SITE INSPECTION REPORT
NEO SMELTING AND REFINING
150-40 11TH AVENUE
WHITESTONE, NEW YORK

CERCLIS ID No.: NYN000206646

EPA Contract No.: EP-S5-06-04
TDD No.: S05-0013-1302-006
Document Control No.: 2101-2A-BHPH

JULY 2013

Prepared for:

U.S. ENVIRONMENTAL PROTECTION AGENCY

Prepared by:

Weston Solutions, Inc.
Edison, New Jersey 08837

254060

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SUBMITTED BY:

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Assistant Project Scientist

Date 7/31/2013

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Date 7/31/2013

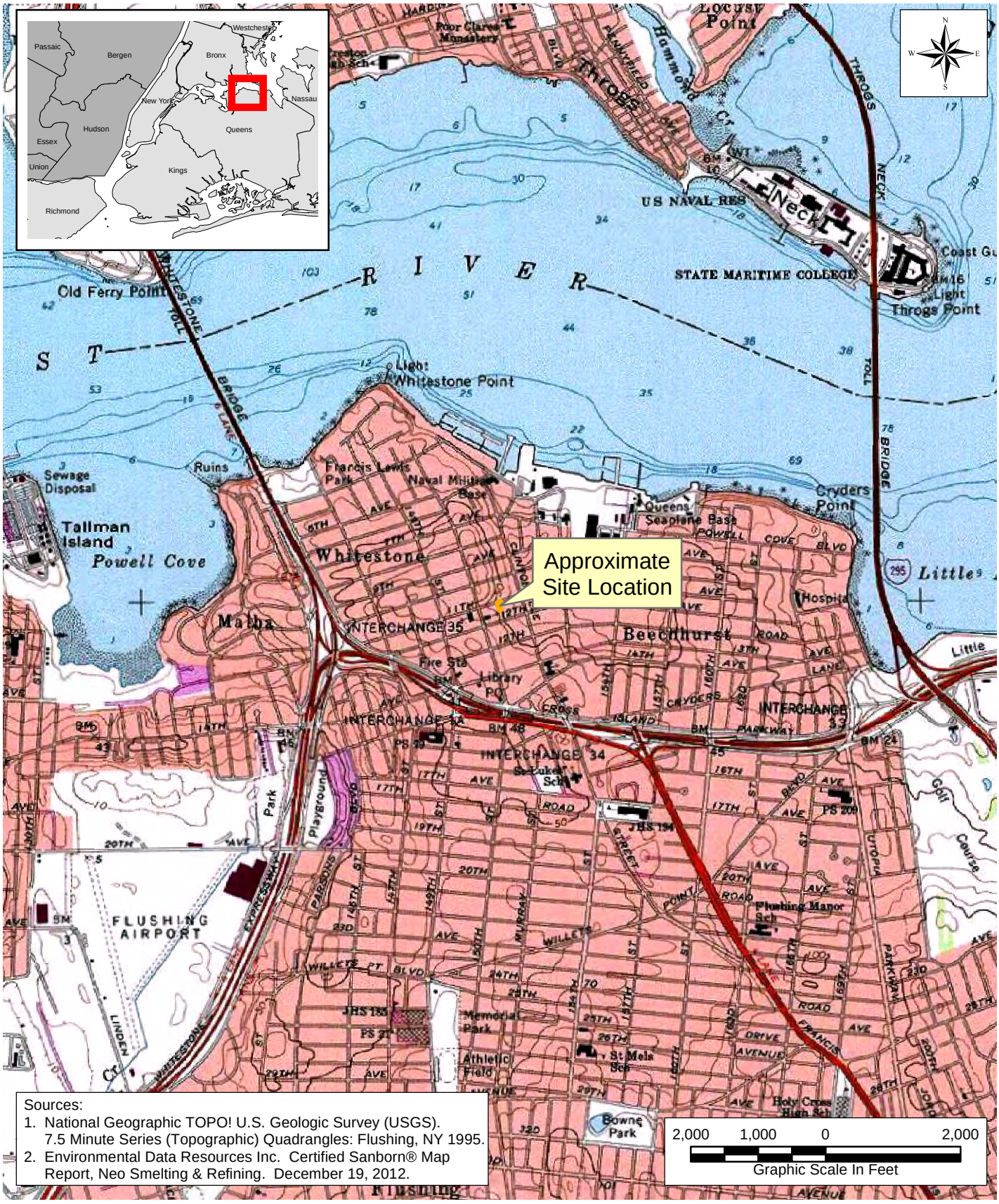
SITE SUMMARY

The Neo Smelting and Refining site (CERCLIS ID No. NYN000206646) (hereafter referred to as "the Site") consists of approximately 3,300 square feet (ft^2) located at 150-40 11th Avenue, Whitestone, NY 11357 [Ref. 3, p. 1; 32, p. 1]. The historic smelting operations were primarily conducted on Block 4516, Lot 16 (historic Lot 22), in the eastern-most portion of the lot [Ref. 2, Figure 3; 5, p. 2; 27, pp. 1-3; 32, p. 1]. Neo Smelting and Refining was identified as a secondary lead smelter in a doctoral dissertation focused on unrecognized secondary lead smelters [Ref. 19, p. 39].

Smelting is a key process in lead production that involves heating lead ore or recovered lead with chemical reducing agents [Ref. 20, p. 1]. The Site operated as a secondary smelter; however, both secondary and primary smelting processes can be responsible for releasing large amounts of lead contamination into the surrounding environment [Ref. 19, p. 39; 20, p. 1].

According to historical documents, the Site was in operation from the late 1940s until sometime after 1958, and the potential of a lead release to the surrounding residential properties existed for approximately two decades [Ref. 5, p. 2; 12, p. 4; 13, pp. 27-29; 25, pp. 1-2]. In addition, historic Certified Sanborn® maps from 1941, 1942, and 1950 indicate that a "Metal Refining" facility occupied the subject property where the smelting building footprint was located [Ref. 13, pp. 27-29]. The 1981 Sanborn map shows "Metal Scrap" as the subject property [Ref. 13, p. 26]. The Sanborn maps reviewed indicated that the subject property operated as "The American Can Co." in 1903 and 1916 prior to smelting activities [Ref. 13, p. 30-31].

The current owner of the Site property is La Famiglia Di Bugey Inc., which owns and operates the Whitestone Manor Condominiums [Ref. 10, p. 2; 5, p. 2; 25, pp. 1-2]. Between 2006 and 2008, the former smelter building was converted into the current residential condominiums, which include 49 residential units [Ref. 5, p. 2; 25, pp. 1-2]. The Site is bound to the west by residential properties, to the east by residential and commercial properties, and to the north and south by mostly commercial stores and some residential homes [Ref. 2, Figures 2 and 3; 4, p. 7; 12, pp. 4-9]. The surrounding properties located on 11th and 12th Avenues have been residential with yard areas since the early 1900s [Ref. 12, pp. 4-9; 13, pp.10-31]. Whitestone Manor Condominiums has an unpaved courtyard area with exposed soil as well as a driveway [Ref. 2, Figure 2 and 3; 12, p. 9; 25, pp. 1-2]. A Site Location Map and Site Map are included in this report.



Sources:
1. National Geographic TOPO! U.S. Geologic Survey (USGS). 7.5 Minute Series (Topographic) Quadrangles: Flushing, NY 1995.
2. Environmental Data Resources Inc. Certified Sanborn® Map Report, Neo Smelting & Refining. December 19, 2012.

LEGEND:

Approximate Footprint of the Former Neo Smelter(2)

TITLE:

Site Location Map
Neo Smelting and Refining
150-40 11th Avenue
Whitestone, NY 11357

PROJECT: Neo Smelting and Refining

CLIENT NAME: EPA

WESTON SOLUTIONS

DATE: July 2013

FIGURE #: 1

P:\SAT2\2013_Smelting_Sites\Neo_Smelting\MXD\12714_Neo_Site_Location.mxd.mxd

Sources:
1. Department of Commerce (DOC), National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), National Geodetic Survey (NGS), Remote Sensing Division. November 2012. http://ngs.woc.noaa.gov/storms/sandy/
2. Environmental Data Resources Inc. Certified Sanborn® Map Report, Neo Smelting & Refining. December 19, 2012.

LEGEND:

Approximate Footprint of the Former Neo Smelter(2)

PROJECT:

Neo Smelting and Refining

TITLE:

Site Map
Neo Smelting and Refining
150-40 11th Avenue
Whitestone, NY 11357

CLIENT NAME: EPA

WESTON SOLUTIONS

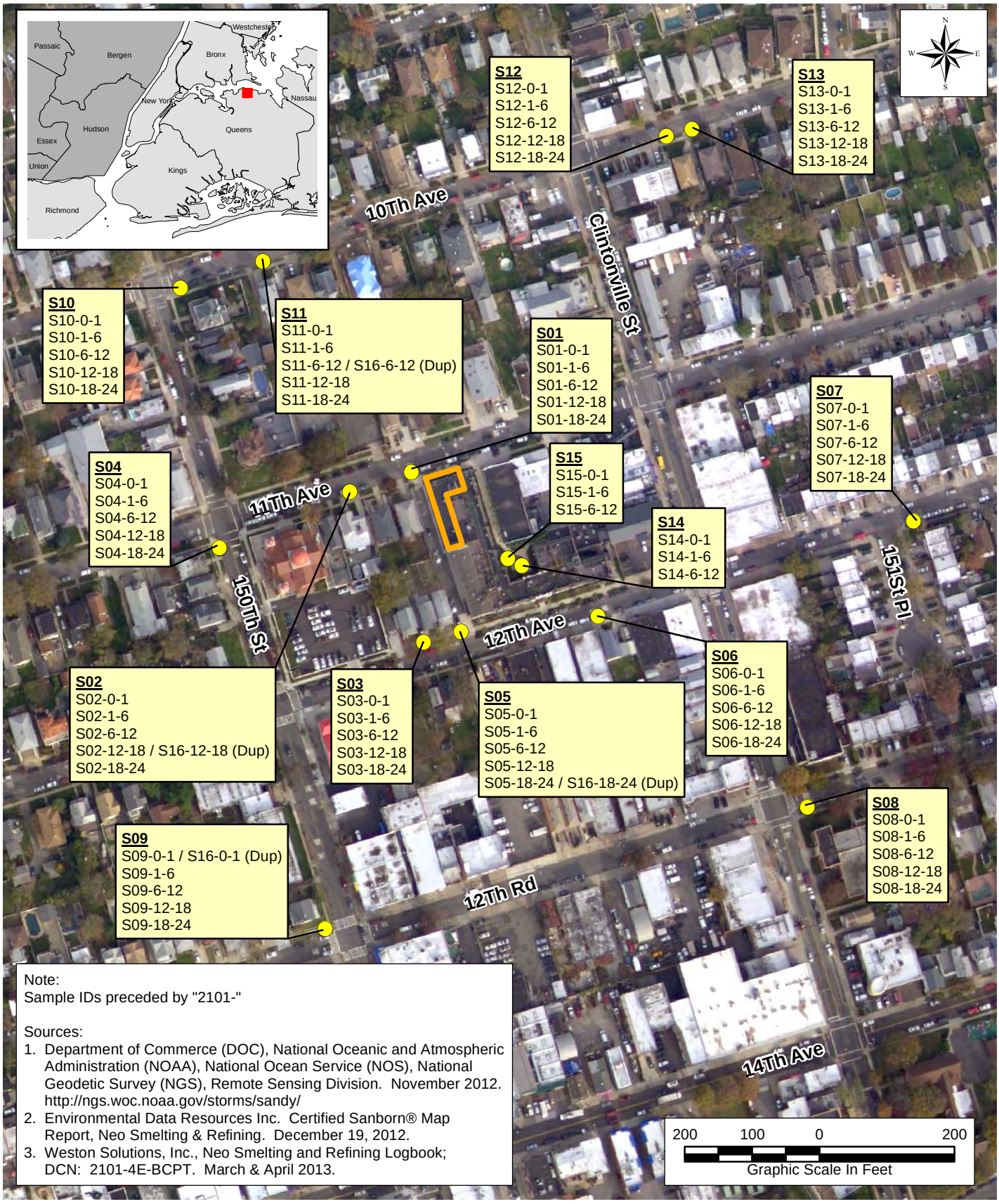
DATE: July 2013

FIGURE #: 2

P:\SAT2\2013_Smelting_Sites\Neo_Smelting\MXD\12599_Site_Map.mxd

From April 25-26, 2013, Weston Solutions, Inc. (WESTON®) personnel collected a total of 75 surface soil samples from right-of-way (ROW) locations downwind of the Site, from the courtyard of the former smelter building footprint, and from ROW locations in surrounding neighborhoods within a ½-mile radius [Ref. 4, pp. 10-23; 17, p. 3]. Soil samples were also collected from four locations outside of the influence of site activities to document background conditions [Ref. 4, pp. 10-23; 17, p. 3]. At each sample location, soil samples were collected at depth intervals of 0-1 inch, 1-6 inches, 6-12 inches, 12-18 inches, and 18-24 inches [Ref. 4, pp. 10-23; 17, p. 3]. A Sample Location Map is included in this report.

The soil samples collected by WESTON were submitted for analysis of Target Analyte List (TAL) Inorganics (including tin) [Ref. 17, pp. 2-3]. Soil samples collected from the 0-1 inch interval were designated for sieving by the Environmental Protection Agency (EPA) Division of Environmental Science and Assessment (DESA) with a 250-micron stainless steel sieve and pan [Ref. 17, p. 3]. All samples were hand-delivered to the EPA DESA for analysis [Ref. 4, pp. 13, 18; 17, p. 4]. Analytical results indicate concentrations of lead found in the Whitestone Manor Condominiums courtyard and one downwind location to be significantly higher than at background conditions [Ref. 18, Table 1; 23, pp. 29-49, 58-82].



Note:
Sample IDs preceded by "2101-"

Sources:
1. Department of Commerce (DOC), National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), National Geodetic Survey (NGS), Remote Sensing Division. November 2012. http://ngs.woc.noaa.gov/storms/sandy/
2. Environmental Data Resources Inc. Certified Sanborn® Map Report, Neo Smelting & Refining. December 19, 2012.
3. Weston Solutions, Inc., Neo Smelting and Refining Logbook; DCN: 2101-4E-BCPT. March & April 2013.

LEGEND:
- Soil Sample Location
- Approximate Footprint of the Former Neo Smelter(2)

TITLE:
Soil Sample Location Map
Neo Smelting and Refining
150-40 11th Avenue
Whitestone, NY 11357

PROJECT:
Neo Smelting and Refining

CLIENT NAME:
EPA

WESTON SOLUTIONS

DATE:
July 2013

FIGURE #:
3

P:\SAT2\2013_Smelting_Sites\Neo_Smelting\MXD\12978_NEO_Sample_Loc.mxd.mxd

SITE ASSESSMENT REPORT: PRELIMINARY ASSESSMENT/SITE INSPECTION

PART I: SITE INFORMATION

1. Site Name/Alias Neo Smelting and Refining

   Street 150-40 11th Avenue

   City Whitestone State New York Zip 11357

2. County Queens County Code 081 Cong. Dist. 03

3. CERCLIS ID NO. NYN000206646

4. Block No. 4516 Lot No. 16

5. Latitude 40.79167º North Longitude -73.81385º West

   USGS Quad(s) Flushing, NY

6. Approximate size of site 3292.3ft^2 or 0.076 acres

7. Current Owner La Famiglia Di Bugey Inc. Telephone No. 718-357-0808

   Mailing Address 15031- 12th Avenue

   City Whitestone State New York Zip 11357

8. Current Operator Whitestone Manor Condominiums Telephone No. 718-357-0808

   Mailing Address 15031- 12th Avenue

   City Whitestone State New York Zip 11357

9. Type of Ownership

   X Private ___ Federal ___ State

   ___ County ___ Municipal ___ Unknown ___ Other _____

Ref. 2, Figures 2 and 3; 5, p. 2 6, p. 1; 7, p. 1; 8, p. 2; 9, p. 1; 10, p. 4.

10. Owner/Operator Notification on File

___ RCRA 3010 ___ Date ___ CERCLA 103c Date _____

___ None _X_ Unknown

11. Permit Information

Permit	Permit No.	Date Issued	Expiration Date	Comments

Permits or other permit information were not found for the subject property. The only information found for the subject property through an environmental records database radius search includes records within the Lead Smelters database and the Federal CERCLIS.

Ref. 14, pp. 17-20.

12. Site Status

__ Active _X_ Inactive __ Unknown

13. Years of Operation: Ca. 1940 - Neo-Smelting & Refining Inc. (Municipal Archives Tax Photo)
1941 - "Metal Reeling" (Sanborn Map – No company name provided)
1942-1944 - Neo Metal & Chemical Corp, Alloy Steel Forging & Tool Co. Inc. (City Directories, Sanborn Maps)
1944-1948 - Neo-Smelting & Refining (City Directories, 1944 Help Wanted Ad)
1950 - "Metal Refining" (Sanborn Map – No company name provided)
1958 - Neo-Smelting & Refining (Court Case Documentation)
1981-2006 - Metal Scrap Warehouse (unrelated to former smelter activity)
2007-Current - Whitestone Manor Condominiums (unrelated to former smelter activity)

Ref. 13, pp. 9-31; 25, pp. 1-2.

14. Identify the types of waste sources (e.g., landfill, surface impoundment, piles, stained soil, above- or below-ground tanks or containers, land treatment, etc.) on site. Initiate as many waste unit numbers as needed to identify all waste sources on site.

(a) Waste Sources

Waste Unit No.	**Waste Source Type**	**Facility Name for Unit**
1	Contaminated Soil	N/A

b) Other Areas of Concern

None.

15. Describe the regulatory history of the site, including the scope and objectives of any previous response actions, investigations and litigation by State, Local and Federal agencies (indicate type, affiliation, date of investigations).

- **Doctoral Dissertation on the Secondary Lead Smelting Industry, 2001** – As part of a doctoral dissertation for George Mason University, William P. Eckel compiled a list of hundreds of locations nationwide where secondary lead smelting or alloying might have been conducted between 1931 and 1964 [Ref. 19, pp. 1-3]. The dissertation identified Neo Smelting & Refining at 150-40 11th Avenue, Whitestone, NY as a secondary lead smelter [Ref. 19, p. 39].

- **Pre-CERCLIS Screening, May 2012** – Pre-CERCLIS screening activities for Neo Smelting and Refining were completed by WESTON personnel in November 2012 [Ref. 16, pp. 1-11]. The Pre-CERCLIS Screening report reconfirmed the address of the Site to be at 150-40 11th Avenue, Whitestone, NY 11357 [Ref. 16, p. 1]. The Site was recommended for further assessment under CERCLA based on: the confirmed historical presence of metal refining operations at this address, the recent conversion of the Site into condominiums, the presence of residential land on site and nearby that contains exposed soil, and the lack of knowledge of historical housekeeping practices and scale of operations [Ref. 16, p. 2].

- **On-site Reconnaissance, March 4, 2013** – An on-site reconnaissance was conducted on March 4, 2013 to observe current site conditions and collect Global Positioning System (GPS) points around the former smelter building footprint where there was likely historically exposed soil [Ref. 4, pp. 2-5].

- **Soil Sampling April 25-26, 2013** – From April 25-26, 2013, WESTON personnel collected a total of 75 surface soil samples from locations downwind of the Site. Samples were taken from the ROW locations along 12th Road, 12th Avenue, 11th Avenue, 150th Street, and the courtyard of the Whitestone Manor Condominiums (location of the former Neo Smelting and Refining Co) in order to determine if the surrounding soil has been impacted by lead as a result of Site operations [Ref. 2, p.3; 4, pp. 12-32; 17, pp. 3-4, 5-8, 11-12]. Soil samples were also collected to document background conditions from four locations outside of the influence of site activities [Ref. 2, Figure 3; 4, pp. 12-32; 17, pp. 3-4, 9-11]. At each sample location, soil samples were collected at depth intervals of 0-1 inch, 1-6 inches, 6-12 inches, 12-18 inches, and 18-24 inches. Analytical results indicate that concentrations of lead detected in the source samples collected within the courtyard of the Whitestone Condominiums, the former smelter footprint, as well as one sample location downwind on the intersection of 12th Avenue and Clintonville Street are significantly

higher than concentrations documented at background sample locations [Ref. 18, Table 1; 23, pp. 28-32, 43-48, 57-71].

a) Is the site or any waste source subject to Petroleum Exclusion? Identify petroleum products and by products that justify this decision.

There are no historical or currently identified Underground Storage Tanks (UST) at the subject property.

Ref. 14, pp. 17-18.

b) Has normal farming application of pesticides registered under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) occurred at the site? Have pesticides been produced or stored at the site? Have there been any leaks or spills of pesticides on site?

The Site was not used for agricultural purposes. The Site is located in a historically commercial and residential area of Whitestone, NY. Pesticide analyses were not conducted for soil samples collected from the site by WESTON in April 2013.

Ref. 12, pp. 5-11; 13, pp. 9-31.

c) Is the site or any waste source subject to Resource Conservation and Recovery Act (RCRA) Subtitle C (briefly explain)?

The current owner of the Site, Whitestone Manor Condominiums, does not hold any Resource Conservation and Recovery Act permits. Historic facility documents reviewed did not reveal any permits held during the time of Neo Smelting and Refining operations.

Ref. 14, pp. 17-22.

d) Is the site or any waste source maintained under the authority of the Nuclear Regulatory Commission (NRC)?

The Site or subject property is not included in Material Licensing Tracking System (MLTS) database. The MLTS is maintained by the NRC and contains a list of sites that possess or use radioactive materials.

Ref. 14, pp. 6, 19.

16. Do any conditions exist on site which would warrant immediate or emergency action?

No conditions were noted that would warrant immediate or emergency action.

Ref. 4.

17. Information available from:

Contact: Andrew Fessler	Agency: EPA Region II	Telephone No.: 212-637-4333
Preparer: Denise Breen	Agency: Region V START III	Date: July 2013

PART II: WASTE SOURCE INFORMATION

For each of the waste units identified in Part I, complete the following items.

Waste Unit 1 - Contaminated Soil

Source Type

_____Landfill	___X___Contaminated Soil
_____Surface Impoundment	_____ Pile
_____Drums	_____ Land Treatment
_____Tanks/Containers	_____Other

Description:

1. Describe the types of containers, impoundments, or other storage systems (i.e., concrete - lined surface impoundments) and any labels that may be present.

   In order to establish the area of observed contamination, soil samples were collected from locations downwind of the Site and from the exposed soil within the courtyard of Whitestone Manor Condominiums. The analytical results indicate significant concentrations of lead at one downwind sample location and within the courtyard of the Whitestone Manor Condominiums. Lead is a hazardous substance attributable to Site operations; therefore, the significant concentrations of lead are used to establish an area of observed contamination.

   Ref. 2, Figures 3; 4, pp. 8-18; 18, Table 1; 23, pp. 29-49, 58-82.

2. Describe the physical condition of the containers or storage systems (i.e., rusted and/or bulging drums).

   From April 25-26, 2013, WESTON collected 75 surface soil samples from 15 sample locations approximately within a ½-mile radius of the Site using a hand auger. The samples were analyzed for TAL Inorganics (including tin) by the EPA DESA. Analytical results indicate an area of observed soil contamination. Analytical results indicate concentrations of lead found in the courtyard of the Whitestone Manor Condominiums and one other downwind location to be significantly higher than concentrations documented at background locations.

   Ref. 2, Figure 3; 4, pp.8-18; 17, pp. 5-12; 18, Table 1; 23, pp. 29-49, 58-82.

3. Describe any secondary containment that may be present (e.g., drums on concrete pad in building or aboveground tank surrounded by berm).

   There is no secondary containment associated with the area of observed soil contamination.

   Ref. 4, pp. 7-23.

Hazardous Waste Quantity

The volume of on-site contaminated soil is unknown; therefore, a volume of greater than 0 cubic yards is used for the purpose of this report.

Ref. 1, pp. 2-5; 2, Figures 3 and 4; 17, pp. 5-12; 18, Table 1.

Hazardous Substances/Physical State

The hazardous substance of lead was used to define the area of observed soil contamination. The physical state of on-site contaminated soil is solid.

Ref. 4, pp. 7-18; 17, pp. 5-12; 23, pp. 3-5, 46, 49, 67.

PART III. SAMPLING RESULTS

From April 25-26, 2013, WESTON personnel collected a total of 75 surface soil samples (including four environmental duplicate samples) from the ROW locations downwind of the Site, the courtyard of the former smelting building footprint, and ROW locations in surrounding neighborhoods within a ½-mile radius [Ref. 4, pp. 8-23; 17, pp. 3-4].

The surface soil samples were collected from a total of 15 locations surrounding the Site located in Whitestone, NY [Ref. 4, pp. 8-23; 17, p. 3, 5-12]. Potential source samples were collected from two locations within the courtyard of Whitestone Condominiums, the location of the former lead smelter [Ref. 4, p. 10; 17, p. 3, 5-12]. Potential release samples were collected from nine sample locations based on historic prevailing wind direction: southeast, south, southwest, and west of the former lead smelter [Ref. 4, pp. 8-23; 17, p. 3, 5-12]. The four sample locations northeast and northwest of the former Neo smelter building footprint are considered to be background sample locations upwind of the influence of site activities, based on the historic prevailing wind directions [Ref. 4, pp. 8-23; 17, p. 3, 5-12].

At each sample location, soil samples were collected at depth intervals of 0-1 inch, 1-6 inches, 6-12 inches, 12-18 inches, and 18-24 inches using a decontaminated stainless-steel hand auger [Ref. 4, pp. 8-23; 17, p. 3]. Refusal was reached within the courtyard of the Whitestone Condominiums (S14 and S15) at the depth of 12 inches [Ref. 4, p. 10; 17, pp. 3, 11-12]. There were no photoionization detector (PID) readings above background from any of the soil samples collected [Ref. 4, pp. 8-23; 17, p. 3]. Each sample was homogenized in a dedicated, disposable aluminum tray with a dedicated, disposable plastic scoop prior to placement into the sample container [Ref. 4, pp. 8-23; 17, p. 3]. All remaining soil not used for laboratory analysis was discarded at the sampling location [Ref. 4, pp. 8-23; 17, p. 3].

All soil samples were submitted for analysis of TAL Inorganics (plus tin) [Ref. 4, p. 18; 17, p. 3]. Soil samples collected from the 0-1 inch interval were designated for sieving by EPA DESA with a 250-micron, stainless-steel sieve and pan [Ref. 17, p. 3]. One rinsate blank was collected to demonstrate adequate decontamination of non-dedicated sampling equipment (hand auger) [Ref. 4, p. 11; 17, pp. 3-4].

WESTON logged sample locations electronically using a handheld Trimble GPS unit and performed post-processing differential correction of the GPS data in accordance with EPA Region 2 GPS Standard Operating Procedures [Ref. 17, p. 4]. The processed GPS data for all samples has been transferred to the Sample Location Map (Figure 3) using Geographic Information Systems [Ref. 2, Figure 3; 17, pp. 3].

Detections of lead in surface soil samples were designated “significant” by lead concentrations being higher than three times (3x) the background concentration at the same depth interval. This report also addresses soil concentrations over 400 ppm; the EPA lead hazard standard is 400 parts per million (ppm) for bare soil in areas where children play and an average of 1,200 ppm for the remainder of the property [Ref 22, p. 7]. Significant detections of lead are noted below:

- Of the 16 soil samples collected at 0-1 inch depth interval, none were greater than 3x background; however, two samples, 2101-S08 and 2101-S09 did exceed the EPA Lead Hazard Standard of 400 ppm. These samples were collected southeast and southwest of the Site, located in a mixed commercial and residential area, and indicated significant detections of lead at 710 ppm and 440 ppm, respectively. Additionally, a preschool/daycare facility, "Pee Wee Folks", is located within 200 feet of S08.

  Ref. 2, Figure 3; 18, Table 1; 23, pp. 63, 68.

- Of the 16 soil samples collected at 1-6 inch depth interval, none were greater than 3x background; however, two samples, 2101-S06 and 2101-S08 did exceed the EPA Lead Hazard Standard of 400 ppm. These samples were collected southeast of the Site, located in a mixed commercial and residential area and indicated significant detections of lead at 530 ppm and 990 ppm, respectively. Additionally, a preschool/daycare facility, "Pee Wee Folks", is located within 200 feet of S08.

  Ref. 2, Figure 3; 18, Table 1; 23, pp. 31, 65.

- Out of 16 soil samples collected from the 6-12 inch depth interval, there were three locations (2101-S08, 2101-S14 and 2101-S15) which are considered significant when compared to 3x the highest background sample (230 x 3 = 690 ppm). These surface soil samples were collected from within the courtyard of the Whitestone Manor Condominiums (2101-S14 and 2101-S15) as well as southeast of the Site at sample location 2101-S08 in a mixed commercial and residential area. Additionally, four soil samples (2101-S06, 2101-S08, 2101-S14 and 2101-S15) exceeded the EPA Lead Hazard Standard of 400 ppm. These sample locations were located east and southeast of the Site (2101-S06 and 2101-S08) and within the courtyard of Whitestone Manor Condominiums (2101-S14 and 2101-S15).

  Ref. 2, Figure 3; 18, Table 1; 23, pp. 33, 46, 49, 67.

- Of the 16 soil samples collected at 12-18 inch depth interval, none were greater than 3x background; however, three samples, 2101-S06, 2101-S07 and 2101-S08 did exceed the EPA Lead Hazard Standard of 400 ppm. The surface soil samples were collected east and southeast of the Site, located within a mixed commercial and residential area and indicated significant detections of lead, 460 ppm, 480 ppm, 550 ppm, respectively. Additionally, a preschool/daycare facility, "Pee Wee Folks", is located within 200 feet of S08.

  Ref. 2, Figure 3; 18, Table 1; 23, pp. 30, 59, 64.

- There were no significant detections of lead in any soil samples collected at the depth interval of 18-24 inches when compared to 3x the highest background sample (260 x 3 = 780 ppm) collected from the same depth. Additionally, detected concentrations did not exceed the EPA Lead Hazard Standard of 400 ppm.

Ref. 2, Figure 3; 18, Table 1; 23, pp. 11-12, 16-17, 22, 27, 32, 37, 42, 51, 56, 61, 66, 71, 76, 81

Based on the analytical data collected, Site-attributable contaminants were found at sample locations 2101-S14, 2101-S15 (located within Whitestone Manor Condominiums) and 2101-S08 (historically downwind of historic smelter activities). Lead concentrations found at 2101-S06, 2101-S07, and 2101-S09 cannot be definitively identified as Site-attributable since they have concentrations less than 3x background at their respective depth intervals.

A summary of the critical soil sample analytical results is presented in Table 1.

Table 1. Neo Smelting and Refining PA/SI Soil Sample Results - April 25-26, 2013
Significant detections of lead in soil samples as compared to background

	Background Samples			Source Samples		Release Samples			
	Residential Soil Exceedence (mg/kg)	Maximum Background (mg/kg)	Exceedance of 3 times background (mg/kg)						
Depth				2101-S15	2101-S14	2101-S06	2101-S07	2101-S08	2101-S09
0-1inch	400	500	1500					710	430 (440)
1-6 inches	400	750	2250			530		990	
6-12 inches	400	230	690	960	690	620		800	
12-18 inches	400	810	2430			460	480	550	
18-24 inches	400	260	780						
Reference	Ref. 22 - pp. 7	Ref. 23 - pp. 73, 76, 79-80, 82		Ref. 23 - p. 49.	Ref. 23 - p. 46.	Ref. 23 - pp. 30, 31, 33.	Ref. 23 - p. 59.	Ref. 23 - pp. 63-65, 67.	Ref. 23 - p. 68.

Duplicates are noted in parenthesis.
All sample results in milligram per kilogram (mg/kg).
Significant detections are defined as detections in excess of three times background.
Maximun background samples as follows:
2101-S12-0-1: Collected in right-of-way (ROW) on 10th Ave
2101-S13-1-6: Collected in right-of-way (ROW) on 10th Ave
2101-S13-6-12: Collected in right-of-way (ROW) on 10th Ave
2101-S13-12-18: Collected in right-of-way (ROW) on 10th Ave
2101-S12-18-24: Collected in right-of-way (ROW) on 10th Ave

PART IV: HAZARD ASSESSMENT

GROUNDWATER ROUTE

1. Describe the likelihood of a release of contaminant(s) to the groundwater as follows: observed release, suspected release, or none. Identify contaminants detected or suspected and provide a rationale for attributing them to the site. For observed release, define the supporting analytical evidence and relationship to background.

A release to groundwater is not suspected.

2. Describe the aquifer of concern; include information such as depth, thickness, geologic composition, areas of karst terrain, permeability, overlying strata, confining layers, interconnections, discontinuities, depth to water table, groundwater flow direction.

There are two aquifers that are used in the Site vicinity (i.e., within the 4-mile target distance limit): Magothy and Lloyd aquifers. The uppermost stratigraphic unit at the Site is upper Pleistocene deposits that mainly consist of unstratified mixture of clay, sand, gravel and boulders with a thickness ranging from 0-65 feet. The underlying Magothy aquifer consists of very fine to coarse sand and silty sand with lesser amounts of interbedded clay and silt. Thickness of the Magothy aquifer ranges from approximately 0-90 feet.

Beneath the Magothy aquifer is the Raritan Formation, which contains the Raritan Clay member and the Lloyd Sand member (a.k.a. Lloyd aquifer). The Raritan Clay confines the underlying Lloyd aquifer and has a thickness of approximately 85-100 feet. The Lloyd Sand consists of fine to coarse sand interbedded with sand and small to large pebbles with interbeds of silt and clay and silty and clayey sand. The Lloyd aquifer has a total thickness ranging from 70-200 feet and is confined by the overlying clay member of the Raritan Formation and the underlying bedrock.

Bedrock consisting mainly of crystalline bedrock of early Paleozoic and Precambrian age underlies the Lloyd aquifer; the bedrock surface forms the base of the groundwater reservoir in the Site vicinity.

Precipitation is the sole source of freshwater in the Queens County area. Groundwater reservoirs recharge from the infiltration of the precipitation through the surficial deposits. Based on regional information, depth to groundwater in the site vicinity is approximately 35-40 feet below ground surface (bgs). General groundwater flow direction is north.

Geologic Unit	Depth (Approximate)	Thickness (Approximate)
Upper Pleistocene Deposits	0 feet	Maximum 75 feet
Magothy Aquifer	0-100 feet	Maximum 100 feet

Raritan Clay	75 feet	100 feet
Lloyd Aquifer	150 feet	70-200 feet
Bedrock	230 feet	N/A

Ref. 29, pp. 1-13; 40, pp. 1-2; 29, pp. 4-12.

3. What is the depth from the lowest point of waste disposal/storage to the highest seasonal level of the saturated zone of the aquifer of concern?

Surface soil samples 2101-S08, 2101-S14, and 2101-S15 (depth: 6-12 inches) collected downwind of the Site indicated significant detections of lead, 800 ppm, 690 ppm, and 960 ppm, respectively. The water table in the area (i.e., the highest seasonal level of the aquifer) is approximately 35-40 feet bgs. Therefore, the depth from the lowest point of waste disposal to groundwater is approximately 35 feet.

Ref. 2, Figure 1; 23, pp. 46, 49, 67; 18, Table 1; 40, pp. 1-2.

4. What is the permeability value of the least permeable continuous intervening stratum between the ground surface and the top of the aquifer of concern?

It is unknown which of the two available aquifers are used for public supply within the Whitestone, Queens, NY area: Magothy, and Lloyd aquifers. The unsaturated portions of Pleistocene deposits form the thin layer above the Magothy aquifer. The upper Pleistocene deposits mainly consist of unstratified mixture of clay, sand, and gravel. The least permeable continuous intervening stratum between ground surface and the top of the Magothy aquifer primarily consists of sand or sand and gravel, which typically has a permeability of 10^{-4} centimeters per second (cm/s).

Ref. 17, pp. 5-12; 29, p. 3; 33, pp. 1-2, 6.

5. What is the net precipitation at the site (inches)?

Net precipitation at the site is greater than 40 inches per year.

Ref. 35, p. 1.

6. What is the distance to and depth of the nearest well that is currently used for drinking purposes?

There are three public supply wells located within a 4-mile radius of the Site. All three wells are located approximately 3.5 miles from the Site and withdraw water from either the Magothy or the Lloyd aquifer.

Ref. 2, Figure 4; 26, p. 1; 33, pp. 1-2

7. If a release to groundwater is observed or suspected, determine the number of people that obtain drinking water from wells that are documented or suspected to be actually contaminated by hazardous substance(s) attributed to an observed release from the site.

A release to groundwater of site-attributable contaminants is not suspected.

8. Identify the population served by wells located within 4 miles of the site that draw from the aquifer of concern.

Distance	**Population**
0 - ¼ mile	None Identified.
>¼ - ½ mile	None identified.
>½ - 1 mile	None identified.
>1 - 2 miles	None identified.
>2 - 3 miles	None identified.
>3 - 4 miles	8,837 people

Ref. 2, Figure 4; 26, p. 1; 33, pp. 1-2.

State whether groundwater is blended with surface water, groundwater, or both before distribution.

There are three public supply wells located within a 4-mile radius of the Site. There are no known surface water intakes within a 4-mile radius. The public water system source is solely groundwater; therefore, groundwater is not blended with surface water. Groundwater is equally blended within the well water system before distribution.

Ref. 2, Figure 4; 26, p. 1; 33, pp. 1-2.

Is a designated wellhead protection area within 4 miles of the site?

There are three public supply wells located within a 4-mile radius. The Wellhead Protection Program for New York (September 1990) was developed in accordance with Section 1428 of the Safe Drinking Water Act and approved by EPA between 1990 and 1991. The document sets forth wellhead protection area delineation policies for drinking water wells in the State, including a specific baseline designation for all public supply wells in the Magothy aquifer. Being that there are active public supply wells, there are wellhead protection areas within 4 miles of the Site.

Ref. 2, Figure 4; 37, p. 1; 38, pp. 1-2; 39, pp. 1-4.

Does a waste source overlie a designated or proposed wellhead protection area? If a release to groundwater is observed or suspected, does a designated or proposed wellhead protection area lie within the contaminant boundary of the release?

Analytical results indicate an area of observed soil contamination. Analytical results of soil samples indicate concentrations of lead detected in the courtyard of the Whitestone Manor Condominiums and one sample located downwind at the 6-12 inch interval to be higher than the concentrations documented at the background locations. Sample locations downwind of the Site also indicated lead concentrations over background and/or over the Exceedance of 400 ppm. Although there are three public supply wells located within a 4-mile radius, none of the wells or associated wellhead protection areas are within a 1-mile radius of the Site. A release to groundwater of Site-attributable contaminants is not suspected.

Ref. 2, Figure 3 and 4; 4, pp. 9-17; 17, pp. 4-5, 5-12; 18, Table 1; 23. pp. 23, pp. 46, 49, 67; 37, p. 1; 38, pp. 1-2; 39, pp. 1-4.

9. Identify one of the following resource uses of groundwater within 4 miles of the site (i.e., commercial livestock watering, ingredient in commercial food preparation, supply for commercial aquaculture, supply for major, or designated water recreation area, excluding drinking water use, irrigation (5-acre minimum) of commercial food or commercial forage crops, unusable).

There are three public supply wells within a 4-mile radius of the Site; however, there are no known resource uses of groundwater within 4 miles of the site.

Ref. 26, p. 1; 33, pp. 1-2.

SURFACE WATER ROUTE

10. Describe the likelihood of a release of contaminant(s) to surface water as follows: observed release, suspected release, or none. Identify contaminants detected or suspected and provide a rationale for attributing them to the site. For observed release, define the supporting analytical evidence and relationship to background.

Although a release to surface water is not suspected, the analytical results of soil samples collected within the courtyard of Whitestone Manor Condominiums and within the ROW located at the intersection of 12th Avenue and Clintonville Street indicate that concentrations of lead are significantly higher when compared to concentrations documented at background locations. It is likely that the majority of runoff is intercepted by storm drains located along 11th Avenue, Clintonville Street, and 12th Avenue. Runoff from the streets is carried by separate storm sewers directly to local streams, rivers and bays. In most areas, sanitary and industrial wastewater, rainwater, and street runoff are collected in the same sewers and then conveyed together to the City's treatment plants. This is known as a combined sewer system. Sometimes, during heavy rains or snow, combined sewers fill to capacity and are unable to carry the combined sanitary and storm sewage to the plants. When this occurs, the mix of excess storm water and untreated sewage flows directly into the City's waterways. This is called combined sewer overflow (CSO). Given this situation, the pathway is indeterminate and transport of Site-attributable contaminants to surface water is not known or suspected to have occurred.

Ref. 2, Figures 2; 4, p. 3-4, 19-23; 6, p. 1; 27, pp. 1-3; 42, p. 7.

11. Identify the nearest downslope surface water. If possible, include a description of possible surface drainage patterns from the site.

A release to surface water is not suspected. WESTON visited the Site and determined that the Site is semi-paved and slopes to the east-southeast. Historic operations occurred mainly toward the western portion of the Site; therefore, it is likely that the majority of runoff from the Site is intercepted by storm drains located on 11th and 12th Avenues.

Ref. 2, Figures 2; 4, p. 3-4, 19-23; 6, p. 1.

12. What is the distance in feet to the nearest downslope surface water? Measure the distance along a course that runoff can be expected to follow.

The Site extends along a small portion of 11th Avenue and 12th Avenue and takes up the entire width of the block. Historic operations occurred mainly toward the western portion of the Site; therefore, it is likely that the majority of runoff from the Site is intercepted by storm drains located along 11th and 12th Avenues.

Ref. 2, Figures 2; 4, p. 3-4, 19-23; 6, p. 1.

13. Identify all surface water body types within 15 downstream miles.

Name	Water Body Type	Flow (cfs)	Salt/Fresh/Brackish

There is no known overland pathway to surface water; therefore, a 15-mile pathway map is not provided. It is likely that the majority of runoff from the Site is intercepted by storm drains located along 11th and 12th Avenues. In most areas, sanitary and industrial wastewater, rainwater, and street runoff are collected in the same sewers and then conveyed together to the City's treatment plants. However, sometimes during heavy rains or snow, combined sewers fill to capacity and are unable to carry the combined sanitary and storm sewage to the plants. When this occurs, the mix of excess storm water and untreated sewage flows directly into the City's waterways. Given this situation, the pathway is indeterminate and transport of Site-attributable contaminants to surface water is not known or suspected to have occurred.

Ref. 2, Figure 3 and 4.

14. Determine the 2-yr, 24-hr rainfall (inches) for the site.

The 2-year, 24-hour rainfall for the Site is 3.5 inches.

Ref. 34, p. 5.

15. Determine size of the drainage area (acres) for sources at the site.

WESTON visited the Site and determined that the Site is semi-paved and slopes to the east-southeast. The Site is approximately 3292.3 ft^2 or 0.076 acres. The actual size of the drainage area of observed soil contamination was not calculated due to the limited soil samples collected with significant contaminated soil. It is likely that the majority of runoff from the Site is intercepted by storm drains located along 11th and 12th Avenues.

Ref. 2, Figures 2; 4, p. 3-4, 19-23; 6, p. 1; 32, p. 1.

16. Describe the predominant soil group in the drainage area.

Surface soil samples collected during the April 2013 sampling event indicate that soil is predominantly comprised of silty sand. Silty sand is considered to be moderately fine-textured with low infiltration rates.

Ref. 2, Figures 2; 4, p. 3-4, 9-23; 17, pp. 5-12; 32, p. 1.

17. Determine the type of floodplain that the site is located within.

The Federal Emergency Management Agency (FEMA) has designated the site area to be within an area of minimal flood hazard, usually depicted on FIRMs as above the 500-year flood level.

Ref. 11, pp. 1-3.

18. Identify drinking water intakes in surface waters within 15 miles downstream of the point of surface water entry. For each intake identify: the name of the surface water body in which the intake is located, the distance in miles from the point of surface water entry, population served, and stream flow at the intake location.

There is no known overland pathway to surface water; therefore, a 15-mile pathway map is not provided. There are no known drinking water intakes in the surface waters surrounding the Site vicinity.

Ref. 2, Figure 4; 26, p. 1, 33, pp. 1-2.

19. Identify fisheries that exist within 15 miles downstream of the point of surface water entry. For each fishery specify the following information:

Fishery Name	Water Body Type	Flow (cfs)	Salt/Fresh/Brackish

There is no known overland pathway to surface water; therefore, a 15-mile pathway map is not provided. It is likely that the majority of runoff from the Site is intercepted by storm drains located along 11th and 12th Avenues. In most areas, sanitary and industrial wastewater, rainwater, and street runoff are collected in the same sewers and then conveyed together to the City's treatment plants. In the event of heavy rains or snow, combined sewers fill to capacity and are unable to carry the combined sanitary and storm sewage to the plants. When this occurs, the mix of excess storm water and untreated sewage flows directly into the City's waterways. In these situations, it is very difficult to definitively and confidently link contaminants to specific point sources. Nonetheless, the New York State Department of Health has issued a Health Advisory for eating sport fish caught within the Site vicinity.

Ref. 2, Figure 4; 6, p. 1; 24, pp. 3-5; 42, pp. 5-8.

20. Identify surface water sensitive environments that exist within 15 miles of the point of surface water entry.

Environment	Water Body Type	Flow (cfs)	Distance from Site

There is no known overland pathway to surface water; therefore, a 15-mile pathway map is not provided. See Question 10 for explanation of surface water runoff from the Site and Site-attributable contaminants.

Ref. 2, Figure 3; 31, p. 1; 42, pp. 5-7.

21. If a release to surface water is observed or suspected, identify any intakes, fisheries, and sensitive environments from question Nos. 18-20 that are or may be actually contaminated by hazardous substance(s) attributed to an observed release of from the site.

A release to surface water of Site-attributable contaminants is not suspected; see Question No. 10 for a description of the likelihood of a release.

22. Identify whether the surface water is used for any of the following purposes, such as: irrigation (5 acre minimum) of commercial food or commercial forage crops, watering of commercial livestock, commercial food preparation, recreation, potential drinking water supply.

There is no known overland pathway to surface water; therefore, a 15-mile pathway map is not provided. See Question 10 for explanation of surface water runoff from the Site and Site-attributable contaminants. Surface water within the Site vicinity is used for recreation (e.g., boating, surfing, kayaking, scuba diving, etc.) purposes.

Ref. 37, pp. 1-2.

SOIL EXPOSURE PATHWAY

23. Determine the number of people that occupy residences or attend school or day care on or within 200 feet of observed contamination.

Analytical results of surface soil samples confirmed the presence of on-site contaminated soil based on significant detections of lead. The Site is located within a mixed commercial and residential area; Whitestone Manor Condominiums (sample locations 2101-S14 and 2101-S15) and a day care facility (sample location 2101-S08) are located within 200 feet of observed contamination. According to the United States (US) Census Bureau, the average amount of people per house hold is 2.83. There are 49 condominium units within 200 feet of observed contamination. The total number of residents living within 200 feet of observed contamination is 49 x 2.83 = 139. There is the day care facility, "Pee Wee Folks Preschool Daycare Childcare" located at 12-45 Clintonville Street, which is within 200 feet of observed contamination. "Pee Wee Folks Preschool Daycare Childcare" facility is licensed to have a maximum of 79 children attend daily.

Ref. 2, Figure 2 and 3; 18, Table 1; 23, pp. 46, 49, 67; 43, p. 1; 44, p. 1.

24. Determine the number of people that regularly work on or within 200 feet of observed contamination.

The exact number of employees working within 200 feet of soil contamination is unknown; therefore, for the purpose of the report, it is assumed that there are fewer than 100 employees.

Ref. 2, Figure 2 and 3; 18, Table 1; 23, 23, pp. 46, 49, 67; 44, p. 1.

25. Identify terrestrial sensitive environments on or within 200 feet of observed contamination.

There are no terrestrial sensitive environments on or within 200 feet of observed contamination.

Ref. 2, Figures 2, 3 and 4; 23, pp. 23, pp. 46, 49, 67.

26. Identify whether there are any of the following resource uses, such as commercial agriculture, silviculture, livestock production or grazing within an area of observed or suspected soil contamination.

There are no known resource uses of soil within the area of observed or suspected soil contamination.

Ref. 2, Figure 2 and 3; 18, Table 1; 12 pp. 4-9; 23, 23, pp. 46, 49, 67.

AIR PATHWAY

27. Describe the likelihood of release of hazardous substances to air as follows: observed release, suspected release, or none. Identify contaminants detected or suspected and provide a rationale for attributing them the site. For observed release, define the supporting analytical evidence and relationship to background.

A historical release to air is suspected due to former smelter operations conducted at the Site, which typically disperse lead through smokestacks; however, a current release to air is not suspected. Neo Smelting and Refining operated on the subject property from approximately the early 1940s until 1958. The site is currently occupied by Whitestone Manor Condominiums, which was converted from the original building on the subject property in 2007.

Ref. 2, Figure 3; 4, pp. 8-10, 13; 23, pp. 23, pp. 46, 49, 67; 25, pp. 1-2.

28. Determine populations that reside within 4 miles of the site.

Distance	Population
>0 - ¼ mi	2,388
>¼ - ½ mi	6,118
>½ - 1 mi	21,877
>1 - 2 mi	103,585
>2 - 3 mi	182,784
>3 - 4 mi	303,394

According to the US Census Bureau, the average number of people per household in Queens County is 2.83. There are 49 condominium units within 200 feet of observed contamination. The total number of residents living within 200 feet of observed contamination is 139. The total population that resides within 4 miles of the Site: 620,146.

Ref. 21, p. 1-2; 25, p. 2; 43, p. 1.

29. Identify sensitive environments, including wetlands and associated wetlands acreage, within 4 miles of the site.

Distance	Wetlands Acreage	Sensitive Environments
On-site	0	None identified.
0–0.25 mi.	0	None identified.
0.25–0.50 mi.	0	None identified.
0.50-1 mi.	2.25	None identified.
1-2 mi.	68.96	None identified.
2-3 mi.	20.52	None identified.
3-4 mi.	329.79	6 State-Listed Threatened and 6 Endangered species habitats.

The specific distribution of the State Listed Endangered and Threatened species could not be definitively identified; therefore, it is assumed that all six State-Listed Threatened Species and six State-Listed Endangered Species are located within the furthest distance ring of 3-4 miles.

Ref. 2, Figure 3; 31, p. 1; 15, pp. 2-5.

30. If a release to air is observed or suspected, determine the number of people that reside or are suspected to reside within the area of air contamination from the release.

A release to air is neither observed nor suspected; see Question No. 27 for a description of the likelihood of a release.

31. If a release to air is observed or suspected, identify any sensitive environments, listed in question No. 29, that are or may be located within the area of air contamination from the release.

A release to air is neither observed nor suspected; see Question No. 27 for a description of the likelihood of a release.

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May 29, 2013

Denise Breen
Weston Solutions Inc.
1090 King Georges Post Road, Suite 201
Edison, NJ 08837

RE: Neo Smelting and Refining - 1304050

Enclosed are the results of analyses for samples received by the laboratory on 04/29/2013. The signature below reflects the laboratory's approval of the reported results. If you have any questions concerning this report, please refer to Project Number 1304050 and contact John Birri by phone at 732-906-6886, or via Email at birri.john@epa.gov.

Sincerely,

John R. Bourbon
Chief, DESA/LB

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 2 Laboratory

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Project Narrative:

The National Environmental Laboratory Accreditation Conference Institute (TNI) is a voluntary environmental laboratory accreditation association of State and Federal agencies. TNI established and promoted a National Environmental Laboratory Accreditation Program (NELAP) that provides a uniform set of standards for the generation of environmental data that are of known and defensible quality. The EPA Region 2 Laboratory is NELAP accredited. The Laboratory tests that are accredited have met all the requirements established under the TNI Standards.

Condition Comments

None

Comment(s):

None

Data Qualifier(s):

U- The analyte was not detected at or above the Reporting Limit.
J- The identification of the analyte is acceptable; the reported value is an estimate.
K- The identification of the analyte is acceptable; the reported value may be biased high.
L- The identification of the analyte is acceptable; the reported value may be biased low.
NJ- There is presumptive evidence that the analyte is present; the analyte is reported as a tentative identification. The reported value is an estimate.

Reporting Limit(s):

The Laboratory was able to achieve the appropriate limits for each analyte requested.

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

SUMMARY REPORT FOR SAMPLES

Field ID	Laboratory ID	Matrix	Date Sampled	Date Received
2101-RIN01	1304050-01	Aqueous	04/25/2013 14:41	04/29/2013 10:15
2101-S01-0-1	1304050-02	Solid	04/25/2013 14:40	04/29/2013 10:15
2101-S01-12-18	1304050-03	Solid	04/25/2013 15:00	04/29/2013 10:15
2101-S01-1-6	1304050-04	Solid	04/25/2013 14:50	04/29/2013 10:15
2101-S01-18-24	1304050-05	Solid	04/25/2013 15:05	04/29/2013 10:15
2101-S01-6-12	1304050-06	Solid	04/25/2013 14:55	04/29/2013 10:15
2101-S02-0-1	1304050-07	Solid	04/25/2013 14:01	04/29/2013 10:15
2101-S02-12-18	1304050-08	Solid	04/25/2013 14:21	04/29/2013 10:15
2101-S02-1-6	1304050-09	Solid	04/25/2013 14:06	04/29/2013 10:15
2101-S02-18-24	1304050-10	Solid	04/25/2013 14:30	04/29/2013 10:15
2101-S02-6-12	1304050-11	Solid	04/25/2013 14:15	04/29/2013 10:15
2101-S03-0-1	1304050-12	Solid	04/25/2013 16:10	04/29/2013 10:15
2101-S03-12-18	1304050-13	Solid	04/25/2013 16:43	04/29/2013 10:15
2101-S03-1-6	1304050-14	Solid	04/25/2013 16:30	04/29/2013 10:15
2101-S03-18-24	1304050-15	Solid	04/25/2013 16:47	04/29/2013 10:15
2101-S03-6-12	1304050-16	Solid	04/25/2013 16:36	04/29/2013 10:15
2101-S05-0-1	1304050-17	Solid	04/25/2013 15:35	04/29/2013 10:15
2101-S05-12-18	1304050-18	Solid	04/25/2013 16:01	04/29/2013 10:15
2101-S05-1-6	1304050-19	Solid	04/25/2013 15:47	04/29/2013 10:15
2101-S05-18-24	1304050-20	Solid	04/25/2013 16:20	04/29/2013 10:15
2101-S05-6-12	1304050-21	Solid	04/25/2013 15:52	04/29/2013 10:15
2101-S06-0-1	1304050-22	Solid	04/25/2013 16:53	04/29/2013 10:15
2101-S06-12-18	1304050-23	Solid	04/25/2013 17:15	04/29/2013 10:15
2101-S06-1-6	1304050-24	Solid	04/25/2013 17:00	04/29/2013 10:15
2101-S06-18-24	1304050-25	Solid	04/25/2013 17:20	04/29/2013 10:15
2101-S06-6-12	1304050-26	Solid	04/25/2013 17:08	04/29/2013 10:15
2101-S10-0-1	1304050-27	Solid	04/25/2013 08:17	04/29/2013 10:15
2101-S10-12-18	1304050-28	Solid	04/25/2013 08:54	04/29/2013 10:15
2101-S10-1-6	1304050-29	Solid	04/25/2013 08:37	04/29/2013 10:15

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

SUMMARY REPORT FOR SAMPLES

Field ID	Laboratory ID	Matrix	Date Sampled	Date Received
2101-S10-18-24	1304050-30	Solid	04/25/2013 09:04	04/29/2013 10:15
2101-S10-6-12	1304050-31	Solid	04/25/2013 08:47	04/29/2013 10:15
2101-S11-0-1	1304050-32	Solid	04/25/2013 08:30	04/29/2013 10:15
2101-S11-12-18	1304050-33	Solid	04/25/2013 09:31	04/29/2013 10:15
2101-S11-1-6	1304050-34	Solid	04/25/2013 09:13	04/29/2013 10:15
2101-S11-18-24	1304050-35	Solid	04/25/2013 09:35	04/29/2013 10:15
2101-S11-6-12	1304050-36	Solid	04/25/2013 09:23	04/29/2013 10:15
2101-S14-0-1	1304050-37	Solid	04/25/2013 10:45	04/29/2013 10:15
2101-S14-1-6	1304050-38	Solid	04/25/2013 11:15	04/29/2013 10:15
2101-S14-6-12	1304050-39	Solid	04/25/2013 11:30	04/29/2013 10:15
2101-S15-0-1	1304050-40	Solid	04/25/2013 11:48	04/29/2013 10:15
2101-S15-1-6	1304050-41	Solid	04/25/2013 11:51	04/29/2013 10:15
2101-S15-6-12	1304050-42	Solid	04/25/2013 12:02	04/29/2013 10:15
2101-S16-12-18	1304050-43	Solid	04/25/2013 14:25	04/29/2013 10:15
2101-S16-18-24	1304050-44	Solid	04/25/2013 16:24	04/29/2013 10:15
2101-S16-6-12	1304050-45	Solid	04/25/2013 09:26	04/29/2013 10:15
2101-S04-0-1	1304050-46	Solid	04/26/2013 08:40	04/29/2013 10:15
2101-S04-12-18	1304050-47	Solid	04/26/2013 08:56	04/29/2013 10:15
2101-S04-1-6	1304050-48	Solid	04/26/2013 08:47	04/29/2013 10:15
2101-S04-18-24	1304050-49	Solid	04/26/2013 09:00	04/29/2013 10:15
2101-S04-6-12	1304050-50	Solid	04/26/2013 08:53	04/29/2013 10:15
2101-S07-0-1	1304050-51	Solid	04/26/2013 09:33	04/29/2013 10:15
2101-S07-12-18	1304050-52	Solid	04/26/2013 09:54	04/29/2013 10:15
2101-S07-1-6	1304050-53	Solid	04/26/2013 09:38	04/29/2013 10:15
2101-S07-18-24	1304050-54	Solid	04/26/2013 10:03	04/29/2013 10:15
2101-S07-6-12	1304050-55	Solid	04/26/2013 09:45	04/29/2013 10:15
2101-S08-0-1	1304050-56	Solid	04/26/2013 14:25	04/29/2013 10:15
2101-S08-12-18	1304050-57	Solid	04/26/2013 14:50	04/29/2013 10:15
2101-S08-1-6	1304050-58	Solid	04/26/2013 14:35	04/29/2013 10:15

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

SUMMARY REPORT FOR SAMPLES

Field ID	Laboratory ID	Matrix	Date Sampled	Date Received
2101-S08-18-24	1304050-59	Solid	04/26/2013 14:55	04/29/2013 10:15
2101-S08-6-12	1304050-60	Solid	04/26/2013 14:45	04/29/2013 10:15
2101-S09-0-1	1304050-61	Solid	04/26/2013 07:25	04/29/2013 10:15
2101-S09-12-18	1304050-62	Solid	04/26/2013 07:47	04/29/2013 10:15
2101-S09-1-6	1304050-63	Solid	04/26/2013 07:35	04/29/2013 10:15
2101-S09-18-24	1304050-64	Solid	04/26/2013 07:51	04/29/2013 10:15
2101-S09-6-12	1304050-65	Solid	04/26/2013 07:40	04/29/2013 10:15
2101-S12-0-1	1304050-66	Solid	04/26/2013 11:30	04/29/2013 10:15
2101-S12-12-18	1304050-67	Solid	04/26/2013 11:55	04/29/2013 10:15
2101-S12-1-6	1304050-68	Solid	04/26/2013 11:43	04/29/2013 10:15
2101-S12-18-24	1304050-69	Solid	04/26/2013 12:15	04/29/2013 10:15
2101-S12-6-12	1304050-70	Solid	04/26/2013 11:49	04/29/2013 10:15
2101-S13-0-1	1304050-71	Solid	04/26/2013 11:37	04/29/2013 10:15
2101-S13-12-18	1304050-72	Solid	04/26/2013 12:32	04/29/2013 10:15
2101-S13-1-6	1304050-73	Solid	04/26/2013 12:07	04/29/2013 10:15
2101-S13-18-24	1304050-74	Solid	04/26/2013 12:42	04/29/2013 10:15
2101-S13-6-12	1304050-75	Solid	04/26/2013 12:23	04/29/2013 10:15
2101-S16-0-1	1304050-76	Solid	04/26/2013 07:30	04/29/2013 10:15

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 2 Laboratory

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

SUMMARY REPORT FOR METHODS

Analysis	Method	Certification	Matrix
Metals ICP TAL	EPA 200.7 / SOP C-109 Rev3.2	NELAP	Aqueous
Metals ICP TAL	EPA 200.7 / SOP C-109 Rev3.2	NELAP	Solid

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-RIN01				Sample ID: 1304050-01
Metals ICP				
Aluminum	---	U	100	ug/L
Antimony	---	U	20	ug/L
Arsenic	---	U	8.0	ug/L
Barium	---	U	100	ug/L
Beryllium	---	U	3.0	ug/L
Cadmium	---	U	3.0	ug/L
Calcium	---	U	500	ug/L
Chromium	---	U	5.0	ug/L
Cobalt	---	U	20	ug/L
Copper	---	U	10	ug/L
Iron	---	U	50	ug/L
Lead	---	U	8.0	ug/L
Magnesium	---	U	500	ug/L
Manganese	---	U	5.0	ug/L
Nickel	---	U	20	ug/L
Potassium	---	U	500	ug/L
Selenium	---	U	20	ug/L
Silver	---	U	5.0	ug/L
Sodium	---	U	1000	ug/L
Thallium	---	U	20	ug/L
Tin	---	U	10	ug/L
Vanadium	---	U	20	ug/L

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-RIN01				Sample ID: 1304050-01
Metals ICP				
Zinc	---	U	20	ug/L
Field ID: 2101-S01-0-1				Sample ID: 1304050-02
Metals ICP				
Aluminum	14000		11	mg/kg dry
Antimony	3.4		2.2	mg/kg dry
Arsenic	26		0.86	mg/kg dry
Barium	79		11	mg/kg dry
Beryllium	0.48		0.32	mg/kg dry
Cadmium	7.4		0.32	mg/kg dry
Calcium	3200		54	mg/kg dry
Chromium	32		0.54	mg/kg dry
Cobalt	5.5		2.2	mg/kg dry
Copper	50		1.1	mg/kg dry
Iron	18000		5.4	mg/kg dry
Lead	150		0.86	mg/kg dry
Magnesium	2100		54	mg/kg dry
Manganese	210		0.54	mg/kg dry
Molybdenum	1.2		1.1	mg/kg dry
Nickel	15		2.2	mg/kg dry
Potassium	580		54	mg/kg dry
Selenium	---	U	2.2	mg/kg dry
Silver	13		0.54	mg/kg dry
Sodium	1000		110	mg/kg dry
Thallium	---	U	2.2	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S01-0-1			Sample ID: 1304050-02	
Metals ICP				
Tin	21		1.1	mg/kg dry
Vanadium	30		2.2	mg/kg dry
Zinc	170		2.2	mg/kg dry
Field ID: 2101-S01-12-18			Sample ID: 1304050-03	
Metals ICP				
Aluminum	8000		8.2	mg/kg dry
Antimony	---	U	1.6	mg/kg dry
Arsenic	3.0		0.65	mg/kg dry
Barium	42		8.2	mg/kg dry
Beryllium	0.29		0.24	mg/kg dry
Cadmium	20		0.24	mg/kg dry
Calcium	810		41	mg/kg dry
Chromium	18		0.41	mg/kg dry
Cobalt	6.5		1.6	mg/kg dry
Copper	16		0.82	mg/kg dry
Iron	13000		4.1	mg/kg dry
Lead	16		0.65	mg/kg dry
Magnesium	1800		41	mg/kg dry
Manganese	250		0.41	mg/kg dry
Molybdenum	---	U	0.82	mg/kg dry
Nickel	16		1.6	mg/kg dry
Potassium	420		41	mg/kg dry
Selenium	---	U	1.6	mg/kg dry
Silver	7.5		0.41	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S01-12-18				Sample ID: 1304050-03
Metals ICP				
Sodium	190		82	mg/kg dry
Thallium	---	U	1.6	mg/kg dry
Tin	---	U	0.82	mg/kg dry
Vanadium	24		1.6	mg/kg dry
Zinc	26		1.6	mg/kg dry
Field ID: 2101-S01-1-6				Sample ID: 1304050-04
Metals ICP				
Aluminum	5600		9.2	mg/kg dry
Antimony	2.8		1.8	mg/kg dry
Arsenic	8.2		0.74	mg/kg dry
Barium	91		9.2	mg/kg dry
Beryllium	0.50		0.28	mg/kg dry
Cadmium	4.4		0.28	mg/kg dry
Calcium	6700		46	mg/kg dry
Chromium	20		0.46	mg/kg dry
Cobalt	7.3		1.8	mg/kg dry
Copper	90		0.92	mg/kg dry
Iron	11000		4.6	mg/kg dry
Lead	160		0.74	mg/kg dry
Magnesium	3100		46	mg/kg dry
Manganese	220		0.46	mg/kg dry
Molybdenum	2.7		0.92	mg/kg dry
Nickel	12		1.8	mg/kg dry
Potassium	450		46	mg/kg dry

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S01-1-6				Sample ID: 1304050-04
Metals ICP				
Selenium	---	U	1.8	mg/kg dry
Silver	7.5		0.46	mg/kg dry
Sodium	540		92	mg/kg dry
Thallium	---	U	1.8	mg/kg dry
Tin	18		0.92	mg/kg dry
Vanadium	17		1.8	mg/kg dry
Zinc	210		1.8	mg/kg dry
Field ID: 2101-S01-18-24				Sample ID: 1304050-05
Metals ICP				
Aluminum	7900		8.4	mg/kg dry
Antimony	---	U	1.7	mg/kg dry
Arsenic	2.0		0.67	mg/kg dry
Barium	38		8.4	mg/kg dry
Beryllium	0.28		0.25	mg/kg dry
Cadmium	13		0.25	mg/kg dry
Calcium	1100		42	mg/kg dry
Chromium	17		0.42	mg/kg dry
Cobalt	6.2		1.7	mg/kg dry
Copper	16		0.84	mg/kg dry
Iron	11000		4.2	mg/kg dry
Lead	12		0.67	mg/kg dry
Magnesium	2000		42	mg/kg dry
Manganese	260		0.42	mg/kg dry
Molybdenum	---	U	0.84	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S01-18-24				Sample ID: 1304050-05
Metals ICP				
Nickel	19		1.7	mg/kg dry
Potassium	490		42	mg/kg dry
Selenium	---	U	1.7	mg/kg dry
Silver	6.4		0.42	mg/kg dry
Sodium	180		84	mg/kg dry
Thallium	---	U	1.7	mg/kg dry
Tin	---	U	0.84	mg/kg dry
Vanadium	18		1.7	mg/kg dry
Zinc	22		1.7	mg/kg dry
Field ID: 2101-S01-6-12				Sample ID: 1304050-06
Metals ICP				
Aluminum	7200		8.8	mg/kg dry
Antimony	4.8		1.8	mg/kg dry
Arsenic	5.6		0.70	mg/kg dry
Barium	88		8.8	mg/kg dry
Beryllium	0.28		0.26	mg/kg dry
Cadmium	61		0.26	mg/kg dry
Calcium	1500		44	mg/kg dry
Chromium	18		0.44	mg/kg dry
Cobalt	6.8		1.8	mg/kg dry
Copper	150		0.88	mg/kg dry
Iron	16000		4.4	mg/kg dry
Lead	73		0.70	mg/kg dry
Magnesium	2100		44	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S01-6-12			Sample ID: 1304050-06	
Metals ICP				
Manganese	280		0.44	mg/kg dry
Molybdenum	---	U	0.88	mg/kg dry
Nickel	32		1.8	mg/kg dry
Potassium	780		44	mg/kg dry
Selenium	---	U	1.8	mg/kg dry
Silver	10		0.44	mg/kg dry
Sodium	270		88	mg/kg dry
Thallium	---	U	1.8	mg/kg dry
Tin	34		0.88	mg/kg dry
Vanadium	20		1.8	mg/kg dry
Zinc	260		1.8	mg/kg dry
Field ID: 2101-S02-0-1			Sample ID: 1304050-07	
Metals ICP				
Aluminum	8500		11	mg/kg dry
Antimony	---	U	2.1	mg/kg dry
Arsenic	10		0.85	mg/kg dry
Barium	66		11	mg/kg dry
Beryllium	---	U	0.32	mg/kg dry
Cadmium	16		0.32	mg/kg dry
Calcium	14000		53	mg/kg dry
Chromium	24		0.53	mg/kg dry
Cobalt	6.4		2.1	mg/kg dry
Copper	53		1.1	mg/kg dry
Iron	13000		5.3	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S02-0-1			Sample ID: 1304050-07	
Metals ICP				
Lead	300		0.85	mg/kg dry
Magnesium	8200		53	mg/kg dry
Manganese	240		0.53	mg/kg dry
Molybdenum	---	U	1.1	mg/kg dry
Nickel	19		2.1	mg/kg dry
Potassium	750		53	mg/kg dry
Selenium	---	U	2.1	mg/kg dry
Silver	12		0.53	mg/kg dry
Sodium	430		110	mg/kg dry
Thallium	---	U	2.1	mg/kg dry
Tin	6.8		1.1	mg/kg dry
Vanadium	32		2.1	mg/kg dry
Zinc	160		2.1	mg/kg dry
Field ID: 2101-S02-12-18			Sample ID: 1304050-08	
Metals ICP				
Aluminum	6700		7.8	mg/kg dry
Antimony	---	U	1.6	mg/kg dry
Arsenic	2.3		0.62	mg/kg dry
Barium	43		7.8	mg/kg dry
Beryllium	---	U	0.23	mg/kg dry
Cadmium	7.5		0.23	mg/kg dry
Calcium	1100		39	mg/kg dry
Chromium	19		0.39	mg/kg dry
Cobalt	6.2		1.6	mg/kg dry

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Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S02-12-18			Sample ID: 1304050-08	
Metals ICP				
Copper	26		0.78	mg/kg dry
Iron	11000		3.9	mg/kg dry
Lead	63		0.62	mg/kg dry
Magnesium	2000		39	mg/kg dry
Manganese	220		0.39	mg/kg dry
Molybdenum	---	U	0.78	mg/kg dry
Nickel	24		1.6	mg/kg dry
Potassium	830		39	mg/kg dry
Selenium	---	U	1.6	mg/kg dry
Silver	9.8		0.39	mg/kg dry
Sodium	210		78	mg/kg dry
Thallium	---	U	1.6	mg/kg dry
Tin	1.1		0.78	mg/kg dry
Vanadium	21		1.6	mg/kg dry
Zinc	52		1.6	mg/kg dry
Field ID: 2101-S02-1-6			Sample ID: 1304050-09	
Metals ICP				
Aluminum	6400		7.9	mg/kg dry
Antimony	---	U	1.6	mg/kg dry
Arsenic	4.5		0.64	mg/kg dry
Barium	55		7.9	mg/kg dry
Beryllium	---	U	0.24	mg/kg dry
Cadmium	16		0.24	mg/kg dry
Calcium	1900		40	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S02-1-6				Sample ID: 1304050-09
Metals ICP				
Chromium	18		0.40	mg/kg dry
Cobalt	5.8		1.6	mg/kg dry
Copper	49		0.79	mg/kg dry
Iron	11000		4.0	mg/kg dry
Lead	300		0.64	mg/kg dry
Magnesium	2200		40	mg/kg dry
Manganese	220		0.40	mg/kg dry
Molybdenum	---	U	0.79	mg/kg dry
Nickel	20		1.6	mg/kg dry
Potassium	710		40	mg/kg dry
Selenium	---	U	1.6	mg/kg dry
Silver	9.6		0.40	mg/kg dry
Sodium	360		79	mg/kg dry
Thallium	---	U	1.6	mg/kg dry
Tin	4.0		0.79	mg/kg dry
Vanadium	31		1.6	mg/kg dry
Zinc	97		1.6	mg/kg dry
Field ID: 2101-S02-18-24				Sample ID: 1304050-10
Metals ICP				
Aluminum	6700		8.0	mg/kg dry
Antimony	---	U	1.6	mg/kg dry
Arsenic	3.2		0.64	mg/kg dry
Barium	50		8.0	mg/kg dry
Beryllium	0.24		0.24	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S02-18-24				Sample ID: 1304050-10
Metals ICP				
Cadmium	9.9		0.24	mg/kg dry
Calcium	810		40	mg/kg dry
Chromium	20		0.40	mg/kg dry
Cobalt	7.6		1.6	mg/kg dry
Copper	30		0.80	mg/kg dry
Iron	11000		4.0	mg/kg dry
Lead	110		0.64	mg/kg dry
Magnesium	1700		40	mg/kg dry
Manganese	270		0.40	mg/kg dry
Molybdenum	---	U	0.80	mg/kg dry
Nickel	22		1.6	mg/kg dry
Potassium	800		40	mg/kg dry
Selenium	---	U	1.6	mg/kg dry
Silver	9.7		0.40	mg/kg dry
Sodium	180		80	mg/kg dry
Thallium	---	U	1.6	mg/kg dry
Tin	2.8		0.80	mg/kg dry
Vanadium	23		1.6	mg/kg dry
Zinc	58		1.6	mg/kg dry
Field ID: 2101-S02-6-12				Sample ID: 1304050-11
Metals ICP				
Aluminum	6400		8.1	mg/kg dry
Antimony	---	U	1.6	mg/kg dry
Arsenic	2.8		0.65	mg/kg dry

Project:Neo Smelting and Refining - 1304050

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Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S02-6-12				Sample ID: 1304050-11
Metals ICP				
Barium	49		8.1	mg/kg dry
Beryllium	---	U	0.24	mg/kg dry
Cadmium	9.2		0.24	mg/kg dry
Calcium	870		40	mg/kg dry
Chromium	18		0.40	mg/kg dry
Cobalt	5.9		1.6	mg/kg dry
Copper	36		0.81	mg/kg dry
Iron	11000		4.0	mg/kg dry
Lead	73		0.65	mg/kg dry
Magnesium	1800		40	mg/kg dry
Manganese	230		0.40	mg/kg dry
Molybdenum	---	U	0.81	mg/kg dry
Nickel	22		1.6	mg/kg dry
Potassium	760		40	mg/kg dry
Selenium	---	U	1.6	mg/kg dry
Silver	9.4		0.40	mg/kg dry
Sodium	230		81	mg/kg dry
Thallium	---	U	1.6	mg/kg dry
Tin	1.5		0.81	mg/kg dry
Vanadium	25		1.6	mg/kg dry
Zinc	57		1.6	mg/kg dry
Field ID: 2101-S03-0-1				Sample ID: 1304050-12
Metals ICP				
Aluminum	8800		11	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S03-0-1				Sample ID: 1304050-12
Metals ICP				
Antimony	3.1		2.2	mg/kg dry
Arsenic	8.8		0.86	mg/kg dry
Barium	79		11	mg/kg dry
Beryllium	---	U	0.32	mg/kg dry
Cadmium	10		0.32	mg/kg dry
Calcium	5000		54	mg/kg dry
Chromium	31		0.54	mg/kg dry
Cobalt	7.5		2.2	mg/kg dry
Copper	53		1.1	mg/kg dry
Iron	15000		5.4	mg/kg dry
Lead	380		0.86	mg/kg dry
Magnesium	2800		54	mg/kg dry
Manganese	270		0.54	mg/kg dry
Molybdenum	---	U	1.1	mg/kg dry
Nickel	26		2.2	mg/kg dry
Potassium	690		54	mg/kg dry
Selenium	---	U	2.2	mg/kg dry
Silver	11		0.54	mg/kg dry
Sodium	---	U	110	mg/kg dry
Thallium	---	U	2.2	mg/kg dry
Tin	52		1.1	mg/kg dry
Vanadium	40		2.2	mg/kg dry
Zinc	170		2.2	mg/kg dry
Field ID: 2101-S03-12-18				Sample ID: 1304050-13

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S03-12-18			Sample ID: 1304050-13	
Metals ICP				
Aluminum	7100		8.5	mg/kg dry
Antimony	---	U	1.7	mg/kg dry
Arsenic	1.6		0.68	mg/kg dry
Barium	34		8.5	mg/kg dry
Beryllium	---	U	0.26	mg/kg dry
Cadmium	1.7		0.26	mg/kg dry
Calcium	630		43	mg/kg dry
Chromium	24		0.43	mg/kg dry
Cobalt	7.3		1.7	mg/kg dry
Copper	23		0.85	mg/kg dry
Iron	13000		4.3	mg/kg dry
Lead	45		0.68	mg/kg dry
Magnesium	1900		43	mg/kg dry
Manganese	200		0.43	mg/kg dry
Molybdenum	---	U	0.85	mg/kg dry
Nickel	64		1.7	mg/kg dry
Potassium	510		43	mg/kg dry
Selenium	---	U	1.7	mg/kg dry
Silver	9.4		0.43	mg/kg dry
Sodium	---	U	85	mg/kg dry
Thallium	---	U	1.7	mg/kg dry
Tin	18		0.85	mg/kg dry
Vanadium	24		1.7	mg/kg dry
Zinc	36		1.7	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S03-1-6			Sample ID: 1304050-14	
Metals ICP				
Aluminum	7600		9.0	mg/kg dry
Antimony	2.2		1.8	mg/kg dry
Arsenic	6.1		0.72	mg/kg dry
Barium	68		9.0	mg/kg dry
Beryllium	---	U	0.27	mg/kg dry
Cadmium	5.6		0.27	mg/kg dry
Calcium	1400		45	mg/kg dry
Chromium	23		0.45	mg/kg dry
Cobalt	5.9		1.8	mg/kg dry
Copper	44		0.90	mg/kg dry
Iron	13000		4.5	mg/kg dry
Lead	240		0.72	mg/kg dry
Magnesium	1800		45	mg/kg dry
Manganese	180		0.45	mg/kg dry
Molybdenum	---	U	0.90	mg/kg dry
Nickel	24		1.8	mg/kg dry
Potassium	410		45	mg/kg dry
Selenium	---	U	1.8	mg/kg dry
Silver	8.9		0.45	mg/kg dry
Sodium	---	U	90	mg/kg dry
Thallium	---	U	1.8	mg/kg dry
Tin	55		0.90	mg/kg dry
Vanadium	28		1.8	mg/kg dry
Zinc	78		1.8	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S03-18-24			Sample ID: 1304050-15	
Metals ICP				
Aluminum	9600		8.2	mg/kg dry
Antimony	---	U	1.6	mg/kg dry
Arsenic	1.0		0.66	mg/kg dry
Barium	44		8.2	mg/kg dry
Beryllium	---	U	0.25	mg/kg dry
Cadmium	1.4		0.25	mg/kg dry
Calcium	760		41	mg/kg dry
Chromium	21		0.41	mg/kg dry
Cobalt	15		1.6	mg/kg dry
Copper	30		0.82	mg/kg dry
Iron	17000		4.1	mg/kg dry
Lead	19		0.66	mg/kg dry
Magnesium	8900		41	mg/kg dry
Manganese	280		0.41	mg/kg dry
Molybdenum	---	U	0.82	mg/kg dry
Nickel	86		1.6	mg/kg dry
Potassium	720		41	mg/kg dry
Selenium	---	U	1.6	mg/kg dry
Silver	13		0.41	mg/kg dry
Sodium	120		82	mg/kg dry
Thallium	---	U	1.6	mg/kg dry
Tin	1.5		0.82	mg/kg dry
Vanadium	24		1.6	mg/kg dry
Zinc	40		1.6	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S03-6-12			Sample ID: 1304050-16	
Metals ICP				
Aluminum	8300		8.6	mg/kg dry
Antimony	1.7		1.7	mg/kg dry
Arsenic	2.5		0.69	mg/kg dry
Barium	56		8.6	mg/kg dry
Beryllium	---	U	0.26	mg/kg dry
Cadmium	2.8		0.26	mg/kg dry
Calcium	780		43	mg/kg dry
Chromium	27		0.43	mg/kg dry
Cobalt	10		1.7	mg/kg dry
Copper	30		0.86	mg/kg dry
Iron	13000		4.3	mg/kg dry
Lead	81		0.69	mg/kg dry
Magnesium	2300		43	mg/kg dry
Manganese	240		0.43	mg/kg dry
Molybdenum	---	U	0.86	mg/kg dry
Nickel	77		1.7	mg/kg dry
Potassium	570		43	mg/kg dry
Selenium	---	U	1.7	mg/kg dry
Silver	11		0.43	mg/kg dry
Sodium	---	U	86	mg/kg dry
Thallium	---	U	1.7	mg/kg dry
Tin	14		0.86	mg/kg dry
Vanadium	23		1.7	mg/kg dry
Zinc	45		1.7	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S05-0-1			Sample ID: 1304050-17	
Metals ICP				
Aluminum	10000		11	mg/kg dry
Antimony	---	U	2.1	mg/kg dry
Arsenic	17		0.86	mg/kg dry
Barium	69		11	mg/kg dry
Beryllium	0.34		0.32	mg/kg dry
Cadmium	5.3		0.32	mg/kg dry
Calcium	12000		54	mg/kg dry
Chromium	22		0.54	mg/kg dry
Cobalt	4.5		2.1	mg/kg dry
Copper	42		1.1	mg/kg dry
Iron	15000		5.4	mg/kg dry
Lead	92		0.86	mg/kg dry
Magnesium	5100		54	mg/kg dry
Manganese	210		0.54	mg/kg dry
Molybdenum	---	U	1.1	mg/kg dry
Nickel	12		2.1	mg/kg dry
Potassium	930		54	mg/kg dry
Selenium	---	U	2.1	mg/kg dry
Silver	11		0.54	mg/kg dry
Sodium	---	U	110	mg/kg dry
Thallium	---	U	2.1	mg/kg dry
Tin	7.6		1.1	mg/kg dry
Vanadium	25		2.1	mg/kg dry
Zinc	140		2.1	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S05-12-18			Sample ID: 1304050-18	
Metals ICP				
Aluminum	8500		8.6	mg/kg dry
Antimony	---	U	1.7	mg/kg dry
Arsenic	1.3		0.69	mg/kg dry
Barium	59		8.6	mg/kg dry
Beryllium	0.26		0.26	mg/kg dry
Cadmium	1.0		0.26	mg/kg dry
Calcium	900		43	mg/kg dry
Chromium	29		0.43	mg/kg dry
Cobalt	7.4		1.7	mg/kg dry
Copper	20		0.86	mg/kg dry
Iron	14000		4.3	mg/kg dry
Lead	8.5		0.69	mg/kg dry
Magnesium	2400		43	mg/kg dry
Manganese	260		0.43	mg/kg dry
Molybdenum	---	U	0.86	mg/kg dry
Nickel	27		1.7	mg/kg dry
Potassium	1300		43	mg/kg dry
Selenium	---	U	1.7	mg/kg dry
Silver	16		0.43	mg/kg dry
Sodium	---	U	86	mg/kg dry
Thallium	---	U	1.7	mg/kg dry
Tin	---	U	0.86	mg/kg dry
Vanadium	29		1.7	mg/kg dry
Zinc	30		1.7	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S05-1-6			Sample ID: 1304050-19	
Metals ICP				
Aluminum	6900		8.5	mg/kg dry
Antimony	---	U	1.7	mg/kg dry
Arsenic	5.6		0.68	mg/kg dry
Barium	98		8.5	mg/kg dry
Beryllium	---	U	0.25	mg/kg dry
Cadmium	2.6		0.25	mg/kg dry
Calcium	6100		42	mg/kg dry
Chromium	16		0.42	mg/kg dry
Cobalt	5.1		1.7	mg/kg dry
Copper	30		0.85	mg/kg dry
Iron	12000		4.2	mg/kg dry
Lead	110		0.68	mg/kg dry
Magnesium	2700		42	mg/kg dry
Manganese	270		0.42	mg/kg dry
Molybdenum	---	U	0.85	mg/kg dry
Nickel	13		1.7	mg/kg dry
Potassium	780		42	mg/kg dry
Selenium	---	U	1.7	mg/kg dry
Silver	9.4		0.42	mg/kg dry
Sodium	---	U	85	mg/kg dry
Thallium	---	U	1.7	mg/kg dry
Tin	3.7		0.85	mg/kg dry
Vanadium	21		1.7	mg/kg dry
Zinc	110		1.7	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S05-18-24			Sample ID: 1304050-20	
Metals ICP				
Aluminum	8600		8.3	mg/kg dry
Antimony	---	U	1.7	mg/kg dry
Arsenic	1.5		0.66	mg/kg dry
Barium	63		8.3	mg/kg dry
Beryllium	---	U	0.25	mg/kg dry
Cadmium	3.9		0.25	mg/kg dry
Calcium	1200		41	mg/kg dry
Chromium	29		0.41	mg/kg dry
Cobalt	9.2		1.7	mg/kg dry
Copper	28		0.83	mg/kg dry
Iron	15000		4.1	mg/kg dry
Lead	13		0.66	mg/kg dry
Magnesium	2700		41	mg/kg dry
Manganese	280		0.41	mg/kg dry
Molybdenum	---	U	0.83	mg/kg dry
Nickel	32		1.7	mg/kg dry
Potassium	1600		41	mg/kg dry
Selenium	---	U	1.7	mg/kg dry
Silver	17		0.41	mg/kg dry
Sodium	---	U	83	mg/kg dry
Thallium	---	U	1.7	mg/kg dry
Tin	2.6		0.83	mg/kg dry
Vanadium	27		1.7	mg/kg dry
Zinc	40		1.7	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S05-6-12			Sample ID: 1304050-21	
Metals ICP				
Aluminum	9700		8.4	mg/kg dry
Antimony	---	U	1.7	mg/kg dry
Arsenic	1.6		0.67	mg/kg dry
Barium	70		8.4	mg/kg dry
Beryllium	---	U	0.25	mg/kg dry
Cadmium	2.2		0.25	mg/kg dry
Calcium	1200		42	mg/kg dry
Chromium	30		0.42	mg/kg dry
Cobalt	8.1		1.7	mg/kg dry
Copper	25		0.84	mg/kg dry
Iron	16000		4.2	mg/kg dry
Lead	18		0.67	mg/kg dry
Magnesium	2800		42	mg/kg dry
Manganese	300		0.42	mg/kg dry
Molybdenum	---	U	0.84	mg/kg dry
Nickel	30		1.7	mg/kg dry
Potassium	1600		42	mg/kg dry
Selenium	---	U	1.7	mg/kg dry
Silver	18		0.42	mg/kg dry
Sodium	---	U	84	mg/kg dry
Thallium	---	U	1.7	mg/kg dry
Tin	---	U	0.84	mg/kg dry
Vanadium	27		1.7	mg/kg dry
Zinc	40		1.7	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units

Field ID: 2101-S06-0-1 | Sample ID: 1304050-22

Metals ICP

Analyte	Result	Qualifier	Reporting Limit	Units
Aluminum	6000		10	mg/kg dry
Antimony	3.2		2.1	mg/kg dry
Arsenic	5.3		0.83	mg/kg dry
Barium	81		10	mg/kg dry
Beryllium	---	U	0.31	mg/kg dry
Cadmium	7.6		0.31	mg/kg dry
Calcium	27000		52	mg/kg dry
Chromium	33		0.52	mg/kg dry
Cobalt	7.6		2.1	mg/kg dry
Copper	95		1.0	mg/kg dry
Iron	12000		5.2	mg/kg dry
Lead	310		0.83	mg/kg dry
Magnesium	14000		52	mg/kg dry
Manganese	210		0.52	mg/kg dry
Molybdenum	1.6		1.0	mg/kg dry
Nickel	27		2.1	mg/kg dry
Potassium	620		52	mg/kg dry
Selenium	---	U	2.1	mg/kg dry
Silver	8.7		0.52	mg/kg dry
Sodium	280		100	mg/kg dry
Thallium	---	U	2.1	mg/kg dry
Tin	25		1.0	mg/kg dry
Vanadium	25		2.1	mg/kg dry
Zinc	400		2.1	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units

Field ID: 2101-S06-12-18 | Sample ID: 1304050-23

Metals ICP

Analyte	Result	Qualifier	Reporting Limit	Units
Aluminum	6400		9.2	mg/kg dry
Antimony	2.5		1.8	mg/kg dry
Arsenic	8.1		0.74	mg/kg dry
Barium	230		9.2	mg/kg dry
Beryllium	0.31		0.28	mg/kg dry
Cadmium	7.4		0.28	mg/kg dry
Calcium	7300		46	mg/kg dry
Chromium	30		0.46	mg/kg dry
Cobalt	6.1		1.8	mg/kg dry
Copper	110		0.92	mg/kg dry
Iron	14000		4.6	mg/kg dry
Lead	460		0.74	mg/kg dry
Magnesium	3800		46	mg/kg dry
Manganese	170		0.46	mg/kg dry
Molybdenum	---	U	0.92	mg/kg dry
Nickel	26		1.8	mg/kg dry
Potassium	490		46	mg/kg dry
Selenium	---	U	1.8	mg/kg dry
Silver	8.5		0.46	mg/kg dry
Sodium	160		92	mg/kg dry
Thallium	---	U	1.8	mg/kg dry
Tin	48		0.92	mg/kg dry
Vanadium	26		1.8	mg/kg dry
Zinc	440		1.8	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S06-1-6			Sample ID: 1304050-24	
Metals ICP				
Aluminum	7300		9.8	mg/kg dry
Antimony	2.6		2.0	mg/kg dry
Arsenic	8.0		0.79	mg/kg dry
Barium	120		9.8	mg/kg dry
Beryllium	0.34		0.29	mg/kg dry
Cadmium	9.8		0.29	mg/kg dry
Calcium	15000		49	mg/kg dry
Chromium	30		0.49	mg/kg dry
Cobalt	6.0		2.0	mg/kg dry
Copper	110		0.98	mg/kg dry
Iron	13000		4.9	mg/kg dry
Lead	530		0.79	mg/kg dry
Magnesium	7200		49	mg/kg dry
Manganese	230		0.49	mg/kg dry
Molybdenum	1.0		0.98	mg/kg dry
Nickel	30		2.0	mg/kg dry
Potassium	340		49	mg/kg dry
Selenium	---	U	2.0	mg/kg dry
Silver	7.7		0.49	mg/kg dry
Sodium	180		98	mg/kg dry
Thallium	---	U	2.0	mg/kg dry
Tin	14		0.98	mg/kg dry
Vanadium	27		2.0	mg/kg dry
Zinc	490		2.0	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S06-18-24			Sample ID: 1304050-25	
Metals ICP				
Aluminum	6800		8.8	mg/kg dry
Antimony	---	U	1.8	mg/kg dry
Arsenic	2.9		0.70	mg/kg dry
Barium	53		8.8	mg/kg dry
Beryllium	---	U	0.26	mg/kg dry
Cadmium	1.8		0.26	mg/kg dry
Calcium	1700		44	mg/kg dry
Chromium	20		0.44	mg/kg dry
Cobalt	5.9		1.8	mg/kg dry
Copper	99		0.88	mg/kg dry
Iron	12000		4.4	mg/kg dry
Lead	270		0.70	mg/kg dry
Magnesium	1900		44	mg/kg dry
Manganese	130		0.44	mg/kg dry
Molybdenum	---	U	0.88	mg/kg dry
Nickel	20		1.8	mg/kg dry
Potassium	800		44	mg/kg dry
Selenium	---	U	1.8	mg/kg dry
Silver	10		0.44	mg/kg dry
Sodium	130		88	mg/kg dry
Thallium	---	U	1.8	mg/kg dry
Tin	110		0.88	mg/kg dry
Vanadium	22		1.8	mg/kg dry
Zinc	110		1.8	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S06-6-12			Sample ID: 1304050-26	
Metals ICP				
Aluminum	5400		8.6	mg/kg dry
Antimony	3.8		1.7	mg/kg dry
Arsenic	8.0		0.69	mg/kg dry
Barium	160		8.6	mg/kg dry
Beryllium	0.33		0.26	mg/kg dry
Cadmium	12		0.26	mg/kg dry
Calcium	9800		43	mg/kg dry
Chromium	26		0.43	mg/kg dry
Cobalt	5.2		1.7	mg/kg dry
Copper	170		0.86	mg/kg dry
Iron	18000		4.3	mg/kg dry
Lead	620		0.69	mg/kg dry
Magnesium	4000		43	mg/kg dry
Manganese	190		0.43	mg/kg dry
Molybdenum	1.4		0.86	mg/kg dry
Nickel	25		1.7	mg/kg dry
Potassium	250		43	mg/kg dry
Selenium	---	U	1.7	mg/kg dry
Silver	7.2		0.43	mg/kg dry
Sodium	140		86	mg/kg dry
Thallium	---	U	1.7	mg/kg dry
Tin	32		0.86	mg/kg dry
Vanadium	24		1.7	mg/kg dry
Zinc	790		1.7	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S10-0-1			Sample ID: 1304050-27	
Metals ICP				
Aluminum	7700		10	mg/kg dry
Antimony	2.0		2.0	mg/kg dry
Arsenic	5.1		0.82	mg/kg dry
Barium	57		10	mg/kg dry
Beryllium	---	U	0.31	mg/kg dry
Cadmium	0.87		0.31	mg/kg dry
Calcium	7200		51	mg/kg dry
Chromium	23		0.51	mg/kg dry
Cobalt	6.2		2.0	mg/kg dry
Copper	34		1.0	mg/kg dry
Iron	13000		5.1	mg/kg dry
Lead	190		0.82	mg/kg dry
Magnesium	4500		51	mg/kg dry
Manganese	240		0.51	mg/kg dry
Molybdenum	---	U	1.0	mg/kg dry
Nickel	18		2.0	mg/kg dry
Potassium	570		51	mg/kg dry
Selenium	---	U	2.0	mg/kg dry
Silver	11		0.51	mg/kg dry
Sodium	160		100	mg/kg dry
Thallium	---	U	2.0	mg/kg dry
Tin	7.3		1.0	mg/kg dry
Vanadium	29		2.0	mg/kg dry
Zinc	110		2.0	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S10-12-18			Sample ID: 1304050-28	
Metals ICP				
Aluminum	8700		8.3	mg/kg dry
Antimony	---	U	1.7	mg/kg dry
Arsenic	3.1		0.67	mg/kg dry
Barium	46		8.3	mg/kg dry
Beryllium	0.33		0.25	mg/kg dry
Cadmium	0.25		0.25	mg/kg dry
Calcium	1200		42	mg/kg dry
Chromium	19		0.42	mg/kg dry
Cobalt	6.0		1.7	mg/kg dry
Copper	16		0.83	mg/kg dry
Iron	14000		4.2	mg/kg dry
Lead	52		0.67	mg/kg dry
Magnesium	2300		42	mg/kg dry
Manganese	210		0.42	mg/kg dry
Molybdenum	---	U	0.83	mg/kg dry
Nickel	18		1.7	mg/kg dry
Potassium	420		42	mg/kg dry
Selenium	---	U	1.7	mg/kg dry
Silver	8.1		0.42	mg/kg dry
Sodium	---	U	83	mg/kg dry
Thallium	---	U	1.7	mg/kg dry
Tin	0.97		0.83	mg/kg dry
Vanadium	23		1.7	mg/kg dry
Zinc	36		1.7	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S10-1-6			Sample ID: 1304050-29	
Metals ICP				
Aluminum	7600		8.3	mg/kg dry
Antimony	---	U	1.7	mg/kg dry
Arsenic	4.9		0.66	mg/kg dry
Barium	50		8.3	mg/kg dry
Beryllium	0.31		0.25	mg/kg dry
Cadmium	0.83		0.25	mg/kg dry
Calcium	2900		41	mg/kg dry
Chromium	19		0.41	mg/kg dry
Cobalt	5.8		1.7	mg/kg dry
Copper	28		0.83	mg/kg dry
Iron	13000		4.1	mg/kg dry
Lead	170		0.66	mg/kg dry
Magnesium	2700		41	mg/kg dry
Manganese	200		0.41	mg/kg dry
Molybdenum	---	U	0.83	mg/kg dry
Nickel	17		1.7	mg/kg dry
Potassium	510		41	mg/kg dry
Selenium	---	U	1.7	mg/kg dry
Silver	9.5		0.41	mg/kg dry
Sodium	120		83	mg/kg dry
Thallium	---	U	1.7	mg/kg dry
Tin	2.3		0.83	mg/kg dry
Vanadium	25		1.7	mg/kg dry
Zinc	82		1.7	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S10-18-24			Sample ID: 1304050-30	
Metals ICP				
Aluminum	6900		8.2	mg/kg dry
Antimony	---	U	1.6	mg/kg dry
Arsenic	1.4		0.65	mg/kg dry
Barium	34		8.2	mg/kg dry
Beryllium	---	U	0.25	mg/kg dry
Cadmium	---	U	0.25	mg/kg dry
Calcium	900		41	mg/kg dry
Chromium	16		0.41	mg/kg dry
Cobalt	5.8		1.6	mg/kg dry
Copper	14		0.82	mg/kg dry
Iron	9800		4.1	mg/kg dry
Lead	25		0.65	mg/kg dry
Magnesium	2800		41	mg/kg dry
Manganese	130		0.41	mg/kg dry
Molybdenum	---	U	0.82	mg/kg dry
Nickel	24		1.6	mg/kg dry
Potassium	690		41	mg/kg dry
Selenium	---	U	1.6	mg/kg dry
Silver	9.3		0.41	mg/kg dry
Sodium	---	U	82	mg/kg dry
Thallium	---	U	1.6	mg/kg dry
Tin	---	U	0.82	mg/kg dry
Vanadium	18		1.6	mg/kg dry
Zinc	27		1.6	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S10-6-12			Sample ID: 1304050-31	
Metals ICP				
Aluminum	8400		8.2	mg/kg dry
Antimony	4.1		1.6	mg/kg dry
Arsenic	6.3		0.66	mg/kg dry
Barium	46		8.2	mg/kg dry
Beryllium	1.0		0.25	mg/kg dry
Cadmium	1.2		0.25	mg/kg dry
Calcium	1200		41	mg/kg dry
Chromium	140		0.41	mg/kg dry
Cobalt	7.9		1.6	mg/kg dry
Copper	26		0.82	mg/kg dry
Iron	31000		4.1	mg/kg dry
Lead	120		0.66	mg/kg dry
Magnesium	1700		41	mg/kg dry
Manganese	240		0.41	mg/kg dry
Molybdenum	---	U	0.82	mg/kg dry
Nickel	280		1.6	mg/kg dry
Potassium	280		41	mg/kg dry
Selenium	---	U	1.6	mg/kg dry
Silver	6.4		0.41	mg/kg dry
Sodium	---	U	82	mg/kg dry
Thallium	---	U	1.6	mg/kg dry
Tin	17		0.82	mg/kg dry
Vanadium	28		1.6	mg/kg dry
Zinc	70		1.6	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S11-0-1			Sample ID: 1304050-32	
Metals ICP				
Aluminum	7500		9.9	mg/kg dry
Antimony	2.2		2.0	mg/kg dry
Arsenic	5.0		0.79	mg/kg dry
Barium	75		9.9	mg/kg dry
Beryllium	---	U	0.30	mg/kg dry
Cadmium	7.3		0.30	mg/kg dry
Calcium	2400		50	mg/kg dry
Chromium	30		0.50	mg/kg dry
Cobalt	7.2		2.0	mg/kg dry
Copper	54		0.99	mg/kg dry
Iron	13000		5.0	mg/kg dry
Lead	260		0.79	mg/kg dry
Magnesium	2300		50	mg/kg dry
Manganese	240		0.50	mg/kg dry
Molybdenum	---	U	0.99	mg/kg dry
Nickel	25		2.0	mg/kg dry
Potassium	760		50	mg/kg dry
Selenium	---	U	2.0	mg/kg dry
Silver	12		0.50	mg/kg dry
Sodium	350		99	mg/kg dry
Thallium	---	U	2.0	mg/kg dry
Tin	6.7		0.99	mg/kg dry
Vanadium	44		2.0	mg/kg dry
Zinc	190		2.0	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S11-12-18			Sample ID: 1304050-33	
Metals ICP				
Aluminum	6200		8.1	mg/kg dry
Antimony	---	U	1.6	mg/kg dry
Arsenic	1.0		0.65	mg/kg dry
Barium	34		8.1	mg/kg dry
Beryllium	---	U	0.24	mg/kg dry
Cadmium	1.3		0.24	mg/kg dry
Calcium	1100		41	mg/kg dry
Chromium	17		0.41	mg/kg dry
Cobalt	6.0		1.6	mg/kg dry
Copper	17		0.81	mg/kg dry
Iron	9400		4.1	mg/kg dry
Lead	24		0.65	mg/kg dry
Magnesium	2800		41	mg/kg dry
Manganese	190		0.41	mg/kg dry
Molybdenum	---	U	0.81	mg/kg dry
Nickel	26		1.6	mg/kg dry
Potassium	740		41	mg/kg dry
Selenium	---	U	1.6	mg/kg dry
Silver	9.9		0.41	mg/kg dry
Sodium	100		81	mg/kg dry
Thallium	---	U	1.6	mg/kg dry
Tin	---	U	0.81	mg/kg dry
Vanadium	18		1.6	mg/kg dry
Zinc	32		1.6	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S11-1-6			Sample ID: 1304050-34	
Metals ICP				
Aluminum	6400		8.4	mg/kg dry
Antimony	---	U	1.7	mg/kg dry
Arsenic	3.8		0.67	mg/kg dry
Barium	55		8.4	mg/kg dry
Beryllium	---	U	0.25	mg/kg dry
Cadmium	6.6		0.25	mg/kg dry
Calcium	1600		42	mg/kg dry
Chromium	23		0.42	mg/kg dry
Cobalt	8.1		1.7	mg/kg dry
Copper	38		0.84	mg/kg dry
Iron	11000		4.2	mg/kg dry
Lead	170		0.67	mg/kg dry
Magnesium	2100		42	mg/kg dry
Manganese	180		0.42	mg/kg dry
Molybdenum	---	U	0.84	mg/kg dry
Nickel	21		1.7	mg/kg dry
Potassium	560		42	mg/kg dry
Selenium	---	U	1.7	mg/kg dry
Silver	11		0.42	mg/kg dry
Sodium	140		84	mg/kg dry
Thallium	---	U	1.7	mg/kg dry
Tin	4.3		0.84	mg/kg dry
Vanadium	30		1.7	mg/kg dry
Zinc	130		1.7	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S11-18-24			Sample ID: 1304050-35	
Metals ICP				
Aluminum	5600		8.2	mg/kg dry
Antimony	---	U	1.6	mg/kg dry
Arsenic	0.66		0.66	mg/kg dry
Barium	28		8.2	mg/kg dry
Beryllium	---	U	0.25	mg/kg dry
Cadmium	0.78		0.25	mg/kg dry
Calcium	1000		41	mg/kg dry
Chromium	18		0.41	mg/kg dry
Cobalt	5.4		1.6	mg/kg dry
Copper	13		0.82	mg/kg dry
Iron	10000		4.1	mg/kg dry
Lead	14		0.66	mg/kg dry
Magnesium	2300		41	mg/kg dry
Manganese	170		0.41	mg/kg dry
Molybdenum	---	U	0.82	mg/kg dry
Nickel	21		1.6	mg/kg dry
Potassium	760		41	mg/kg dry
Selenium	---	U	1.6	mg/kg dry
Silver	9.9		0.41	mg/kg dry
Sodium	110		82	mg/kg dry
Thallium	---	U	1.6	mg/kg dry
Tin	---	U	0.82	mg/kg dry
Vanadium	18		1.6	mg/kg dry
Zinc	24		1.6	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S11-6-12			Sample ID: 1304050-36	
Metals ICP				
Aluminum	6300		8.6	mg/kg dry
Antimony	---	U	1.7	mg/kg dry
Arsenic	0.90		0.69	mg/kg dry
Barium	35		8.6	mg/kg dry
Beryllium	---	U	0.26	mg/kg dry
Cadmium	1.8		0.26	mg/kg dry
Calcium	800		43	mg/kg dry
Chromium	17		0.43	mg/kg dry
Cobalt	5.6		1.7	mg/kg dry
Copper	18		0.86	mg/kg dry
Iron	9600		4.3	mg/kg dry
Lead	21		0.69	mg/kg dry
Magnesium	2300		43	mg/kg dry
Manganese	170		0.43	mg/kg dry
Molybdenum	---	U	0.86	mg/kg dry
Nickel	19		1.7	mg/kg dry
Potassium	680		43	mg/kg dry
Selenium	---	U	1.7	mg/kg dry
Silver	10		0.43	mg/kg dry
Sodium	---	U	86	mg/kg dry
Thallium	---	U	1.7	mg/kg dry
Tin	---	U	0.86	mg/kg dry
Vanadium	19		1.7	mg/kg dry
Zinc	29		1.7	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S14-0-1			Sample ID: 1304050-37	
Metals ICP				
Aluminum	10000		10	mg/kg dry
Antimony	---	U	2.1	mg/kg dry
Arsenic	11		0.84	mg/kg dry
Barium	97		10	mg/kg dry
Beryllium	---	U	0.31	mg/kg dry
Cadmium	0.65		0.31	mg/kg dry
Calcium	4200		52	mg/kg dry
Chromium	26		0.52	mg/kg dry
Cobalt	7.3		2.1	mg/kg dry
Copper	45		1.0	mg/kg dry
Iron	16000		5.2	mg/kg dry
Lead	140		0.84	mg/kg dry
Magnesium	2900		52	mg/kg dry
Manganese	300		0.52	mg/kg dry
Molybdenum	---	U	1.0	mg/kg dry
Nickel	17		2.1	mg/kg dry
Potassium	1000		52	mg/kg dry
Selenium	---	U	2.1	mg/kg dry
Silver	15		0.52	mg/kg dry
Sodium	---	U	100	mg/kg dry
Thallium	---	U	2.1	mg/kg dry
Tin	4.0		1.0	mg/kg dry
Vanadium	29		2.1	mg/kg dry
Zinc	130		2.1	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S14-1-6				Sample ID: 1304050-38
Metals ICP				
Aluminum	7100		9.3	mg/kg dry
Antimony	2.1		1.9	mg/kg dry
Arsenic	4.6		0.75	mg/kg dry
Barium	97		9.3	mg/kg dry
Beryllium	0.32		0.28	mg/kg dry
Cadmium	0.68		0.28	mg/kg dry
Calcium	6400		47	mg/kg dry
Chromium	21		0.47	mg/kg dry
Cobalt	8.8		1.9	mg/kg dry
Copper	95		0.93	mg/kg dry
Iron	14000		4.7	mg/kg dry
Lead	140		0.75	mg/kg dry
Magnesium	3500		47	mg/kg dry
Manganese	290		0.47	mg/kg dry
Molybdenum	4.6		0.93	mg/kg dry
Nickel	13		1.9	mg/kg dry
Potassium	830		47	mg/kg dry
Selenium	---	U	1.9	mg/kg dry
Silver	11		0.47	mg/kg dry
Sodium	---	U	93	mg/kg dry
Thallium	---	U	1.9	mg/kg dry
Tin	54		0.93	mg/kg dry
Vanadium	19		1.9	mg/kg dry
Zinc	460		1.9	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S14-6-12			Sample ID: 1304050-39	
Metals ICP				
Aluminum	7000		9.3	mg/kg dry
Antimony	7.5		1.9	mg/kg dry
Arsenic	9.8		0.74	mg/kg dry
Barium	160		9.3	mg/kg dry
Beryllium	0.31		0.28	mg/kg dry
Cadmium	180		0.28	mg/kg dry
Calcium	20000		46	mg/kg dry
Chromium	54		0.46	mg/kg dry
Cobalt	11		1.9	mg/kg dry
Copper	150		0.93	mg/kg dry
Iron	16000		4.6	mg/kg dry
Lead	690		0.74	mg/kg dry
Magnesium	6100		46	mg/kg dry
Manganese	210		0.46	mg/kg dry
Molybdenum	1.8		0.93	mg/kg dry
Nickel	50		1.9	mg/kg dry
Potassium	620		46	mg/kg dry
Selenium	---	U	1.9	mg/kg dry
Silver	8.4		0.46	mg/kg dry
Sodium	---	U	93	mg/kg dry
Thallium	---	U	1.9	mg/kg dry
Tin	76		0.93	mg/kg dry
Vanadium	25		1.9	mg/kg dry
Zinc	550		1.9	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S15-0-1			Sample ID: 1304050-40	
Metals ICP				
Aluminum	11000		10	mg/kg dry
Antimony	---	U	2.0	mg/kg dry
Arsenic	13		0.80	mg/kg dry
Barium	91		10	mg/kg dry
Beryllium	0.40		0.30	mg/kg dry
Cadmium	4.1		0.30	mg/kg dry
Calcium	3400		50	mg/kg dry
Chromium	22		0.50	mg/kg dry
Cobalt	6.7		2.0	mg/kg dry
Copper	35		1.0	mg/kg dry
Iron	16000		5.0	mg/kg dry
Lead	110		0.80	mg/kg dry
Magnesium	2900		50	mg/kg dry
Manganese	260		0.50	mg/kg dry
Molybdenum	---	U	1.0	mg/kg dry
Nickel	16		2.0	mg/kg dry
Potassium	850		50	mg/kg dry
Selenium	---	U	2.0	mg/kg dry
Silver	14		0.50	mg/kg dry
Sodium	---	U	100	mg/kg dry
Thallium	---	U	2.0	mg/kg dry
Tin	4.2		1.0	mg/kg dry
Vanadium	28		2.0	mg/kg dry
Zinc	150		2.0	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S15-1-6				Sample ID: 1304050-41
Metals ICP				
Aluminum	6800		9.5	mg/kg dry
Antimony	---	U	1.9	mg/kg dry
Arsenic	4.5		0.76	mg/kg dry
Barium	71		9.5	mg/kg dry
Beryllium	0.31		0.29	mg/kg dry
Cadmium	1.7		0.29	mg/kg dry
Calcium	4700		48	mg/kg dry
Chromium	15		0.48	mg/kg dry
Cobalt	5.4		1.9	mg/kg dry
Copper	30		0.95	mg/kg dry
Iron	13000		4.8	mg/kg dry
Lead	98		0.76	mg/kg dry
Magnesium	2500		48	mg/kg dry
Manganese	210		0.48	mg/kg dry
Molybdenum	---	U	0.95	mg/kg dry
Nickel	13		1.9	mg/kg dry
Potassium	850		48	mg/kg dry
Selenium	---	U	1.9	mg/kg dry
Silver	10		0.48	mg/kg dry
Sodium	---	U	95	mg/kg dry
Thallium	---	U	1.9	mg/kg dry
Tin	3.0		0.95	mg/kg dry
Vanadium	22		1.9	mg/kg dry
Zinc	120		1.9	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S15-6-12			Sample ID: 1304050-42	
Metals ICP				
Aluminum	7000		8.2	mg/kg dry
Antimony	8.1		1.6	mg/kg dry
Arsenic	11		0.66	mg/kg dry
Barium	110		8.2	mg/kg dry
Beryllium	0.29		0.25	mg/kg dry
Cadmium	590		0.25	mg/kg dry
Calcium	12000		41	mg/kg dry
Chromium	20		0.41	mg/kg dry
Cobalt	7.1		1.6	mg/kg dry
Copper	230		0.82	mg/kg dry
Iron	14000		4.1	mg/kg dry
Lead	960		0.66	mg/kg dry
Magnesium	3100		41	mg/kg dry
Manganese	210		0.41	mg/kg dry
Molybdenum	1.1		0.82	mg/kg dry
Nickel	81		1.6	mg/kg dry
Potassium	790		41	mg/kg dry
Selenium	1.7		1.6	mg/kg dry
Silver	11		0.41	mg/kg dry
Sodium	---	U	82	mg/kg dry
Thallium	---	U	1.6	mg/kg dry
Tin	82		0.82	mg/kg dry
Vanadium	29		1.6	mg/kg dry
Zinc	1100		1.6	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S16-12-18			Sample ID: 1304050-43	
Metals ICP				
Aluminum	6300		8.4	mg/kg dry
Antimony	---	U	1.7	mg/kg dry
Arsenic	2.0		0.67	mg/kg dry
Barium	51		8.4	mg/kg dry
Beryllium	---	U	0.25	mg/kg dry
Cadmium	7.6		0.25	mg/kg dry
Calcium	900		42	mg/kg dry
Chromium	18		0.42	mg/kg dry
Cobalt	6.0		1.7	mg/kg dry
Copper	25		0.84	mg/kg dry
Iron	11000		4.2	mg/kg dry
Lead	55		0.67	mg/kg dry
Magnesium	1800		42	mg/kg dry
Manganese	320		0.42	mg/kg dry
Molybdenum	---	U	0.84	mg/kg dry
Nickel	22		1.7	mg/kg dry
Potassium	780		42	mg/kg dry
Selenium	---	U	1.7	mg/kg dry
Silver	8.9		0.42	mg/kg dry
Sodium	190		84	mg/kg dry
Thallium	---	U	1.7	mg/kg dry
Tin	1.8		0.84	mg/kg dry
Vanadium	21		1.7	mg/kg dry
Zinc	49		1.7	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S16-18-24			Sample ID: 1304050-44	
Metals ICP				
Aluminum	8400		8.2	mg/kg dry
Antimony	---	U	1.6	mg/kg dry
Arsenic	1.6		0.66	mg/kg dry
Barium	61		8.2	mg/kg dry
Beryllium	0.26		0.25	mg/kg dry
Cadmium	4.0		0.25	mg/kg dry
Calcium	1300		41	mg/kg dry
Chromium	30		0.41	mg/kg dry
Cobalt	7.6		1.6	mg/kg dry
Copper	28		0.82	mg/kg dry
Iron	16000		4.1	mg/kg dry
Lead	14		0.66	mg/kg dry
Magnesium	2700		41	mg/kg dry
Manganese	260		0.41	mg/kg dry
Molybdenum	---	U	0.82	mg/kg dry
Nickel	32		1.6	mg/kg dry
Potassium	1500		41	mg/kg dry
Selenium	---	U	1.6	mg/kg dry
Silver	14		0.41	mg/kg dry
Sodium	---	U	82	mg/kg dry
Thallium	---	U	1.6	mg/kg dry
Tin	1.3		0.82	mg/kg dry
Vanadium	25		1.6	mg/kg dry
Zinc	40		1.6	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S16-6-12			Sample ID: 1304050-45	
Metals ICP				
Aluminum	7000		8.5	mg/kg dry
Antimony	---	U	1.7	mg/kg dry
Arsenic	1.1		0.68	mg/kg dry
Barium	38		8.5	mg/kg dry
Beryllium	---	U	0.26	mg/kg dry
Cadmium	2.0		0.26	mg/kg dry
Calcium	980		43	mg/kg dry
Chromium	20		0.43	mg/kg dry
Cobalt	6.2		1.7	mg/kg dry
Copper	19		0.85	mg/kg dry
Iron	10000		4.3	mg/kg dry
Lead	21		0.68	mg/kg dry
Magnesium	2400		43	mg/kg dry
Manganese	190		0.43	mg/kg dry
Molybdenum	---	U	0.85	mg/kg dry
Nickel	21		1.7	mg/kg dry
Potassium	780		43	mg/kg dry
Selenium	---	U	1.7	mg/kg dry
Silver	11		0.43	mg/kg dry
Sodium	110		85	mg/kg dry
Thallium	---	U	1.7	mg/kg dry
Tin	---	U	0.85	mg/kg dry
Vanadium	21		1.7	mg/kg dry
Zinc	29		1.7	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S04-0-1			Sample ID: 1304050-46	
Metals ICP				
Aluminum	9500		12	mg/kg dry
Antimony	---	U	2.4	mg/kg dry
Arsenic	8.5		0.95	mg/kg dry
Barium	94		12	mg/kg dry
Beryllium	---	U	0.35	mg/kg dry
Cadmium	2.5		0.35	mg/kg dry
Calcium	11000		59	mg/kg dry
Chromium	28		0.59	mg/kg dry
Cobalt	6.7		2.4	mg/kg dry
Copper	51		1.2	mg/kg dry
Iron	15000		5.9	mg/kg dry
Lead	190		0.95	mg/kg dry
Magnesium	5500		59	mg/kg dry
Manganese	340		0.59	mg/kg dry
Molybdenum	---	U	1.2	mg/kg dry
Nickel	20		2.4	mg/kg dry
Potassium	600		59	mg/kg dry
Selenium	---	U	2.4	mg/kg dry
Silver	9.9		0.59	mg/kg dry
Sodium	620		120	mg/kg dry
Thallium	---	U	2.4	mg/kg dry
Tin	6.0		1.2	mg/kg dry
Vanadium	33		2.4	mg/kg dry
Zinc	200		2.4	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S04-12-18			Sample ID: 1304050-47	
Metals ICP				
Aluminum	8800		8.1	mg/kg dry
Antimony	---	U	1.6	mg/kg dry
Arsenic	3.0		0.65	mg/kg dry
Barium	54		8.1	mg/kg dry
Beryllium	0.30		0.24	mg/kg dry
Cadmium	2.3		0.24	mg/kg dry
Calcium	1000		41	mg/kg dry
Chromium	19		0.41	mg/kg dry
Cobalt	6.6		1.6	mg/kg dry
Copper	19		0.81	mg/kg dry
Iron	13000		4.1	mg/kg dry
Lead	34		0.65	mg/kg dry
Magnesium	2100		41	mg/kg dry
Manganese	200		0.41	mg/kg dry
Molybdenum	---	U	0.81	mg/kg dry
Nickel	19		1.6	mg/kg dry
Potassium	740		41	mg/kg dry
Selenium	---	U	1.6	mg/kg dry
Silver	9.3		0.41	mg/kg dry
Sodium	130		81	mg/kg dry
Thallium	---	U	1.6	mg/kg dry
Tin	---	U	0.81	mg/kg dry
Vanadium	21		1.6	mg/kg dry
Zinc	57		1.6	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S04-1-6			Sample ID: 1304050-48	
Metals ICP				
Aluminum	9300		9.4	mg/kg dry
Antimony	---	U	1.9	mg/kg dry
Arsenic	9.9		0.75	mg/kg dry
Barium	110		9.4	mg/kg dry
Beryllium	0.39		0.28	mg/kg dry
Cadmium	3.4		0.28	mg/kg dry
Calcium	2400		47	mg/kg dry
Chromium	24		0.47	mg/kg dry
Cobalt	6.3		1.9	mg/kg dry
Copper	49		0.94	mg/kg dry
Iron	16000		4.7	mg/kg dry
Lead	180		0.75	mg/kg dry
Magnesium	2300		47	mg/kg dry
Manganese	360		0.47	mg/kg dry
Molybdenum	---	U	0.94	mg/kg dry
Nickel	17		1.9	mg/kg dry
Potassium	580		47	mg/kg dry
Selenium	---	U	1.9	mg/kg dry
Silver	8.6		0.47	mg/kg dry
Sodium	290		94	mg/kg dry
Thallium	---	U	1.9	mg/kg dry
Tin	6.3		0.94	mg/kg dry
Vanadium	31		1.9	mg/kg dry
Zinc	150		1.9	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S04-18-24			Sample ID: 1304050-49	
Metals ICP				
Aluminum	8800		9.5	mg/kg dry
Antimony	---	U	1.9	mg/kg dry
Arsenic	2.6		0.76	mg/kg dry
Barium	40		9.5	mg/kg dry
Beryllium	0.37		0.28	mg/kg dry
Cadmium	4.8		0.28	mg/kg dry
Calcium	710		47	mg/kg dry
Chromium	16		0.47	mg/kg dry
Cobalt	6.2		1.9	mg/kg dry
Copper	20		0.95	mg/kg dry
Iron	13000		4.7	mg/kg dry
Lead	140		0.76	mg/kg dry
Magnesium	1900		47	mg/kg dry
Manganese	140		0.47	mg/kg dry
Molybdenum	---	U	0.95	mg/kg dry
Nickel	16		1.9	mg/kg dry
Potassium	520		47	mg/kg dry
Selenium	---	U	1.9	mg/kg dry
Silver	6.8		0.47	mg/kg dry
Sodium	110		95	mg/kg dry
Thallium	---	U	1.9	mg/kg dry
Tin	500		0.95	mg/kg dry
Vanadium	18		1.9	mg/kg dry
Zinc	49		1.9	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S04-6-12			Sample ID: 1304050-50	
Metals ICP				
Aluminum	9300		9.2	mg/kg dry
Antimony	---	U	1.8	mg/kg dry
Arsenic	7.0		0.73	mg/kg dry
Barium	76		9.2	mg/kg dry
Beryllium	0.35		0.27	mg/kg dry
Cadmium	3.8		0.27	mg/kg dry
Calcium	1600		46	mg/kg dry
Chromium	21		0.46	mg/kg dry
Cobalt	6.4		1.8	mg/kg dry
Copper	27		0.92	mg/kg dry
Iron	14000		4.6	mg/kg dry
Lead	92		0.73	mg/kg dry
Magnesium	2100		46	mg/kg dry
Manganese	280		0.46	mg/kg dry
Molybdenum	---	U	0.92	mg/kg dry
Nickel	17		1.8	mg/kg dry
Potassium	570		46	mg/kg dry
Selenium	---	U	1.8	mg/kg dry
Silver	8.7		0.46	mg/kg dry
Sodium	190		92	mg/kg dry
Thallium	---	U	1.8	mg/kg dry
Tin	1.8		0.92	mg/kg dry
Vanadium	27		1.8	mg/kg dry
Zinc	89		1.8	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S07-0-1			Sample ID: 1304050-51	
Metals ICP				
Aluminum	7200		10	mg/kg dry
Antimony	---	U	2.1	mg/kg dry
Arsenic	8.3		0.84	mg/kg dry
Barium	55		10	mg/kg dry
Beryllium	---	U	0.31	mg/kg dry
Cadmium	1.5		0.31	mg/kg dry
Calcium	5400		52	mg/kg dry
Chromium	26		0.52	mg/kg dry
Cobalt	6.2		2.1	mg/kg dry
Copper	38		1.0	mg/kg dry
Iron	14000		5.2	mg/kg dry
Lead	150		0.84	mg/kg dry
Magnesium	2900		52	mg/kg dry
Manganese	190		0.52	mg/kg dry
Molybdenum	---	U	1.0	mg/kg dry
Nickel	20		2.1	mg/kg dry
Potassium	1000		52	mg/kg dry
Selenium	---	U	2.1	mg/kg dry
Silver	12		0.52	mg/kg dry
Sodium	120		100	mg/kg dry
Thallium	---	U	2.1	mg/kg dry
Tin	13		1.0	mg/kg dry
Vanadium	29		2.1	mg/kg dry
Zinc	170		2.1	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S07-12-18			Sample ID: 1304050-52	
Metals ICP				
Aluminum	7900		9.8	mg/kg dry
Antimony	---	U	2.0	mg/kg dry
Arsenic	12		0.78	mg/kg dry
Barium	110		9.8	mg/kg dry
Beryllium	0.36		0.29	mg/kg dry
Cadmium	2.0		0.29	mg/kg dry
Calcium	6600		49	mg/kg dry
Chromium	23		0.49	mg/kg dry
Cobalt	7.8		2.0	mg/kg dry
Copper	85		0.98	mg/kg dry
Iron	20000		4.9	mg/kg dry
Lead	480		0.78	mg/kg dry
Magnesium	4200		49	mg/kg dry
Manganese	260		0.49	mg/kg dry
Molybdenum	1.2		0.98	mg/kg dry
Nickel	20		2.0	mg/kg dry
Potassium	400		49	mg/kg dry
Selenium	---	U	2.0	mg/kg dry
Silver	10		0.49	mg/kg dry
Sodium	360		98	mg/kg dry
Thallium	---	U	2.0	mg/kg dry
Tin	87		0.98	mg/kg dry
Vanadium	29		2.0	mg/kg dry
Zinc	140		2.0	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S07-1-6			Sample ID: 1304050-53	
Metals ICP				
Aluminum	7500		8.6	mg/kg dry
Antimony	---	U	1.7	mg/kg dry
Arsenic	12		0.69	mg/kg dry
Barium	61		8.6	mg/kg dry
Beryllium	0.38		0.26	mg/kg dry
Cadmium	2.4		0.26	mg/kg dry
Calcium	1900		43	mg/kg dry
Chromium	20		0.43	mg/kg dry
Cobalt	6.9		1.7	mg/kg dry
Copper	45		0.86	mg/kg dry
Iron	16000		4.3	mg/kg dry
Lead	190		0.69	mg/kg dry
Magnesium	1900		43	mg/kg dry
Manganese	230		0.43	mg/kg dry
Molybdenum	---	U	0.86	mg/kg dry
Nickel	21		1.7	mg/kg dry
Potassium	630		43	mg/kg dry
Selenium	---	U	1.7	mg/kg dry
Silver	12		0.43	mg/kg dry
Sodium	120		86	mg/kg dry
Thallium	---	U	1.7	mg/kg dry
Tin	11		0.86	mg/kg dry
Vanadium	30		1.7	mg/kg dry
Zinc	130		1.7	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S07-18-24			Sample ID: 1304050-54	
Metals ICP				
Aluminum	6600		9.5	mg/kg dry
Antimony	---	U	1.9	mg/kg dry
Arsenic	6.7		0.76	mg/kg dry
Barium	80		9.5	mg/kg dry
Beryllium	---	U	0.28	mg/kg dry
Cadmium	0.59		0.28	mg/kg dry
Calcium	1900		47	mg/kg dry
Chromium	18		0.47	mg/kg dry
Cobalt	4.8		1.9	mg/kg dry
Copper	55		0.95	mg/kg dry
Iron	11000		4.7	mg/kg dry
Lead	210		0.76	mg/kg dry
Magnesium	1300		47	mg/kg dry
Manganese	120		0.47	mg/kg dry
Molybdenum	---	U	0.95	mg/kg dry
Nickel	14		1.9	mg/kg dry
Potassium	240		47	mg/kg dry
Selenium	---	U	1.9	mg/kg dry
Silver	4.0		0.47	mg/kg dry
Sodium	440		95	mg/kg dry
Thallium	---	U	1.9	mg/kg dry
Tin	8.9		0.95	mg/kg dry
Vanadium	23		1.9	mg/kg dry
Zinc	200		1.9	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S07-6-12			Sample ID: 1304050-55	
Metals ICP				
Aluminum	8300		8.5	mg/kg dry
Antimony	---	U	1.7	mg/kg dry
Arsenic	13		0.68	mg/kg dry
Barium	71		8.5	mg/kg dry
Beryllium	0.37		0.26	mg/kg dry
Cadmium	3.7		0.26	mg/kg dry
Calcium	1500		43	mg/kg dry
Chromium	22		0.43	mg/kg dry
Cobalt	8.2		1.7	mg/kg dry
Copper	52		0.85	mg/kg dry
Iron	15000		4.3	mg/kg dry
Lead	270		0.68	mg/kg dry
Magnesium	2000		43	mg/kg dry
Manganese	230		0.43	mg/kg dry
Molybdenum	---	U	0.85	mg/kg dry
Nickel	23		1.7	mg/kg dry
Potassium	540		43	mg/kg dry
Selenium	---	U	1.7	mg/kg dry
Silver	15		0.43	mg/kg dry
Sodium	210		85	mg/kg dry
Thallium	---	U	1.7	mg/kg dry
Tin	27		0.85	mg/kg dry
Vanadium	32		1.7	mg/kg dry
Zinc	140		1.7	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S08-0-1			Sample ID: 1304050-56	
Metals ICP				
Aluminum	7300		11	mg/kg dry
Antimony	3.1		2.3	mg/kg dry
Arsenic	6.5		0.90	mg/kg dry
Barium	130		11	mg/kg dry
Beryllium	---	U	0.34	mg/kg dry
Cadmium	2.6		0.34	mg/kg dry
Calcium	7100		57	mg/kg dry
Chromium	35		0.57	mg/kg dry
Cobalt	7.4		2.3	mg/kg dry
Copper	77		1.1	mg/kg dry
Iron	16000		5.7	mg/kg dry
Lead	710		0.90	mg/kg dry
Magnesium	3400		57	mg/kg dry
Manganese	270		0.57	mg/kg dry
Molybdenum	1.3		1.1	mg/kg dry
Nickel	31		2.3	mg/kg dry
Potassium	530		57	mg/kg dry
Selenium	---	U	2.3	mg/kg dry
Silver	9.1		0.57	mg/kg dry
Sodium	500		110	mg/kg dry
Thallium	---	U	2.3	mg/kg dry
Tin	15		1.1	mg/kg dry
Vanadium	42		2.3	mg/kg dry
Zinc	410		2.3	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S08-12-18				Sample ID: 1304050-57
Metals ICP				
Aluminum	6900		9.0	mg/kg dry
Antimony	2.4		1.8	mg/kg dry
Arsenic	11		0.72	mg/kg dry
Barium	69		9.0	mg/kg dry
Beryllium	0.30		0.27	mg/kg dry
Cadmium	1.1		0.27	mg/kg dry
Calcium	3100		45	mg/kg dry
Chromium	23		0.45	mg/kg dry
Cobalt	6.3		1.8	mg/kg dry
Copper	57		0.90	mg/kg dry
Iron	14000		4.5	mg/kg dry
Lead	550		0.72	mg/kg dry
Magnesium	2300		45	mg/kg dry
Manganese	220		0.45	mg/kg dry
Molybdenum	---	U	0.90	mg/kg dry
Nickel	24		1.8	mg/kg dry
Potassium	370		45	mg/kg dry
Selenium	---	U	1.8	mg/kg dry
Silver	8.5		0.45	mg/kg dry
Sodium	160		90	mg/kg dry
Thallium	---	U	1.8	mg/kg dry
Tin	12		0.90	mg/kg dry
Vanadium	29		1.8	mg/kg dry
Zinc	240		1.8	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S08-1-6			Sample ID: 1304050-58	
Metals ICP				
Aluminum	5200		8.4	mg/kg dry
Antimony	1.9		1.7	mg/kg dry
Arsenic	4.6		0.67	mg/kg dry
Barium	700		8.4	mg/kg dry
Beryllium	---	U	0.25	mg/kg dry
Cadmium	1.6		0.25	mg/kg dry
Calcium	4900		42	mg/kg dry
Chromium	21		0.42	mg/kg dry
Cobalt	5.4		1.7	mg/kg dry
Copper	56		0.84	mg/kg dry
Iron	12000		4.2	mg/kg dry
Lead	990		0.67	mg/kg dry
Magnesium	3000		42	mg/kg dry
Manganese	170		0.42	mg/kg dry
Molybdenum	1.4		0.84	mg/kg dry
Nickel	18		1.7	mg/kg dry
Potassium	370		42	mg/kg dry
Selenium	---	U	1.7	mg/kg dry
Silver	7.1		0.42	mg/kg dry
Sodium	320		84	mg/kg dry
Thallium	---	U	1.7	mg/kg dry
Tin	9.6		0.84	mg/kg dry
Vanadium	33		1.7	mg/kg dry
Zinc	280		1.7	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S08-18-24			Sample ID: 1304050-59	
Metals ICP				
Aluminum	9600		9.4	mg/kg dry
Antimony	---	U	1.9	mg/kg dry
Arsenic	3.6		0.76	mg/kg dry
Barium	41		9.4	mg/kg dry
Beryllium	0.33		0.28	mg/kg dry
Cadmium	---	U	0.28	mg/kg dry
Calcium	1200		47	mg/kg dry
Chromium	26		0.47	mg/kg dry
Cobalt	6.4		1.9	mg/kg dry
Copper	11		0.94	mg/kg dry
Iron	17000		4.7	mg/kg dry
Lead	40		0.76	mg/kg dry
Magnesium	1800		47	mg/kg dry
Manganese	220		0.47	mg/kg dry
Molybdenum	---	U	0.94	mg/kg dry
Nickel	17		1.9	mg/kg dry
Potassium	220		47	mg/kg dry
Selenium	---	U	1.9	mg/kg dry
Silver	5.7		0.47	mg/kg dry
Sodium	---	U	94	mg/kg dry
Thallium	---	U	1.9	mg/kg dry
Tin	1.2		0.94	mg/kg dry
Vanadium	27		1.9	mg/kg dry
Zinc	33		1.9	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S08-6-12			Sample ID: 1304050-60	
Metals ICP				
Aluminum	5600		9.2	mg/kg dry
Antimony	2.3		1.8	mg/kg dry
Arsenic	7.1		0.73	mg/kg dry
Barium	100		9.2	mg/kg dry
Beryllium	---	U	0.28	mg/kg dry
Cadmium	1.7		0.28	mg/kg dry
Calcium	4100		46	mg/kg dry
Chromium	23		0.46	mg/kg dry
Cobalt	5.5		1.8	mg/kg dry
Copper	53		0.92	mg/kg dry
Iron	12000		4.6	mg/kg dry
Lead	800		0.73	mg/kg dry
Magnesium	2400		46	mg/kg dry
Manganese	170		0.46	mg/kg dry
Molybdenum	---	U	0.92	mg/kg dry
Nickel	21		1.8	mg/kg dry
Potassium	310		46	mg/kg dry
Selenium	---	U	1.8	mg/kg dry
Silver	7.3		0.46	mg/kg dry
Sodium	160		92	mg/kg dry
Thallium	---	U	1.8	mg/kg dry
Tin	22		0.92	mg/kg dry
Vanadium	27		1.8	mg/kg dry
Zinc	250		1.8	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S09-0-1			Sample ID: 1304050-61	
Metals ICP				
Aluminum	8900		10	mg/kg dry
Antimony	---	U	2.1	mg/kg dry
Arsenic	3.2		0.83	mg/kg dry
Barium	89		10	mg/kg dry
Beryllium	---	U	0.31	mg/kg dry
Cadmium	3.1		0.31	mg/kg dry
Calcium	4000		52	mg/kg dry
Chromium	30		0.52	mg/kg dry
Cobalt	7.5		2.1	mg/kg dry
Copper	63		1.0	mg/kg dry
Iron	14000		5.2	mg/kg dry
Lead	430		0.83	mg/kg dry
Magnesium	2900		52	mg/kg dry
Manganese	250		0.52	mg/kg dry
Molybdenum	---	U	1.0	mg/kg dry
Nickel	26		2.1	mg/kg dry
Potassium	830		52	mg/kg dry
Selenium	---	U	2.1	mg/kg dry
Silver	12		0.52	mg/kg dry
Sodium	160		100	mg/kg dry
Thallium	---	U	2.1	mg/kg dry
Tin	5.1		1.0	mg/kg dry
Vanadium	33		2.1	mg/kg dry
Zinc	180		2.1	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S09-12-18				Sample ID: 1304050-62
Metals ICP				
Aluminum	9300		8.6	mg/kg dry
Antimony	---	U	1.7	mg/kg dry
Arsenic	2.1		0.69	mg/kg dry
Barium	73		8.6	mg/kg dry
Beryllium	0.32		0.26	mg/kg dry
Cadmium	1.7		0.26	mg/kg dry
Calcium	1200		43	mg/kg dry
Chromium	23		0.43	mg/kg dry
Cobalt	7.8		1.7	mg/kg dry
Copper	26		0.86	mg/kg dry
Iron	15000		4.3	mg/kg dry
Lead	140		0.69	mg/kg dry
Magnesium	2500		43	mg/kg dry
Manganese	250		0.43	mg/kg dry
Molybdenum	---	U	0.86	mg/kg dry
Nickel	27		1.7	mg/kg dry
Potassium	670		43	mg/kg dry
Selenium	---	U	1.7	mg/kg dry
Silver	11		0.43	mg/kg dry
Sodium	92		86	mg/kg dry
Thallium	---	U	1.7	mg/kg dry
Tin	3.9		0.86	mg/kg dry
Vanadium	25		1.7	mg/kg dry
Zinc	65		1.7	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S09-1-6				Sample ID: 1304050-63
Metals ICP				
Aluminum	7200		8.9	mg/kg dry
Antimony	---	U	1.8	mg/kg dry
Arsenic	2.4		0.71	mg/kg dry
Barium	49		8.9	mg/kg dry
Beryllium	0.29		0.27	mg/kg dry
Cadmium	1.4		0.27	mg/kg dry
Calcium	1700		45	mg/kg dry
Chromium	24		0.45	mg/kg dry
Cobalt	6.0		1.8	mg/kg dry
Copper	32		0.89	mg/kg dry
Iron	12000		4.5	mg/kg dry
Lead	160		0.71	mg/kg dry
Magnesium	2200		45	mg/kg dry
Manganese	170		0.45	mg/kg dry
Molybdenum	---	U	0.89	mg/kg dry
Nickel	22		1.8	mg/kg dry
Potassium	480		45	mg/kg dry
Selenium	---	U	1.8	mg/kg dry
Silver	9.6		0.45	mg/kg dry
Sodium	---	U	89	mg/kg dry
Thallium	---	U	1.8	mg/kg dry
Tin	2.5		0.89	mg/kg dry
Vanadium	30		1.8	mg/kg dry
Zinc	97		1.8	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S09-18-24				Sample ID: 1304050-64
Metals ICP				
Aluminum	6500		8.5	mg/kg dry
Antimony	---	U	1.7	mg/kg dry
Arsenic	1.7		0.68	mg/kg dry
Barium	39		8.5	mg/kg dry
Beryllium	---	U	0.26	mg/kg dry
Cadmium	---	U	0.26	mg/kg dry
Calcium	680		43	mg/kg dry
Chromium	15		0.43	mg/kg dry
Cobalt	6.4		1.7	mg/kg dry
Copper	20		0.85	mg/kg dry
Iron	12000		4.3	mg/kg dry
Lead	26		0.68	mg/kg dry
Magnesium	2800		43	mg/kg dry
Manganese	130		0.43	mg/kg dry
Molybdenum	---	U	0.85	mg/kg dry
Nickel	28		1.7	mg/kg dry
Potassium	910		43	mg/kg dry
Selenium	---	U	1.7	mg/kg dry
Silver	11		0.43	mg/kg dry
Sodium	---	U	85	mg/kg dry
Thallium	---	U	1.7	mg/kg dry
Tin	---	U	0.85	mg/kg dry
Vanadium	19		1.7	mg/kg dry
Zinc	40		1.7	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S09-6-12				Sample ID: 1304050-65
Metals ICP				
Aluminum	8400		8.8	mg/kg dry
Antimony	---	U	1.8	mg/kg dry
Arsenic	2.4		0.71	mg/kg dry
Barium	55		8.8	mg/kg dry
Beryllium	0.29		0.27	mg/kg dry
Cadmium	1.5		0.27	mg/kg dry
Calcium	1400		44	mg/kg dry
Chromium	24		0.44	mg/kg dry
Cobalt	7.6		1.8	mg/kg dry
Copper	29		0.88	mg/kg dry
Iron	13000		4.4	mg/kg dry
Lead	130		0.71	mg/kg dry
Magnesium	3100		44	mg/kg dry
Manganese	190		0.44	mg/kg dry
Molybdenum	---	U	0.88	mg/kg dry
Nickel	31		1.8	mg/kg dry
Potassium	550		44	mg/kg dry
Selenium	---	U	1.8	mg/kg dry
Silver	11		0.44	mg/kg dry
Sodium	91		88	mg/kg dry
Thallium	---	U	1.8	mg/kg dry
Tin	2.1		0.88	mg/kg dry
Vanadium	26		1.8	mg/kg dry
Zinc	81		1.8	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S12-0-1			Sample ID: 1304050-66	
Metals ICP				
Aluminum	6800		11	mg/kg dry
Antimony	2.6		2.1	mg/kg dry
Arsenic	4.7		0.85	mg/kg dry
Barium	74		11	mg/kg dry
Beryllium	---	U	0.32	mg/kg dry
Cadmium	2.8		0.32	mg/kg dry
Calcium	6500		53	mg/kg dry
Chromium	53		0.53	mg/kg dry
Cobalt	5.8		2.1	mg/kg dry
Copper	72		1.1	mg/kg dry
Iron	15000		5.3	mg/kg dry
Lead	500		0.85	mg/kg dry
Magnesium	3700		53	mg/kg dry
Manganese	260		0.53	mg/kg dry
Molybdenum	1.1		1.1	mg/kg dry
Nickel	20		2.1	mg/kg dry
Potassium	360		53	mg/kg dry
Selenium	---	U	2.1	mg/kg dry
Silver	6.3		0.53	mg/kg dry
Sodium	---	U	110	mg/kg dry
Thallium	---	U	2.1	mg/kg dry
Tin	12		1.1	mg/kg dry
Vanadium	36		2.1	mg/kg dry
Zinc	470		2.1	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S12-12-18			Sample ID: 1304050-67	
Metals ICP				
Aluminum	5400		8.0	mg/kg dry
Antimony	---	U	1.6	mg/kg dry
Arsenic	4.4		0.64	mg/kg dry
Barium	52		8.0	mg/kg dry
Beryllium	0.26		0.24	mg/kg dry
Cadmium	8.0		0.24	mg/kg dry
Calcium	9400		40	mg/kg dry
Chromium	16		0.40	mg/kg dry
Cobalt	4.7		1.6	mg/kg dry
Copper	33		0.80	mg/kg dry
Iron	12000		4.0	mg/kg dry
Lead	190		0.64	mg/kg dry
Magnesium	6200		40	mg/kg dry
Manganese	220		0.40	mg/kg dry
Molybdenum	---	U	0.80	mg/kg dry
Nickel	14		1.6	mg/kg dry
Potassium	350		40	mg/kg dry
Selenium	---	U	1.6	mg/kg dry
Silver	5.9		0.40	mg/kg dry
Sodium	---	U	80	mg/kg dry
Thallium	---	U	1.6	mg/kg dry
Tin	5.6		0.80	mg/kg dry
Vanadium	19		1.6	mg/kg dry
Zinc	110		1.6	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S12-1-6			Sample ID: 1304050-68	
Metals ICP				
Aluminum	7000		8.0	mg/kg dry
Antimony	1.6		1.6	mg/kg dry
Arsenic	5.3		0.64	mg/kg dry
Barium	61		8.0	mg/kg dry
Beryllium	0.29		0.24	mg/kg dry
Cadmium	2.3		0.24	mg/kg dry
Calcium	2300		40	mg/kg dry
Chromium	25		0.40	mg/kg dry
Cobalt	5.7		1.6	mg/kg dry
Copper	60		0.80	mg/kg dry
Iron	14000		4.0	mg/kg dry
Lead	270		0.64	mg/kg dry
Magnesium	2900		40	mg/kg dry
Manganese	250		0.40	mg/kg dry
Molybdenum	---	U	0.80	mg/kg dry
Nickel	22		1.6	mg/kg dry
Potassium	330		40	mg/kg dry
Selenium	---	U	1.6	mg/kg dry
Silver	5.3		0.40	mg/kg dry
Sodium	---	U	80	mg/kg dry
Thallium	---	U	1.6	mg/kg dry
Tin	9.1		0.80	mg/kg dry
Vanadium	31		1.6	mg/kg dry
Zinc	160		1.6	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S12-18-24			Sample ID: 1304050-69	
Metals ICP				
Aluminum	6400		8.4	mg/kg dry
Antimony	---	U	1.7	mg/kg dry
Arsenic	6.3		0.67	mg/kg dry
Barium	88		8.4	mg/kg dry
Beryllium	0.27		0.25	mg/kg dry
Cadmium	6.1		0.25	mg/kg dry
Calcium	18000		42	mg/kg dry
Chromium	17		0.42	mg/kg dry
Cobalt	6.3		1.7	mg/kg dry
Copper	43		0.84	mg/kg dry
Iron	17000		4.2	mg/kg dry
Lead	260		0.67	mg/kg dry
Magnesium	12000		42	mg/kg dry
Manganese	330		0.42	mg/kg dry
Molybdenum	---	U	0.84	mg/kg dry
Nickel	22		1.7	mg/kg dry
Potassium	790		42	mg/kg dry
Selenium	---	U	1.7	mg/kg dry
Silver	8.2		0.42	mg/kg dry
Sodium	140		84	mg/kg dry
Thallium	---	U	1.7	mg/kg dry
Tin	8.7		0.84	mg/kg dry
Vanadium	23		1.7	mg/kg dry
Zinc	140		1.7	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S12-6-12			Sample ID: 1304050-70	
Metals ICP				
Aluminum	7100		9.1	mg/kg dry
Antimony	---	U	1.8	mg/kg dry
Arsenic	4.8		0.73	mg/kg dry
Barium	55		9.1	mg/kg dry
Beryllium	---	U	0.27	mg/kg dry
Cadmium	2.7		0.27	mg/kg dry
Calcium	8600		46	mg/kg dry
Chromium	17		0.46	mg/kg dry
Cobalt	5.4		1.8	mg/kg dry
Copper	32		0.91	mg/kg dry
Iron	13000		4.6	mg/kg dry
Lead	130		0.73	mg/kg dry
Magnesium	6300		46	mg/kg dry
Manganese	230		0.46	mg/kg dry
Molybdenum	---	U	0.91	mg/kg dry
Nickel	15		1.8	mg/kg dry
Potassium	380		46	mg/kg dry
Selenium	---	U	1.8	mg/kg dry
Silver	6.1		0.46	mg/kg dry
Sodium	---	U	91	mg/kg dry
Thallium	---	U	1.8	mg/kg dry
Tin	4.2		0.91	mg/kg dry
Vanadium	22		1.8	mg/kg dry
Zinc	74		1.8	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S13-0-1			Sample ID: 1304050-71	
Metals ICP				
Aluminum	6500		11	mg/kg dry
Antimony	3.1		2.2	mg/kg dry
Arsenic	4.9		0.89	mg/kg dry
Barium	82		11	mg/kg dry
Beryllium	---	U	0.33	mg/kg dry
Cadmium	6.4		0.33	mg/kg dry
Calcium	13000		56	mg/kg dry
Chromium	37		0.56	mg/kg dry
Cobalt	6.1		2.2	mg/kg dry
Copper	95		1.1	mg/kg dry
Iron	15000		5.6	mg/kg dry
Lead	390		0.89	mg/kg dry
Magnesium	7100		56	mg/kg dry
Manganese	260		0.56	mg/kg dry
Molybdenum	1.6		1.1	mg/kg dry
Nickel	27		2.2	mg/kg dry
Potassium	500		56	mg/kg dry
Selenium	---	U	2.2	mg/kg dry
Silver	6.5		0.56	mg/kg dry
Sodium	220		110	mg/kg dry
Thallium	---	U	2.2	mg/kg dry
Tin	13		1.1	mg/kg dry
Vanadium	37		2.2	mg/kg dry
Zinc	700		2.2	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S13-12-18			Sample ID: 1304050-72	
Metals ICP				
Aluminum	7700		8.9	mg/kg dry
Antimony	---	U	1.8	mg/kg dry
Arsenic	7.7		0.71	mg/kg dry
Barium	70		8.9	mg/kg dry
Beryllium	0.30		0.27	mg/kg dry
Cadmium	23		0.27	mg/kg dry
Calcium	4400		45	mg/kg dry
Chromium	22		0.45	mg/kg dry
Cobalt	6.5		1.8	mg/kg dry
Copper	55		0.89	mg/kg dry
Iron	20000		4.5	mg/kg dry
Lead	810		0.71	mg/kg dry
Magnesium	3400		45	mg/kg dry
Manganese	260		0.45	mg/kg dry
Molybdenum	---	U	0.89	mg/kg dry
Nickel	19		1.8	mg/kg dry
Potassium	410		45	mg/kg dry
Selenium	---	U	1.8	mg/kg dry
Silver	7.1		0.45	mg/kg dry
Sodium	160		89	mg/kg dry
Thallium	---	U	1.8	mg/kg dry
Tin	430		0.89	mg/kg dry
Vanadium	29		1.8	mg/kg dry
Zinc	370		1.8	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S13-1-6			Sample ID: 1304050-73	
Metals ICP				
Aluminum	6600		9.4	mg/kg dry
Antimony	---	U	1.9	mg/kg dry
Arsenic	5.4		0.75	mg/kg dry
Barium	68		9.4	mg/kg dry
Beryllium	0.34		0.28	mg/kg dry
Cadmium	8.7		0.28	mg/kg dry
Calcium	4600		47	mg/kg dry
Chromium	21		0.47	mg/kg dry
Cobalt	7.2		1.9	mg/kg dry
Copper	110		0.94	mg/kg dry
Iron	15000		4.7	mg/kg dry
Lead	750		0.75	mg/kg dry
Magnesium	3400		47	mg/kg dry
Manganese	240		0.47	mg/kg dry
Molybdenum	---	U	0.94	mg/kg dry
Nickel	24		1.9	mg/kg dry
Potassium	430		47	mg/kg dry
Selenium	---	U	1.9	mg/kg dry
Silver	7.2		0.47	mg/kg dry
Sodium	150		94	mg/kg dry
Thallium	---	U	1.9	mg/kg dry
Tin	210		0.94	mg/kg dry
Vanadium	40		1.9	mg/kg dry
Zinc	310		1.9	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S13-18-24			Sample ID: 1304050-74	
Metals ICP				
Aluminum	8400		9.1	mg/kg dry
Antimony	---	U	1.8	mg/kg dry
Arsenic	5.0		0.73	mg/kg dry
Barium	56		9.1	mg/kg dry
Beryllium	0.31		0.27	mg/kg dry
Cadmium	7.0		0.27	mg/kg dry
Calcium	3100		45	mg/kg dry
Chromium	20		0.45	mg/kg dry
Cobalt	6.3		1.8	mg/kg dry
Copper	30		0.91	mg/kg dry
Iron	16000		4.5	mg/kg dry
Lead	97		0.73	mg/kg dry
Magnesium	3000		45	mg/kg dry
Manganese	220		0.45	mg/kg dry
Molybdenum	---	U	0.91	mg/kg dry
Nickel	18		1.8	mg/kg dry
Potassium	450		45	mg/kg dry
Selenium	---	U	1.8	mg/kg dry
Silver	6.9		0.45	mg/kg dry
Sodium	160		91	mg/kg dry
Thallium	---	U	1.8	mg/kg dry
Tin	6.8		0.91	mg/kg dry
Vanadium	26		1.8	mg/kg dry
Zinc	140		1.8	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S13-6-12			Sample ID: 1304050-75	
Metals ICP				
Aluminum	7200		9.3	mg/kg dry
Antimony	2.0		1.9	mg/kg dry
Arsenic	6.3		0.75	mg/kg dry
Barium	81		9.3	mg/kg dry
Beryllium	0.35		0.28	mg/kg dry
Cadmium	20		0.28	mg/kg dry
Calcium	5900		47	mg/kg dry
Chromium	23		0.47	mg/kg dry
Cobalt	6.4		1.9	mg/kg dry
Copper	76		0.93	mg/kg dry
Iron	17000		4.7	mg/kg dry
Lead	230		0.75	mg/kg dry
Magnesium	4300		47	mg/kg dry
Manganese	240		0.47	mg/kg dry
Molybdenum	---	U	0.93	mg/kg dry
Nickel	25		1.9	mg/kg dry
Potassium	370	K	47	mg/kg dry
Selenium	---	U	1.9	mg/kg dry
Silver	7.1		0.47	mg/kg dry
Sodium	160		93	mg/kg dry
Thallium	---	U	1.9	mg/kg dry
Tin	15	K	0.93	mg/kg dry
Vanadium	32		1.9	mg/kg dry
Zinc	320		1.9	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S16-0-1			Sample ID: 1304050-76	
Metals ICP				
Aluminum	8900		11	mg/kg dry
Antimony	2.4		2.1	mg/kg dry
Arsenic	3.4		0.86	mg/kg dry
Barium	84		11	mg/kg dry
Beryllium	---	U	0.32	mg/kg dry
Cadmium	2.9		0.32	mg/kg dry
Calcium	3900		54	mg/kg dry
Chromium	31		0.54	mg/kg dry
Cobalt	7.6		2.1	mg/kg dry
Copper	62		1.1	mg/kg dry
Iron	14000		5.4	mg/kg dry
Lead	440		0.86	mg/kg dry
Magnesium	2900		54	mg/kg dry
Manganese	240		0.54	mg/kg dry
Molybdenum	---	U	1.1	mg/kg dry
Nickel	26		2.1	mg/kg dry
Potassium	820		54	mg/kg dry
Selenium	---	U	2.1	mg/kg dry
Silver	12		0.54	mg/kg dry
Sodium	160		110	mg/kg dry
Thallium	---	U	2.1	mg/kg dry
Tin	14		1.1	mg/kg dry
Vanadium	34		2.1	mg/kg dry
Zinc	180		2.1	mg/kg dry

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-RIN01	04/25/2013	1	Aluminum	100	Yes	U	100	ug/L
2101-RIN01	04/25/2013	1	Antimony	20	Yes	U	20	ug/L
2101-RIN01	04/25/2013	1	Arsenic	8.0	Yes	U	8.0	ug/L
2101-RIN01	04/25/2013	1	Barium	100	Yes	U	100	ug/L
2101-RIN01	04/25/2013	1	Beryllium	3.0	Yes	U	3.0	ug/L
2101-RIN01	04/25/2013	1	Cadmium	3.0	Yes	U	3.0	ug/L
2101-RIN01	04/25/2013	1	Calcium	500	Yes	U	500	ug/L
2101-RIN01	04/25/2013	1	Chromium	5.0	Yes	U	5.0	ug/L
2101-RIN01	04/25/2013	1	Cobalt	20	Yes	U	20	ug/L
2101-RIN01	04/25/2013	1	Copper	10	Yes	U	10	ug/L
2101-RIN01	04/25/2013	1	Iron	50	Yes	U	50	ug/L
2101-RIN01	04/25/2013	1	Lead	8.0	Yes	U	8.0	ug/L
2101-RIN01	04/25/2013	1	Magnesium	500	Yes	U	500	ug/L
2101-RIN01	04/25/2013	1	Manganese	5.0	Yes	U	5.0	ug/L
2101-RIN01	04/25/2013	1	Nickel	20	Yes	U	20	ug/L
2101-RIN01	04/25/2013	1	Potassium	500	Yes	U	500	ug/L
2101-RIN01	04/25/2013	1	Selenium	20	Yes	U	20	ug/L
2101-RIN01	04/25/2013	1	Silver	5.0	Yes	U	5.0	ug/L
2101-RIN01	04/25/2013	1	Sodium	1000	Yes	U	1000	ug/L
2101-RIN01	04/25/2013	1	Thallium	20	Yes	U	20	ug/L
2101-RIN01	04/25/2013	1	Tin	10	Yes	U	10	ug/L
2101-RIN01	04/25/2013	1	Vanadium	20	Yes	U	20	ug/L
2101-RIN01	04/25/2013	1	Zinc	20	Yes	U	20	ug/L
2101-S01-0-1	04/25/2013	1	Aluminum	14000	Yes		11	mg/kg
2101-S01-0-1	04/25/2013	1	Antimony	3.4	Yes		2.2	mg/kg
2101-S01-0-1	04/25/2013	1	Arsenic	26	Yes		0.86	mg/kg
2101-S01-0-1	04/25/2013	1	Barium	79	Yes		11	mg/kg
2101-S01-0-1	04/25/2013	1	Beryllium	0.48	Yes		0.32	mg/kg
2101-S01-0-1	04/25/2013	1	Cadmium	7.4	Yes		0.32	mg/kg
2101-S01-0-1	04/25/2013	1	Calcium	3200	Yes		54	mg/kg
2101-S01-0-1	04/25/2013	1	Chromium	32	Yes		0.54	mg/kg
2101-S01-0-1	04/25/2013	1	Cobalt	5.5	Yes		2.2	mg/kg
2101-S01-0-1	04/25/2013	1	Copper	50	Yes		1.1	mg/kg
2101-S01-0-1	04/25/2013	1	Iron	18000	Yes		5.4	mg/kg

Note: This printed Excel file is excerpted from the original data spreadsheet.

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S01-0-1	04/25/2013	1	Lead	150	Yes		0.86	mg/kg
2101-S01-0-1	04/25/2013	1	Magnesium	2100	Yes		54	mg/kg
2101-S01-0-1	04/25/2013	1	Manganese	210	Yes		0.54	mg/kg
2101-S01-0-1	04/25/2013	1	Molybdenum	1.2	Yes		1.1	mg/kg
2101-S01-0-1	04/25/2013	1	Nickel	15	Yes		2.2	mg/kg
2101-S01-0-1	04/25/2013	1	Potassium	580	Yes		54	mg/kg
2101-S01-0-1	04/25/2013	1	Selenium	2.2	Yes	U	2.2	mg/kg
2101-S01-0-1	04/25/2013	1	Silver	13	Yes		0.54	mg/kg
2101-S01-0-1	04/25/2013	1	Sodium	1000	Yes		110	mg/kg
2101-S01-0-1	04/25/2013	1	Thallium	2.2	Yes	U	2.2	mg/kg
2101-S01-0-1	04/25/2013	1	Tin	21	Yes		1.1	mg/kg
2101-S01-0-1	04/25/2013	1	Vanadium	30	Yes		2.2	mg/kg
2101-S01-0-1	04/25/2013	1	Zinc	170	Yes		2.2	mg/kg
2101-S01-12-18	04/25/2013	1	Aluminum	8000	Yes		8.2	mg/kg
2101-S01-12-18	04/25/2013	1	Antimony	1.6	Yes	U	1.6	mg/kg
2101-S01-12-18	04/25/2013	1	Arsenic	3.0	Yes		0.65	mg/kg
2101-S01-12-18	04/25/2013	1	Barium	42	Yes		8.2	mg/kg
2101-S01-12-18	04/25/2013	1	Beryllium	0.29	Yes		0.24	mg/kg
2101-S01-12-18	04/25/2013	1	Cadmium	20	Yes		0.24	mg/kg
2101-S01-12-18	04/25/2013	1	Calcium	810	Yes		41	mg/kg
2101-S01-12-18	04/25/2013	1	Chromium	18	Yes		0.41	mg/kg
2101-S01-12-18	04/25/2013	1	Cobalt	6.5	Yes		1.6	mg/kg
2101-S01-12-18	04/25/2013	1	Copper	16	Yes		0.82	mg/kg
2101-S01-12-18	04/25/2013	1	Iron	13000	Yes		4.1	mg/kg
2101-S01-12-18	04/25/2013	1	Lead	16	Yes		0.65	mg/kg
2101-S01-12-18	04/25/2013	1	Magnesium	1800	Yes		41	mg/kg
2101-S01-12-18	04/25/2013	1	Manganese	250	Yes		0.41	mg/kg
2101-S01-12-18	04/25/2013	1	Molybdenum	0.82	Yes	U	0.82	mg/kg
2101-S01-12-18	04/25/2013	1	Nickel	16	Yes		1.6	mg/kg
2101-S01-12-18	04/25/2013	1	Potassium	420	Yes		41	mg/kg
2101-S01-12-18	04/25/2013	1	Selenium	1.6	Yes	U	1.6	mg/kg
2101-S01-12-18	04/25/2013	1	Silver	7.5	Yes		0.41	mg/kg
2101-S01-12-18	04/25/2013	1	Sodium	190	Yes		82	mg/kg
2101-S01-12-18	04/25/2013	1	Thallium	1.6	Yes	U	1.6	mg/kg

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S01-12-18	04/25/2013	1	Tin	0.82	Yes	U	0.82	mg/kg
2101-S01-12-18	04/25/2013	1	Vanadium	24	Yes		1.6	mg/kg
2101-S01-12-18	04/25/2013	1	Zinc	26	Yes		1.6	mg/kg
2101-S01-1-6	04/25/2013	1	Aluminum	5600	Yes		9.2	mg/kg
2101-S01-1-6	04/25/2013	1	Antimony	2.8	Yes		1.8	mg/kg
2101-S01-1-6	04/25/2013	1	Arsenic	8.2	Yes		0.74	mg/kg
2101-S01-1-6	04/25/2013	1	Barium	91	Yes		9.2	mg/kg
2101-S01-1-6	04/25/2013	1	Beryllium	0.50	Yes		0.28	mg/kg
2101-S01-1-6	04/25/2013	1	Cadmium	4.4	Yes		0.28	mg/kg
2101-S01-1-6	04/25/2013	1	Calcium	6700	Yes		46	mg/kg
2101-S01-1-6	04/25/2013	1	Chromium	20	Yes		0.46	mg/kg
2101-S01-1-6	04/25/2013	1	Cobalt	7.3	Yes		1.8	mg/kg
2101-S01-1-6	04/25/2013	1	Copper	90	Yes		0.92	mg/kg
2101-S01-1-6	04/25/2013	1	Iron	11000	Yes		4.6	mg/kg
2101-S01-1-6	04/25/2013	1	Lead	160	Yes		0.74	mg/kg
2101-S01-1-6	04/25/2013	1	Magnesium	3100	Yes		46	mg/kg
2101-S01-1-6	04/25/2013	1	Manganese	220	Yes		0.46	mg/kg
2101-S01-1-6	04/25/2013	1	Molybdenum	2.7	Yes		0.92	mg/kg
2101-S01-1-6	04/25/2013	1	Nickel	12	Yes		1.8	mg/kg
2101-S01-1-6	04/25/2013	1	Potassium	450	Yes		46	mg/kg
2101-S01-1-6	04/25/2013	1	Selenium	1.8	Yes	U	1.8	mg/kg
2101-S01-1-6	04/25/2013	1	Silver	7.5	Yes		0.46	mg/kg
2101-S01-1-6	04/25/2013	1	Sodium	540	Yes		92	mg/kg
2101-S01-1-6	04/25/2013	1	Thallium	1.8	Yes	U	1.8	mg/kg
2101-S01-1-6	04/25/2013	1	Tin	18	Yes		0.92	mg/kg
2101-S01-1-6	04/25/2013	1	Vanadium	17	Yes		1.8	mg/kg
2101-S01-1-6	04/25/2013	1	Zinc	210	Yes		1.8	mg/kg
2101-S01-18-24	04/25/2013	1	Aluminum	7900	Yes		8.4	mg/kg
2101-S01-18-24	04/25/2013	1	Antimony	1.7	Yes	U	1.7	mg/kg
2101-S01-18-24	04/25/2013	1	Arsenic	2.0	Yes		0.67	mg/kg
2101-S01-18-24	04/25/2013	1	Barium	38	Yes		8.4	mg/kg
2101-S01-18-24	04/25/2013	1	Beryllium	0.28	Yes		0.25	mg/kg
2101-S01-18-24	04/25/2013	1	Cadmium	13	Yes		0.25	mg/kg
2101-S01-18-24	04/25/2013	1	Calcium	1100	Yes		42	mg/kg

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S01-18-24	04/25/2013	1	Chromium	17	Yes		0.42	mg/kg
2101-S01-18-24	04/25/2013	1	Cobalt	6.2	Yes		1.7	mg/kg
2101-S01-18-24	04/25/2013	1	Copper	16	Yes		0.84	mg/kg
2101-S01-18-24	04/25/2013	1	Iron	11000	Yes		4.2	mg/kg
2101-S01-18-24	04/25/2013	1	Lead	12	Yes		0.67	mg/kg
2101-S01-18-24	04/25/2013	1	Magnesium	2000	Yes		42	mg/kg
2101-S01-18-24	04/25/2013	1	Manganese	260	Yes		0.42	mg/kg
2101-S01-18-24	04/25/2013	1	Molybdenum	0.84	Yes	U	0.84	mg/kg
2101-S01-18-24	04/25/2013	1	Nickel	19	Yes		1.7	mg/kg
2101-S01-18-24	04/25/2013	1	Potassium	490	Yes		42	mg/kg
2101-S01-18-24	04/25/2013	1	Selenium	1.7	Yes	U	1.7	mg/kg
2101-S01-18-24	04/25/2013	1	Silver	6.4	Yes		0.42	mg/kg
2101-S01-18-24	04/25/2013	1	Sodium	180	Yes		84	mg/kg
2101-S01-18-24	04/25/2013	1	Thallium	1.7	Yes	U	1.7	mg/kg
2101-S01-18-24	04/25/2013	1	Tin	0.84	Yes	U	0.84	mg/kg
2101-S01-18-24	04/25/2013	1	Vanadium	18	Yes		1.7	mg/kg
2101-S01-18-24	04/25/2013	1	Zinc	22	Yes		1.7	mg/kg
2101-S01-6-12	04/25/2013	1	Aluminum	7200	Yes		8.8	mg/kg
2101-S01-6-12	04/25/2013	1	Antimony	4.8	Yes		1.8	mg/kg
2101-S01-6-12	04/25/2013	1	Arsenic	5.6	Yes		0.70	mg/kg
2101-S01-6-12	04/25/2013	1	Barium	88	Yes		8.8	mg/kg
2101-S01-6-12	04/25/2013	1	Beryllium	0.28	Yes		0.26	mg/kg
2101-S01-6-12	04/25/2013	1	Cadmium	61	Yes		0.26	mg/kg
2101-S01-6-12	04/25/2013	1	Calcium	1500	Yes		44	mg/kg
2101-S01-6-12	04/25/2013	1	Chromium	18	Yes		0.44	mg/kg
2101-S01-6-12	04/25/2013	1	Cobalt	6.8	Yes		1.8	mg/kg
2101-S01-6-12	04/25/2013	1	Copper	150	Yes		0.88	mg/kg
2101-S01-6-12	04/25/2013	1	Iron	16000	Yes		4.4	mg/kg
2101-S01-6-12	04/25/2013	1	Lead	73	Yes		0.70	mg/kg
2101-S01-6-12	04/25/2013	1	Magnesium	2100	Yes		44	mg/kg
2101-S01-6-12	04/25/2013	1	Manganese	280	Yes		0.44	mg/kg
2101-S01-6-12	04/25/2013	1	Molybdenum	0.88	Yes	U	0.88	mg/kg
2101-S01-6-12	04/25/2013	1	Nickel	32	Yes		1.8	mg/kg
2101-S01-6-12	04/25/2013	1	Potassium	780	Yes		44	mg/kg

Note: This printed Excel file is excerpted from the original data spreadsheet.

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S01-6-12	04/25/2013	1	Selenium	1.8	Yes	U	1.8	mg/kg
2101-S01-6-12	04/25/2013	1	Silver	10	Yes		0.44	mg/kg
2101-S01-6-12	04/25/2013	1	Sodium	270	Yes		88	mg/kg
2101-S01-6-12	04/25/2013	1	Thallium	1.8	Yes	U	1.8	mg/kg
2101-S01-6-12	04/25/2013	1	Tin	34	Yes		0.88	mg/kg
2101-S01-6-12	04/25/2013	1	Vanadium	20	Yes		1.8	mg/kg
2101-S01-6-12	04/25/2013	1	Zinc	260	Yes		1.8	mg/kg
2101-S02-0-1	04/25/2013	1	Aluminum	8500	Yes		11	mg/kg
2101-S02-0-1	04/25/2013	1	Antimony	2.1	Yes	U	2.1	mg/kg
2101-S02-0-1	04/25/2013	1	Arsenic	10	Yes		0.85	mg/kg
2101-S02-0-1	04/25/2013	1	Barium	66	Yes		11	mg/kg
2101-S02-0-1	04/25/2013	1	Beryllium	0.32	Yes	U	0.32	mg/kg
2101-S02-0-1	04/25/2013	1	Cadmium	16	Yes		0.32	mg/kg
2101-S02-0-1	04/25/2013	1	Calcium	14000	Yes		53	mg/kg
2101-S02-0-1	04/25/2013	1	Chromium	24	Yes		0.53	mg/kg
2101-S02-0-1	04/25/2013	1	Cobalt	6.4	Yes		2.1	mg/kg
2101-S02-0-1	04/25/2013	1	Copper	53	Yes		1.1	mg/kg
2101-S02-0-1	04/25/2013	1	Iron	13000	Yes		5.3	mg/kg
2101-S02-0-1	04/25/2013	1	Lead	300	Yes		0.85	mg/kg
2101-S02-0-1	04/25/2013	1	Magnesium	8200	Yes		53	mg/kg
2101-S02-0-1	04/25/2013	1	Manganese	240	Yes		0.53	mg/kg
2101-S02-0-1	04/25/2013	1	Molybdenum	1.1	Yes	U	1.1	mg/kg
2101-S02-0-1	04/25/2013	1	Nickel	19	Yes		2.1	mg/kg
2101-S02-0-1	04/25/2013	1	Potassium	750	Yes		53	mg/kg
2101-S02-0-1	04/25/2013	1	Selenium	2.1	Yes	U	2.1	mg/kg
2101-S02-0-1	04/25/2013	1	Silver	12	Yes		0.53	mg/kg
2101-S02-0-1	04/25/2013	1	Sodium	430	Yes		110	mg/kg
2101-S02-0-1	04/25/2013	1	Thallium	2.1	Yes	U	2.1	mg/kg
2101-S02-0-1	04/25/2013	1	Tin	6.8	Yes		1.1	mg/kg
2101-S02-0-1	04/25/2013	1	Vanadium	32	Yes		2.1	mg/kg
2101-S02-0-1	04/25/2013	1	Zinc	160	Yes		2.1	mg/kg
2101-S02-12-18	04/25/2013	1	Aluminum	6700	Yes		7.8	mg/kg
2101-S02-12-18	04/25/2013	1	Antimony	1.6	Yes	U	1.6	mg/kg
2101-S02-12-18	04/25/2013	1	Arsenic	2.3	Yes		0.62	mg/kg

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S02-12-18	04/25/2013	1	Barium	43	Yes		7.8	mg/kg
2101-S02-12-18	04/25/2013	1	Beryllium	0.23	Yes	U	0.23	mg/kg
2101-S02-12-18	04/25/2013	1	Cadmium	7.5	Yes		0.23	mg/kg
2101-S02-12-18	04/25/2013	1	Calcium	1100	Yes		39	mg/kg
2101-S02-12-18	04/25/2013	1	Chromium	19	Yes		0.39	mg/kg
2101-S02-12-18	04/25/2013	1	Cobalt	6.2	Yes		1.6	mg/kg
2101-S02-12-18	04/25/2013	1	Copper	26	Yes		0.78	mg/kg
2101-S02-12-18	04/25/2013	1	Iron	11000	Yes		3.9	mg/kg
2101-S02-12-18	04/25/2013	1	Lead	63	Yes		0.62	mg/kg
2101-S02-12-18	04/25/2013	1	Magnesium	2000	Yes		39	mg/kg
2101-S02-12-18	04/25/2013	1	Manganese	220	Yes		0.39	mg/kg
2101-S02-12-18	04/25/2013	1	Molybdenum	0.78	Yes	U	0.78	mg/kg
2101-S02-12-18	04/25/2013	1	Nickel	24	Yes		1.6	mg/kg
2101-S02-12-18	04/25/2013	1	Potassium	830	Yes		39	mg/kg
2101-S02-12-18	04/25/2013	1	Selenium	1.6	Yes	U	1.6	mg/kg
2101-S02-12-18	04/25/2013	1	Silver	9.8	Yes		0.39	mg/kg
2101-S02-12-18	04/25/2013	1	Sodium	210	Yes		78	mg/kg
2101-S02-12-18	04/25/2013	1	Thallium	1.6	Yes	U	1.6	mg/kg
2101-S02-12-18	04/25/2013	1	Tin	1.1	Yes		0.78	mg/kg
2101-S02-12-18	04/25/2013	1	Vanadium	21	Yes		1.6	mg/kg
2101-S02-12-18	04/25/2013	1	Zinc	52	Yes		1.6	mg/kg
2101-S02-1-6	04/25/2013	1	Aluminum	6400	Yes		7.9	mg/kg
2101-S02-1-6	04/25/2013	1	Antimony	1.6	Yes	U	1.6	mg/kg
2101-S02-1-6	04/25/2013	1	Arsenic	4.5	Yes		0.64	mg/kg
2101-S02-1-6	04/25/2013	1	Barium	55	Yes		7.9	mg/kg
2101-S02-1-6	04/25/2013	1	Beryllium	0.24	Yes	U	0.24	mg/kg
2101-S02-1-6	04/25/2013	1	Cadmium	16	Yes		0.24	mg/kg
2101-S02-1-6	04/25/2013	1	Calcium	1900	Yes		40	mg/kg
2101-S02-1-6	04/25/2013	1	Chromium	18	Yes		0.40	mg/kg
2101-S02-1-6	04/25/2013	1	Cobalt	5.8	Yes		1.6	mg/kg
2101-S02-1-6	04/25/2013	1	Copper	49	Yes		0.79	mg/kg
2101-S02-1-6	04/25/2013	1	Iron	11000	Yes		4.0	mg/kg
2101-S02-1-6	04/25/2013	1	Lead	300	Yes		0.64	mg/kg
2101-S02-1-6	04/25/2013	1	Magnesium	2200	Yes		40	mg/kg

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S02-1-6	04/25/2013	1	Manganese	220	Yes		0.40	mg/kg
2101-S02-1-6	04/25/2013	1	Molybdenum	0.79	Yes	U	0.79	mg/kg
2101-S02-1-6	04/25/2013	1	Nickel	20	Yes		1.6	mg/kg
2101-S02-1-6	04/25/2013	1	Potassium	710	Yes		40	mg/kg
2101-S02-1-6	04/25/2013	1	Selenium	1.6	Yes	U	1.6	mg/kg
2101-S02-1-6	04/25/2013	1	Silver	9.6	Yes		0.40	mg/kg
2101-S02-1-6	04/25/2013	1	Sodium	360	Yes		79	mg/kg
2101-S02-1-6	04/25/2013	1	Thallium	1.6	Yes	U	1.6	mg/kg
2101-S02-1-6	04/25/2013	1	Tin	4.0	Yes		0.79	mg/kg
2101-S02-1-6	04/25/2013	1	Vanadium	31	Yes		1.6	mg/kg
2101-S02-1-6	04/25/2013	1	Zinc	97	Yes		1.6	mg/kg
2101-S02-18-24	04/25/2013	1	Aluminum	6700	Yes		8.0	mg/kg
2101-S02-18-24	04/25/2013	1	Antimony	1.6	Yes	U	1.6	mg/kg
2101-S02-18-24	04/25/2013	1	Arsenic	3.2	Yes		0.64	mg/kg
2101-S02-18-24	04/25/2013	1	Barium	50	Yes		8.0	mg/kg
2101-S02-18-24	04/25/2013	1	Beryllium	0.24	Yes		0.24	mg/kg
2101-S02-18-24	04/25/2013	1	Cadmium	9.9	Yes		0.24	mg/kg
2101-S02-18-24	04/25/2013	1	Calcium	810	Yes		40	mg/kg
2101-S02-18-24	04/25/2013	1	Chromium	20	Yes		0.40	mg/kg
2101-S02-18-24	04/25/2013	1	Cobalt	7.6	Yes		1.6	mg/kg
2101-S02-18-24	04/25/2013	1	Copper	30	Yes		0.80	mg/kg
2101-S02-18-24	04/25/2013	1	Iron	11000	Yes		4.0	mg/kg
2101-S02-18-24	04/25/2013	1	Lead	110	Yes		0.64	mg/kg
2101-S02-18-24	04/25/2013	1	Magnesium	1700	Yes		40	mg/kg
2101-S02-18-24	04/25/2013	1	Manganese	270	Yes		0.40	mg/kg
2101-S02-18-24	04/25/2013	1	Molybdenum	0.80	Yes	U	0.80	mg/kg
2101-S02-18-24	04/25/2013	1	Nickel	22	Yes		1.6	mg/kg
2101-S02-18-24	04/25/2013	1	Potassium	800	Yes		40	mg/kg
2101-S02-18-24	04/25/2013	1	Selenium	1.6	Yes	U	1.6	mg/kg
2101-S02-18-24	04/25/2013	1	Silver	9.7	Yes		0.40	mg/kg
2101-S02-18-24	04/25/2013	1	Sodium	180	Yes		80	mg/kg
2101-S02-18-24	04/25/2013	1	Thallium	1.6	Yes	U	1.6	mg/kg
2101-S02-18-24	04/25/2013	1	Tin	2.8	Yes		0.80	mg/kg
2101-S02-18-24	04/25/2013	1	Vanadium	23	Yes		1.6	mg/kg

Note: This printed Excel file is excerpted from the original data spreadsheet.

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S02-18-24	04/25/2013	1	Zinc	58	Yes		1.6	mg/kg
2101-S02-6-12	04/25/2013	1	Aluminum	6400	Yes		8.1	mg/kg
2101-S02-6-12	04/25/2013	1	Antimony	1.6	Yes	U	1.6	mg/kg
2101-S02-6-12	04/25/2013	1	Arsenic	2.8	Yes		0.65	mg/kg
2101-S02-6-12	04/25/2013	1	Barium	49	Yes		8.1	mg/kg
2101-S02-6-12	04/25/2013	1	Beryllium	0.24	Yes	U	0.24	mg/kg
2101-S02-6-12	04/25/2013	1	Cadmium	9.2	Yes		0.24	mg/kg
2101-S02-6-12	04/25/2013	1	Calcium	870	Yes		40	mg/kg
2101-S02-6-12	04/25/2013	1	Chromium	18	Yes		0.40	mg/kg
2101-S02-6-12	04/25/2013	1	Cobalt	5.9	Yes		1.6	mg/kg
2101-S02-6-12	04/25/2013	1	Copper	36	Yes		0.81	mg/kg
2101-S02-6-12	04/25/2013	1	Iron	11000	Yes		4.0	mg/kg
2101-S02-6-12	04/25/2013	1	Lead	73	Yes		0.65	mg/kg
2101-S02-6-12	04/25/2013	1	Magnesium	1800	Yes		40	mg/kg
2101-S02-6-12	04/25/2013	1	Manganese	230	Yes		0.40	mg/kg
2101-S02-6-12	04/25/2013	1	Molybdenum	0.81	Yes	U	0.81	mg/kg
2101-S02-6-12	04/25/2013	1	Nickel	22	Yes		1.6	mg/kg
2101-S02-6-12	04/25/2013	1	Potassium	760	Yes		40	mg/kg
2101-S02-6-12	04/25/2013	1	Selenium	1.6	Yes	U	1.6	mg/kg
2101-S02-6-12	04/25/2013	1	Silver	9.4	Yes		0.40	mg/kg
2101-S02-6-12	04/25/2013	1	Sodium	230	Yes		81	mg/kg
2101-S02-6-12	04/25/2013	1	Thallium	1.6	Yes	U	1.6	mg/kg
2101-S02-6-12	04/25/2013	1	Tin	1.5	Yes		0.81	mg/kg
2101-S02-6-12	04/25/2013	1	Vanadium	25	Yes		1.6	mg/kg
2101-S02-6-12	04/25/2013	1	Zinc	57	Yes		1.6	mg/kg
2101-S03-0-1	04/25/2013	1	Aluminum	8800	Yes		11	mg/kg
2101-S03-0-1	04/25/2013	1	Antimony	3.1	Yes		2.2	mg/kg
2101-S03-0-1	04/25/2013	1	Arsenic	8.8	Yes		0.86	mg/kg
2101-S03-0-1	04/25/2013	1	Barium	79	Yes		11	mg/kg
2101-S03-0-1	04/25/2013	1	Beryllium	0.32	Yes	U	0.32	mg/kg
2101-S03-0-1	04/25/2013	1	Cadmium	10	Yes		0.32	mg/kg
2101-S03-0-1	04/25/2013	1	Calcium	5000	Yes		54	mg/kg
2101-S03-0-1	04/25/2013	1	Chromium	31	Yes		0.54	mg/kg
2101-S03-0-1	04/25/2013	1	Cobalt	7.5	Yes		2.2	mg/kg

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S03-0-1	04/25/2013	1	Copper	53	Yes		1.1	mg/kg
2101-S03-0-1	04/25/2013	1	Iron	15000	Yes		5.4	mg/kg
2101-S03-0-1	04/25/2013	1	Lead	380	Yes		0.86	mg/kg
2101-S03-0-1	04/25/2013	1	Magnesium	2800	Yes		54	mg/kg
2101-S03-0-1	04/25/2013	1	Manganese	270	Yes		0.54	mg/kg
2101-S03-0-1	04/25/2013	1	Molybdenum	1.1	Yes	U	1.1	mg/kg
2101-S03-0-1	04/25/2013	1	Nickel	26	Yes		2.2	mg/kg
2101-S03-0-1	04/25/2013	1	Potassium	690	Yes		54	mg/kg
2101-S03-0-1	04/25/2013	1	Selenium	2.2	Yes	U	2.2	mg/kg
2101-S03-0-1	04/25/2013	1	Silver	11	Yes		0.54	mg/kg
2101-S03-0-1	04/25/2013	1	Sodium	110	Yes	U	110	mg/kg
2101-S03-0-1	04/25/2013	1	Thallium	2.2	Yes	U	2.2	mg/kg
2101-S03-0-1	04/25/2013	1	Tin	52	Yes		1.1	mg/kg
2101-S03-0-1	04/25/2013	1	Vanadium	40	Yes		2.2	mg/kg
2101-S03-0-1	04/25/2013	1	Zinc	170	Yes		2.2	mg/kg
2101-S03-12-18	04/25/2013	1	Aluminum	7100	Yes		8.5	mg/kg
2101-S03-12-18	04/25/2013	1	Antimony	1.7	Yes	U	1.7	mg/kg
2101-S03-12-18	04/25/2013	1	Arsenic	1.6	Yes		0.68	mg/kg
2101-S03-12-18	04/25/2013	1	Barium	34	Yes		8.5	mg/kg
2101-S03-12-18	04/25/2013	1	Beryllium	0.26	Yes	U	0.26	mg/kg
2101-S03-12-18	04/25/2013	1	Cadmium	1.7	Yes		0.26	mg/kg
2101-S03-12-18	04/25/2013	1	Calcium	630	Yes		43	mg/kg
2101-S03-12-18	04/25/2013	1	Chromium	24	Yes		0.43	mg/kg
2101-S03-12-18	04/25/2013	1	Cobalt	7.3	Yes		1.7	mg/kg
2101-S03-12-18	04/25/2013	1	Copper	23	Yes		0.85	mg/kg
2101-S03-12-18	04/25/2013	1	Iron	13000	Yes		4.3	mg/kg
2101-S03-12-18	04/25/2013	1	Lead	45	Yes		0.68	mg/kg
2101-S03-12-18	04/25/2013	1	Magnesium	1900	Yes		43	mg/kg
2101-S03-12-18	04/25/2013	1	Manganese	200	Yes		0.43	mg/kg
2101-S03-12-18	04/25/2013	1	Molybdenum	0.85	Yes	U	0.85	mg/kg
2101-S03-12-18	04/25/2013	1	Nickel	64	Yes		1.7	mg/kg
2101-S03-12-18	04/25/2013	1	Potassium	510	Yes		43	mg/kg
2101-S03-12-18	04/25/2013	1	Selenium	1.7	Yes	U	1.7	mg/kg
2101-S03-12-18	04/25/2013	1	Silver	9.4	Yes		0.43	mg/kg

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S03-12-18	04/25/2013	1	Sodium	85	Yes	U	85	mg/kg
2101-S03-12-18	04/25/2013	1	Thallium	1.7	Yes	U	1.7	mg/kg
2101-S03-12-18	04/25/2013	1	Tin	18	Yes		0.85	mg/kg
2101-S03-12-18	04/25/2013	1	Vanadium	24	Yes		1.7	mg/kg
2101-S03-12-18	04/25/2013	1	Zinc	36	Yes		1.7	mg/kg
2101-S03-1-6	04/25/2013	1	Aluminum	7600	Yes		9.0	mg/kg
2101-S03-1-6	04/25/2013	1	Antimony	2.2	Yes		1.8	mg/kg
2101-S03-1-6	04/25/2013	1	Arsenic	6.1	Yes		0.72	mg/kg
2101-S03-1-6	04/25/2013	1	Barium	68	Yes		9.0	mg/kg
2101-S03-1-6	04/25/2013	1	Beryllium	0.27	Yes	U	0.27	mg/kg
2101-S03-1-6	04/25/2013	1	Cadmium	5.6	Yes		0.27	mg/kg
2101-S03-1-6	04/25/2013	1	Calcium	1400	Yes		45	mg/kg
2101-S03-1-6	04/25/2013	1	Chromium	23	Yes		0.45	mg/kg
2101-S03-1-6	04/25/2013	1	Cobalt	5.9	Yes		1.8	mg/kg
2101-S03-1-6	04/25/2013	1	Copper	44	Yes		0.90	mg/kg
2101-S03-1-6	04/25/2013	1	Iron	13000	Yes		4.5	mg/kg
2101-S03-1-6	04/25/2013	1	Lead	240	Yes		0.72	mg/kg
2101-S03-1-6	04/25/2013	1	Magnesium	1800	Yes		45	mg/kg
2101-S03-1-6	04/25/2013	1	Manganese	180	Yes		0.45	mg/kg
2101-S03-1-6	04/25/2013	1	Molybdenum	0.90	Yes	U	0.90	mg/kg
2101-S03-1-6	04/25/2013	1	Nickel	24	Yes		1.8	mg/kg
2101-S03-1-6	04/25/2013	1	Potassium	410	Yes		45	mg/kg
2101-S03-1-6	04/25/2013	1	Selenium	1.8	Yes	U	1.8	mg/kg
2101-S03-1-6	04/25/2013	1	Silver	8.9	Yes		0.45	mg/kg
2101-S03-1-6	04/25/2013	1	Sodium	90	Yes	U	90	mg/kg
2101-S03-1-6	04/25/2013	1	Thallium	1.8	Yes	U	1.8	mg/kg
2101-S03-1-6	04/25/2013	1	Tin	55	Yes		0.90	mg/kg
2101-S03-1-6	04/25/2013	1	Vanadium	28	Yes		1.8	mg/kg
2101-S03-1-6	04/25/2013	1	Zinc	78	Yes		1.8	mg/kg
2101-S03-18-24	04/25/2013	1	Aluminum	9600	Yes		8.2	mg/kg
2101-S03-18-24	04/25/2013	1	Antimony	1.6	Yes	U	1.6	mg/kg
2101-S03-18-24	04/25/2013	1	Arsenic	1.0	Yes		0.66	mg/kg
2101-S03-18-24	04/25/2013	1	Barium	44	Yes		8.2	mg/kg
2101-S03-18-24	04/25/2013	1	Beryllium	0.25	Yes	U	0.25	mg/kg

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S03-18-24	04/25/2013	1	Cadmium	1.4	Yes		0.25	mg/kg
2101-S03-18-24	04/25/2013	1	Calcium	760	Yes		41	mg/kg
2101-S03-18-24	04/25/2013	1	Chromium	21	Yes		0.41	mg/kg
2101-S03-18-24	04/25/2013	1	Cobalt	15	Yes		1.6	mg/kg
2101-S03-18-24	04/25/2013	1	Copper	30	Yes		0.82	mg/kg
2101-S03-18-24	04/25/2013	1	Iron	17000	Yes		4.1	mg/kg
2101-S03-18-24	04/25/2013	1	Lead	19	Yes		0.66	mg/kg
2101-S03-18-24	04/25/2013	1	Magnesium	8900	Yes		41	mg/kg
2101-S03-18-24	04/25/2013	1	Manganese	280	Yes		0.41	mg/kg
2101-S03-18-24	04/25/2013	1	Molybdenum	0.82	Yes	U	0.82	mg/kg
2101-S03-18-24	04/25/2013	1	Nickel	86	Yes		1.6	mg/kg
2101-S03-18-24	04/25/2013	1	Potassium	720	Yes		41	mg/kg
2101-S03-18-24	04/25/2013	1	Selenium	1.6	Yes	U	1.6	mg/kg
2101-S03-18-24	04/25/2013	1	Silver	13	Yes		0.41	mg/kg
2101-S03-18-24	04/25/2013	1	Sodium	120	Yes		82	mg/kg
2101-S03-18-24	04/25/2013	1	Thallium	1.6	Yes	U	1.6	mg/kg
2101-S03-18-24	04/25/2013	1	Tin	1.5	Yes		0.82	mg/kg
2101-S03-18-24	04/25/2013	1	Vanadium	24	Yes		1.6	mg/kg
2101-S03-18-24	04/25/2013	1	Zinc	40	Yes		1.6	mg/kg
2101-S03-6-12	04/25/2013	1	Aluminum	8300	Yes		8.6	mg/kg
2101-S03-6-12	04/25/2013	1	Antimony	1.7	Yes		1.7	mg/kg
2101-S03-6-12	04/25/2013	1	Arsenic	2.5	Yes		0.69	mg/kg
2101-S03-6-12	04/25/2013	1	Barium	56	Yes		8.6	mg/kg
2101-S03-6-12	04/25/2013	1	Beryllium	0.26	Yes	U	0.26	mg/kg
2101-S03-6-12	04/25/2013	1	Cadmium	2.8	Yes		0.26	mg/kg
2101-S03-6-12	04/25/2013	1	Calcium	780	Yes		43	mg/kg
2101-S03-6-12	04/25/2013	1	Chromium	27	Yes		0.43	mg/kg
2101-S03-6-12	04/25/2013	1	Cobalt	10	Yes		1.7	mg/kg
2101-S03-6-12	04/25/2013	1	Copper	30	Yes		0.86	mg/kg
2101-S03-6-12	04/25/2013	1	Iron	13000	Yes		4.3	mg/kg
2101-S03-6-12	04/25/2013	1	Lead	81	Yes		0.69	mg/kg
2101-S03-6-12	04/25/2013	1	Magnesium	2300	Yes		43	mg/kg
2101-S03-6-12	04/25/2013	1	Manganese	240	Yes		0.43	mg/kg
2101-S03-6-12	04/25/2013	1	Molybdenum	0.86	Yes	U	0.86	mg/kg

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S03-6-12	04/25/2013	1	Nickel	77	Yes		1.7	mg/kg
2101-S03-6-12	04/25/2013	1	Potassium	570	Yes		43	mg/kg
2101-S03-6-12	04/25/2013	1	Selenium	1.7	Yes	U	1.7	mg/kg
2101-S03-6-12	04/25/2013	1	Silver	11	Yes		0.43	mg/kg
2101-S03-6-12	04/25/2013	1	Sodium	86	Yes	U	86	mg/kg
2101-S03-6-12	04/25/2013	1	Thallium	1.7	Yes	U	1.7	mg/kg
2101-S03-6-12	04/25/2013	1	Tin	14	Yes		0.86	mg/kg
2101-S03-6-12	04/25/2013	1	Vanadium	23	Yes		1.7	mg/kg
2101-S03-6-12	04/25/2013	1	Zinc	45	Yes		1.7	mg/kg
2101-S05-0-1	04/25/2013	1	Aluminum	10000	Yes		11	mg/kg
2101-S05-0-1	04/25/2013	1	Antimony	2.1	Yes	U	2.1	mg/kg
2101-S05-0-1	04/25/2013	1	Arsenic	17	Yes		0.86	mg/kg
2101-S05-0-1	04/25/2013	1	Barium	69	Yes		11	mg/kg
2101-S05-0-1	04/25/2013	1	Beryllium	0.34	Yes		0.32	mg/kg
2101-S05-0-1	04/25/2013	1	Cadmium	5.3	Yes		0.32	mg/kg
2101-S05-0-1	04/25/2013	1	Calcium	12000	Yes		54	mg/kg
2101-S05-0-1	04/25/2013	1	Chromium	22	Yes		0.54	mg/kg
2101-S05-0-1	04/25/2013	1	Cobalt	4.5	Yes		2.1	mg/kg
2101-S05-0-1	04/25/2013	1	Copper	42	Yes		1.1	mg/kg
2101-S05-0-1	04/25/2013	1	Iron	15000	Yes		5.4	mg/kg
2101-S05-0-1	04/25/2013	1	Lead	92	Yes		0.86	mg/kg
2101-S05-0-1	04/25/2013	1	Magnesium	5100	Yes		54	mg/kg
2101-S05-0-1	04/25/2013	1	Manganese	210	Yes		0.54	mg/kg
2101-S05-0-1	04/25/2013	1	Molybdenum	1.1	Yes	U	1.1	mg/kg
2101-S05-0-1	04/25/2013	1	Nickel	12	Yes		2.1	mg/kg
2101-S05-0-1	04/25/2013	1	Potassium	930	Yes		54	mg/kg
2101-S05-0-1	04/25/2013	1	Selenium	2.1	Yes	U	2.1	mg/kg
2101-S05-0-1	04/25/2013	1	Silver	11	Yes		0.54	mg/kg
2101-S05-0-1	04/25/2013	1	Sodium	110	Yes	U	110	mg/kg
2101-S05-0-1	04/25/2013	1	Thallium	2.1	Yes	U	2.1	mg/kg
2101-S05-0-1	04/25/2013	1	Tin	7.6	Yes		1.1	mg/kg
2101-S05-0-1	04/25/2013	1	Vanadium	25	Yes		2.1	mg/kg
2101-S05-0-1	04/25/2013	1	Zinc	140	Yes		2.1	mg/kg
2101-S05-12-18	04/25/2013	1	Aluminum	8500	Yes		8.6	mg/kg

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S05-12-18	04/25/2013	1	Antimony	1.7	Yes	U	1.7	mg/kg
2101-S05-12-18	04/25/2013	1	Arsenic	1.3	Yes		0.69	mg/kg
2101-S05-12-18	04/25/2013	1	Barium	59	Yes		8.6	mg/kg
2101-S05-12-18	04/25/2013	1	Beryllium	0.26	Yes		0.26	mg/kg
2101-S05-12-18	04/25/2013	1	Cadmium	1.0	Yes		0.26	mg/kg
2101-S05-12-18	04/25/2013	1	Calcium	900	Yes		43	mg/kg
2101-S05-12-18	04/25/2013	1	Chromium	29	Yes		0.43	mg/kg
2101-S05-12-18	04/25/2013	1	Cobalt	7.4	Yes		1.7	mg/kg
2101-S05-12-18	04/25/2013	1	Copper	20	Yes		0.86	mg/kg
2101-S05-12-18	04/25/2013	1	Iron	14000	Yes		4.3	mg/kg
2101-S05-12-18	04/25/2013	1	Lead	8.5	Yes		0.69	mg/kg
2101-S05-12-18	04/25/2013	1	Magnesium	2400	Yes		43	mg/kg
2101-S05-12-18	04/25/2013	1	Manganese	260	Yes		0.43	mg/kg
2101-S05-12-18	04/25/2013	1	Molybdenum	0.86	Yes	U	0.86	mg/kg
2101-S05-12-18	04/25/2013	1	Nickel	27	Yes		1.7	mg/kg
2101-S05-12-18	04/25/2013	1	Potassium	1300	Yes		43	mg/kg
2101-S05-12-18	04/25/2013	1	Selenium	1.7	Yes	U	1.7	mg/kg
2101-S05-12-18	04/25/2013	1	Silver	16	Yes		0.43	mg/kg
2101-S05-12-18	04/25/2013	1	Sodium	86	Yes	U	86	mg/kg
2101-S05-12-18	04/25/2013	1	Thallium	1.7	Yes	U	1.7	mg/kg
2101-S05-12-18	04/25/2013	1	Tin	0.86	Yes	U	0.86	mg/kg
2101-S05-12-18	04/25/2013	1	Vanadium	29	Yes		1.7	mg/kg
2101-S05-12-18	04/25/2013	1	Zinc	30	Yes		1.7	mg/kg
2101-S05-1-6	04/25/2013	1	Aluminum	6900	Yes		8.5	mg/kg
2101-S05-1-6	04/25/2013	1	Antimony	1.7	Yes	U	1.7	mg/kg
2101-S05-1-6	04/25/2013	1	Arsenic	5.6	Yes		0.68	mg/kg
2101-S05-1-6	04/25/2013	1	Barium	98	Yes		8.5	mg/kg
2101-S05-1-6	04/25/2013	1	Beryllium	0.25	Yes	U	0.25	mg/kg
2101-S05-1-6	04/25/2013	1	Cadmium	2.6	Yes		0.25	mg/kg
2101-S05-1-6	04/25/2013	1	Calcium	6100	Yes		42	mg/kg
2101-S05-1-6	04/25/2013	1	Chromium	16	Yes		0.42	mg/kg
2101-S05-1-6	04/25/2013	1	Cobalt	5.1	Yes		1.7	mg/kg
2101-S05-1-6	04/25/2013	1	Copper	30	Yes		0.85	mg/kg
2101-S05-1-6	04/25/2013	1	Iron	12000	Yes		4.2	mg/kg

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S05-1-6	04/25/2013	1	Lead	110	Yes		0.68	mg/kg
2101-S05-1-6	04/25/2013	1	Magnesium	2700	Yes		42	mg/kg
2101-S05-1-6	04/25/2013	1	Manganese	270	Yes		0.42	mg/kg
2101-S05-1-6	04/25/2013	1	Molybdenum	0.85	Yes	U	0.85	mg/kg
2101-S05-1-6	04/25/2013	1	Nickel	13	Yes		1.7	mg/kg
2101-S05-1-6	04/25/2013	1	Potassium	780	Yes		42	mg/kg
2101-S05-1-6	04/25/2013	1	Selenium	1.7	Yes	U	1.7	mg/kg
2101-S05-1-6	04/25/2013	1	Silver	9.4	Yes		0.42	mg/kg
2101-S05-1-6	04/25/2013	1	Sodium	85	Yes	U	85	mg/kg
2101-S05-1-6	04/25/2013	1	Thallium	1.7	Yes	U	1.7	mg/kg
2101-S05-1-6	04/25/2013	1	Tin	3.7	Yes		0.85	mg/kg
2101-S05-1-6	04/25/2013	1	Vanadium	21	Yes		1.7	mg/kg
2101-S05-1-6	04/25/2013	1	Zinc	110	Yes		1.7	mg/kg
2101-S05-18-24	04/25/2013	1	Aluminum	8600	Yes		8.3	mg/kg
2101-S05-18-24	04/25/2013	1	Antimony	1.7	Yes	U	1.7	mg/kg
2101-S05-18-24	04/25/2013	1	Arsenic	1.5	Yes		0.66	mg/kg
2101-S05-18-24	04/25/2013	1	Barium	63	Yes		8.3	mg/kg
2101-S05-18-24	04/25/2013	1	Beryllium	0.25	Yes	U	0.25	mg/kg
2101-S05-18-24	04/25/2013	1	Cadmium	3.9	Yes		0.25	mg/kg
2101-S05-18-24	04/25/2013	1	Calcium	1200	Yes		41	mg/kg
2101-S05-18-24	04/25/2013	1	Chromium	29	Yes		0.41	mg/kg
2101-S05-18-24	04/25/2013	1	Cobalt	9.2	Yes		1.7	mg/kg
2101-S05-18-24	04/25/2013	1	Copper	28	Yes		0.83	mg/kg
2101-S05-18-24	04/25/2013	1	Iron	15000	Yes		4.1	mg/kg
2101-S05-18-24	04/25/2013	1	Lead	13	Yes		0.66	mg/kg
2101-S05-18-24	04/25/2013	1	Magnesium	2700	Yes		41	mg/kg
2101-S05-18-24	04/25/2013	1	Manganese	280	Yes		0.41	mg/kg
2101-S05-18-24	04/25/2013	1	Molybdenum	0.83	Yes	U	0.83	mg/kg
2101-S05-18-24	04/25/2013	1	Nickel	32	Yes		1.7	mg/kg
2101-S05-18-24	04/25/2013	1	Potassium	1600	Yes		41	mg/kg
2101-S05-18-24	04/25/2013	1	Selenium	1.7	Yes	U	1.7	mg/kg
2101-S05-18-24	04/25/2013	1	Silver	17	Yes		0.41	mg/kg
2101-S05-18-24	04/25/2013	1	Sodium	83	Yes	U	83	mg/kg
2101-S05-18-24	04/25/2013	1	Thallium	1.7	Yes	U	1.7	mg/kg

Note: This printed Excel file is excerpted from the original data spreadsheet.

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S05-18-24	04/25/2013	1	Tin	2.6	Yes		0.83	mg/kg
2101-S05-18-24	04/25/2013	1	Vanadium	27	Yes		1.7	mg/kg
2101-S05-18-24	04/25/2013	1	Zinc	40	Yes		1.7	mg/kg
2101-S05-6-12	04/25/2013	1	Aluminum	9700	Yes		8.4	mg/kg
2101-S05-6-12	04/25/2013	1	Antimony	1.7	Yes	U	1.7	mg/kg
2101-S05-6-12	04/25/2013	1	Arsenic	1.6	Yes		0.67	mg/kg
2101-S05-6-12	04/25/2013	1	Barium	70	Yes		8.4	mg/kg
2101-S05-6-12	04/25/2013	1	Beryllium	0.25	Yes	U	0.25	mg/kg
2101-S05-6-12	04/25/2013	1	Cadmium	2.2	Yes		0.25	mg/kg
2101-S05-6-12	04/25/2013	1	Calcium	1200	Yes		42	mg/kg
2101-S05-6-12	04/25/2013	1	Chromium	30	Yes		0.42	mg/kg
2101-S05-6-12	04/25/2013	1	Cobalt	8.1	Yes		1.7	mg/kg
2101-S05-6-12	04/25/2013	1	Copper	25	Yes		0.84	mg/kg
2101-S05-6-12	04/25/2013	1	Iron	16000	Yes		4.2	mg/kg
2101-S05-6-12	04/25/2013	1	Lead	18	Yes		0.67	mg/kg
2101-S05-6-12	04/25/2013	1	Magnesium	2800	Yes		42	mg/kg
2101-S05-6-12	04/25/2013	1	Manganese	300	Yes		0.42	mg/kg
2101-S05-6-12	04/25/2013	1	Molybdenum	0.84	Yes	U	0.84	mg/kg
2101-S05-6-12	04/25/2013	1	Nickel	30	Yes		1.7	mg/kg
2101-S05-6-12	04/25/2013	1	Potassium	1600	Yes		42	mg/kg
2101-S05-6-12	04/25/2013	1	Selenium	1.7	Yes	U	1.7	mg/kg
2101-S05-6-12	04/25/2013	1	Silver	18	Yes		0.42	mg/kg
2101-S05-6-12	04/25/2013	1	Sodium	84	Yes	U	84	mg/kg
2101-S05-6-12	04/25/2013	1	Thallium	1.7	Yes	U	1.7	mg/kg
2101-S05-6-12	04/25/2013	1	Tin	0.84	Yes	U	0.84	mg/kg
2101-S05-6-12	04/25/2013	1	Vanadium	27	Yes		1.7	mg/kg
2101-S05-6-12	04/25/2013	1	Zinc	40	Yes		1.7	mg/kg
2101-S06-0-1	04/25/2013	1	Aluminum	6000	Yes		10	mg/kg
2101-S06-0-1	04/25/2013	1	Antimony	3.2	Yes		2.1	mg/kg
2101-S06-0-1	04/25/2013	1	Arsenic	5.3	Yes		0.83	mg/kg
2101-S06-0-1	04/25/2013	1	Barium	81	Yes		10	mg/kg
2101-S06-0-1	04/25/2013	1	Beryllium	0.31	Yes	U	0.31	mg/kg
2101-S06-0-1	04/25/2013	1	Cadmium	7.6	Yes		0.31	mg/kg
2101-S06-0-1	04/25/2013	1	Calcium	27000	Yes		52	mg/kg

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S06-0-1	04/25/2013	1	Chromium	33	Yes		0.52	mg/kg
2101-S06-0-1	04/25/2013	1	Cobalt	7.6	Yes		2.1	mg/kg
2101-S06-0-1	04/25/2013	1	Copper	95	Yes		1.0	mg/kg
2101-S06-0-1	04/25/2013	1	Iron	12000	Yes		5.2	mg/kg
2101-S06-0-1	04/25/2013	1	Lead	310	Yes		0.83	mg/kg
2101-S06-0-1	04/25/2013	1	Magnesium	14000	Yes		52	mg/kg
2101-S06-0-1	04/25/2013	1	Manganese	210	Yes		0.52	mg/kg
2101-S06-0-1	04/25/2013	1	Molybdenum	1.6	Yes		1.0	mg/kg
2101-S06-0-1	04/25/2013	1	Nickel	27	Yes		2.1	mg/kg
2101-S06-0-1	04/25/2013	1	Potassium	620	Yes		52	mg/kg
2101-S06-0-1	04/25/2013	1	Selenium	2.1	Yes	U	2.1	mg/kg
2101-S06-0-1	04/25/2013	1	Silver	8.7	Yes		0.52	mg/kg
2101-S06-0-1	04/25/2013	1	Sodium	280	Yes		100	mg/kg
2101-S06-0-1	04/25/2013	1	Thallium	2.1	Yes	U	2.1	mg/kg
2101-S06-0-1	04/25/2013	1	Tin	25	Yes		1.0	mg/kg
2101-S06-0-1	04/25/2013	1	Vanadium	25	Yes		2.1	mg/kg
2101-S06-0-1	04/25/2013	1	Zinc	400	Yes		2.1	mg/kg
2101-S06-12-18	04/25/2013	1	Aluminum	6400	Yes		9.2	mg/kg
2101-S06-12-18	04/25/2013	1	Antimony	2.5	Yes		1.8	mg/kg
2101-S06-12-18	04/25/2013	1	Arsenic	8.1	Yes		0.74	mg/kg
2101-S06-12-18	04/25/2013	1	Barium	230	Yes		9.2	mg/kg
2101-S06-12-18	04/25/2013	1	Beryllium	0.31	Yes		0.28	mg/kg
2101-S06-12-18	04/25/2013	1	Cadmium	7.4	Yes		0.28	mg/kg
2101-S06-12-18	04/25/2013	1	Calcium	7300	Yes		46	mg/kg
2101-S06-12-18	04/25/2013	1	Chromium	30	Yes		0.46	mg/kg
2101-S06-12-18	04/25/2013	1	Cobalt	6.1	Yes		1.8	mg/kg
2101-S06-12-18	04/25/2013	1	Copper	110	Yes		0.92	mg/kg
2101-S06-12-18	04/25/2013	1	Iron	14000	Yes		4.6	mg/kg
2101-S06-12-18	04/25/2013	1	Lead	460	Yes		0.74	mg/kg
2101-S06-12-18	04/25/2013	1	Magnesium	3800	Yes		46	mg/kg
2101-S06-12-18	04/25/2013	1	Manganese	170	Yes		0.46	mg/kg
2101-S06-12-18	04/25/2013	1	Molybdenum	0.92	Yes	U	0.92	mg/kg
2101-S06-12-18	04/25/2013	1	Nickel	26	Yes		1.8	mg/kg
2101-S06-12-18	04/25/2013	1	Potassium	490	Yes		46	mg/kg

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S06-12-18	04/25/2013	1	Selenium	1.8	Yes	U	1.8	mg/kg
2101-S06-12-18	04/25/2013	1	Silver	8.5	Yes		0.46	mg/kg
2101-S06-12-18	04/25/2013	1	Sodium	160	Yes		92	mg/kg
2101-S06-12-18	04/25/2013	1	Thallium	1.8	Yes	U	1.8	mg/kg
2101-S06-12-18	04/25/2013	1	Tin	48	Yes		0.92	mg/kg
2101-S06-12-18	04/25/2013	1	Vanadium	26	Yes		1.8	mg/kg
2101-S06-12-18	04/25/2013	1	Zinc	440	Yes		1.8	mg/kg
2101-S06-1-6	04/25/2013	1	Aluminum	7300	Yes		9.8	mg/kg
2101-S06-1-6	04/25/2013	1	Antimony	2.6	Yes		2.0	mg/kg
2101-S06-1-6	04/25/2013	1	Arsenic	8.0	Yes		0.79	mg/kg
2101-S06-1-6	04/25/2013	1	Barium	120	Yes		9.8	mg/kg
2101-S06-1-6	04/25/2013	1	Beryllium	0.34	Yes		0.29	mg/kg
2101-S06-1-6	04/25/2013	1	Cadmium	9.8	Yes		0.29	mg/kg
2101-S06-1-6	04/25/2013	1	Calcium	15000	Yes		49	mg/kg
2101-S06-1-6	04/25/2013	1	Chromium	30	Yes		0.49	mg/kg
2101-S06-1-6	04/25/2013	1	Cobalt	6.0	Yes		2.0	mg/kg
2101-S06-1-6	04/25/2013	1	Copper	110	Yes		0.98	mg/kg
2101-S06-1-6	04/25/2013	1	Iron	13000	Yes		4.9	mg/kg
2101-S06-1-6	04/25/2013	1	Lead	530	Yes		0.79	mg/kg
2101-S06-1-6	04/25/2013	1	Magnesium	7200	Yes		49	mg/kg
2101-S06-1-6	04/25/2013	1	Manganese	230	Yes		0.49	mg/kg
2101-S06-1-6	04/25/2013	1	Molybdenum	1.0	Yes		0.98	mg/kg
2101-S06-1-6	04/25/2013	1	Nickel	30	Yes		2.0	mg/kg
2101-S06-1-6	04/25/2013	1	Potassium	340	Yes		49	mg/kg
2101-S06-1-6	04/25/2013	1	Selenium	2.0	Yes	U	2.0	mg/kg
2101-S06-1-6	04/25/2013	1	Silver	7.7	Yes		0.49	mg/kg
2101-S06-1-6	04/25/2013	1	Sodium	180	Yes		98	mg/kg
2101-S06-1-6	04/25/2013	1	Thallium	2.0	Yes	U	2.0	mg/kg
2101-S06-1-6	04/25/2013	1	Tin	14	Yes		0.98	mg/kg
2101-S06-1-6	04/25/2013	1	Vanadium	27	Yes		2.0	mg/kg
2101-S06-1-6	04/25/2013	1	Zinc	490	Yes		2.0	mg/kg
2101-S06-18-24	04/25/2013	1	Aluminum	6800	Yes		8.8	mg/kg
2101-S06-18-24	04/25/2013	1	Antimony	1.8	Yes	U	1.8	mg/kg
2101-S06-18-24	04/25/2013	1	Arsenic	2.9	Yes		0.70	mg/kg

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S06-18-24	04/25/2013	1	Barium	53	Yes		8.8	mg/kg
2101-S06-18-24	04/25/2013	1	Beryllium	0.26	Yes	U	0.26	mg/kg
2101-S06-18-24	04/25/2013	1	Cadmium	1.8	Yes		0.26	mg/kg
2101-S06-18-24	04/25/2013	1	Calcium	1700	Yes		44	mg/kg
2101-S06-18-24	04/25/2013	1	Chromium	20	Yes		0.44	mg/kg
2101-S06-18-24	04/25/2013	1	Cobalt	5.9	Yes		1.8	mg/kg
2101-S06-18-24	04/25/2013	1	Copper	99	Yes		0.88	mg/kg
2101-S06-18-24	04/25/2013	1	Iron	12000	Yes		4.4	mg/kg
2101-S06-18-24	04/25/2013	1	Lead	270	Yes		0.70	mg/kg
2101-S06-18-24	04/25/2013	1	Magnesium	1900	Yes		44	mg/kg
2101-S06-18-24	04/25/2013	1	Manganese	130	Yes		0.44	mg/kg
2101-S06-18-24	04/25/2013	1	Molybdenum	0.88	Yes	U	0.88	mg/kg
2101-S06-18-24	04/25/2013	1	Nickel	20	Yes		1.8	mg/kg
2101-S06-18-24	04/25/2013	1	Potassium	800	Yes		44	mg/kg
2101-S06-18-24	04/25/2013	1	Selenium	1.8	Yes	U	1.8	mg/kg
2101-S06-18-24	04/25/2013	1	Silver	10	Yes		0.44	mg/kg
2101-S06-18-24	04/25/2013	1	Sodium	130	Yes		88	mg/kg
2101-S06-18-24	04/25/2013	1	Thallium	1.8	Yes	U	1.8	mg/kg
2101-S06-18-24	04/25/2013	1	Tin	110	Yes		0.88	mg/kg
2101-S06-18-24	04/25/2013	1	Vanadium	22	Yes		1.8	mg/kg
2101-S06-18-24	04/25/2013	1	Zinc	110	Yes		1.8	mg/kg
2101-S06-6-12	04/25/2013	1	Aluminum	5400	Yes		8.6	mg/kg
2101-S06-6-12	04/25/2013	1	Antimony	3.8	Yes		1.7	mg/kg
2101-S06-6-12	04/25/2013	1	Arsenic	8.0	Yes		0.69	mg/kg
2101-S06-6-12	04/25/2013	1	Barium	160	Yes		8.6	mg/kg
2101-S06-6-12	04/25/2013	1	Beryllium	0.33	Yes		0.26	mg/kg
2101-S06-6-12	04/25/2013	1	Cadmium	12	Yes		0.26	mg/kg
2101-S06-6-12	04/25/2013	1	Calcium	9800	Yes		43	mg/kg
2101-S06-6-12	04/25/2013	1	Chromium	26	Yes		0.43	mg/kg
2101-S06-6-12	04/25/2013	1	Cobalt	5.2	Yes		1.7	mg/kg
2101-S06-6-12	04/25/2013	1	Copper	170	Yes		0.86	mg/kg
2101-S06-6-12	04/25/2013	1	Iron	18000	Yes		4.3	mg/kg
2101-S06-6-12	04/25/2013	1	Lead	620	Yes		0.69	mg/kg
2101-S06-6-12	04/25/2013	1	Magnesium	4000	Yes		43	mg/kg

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S06-6-12	04/25/2013	1	Manganese	190	Yes		0.43	mg/kg
2101-S06-6-12	04/25/2013	1	Molybdenum	1.4	Yes		0.86	mg/kg
2101-S06-6-12	04/25/2013	1	Nickel	25	Yes		1.7	mg/kg
2101-S06-6-12	04/25/2013	1	Potassium	250	Yes		43	mg/kg
2101-S06-6-12	04/25/2013	1	Selenium	1.7	Yes	U	1.7	mg/kg
2101-S06-6-12	04/25/2013	1	Silver	7.2	Yes		0.43	mg/kg
2101-S06-6-12	04/25/2013	1	Sodium	140	Yes		86	mg/kg
2101-S06-6-12	04/25/2013	1	Thallium	1.7	Yes	U	1.7	mg/kg
2101-S06-6-12	04/25/2013	1	Tin	32	Yes		0.86	mg/kg
2101-S06-6-12	04/25/2013	1	Vanadium	24	Yes		1.7	mg/kg
2101-S06-6-12	04/25/2013	1	Zinc	790	Yes		1.7	mg/kg
2101-S10-0-1	04/25/2013	1	Aluminum	7700	Yes		10	mg/kg
2101-S10-0-1	04/25/2013	1	Antimony	2.0	Yes		2.0	mg/kg
2101-S10-0-1	04/25/2013	1	Arsenic	5.1	Yes		0.82	mg/kg
2101-S10-0-1	04/25/2013	1	Barium	57	Yes		10	mg/kg
2101-S10-0-1	04/25/2013	1	Beryllium	0.31	Yes	U	0.31	mg/kg
2101-S10-0-1	04/25/2013	1	Cadmium	0.87	Yes		0.31	mg/kg
2101-S10-0-1	04/25/2013	1	Calcium	7200	Yes		51	mg/kg
2101-S10-0-1	04/25/2013	1	Chromium	23	Yes		0.51	mg/kg
2101-S10-0-1	04/25/2013	1	Cobalt	6.2	Yes		2.0	mg/kg
2101-S10-0-1	04/25/2013	1	Copper	34	Yes		1.0	mg/kg
2101-S10-0-1	04/25/2013	1	Iron	13000	Yes		5.1	mg/kg
2101-S10-0-1	04/25/2013	1	Lead	190	Yes		0.82	mg/kg
2101-S10-0-1	04/25/2013	1	Magnesium	4500	Yes		51	mg/kg
2101-S10-0-1	04/25/2013	1	Manganese	240	Yes		0.51	mg/kg
2101-S10-0-1	04/25/2013	1	Molybdenum	1.0	Yes	U	1.0	mg/kg
2101-S10-0-1	04/25/2013	1	Nickel	18	Yes		2.0	mg/kg
2101-S10-0-1	04/25/2013	1	Potassium	570	Yes		51	mg/kg
2101-S10-0-1	04/25/2013	1	Selenium	2.0	Yes	U	2.0	mg/kg
2101-S10-0-1	04/25/2013	1	Silver	11	Yes		0.51	mg/kg
2101-S10-0-1	04/25/2013	1	Sodium	160	Yes		100	mg/kg
2101-S10-0-1	04/25/2013	1	Thallium	2.0	Yes	U	2.0	mg/kg
2101-S10-0-1	04/25/2013	1	Tin	7.3	Yes		1.0	mg/kg
2101-S10-0-1	04/25/2013	1	Vanadium	29	Yes		2.0	mg/kg

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S10-0-1	04/25/2013	1	Zinc	110	Yes		2.0	mg/kg
2101-S10-12-18	04/25/2013	1	Aluminum	8700	Yes		8.3	mg/kg
2101-S10-12-18	04/25/2013	1	Antimony	1.7	Yes	U	1.7	mg/kg
2101-S10-12-18	04/25/2013	1	Arsenic	3.1	Yes		0.67	mg/kg
2101-S10-12-18	04/25/2013	1	Barium	46	Yes		8.3	mg/kg
2101-S10-12-18	04/25/2013	1	Beryllium	0.33	Yes		0.25	mg/kg
2101-S10-12-18	04/25/2013	1	Cadmium	0.25	Yes		0.25	mg/kg
2101-S10-12-18	04/25/2013	1	Calcium	1200	Yes		42	mg/kg
2101-S10-12-18	04/25/2013	1	Chromium	19	Yes		0.42	mg/kg
2101-S10-12-18	04/25/2013	1	Cobalt	6.0	Yes		1.7	mg/kg
2101-S10-12-18	04/25/2013	1	Copper	16	Yes		0.83	mg/kg
2101-S10-12-18	04/25/2013	1	Iron	14000	Yes		4.2	mg/kg
2101-S10-12-18	04/25/2013	1	Lead	52	Yes		0.67	mg/kg
2101-S10-12-18	04/25/2013	1	Magnesium	2300	Yes		42	mg/kg
2101-S10-12-18	04/25/2013	1	Manganese	210	Yes		0.42	mg/kg
2101-S10-12-18	04/25/2013	1	Molybdenum	0.83	Yes	U	0.83	mg/kg
2101-S10-12-18	04/25/2013	1	Nickel	18	Yes		1.7	mg/kg
2101-S10-12-18	04/25/2013	1	Potassium	420	Yes		42	mg/kg
2101-S10-12-18	04/25/2013	1	Selenium	1.7	Yes	U	1.7	mg/kg
2101-S10-12-18	04/25/2013	1	Silver	8.1	Yes		0.42	mg/kg
2101-S10-12-18	04/25/2013	1	Sodium	83	Yes	U	83	mg/kg
2101-S10-12-18	04/25/2013	1	Thallium	1.7	Yes	U	1.7	mg/kg
2101-S10-12-18	04/25/2013	1	Tin	0.97	Yes		0.83	mg/kg
2101-S10-12-18	04/25/2013	1	Vanadium	23	Yes		1.7	mg/kg
2101-S10-12-18	04/25/2013	1	Zinc	36	Yes		1.7	mg/kg
2101-S10-1-6	04/25/2013	1	Aluminum	7600	Yes		8.3	mg/kg
2101-S10-1-6	04/25/2013	1	Antimony	1.7	Yes	U	1.7	mg/kg
2101-S10-1-6	04/25/2013	1	Arsenic	4.9	Yes		0.66	mg/kg
2101-S10-1-6	04/25/2013	1	Barium	50	Yes		8.3	mg/kg
2101-S10-1-6	04/25/2013	1	Beryllium	0.31	Yes		0.25	mg/kg
2101-S10-1-6	04/25/2013	1	Cadmium	0.83	Yes		0.25	mg/kg
2101-S10-1-6	04/25/2013	1	Calcium	2900	Yes		41	mg/kg
2101-S10-1-6	04/25/2013	1	Chromium	19	Yes		0.41	mg/kg
2101-S10-1-6	04/25/2013	1	Cobalt	5.8	Yes		1.7	mg/kg

Note: This printed Excel file is excerpted from the original data spreadsheet.

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S10-1-6	04/25/2013	1	Copper	28	Yes		0.83	mg/kg
2101-S10-1-6	04/25/2013	1	Iron	13000	Yes		4.1	mg/kg
2101-S10-1-6	04/25/2013	1	Lead	170	Yes		0.66	mg/kg
2101-S10-1-6	04/25/2013	1	Magnesium	2700	Yes		41	mg/kg
2101-S10-1-6	04/25/2013	1	Manganese	200	Yes		0.41	mg/kg
2101-S10-1-6	04/25/2013	1	Molybdenum	0.83	Yes	U	0.83	mg/kg
2101-S10-1-6	04/25/2013	1	Nickel	17	Yes		1.7	mg/kg
2101-S10-1-6	04/25/2013	1	Potassium	510	Yes		41	mg/kg
2101-S10-1-6	04/25/2013	1	Selenium	1.7	Yes	U	1.7	mg/kg
2101-S10-1-6	04/25/2013	1	Silver	9.5	Yes		0.41	mg/kg
2101-S10-1-6	04/25/2013	1	Sodium	120	Yes		83	mg/kg
2101-S10-1-6	04/25/2013	1	Thallium	1.7	Yes	U	1.7	mg/kg
2101-S10-1-6	04/25/2013	1	Tin	2.3	Yes		0.83	mg/kg
2101-S10-1-6	04/25/2013	1	Vanadium	25	Yes		1.7	mg/kg
2101-S10-1-6	04/25/2013	1	Zinc	82	Yes		1.7	mg/kg
2101-S10-18-24	04/25/2013	1	Aluminum	6900	Yes		8.2	mg/kg
2101-S10-18-24	04/25/2013	1	Antimony	1.6	Yes	U	1.6	mg/kg
2101-S10-18-24	04/25/2013	1	Arsenic	1.4	Yes		0.65	mg/kg
2101-S10-18-24	04/25/2013	1	Barium	34	Yes		8.2	mg/kg
2101-S10-18-24	04/25/2013	1	Beryllium	0.25	Yes	U	0.25	mg/kg
2101-S10-18-24	04/25/2013	1	Cadmium	0.25	Yes	U	0.25	mg/kg
2101-S10-18-24	04/25/2013	1	Calcium	900	Yes		41	mg/kg
2101-S10-18-24	04/25/2013	1	Chromium	16	Yes		0.41	mg/kg
2101-S10-18-24	04/25/2013	1	Cobalt	5.8	Yes		1.6	mg/kg
2101-S10-18-24	04/25/2013	1	Copper	14	Yes		0.82	mg/kg
2101-S10-18-24	04/25/2013	1	Iron	9800	Yes		4.1	mg/kg
2101-S10-18-24	04/25/2013	1	Lead	25	Yes		0.65	mg/kg
2101-S10-18-24	04/25/2013	1	Magnesium	2800	Yes		41	mg/kg
2101-S10-18-24	04/25/2013	1	Manganese	130	Yes		0.41	mg/kg
2101-S10-18-24	04/25/2013	1	Molybdenum	0.82	Yes	U	0.82	mg/kg
2101-S10-18-24	04/25/2013	1	Nickel	24	Yes		1.6	mg/kg
2101-S10-18-24	04/25/2013	1	Potassium	690	Yes		41	mg/kg
2101-S10-18-24	04/25/2013	1	Selenium	1.6	Yes	U	1.6	mg/kg
2101-S10-18-24	04/25/2013	1	Silver	9.3	Yes		0.41	mg/kg

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S10-18-24	04/25/2013	1	Sodium	82	Yes	U	82	mg/kg
2101-S10-18-24	04/25/2013	1	Thallium	1.6	Yes	U	1.6	mg/kg
2101-S10-18-24	04/25/2013	1	Tin	0.82	Yes	U	0.82	mg/kg
2101-S10-18-24	04/25/2013	1	Vanadium	18	Yes		1.6	mg/kg
2101-S10-18-24	04/25/2013	1	Zinc	27	Yes		1.6	mg/kg
2101-S10-6-12	04/25/2013	1	Aluminum	8400	Yes		8.2	mg/kg
2101-S10-6-12	04/25/2013	1	Antimony	4.1	Yes		1.6	mg/kg
2101-S10-6-12	04/25/2013	1	Arsenic	6.3	Yes		0.66	mg/kg
2101-S10-6-12	04/25/2013	1	Barium	46	Yes		8.2	mg/kg
2101-S10-6-12	04/25/2013	1	Beryllium	1.0	Yes		0.25	mg/kg
2101-S10-6-12	04/25/2013	1	Cadmium	1.2	Yes		0.25	mg/kg
2101-S10-6-12	04/25/2013	1	Calcium	1200	Yes		41	mg/kg
2101-S10-6-12	04/25/2013	1	Chromium	140	Yes		0.41	mg/kg
2101-S10-6-12	04/25/2013	1	Cobalt	7.9	Yes		1.6	mg/kg
2101-S10-6-12	04/25/2013	1	Copper	26	Yes		0.82	mg/kg
2101-S10-6-12	04/25/2013	1	Iron	31000	Yes		4.1	mg/kg
2101-S10-6-12	04/25/2013	1	Lead	120	Yes		0.66	mg/kg
2101-S10-6-12	04/25/2013	1	Magnesium	1700	Yes		41	mg/kg
2101-S10-6-12	04/25/2013	1	Manganese	240	Yes		0.41	mg/kg
2101-S10-6-12	04/25/2013	1	Molybdenum	0.82	Yes	U	0.82	mg/kg
2101-S10-6-12	04/25/2013	1	Nickel	280	Yes		1.6	mg/kg
2101-S10-6-12	04/25/2013	1	Potassium	280	Yes		41	mg/kg
2101-S10-6-12	04/25/2013	1	Selenium	1.6	Yes	U	1.6	mg/kg
2101-S10-6-12	04/25/2013	1	Silver	6.4	Yes		0.41	mg/kg
2101-S10-6-12	04/25/2013	1	Sodium	82	Yes	U	82	mg/kg
2101-S10-6-12	04/25/2013	1	Thallium	1.6	Yes	U	1.6	mg/kg
2101-S10-6-12	04/25/2013	1	Tin	17	Yes		0.82	mg/kg
2101-S10-6-12	04/25/2013	1	Vanadium	28	Yes		1.6	mg/kg
2101-S10-6-12	04/25/2013	1	Zinc	70	Yes		1.6	mg/kg
2101-S11-0-1	04/25/2013	1	Aluminum	7500	Yes		9.9	mg/kg
2101-S11-0-1	04/25/2013	1	Antimony	2.2	Yes		2.0	mg/kg
2101-S11-0-1	04/25/2013	1	Arsenic	5.0	Yes		0.79	mg/kg
2101-S11-0-1	04/25/2013	1	Barium	75	Yes		9.9	mg/kg
2101-S11-0-1	04/25/2013	1	Beryllium	0.30	Yes	U	0.30	mg/kg

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S11-0-1	04/25/2013	1	Cadmium	7.3	Yes		0.30	mg/kg
2101-S11-0-1	04/25/2013	1	Calcium	2400	Yes		50	mg/kg
2101-S11-0-1	04/25/2013	1	Chromium	30	Yes		0.50	mg/kg
2101-S11-0-1	04/25/2013	1	Cobalt	7.2	Yes		2.0	mg/kg
2101-S11-0-1	04/25/2013	1	Copper	54	Yes		0.99	mg/kg
2101-S11-0-1	04/25/2013	1	Iron	13000	Yes		5.0	mg/kg
2101-S11-0-1	04/25/2013	1	Lead	260	Yes		0.79	mg/kg
2101-S11-0-1	04/25/2013	1	Magnesium	2300	Yes		50	mg/kg
2101-S11-0-1	04/25/2013	1	Manganese	240	Yes		0.50	mg/kg
2101-S11-0-1	04/25/2013	1	Molybdenum	0.99	Yes	U	0.99	mg/kg
2101-S11-0-1	04/25/2013	1	Nickel	25	Yes		2.0	mg/kg
2101-S11-0-1	04/25/2013	1	Potassium	760	Yes		50	mg/kg
2101-S11-0-1	04/25/2013	1	Selenium	2.0	Yes	U	2.0	mg/kg
2101-S11-0-1	04/25/2013	1	Silver	12	Yes		0.50	mg/kg
2101-S11-0-1	04/25/2013	1	Sodium	350	Yes		99	mg/kg
2101-S11-0-1	04/25/2013	1	Thallium	2.0	Yes	U	2.0	mg/kg
2101-S11-0-1	04/25/2013	1	Tin	6.7	Yes		0.99	mg/kg
2101-S11-0-1	04/25/2013	1	Vanadium	44	Yes		2.0	mg/kg
2101-S11-0-1	04/25/2013	1	Zinc	190	Yes		2.0	mg/kg
2101-S11-12-18	04/25/2013	1	Aluminum	6200	Yes		8.1	mg/kg
2101-S11-12-18	04/25/2013	1	Antimony	1.6	Yes	U	1.6	mg/kg
2101-S11-12-18	04/25/2013	1	Arsenic	1.0	Yes		0.65	mg/kg
2101-S11-12-18	04/25/2013	1	Barium	34	Yes		8.1	mg/kg
2101-S11-12-18	04/25/2013	1	Beryllium	0.24	Yes	U	0.24	mg/kg
2101-S11-12-18	04/25/2013	1	Cadmium	1.3	Yes		0.24	mg/kg
2101-S11-12-18	04/25/2013	1	Calcium	1100	Yes		41	mg/kg
2101-S11-12-18	04/25/2013	1	Chromium	17	Yes		0.41	mg/kg
2101-S11-12-18	04/25/2013	1	Cobalt	6.0	Yes		1.6	mg/kg
2101-S11-12-18	04/25/2013	1	Copper	17	Yes		0.81	mg/kg
2101-S11-12-18	04/25/2013	1	Iron	9400	Yes		4.1	mg/kg
2101-S11-12-18	04/25/2013	1	Lead	24	Yes		0.65	mg/kg
2101-S11-12-18	04/25/2013	1	Magnesium	2800	Yes		41	mg/kg
2101-S11-12-18	04/25/2013	1	Manganese	190	Yes		0.41	mg/kg
2101-S11-12-18	04/25/2013	1	Molybdenum	0.81	Yes	U	0.81	mg/kg

Note: This printed Excel file is excerpted from the original data spreadsheet.

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S11-12-18	04/25/2013	1	Nickel	26	Yes		1.6	mg/kg
2101-S11-12-18	04/25/2013	1	Potassium	740	Yes		41	mg/kg
2101-S11-12-18	04/25/2013	1	Selenium	1.6	Yes	U	1.6	mg/kg
2101-S11-12-18	04/25/2013	1	Silver	9.9	Yes		0.41	mg/kg
2101-S11-12-18	04/25/2013	1	Sodium	100	Yes		81	mg/kg
2101-S11-12-18	04/25/2013	1	Thallium	1.6	Yes	U	1.6	mg/kg
2101-S11-12-18	04/25/2013	1	Tin	0.81	Yes	U	0.81	mg/kg
2101-S11-12-18	04/25/2013	1	Vanadium	18	Yes		1.6	mg/kg
2101-S11-12-18	04/25/2013	1	Zinc	32	Yes		1.6	mg/kg
2101-S11-1-6	04/25/2013	1	Aluminum	6400	Yes		8.4	mg/kg
2101-S11-1-6	04/25/2013	1	Antimony	1.7	Yes	U	1.7	mg/kg
2101-S11-1-6	04/25/2013	1	Arsenic	3.8	Yes		0.67	mg/kg
2101-S11-1-6	04/25/2013	1	Barium	55	Yes		8.4	mg/kg
2101-S11-1-6	04/25/2013	1	Beryllium	0.25	Yes	U	0.25	mg/kg
2101-S11-1-6	04/25/2013	1	Cadmium	6.6	Yes		0.25	mg/kg
2101-S11-1-6	04/25/2013	1	Calcium	1600	Yes		42	mg/kg
2101-S11-1-6	04/25/2013	1	Chromium	23	Yes		0.42	mg/kg
2101-S11-1-6	04/25/2013	1	Cobalt	8.1	Yes		1.7	mg/kg
2101-S11-1-6	04/25/2013	1	Copper	38	Yes		0.84	mg/kg
2101-S11-1-6	04/25/2013	1	Iron	11000	Yes		4.2	mg/kg
2101-S11-1-6	04/25/2013	1	Lead	170	Yes		0.67	mg/kg
2101-S11-1-6	04/25/2013	1	Magnesium	2100	Yes		42	mg/kg
2101-S11-1-6	04/25/2013	1	Manganese	180	Yes		0.42	mg/kg
2101-S11-1-6	04/25/2013	1	Molybdenum	0.84	Yes	U	0.84	mg/kg
2101-S11-1-6	04/25/2013	1	Nickel	21	Yes		1.7	mg/kg
2101-S11-1-6	04/25/2013	1	Potassium	560	Yes		42	mg/kg
2101-S11-1-6	04/25/2013	1	Selenium	1.7	Yes	U	1.7	mg/kg
2101-S11-1-6	04/25/2013	1	Silver	11	Yes		0.42	mg/kg
2101-S11-1-6	04/25/2013	1	Sodium	140	Yes		84	mg/kg
2101-S11-1-6	04/25/2013	1	Thallium	1.7	Yes	U	1.7	mg/kg
2101-S11-1-6	04/25/2013	1	Tin	4.3	Yes		0.84	mg/kg
2101-S11-1-6	04/25/2013	1	Vanadium	30	Yes		1.7	mg/kg
2101-S11-1-6	04/25/2013	1	Zinc	130	Yes		1.7	mg/kg
2101-S11-18-24	04/25/2013	1	Aluminum	5600	Yes		8.2	mg/kg

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sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S11-18-24	04/25/2013	1	Antimony	1.6	Yes	U	1.6	mg/kg
2101-S11-18-24	04/25/2013	1	Arsenic	0.66	Yes		0.66	mg/kg
2101-S11-18-24	04/25/2013	1	Barium	28	Yes		8.2	mg/kg
2101-S11-18-24	04/25/2013	1	Beryllium	0.25	Yes	U	0.25	mg/kg
2101-S11-18-24	04/25/2013	1	Cadmium	0.78	Yes		0.25	mg/kg
2101-S11-18-24	04/25/2013	1	Calcium	1000	Yes		41	mg/kg
2101-S11-18-24	04/25/2013	1	Chromium	18	Yes		0.41	mg/kg
2101-S11-18-24	04/25/2013	1	Cobalt	5.4	Yes		1.6	mg/kg
2101-S11-18-24	04/25/2013	1	Copper	13	Yes		0.82	mg/kg
2101-S11-18-24	04/25/2013	1	Iron	10000	Yes		4.1	mg/kg
2101-S11-18-24	04/25/2013	1	Lead	14	Yes		0.66	mg/kg
2101-S11-18-24	04/25/2013	1	Magnesium	2300	Yes		41	mg/kg
2101-S11-18-24	04/25/2013	1	Manganese	170	Yes		0.41	mg/kg
2101-S11-18-24	04/25/2013	1	Molybdenum	0.82	Yes	U	0.82	mg/kg
2101-S11-18-24	04/25/2013	1	Nickel	21	Yes		1.6	mg/kg
2101-S11-18-24	04/25/2013	1	Potassium	760	Yes		41	mg/kg
2101-S11-18-24	04/25/2013	1	Selenium	1.6	Yes	U	1.6	mg/kg
2101-S11-18-24	04/25/2013	1	Silver	9.9	Yes		0.41	mg/kg
2101-S11-18-24	04/25/2013	1	Sodium	110	Yes		82	mg/kg
2101-S11-18-24	04/25/2013	1	Thallium	1.6	Yes	U	1.6	mg/kg
2101-S11-18-24	04/25/2013	1	Tin	0.82	Yes	U	0.82	mg/kg
2101-S11-18-24	04/25/2013	1	Vanadium	18	Yes		1.6	mg/kg
2101-S11-18-24	04/25/2013	1	Zinc	24	Yes		1.6	mg/kg
2101-S11-6-12	04/25/2013	1	Aluminum	6300	Yes		8.6	mg/kg
2101-S11-6-12	04/25/2013	1	Antimony	1.7	Yes	U	1.7	mg/kg
2101-S11-6-12	04/25/2013	1	Arsenic	0.90	Yes		0.69	mg/kg
2101-S11-6-12	04/25/2013	1	Barium	35	Yes		8.6	mg/kg
2101-S11-6-12	04/25/2013	1	Beryllium	0.26	Yes	U	0.26	mg/kg
2101-S11-6-12	04/25/2013	1	Cadmium	1.8	Yes		0.26	mg/kg
2101-S11-6-12	04/25/2013	1	Calcium	800	Yes		43	mg/kg
2101-S11-6-12	04/25/2013	1	Chromium	17	Yes		0.43	mg/kg
2101-S11-6-12	04/25/2013	1	Cobalt	5.6	Yes		1.7	mg/kg
2101-S11-6-12	04/25/2013	1	Copper	18	Yes		0.86	mg/kg
2101-S11-6-12	04/25/2013	1	Iron	9600	Yes		4.3	mg/kg

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sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S11-6-12	04/25/2013	1	Lead	21	Yes		0.69	mg/kg
2101-S11-6-12	04/25/2013	1	Magnesium	2300	Yes		43	mg/kg
2101-S11-6-12	04/25/2013	1	Manganese	170	Yes		0.43	mg/kg
2101-S11-6-12	04/25/2013	1	Molybdenum	0.86	Yes	U	0.86	mg/kg
2101-S11-6-12	04/25/2013	1	Nickel	19	Yes		1.7	mg/kg
2101-S11-6-12	04/25/2013	1	Potassium	680	Yes		43	mg/kg
2101-S11-6-12	04/25/2013	1	Selenium	1.7	Yes	U	1.7	mg/kg
2101-S11-6-12	04/25/2013	1	Silver	10	Yes		0.43	mg/kg
2101-S11-6-12	04/25/2013	1	Sodium	86	Yes	U	86	mg/kg
2101-S11-6-12	04/25/2013	1	Thallium	1.7	Yes	U	1.7	mg/kg
2101-S11-6-12	04/25/2013	1	Tin	0.86	Yes	U	0.86	mg/kg
2101-S11-6-12	04/25/2013	1	Vanadium	19	Yes		1.7	mg/kg
2101-S11-6-12	04/25/2013	1	Zinc	29	Yes		1.7	mg/kg
2101-S14-0-1	04/25/2013	1	Aluminum	10000	Yes		10	mg/kg
2101-S14-0-1	04/25/2013	1	Antimony	2.1	Yes	U	2.1	mg/kg
2101-S14-0-1	04/25/2013	1	Arsenic	11	Yes		0.84	mg/kg
2101-S14-0-1	04/25/2013	1	Barium	97	Yes		10	mg/kg
2101-S14-0-1	04/25/2013	1	Beryllium	0.31	Yes	U	0.31	mg/kg
2101-S14-0-1	04/25/2013	1	Cadmium	0.65	Yes		0.31	mg/kg
2101-S14-0-1	04/25/2013	1	Calcium	4200	Yes		52	mg/kg
2101-S14-0-1	04/25/2013	1	Chromium	26	Yes		0.52	mg/kg
2101-S14-0-1	04/25/2013	1	Cobalt	7.3	Yes		2.1	mg/kg
2101-S14-0-1	04/25/2013	1	Copper	45	Yes		1.0	mg/kg
2101-S14-0-1	04/25/2013	1	Iron	16000	Yes		5.2	mg/kg
2101-S14-0-1	04/25/2013	1	Lead	140	Yes		0.84	mg/kg
2101-S14-0-1	04/25/2013	1	Magnesium	2900	Yes		52	mg/kg
2101-S14-0-1	04/25/2013	1	Manganese	300	Yes		0.52	mg/kg
2101-S14-0-1	04/25/2013	1	Molybdenum	1.0	Yes	U	1.0	mg/kg
2101-S14-0-1	04/25/2013	1	Nickel	17	Yes		2.1	mg/kg
2101-S14-0-1	04/25/2013	1	Potassium	1000	Yes		52	mg/kg
2101-S14-0-1	04/25/2013	1	Selenium	2.1	Yes	U	2.1	mg/kg
2101-S14-0-1	04/25/2013	1	Silver	15	Yes		0.52	mg/kg
2101-S14-0-1	04/25/2013	1	Sodium	100	Yes	U	100	mg/kg
2101-S14-0-1	04/25/2013	1	Thallium	2.1	Yes	U	2.1	mg/kg

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S14-0-1	04/25/2013	1	Tin	4.0	Yes		1.0	mg/kg
2101-S14-0-1	04/25/2013	1	Vanadium	29	Yes		2.1	mg/kg
2101-S14-0-1	04/25/2013	1	Zinc	130	Yes		2.1	mg/kg
2101-S14-1-6	04/25/2013	1	Aluminum	7100	Yes		9.3	mg/kg
2101-S14-1-6	04/25/2013	1	Antimony	2.1	Yes		1.9	mg/kg
2101-S14-1-6	04/25/2013	1	Arsenic	4.6	Yes		0.75	mg/kg
2101-S14-1-6	04/25/2013	1	Barium	97	Yes		9.3	mg/kg
2101-S14-1-6	04/25/2013	1	Beryllium	0.32	Yes		0.28	mg/kg
2101-S14-1-6	04/25/2013	1	Cadmium	0.68	Yes		0.28	mg/kg
2101-S14-1-6	04/25/2013	1	Calcium	6400	Yes		47	mg/kg
2101-S14-1-6	04/25/2013	1	Chromium	21	Yes		0.47	mg/kg
2101-S14-1-6	04/25/2013	1	Cobalt	8.8	Yes		1.9	mg/kg
2101-S14-1-6	04/25/2013	1	Copper	95	Yes		0.93	mg/kg
2101-S14-1-6	04/25/2013	1	Iron	14000	Yes		4.7	mg/kg
2101-S14-1-6	04/25/2013	1	Lead	140	Yes		0.75	mg/kg
2101-S14-1-6	04/25/2013	1	Magnesium	3500	Yes		47	mg/kg
2101-S14-1-6	04/25/2013	1	Manganese	290	Yes		0.47	mg/kg
2101-S14-1-6	04/25/2013	1	Molybdenum	4.6	Yes		0.93	mg/kg
2101-S14-1-6	04/25/2013	1	Nickel	13	Yes		1.9	mg/kg
2101-S14-1-6	04/25/2013	1	Potassium	830	Yes		47	mg/kg
2101-S14-1-6	04/25/2013	1	Selenium	1.9	Yes	U	1.9	mg/kg
2101-S14-1-6	04/25/2013	1	Silver	11	Yes		0.47	mg/kg
2101-S14-1-6	04/25/2013	1	Sodium	93	Yes	U	93	mg/kg
2101-S14-1-6	04/25/2013	1	Thallium	1.9	Yes	U	1.9	mg/kg
2101-S14-1-6	04/25/2013	1	Tin	54	Yes		0.93	mg/kg
2101-S14-1-6	04/25/2013	1	Vanadium	19	Yes		1.9	mg/kg
2101-S14-1-6	04/25/2013	1	Zinc	460	Yes		1.9	mg/kg
2101-S14-6-12	04/25/2013	1	Aluminum	7000	Yes		9.3	mg/kg
2101-S14-6-12	04/25/2013	1	Antimony	7.5	Yes		1.9	mg/kg
2101-S14-6-12	04/25/2013	1	Arsenic	9.8	Yes		0.74	mg/kg
2101-S14-6-12	04/25/2013	1	Barium	160	Yes		9.3	mg/kg
2101-S14-6-12	04/25/2013	1	Beryllium	0.31	Yes		0.28	mg/kg
2101-S14-6-12	04/25/2013	1	Cadmium	180	Yes		0.28	mg/kg
2101-S14-6-12	04/25/2013	1	Calcium	20000	Yes		46	mg/kg

Note: This printed Excel file is excerpted from the original data spreadsheet.

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S14-6-12	04/25/2013	1	Chromium	54	Yes		0.46	mg/kg
2101-S14-6-12	04/25/2013	1	Cobalt	11	Yes		1.9	mg/kg
2101-S14-6-12	04/25/2013	1	Copper	150	Yes		0.93	mg/kg
2101-S14-6-12	04/25/2013	1	Iron	16000	Yes		4.6	mg/kg
2101-S14-6-12	04/25/2013	1	Lead	690	Yes		0.74	mg/kg
2101-S14-6-12	04/25/2013	1	Magnesium	6100	Yes		46	mg/kg
2101-S14-6-12	04/25/2013	1	Manganese	210	Yes		0.46	mg/kg
2101-S14-6-12	04/25/2013	1	Molybdenum	1.8	Yes		0.93	mg/kg
2101-S14-6-12	04/25/2013	1	Nickel	50	Yes		1.9	mg/kg
2101-S14-6-12	04/25/2013	1	Potassium	620	Yes		46	mg/kg
2101-S14-6-12	04/25/2013	1	Selenium	1.9	Yes	U	1.9	mg/kg
2101-S14-6-12	04/25/2013	1	Silver	8.4	Yes		0.46	mg/kg
2101-S14-6-12	04/25/2013	1	Sodium	93	Yes	U	93	mg/kg
2101-S14-6-12	04/25/2013	1	Thallium	1.9	Yes	U	1.9	mg/kg
2101-S14-6-12	04/25/2013	1	Tin	76	Yes		0.93	mg/kg
2101-S14-6-12	04/25/2013	1	Vanadium	25	Yes		1.9	mg/kg
2101-S14-6-12	04/25/2013	1	Zinc	550	Yes		1.9	mg/kg
2101-S15-0-1	04/25/2013	1	Aluminum	11000	Yes		10	mg/kg
2101-S15-0-1	04/25/2013	1	Antimony	2.0	Yes	U	2.0	mg/kg
2101-S15-0-1	04/25/2013	1	Arsenic	13	Yes		0.80	mg/kg
2101-S15-0-1	04/25/2013	1	Barium	91	Yes		10	mg/kg
2101-S15-0-1	04/25/2013	1	Beryllium	0.40	Yes		0.30	mg/kg
2101-S15-0-1	04/25/2013	1	Cadmium	4.1	Yes		0.30	mg/kg
2101-S15-0-1	04/25/2013	1	Calcium	3400	Yes		50	mg/kg
2101-S15-0-1	04/25/2013	1	Chromium	22	Yes		0.50	mg/kg
2101-S15-0-1	04/25/2013	1	Cobalt	6.7	Yes		2.0	mg/kg
2101-S15-0-1	04/25/2013	1	Copper	35	Yes		1.0	mg/kg
2101-S15-0-1	04/25/2013	1	Iron	16000	Yes		5.0	mg/kg
2101-S15-0-1	04/25/2013	1	Lead	110	Yes		0.80	mg/kg
2101-S15-0-1	04/25/2013	1	Magnesium	2900	Yes		50	mg/kg
2101-S15-0-1	04/25/2013	1	Manganese	260	Yes		0.50	mg/kg
2101-S15-0-1	04/25/2013	1	Molybdenum	1.0	Yes	U	1.0	mg/kg
2101-S15-0-1	04/25/2013	1	Nickel	16	Yes		2.0	mg/kg
2101-S15-0-1	04/25/2013	1	Potassium	850	Yes		50	mg/kg

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S15-0-1	04/25/2013	1	Selenium	2.0	Yes	U	2.0	mg/kg
2101-S15-0-1	04/25/2013	1	Silver	14	Yes		0.50	mg/kg
2101-S15-0-1	04/25/2013	1	Sodium	100	Yes	U	100	mg/kg
2101-S15-0-1	04/25/2013	1	Thallium	2.0	Yes	U	2.0	mg/kg
2101-S15-0-1	04/25/2013	1	Tin	4.2	Yes		1.0	mg/kg
2101-S15-0-1	04/25/2013	1	Vanadium	28	Yes		2.0	mg/kg
2101-S15-0-1	04/25/2013	1	Zinc	150	Yes		2.0	mg/kg
2101-S15-1-6	04/25/2013	1	Aluminum	6800	Yes		9.5	mg/kg
2101-S15-1-6	04/25/2013	1	Antimony	1.9	Yes	U	1.9	mg/kg
2101-S15-1-6	04/25/2013	1	Arsenic	4.5	Yes		0.76	mg/kg
2101-S15-1-6	04/25/2013	1	Barium	71	Yes		9.5	mg/kg
2101-S15-1-6	04/25/2013	1	Beryllium	0.31	Yes		0.29	mg/kg
2101-S15-1-6	04/25/2013	1	Cadmium	1.7	Yes		0.29	mg/kg
2101-S15-1-6	04/25/2013	1	Calcium	4700	Yes		48	mg/kg
2101-S15-1-6	04/25/2013	1	Chromium	15	Yes		0.48	mg/kg
2101-S15-1-6	04/25/2013	1	Cobalt	5.4	Yes		1.9	mg/kg
2101-S15-1-6	04/25/2013	1	Copper	30	Yes		0.95	mg/kg
2101-S15-1-6	04/25/2013	1	Iron	13000	Yes		4.8	mg/kg
2101-S15-1-6	04/25/2013	1	Lead	98	Yes		0.76	mg/kg
2101-S15-1-6	04/25/2013	1	Magnesium	2500	Yes		48	mg/kg
2101-S15-1-6	04/25/2013	1	Manganese	210	Yes		0.48	mg/kg
2101-S15-1-6	04/25/2013	1	Molybdenum	0.95	Yes	U	0.95	mg/kg
2101-S15-1-6	04/25/2013	1	Nickel	13	Yes		1.9	mg/kg
2101-S15-1-6	04/25/2013	1	Potassium	850	Yes		48	mg/kg
2101-S15-1-6	04/25/2013	1	Selenium	1.9	Yes	U	1.9	mg/kg
2101-S15-1-6	04/25/2013	1	Silver	10	Yes		0.48	mg/kg
2101-S15-1-6	04/25/2013	1	Sodium	95	Yes	U	95	mg/kg
2101-S15-1-6	04/25/2013	1	Thallium	1.9	Yes	U	1.9	mg/kg
2101-S15-1-6	04/25/2013	1	Tin	3.0	Yes		0.95	mg/kg
2101-S15-1-6	04/25/2013	1	Vanadium	22	Yes		1.9	mg/kg
2101-S15-1-6	04/25/2013	1	Zinc	120	Yes		1.9	mg/kg
2101-S15-6-12	04/25/2013	1	Aluminum	7000	Yes		8.2	mg/kg
2101-S15-6-12	04/25/2013	1	Antimony	8.1	Yes		1.6	mg/kg
2101-S15-6-12	04/25/2013	1	Arsenic	11	Yes		0.66	mg/kg

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S15-6-12	04/25/2013	1	Barium	110	Yes		8.2	mg/kg
2101-S15-6-12	04/25/2013	1	Beryllium	0.29	Yes		0.25	mg/kg
2101-S15-6-12	04/25/2013	1	Cadmium	590	Yes		0.25	mg/kg
2101-S15-6-12	04/25/2013	1	Calcium	12000	Yes		41	mg/kg
2101-S15-6-12	04/25/2013	1	Chromium	20	Yes		0.41	mg/kg
2101-S15-6-12	04/25/2013	1	Cobalt	7.1	Yes		1.6	mg/kg
2101-S15-6-12	04/25/2013	1	Copper	230	Yes		0.82	mg/kg
2101-S15-6-12	04/25/2013	1	Iron	14000	Yes		4.1	mg/kg
2101-S15-6-12	04/25/2013	1	Lead	960	Yes		0.66	mg/kg
2101-S15-6-12	04/25/2013	1	Magnesium	3100	Yes		41	mg/kg
2101-S15-6-12	04/25/2013	1	Manganese	210	Yes		0.41	mg/kg
2101-S15-6-12	04/25/2013	1	Molybdenum	1.1	Yes		0.82	mg/kg
2101-S15-6-12	04/25/2013	1	Nickel	81	Yes		1.6	mg/kg
2101-S15-6-12	04/25/2013	1	Potassium	790	Yes		41	mg/kg
2101-S15-6-12	04/25/2013	1	Selenium	1.7	Yes		1.6	mg/kg
2101-S15-6-12	04/25/2013	1	Silver	11	Yes		0.41	mg/kg
2101-S15-6-12	04/25/2013	1	Sodium	82	Yes	U	82	mg/kg
2101-S15-6-12	04/25/2013	1	Thallium	1.6	Yes	U	1.6	mg/kg
2101-S15-6-12	04/25/2013	1	Tin	82	Yes		0.82	mg/kg
2101-S15-6-12	04/25/2013	1	Vanadium	29	Yes		1.6	mg/kg
2101-S15-6-12	04/25/2013	1	Zinc	1100	Yes		1.6	mg/kg
2101-S16-12-18	04/25/2013	1	Aluminum	6300	Yes		8.4	mg/kg
2101-S16-12-18	04/25/2013	1	Antimony	1.7	Yes	U	1.7	mg/kg
2101-S16-12-18	04/25/2013	1	Arsenic	2.0	Yes		0.67	mg/kg
2101-S16-12-18	04/25/2013	1	Barium	51	Yes		8.4	mg/kg
2101-S16-12-18	04/25/2013	1	Beryllium	0.25	Yes	U	0.25	mg/kg
2101-S16-12-18	04/25/2013	1	Cadmium	7.6	Yes		0.25	mg/kg
2101-S16-12-18	04/25/2013	1	Calcium	900	Yes		42	mg/kg
2101-S16-12-18	04/25/2013	1	Chromium	18	Yes		0.42	mg/kg
2101-S16-12-18	04/25/2013	1	Cobalt	6.0	Yes		1.7	mg/kg
2101-S16-12-18	04/25/2013	1	Copper	25	Yes		0.84	mg/kg
2101-S16-12-18	04/25/2013	1	Iron	11000	Yes		4.2	mg/kg
2101-S16-12-18	04/25/2013	1	Lead	55	Yes		0.67	mg/kg
2101-S16-12-18	04/25/2013	1	Magnesium	1800	Yes		42	mg/kg

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S16-12-18	04/25/2013	1	Manganese	320	Yes		0.42	mg/kg
2101-S16-12-18	04/25/2013	1	Molybdenum	0.84	Yes	U	0.84	mg/kg
2101-S16-12-18	04/25/2013	1	Nickel	22	Yes		1.7	mg/kg
2101-S16-12-18	04/25/2013	1	Potassium	780	Yes		42	mg/kg
2101-S16-12-18	04/25/2013	1	Selenium	1.7	Yes	U	1.7	mg/kg
2101-S16-12-18	04/25/2013	1	Silver	8.9	Yes		0.42	mg/kg
2101-S16-12-18	04/25/2013	1	Sodium	190	Yes		84	mg/kg
2101-S16-12-18	04/25/2013	1	Thallium	1.7	Yes	U	1.7	mg/kg
2101-S16-12-18	04/25/2013	1	Tin	1.8	Yes		0.84	mg/kg
2101-S16-12-18	04/25/2013	1	Vanadium	21	Yes		1.7	mg/kg
2101-S16-12-18	04/25/2013	1	Zinc	49	Yes		1.7	mg/kg
2101-S16-18-24	04/25/2013	1	Aluminum	8400	Yes		8.2	mg/kg
2101-S16-18-24	04/25/2013	1	Antimony	1.6	Yes	U	1.6	mg/kg
2101-S16-18-24	04/25/2013	1	Arsenic	1.6	Yes		0.66	mg/kg
2101-S16-18-24	04/25/2013	1	Barium	61	Yes		8.2	mg/kg
2101-S16-18-24	04/25/2013	1	Beryllium	0.26	Yes		0.25	mg/kg
2101-S16-18-24	04/25/2013	1	Cadmium	4.0	Yes		0.25	mg/kg
2101-S16-18-24	04/25/2013	1	Calcium	1300	Yes		41	mg/kg
2101-S16-18-24	04/25/2013	1	Chromium	30	Yes		0.41	mg/kg
2101-S16-18-24	04/25/2013	1	Cobalt	7.6	Yes		1.6	mg/kg
2101-S16-18-24	04/25/2013	1	Copper	28	Yes		0.82	mg/kg
2101-S16-18-24	04/25/2013	1	Iron	16000	Yes		4.1	mg/kg
2101-S16-18-24	04/25/2013	1	Lead	14	Yes		0.66	mg/kg
2101-S16-18-24	04/25/2013	1	Magnesium	2700	Yes		41	mg/kg
2101-S16-18-24	04/25/2013	1	Manganese	260	Yes		0.41	mg/kg
2101-S16-18-24	04/25/2013	1	Molybdenum	0.82	Yes	U	0.82	mg/kg
2101-S16-18-24	04/25/2013	1	Nickel	32	Yes		1.6	mg/kg
2101-S16-18-24	04/25/2013	1	Potassium	1500	Yes		41	mg/kg
2101-S16-18-24	04/25/2013	1	Selenium	1.6	Yes	U	1.6	mg/kg
2101-S16-18-24	04/25/2013	1	Silver	14	Yes		0.41	mg/kg
2101-S16-18-24	04/25/2013	1	Sodium	82	Yes	U	82	mg/kg
2101-S16-18-24	04/25/2013	1	Thallium	1.6	Yes	U	1.6	mg/kg
2101-S16-18-24	04/25/2013	1	Tin	1.3	Yes		0.82	mg/kg
2101-S16-18-24	04/25/2013	1	Vanadium	25	Yes		1.6	mg/kg

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S16-18-24	04/25/2013	1	Zinc	40	Yes		1.6	mg/kg
2101-S16-6-12	04/25/2013	1	Aluminum	7000	Yes		8.5	mg/kg
2101-S16-6-12	04/25/2013	1	Antimony	1.7	Yes	U	1.7	mg/kg
2101-S16-6-12	04/25/2013	1	Arsenic	1.1	Yes		0.68	mg/kg
2101-S16-6-12	04/25/2013	1	Barium	38	Yes		8.5	mg/kg
2101-S16-6-12	04/25/2013	1	Beryllium	0.26	Yes	U	0.26	mg/kg
2101-S16-6-12	04/25/2013	1	Cadmium	2.0	Yes		0.26	mg/kg
2101-S16-6-12	04/25/2013	1	Calcium	980	Yes		43	mg/kg
2101-S16-6-12	04/25/2013	1	Chromium	20	Yes		0.43	mg/kg
2101-S16-6-12	04/25/2013	1	Cobalt	6.2	Yes		1.7	mg/kg
2101-S16-6-12	04/25/2013	1	Copper	19	Yes		0.85	mg/kg
2101-S16-6-12	04/25/2013	1	Iron	10000	Yes		4.3	mg/kg
2101-S16-6-12	04/25/2013	1	Lead	21	Yes		0.68	mg/kg
2101-S16-6-12	04/25/2013	1	Magnesium	2400	Yes		43	mg/kg
2101-S16-6-12	04/25/2013	1	Manganese	190	Yes		0.43	mg/kg
2101-S16-6-12	04/25/2013	1	Molybdenum	0.85	Yes	U	0.85	mg/kg
2101-S16-6-12	04/25/2013	1	Nickel	21	Yes		1.7	mg/kg
2101-S16-6-12	04/25/2013	1	Potassium	780	Yes		43	mg/kg
2101-S16-6-12	04/25/2013	1	Selenium	1.7	Yes	U	1.7	mg/kg
2101-S16-6-12	04/25/2013	1	Silver	11	Yes		0.43	mg/kg
2101-S16-6-12	04/25/2013	1	Sodium	110	Yes		85	mg/kg
2101-S16-6-12	04/25/2013	1	Thallium	1.7	Yes	U	1.7	mg/kg
2101-S16-6-12	04/25/2013	1	Tin	0.85	Yes	U	0.85	mg/kg
2101-S16-6-12	04/25/2013	1	Vanadium	21	Yes		1.7	mg/kg
2101-S16-6-12	04/25/2013	1	Zinc	29	Yes		1.7	mg/kg
2101-S04-0-1	04/26/2013	1	Aluminum	9500	Yes		12	mg/kg
2101-S04-0-1	04/26/2013	1	Antimony	2.4	Yes	U	2.4	mg/kg
2101-S04-0-1	04/26/2013	1	Arsenic	8.5	Yes		0.95	mg/kg
2101-S04-0-1	04/26/2013	1	Barium	94	Yes		12	mg/kg
2101-S04-0-1	04/26/2013	1	Beryllium	0.35	Yes	U	0.35	mg/kg
2101-S04-0-1	04/26/2013	1	Cadmium	2.5	Yes		0.35	mg/kg
2101-S04-0-1	04/26/2013	1	Calcium	11000	Yes		59	mg/kg
2101-S04-0-1	04/26/2013	1	Chromium	28	Yes		0.59	mg/kg
2101-S04-0-1	04/26/2013	1	Cobalt	6.7	Yes		2.4	mg/kg

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S04-0-1	04/26/2013	1	Copper	51	Yes		1.2	mg/kg
2101-S04-0-1	04/26/2013	1	Iron	15000	Yes		5.9	mg/kg
2101-S04-0-1	04/26/2013	1	Lead	190	Yes		0.95	mg/kg
2101-S04-0-1	04/26/2013	1	Magnesium	5500	Yes		59	mg/kg
2101-S04-0-1	04/26/2013	1	Manganese	340	Yes		0.59	mg/kg
2101-S04-0-1	04/26/2013	1	Molybdenum	1.2	Yes	U	1.2	mg/kg
2101-S04-0-1	04/26/2013	1	Nickel	20	Yes		2.4	mg/kg
2101-S04-0-1	04/26/2013	1	Potassium	600	Yes		59	mg/kg
2101-S04-0-1	04/26/2013	1	Selenium	2.4	Yes	U	2.4	mg/kg
2101-S04-0-1	04/26/2013	1	Silver	9.9	Yes		0.59	mg/kg
2101-S04-0-1	04/26/2013	1	Sodium	620	Yes		120	mg/kg
2101-S04-0-1	04/26/2013	1	Thallium	2.4	Yes	U	2.4	mg/kg
2101-S04-0-1	04/26/2013	1	Tin	6.0	Yes		1.2	mg/kg
2101-S04-0-1	04/26/2013	1	Vanadium	33	Yes		2.4	mg/kg
2101-S04-0-1	04/26/2013	1	Zinc	200	Yes		2.4	mg/kg
2101-S04-12-18	04/26/2013	1	Aluminum	8800	Yes		8.1	mg/kg
2101-S04-12-18	04/26/2013	1	Antimony	1.6	Yes	U	1.6	mg/kg
2101-S04-12-18	04/26/2013	1	Arsenic	3.0	Yes		0.65	mg/kg
2101-S04-12-18	04/26/2013	1	Barium	54	Yes		8.1	mg/kg
2101-S04-12-18	04/26/2013	1	Beryllium	0.30	Yes		0.24	mg/kg
2101-S04-12-18	04/26/2013	1	Cadmium	2.3	Yes		0.24	mg/kg
2101-S04-12-18	04/26/2013	1	Calcium	1000	Yes		41	mg/kg
2101-S04-12-18	04/26/2013	1	Chromium	19	Yes		0.41	mg/kg
2101-S04-12-18	04/26/2013	1	Cobalt	6.6	Yes		1.6	mg/kg
2101-S04-12-18	04/26/2013	1	Copper	19	Yes		0.81	mg/kg
2101-S04-12-18	04/26/2013	1	Iron	13000	Yes		4.1	mg/kg
2101-S04-12-18	04/26/2013	1	Lead	34	Yes		0.65	mg/kg
2101-S04-12-18	04/26/2013	1	Magnesium	2100	Yes		41	mg/kg
2101-S04-12-18	04/26/2013	1	Manganese	200	Yes		0.41	mg/kg
2101-S04-12-18	04/26/2013	1	Molybdenum	0.81	Yes	U	0.81	mg/kg
2101-S04-12-18	04/26/2013	1	Nickel	19	Yes		1.6	mg/kg
2101-S04-12-18	04/26/2013	1	Potassium	740	Yes		41	mg/kg
2101-S04-12-18	04/26/2013	1	Selenium	1.6	Yes	U	1.6	mg/kg
2101-S04-12-18	04/26/2013	1	Silver	9.3	Yes		0.41	mg/kg

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S04-12-18	04/26/2013	1	Sodium	130	Yes		81	mg/kg
2101-S04-12-18	04/26/2013	1	Thallium	1.6	Yes	U	1.6	mg/kg
2101-S04-12-18	04/26/2013	1	Tin	0.81	Yes	U	0.81	mg/kg
2101-S04-12-18	04/26/2013	1	Vanadium	21	Yes		1.6	mg/kg
2101-S04-12-18	04/26/2013	1	Zinc	57	Yes		1.6	mg/kg
2101-S04-1-6	04/26/2013	1	Aluminum	9300	Yes		9.4	mg/kg
2101-S04-1-6	04/26/2013	1	Antimony	1.9	Yes	U	1.9	mg/kg
2101-S04-1-6	04/26/2013	1	Arsenic	9.9	Yes		0.75	mg/kg
2101-S04-1-6	04/26/2013	1	Barium	110	Yes		9.4	mg/kg
2101-S04-1-6	04/26/2013	1	Beryllium	0.39	Yes		0.28	mg/kg
2101-S04-1-6	04/26/2013	1	Cadmium	3.4	Yes		0.28	mg/kg
2101-S04-1-6	04/26/2013	1	Calcium	2400	Yes		47	mg/kg
2101-S04-1-6	04/26/2013	1	Chromium	24	Yes		0.47	mg/kg
2101-S04-1-6	04/26/2013	1	Cobalt	6.3	Yes		1.9	mg/kg
2101-S04-1-6	04/26/2013	1	Copper	49	Yes		0.94	mg/kg
2101-S04-1-6	04/26/2013	1	Iron	16000	Yes		4.7	mg/kg
2101-S04-1-6	04/26/2013	1	Lead	180	Yes		0.75	mg/kg
2101-S04-1-6	04/26/2013	1	Magnesium	2300	Yes		47	mg/kg
2101-S04-1-6	04/26/2013	1	Manganese	360	Yes		0.47	mg/kg
2101-S04-1-6	04/26/2013	1	Molybdenum	0.94	Yes	U	0.94	mg/kg
2101-S04-1-6	04/26/2013	1	Nickel	17	Yes		1.9	mg/kg
2101-S04-1-6	04/26/2013	1	Potassium	580	Yes		47	mg/kg
2101-S04-1-6	04/26/2013	1	Selenium	1.9	Yes	U	1.9	mg/kg
2101-S04-1-6	04/26/2013	1	Silver	8.6	Yes		0.47	mg/kg
2101-S04-1-6	04/26/2013	1	Sodium	290	Yes		94	mg/kg
2101-S04-1-6	04/26/2013	1	Thallium	1.9	Yes	U	1.9	mg/kg
2101-S04-1-6	04/26/2013	1	Tin	6.3	Yes		0.94	mg/kg
2101-S04-1-6	04/26/2013	1	Vanadium	31	Yes		1.9	mg/kg
2101-S04-1-6	04/26/2013	1	Zinc	150	Yes		1.9	mg/kg
2101-S04-18-24	04/26/2013	1	Aluminum	8800	Yes		9.5	mg/kg
2101-S04-18-24	04/26/2013	1	Antimony	1.9	Yes	U	1.9	mg/kg
2101-S04-18-24	04/26/2013	1	Arsenic	2.6	Yes		0.76	mg/kg
2101-S04-18-24	04/26/2013	1	Barium	40	Yes		9.5	mg/kg
2101-S04-18-24	04/26/2013	1	Beryllium	0.37	Yes		0.28	mg/kg

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S04-18-24	04/26/2013	1	Cadmium	4.8	Yes		0.28	mg/kg
2101-S04-18-24	04/26/2013	1	Calcium	710	Yes		47	mg/kg
2101-S04-18-24	04/26/2013	1	Chromium	16	Yes		0.47	mg/kg
2101-S04-18-24	04/26/2013	1	Cobalt	6.2	Yes		1.9	mg/kg
2101-S04-18-24	04/26/2013	1	Copper	20	Yes		0.95	mg/kg
2101-S04-18-24	04/26/2013	1	Iron	13000	Yes		4.7	mg/kg
2101-S04-18-24	04/26/2013	1	Lead	140	Yes		0.76	mg/kg
2101-S04-18-24	04/26/2013	1	Magnesium	1900	Yes		47	mg/kg
2101-S04-18-24	04/26/2013	1	Manganese	140	Yes		0.47	mg/kg
2101-S04-18-24	04/26/2013	1	Molybdenum	0.95	Yes	U	0.95	mg/kg
2101-S04-18-24	04/26/2013	1	Nickel	16	Yes		1.9	mg/kg
2101-S04-18-24	04/26/2013	1	Potassium	520	Yes		47	mg/kg
2101-S04-18-24	04/26/2013	1	Selenium	1.9	Yes	U	1.9	mg/kg
2101-S04-18-24	04/26/2013	1	Silver	6.8	Yes		0.47	mg/kg
2101-S04-18-24	04/26/2013	1	Sodium	110	Yes		95	mg/kg
2101-S04-18-24	04/26/2013	1	Thallium	1.9	Yes	U	1.9	mg/kg
2101-S04-18-24	04/26/2013	1	Tin	500	Yes		0.95	mg/kg
2101-S04-18-24	04/26/2013	1	Vanadium	18	Yes		1.9	mg/kg
2101-S04-18-24	04/26/2013	1	Zinc	49	Yes		1.9	mg/kg
2101-S04-6-12	04/26/2013	1	Aluminum	9300	Yes		9.2	mg/kg
2101-S04-6-12	04/26/2013	1	Antimony	1.8	Yes	U	1.8	mg/kg
2101-S04-6-12	04/26/2013	1	Arsenic	7.0	Yes		0.73	mg/kg
2101-S04-6-12	04/26/2013	1	Barium	76	Yes		9.2	mg/kg
2101-S04-6-12	04/26/2013	1	Beryllium	0.35	Yes		0.27	mg/kg
2101-S04-6-12	04/26/2013	1	Cadmium	3.8	Yes		0.27	mg/kg
2101-S04-6-12	04/26/2013	1	Calcium	1600	Yes		46	mg/kg
2101-S04-6-12	04/26/2013	1	Chromium	21	Yes		0.46	mg/kg
2101-S04-6-12	04/26/2013	1	Cobalt	6.4	Yes		1.8	mg/kg
2101-S04-6-12	04/26/2013	1	Copper	27	Yes		0.92	mg/kg
2101-S04-6-12	04/26/2013	1	Iron	14000	Yes		4.6	mg/kg
2101-S04-6-12	04/26/2013	1	Lead	92	Yes		0.73	mg/kg
2101-S04-6-12	04/26/2013	1	Magnesium	2100	Yes		46	mg/kg
2101-S04-6-12	04/26/2013	1	Manganese	280	Yes		0.46	mg/kg
2101-S04-6-12	04/26/2013	1	Molybdenum	0.92	Yes	U	0.92	mg/kg

Note: This printed Excel file is excerpted from the original data spreadsheet.

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S04-6-12	04/26/2013	1	Nickel	17	Yes		1.8	mg/kg
2101-S04-6-12	04/26/2013	1	Potassium	570	Yes		46	mg/kg
2101-S04-6-12	04/26/2013	1	Selenium	1.8	Yes	U	1.8	mg/kg
2101-S04-6-12	04/26/2013	1	Silver	8.7	Yes		0.46	mg/kg
2101-S04-6-12	04/26/2013	1	Sodium	190	Yes		92	mg/kg
2101-S04-6-12	04/26/2013	1	Thallium	1.8	Yes	U	1.8	mg/kg
2101-S04-6-12	04/26/2013	1	Tin	1.8	Yes		0.92	mg/kg
2101-S04-6-12	04/26/2013	1	Vanadium	27	Yes		1.8	mg/kg
2101-S04-6-12	04/26/2013	1	Zinc	89	Yes		1.8	mg/kg
2101-S07-0-1	04/26/2013	1	Aluminum	7200	Yes		10	mg/kg
2101-S07-0-1	04/26/2013	1	Antimony	2.1	Yes	U	2.1	mg/kg
2101-S07-0-1	04/26/2013	1	Arsenic	8.3	Yes		0.84	mg/kg
2101-S07-0-1	04/26/2013	1	Barium	55	Yes		10	mg/kg
2101-S07-0-1	04/26/2013	1	Beryllium	0.31	Yes	U	0.31	mg/kg
2101-S07-0-1	04/26/2013	1	Cadmium	1.5	Yes		0.31	mg/kg
2101-S07-0-1	04/26/2013	1	Calcium	5400	Yes		52	mg/kg
2101-S07-0-1	04/26/2013	1	Chromium	26	Yes		0.52	mg/kg
2101-S07-0-1	04/26/2013	1	Cobalt	6.2	Yes		2.1	mg/kg
2101-S07-0-1	04/26/2013	1	Copper	38	Yes		1.0	mg/kg
2101-S07-0-1	04/26/2013	1	Iron	14000	Yes		5.2	mg/kg
2101-S07-0-1	04/26/2013	1	Lead	150	Yes		0.84	mg/kg
2101-S07-0-1	04/26/2013	1	Magnesium	2900	Yes		52	mg/kg
2101-S07-0-1	04/26/2013	1	Manganese	190	Yes		0.52	mg/kg
2101-S07-0-1	04/26/2013	1	Molybdenum	1.0	Yes	U	1.0	mg/kg
2101-S07-0-1	04/26/2013	1	Nickel	20	Yes		2.1	mg/kg
2101-S07-0-1	04/26/2013	1	Potassium	1000	Yes		52	mg/kg
2101-S07-0-1	04/26/2013	1	Selenium	2.1	Yes	U	2.1	mg/kg
2101-S07-0-1	04/26/2013	1	Silver	12	Yes		0.52	mg/kg
2101-S07-0-1	04/26/2013	1	Sodium	120	Yes		100	mg/kg
2101-S07-0-1	04/26/2013	1	Thallium	2.1	Yes	U	2.1	mg/kg
2101-S07-0-1	04/26/2013	1	Tin	13	Yes		1.0	mg/kg
2101-S07-0-1	04/26/2013	1	Vanadium	29	Yes		2.1	mg/kg
2101-S07-0-1	04/26/2013	1	Zinc	170	Yes		2.1	mg/kg
2101-S07-12-18	04/26/2013	1	Aluminum	7900	Yes		9.8	mg/kg

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S07-12-18	04/26/2013	1	Antimony	2.0	Yes	U	2.0	mg/kg
2101-S07-12-18	04/26/2013	1	Arsenic	12	Yes		0.78	mg/kg
2101-S07-12-18	04/26/2013	1	Barium	110	Yes		9.8	mg/kg
2101-S07-12-18	04/26/2013	1	Beryllium	0.36	Yes		0.29	mg/kg
2101-S07-12-18	04/26/2013	1	Cadmium	2.0	Yes		0.29	mg/kg
2101-S07-12-18	04/26/2013	1	Calcium	6600	Yes		49	mg/kg
2101-S07-12-18	04/26/2013	1	Chromium	23	Yes		0.49	mg/kg
2101-S07-12-18	04/26/2013	1	Cobalt	7.8	Yes		2.0	mg/kg
2101-S07-12-18	04/26/2013	1	Copper	85	Yes		0.98	mg/kg
2101-S07-12-18	04/26/2013	1	Iron	20000	Yes		4.9	mg/kg
2101-S07-12-18	04/26/2013	1	Lead	480	Yes		0.78	mg/kg
2101-S07-12-18	04/26/2013	1	Magnesium	4200	Yes		49	mg/kg
2101-S07-12-18	04/26/2013	1	Manganese	260	Yes		0.49	mg/kg
2101-S07-12-18	04/26/2013	1	Molybdenum	1.2	Yes		0.98	mg/kg
2101-S07-12-18	04/26/2013	1	Nickel	20	Yes		2.0	mg/kg
2101-S07-12-18	04/26/2013	1	Potassium	400	Yes		49	mg/kg
2101-S07-12-18	04/26/2013	1	Selenium	2.0	Yes	U	2.0	mg/kg
2101-S07-12-18	04/26/2013	1	Silver	10	Yes		0.49	mg/kg
2101-S07-12-18	04/26/2013	1	Sodium	360	Yes		98	mg/kg
2101-S07-12-18	04/26/2013	1	Thallium	2.0	Yes	U	2.0	mg/kg
2101-S07-12-18	04/26/2013	1	Tin	87	Yes		0.98	mg/kg
2101-S07-12-18	04/26/2013	1	Vanadium	29	Yes		2.0	mg/kg
2101-S07-12-18	04/26/2013	1	Zinc	140	Yes		2.0	mg/kg
2101-S07-1-6	04/26/2013	1	Aluminum	7500	Yes		8.6	mg/kg
2101-S07-1-6	04/26/2013	1	Antimony	1.7	Yes	U	1.7	mg/kg
2101-S07-1-6	04/26/2013	1	Arsenic	12	Yes		0.69	mg/kg
2101-S07-1-6	04/26/2013	1	Barium	61	Yes		8.6	mg/kg
2101-S07-1-6	04/26/2013	1	Beryllium	0.38	Yes		0.26	mg/kg
2101-S07-1-6	04/26/2013	1	Cadmium	2.4	Yes		0.26	mg/kg
2101-S07-1-6	04/26/2013	1	Calcium	1900	Yes		43	mg/kg
2101-S07-1-6	04/26/2013	1	Chromium	20	Yes		0.43	mg/kg
2101-S07-1-6	04/26/2013	1	Cobalt	6.9	Yes		1.7	mg/kg
2101-S07-1-6	04/26/2013	1	Copper	45	Yes		0.86	mg/kg
2101-S07-1-6	04/26/2013	1	Iron	16000	Yes		4.3	mg/kg

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S07-1-6	04/26/2013	1	Lead	190	Yes		0.69	mg/kg
2101-S07-1-6	04/26/2013	1	Magnesium	1900	Yes		43	mg/kg
2101-S07-1-6	04/26/2013	1	Manganese	230	Yes		0.43	mg/kg
2101-S07-1-6	04/26/2013	1	Molybdenum	0.86	Yes	U	0.86	mg/kg
2101-S07-1-6	04/26/2013	1	Nickel	21	Yes		1.7	mg/kg
2101-S07-1-6	04/26/2013	1	Potassium	630	Yes		43	mg/kg
2101-S07-1-6	04/26/2013	1	Selenium	1.7	Yes	U	1.7	mg/kg
2101-S07-1-6	04/26/2013	1	Silver	12	Yes		0.43	mg/kg
2101-S07-1-6	04/26/2013	1	Sodium	120	Yes		86	mg/kg
2101-S07-1-6	04/26/2013	1	Thallium	1.7	Yes	U	1.7	mg/kg
2101-S07-1-6	04/26/2013	1	Tin	11	Yes		0.86	mg/kg
2101-S07-1-6	04/26/2013	1	Vanadium	30	Yes		1.7	mg/kg
2101-S07-1-6	04/26/2013	1	Zinc	130	Yes		1.7	mg/kg
2101-S07-18-24	04/26/2013	1	Aluminum	6600	Yes		9.5	mg/kg
2101-S07-18-24	04/26/2013	1	Antimony	1.9	Yes	U	1.9	mg/kg
2101-S07-18-24	04/26/2013	1	Arsenic	6.7	Yes		0.76	mg/kg
2101-S07-18-24	04/26/2013	1	Barium	80	Yes		9.5	mg/kg
2101-S07-18-24	04/26/2013	1	Beryllium	0.28	Yes	U	0.28	mg/kg
2101-S07-18-24	04/26/2013	1	Cadmium	0.59	Yes		0.28	mg/kg
2101-S07-18-24	04/26/2013	1	Calcium	1900	Yes		47	mg/kg
2101-S07-18-24	04/26/2013	1	Chromium	18	Yes		0.47	mg/kg
2101-S07-18-24	04/26/2013	1	Cobalt	4.8	Yes		1.9	mg/kg
2101-S07-18-24	04/26/2013	1	Copper	55	Yes		0.95	mg/kg
2101-S07-18-24	04/26/2013	1	Iron	11000	Yes		4.7	mg/kg
2101-S07-18-24	04/26/2013	1	Lead	210	Yes		0.76	mg/kg
2101-S07-18-24	04/26/2013	1	Magnesium	1300	Yes		47	mg/kg
2101-S07-18-24	04/26/2013	1	Manganese	120	Yes		0.47	mg/kg
2101-S07-18-24	04/26/2013	1	Molybdenum	0.95	Yes	U	0.95	mg/kg
2101-S07-18-24	04/26/2013	1	Nickel	14	Yes		1.9	mg/kg
2101-S07-18-24	04/26/2013	1	Potassium	240	Yes		47	mg/kg
2101-S07-18-24	04/26/2013	1	Selenium	1.9	Yes	U	1.9	mg/kg
2101-S07-18-24	04/26/2013	1	Silver	4.0	Yes		0.47	mg/kg
2101-S07-18-24	04/26/2013	1	Sodium	440	Yes		95	mg/kg
2101-S07-18-24	04/26/2013	1	Thallium	1.9	Yes	U	1.9	mg/kg

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S07-18-24	04/26/2013	1	Tin	8.9	Yes		0.95	mg/kg
2101-S07-18-24	04/26/2013	1	Vanadium	23	Yes		1.9	mg/kg
2101-S07-18-24	04/26/2013	1	Zinc	200	Yes		1.9	mg/kg
2101-S07-6-12	04/26/2013	1	Aluminum	8300	Yes		8.5	mg/kg
2101-S07-6-12	04/26/2013	1	Antimony	1.7	Yes	U	1.7	mg/kg
2101-S07-6-12	04/26/2013	1	Arsenic	13	Yes		0.68	mg/kg
2101-S07-6-12	04/26/2013	1	Barium	71	Yes		8.5	mg/kg
2101-S07-6-12	04/26/2013	1	Beryllium	0.37	Yes		0.26	mg/kg
2101-S07-6-12	04/26/2013	1	Cadmium	3.7	Yes		0.26	mg/kg
2101-S07-6-12	04/26/2013	1	Calcium	1500	Yes		43	mg/kg
2101-S07-6-12	04/26/2013	1	Chromium	22	Yes		0.43	mg/kg
2101-S07-6-12	04/26/2013	1	Cobalt	8.2	Yes		1.7	mg/kg
2101-S07-6-12	04/26/2013	1	Copper	52	Yes		0.85	mg/kg
2101-S07-6-12	04/26/2013	1	Iron	15000	Yes		4.3	mg/kg
2101-S07-6-12	04/26/2013	1	Lead	270	Yes		0.68	mg/kg
2101-S07-6-12	04/26/2013	1	Magnesium	2000	Yes		43	mg/kg
2101-S07-6-12	04/26/2013	1	Manganese	230	Yes		0.43	mg/kg
2101-S07-6-12	04/26/2013	1	Molybdenum	0.85	Yes	U	0.85	mg/kg
2101-S07-6-12	04/26/2013	1	Nickel	23	Yes		1.7	mg/kg
2101-S07-6-12	04/26/2013	1	Potassium	540	Yes		43	mg/kg
2101-S07-6-12	04/26/2013	1	Selenium	1.7	Yes	U	1.7	mg/kg
2101-S07-6-12	04/26/2013	1	Silver	15	Yes		0.43	mg/kg
2101-S07-6-12	04/26/2013	1	Sodium	210	Yes		85	mg/kg
2101-S07-6-12	04/26/2013	1	Thallium	1.7	Yes	U	1.7	mg/kg
2101-S07-6-12	04/26/2013	1	Tin	27	Yes		0.85	mg/kg
2101-S07-6-12	04/26/2013	1	Vanadium	32	Yes		1.7	mg/kg
2101-S07-6-12	04/26/2013	1	Zinc	140	Yes		1.7	mg/kg
2101-S08-0-1	04/26/2013	1	Aluminum	7300	Yes		11	mg/kg
2101-S08-0-1	04/26/2013	1	Antimony	3.1	Yes		2.3	mg/kg
2101-S08-0-1	04/26/2013	1	Arsenic	6.5	Yes		0.90	mg/kg
2101-S08-0-1	04/26/2013	1	Barium	130	Yes		11	mg/kg
2101-S08-0-1	04/26/2013	1	Beryllium	0.34	Yes	U	0.34	mg/kg
2101-S08-0-1	04/26/2013	1	Cadmium	2.6	Yes		0.34	mg/kg
2101-S08-0-1	04/26/2013	1	Calcium	7100	Yes		57	mg/kg

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S08-0-1	04/26/2013	1	Chromium	35	Yes		0.57	mg/kg
2101-S08-0-1	04/26/2013	1	Cobalt	7.4	Yes		2.3	mg/kg
2101-S08-0-1	04/26/2013	1	Copper	77	Yes		1.1	mg/kg
2101-S08-0-1	04/26/2013	1	Iron	16000	Yes		5.7	mg/kg
2101-S08-0-1	04/26/2013	1	Lead	710	Yes		0.90	mg/kg
2101-S08-0-1	04/26/2013	1	Magnesium	3400	Yes		57	mg/kg
2101-S08-0-1	04/26/2013	1	Manganese	270	Yes		0.57	mg/kg
2101-S08-0-1	04/26/2013	1	Molybdenum	1.3	Yes		1.1	mg/kg
2101-S08-0-1	04/26/2013	1	Nickel	31	Yes		2.3	mg/kg
2101-S08-0-1	04/26/2013	1	Potassium	530	Yes		57	mg/kg
2101-S08-0-1	04/26/2013	1	Selenium	2.3	Yes	U	2.3	mg/kg
2101-S08-0-1	04/26/2013	1	Silver	9.1	Yes		0.57	mg/kg
2101-S08-0-1	04/26/2013	1	Sodium	500	Yes		110	mg/kg
2101-S08-0-1	04/26/2013	1	Thallium	2.3	Yes	U	2.3	mg/kg
2101-S08-0-1	04/26/2013	1	Tin	15	Yes		1.1	mg/kg
2101-S08-0-1	04/26/2013	1	Vanadium	42	Yes		2.3	mg/kg
2101-S08-0-1	04/26/2013	1	Zinc	410	Yes		2.3	mg/kg
2101-S08-12-18	04/26/2013	1	Aluminum	6900	Yes		9.0	mg/kg
2101-S08-12-18	04/26/2013	1	Antimony	2.4	Yes		1.8	mg/kg
2101-S08-12-18	04/26/2013	1	Arsenic	11	Yes		0.72	mg/kg
2101-S08-12-18	04/26/2013	1	Barium	69	Yes		9.0	mg/kg
2101-S08-12-18	04/26/2013	1	Beryllium	0.30	Yes		0.27	mg/kg
2101-S08-12-18	04/26/2013	1	Cadmium	1.1	Yes		0.27	mg/kg
2101-S08-12-18	04/26/2013	1	Calcium	3100	Yes		45	mg/kg
2101-S08-12-18	04/26/2013	1	Chromium	23	Yes		0.45	mg/kg
2101-S08-12-18	04/26/2013	1	Cobalt	6.3	Yes		1.8	mg/kg
2101-S08-12-18	04/26/2013	1	Copper	57	Yes		0.90	mg/kg
2101-S08-12-18	04/26/2013	1	Iron	14000	Yes		4.5	mg/kg
2101-S08-12-18	04/26/2013	1	Lead	550	Yes		0.72	mg/kg
2101-S08-12-18	04/26/2013	1	Magnesium	2300	Yes		45	mg/kg
2101-S08-12-18	04/26/2013	1	Manganese	220	Yes		0.45	mg/kg
2101-S08-12-18	04/26/2013	1	Molybdenum	0.90	Yes	U	0.90	mg/kg
2101-S08-12-18	04/26/2013	1	Nickel	24	Yes		1.8	mg/kg
2101-S08-12-18	04/26/2013	1	Potassium	370	Yes		45	mg/kg

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S08-12-18	04/26/2013	1	Selenium	1.8	Yes	U	1.8	mg/kg
2101-S08-12-18	04/26/2013	1	Silver	8.5	Yes		0.45	mg/kg
2101-S08-12-18	04/26/2013	1	Sodium	160	Yes		90	mg/kg
2101-S08-12-18	04/26/2013	1	Thallium	1.8	Yes	U	1.8	mg/kg
2101-S08-12-18	04/26/2013	1	Tin	12	Yes		0.90	mg/kg
2101-S08-12-18	04/26/2013	1	Vanadium	29	Yes		1.8	mg/kg
2101-S08-12-18	04/26/2013	1	Zinc	240	Yes		1.8	mg/kg
2101-S08-1-6	04/26/2013	1	Aluminum	5200	Yes		8.4	mg/kg
2101-S08-1-6	04/26/2013	1	Antimony	1.9	Yes		1.7	mg/kg
2101-S08-1-6	04/26/2013	1	Arsenic	4.6	Yes		0.67	mg/kg
2101-S08-1-6	04/26/2013	1	Barium	700	Yes		8.4	mg/kg
2101-S08-1-6	04/26/2013	1	Beryllium	0.25	Yes	U	0.25	mg/kg
2101-S08-1-6	04/26/2013	1	Cadmium	1.6	Yes		0.25	mg/kg
2101-S08-1-6	04/26/2013	1	Calcium	4900	Yes		42	mg/kg
2101-S08-1-6	04/26/2013	1	Chromium	21	Yes		0.42	mg/kg
2101-S08-1-6	04/26/2013	1	Cobalt	5.4	Yes		1.7	mg/kg
2101-S08-1-6	04/26/2013	1	Copper	56	Yes		0.84	mg/kg
2101-S08-1-6	04/26/2013	1	Iron	12000	Yes		4.2	mg/kg
2101-S08-1-6	04/26/2013	1	Lead	990	Yes		0.67	mg/kg
2101-S08-1-6	04/26/2013	1	Magnesium	3000	Yes		42	mg/kg
2101-S08-1-6	04/26/2013	1	Manganese	170	Yes		0.42	mg/kg
2101-S08-1-6	04/26/2013	1	Molybdenum	1.4	Yes		0.84	mg/kg
2101-S08-1-6	04/26/2013	1	Nickel	18	Yes		1.7	mg/kg
2101-S08-1-6	04/26/2013	1	Potassium	370	Yes		42	mg/kg
2101-S08-1-6	04/26/2013	1	Selenium	1.7	Yes	U	1.7	mg/kg
2101-S08-1-6	04/26/2013	1	Silver	7.1	Yes		0.42	mg/kg
2101-S08-1-6	04/26/2013	1	Sodium	320	Yes		84	mg/kg
2101-S08-1-6	04/26/2013	1	Thallium	1.7	Yes	U	1.7	mg/kg
2101-S08-1-6	04/26/2013	1	Tin	9.6	Yes		0.84	mg/kg
2101-S08-1-6	04/26/2013	1	Vanadium	33	Yes		1.7	mg/kg
2101-S08-1-6	04/26/2013	1	Zinc	280	Yes		1.7	mg/kg
2101-S08-18-24	04/26/2013	1	Aluminum	9600	Yes		9.4	mg/kg
2101-S08-18-24	04/26/2013	1	Antimony	1.9	Yes	U	1.9	mg/kg
2101-S08-18-24	04/26/2013	1	Arsenic	3.6	Yes		0.76	mg/kg

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S08-18-24	04/26/2013	1	Barium	41	Yes		9.4	mg/kg
2101-S08-18-24	04/26/2013	1	Beryllium	0.33	Yes		0.28	mg/kg
2101-S08-18-24	04/26/2013	1	Cadmium	0.28	Yes	U	0.28	mg/kg
2101-S08-18-24	04/26/2013	1	Calcium	1200	Yes		47	mg/kg
2101-S08-18-24	04/26/2013	1	Chromium	26	Yes		0.47	mg/kg
2101-S08-18-24	04/26/2013	1	Cobalt	6.4	Yes		1.9	mg/kg
2101-S08-18-24	04/26/2013	1	Copper	11	Yes		0.94	mg/kg
2101-S08-18-24	04/26/2013	1	Iron	17000	Yes		4.7	mg/kg
2101-S08-18-24	04/26/2013	1	Lead	40	Yes		0.76	mg/kg
2101-S08-18-24	04/26/2013	1	Magnesium	1800	Yes		47	mg/kg
2101-S08-18-24	04/26/2013	1	Manganese	220	Yes		0.47	mg/kg
2101-S08-18-24	04/26/2013	1	Molybdenum	0.94	Yes	U	0.94	mg/kg
2101-S08-18-24	04/26/2013	1	Nickel	17	Yes		1.9	mg/kg
2101-S08-18-24	04/26/2013	1	Potassium	220	Yes		47	mg/kg
2101-S08-18-24	04/26/2013	1	Selenium	1.9	Yes	U	1.9	mg/kg
2101-S08-18-24	04/26/2013	1	Silver	5.7	Yes		0.47	mg/kg
2101-S08-18-24	04/26/2013	1	Sodium	94	Yes	U	94	mg/kg
2101-S08-18-24	04/26/2013	1	Thallium	1.9	Yes	U	1.9	mg/kg
2101-S08-18-24	04/26/2013	1	Tin	1.2	Yes		0.94	mg/kg
2101-S08-18-24	04/26/2013	1	Vanadium	27	Yes		1.9	mg/kg
2101-S08-18-24	04/26/2013	1	Zinc	33	Yes		1.9	mg/kg
2101-S08-6-12	04/26/2013	1	Aluminum	5600	Yes		9.2	mg/kg
2101-S08-6-12	04/26/2013	1	Antimony	2.3	Yes		1.8	mg/kg
2101-S08-6-12	04/26/2013	1	Arsenic	7.1	Yes		0.73	mg/kg
2101-S08-6-12	04/26/2013	1	Barium	100	Yes		9.2	mg/kg
2101-S08-6-12	04/26/2013	1	Beryllium	0.28	Yes	U	0.28	mg/kg
2101-S08-6-12	04/26/2013	1	Cadmium	1.7	Yes		0.28	mg/kg
2101-S08-6-12	04/26/2013	1	Calcium	4100	Yes		46	mg/kg
2101-S08-6-12	04/26/2013	1	Chromium	23	Yes		0.46	mg/kg
2101-S08-6-12	04/26/2013	1	Cobalt	5.5	Yes		1.8	mg/kg
2101-S08-6-12	04/26/2013	1	Copper	53	Yes		0.92	mg/kg
2101-S08-6-12	04/26/2013	1	Iron	12000	Yes		4.6	mg/kg
2101-S08-6-12	04/26/2013	1	Lead	800	Yes		0.73	mg/kg
2101-S08-6-12	04/26/2013	1	Magnesium	2400	Yes		46	mg/kg

Note: This printed Excel file is excerpted from the original data spreadsheet.

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S08-6-12	04/26/2013	1	Manganese	170	Yes		0.46	mg/kg
2101-S08-6-12	04/26/2013	1	Molybdenum	0.92	Yes	U	0.92	mg/kg
2101-S08-6-12	04/26/2013	1	Nickel	21	Yes		1.8	mg/kg
2101-S08-6-12	04/26/2013	1	Potassium	310	Yes		46	mg/kg
2101-S08-6-12	04/26/2013	1	Selenium	1.8	Yes	U	1.8	mg/kg
2101-S08-6-12	04/26/2013	1	Silver	7.3	Yes		0.46	mg/kg
2101-S08-6-12	04/26/2013	1	Sodium	160	Yes		92	mg/kg
2101-S08-6-12	04/26/2013	1	Thallium	1.8	Yes	U	1.8	mg/kg
2101-S08-6-12	04/26/2013	1	Tin	22	Yes		0.92	mg/kg
2101-S08-6-12	04/26/2013	1	Vanadium	27	Yes		1.8	mg/kg
2101-S08-6-12	04/26/2013	1	Zinc	250	Yes		1.8	mg/kg
2101-S09-0-1	04/26/2013	1	Aluminum	8900	Yes		10	mg/kg
2101-S09-0-1	04/26/2013	1	Antimony	2.1	Yes	U	2.1	mg/kg
2101-S09-0-1	04/26/2013	1	Arsenic	3.2	Yes		0.83	mg/kg
2101-S09-0-1	04/26/2013	1	Barium	89	Yes		10	mg/kg
2101-S09-0-1	04/26/2013	1	Beryllium	0.31	Yes	U	0.31	mg/kg
2101-S09-0-1	04/26/2013	1	Cadmium	3.1	Yes		0.31	mg/kg
2101-S09-0-1	04/26/2013	1	Calcium	4000	Yes		52	mg/kg
2101-S09-0-1	04/26/2013	1	Chromium	30	Yes		0.52	mg/kg
2101-S09-0-1	04/26/2013	1	Cobalt	7.5	Yes		2.1	mg/kg
2101-S09-0-1	04/26/2013	1	Copper	63	Yes		1.0	mg/kg
2101-S09-0-1	04/26/2013	1	Iron	14000	Yes		5.2	mg/kg
2101-S09-0-1	04/26/2013	1	Lead	430	Yes		0.83	mg/kg
2101-S09-0-1	04/26/2013	1	Magnesium	2900	Yes		52	mg/kg
2101-S09-0-1	04/26/2013	1	Manganese	250	Yes		0.52	mg/kg
2101-S09-0-1	04/26/2013	1	Molybdenum	1.0	Yes	U	1.0	mg/kg
2101-S09-0-1	04/26/2013	1	Nickel	26	Yes		2.1	mg/kg
2101-S09-0-1	04/26/2013	1	Potassium	830	Yes		52	mg/kg
2101-S09-0-1	04/26/2013	1	Selenium	2.1	Yes	U	2.1	mg/kg
2101-S09-0-1	04/26/2013	1	Silver	12	Yes		0.52	mg/kg
2101-S09-0-1	04/26/2013	1	Sodium	160	Yes		100	mg/kg
2101-S09-0-1	04/26/2013	1	Thallium	2.1	Yes	U	2.1	mg/kg
2101-S09-0-1	04/26/2013	1	Tin	5.1	Yes		1.0	mg/kg
2101-S09-0-1	04/26/2013	1	Vanadium	33	Yes		2.1	mg/kg

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S09-0-1	04/26/2013	1	Zinc	180	Yes		2.1	mg/kg
2101-S09-12-18	04/26/2013	1	Aluminum	9300	Yes		8.6	mg/kg
2101-S09-12-18	04/26/2013	1	Antimony	1.7	Yes	U	1.7	mg/kg
2101-S09-12-18	04/26/2013	1	Arsenic	2.1	Yes		0.69	mg/kg
2101-S09-12-18	04/26/2013	1	Barium	73	Yes		8.6	mg/kg
2101-S09-12-18	04/26/2013	1	Beryllium	0.32	Yes		0.26	mg/kg
2101-S09-12-18	04/26/2013	1	Cadmium	1.7	Yes		0.26	mg/kg
2101-S09-12-18	04/26/2013	1	Calcium	1200	Yes		43	mg/kg
2101-S09-12-18	04/26/2013	1	Chromium	23	Yes		0.43	mg/kg
2101-S09-12-18	04/26/2013	1	Cobalt	7.8	Yes		1.7	mg/kg
2101-S09-12-18	04/26/2013	1	Copper	26	Yes		0.86	mg/kg
2101-S09-12-18	04/26/2013	1	Iron	15000	Yes		4.3	mg/kg
2101-S09-12-18	04/26/2013	1	Lead	140	Yes		0.69	mg/kg
2101-S09-12-18	04/26/2013	1	Magnesium	2500	Yes		43	mg/kg
2101-S09-12-18	04/26/2013	1	Manganese	250	Yes		0.43	mg/kg
2101-S09-12-18	04/26/2013	1	Molybdenum	0.86	Yes	U	0.86	mg/kg
2101-S09-12-18	04/26/2013	1	Nickel	27	Yes		1.7	mg/kg
2101-S09-12-18	04/26/2013	1	Potassium	670	Yes		43	mg/kg
2101-S09-12-18	04/26/2013	1	Selenium	1.7	Yes	U	1.7	mg/kg
2101-S09-12-18	04/26/2013	1	Silver	11	Yes		0.43	mg/kg
2101-S09-12-18	04/26/2013	1	Sodium	92	Yes		86	mg/kg
2101-S09-12-18	04/26/2013	1	Thallium	1.7	Yes	U	1.7	mg/kg
2101-S09-12-18	04/26/2013	1	Tin	3.9	Yes		0.86	mg/kg
2101-S09-12-18	04/26/2013	1	Vanadium	25	Yes		1.7	mg/kg
2101-S09-12-18	04/26/2013	1	Zinc	65	Yes		1.7	mg/kg
2101-S09-1-6	04/26/2013	1	Aluminum	7200	Yes		8.9	mg/kg
2101-S09-1-6	04/26/2013	1	Antimony	1.8	Yes	U	1.8	mg/kg
2101-S09-1-6	04/26/2013	1	Arsenic	2.4	Yes		0.71	mg/kg
2101-S09-1-6	04/26/2013	1	Barium	49	Yes		8.9	mg/kg
2101-S09-1-6	04/26/2013	1	Beryllium	0.29	Yes		0.27	mg/kg
2101-S09-1-6	04/26/2013	1	Cadmium	1.4	Yes		0.27	mg/kg
2101-S09-1-6	04/26/2013	1	Calcium	1700	Yes		45	mg/kg
2101-S09-1-6	04/26/2013	1	Chromium	24	Yes		0.45	mg/kg
2101-S09-1-6	04/26/2013	1	Cobalt	6.0	Yes		1.8	mg/kg

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sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S09-1-6	04/26/2013	1	Copper	32	Yes		0.89	mg/kg
2101-S09-1-6	04/26/2013	1	Iron	12000	Yes		4.5	mg/kg
2101-S09-1-6	04/26/2013	1	Lead	160	Yes		0.71	mg/kg
2101-S09-1-6	04/26/2013	1	Magnesium	2200	Yes		45	mg/kg
2101-S09-1-6	04/26/2013	1	Manganese	170	Yes		0.45	mg/kg
2101-S09-1-6	04/26/2013	1	Molybdenum	0.89	Yes	U	0.89	mg/kg
2101-S09-1-6	04/26/2013	1	Nickel	22	Yes		1.8	mg/kg
2101-S09-1-6	04/26/2013	1	Potassium	480	Yes		45	mg/kg
2101-S09-1-6	04/26/2013	1	Selenium	1.8	Yes	U	1.8	mg/kg
2101-S09-1-6	04/26/2013	1	Silver	9.6	Yes		0.45	mg/kg
2101-S09-1-6	04/26/2013	1	Sodium	89	Yes	U	89	mg/kg
2101-S09-1-6	04/26/2013	1	Thallium	1.8	Yes	U	1.8	mg/kg
2101-S09-1-6	04/26/2013	1	Tin	2.5	Yes		0.89	mg/kg
2101-S09-1-6	04/26/2013	1	Vanadium	30	Yes		1.8	mg/kg
2101-S09-1-6	04/26/2013	1	Zinc	97	Yes		1.8	mg/kg
2101-S09-18-24	04/26/2013	1	Aluminum	6500	Yes		8.5	mg/kg
2101-S09-18-24	04/26/2013	1	Antimony	1.7	Yes	U	1.7	mg/kg
2101-S09-18-24	04/26/2013	1	Arsenic	1.7	Yes		0.68	mg/kg
2101-S09-18-24	04/26/2013	1	Barium	39	Yes		8.5	mg/kg
2101-S09-18-24	04/26/2013	1	Beryllium	0.26	Yes	U	0.26	mg/kg
2101-S09-18-24	04/26/2013	1	Cadmium	0.26	Yes	U	0.26	mg/kg
2101-S09-18-24	04/26/2013	1	Calcium	680	Yes		43	mg/kg
2101-S09-18-24	04/26/2013	1	Chromium	15	Yes		0.43	mg/kg
2101-S09-18-24	04/26/2013	1	Cobalt	6.4	Yes		1.7	mg/kg
2101-S09-18-24	04/26/2013	1	Copper	20	Yes		0.85	mg/kg
2101-S09-18-24	04/26/2013	1	Iron	12000	Yes		4.3	mg/kg
2101-S09-18-24	04/26/2013	1	Lead	26	Yes		0.68	mg/kg
2101-S09-18-24	04/26/2013	1	Magnesium	2800	Yes		43	mg/kg
2101-S09-18-24	04/26/2013	1	Manganese	130	Yes		0.43	mg/kg
2101-S09-18-24	04/26/2013	1	Molybdenum	0.85	Yes	U	0.85	mg/kg
2101-S09-18-24	04/26/2013	1	Nickel	28	Yes		1.7	mg/kg
2101-S09-18-24	04/26/2013	1	Potassium	910	Yes		43	mg/kg
2101-S09-18-24	04/26/2013	1	Selenium	1.7	Yes	U	1.7	mg/kg
2101-S09-18-24	04/26/2013	1	Silver	11	Yes		0.43	mg/kg

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S09-18-24	04/26/2013	1	Sodium	85	Yes	U	85	mg/kg
2101-S09-18-24	04/26/2013	1	Thallium	1.7	Yes	U	1.7	mg/kg
2101-S09-18-24	04/26/2013	1	Tin	0.85	Yes	U	0.85	mg/kg
2101-S09-18-24	04/26/2013	1	Vanadium	19	Yes		1.7	mg/kg
2101-S09-18-24	04/26/2013	1	Zinc	40	Yes		1.7	mg/kg
2101-S09-6-12	04/26/2013	1	Aluminum	8400	Yes		8.8	mg/kg
2101-S09-6-12	04/26/2013	1	Antimony	1.8	Yes	U	1.8	mg/kg
2101-S09-6-12	04/26/2013	1	Arsenic	2.4	Yes		0.71	mg/kg
2101-S09-6-12	04/26/2013	1	Barium	55	Yes		8.8	mg/kg
2101-S09-6-12	04/26/2013	1	Beryllium	0.29	Yes		0.27	mg/kg
2101-S09-6-12	04/26/2013	1	Cadmium	1.5	Yes		0.27	mg/kg
2101-S09-6-12	04/26/2013	1	Calcium	1400	Yes		44	mg/kg
2101-S09-6-12	04/26/2013	1	Chromium	24	Yes		0.44	mg/kg
2101-S09-6-12	04/26/2013	1	Cobalt	7.6	Yes		1.8	mg/kg
2101-S09-6-12	04/26/2013	1	Copper	29	Yes		0.88	mg/kg
2101-S09-6-12	04/26/2013	1	Iron	13000	Yes		4.4	mg/kg
2101-S09-6-12	04/26/2013	1	Lead	130	Yes		0.71	mg/kg
2101-S09-6-12	04/26/2013	1	Magnesium	3100	Yes		44	mg/kg
2101-S09-6-12	04/26/2013	1	Manganese	190	Yes		0.44	mg/kg
2101-S09-6-12	04/26/2013	1	Molybdenum	0.88	Yes	U	0.88	mg/kg
2101-S09-6-12	04/26/2013	1	Nickel	31	Yes		1.8	mg/kg
2101-S09-6-12	04/26/2013	1	Potassium	550	Yes		44	mg/kg
2101-S09-6-12	04/26/2013	1	Selenium	1.8	Yes	U	1.8	mg/kg
2101-S09-6-12	04/26/2013	1	Silver	11	Yes		0.44	mg/kg
2101-S09-6-12	04/26/2013	1	Sodium	91	Yes		88	mg/kg
2101-S09-6-12	04/26/2013	1	Thallium	1.8	Yes	U	1.8	mg/kg
2101-S09-6-12	04/26/2013	1	Tin	2.1	Yes		0.88	mg/kg
2101-S09-6-12	04/26/2013	1	Vanadium	26	Yes		1.8	mg/kg
2101-S09-6-12	04/26/2013	1	Zinc	81	Yes		1.8	mg/kg
2101-S12-0-1	04/26/2013	1	Aluminum	6800	Yes		11	mg/kg
2101-S12-0-1	04/26/2013	1	Antimony	2.6	Yes		2.1	mg/kg
2101-S12-0-1	04/26/2013	1	Arsenic	4.7	Yes		0.85	mg/kg
2101-S12-0-1	04/26/2013	1	Barium	74	Yes		11	mg/kg
2101-S12-0-1	04/26/2013	1	Beryllium	0.32	Yes	U	0.32	mg/kg

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S12-0-1	04/26/2013	1	Cadmium	2.8	Yes		0.32	mg/kg
2101-S12-0-1	04/26/2013	1	Calcium	6500	Yes		53	mg/kg
2101-S12-0-1	04/26/2013	1	Chromium	53	Yes		0.53	mg/kg
2101-S12-0-1	04/26/2013	1	Cobalt	5.8	Yes		2.1	mg/kg
2101-S12-0-1	04/26/2013	1	Copper	72	Yes		1.1	mg/kg
2101-S12-0-1	04/26/2013	1	Iron	15000	Yes		5.3	mg/kg
2101-S12-0-1	04/26/2013	1	Lead	500	Yes		0.85	mg/kg
2101-S12-0-1	04/26/2013	1	Magnesium	3700	Yes		53	mg/kg
2101-S12-0-1	04/26/2013	1	Manganese	260	Yes		0.53	mg/kg
2101-S12-0-1	04/26/2013	1	Molybdenum	1.1	Yes		1.1	mg/kg
2101-S12-0-1	04/26/2013	1	Nickel	20	Yes		2.1	mg/kg
2101-S12-0-1	04/26/2013	1	Potassium	360	Yes		53	mg/kg
2101-S12-0-1	04/26/2013	1	Selenium	2.1	Yes	U	2.1	mg/kg
2101-S12-0-1	04/26/2013	1	Silver	6.3	Yes		0.53	mg/kg
2101-S12-0-1	04/26/2013	1	Sodium	110	Yes	U	110	mg/kg
2101-S12-0-1	04/26/2013	1	Thallium	2.1	Yes	U	2.1	mg/kg
2101-S12-0-1	04/26/2013	1	Tin	12	Yes		1.1	mg/kg
2101-S12-0-1	04/26/2013	1	Vanadium	36	Yes		2.1	mg/kg
2101-S12-0-1	04/26/2013	1	Zinc	470	Yes		2.1	mg/kg
2101-S12-12-18	04/26/2013	1	Aluminum	5400	Yes		8.0	mg/kg
2101-S12-12-18	04/26/2013	1	Antimony	1.6	Yes	U	1.6	mg/kg
2101-S12-12-18	04/26/2013	1	Arsenic	4.4	Yes		0.64	mg/kg
2101-S12-12-18	04/26/2013	1	Barium	52	Yes		8.0	mg/kg
2101-S12-12-18	04/26/2013	1	Beryllium	0.26	Yes		0.24	mg/kg
2101-S12-12-18	04/26/2013	1	Cadmium	8.0	Yes		0.24	mg/kg
2101-S12-12-18	04/26/2013	1	Calcium	9400	Yes		40	mg/kg
2101-S12-12-18	04/26/2013	1	Chromium	16	Yes		0.40	mg/kg
2101-S12-12-18	04/26/2013	1	Cobalt	4.7	Yes		1.6	mg/kg
2101-S12-12-18	04/26/2013	1	Copper	33	Yes		0.80	mg/kg
2101-S12-12-18	04/26/2013	1	Iron	12000	Yes		4.0	mg/kg
2101-S12-12-18	04/26/2013	1	Lead	190	Yes		0.64	mg/kg
2101-S12-12-18	04/26/2013	1	Magnesium	6200	Yes		40	mg/kg
2101-S12-12-18	04/26/2013	1	Manganese	220	Yes		0.40	mg/kg
2101-S12-12-18	04/26/2013	1	Molybdenum	0.80	Yes	U	0.80	mg/kg

Note: This printed Excel file is excerpted from the original data spreadsheet.

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S12-12-18	04/26/2013	1	Nickel	14	Yes		1.6	mg/kg
2101-S12-12-18	04/26/2013	1	Potassium	350	Yes		40	mg/kg
2101-S12-12-18	04/26/2013	1	Selenium	1.6	Yes	U	1.6	mg/kg
2101-S12-12-18	04/26/2013	1	Silver	5.9	Yes		0.40	mg/kg
2101-S12-12-18	04/26/2013	1	Sodium	80	Yes	U	80	mg/kg
2101-S12-12-18	04/26/2013	1	Thallium	1.6	Yes	U	1.6	mg/kg
2101-S12-12-18	04/26/2013	1	Tin	5.6	Yes		0.80	mg/kg
2101-S12-12-18	04/26/2013	1	Vanadium	19	Yes		1.6	mg/kg
2101-S12-12-18	04/26/2013	1	Zinc	110	Yes		1.6	mg/kg
2101-S12-1-6	04/26/2013	1	Aluminum	7000	Yes		8.0	mg/kg
2101-S12-1-6	04/26/2013	1	Antimony	1.6	Yes		1.6	mg/kg
2101-S12-1-6	04/26/2013	1	Arsenic	5.3	Yes		0.64	mg/kg
2101-S12-1-6	04/26/2013	1	Barium	61	Yes		8.0	mg/kg
2101-S12-1-6	04/26/2013	1	Beryllium	0.29	Yes		0.24	mg/kg
2101-S12-1-6	04/26/2013	1	Cadmium	2.3	Yes		0.24	mg/kg
2101-S12-1-6	04/26/2013	1	Calcium	2300	Yes		40	mg/kg
2101-S12-1-6	04/26/2013	1	Chromium	25	Yes		0.40	mg/kg
2101-S12-1-6	04/26/2013	1	Cobalt	5.7	Yes		1.6	mg/kg
2101-S12-1-6	04/26/2013	1	Copper	60	Yes		0.80	mg/kg
2101-S12-1-6	04/26/2013	1	Iron	14000	Yes		4.0	mg/kg
2101-S12-1-6	04/26/2013	1	Lead	270	Yes		0.64	mg/kg
2101-S12-1-6	04/26/2013	1	Magnesium	2900	Yes		40	mg/kg
2101-S12-1-6	04/26/2013	1	Manganese	250	Yes		0.40	mg/kg
2101-S12-1-6	04/26/2013	1	Molybdenum	0.80	Yes	U	0.80	mg/kg
2101-S12-1-6	04/26/2013	1	Nickel	22	Yes		1.6	mg/kg
2101-S12-1-6	04/26/2013	1	Potassium	330	Yes		40	mg/kg
2101-S12-1-6	04/26/2013	1	Selenium	1.6	Yes	U	1.6	mg/kg
2101-S12-1-6	04/26/2013	1	Silver	5.3	Yes		0.40	mg/kg
2101-S12-1-6	04/26/2013	1	Sodium	80	Yes	U	80	mg/kg
2101-S12-1-6	04/26/2013	1	Thallium	1.6	Yes	U	1.6	mg/kg
2101-S12-1-6	04/26/2013	1	Tin	9.1	Yes		0.80	mg/kg
2101-S12-1-6	04/26/2013	1	Vanadium	31	Yes		1.6	mg/kg
2101-S12-1-6	04/26/2013	1	Zinc	160	Yes		1.6	mg/kg
2101-S12-18-24	04/26/2013	1	Aluminum	6400	Yes		8.4	mg/kg

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S12-18-24	04/26/2013	1	Antimony	1.7	Yes	U	1.7	mg/kg
2101-S12-18-24	04/26/2013	1	Arsenic	6.3	Yes		0.67	mg/kg
2101-S12-18-24	04/26/2013	1	Barium	88	Yes		8.4	mg/kg
2101-S12-18-24	04/26/2013	1	Beryllium	0.27	Yes		0.25	mg/kg
2101-S12-18-24	04/26/2013	1	Cadmium	6.1	Yes		0.25	mg/kg
2101-S12-18-24	04/26/2013	1	Calcium	18000	Yes		42	mg/kg
2101-S12-18-24	04/26/2013	1	Chromium	17	Yes		0.42	mg/kg
2101-S12-18-24	04/26/2013	1	Cobalt	6.3	Yes		1.7	mg/kg
2101-S12-18-24	04/26/2013	1	Copper	43	Yes		0.84	mg/kg
2101-S12-18-24	04/26/2013	1	Iron	17000	Yes		4.2	mg/kg
2101-S12-18-24	04/26/2013	1	Lead	260	Yes		0.67	mg/kg
2101-S12-18-24	04/26/2013	1	Magnesium	12000	Yes		42	mg/kg
2101-S12-18-24	04/26/2013	1	Manganese	330	Yes		0.42	mg/kg
2101-S12-18-24	04/26/2013	1	Molybdenum	0.84	Yes	U	0.84	mg/kg
2101-S12-18-24	04/26/2013	1	Nickel	22	Yes		1.7	mg/kg
2101-S12-18-24	04/26/2013	1	Potassium	790	Yes		42	mg/kg
2101-S12-18-24	04/26/2013	1	Selenium	1.7	Yes	U	1.7	mg/kg
2101-S12-18-24	04/26/2013	1	Silver	8.2	Yes		0.42	mg/kg
2101-S12-18-24	04/26/2013	1	Sodium	140	Yes		84	mg/kg
2101-S12-18-24	04/26/2013	1	Thallium	1.7	Yes	U	1.7	mg/kg
2101-S12-18-24	04/26/2013	1	Tin	8.7	Yes		0.84	mg/kg
2101-S12-18-24	04/26/2013	1	Vanadium	23	Yes		1.7	mg/kg
2101-S12-18-24	04/26/2013	1	Zinc	140	Yes		1.7	mg/kg
2101-S12-6-12	04/26/2013	1	Aluminum	7100	Yes		9.1	mg/kg
2101-S12-6-12	04/26/2013	1	Antimony	1.8	Yes	U	1.8	mg/kg
2101-S12-6-12	04/26/2013	1	Arsenic	4.8	Yes		0.73	mg/kg
2101-S12-6-12	04/26/2013	1	Barium	55	Yes		9.1	mg/kg
2101-S12-6-12	04/26/2013	1	Beryllium	0.27	Yes	U	0.27	mg/kg
2101-S12-6-12	04/26/2013	1	Cadmium	2.7	Yes		0.27	mg/kg
2101-S12-6-12	04/26/2013	1	Calcium	8600	Yes		46	mg/kg
2101-S12-6-12	04/26/2013	1	Chromium	17	Yes		0.46	mg/kg
2101-S12-6-12	04/26/2013	1	Cobalt	5.4	Yes		1.8	mg/kg
2101-S12-6-12	04/26/2013	1	Copper	32	Yes		0.91	mg/kg
2101-S12-6-12	04/26/2013	1	Iron	13000	Yes		4.6	mg/kg

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S12-6-12	04/26/2013	1	Lead	130	Yes		0.73	mg/kg
2101-S12-6-12	04/26/2013	1	Magnesium	6300	Yes		46	mg/kg
2101-S12-6-12	04/26/2013	1	Manganese	230	Yes		0.46	mg/kg
2101-S12-6-12	04/26/2013	1	Molybdenum	0.91	Yes	U	0.91	mg/kg
2101-S12-6-12	04/26/2013	1	Nickel	15	Yes		1.8	mg/kg
2101-S12-6-12	04/26/2013	1	Potassium	380	Yes		46	mg/kg
2101-S12-6-12	04/26/2013	1	Selenium	1.8	Yes	U	1.8	mg/kg
2101-S12-6-12	04/26/2013	1	Silver	6.1	Yes		0.46	mg/kg
2101-S12-6-12	04/26/2013	1	Sodium	91	Yes	U	91	mg/kg
2101-S12-6-12	04/26/2013	1	Thallium	1.8	Yes	U	1.8	mg/kg
2101-S12-6-12	04/26/2013	1	Tin	4.2	Yes		0.91	mg/kg
2101-S12-6-12	04/26/2013	1	Vanadium	22	Yes		1.8	mg/kg
2101-S12-6-12	04/26/2013	1	Zinc	74	Yes		1.8	mg/kg
2101-S13-0-1	04/26/2013	1	Aluminum	6500	Yes		11	mg/kg
2101-S13-0-1	04/26/2013	1	Antimony	3.1	Yes		2.2	mg/kg
2101-S13-0-1	04/26/2013	1	Arsenic	4.9	Yes		0.89	mg/kg
2101-S13-0-1	04/26/2013	1	Barium	82	Yes		11	mg/kg
2101-S13-0-1	04/26/2013	1	Beryllium	0.33	Yes	U	0.33	mg/kg
2101-S13-0-1	04/26/2013	1	Cadmium	6.4	Yes		0.33	mg/kg
2101-S13-0-1	04/26/2013	1	Calcium	13000	Yes		56	mg/kg
2101-S13-0-1	04/26/2013	1	Chromium	37	Yes		0.56	mg/kg
2101-S13-0-1	04/26/2013	1	Cobalt	6.1	Yes		2.2	mg/kg
2101-S13-0-1	04/26/2013	1	Copper	95	Yes		1.1	mg/kg
2101-S13-0-1	04/26/2013	1	Iron	15000	Yes		5.6	mg/kg
2101-S13-0-1	04/26/2013	1	Lead	390	Yes		0.89	mg/kg
2101-S13-0-1	04/26/2013	1	Magnesium	7100	Yes		56	mg/kg
2101-S13-0-1	04/26/2013	1	Manganese	260	Yes		0.56	mg/kg
2101-S13-0-1	04/26/2013	1	Molybdenum	1.6	Yes		1.1	mg/kg
2101-S13-0-1	04/26/2013	1	Nickel	27	Yes		2.2	mg/kg
2101-S13-0-1	04/26/2013	1	Potassium	500	Yes		56	mg/kg
2101-S13-0-1	04/26/2013	1	Selenium	2.2	Yes	U	2.2	mg/kg
2101-S13-0-1	04/26/2013	1	Silver	6.5	Yes		0.56	mg/kg
2101-S13-0-1	04/26/2013	1	Sodium	220	Yes		110	mg/kg
2101-S13-0-1	04/26/2013	1	Thallium	2.2	Yes	U	2.2	mg/kg

Note: This printed Excel file is excerpted from the original data spreadsheet.

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S13-0-1	04/26/2013	1	Tin	13	Yes		1.1	mg/kg
2101-S13-0-1	04/26/2013	1	Vanadium	37	Yes		2.2	mg/kg
2101-S13-0-1	04/26/2013	1	Zinc	700	Yes		2.2	mg/kg
2101-S13-12-18	04/26/2013	1	Aluminum	7700	Yes		8.9	mg/kg
2101-S13-12-18	04/26/2013	1	Antimony	1.8	Yes	U	1.8	mg/kg
2101-S13-12-18	04/26/2013	1	Arsenic	7.7	Yes		0.71	mg/kg
2101-S13-12-18	04/26/2013	1	Barium	70	Yes		8.9	mg/kg
2101-S13-12-18	04/26/2013	1	Beryllium	0.30	Yes		0.27	mg/kg
2101-S13-12-18	04/26/2013	1	Cadmium	23	Yes		0.27	mg/kg
2101-S13-12-18	04/26/2013	1	Calcium	4400	Yes		45	mg/kg
2101-S13-12-18	04/26/2013	1	Chromium	22	Yes		0.45	mg/kg
2101-S13-12-18	04/26/2013	1	Cobalt	6.5	Yes		1.8	mg/kg
2101-S13-12-18	04/26/2013	1	Copper	55	Yes		0.89	mg/kg
2101-S13-12-18	04/26/2013	1	Iron	20000	Yes		4.5	mg/kg
2101-S13-12-18	04/26/2013	1	Lead	810	Yes		0.71	mg/kg
2101-S13-12-18	04/26/2013	1	Magnesium	3400	Yes		45	mg/kg
2101-S13-12-18	04/26/2013	1	Manganese	260	Yes		0.45	mg/kg
2101-S13-12-18	04/26/2013	1	Molybdenum	0.89	Yes	U	0.89	mg/kg
2101-S13-12-18	04/26/2013	1	Nickel	19	Yes		1.8	mg/kg
2101-S13-12-18	04/26/2013	1	Potassium	410	Yes		45	mg/kg
2101-S13-12-18	04/26/2013	1	Selenium	1.8	Yes	U	1.8	mg/kg
2101-S13-12-18	04/26/2013	1	Silver	7.1	Yes		0.45	mg/kg
2101-S13-12-18	04/26/2013	1	Sodium	160	Yes		89	mg/kg
2101-S13-12-18	04/26/2013	1	Thallium	1.8	Yes	U	1.8	mg/kg
2101-S13-12-18	04/26/2013	1	Tin	430	Yes		0.89	mg/kg
2101-S13-12-18	04/26/2013	1	Vanadium	29	Yes		1.8	mg/kg
2101-S13-12-18	04/26/2013	1	Zinc	370	Yes		1.8	mg/kg
2101-S13-1-6	04/26/2013	1	Aluminum	6600	Yes		9.4	mg/kg
2101-S13-1-6	04/26/2013	1	Antimony	1.9	Yes	U	1.9	mg/kg
2101-S13-1-6	04/26/2013	1	Arsenic	5.4	Yes		0.75	mg/kg
2101-S13-1-6	04/26/2013	1	Barium	68	Yes		9.4	mg/kg
2101-S13-1-6	04/26/2013	1	Beryllium	0.34	Yes		0.28	mg/kg
2101-S13-1-6	04/26/2013	1	Cadmium	8.7	Yes		0.28	mg/kg
2101-S13-1-6	04/26/2013	1	Calcium	4600	Yes		47	mg/kg

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S13-1-6	04/26/2013	1	Chromium	21	Yes		0.47	mg/kg
2101-S13-1-6	04/26/2013	1	Cobalt	7.2	Yes		1.9	mg/kg
2101-S13-1-6	04/26/2013	1	Copper	110	Yes		0.94	mg/kg
2101-S13-1-6	04/26/2013	1	Iron	15000	Yes		4.7	mg/kg
2101-S13-1-6	04/26/2013	1	Lead	750	Yes		0.75	mg/kg
2101-S13-1-6	04/26/2013	1	Magnesium	3400	Yes		47	mg/kg
2101-S13-1-6	04/26/2013	1	Manganese	240	Yes		0.47	mg/kg
2101-S13-1-6	04/26/2013	1	Molybdenum	0.94	Yes	U	0.94	mg/kg
2101-S13-1-6	04/26/2013	1	Nickel	24	Yes		1.9	mg/kg
2101-S13-1-6	04/26/2013	1	Potassium	430	Yes		47	mg/kg
2101-S13-1-6	04/26/2013	1	Selenium	1.9	Yes	U	1.9	mg/kg
2101-S13-1-6	04/26/2013	1	Silver	7.2	Yes		0.47	mg/kg
2101-S13-1-6	04/26/2013	1	Sodium	150	Yes		94	mg/kg
2101-S13-1-6	04/26/2013	1	Thallium	1.9	Yes	U	1.9	mg/kg
2101-S13-1-6	04/26/2013	1	Tin	210	Yes		0.94	mg/kg
2101-S13-1-6	04/26/2013	1	Vanadium	40	Yes		1.9	mg/kg
2101-S13-1-6	04/26/2013	1	Zinc	310	Yes		1.9	mg/kg
2101-S13-18-24	04/26/2013	1	Aluminum	8400	Yes		9.1	mg/kg
2101-S13-18-24	04/26/2013	1	Antimony	1.8	Yes	U	1.8	mg/kg
2101-S13-18-24	04/26/2013	1	Arsenic	5.0	Yes		0.73	mg/kg
2101-S13-18-24	04/26/2013	1	Barium	56	Yes		9.1	mg/kg
2101-S13-18-24	04/26/2013	1	Beryllium	0.31	Yes		0.27	mg/kg
2101-S13-18-24	04/26/2013	1	Cadmium	7.0	Yes		0.27	mg/kg
2101-S13-18-24	04/26/2013	1	Calcium	3100	Yes		45	mg/kg
2101-S13-18-24	04/26/2013	1	Chromium	20	Yes		0.45	mg/kg
2101-S13-18-24	04/26/2013	1	Cobalt	6.3	Yes		1.8	mg/kg
2101-S13-18-24	04/26/2013	1	Copper	30	Yes		0.91	mg/kg
2101-S13-18-24	04/26/2013	1	Iron	16000	Yes		4.5	mg/kg
2101-S13-18-24	04/26/2013	1	Lead	97	Yes		0.73	mg/kg
2101-S13-18-24	04/26/2013	1	Magnesium	3000	Yes		45	mg/kg
2101-S13-18-24	04/26/2013	1	Manganese	220	Yes		0.45	mg/kg
2101-S13-18-24	04/26/2013	1	Molybdenum	0.91	Yes	U	0.91	mg/kg
2101-S13-18-24	04/26/2013	1	Nickel	18	Yes		1.8	mg/kg
2101-S13-18-24	04/26/2013	1	Potassium	450	Yes		45	mg/kg

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S13-18-24	04/26/2013	1	Selenium	1.8	Yes	U	1.8	mg/kg
2101-S13-18-24	04/26/2013	1	Silver	6.9	Yes		0.45	mg/kg
2101-S13-18-24	04/26/2013	1	Sodium	160	Yes		91	mg/kg
2101-S13-18-24	04/26/2013	1	Thallium	1.8	Yes	U	1.8	mg/kg
2101-S13-18-24	04/26/2013	1	Tin	6.8	Yes		0.91	mg/kg
2101-S13-18-24	04/26/2013	1	Vanadium	26	Yes		1.8	mg/kg
2101-S13-18-24	04/26/2013	1	Zinc	140	Yes		1.8	mg/kg
2101-S13-6-12	04/26/2013	1	Aluminum	7200	Yes		9.3	mg/kg
2101-S13-6-12	04/26/2013	1	Antimony	2.0	Yes		1.9	mg/kg
2101-S13-6-12	04/26/2013	1	Arsenic	6.3	Yes		0.75	mg/kg
2101-S13-6-12	04/26/2013	1	Barium	81	Yes		9.3	mg/kg
2101-S13-6-12	04/26/2013	1	Beryllium	0.35	Yes		0.28	mg/kg
2101-S13-6-12	04/26/2013	1	Cadmium	20	Yes		0.28	mg/kg
2101-S13-6-12	04/26/2013	1	Calcium	5900	Yes		47	mg/kg
2101-S13-6-12	04/26/2013	1	Chromium	23	Yes		0.47	mg/kg
2101-S13-6-12	04/26/2013	1	Cobalt	6.4	Yes		1.9	mg/kg
2101-S13-6-12	04/26/2013	1	Copper	76	Yes		0.93	mg/kg
2101-S13-6-12	04/26/2013	1	Iron	17000	Yes		4.7	mg/kg
2101-S13-6-12	04/26/2013	1	Lead	230	Yes		0.75	mg/kg
2101-S13-6-12	04/26/2013	1	Magnesium	4300	Yes		47	mg/kg
2101-S13-6-12	04/26/2013	1	Manganese	240	Yes		0.47	mg/kg
2101-S13-6-12	04/26/2013	1	Molybdenum	0.93	Yes	U	0.93	mg/kg
2101-S13-6-12	04/26/2013	1	Nickel	25	Yes		1.9	mg/kg
2101-S13-6-12	04/26/2013	1	Potassium	370	Yes	K	47	mg/kg
2101-S13-6-12	04/26/2013	1	Selenium	1.9	Yes	U	1.9	mg/kg
2101-S13-6-12	04/26/2013	1	Silver	7.1	Yes		0.47	mg/kg
2101-S13-6-12	04/26/2013	1	Sodium	160	Yes		93	mg/kg
2101-S13-6-12	04/26/2013	1	Thallium	1.9	Yes	U	1.9	mg/kg
2101-S13-6-12	04/26/2013	1	Tin	15	Yes	K	0.93	mg/kg
2101-S13-6-12	04/26/2013	1	Vanadium	32	Yes		1.9	mg/kg
2101-S13-6-12	04/26/2013	1	Zinc	320	Yes		1.9	mg/kg
2101-S16-0-1	04/26/2013	1	Aluminum	8900	Yes		11	mg/kg
2101-S16-0-1	04/26/2013	1	Antimony	2.4	Yes		2.1	mg/kg
2101-S16-0-1	04/26/2013	1	Arsenic	3.4	Yes		0.86	mg/kg

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S16-0-1	04/26/2013	1	Barium	84	Yes		11	mg/kg
2101-S16-0-1	04/26/2013	1	Beryllium	0.32	Yes	U	0.32	mg/kg
2101-S16-0-1	04/26/2013	1	Cadmium	2.9	Yes		0.32	mg/kg
2101-S16-0-1	04/26/2013	1	Calcium	3900	Yes		54	mg/kg
2101-S16-0-1	04/26/2013	1	Chromium	31	Yes		0.54	mg/kg
2101-S16-0-1	04/26/2013	1	Cobalt	7.6	Yes		2.1	mg/kg
2101-S16-0-1	04/26/2013	1	Copper	62	Yes		1.1	mg/kg
2101-S16-0-1	04/26/2013	1	Iron	14000	Yes		5.4	mg/kg
2101-S16-0-1	04/26/2013	1	Lead	440	Yes		0.86	mg/kg
2101-S16-0-1	04/26/2013	1	Magnesium	2900	Yes		54	mg/kg
2101-S16-0-1	04/26/2013	1	Manganese	240	Yes		0.54	mg/kg
2101-S16-0-1	04/26/2013	1	Molybdenum	1.1	Yes	U	1.1	mg/kg
2101-S16-0-1	04/26/2013	1	Nickel	26	Yes		2.1	mg/kg
2101-S16-0-1	04/26/2013	1	Potassium	820	Yes		54	mg/kg
2101-S16-0-1	04/26/2013	1	Selenium	2.1	Yes	U	2.1	mg/kg
2101-S16-0-1	04/26/2013	1	Silver	12	Yes		0.54	mg/kg
2101-S16-0-1	04/26/2013	1	Sodium	160	Yes		110	mg/kg
2101-S16-0-1	04/26/2013	1	Thallium	2.1	Yes	U	2.1	mg/kg
2101-S16-0-1	04/26/2013	1	Tin	14	Yes		1.1	mg/kg
2101-S16-0-1	04/26/2013	1	Vanadium	34	Yes		2.1	mg/kg
2101-S16-0-1	04/26/2013	1	Zinc	180	Yes		2.1	mg/kg

4.2.4.2.2 *Hazardous waste quantity.* Assign the same factor value for hazardous waste quantity for the watershed as would be assigned in section 4.2.2.2.2 for the drinking water threat. Enter this value in Table 4–25.

4.2.4.2.3 *Calculation of environmental threat-waste characteristics factor category value.* For the hazardous substance selected for the watershed in section 4.2.4.2.1.5, use its ecosystem toxicity/mobility/persistence factor value and ecosystem bioaccumulation potential factor value as follows to assign a value to the waste characteristics factor category. First, multiply the ecosystem toxicity/mobility/persistence factor value and the hazardous waste quantity factor value for the watershed, subject to a maximum product of 1×10^{8}. Then multiply this product by the ecosystem bioaccumulation potential factor value for this hazardous substance, subject to a maximum product of 1×10^{12}. Based on this product, assign a value from Table 2–7 (section 2.4.3.1) to the environmental threat-waste characteristics category for the watershed. Enter the value in Table 4–25.

4.2.4.3 *Environmental threat-targets.* Evaluate the environmental threat-targets factor category for a watershed using one factor: sensitive environments.

4.2.4.3.1 *Sensitive environments.* Evaluate sensitive environments for the watershed based on three factors: Level I concentrations, Level II concentrations, and potential contamination. Determine which applies to each sensitive environment as specified in section 4.1.4.3.1, except: use only those samples from the surface water in-water segment and only those hazardous substances in such samples that meet the conditions in sections 4.2.1.3 and 4.2.1.4.

4.2.4.3.1.1 *Level I concentrations.* Assign a value to this factor as specified in section 4.1.4.3.1.1. Enter this value in Table 4–25.

4.2.4.3.1.2 *Level II concentrations.* Assign a value to this factor as specified in section 4.1.4.3.1.2. Enter this value in Table 4–25.

4.2.4.3.1.3 *Potential contamination.* Assign a value to this factor as specified in section 4.1.4.3.1.3 with the following modification. Multiply the appropriate dilution weight from Table 4–13 for the sensitive environments in each type of surface water body by the adjustment value selected from Table 4–27, as specified in section 4.2.2.3.1. Use the resulting product, not the value from Table 4–13, as the dilution weight for the sensitive environments in that type of surface water body. Do not round this product to the nearest integer. Enter the value assigned in Table 4–25.

4.2.4.3.1.4 *Calculation of environmental threat-targets factor category value.* Sum the values for Level I concentrations, Level II concentrations, and potential contamination for the watershed. Do not round this sum to the nearest integer. Assign this sum as the environmental threat targets factor category value for the watershed. Enter this value in Table 4–25.

4.2.4.4 *Calculation of environmental threat score for a watershed.* Multiply the environmental threat factor category values for likelihood of release, waste characteristics, and targets for the watershed, and round the product to the nearest integer. Then divide by 82,500. Assign the resulting value, subject to a maximum of 60, as the environmental threat score for the watershed. Enter this score in Table 4–25.

4.2.5 *Calculation of ground water to surface water migration component score for a watershed.* Sum the scores for the three threats for the watershed (that is, drinking water, human food chain, and environmental threats). Assign the resulting score, subject to a maximum value of 100, as the ground water to surface water migration component score for the watershed. Enter this score in Table 4–25.

4.2.6 *Calculation of ground water to surface water migration component score.* Select the highest ground water to surface water migration component score from the watersheds evaluated. Assign this score as the ground water to surface water migration component score for the site, subject to a maximum score of 100. Enter this score in Table 4–25.

4.3 *Calculation of surface water migration pathway score.* Determine the surface water migration pathway score as follows:

- If only one of the two surface water migration components (overland/flood or ground water to surface water) is scored, assign the score of that component as the surface water migration pathway score.
- If both components are scored, select the higher of the two component scores from sections 4.1.6 and 4.2.6. Assign that score as the surface water migration pathway score.

5.0 Soil Exposure Pathway

Evaluate the soil exposure pathway based on two threats: Resident population threat and nearby population threat. Evaluate both threats based on three factor categories: Likelihood of exposure, waste characteristics, and targets. Figure 5–1 indicates the factors included within each factor category for each type of threat.

Determine the soil exposure pathway score (S_s) in terms of the factor category values as follows:

$$S_s = \frac{\sum_{i=1}^{2} (LE_i)(WC_i)(T_i)}{SF}$$

where:

LE_i = Likelihood of exposure factor category value for threat i (that is, resident population threat or nearby population threat).

WC_i = Waste characteristics factor category value for threat i.

T_i = Targets factor category value for threat i.

SF = Scaling factor.

Table 5–1 outlines the specific calculation procedure.

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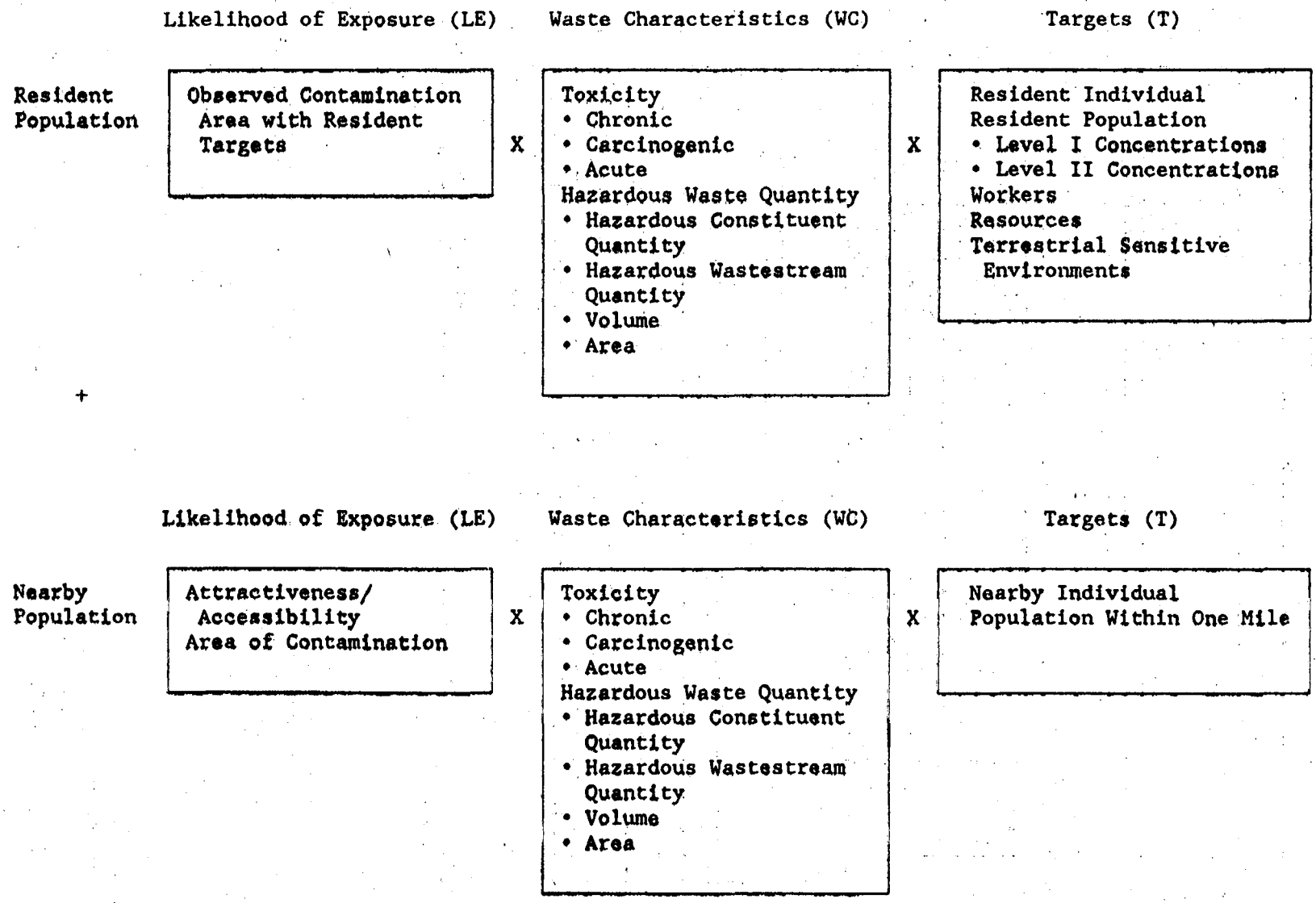

Figure 5-1
OVERVIEW OF SOIL EXPOSURE PATHWAY

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TABLE 5-1.—SOIL EXPOSURE PATHWAY SCORESHEET

Factor categories and factors	Maximum value	Value assigned
Resident Population Threat		
Likelihood of Exposure		
1. Likelihood of Exposure	550	
Waste Characteristics		
2. Toxicity	(a)	
3. Hazardous Waste Quantity	(a)	
4. Waste Characteristics	100	
Targets		
5. Resident Individual	50	
6 Resident Population:		
6a. Level I Concentrations	(b)	
6b. Level II Concentrations	(b)	
6c. Resident Population (lines 6a + 6b)	(b)	
7. Workers	15	
8. Resources	5	
9. Terrestrial Sensitive Environments	(c)	
10. Targets (lines 5 + 6c + 7 + 8 + 9)	(b)	
Resident Population Threat Score		
11. Resident Population Threat (lines 1 × 4 × 10)	(b)	
Nearby Population Threat		
Likelihood of Exposure		
12. Attractiveness/Accessibility	100	
13. Area of Contamination	100	
14. Likelihood of Exposure	500	
Waste Characteristics		
15. Toxicity	(a)	
16. Hazardous Waste Quantity	(a)	
17. Waste Characteristics	100	
Targets		
18. Nearby Individual	1	
19. Population Within 1 Mile	(b)	
20. Targets (lines 18 + 19)	(b)	
Nearby Population Threat Score		
21. Nearby Population Threat (lines 14 × 17 × 20)	(b)	
Soil Exposure Pathway Score		
22. Soil Exposure Pathway Score [d] (S_s), (lines [11+21] / 82,500, subject to a maximum of 100)	100	

[a] Maximum value applies to waste characteristics category.
[b] Maximum value not applicable.
[c] No specific maximum value applies to factor. However, pathway score based solely on terrestrial sensitive environments is limited to maximum of 60
[d] Do not round to nearest integer.

5.0.1 *General considerations.* Evaluate the soil exposure pathway based on areas of observed contamination:

- Consider observed contamination to be present at sampling locations where analytic evidence indicates that:
  - –A hazardous substance attributable to the site is present at a concentration significantly above background levels for the site (see Table 2–3 in section 2.3 for the criteria for determining analytical significance), *and*
  - –This hazardous substance, if not present at the surface, is covered by 2 feet or less of cover material (for example, soil).
- Establish areas of observed contamination based on sampling locations at which there is observed contamination as follows:
  - –For all sources except contaminated soil, if observed contamination from the site is present at any sampling location within the source, consider that entire source to be an area of observed contamination.
  - –For contaminated soil, consider both the sampling location(s) with observed contamination from the site and the area lying between such locations to be an area of observed contamination, unless available information indicates otherwise.
- If an area of observed contamination (or portion of such an area) is covered by a permanent, or otherwise maintained, essentially impenetrable material (for example, asphalt) that is not more than 2 feet thick, exclude that area (or portion of the area) in evaluating the soil exposure pathway.
- For an area of observed contamination, consider only those hazardous substances that meet the criteria for observed contamination for that area to be associated with that area in evaluating the soil exposure pathway (see section 2.2.2).

If there is observed contamination, assign scores for the resident population threat and the nearby population threat, as specified in sections 5.1 and 5.2. If there is no observed contamination, assign the soil exposure pathway a score of 0.

5.1 *Resident Population Threat.* Evaluate the resident population threat only if there is an area of observed contamination in one or more of the following locations:

- Within the property boundary of a residence, school, or day care center *and* within 200 feet of the respective residence, school, or day care center, or
- Within a workplace property boundary *and* within 200 feet of a workplace area, or
- Within the boundaries of a resource specified in section 5.1.3.4, or
- Within the boundaries of a terrestrial sensitive environment specified in section 5.1.3.5.

If not, assign the resident population threat a value of 0, enter this value in Table 5–1, and proceed to the nearby population threat (section 5.2).

5.1.1 *Likelihood of exposure.* Assign a value of 550 to the likelihood of exposure factor category for the resident population threat if there is an area of observed contamination in one or more locations listed in section 5.1. Enter this value in Table 5–1.

5.1.2 *Waste characteristics.* Evaluate waste characteristics based on two factors: toxicity and hazardous waste quantity. Evaluate only those hazardous substances that meet the criteria for observed contamination at the site (see section 5.0.1).

5.1.2.1 *Toxicity.* Assign a toxicity factor value to each hazardous substance as specified in section 2.4.1.1. Use the hazardous substance with the highest toxicity factor value to assign the value to the toxicity factor for the resident population threat. Enter this value in Table 5–1.

5.1.2.2 *Hazardous waste quantity.* Assign hazardous waste quantity factor value as specified in section 2.4.2. In estimating the hazardous waste quantity, use Table 5–2 and:

• Consider only the first 2 feet of depth of an area of observed contamination, except as specified for the volume measure.

• Use the volume measure (see section 2.4.2.1.3) only for those types of areas of observed contamination listed in Tier C of Table 5–2. In evaluating the volume measure for these listed areas of observed contamination, use the full volume, not just the volume within the top 2 feet.

• Use the area measure (see section 2.4.2.1.4), not the volume measure, for all other types of areas of observed contamination, even if their volume is known.

Enter the value assigned in Table 5–1.

TABLE 5–2.—HAZARDOUS WASTE QUANTITY EVALUATION EQUATIONS FOR SOIL EXPOSURE PATHWAY

Tier	Measure	Units	Equation for assigning value [a]
A	Hazardous Constituent Quantity (C)	lb	C
B [b]	Hazardous Wastestream Quantity (W)	lb	W/5,000
C [b]	Volume (V)		
	Surface Impoundment [c]	yd^3	V/2.5
	Drums [d]	gallon	V/500
	Tanks and Containers Other Than Drums	yd^3	V/2.5
D [b]	Area (A)		
	Landfill	ft^2	A/34,000
	Surface Impoundment	ft^2	A/13
	Surface Impoundment (Buried/backfilled)	ft^2	A/13
	Land treatment	ft^2	A/270
	Pile [e]	ft^2	A/34
	Contaminated Soil	ft^2	A/34,000

[a] Do not round nearest integer.
[b] Convert volume to mass when necessary: 1 ton=2,000 pounds=1 cubic yard=4 drums=200 gallons.
[c] Use volume measure only for surface impoundments containing hazardous substances present as liquids. Use area measures in Tier D for dry surface impoundments and for buried/backfilled surface impoundments.
[d] If actual volume of drums is unavailable, assume 1 drum=50 gallons.
[e] Use land surface area under pile, not surface area of pile.

5.1.2.3 *Calculation of waste characteristics factor category value.* Multiply the toxicity and hazardous waste quantity factor values, subject to a maximum product of 1×10^8. Based on this product, assign a value from Table 2–7 (section 2.4.3.1) to the waste characteristics factor category. Enter this value in Table 5–1.

5.1.3 *Targets.* Evaluate the targets factor category for the resident population threat based on five factors: resident individual, resident population, workers, resources, and terrestrial sensitive environments.

In evaluating the targets factor category for the resident population threat, count only the following as targets:

• Resident individual—a person living or attending school or day care on a property with an area of observed contamination *and* whose residence, school, or day care center, respectively, is on or within 200 feet of the area of observed contamination.

• Worker—a person working on a property with an area of observed contamination *and* whose workplace area is on or within 200 feet of the area of observed contamination.

• Resources located on an area of observed contamination, as specified in section 5.1.

• Terrestrial sensitive environments located on an area of observed contamination, as specified in section 5.1.

5.1.3.1 *Resident individual.* Evaluate this factor based on whether there is a resident individual, as specified in section 5.1.3, who is subject to Level I or Level II concentrations.

First, determine those areas of observed contamination subject to Level I concentrations and those subject to Level II concentrations as specified in sections 2.5.1 and 2.5.2. Use the health-based benchmarks from Table 5–3 in determining the level of contamination. Then assign a value to the resident individual factor as follows:

• Assign a value of 50 if there is at least one resident individual for one or more areas subject to Level I concentrations.

• Assign a value of 45 if there is no such resident individuals, but there is at least one resident individual for one or more areas subject to Level II concentrations.

• Assign a value of 0 if there is no resident individual.

Enter the value assigned in Table 5–1.

5.1.3.2 *Resident population.* Evaluate resident population based on two factors: Level I concentrations and Level II concentrations. Determine which factor applies as specified in sections 2.5.1 and 2.5.2, using the health-based benchmarks from Table 5–3. Evaluate populations subject to Level I concentrations as specified in section 5.1.3.2.1 and populations subject to Level II concentrations as specified in section 5.1.3.2.2.

TABLE 5–3.—HEALTH-BASED BENCHMARKS FOR HAZARDOUS SUBSTANCES IN SOILS

• Screening concentration for cancer corresponding to that concentration that corresponds to the 10^{-6} individual cancer risk for oral exposures.	
• Screening concentration for noncancer toxicological responses corresponding to the Reference Dose (RfD) for oral exposures.	

Count only those persons meeting the criteria for resident individual as specified in section 5.1.3. In estimating the number of people living on property with an area of observed contamination, when the estimate in based on the number of residences, multiply each residence by the average number of persons per residence for the county in which the residence is located.

5.1.3.2.1 *Level I concentrations.* Sum the number of resident individuals subject to Level I concentrations and multiply this sum by 10. Assign the resulting product as the value for this factor. Enter this value in Table 5–1.

5.1.3.2.2 *Level II concentrations.* Sum the number of resident individuals subject to Level II concentrations. Do not include those people already counted under the Level I concentrations factor. Assign this sum as the value for this factor. Enter this value in Table 5–1.

5.1.3.2.3 *Calculation of resident population factor value.* Sum the factor values for Level I concentrations and Level II concentrations. Assign this sum as the resident population factor value. Enter this value in Table 5–1.

5.1.3.3 *Workers.* Evaluate this factor based on the number of workers that meet the section 5.1.3 criteria. Assign a value for these workers using Table 5–4. Enter this value in Table 5–1.

TABLE 5–4.—FACTOR VALUES FOR WORKERS

Number of workers	Assigned value
0	0
1 to 100	5
101 to 1,000	10
Greater than 1,000	15

5.1.3.4 *Resources.* Evaluate the resources factor as follows:

• Assign a value of 5 to the resources factor if one or more of the following is present on an area of observed contamination at the site:

–Commercial agriculture.
–Commercial silviculture.
–Commercial livestock production or commercial livestock grazing.

• Assign a value of 0 if none of the above are present.

Enter the value assigned in Table 5–1.

5.1.3.5 *Terrestrial sensitive environments.* Assign value(s) from Table 5–5 to each terrestrial sensitive environment that meets the eligibility criteria of section 5.1.3.

Calculate a value (ES) for terrestrial sensitive environments as follows:

$$ES = \sum_{i=1}^{n} S_i$$

where:

S_i = Value(s) assigned from Table 5–5 to terrestrial sensitive environment i.

n=Number of terrestrial sensitive environments meeting section 5.1.3 criteria.

Because the pathway score based solely on terrestrial sensitive environments is limited to a maximum of 60, determine the value for the terrestrial sensitive environments factor as follows:

TABLE 5–5.—TERRESTRIAL SENSITIVE ENVIRONMENTS RATING VALUES

Terrestrial sensitive environments	Assigned value
Terrestrial critical habitat[a] for Federal designated endangered or threatened species	100
National Park	
Designated Federal Wilderness Area	
National Monument	
Terrestrial habitat known to be used by Federal designated or proposed threatened or endangered species	75
National Preserve (terrestrial)	
National or State Terrestrial Wildlife Refuge	
Federal land designated for protection of natural ecosystems	
Administratively proposed Federal Wilderness Area	
Terrestrial areas utilized for breeding by large or dense aggregations of animals[b]	
Terrestrial habitat known to be used by State designated endangered or threatened species	50
Terrestrial habitat known to be used by species under review as to its Federal designated endangered or threatened status	
State lands designated for wildlife or game management	25
State designated Natural Areas	
Particular areas, relatively small in size, important to maintenance of unique biotic communities	

[a] Critical habitat as defined in 50 CFR 424.02.
[b] Limit to vertebrate species.

• Multiply the values assigned to the resident population threat for likelihood of exposure (LE), waste characteristics (WC), and ES. Divide the product by 82,500.

–If the result is 60 or less, assign the value ES as the terrestrial sensitive environments factor value.

–If the result exceeds 60, calculate a value EC as follows:

$$EC = \frac{(60)(82{,}500)}{(LE)(WC)}$$

Assign the value EC as the terrestrial sensitive environments factor value. Do not round this value to the nearest interger.

Enter the value assigned for the terrestrial sensitive environments factor in Table 5–1.

5.1.3.6 *Calculation of resident population targets factor category value.* Sum the values for the resident individual, resident population, workers, resources, and terrestrial sensitive environments factors. Do not round to the nearest integer. Assign this sum as the targets factor category value for the resident population threat. Enter this value in Table 5–1.

5.1.4 *Calculation of resident population threat score.* Multiply the values for likelihood of exposure, waste characteristics, and targets for the resident population threat, and round the product to the nearest integer. Assign this product as the resident population threat score. Enter this score in Table 5–1.

5.2 *Nearby population threat.* Include in the nearby population only those individuals who live or attend school within a 1-mile travel distance of an area of observed contamination at the site and who do not meet the criteria for resident individual as specified in section 5.1.3.

Do not consider areas of observed contamination that have an attractiveness/accessibility factor value of 0 (see section 5.2.1.1) in evaluating the nearby population threat.

5.2.1 *Likelihood of exposure.* Evaluate two factors for the likelihood of exposure factor category for the nearby population threat: attractiveness/accessibility and area of contamination.

5.2.1.1. *Attractiveness/accessibility.* Assign a value for attractiveness/accessibility from Table 5–6 to each area of observed contamination, excluding any land used for residences. Select the highest value assigned to the areas evaluated and use it as the value for the attractiveness/accessibility factor. Enter this value in Table 5–1.

5.2.1.2 *Area of contamination.* Evaluate area of contamination based on the total area of the areas of observed contamination at the site. Count only the area(s) that meet the criteria in section 5.0.1 and that receive an attractiveness/accessibility value greater than 0. Assign a value to this factor from Table 5–7. Enter this value in Table 5–1.

TABLE 5–6.—ATTRACTIVENESS/ ACCESSIBILITY VALUES

Area of observed contamination	Assigned value
Designated recreational area	100
Regularly used for public recreation (for example, fishing, hiking, softball)	75
Accessible and unique recreational area (for example, vacant lots in urban area)	75
Moderately accessible (may have some access improvements—for example, gravel road), with some public recreation use	50
Slightly accessible (for example, extremely rural area with no road improvement), with some public recreation use	25
Accessible, with no public recreation use	10
Surrounded by maintained fence or combination of maintained fence and natural barriers	5
Physically inaccessible to public, with no evidence of public recreation use	0

TABLE 5–7.—AREA OF CONTAMINATION FACTOR VALUES

Total area of the areas of observed contamination (square feet)	Assigned value
Less than or equal to 5,000	5
Greater than 5,000 to 125,000	20
Greater than 125,000 to 250,000	40
Greater than 250,000 to 375,000	60
Greater than 375,000 to 500,000	80
Greater than 500,000	100

5.2.1.3 *Likelihood of exposure factor category value.* Assign a value from Table 5–8 to the likelihood of exposure factor category, based on the values assigned to the attractiveness/accessibility and area of contamination factors. Enter this value in Table 5–1.

TABLE 5–8.—NEARBY POPULATION LIKELIHOOD OF EXPOSURE FACTOR VALUES

Area of contamination factor value	Attractiveness/accessibility factor value						
	100	75	50	25	10	5	0
100	500	500	375	250	125	50	0
80	500	375	250	125	50	25	0
60	375	250	125	50	25	5	0
40	250	125	50	25	5	5	0
20	125	50	25	5	5	5	0
5	50	25	5	5	5	5	0

5.2.2 *Waste characteristics.* Evaluate waste characteristics based on two factors: toxicity and hazardous waste quantity. Evaluate only those hazardous substances that meet the criteria for observed contamination (see section 5.0.1) at areas that can be assigned an attractiveness/accessibility factor value greater than 0.

5.2.2.1 *Toxicity.* Assign a toxicity factor value as specified in section 2.4.1.1 to each hazardous substance meeting the criteria in section 5.2.2. Use the hazardous substance with the highest toxicity factor value to assign the value to the toxicity factor for the nearby population threat. Enter this value in Table 5–1.

5.2.2.2 *Hazardous waste quantity.* Assign a value to the hazardous waste quantity factor as specified in section 5.1.2.2, except: consider only those areas of observed contamination that can be assigned an attractiveness/accessibility factor value greater than 0. Enter the value assigned in Table 5–1.

5.2.2.3 *Calculation of waste characteristics factor category value.* Multiply the toxicity and hazardous waste quantity factor values, subject to a maximum product of 1×10^8. Based on this product, assign a value from Table 2–7 (section 2.4.3.1) to the waste characteristics factor category. Enter this value in Table 5–1.

5.2.3 *Targets.* Evaluate the targets factory category for the nearby population threat based on two factors: nearby individual and population within a 1-mile travel distance from the site.

5.2.3.1 *Nearby individual.* If one or mor persons meet the section 5.1.3 criteria for a

resident individual, assign this factor a value of 0. Enter this value in Table 5–1.

If no person meets the criteria for a resident individual, determine the shortest travel distance from the site to any residence or school. In determining the travel distance, measure the shortest overland distance an individual would travel from a residence or school to the nearest area of observed contamination for the site with an attractiveness/accessibility factor value greater than 0. If there are no natural barriers to travel, measure the travel distance as the shortest straight-line distance from the residence or school to the area of observed contamination. If natural barriers exist (for example, a river), measure the travel distance as the shortest straight-line distance from the residence or school to the nearest crossing point and from there as the shortest straight-line distance to the area of observed contamination. Based on the shortest travel distance, assign a value from Table 5–9 to the nearest individual factor. Enter this value in Table 5–1.

TABLE 5–9.—NEARBY INDIVIDUAL FACTOR VALUES

Travel distance for nearby individual (miles)	Assigned value
Greater than 0 to ¼	1[a]
Greater than ¼ to 1	0

[a] Assign a value of 0 if one or more persons meet the section 5.1.3 criteria for resident individual.

5.2.3.2 *Population within 1 mile.* Determine the population within each travel distance category of Table 5–10. Count residents and students who attend school within this travel distance. Do not include those people already counted in the resident population threat. Determine travel distances as specified in section 5.2.3.1.

In estimating residential population, when the estimate is based on the number of residences, multiply each residence by the average number of persons per residence for the county in which the residence is located.

Based on the number of people included within a travel distance category, assign a distance-weighted population value for that travel distance from Table 5–10.

Calculate the value for the population within 1 mile factor (PN) as follows:

$$PN = \frac{1}{10} \sum_{i=1}^{3} W$$

where:

W_i = Distance-weighted population value from Table 5–10 for travel distance category i.

If PN is less than 1, do not round it to the nearest integer; if PN is 1 or more, round to the nearest integer. Enter this value in Table 5–1.

5.2.3.3 *Calculation of nearby population targets factor category value.* Sum the values for the nearby individual factor and the population within 1 mile factor. Do not round this sum to the nearest integer. Assign this sum as the targets factor category value for the nearby population threat. Enter this value in Table 5–1.

TABLE 5–10.—DISTANCE-WEIGHTED POPULATION VALUES FOR NEARBY POPULATION THREAT [a]

Travel distance category (miles)	Number of people within the travel distance category											
	0	1 to 10	11 to 30	31 to 100	101 to 300	301 to 1,000	1,001 to 3,000	3,001 to 10,000	10,001 to 30,000	30,001 to 100,000	100,001 to 300,000	300,001 to 1,000,000
Greater than 0 to ¼	0	0.1	0.4	1.0	4	13	41	130	408	1,303	4,081	13,034
Greater than ¼ to ½	0	0.05	0.2	0.7	2	7	20	65	204	652	2,041	6,517
Greater than ½ to 1	0	0.02	0.1	0.3	1	3	10	33	102	326	1,020	3,258

[a] Round the number of people present within a travel distance category to nearest integer. Do not round the assigned distance-weighted population value to nearest integer.

5.2.4 *Calculation of nearby population threat score.* Multiply the values for likelihood of exposure, waste characteristics, and targets for the nearby population threat, and round the product to the nearest integer. Assign this product as the nearby population threat score. Enter this score in Table 5–1.

5.3 *Calculation of soil exposure pathway score.* Sum the resident population threat score and the nearby population threat score, and divide the sum by 82,500. Assign the resulting value, subject to a maximum of 100, as the soil exposure pathway score (S_s). Enter this score in Table 5–1.

6.0 Air Migration Pathway

Evaluate the air migration pathway based on three factor categories: likelihood of release, waste characteristics, and targets. Figure 6–1 indicates the factors included within each factor category.

Determine the air migration pathway score (S_a) in terms of the factor category values as follows:

$$S_a = \frac{(LR)(WC)(T)}{SF}$$

where:

LR = Likelihood of release factor category value.

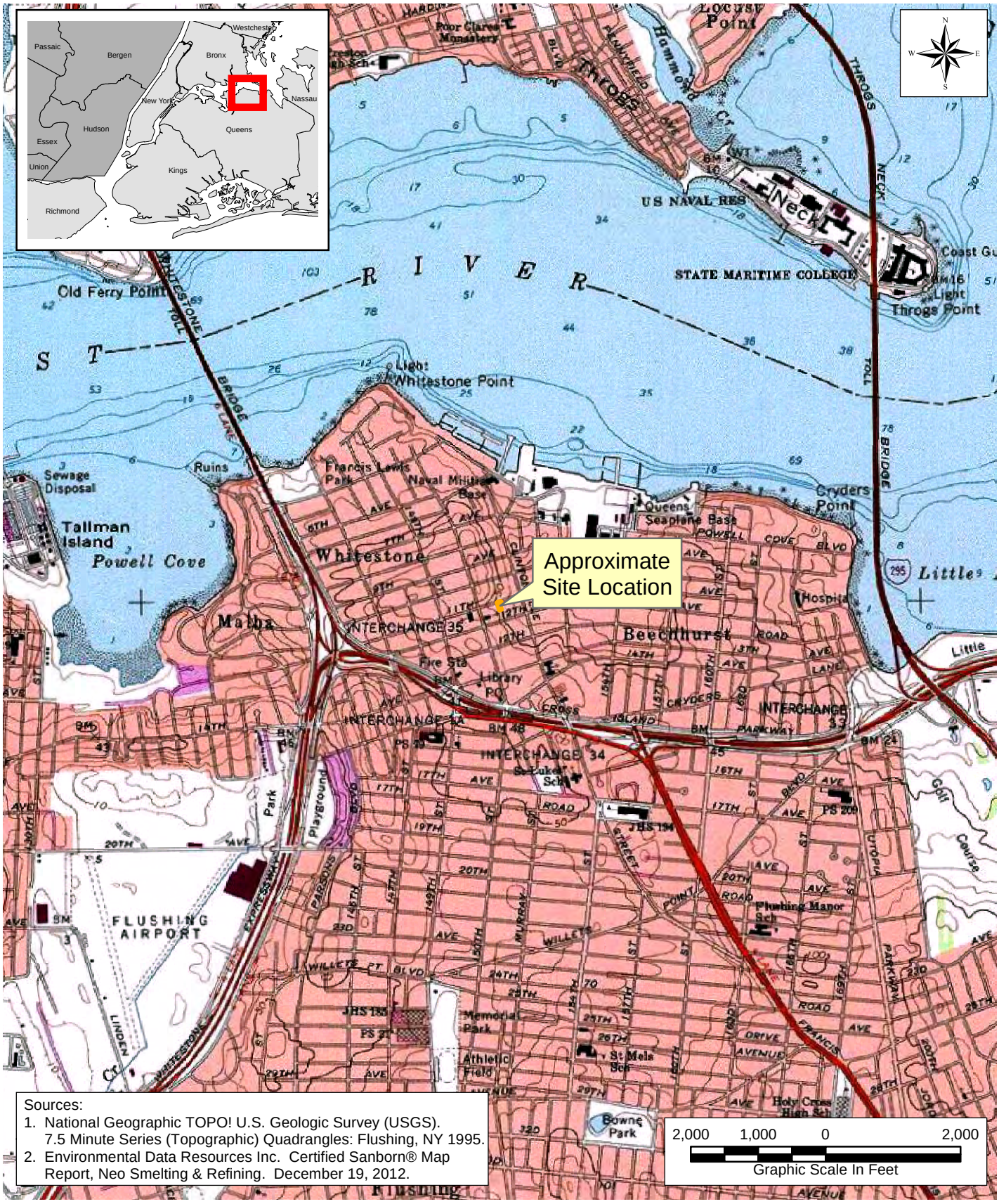
WC = Waste characteristics factor category value.

T = Targets factor category value.

SF = Scaling factor.

Table 6–1 outlines the specific calculation procedure.

BILLING CODE 6560-50-M



Sources:
1. National Geographic TOPO! U.S. Geologic Survey (USGS). 7.5 Minute Series (Topographic) Quadrangles: Flushing, NY 1995.
2. Environmental Data Resources Inc. Certified Sanborn® Map Report, Neo Smelting & Refining. December 19, 2012.

LEGEND:

Approximate Footprint of the Former Neo Smelter(2)

TITLE:

Site Location Map
Neo Smelting and Refining
150-40 11th Avenue
Whitestone, NY 11357

PROJECT: Neo Smelting and Refining

CLIENT NAME: EPA

WESTON SOLUTIONS

DATE: July 2013

FIGURE #: 1

P:\SAT2\2013_Smelting_Sites\Neo_Smelting\MXD\12714_Neo_Site_Location.mxd.mxd

Sources:
1. Department of Commerce (DOC), National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), National Geodetic Survey (NGS), Remote Sensing Division. November 2012. http://ngs.woc.noaa.gov/storms/sandy/
2. Environmental Data Resources Inc. Certified Sanborn® Map Report, Neo Smelting & Refining. December 19, 2012.

LEGEND:

Approximate Footprint of the Former Neo Smelter(2)

PROJECT:

Neo Smelting and Refining

TITLE:

Site Map
Neo Smelting and Refining
150-40 11th Avenue
Whitestone, NY 11357

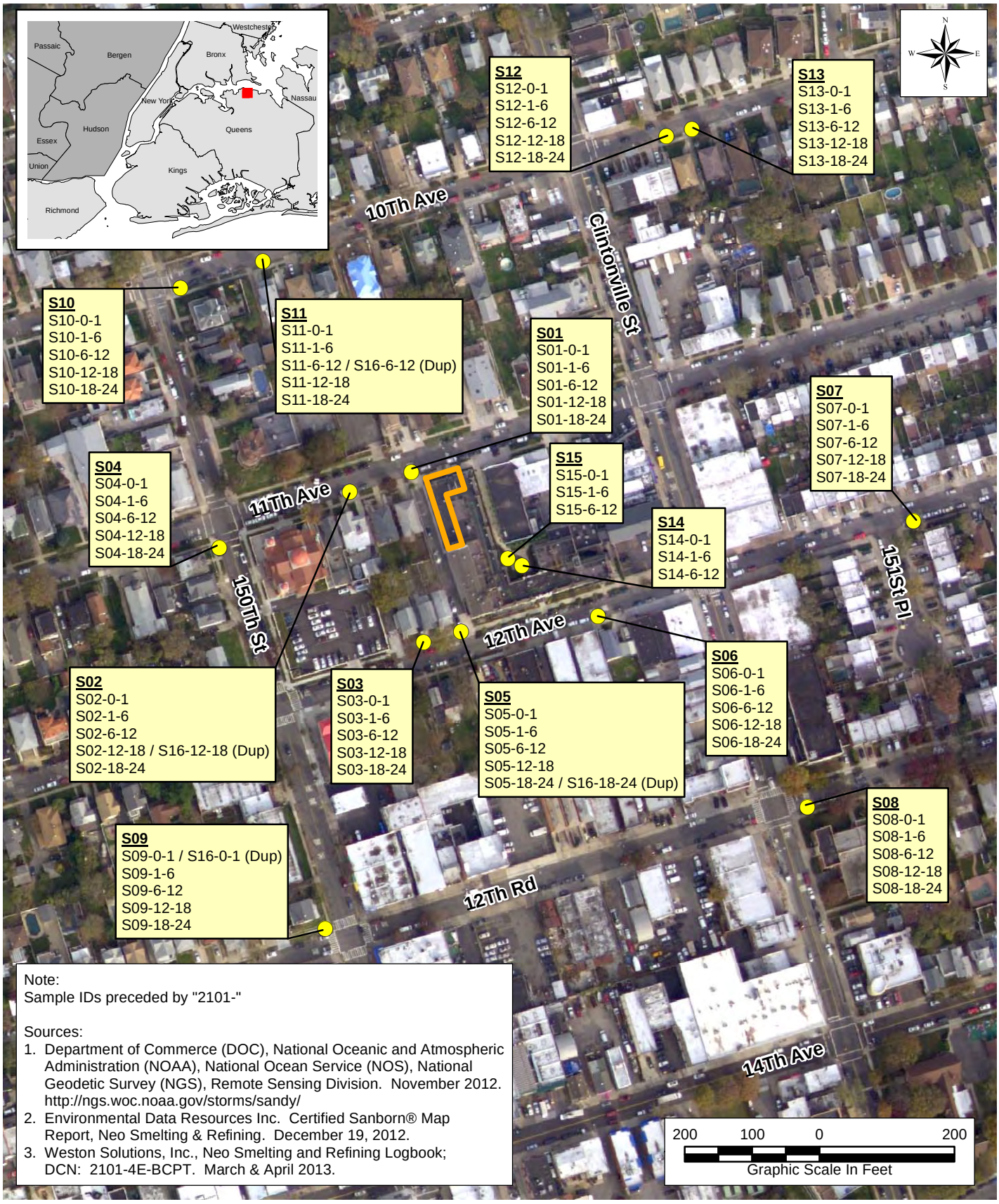
CLIENT NAME: EPA

WESTON SOLUTIONS

DATE: July 2013

FIGURE #: 2

P:\SAT2\2013_Smelting_Sites\Neo_Smelting\MXD\12599_Site_Map.mxd



Note:
Sample IDs preceded by "2101-"

Sources:
1. Department of Commerce (DOC), National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), National Geodetic Survey (NGS), Remote Sensing Division. November 2012. http://ngs.woc.noaa.gov/storms/sandy/
2. Environmental Data Resources Inc. Certified Sanborn® Map Report, Neo Smelting & Refining. December 19, 2012.
3. Weston Solutions, Inc., Neo Smelting and Refining Logbook; DCN: 2101-4E-BCPT. March & April 2013.

LEGEND:
- Soil Sample Location
- Approximate Footprint of the Former Neo Smelter(2)

TITLE:
Soil Sample Location Map
Neo Smelting and Refining
150-40 11th Avenue
Whitestone, NY 11357

PROJECT:
Neo Smelting and Refining

CLIENT NAME:
EPA

WESTON SOLUTIONS

DATE:
July 2013

FIGURE #:
3

P:\SAT2\2013_Smelting_Sites\Neo_Smelting\MXD\12978_NEO_Sample_Loc.mxd.mxd

4 Miles
3 Miles
2 Miles
1 Mile
1/2 Mile
1/4 Mile
Site Reference Location
NY2902841 WELL 7
NY2902841 WELL 5
NY2902841 WELL 6

2,400 1,200 0 2,400 4,800
Graphic Scale In Feet

LEGEND

Site Reference Location(4)
-Longitude: West 73.81384
-Latitude: North 40.79167

NY2902841 ← Well Permit ID
WELL 6 ← Well Name

Active Public Well Location

HRS Eligible Wetlands

SOURCES:
1. National Geographic TOPO! U.S. Geologic Survey (USGS). 7.5 Minute Series (Topographic) Quadrangles: Brooklyn, NY, 1995; Central Park, NY, 1995; Flushing, NY, 1995; Jamaica, NY, 1994; Lynbrook, NY 1969; and Sea Cliff, NY 1979.
2. U.S Department of the Interior, Fish and Wildlife Service, St. Petersburg, FL. National Wetlands Inventory. http://www.nwi.fws.gov. Date January 1st, 2013.
3. Well information provided by the USEPA on June 10th, 2013.
4. WESTON. Project Note to Neo Smelting and Refining Co. Site File: Determination of Site Boundary and Calculations of Site Acreage. June 26, 2013. [1 page].

DRAWING TITLE: 4-Mile Radius Map
Neo Smelting and Refining
150-40 11th Avenue
Whitestone, NY 11357

FIGURE: 4
SCALE: 1" = 2400'
DATE: July 2013

CLIENT NAME: EPA
PROJECT NAME: Neo Smelting and Refining

PROJECT MANAGER: D. Breen
CHECKED BY: D. Breen
CONTRACT No.: EP-S5-06-04
DRAWN/MODIFIED BY: J. Lynes
DATE CREATED: 07/30/2013

REPORT DATE: July 2013
DRAWING PATH: 13248_NEO_4_Mile.mxd P:\GIS\2013_Smelting_Sites\Neo_Smelting\MXD
REVISION No.: 0
WORK ORDER No.: 20405.012.013.2101.00

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WESTON SOLUTIONS SM
Weston Solutions, Inc.
205 Campus Drive Edison, New Jersey 08837-3939
TEL: (732) 417-5800 Fax: (732) 417-5801
http://www.westonsolutions.com

Sources:

1. Department of Commerce (DOC), National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), National Geodetic Survey (NGS), Remote Sensing Division. November 2012. http://ngs.woc.noaa.gov/storms/sandy/
2. Environmental Data Resources Inc. Certified Sanborn® Map Report, Neo Smelting & Refining. December 19, 2012.
3. Weston Solutions, Inc., Neo Smelting and Refining Logbook; DCN: 2101-4E-BCPT. March & April 2013.

LEGEND:

- Soil Sample Location with Contamination
- Soil Sample Location with no Contamination
- 200 Foot Contamination Buffer
- Approximate Footprint of the Former Neo Smelter(2)

TITLE:

200 Foot Contamination Buffer
Neo Smelting and Refining
150-40 11th Avenue
Whitestone, NY 11357

PROJECT: Neo Smelting and Refining

CLIENT NAME: EPA

WESTON SOLUTIONS

DATE: July 2013

FIGURE #: 5

P:\SAT2\2013_Smelting_Sites\Neo_Smelting\MXD\13425_NEO_200_Ft_Buffer.mxd.mxd

Superfund

Search Superfund Site Information

NEO SMELTING AND REFINING

Site Information

Site Info | Aliases | Operable Units | Contacts
Actions | Contaminants | Site-Specific Documents

Site Name: NEO SMELTING AND REFINING
Street: 150-40 11TH AVE
City / State / ZIP: WHITESTONE, NY 11357

NPL Status: Not on the NPL
Non-NPL Status: SI Ongoing

EPA ID: NYN000206646
EPA Region: 02
County: QUEENS

Federal Facility Flag: Not a Federal Facility

Return to Search Results

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OSWER Home | Superfund Home

Superfund

Search Superfund Site Information

NEO SMELTING AND REFINING

Actions

Site Info | Aliases | Operable Units | Contacts
Actions | Contaminants | Site-Specific Documents

OU	Action Name	Qualifier	Lead	Actual Start	Actual Completion
00	DISCOVERY		F		11/28/2012
00	PRE-CERCLIS SCREENING		F		11/28/2012
00	PRELIMINARY ASSESSMENT	H	F	02/14/2013	03/14/2013

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Superfund

Search Superfund Site Information

NEO SMELTING AND REFINING

Operable Units

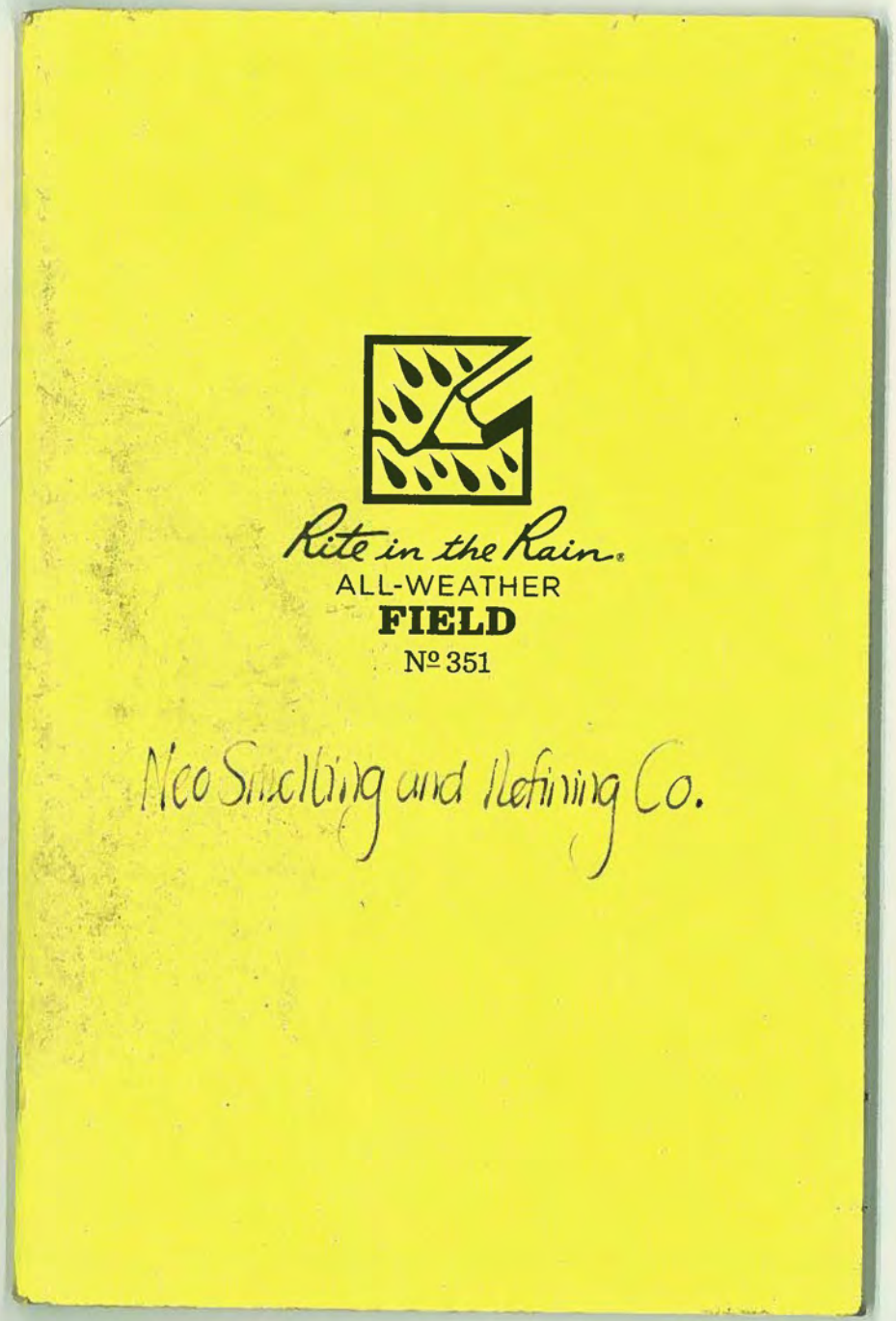
Site Info | Aliases | Operable Units | Contacts
Actions | Contaminants | Site-Specific Documents

OU ID	OU Name
00	SITEWIDE

Return to Search Results

Return to Search Superfund Site Information

OSWER Home | Superfund Home


Rite in the Rain
ALL-WEATHER
FIELD
№ 351
Neo Smelting and Refining Co.

"Rite in the Rain®"
ALL-WEATHER WRITING PAPER

Name Weston Solutions INC.
205 Campus Drive
Address Edison, NJ
08837
Phone 732-417-5800

Project Neo Smelting and Refining Co.

2101-4E-13CPT

Clear Vinyl Protective Slipcovers (Item No. 30) are available for this style of notebook. Helps protect your notebook from wear & tear. Contact your dealer or the J. L. Darling Corporation.

CONTENTS

PAGE	REFERENCE	DATE
2-5	Reconnaissance	3/4/13
6-9	Sampling Access Requests	4/1/13
10-11	Recon / Flag Sample Locations	4/24/13
12-32	PA/SI Sampling	4/25/13 - 4/26/13

3/4/13 Neo, Whitestone, NY

0840 Michele Capriglione and Gerry Gilliland depart office in order to conduct recons at The NY Smelter Sites. The recons will consist of
- Collecting GPS points at proposed sample locations around the former footprints of the smelter buildings as well as up-wind and down-wind directions.
- photo-document
- observe exposed soil with an emphasis on noting exposed soil present during the years of operations using Sanborns + ~~GMC~~ historical aerials.

3/4/13 Neo, Whitestone, NY

1415 Michele Capriglione and Gerry Gilliland arrive at Neo Smelting and Refining.

1418 Arrive at 10 01 150th St on corner of 10th Ave NW background

1430 GPS and photodocument 151 14 10th Ave. NE background. All houses on this block in this area have ROW.

Overhead wires at these sample points. The N side of street does not have overhead wires.

1445 Arrive at 1102 152nd St approx due west of the site. No overhead

3/4/13 Neo, Whitestone, NY

wires observed. GPS point collected, Greek church accross St.

1447 GPS and photo document possible sample point located SE of Site. 150-46 12th St.

1452 GPS and photo document possible release sample point located at 150-25 12th Ave and driveway into condos. No overhead wires.

150-17 12th through 150-25 12th all backyards that were there during smelting ops.

1505 GPS and photodocument 150-24 11th Ave.

150-12 11th through 150-24 11th all backyards during smelting

mgh

3/4/13 Neo, Whitestone, NY

operations.

On 11th Ave east of the site very limited exposed soil

1523 GPS and photo document 12 ~~01~~ mic 03 151 Pl. No overhead wires, near street light.

1525 GPS and photo document near corner of 12th Rd. and Clintonville St. 1245 Whitestone Hebrew Center.

1535 GPS and photo document release sample near corner of 12th Rd and 150 St. Parking meters, street light and overhead utilities observed.

mgh

Whitestone, NY 4/1/13 NEO

Weather: ~60°F, partly cloudy

Team Members: Denise Breen (Weston)(DB)
Dan Carlson (Weston)(DC)

Scope: Visit and obtain access agreements from near by residences for future sampling event. (DB)

11:30 Arrive on site. (DB)

11:35 Knocked on door for house 150-24 11th Ave NO answer at either of two doors. Noticed it could be a multifamily home.

11:45 Knocked on door for house 150-20 11th Ave. No ~~and~~ DB answer at door. (DB)

12:00 Walked to 12th Ave. Knocked on 150-21 12th Ave's door. Man answered door and confirmed he was aware of the voicemail DB left on Thursday trying to gain access. Man refused to give any contact information and refuses to sign access agreement. DB left business card with him. (DB)

Denise Breen 4/1/13

12:10 Arrive at 150-25 12th Ave and knock on door. No answer but left DB business card and access agreement in mail box.

12:50 Tried to knock ~~and~~ DB on door for 150-25 12th Ave again. Still no answer. (DB)

13:00 Drove past residence again and noticed women standing outside of 150-20 11th Ave. (DB) Spoke with Melitta Papadopoulos. She is not the owner but lives in the lower unit. Top unit is vacant. She would not release homeowners contact info. (DB) gave access agreement and business card and Melitta said she would give home owner contact info. DB confirmed contact info with Melitta.

13:10 Weston employees try more homes in area for access.

13:15 Knock on door at 150-16 11th Ave. Name on mailbox reads "Byles."

Denise Breen 4/1/13

No one answer either of the two doors (multi-family home). DB left business card and access agreement in both mailboxes.

13:20 Weston employees knock on door of 150-12 11th Ave. A boy answered door and told us homeowners (mom & dad) were not home. DB gave kid business card and access information. Boy told Weston he would give to his parents.

13:25 Approach 150-17 12th Ave. There was no answer. DB left business card and access letter. (DB)

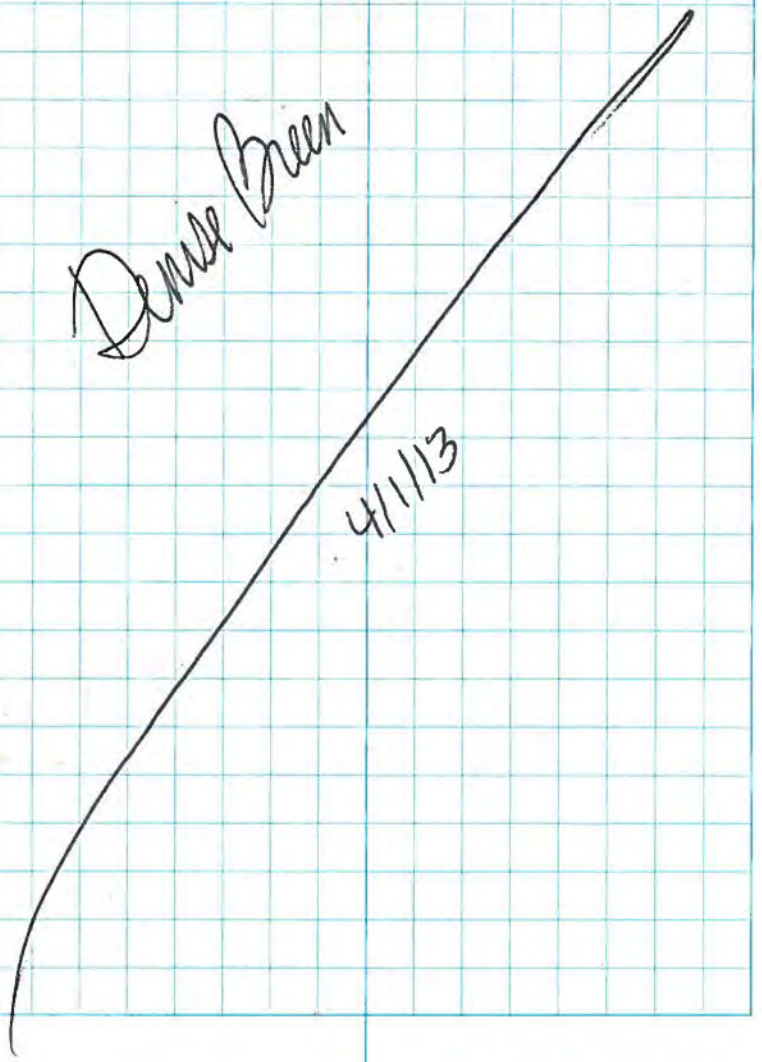
13:27 Approach 150-~~48~~46 12th Ave. There was no answer at either door. DB left business card and access letter.

13:30 Approach 150-46 12th Ave. Knock on door and woman ~~fw~~ (DB) answers door. She doesn't speak english and wasn't with someone who spoke english.

13:35 Knock on door of 150-17 12th Ave. There was no answer. DB left business card and access letter.

Dennis Breen 4/1/13

13:40 Weston employees leave the site. (DB)



NEO, Whitestone, NY 4/24/13

Weather: Sunny, ~64°F

Team members: Denise Breen (DB)(Weston)
Daniel Carlson (DC)(Weston)
Sean Gaulas (SG)(Weston

Scope: Verify mark out and mark the specific sample locations.

17:05 Weston Team arrives on site. DC places marker for S04. No mark out was noticed. DB took photo of location.

17:10 DC places marker for S02 and S01. mark-outs were not seen in immediate area. DB took photo of the location.

17:15 DC placed marker for S05 and S03. Mark outs were seen and taken into consideration. DB took photo.

17:20 DC placed marker for S06 A mark out was seen and taken into consideration. DB took photo of location.

17:25 Weston team drives to 150th and 10th Ave. DC places S10 and S11 markers taking into consideration

Denise Breen 4/24/13

NEO, Whitestone, NY 4/24/13

the markouts. DB takes photo of location.

17:30 DC places marker for S11 which is infront of 151-14 10th Ave. for S12. DC places marker at 151-18 10th Ave for S13.

17:35 DC place marker for S07 at corner of 151st place and 12th Ave. DB takes photo of location.

17:40 DC places marker for S08 and notices no mark-outs. DB takes photo of the location. DB notices "Pee Wee Falks" is located on this street corner. It is a day care / pre-school / after school care facility.

17:45 DC places flag for S09 keeping all markouts into consideration. DB took photo of location.

17:55 Weston Team leaves site.

Note: All current markouts were taken into consideration. Sprinkler Systems were not seen and DB took photos of all sample locations.

Denise Breen 4/24/13

12

4/25/13 Neo, Whitestone, NY

Weather: Sunny, ~60°

Team Members: Dan Carlson (Weston) (DC)
Denise Breen (Weston) (DB)
Sean Gaulas (Weston) (SG)

Scope: Conduct PA/SI sampling in accordance with the Neo Smelting and Refining SAQAPP. 5 soil samples will be collected from each sample location. 1 sample from the 0-1" interval, 1 from the 1-6" interval, 1 from the 6-12" interval, 1 from the 12-18" interval, and 1 from the 18-24" interval. All samples will be collected with dedicated plastic scoops. Soil will be obtained with bucket augers. Bucket auger heads will be decontaminated ~~bet~~ after each use at an interval with an Alconox wash, tap water rinse, and steam clean with DI water. Air monitoring will be conducted with a PDR. A photo-ionization detector (PID) will be used to screen soil from each sample interval.

0700 Weston arrives on site. Set up

Dan Carlson 4/25/13

13

Neo, Whitestone, NY 4/25/13

at locations S10 and S11, near the intersection of 10th Ave and 150th Street.

0705 DC conducts health and safety meeting. Traffic main concern; wear high-vis vests and utilize cones around work area. Action level for dust levels for lead is 0.37 mg/m^3. Will kept eye on PDR.

0710 DB calibrates PDR (RFW24121)

0715 DB calibrates PID (MiniRAE3000, RFW 24709) ~~w~~ w/ zero air gas and 100 ppm isobutylene. Post-calibration reading for isobutylene is 100.0 ppm.

0730 Bucket augers were left at hotel. SG leaves site to pick them up. DC + DB will finish setting up and collect 0-1" intervals.

0803 SG arrives back on site with augers.

0810 SG decons auger heads. DB decons auger heads.

0817 DC collects 12101-S10-0-1 w/ dedicated scoop.

Dan Carlson 4/25/13

4/25/13 Neo, Whitestone, NY

Silty SAND, fine, little organic matter, medium brown, dry.

0830 DC collects 2101-S11-0-1 w/ dedicated scoop. Medium brown Silty SAND, fine, little organic matter, moist.

0837 DC collects 2101-S10-1-6 w/ dedicated scoop. Light brown Sandy SILT, trace organic matter, moist.

0847 DC collects 2101-S10-6-12 w/ dedicated scoop. Orangish medium brown Silty SAND, fine, trace organic matter, moist.

0854 DC collects 2101-S10-12-18 w/ dedicated scoop. Orangish medium brown Sandy SILT, trace organic matter + gravel, moist.

0904 DC collects 2101-S10-18-24 w/ dedicated scoop. Tanish light brown Silty SAND, fine, little fine to coarse gravel, moist.

0913 DC collects 2101-S11-1-6 w/ dedicated scoop. Medium to dark brown Silty SAND, fine, trace organic matter + ~~coarse~~ fine gravel, moist (MS/MSD)

0915 SG leaves for ice to keep samples on.

0923 DC collects 2101-S1-6-12 w/ dedicated scoop. Tanish light brown Silty SAND, fine, trace

4/25/13

Neo, Whitestone, NY 4/25/13

organic matter + fine gravel, moist

0926 DC collects 2101-S16-6-12. DUP of 2101-S11-6-12.

0931 DC collects 2101-S11-12-18 w/ dedicated scoop. Tanish medium brown Silty SAND, fine, trace fine gravel, moist.

0935 DC collects 2101-S11-18-24 w/ dedicated scoop. Tanish medium brown Silty SAND, fine, trace fine gravel, moist.

* No PID readings above background were detected from any soil from S10 or S11. DB augered S10 and SG augered S11.

0940 Soil from S10 is put back into the borehole in the order it was collected. Soil from S11 is put back into the borehole in the order it was collected.

0943 DB collects GPS coordinates at S10 and S11.

0957 Weston meets with EPA at Whitestone Condominiums. EPA:
Andrew Fessler (AF) - WAM
Margaret Gregor (MG) - OSC
Natalie Loney (NL) - CIC

1005 Weston + EPA scout out locations to

4/25/13

4/25/13 Neo, Whitestone, NY

be sampled on White Stone Condominium property (S14 and S15), within the courtyard.

1025 Weston sets up along 11th Ave, in front of the Condominiums, and at locations S14 and S15.

1045 DC collects 2101-S14-0-1 w/ dedicated scoop. Medium to dark brown Sandy SILT, little organic matter, wet.

1055 SG + DB are hitting debris at their boreholes. SG augering at S14 and DB at S15.
SG reached refusal at 12" at ~~S15~~ S14 (concrete + brick). Will colocate approx. 1 foot away from borehole to collect 12-18" and 18-24" intervals

1115 DC collects 2101-S14-1-6 w/ dedicated scoop. Medium brown Silty SAND, fine to medium, some fine gravel, wet, trace organic matter

1117 DB reached refusal at 16" at S15, (rock + brick). Will ~~to locate approx. 10~~ relocate approx. 10 feet away ~~to~~ for all sample intervals.

1130 DC collects 2101-S14-6-12 w/ dedicated scoop.

4/25/13

Neo, Whitestone, NY 4/25/13

Medium brown Silty SAND, fine to coarse, little fine gravel, moist.

1145 debris and refusal is being reached at approx. 12" in depth all across the courtyard. OSC decides to only collect down to 12" after refusals at colocations and relocations.

1148 DC collects 2101-S15-0-1 w/ dedicated scoop. Orangish medium brown Silty SAND and ORGANIC MATTER, fine to coarse, moist.

1151 DC collects 2101-S15-1-6 w/ dedicated scoop. Medium brown Silty SAND, fine to coarse, little fine gravel, trace organic matter, moist.

1202 DC collects 2101-S15-6-12 w/ dedicated scoop. Medium brown Silty SAND, fine to coarse, little fine gravel, moist.

~~1205 DC collects 2101-S1~~

* No PID readings above background were detected in any soil from either S14 or S15.

1210 Soil from S14 and S15 ~~were~~ was put back in their respective boreholes in the order it was taken from the ground.

1215 DB collects GPS coordinates for S14 and S15.

4/25/13

4/25/13 Neo, Whitestone, NY

1230 Weston + EPA leave for lunch.

1330 Weston + EPA back on site. Weston set up at locations S01 and S02, along 11th Ave.

1340 DB begins augering at S01 and SG augering at S02.

~~1353 DC collects 2101-S01-0-1 w/ dedicated scoop. Medium brown Silty SAND, fine to coarse, some organic matter, moist.~~

1357 DB reaches refusal at S01, (rocks) at approx. 10". Will relocate approx. 5 ft. west, along the right of way.

1401 DC collects 2101-S02-0-1 w/ dedicated scoop. Medium brown Silty SAND, fine to medium, some organic matter, dry.

1406 DC collects 2101-S02-1-6 w/ dedicated scoop. Medium brown Silty SAND, mostly fine w/ trace medium + coarse, trace organic matter, moist.

1415 DC collects 2101-S02-6-12 w/ dedicated scoop. Orangish medium brown Silty SAND, mostly fine w/ trace medium + coarse, trace organic matter, moist.

4/25/13

Neo, Whitestone, NY 4/25/13

1421 DC collects 2101-S02-12-18 w/ dedicated scoop. S.A.A.

1425 DC collects 2101-S16-12-18. DUP of 2101-S02-12-18.

1430 DC collects 2101-S02-18-24 w/ dedicated scoop. Orangish medium brown Silty SAND, mostly fine w/ little medium + coarse, moist.

1440 DC collects ~~2101-S01-0-1~~ 2101-S01-0-1 w/ dedicated scoop. Medium brown Silty SAND, mostly fine w/ trace medium + coarse, little organic matter, moist.

1441 DB + DC collect 2101-RINO1 from deconned bucket auger head.

1450 DC collects 2101-S01-1-6 w/ dedicated scoop. Medium to dark brown Silty SAND, mostly fine w/ trace medium + coarse, trace organic matter, moist.

1455 DC collects 2101-S01-6-12 w/ dedicated scoop. Tannish medium brown Silty SAND, fine w/ trace coarse, trace organic matter, moist.

1500 DC collects 2101-S01-12-18 w/ dedicated scoop. Orangish tan Silty SAND, fine w/ little coarse, moist.

4/25/13

4/25/13 Neo, Whitestone, NY

1505 DC collects 2101-S01-18-24 w/ dedicated scoop. S.A.A.

* No PID readings above background from any soil from S01 or S02.

1510 Soil from S01 + S02 put in their respective boreholes in the order it was taken from the ground.

1517 Arrive at locations S05, S06, and S03. Set up equipment.

*Late Entry - 1500 - MG and NL leave site.

1535 ~~Arrive~~ DC collects 2101-S05-0-1 w/ dedicated scoop. Medium brown Silty SAND, fine w/ trace medium to coarse, some organic matter, moist.

1547 DC collects 2101-S05-1-6 w/ dedicated scoop. Medium brown Silty SAND, fine w/ trace medium, some organic matter, moist

1552 DC collects 2101-S05-6-12 w/ dedicated scoop. Tan Silty SAND, fine w/ trace medium and coarse, moist.

1601 DC collects 2101-S05-12-18 w/ dedicated scoop. S.A.A. MS/MSD

1610 DC collects 2101-S03-0-1 w/ dedicated

4/25/13

Neo, Whitestone, NY 4/25/13

scoop. Tannish medium brown Silty SAND, fine, trace organic matter, moist.

1620 DC collects 2101-S05-18-24 w/ dedicated scoop. Tan Silty SAND, fine w/ trace medium and coarse, trace fine gravel, moist.

1624 DC collects 2101-S16-18-24 DUP of 2101-S05-18-24. 1-6

1630 DC collects 2101-S03-6-12 w/ dedicated scoop. Tannish brown Silty SAND, fine w/ trace coarse, trace organic matter, moist.

1636 DC collects 2101-S03-6-12 w/ dedicated scoop. S.A.A.

1643 DC collects 2101-S03-12-18 w/ dedicated scoop. Tannish light brown Silty SAND, fine w/ trace coarse, little fine gravel, trace organic matter, moist.

1647 DC collects 2101-S03-18-24 w/ dedicated scoop. S.A.A.

1653 DC collects 2101-S06-0-1 w/ dedicated scoop. Medium to dark brown Sandy SILT and ORGANIC MATTER, moist.

1700 DC collects 2101-S06-1-6 w/ dedicated scoop. Medium brown Silty SAND, fine

4/25/13

4/25/13 Neo, Whitestone, NY

w/ trace coarse, little organic matter, moist.

1708 DC collects 210I-S06-6-12 w/ dedicated scoop. Dark brown Silty SAND, fine to medium w/ trace coarse, little fine gravel, moist, trace organic matter, trace glass

1715 DC collects 210I-S06-12-18 w/ dedicated scoop. Tannish brown Silty SAND, fine to medium w/ trace coarse, trace fine gravel + organic matter, moist.

1720 DC collects 210I-S06-18-24 w/ dedicated scoop. Tannish brown Silty SAND, fine to medium w/ trace coarse, trace fine gravel, moist.

* No PID readings above background from any soil from S05, S06, or S03.

1725 All soil filled into their respective boreholes in the order it was taken from the ground

1730 DB collected GPS coordinates from each sampling location.

AF leaves the site.

* TWA ~~of~~ on PDR is 0.005 mg/m^3.

* Note - Auger heads were decanned after each use at an interval at a location. A clean auger head was used for collecting soil from each interval.

4/25/13

Neo, Whitestone, NY 4/25/13

1740 Weston leaves site, End of Day

* Samples are kept in cooler with ice in rental vehicle. Will be delivered to EPA DESA lab in Edison, NJ, on 4/27/13.

4/25/13

4/26/13 Neo, Whitestone, N.Y

Weather - Sunny, ~60°

Team Members - Dan Carlson (DC) (Weston)
Denise Breen (DB) (Weston)
Sean Gavlas (SG) (Weston)

Scope: Continue PA/SI sampling at the Neo Smelting and Refining site in accordance with the Neo Smelting and Refining SAQAPP. 6 sample locations remain.

0700 Weston arrives on site. Set up at location SO9, at intersection of 12th Rd. and 150th St.

0710 DB calibrates PID and PDR. After calibration with isobutylene gas (100 ppm), post calibration reading on PID is 100.0.

0711 DC conducts H+S meeting. Traffic main concern, will utilize cones and high-visibility vests. PDR used to monitor dust.

0715 DB begins augering at SO9.

0725 DC collects 2101-SO9-0-1 w/ dedicated scoop. Medium brown Silty SAND, fine, trace fine gravel + organic matter, moist.

Dan Carlson 4/26/13

Neo, Whitestone, NY 4/26/13

0730 DC collects 2101-S16-0-1. DUP of 2101-SO9-0-1.

0735 DC collects 2101-SO9-1-6 w/ dedicated scoop. S.A.A.

0740 DC collects 2101-SO9-6-12 w/ dedicated scoop. S.A.A.

0742 Refusal at approx. 20" at SO9. Will co-locate approx. 1 ft. away, to collect the 18"-24" interval.

0747 DC collects 2101-SO9-12-18 w/ dedicated scoop. S.A.A. (but no organic matter).

0751 DC collects 2101-SO9-18-24 w/ dedicated scoop. Light tan Silty SAND, fine, trace fine gravel, moist.

* No PID readings above background from any soil from SO9.

0755 DB collects GPS coordinates for SO9. DC fills borehole with soil in the order it was taken from the ground.

SG decons auger heads with alconox wash and steam clean w/ DI water

0830 Arrive at location SO4; set up. SG + DB auger.

Dan Carlson 4/26/13

4/26/13 Neo, Whitestone, NY

0840 DC collects 2101-S04-0-1 w/ dedicated scoop. Tannish brown Silty SAND, fine, little organic matter, trace fine gravel, moist.

0847 DC collects 2101-S04-1-6 w/ dedicated scoop. Tannish brown Silty SAND, fine, trace organic matter + fine gravel, moist.

0853 DC collects 2101-S04-6-12 w/ dedicated scoop. S.A.A. **MS/MSD**

0856 DC collects 2101-S04-12-18 w/ dedicated scoop. S.A.A.

0900 DC collects 2101-S04-18-24 w/ dedicated scoop. S.A.A.

* No PID readings above background from any soil from location S04

0905 DB fills in S04 w/ soil in the order it was collected from the ground.

0907 Andrew Fessler (AF) (EPA) arrives on site.

0920 Arrive at location S07 at intersection of 12th Ave and ~~15th St.~~ 151st Place.

0925 SG + DB begin augering.

0933 DC collects 2101-S07-0-1 w/ dedicated

Dan 4/26/13

Neo, Whitestone, NY 4/26/13

scoop. Medium brown Silty SAND, fine to medium, little organic matter, moist.

0938 DC collects 2101-S07-1-6 w/ dedicated scoop. Tannish medium brown Silty SAND, fine, trace fine gravel + organic matter, moist.

0945 DC collects 2101-S07-6-12 w/ dedicated scoop. Tannish medium brown Silty SAND, fine, trace fine gravel + organic matter + black fill.

0954 DC collects 2101-S07-12-18 w/ dedicated scoop. Tannish medium brown Silty SAND, ~~with black and white~~ some black and white fill, trace organic matter, moist.

1003 DC collects 2101-S07-18-24 w/ dedicated scoop. Medium tan clayey LOAM and black/white FILL, some fine gravel, trace organic matter, moist.

* No PID readings above background from any soil from S07.

1009 Soil from S07 put back into borehole in the order it was taken from ground.

1010 SG collects GPS coordinates at S07.

Dan 4/26/13

4/26/13 Neo, Whitestone, NY

1030 SG collects GPS coordinates from SO4.

1100 Arrive at locations S12 and S13, along 10th Ave.

1108 DB + SG decon auger heads w/ alconox wash and steam clean w/ DI water.

1120 SG begins augering at ~~S12~~ S13; DB at S12.

1130 DC collects 2101-S12-0-1 w/ dedicated scoop. Medium brown Silty SAND; fine, trace organic matter, moist.

1137 DC collects 2101-S13-0-1 w/ dedicated scoop. Medium brown Silty SAND, fine, trace organic matter, moist.

1143 DC collects 2101-S12-1-6 w/ dedicated scoop. Tannish brown Silty SAND, fine, trace fine gravel + organic matter, moist.

1149 DC collects 2101-S12-6-12 w/ dedicated scoop. S.A.A.

1155 DC collects 2101-S12-12-18 w/ dedicated scoop. Tannish brown Silty SAND, fine, little fine gravel, trace organic matter, moist.

1156 DB reached refusal at approx. 20" at S12.

4/26/13

Neo, Whitestone, NY 4/26/13

Is colocating approx. 1 foot away for another borehole to collect the 18-24" interval.

1203 DB reached refusal at approx. same depth and ~~it co~~ is co-locating again, approx 1 foot away, to attempt for 18-24" again.

1207 DC collects 2101-S12-1-6 w/ dedicated scoop. Tannish brown Silty SAND, fine, trace fine gravel + organic matter, moist.

1215 DC collects 2101-S12-18-24 w/ dedicated scoop. Tannish brown Silty SAND, fine, little fine gravel, trace small black fill (shiny), moist.

1223 DC collects 2101-S13-6-12 w/ dedicated scoop. Tannish brown Silty SAND, fine, some fine gravel, trace organic matter, moist. MS/MSD

1232 DC collects 2101-S13-12-18 w/ dedicated scoop. S.A.A.

1242 DC collects 2101-S13-18-24 w/ dedicated scoop. Tannish brown Silty SAND, fine, little fine gravel, trace organic matter + small white fill and glass bits, moist.

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* No PID readings above background were detected in any soil from SI2 or SI3.
* SG took GPS coordinates at SI2 and SI3
* SG and DB decomned auger heads w/ Alconox wash and steam clean w/ DI water.

1245 Soil from SI2 and SI3 is put in their respective boreholes in the order it was taken from the ground.
1300 Weston + EPA leave site for lunch.
1400 Weston + EPA arrive back on site. ~~Arrive~~
1410 ~~at~~ Arrive at SO8 at intersection of 12th Rd. and Clintonville St.
1420 SG + DB begin augering.
1425 DC collects 2101-SO8-0-1 w/ dedicated scoop. Dark brown Silty SAND, fine, little organic matter, moist.
1435 DC collects 2101-SO8-1-6 w/ dedicated scoop. Medium brown Silty SAND, fine, little organic matter, trace ~~coarse~~ fine gravel, moist.
1440 Refusal at approx. 18" at SO8; will

4/26/13

colocate approx. 1 foot away.
1445 Medium to dark brown Silty SAND, fine w/ some medium, trace organic matter + fine gravel, moist.
1450 DC collects 2101-SO8-6-12 w/ dedicated scoop.
1450 DC collects 2101-SO8-12-18 w/ dedicated scoop. S.A.A.
1455 DC collects 2101-SO8-18-24 w/ dedicated scoop. Brownish Orange Sandy LOAM, trace fine Gravel, moist.
* No PID readings above background from any soil from SO8
1457 SG collects GPS coordinates from SO8
1505 DC puts soil into the borehole for SO8 in the order it was taken from the ground.
1530 Weston + EPA leave site, End of Day.
* Samples collected today and yesterdays samples are kept in a cooler with ice in the locked rental vehicle overnight. Will deliver samples to EPA DESA lab tomorrow in Edison, NJ.

4/26/13

4/27/13 Neo, Whitestone, NY

0700 Dan Carlson (DC), Denise Breen (DB), and Sean Gavlas (SG) conduct sample management. QA/QC sample times, print labels + COCs, bag new ice, bag sample jars, line coolers w/ trash bags. Samples will be delivered to the lab in 2 coolers. One cooler contains samples collected on 4/25 and one cooler contains samples collected on 4/26.

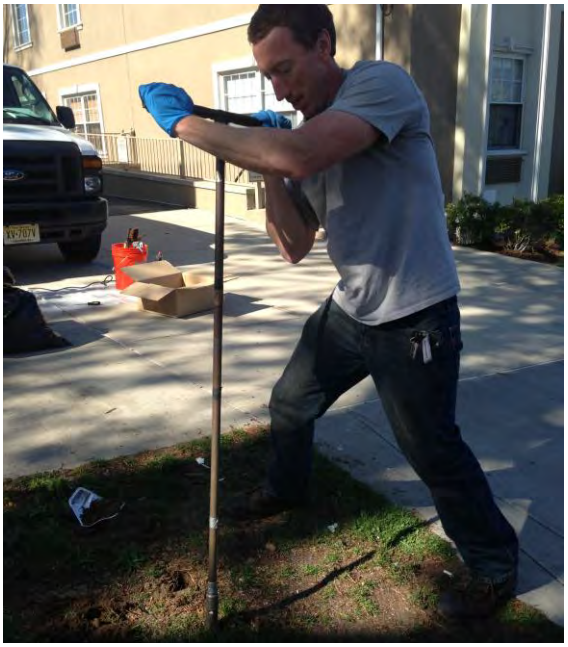
0900 COC 2-042713-082430-0001 put in cooler w/ samples collected on 4/25/13. COC 2-042713-083324-0002 put in cooler w/ samples collected on 4/26/13. Relinquish time of samples to EPA is approximated on COCs at 1100.

0920 Weston leaves hotel; DB and SG take samples to EPA DESA lab in Edison, NJ.

4/27/13

Photographs

Contract No./TDD Number	Site Name/Location	Date	Page
EP-S5-06-04	Neo Smelting and Refining / PA/SI Sampling	4/25/13 – 4/26/13	Page 1 of 5
S05-0013-1302-006	150-40 11th Ave, Whitestone, NY		

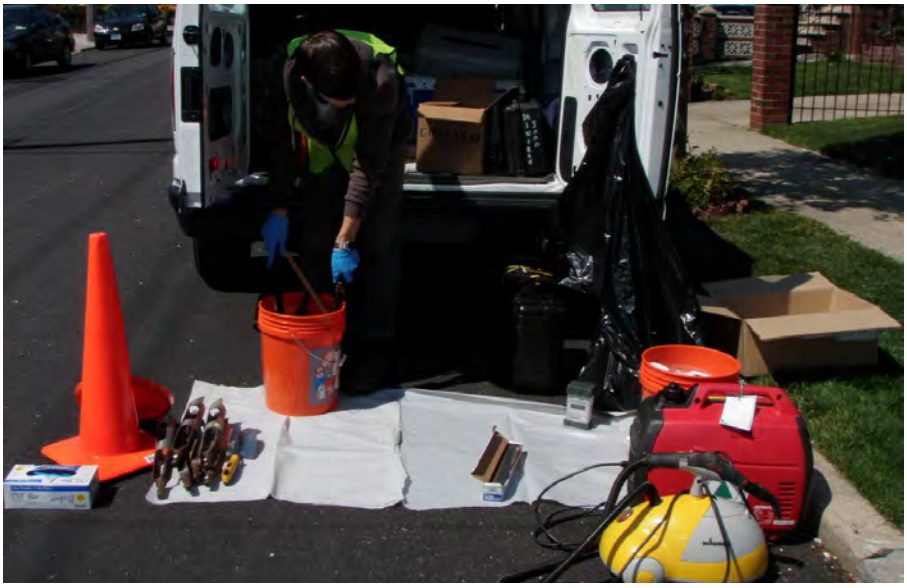


Photograph 1 – View of Weston personnel augering at sample location 2101-S05.

Photograph 2 – View of Weston personnel logging soil lithology and collecting soil samples from sample location 2101-S04.

Photographs

Contract No./TDD Number	Site Name/Location	Date	Page
EP-S5-06-04	Neo Smelting and Refining / PA/SI Sampling	4/25/13 – 4/26/13	Page 2 of 5
S05-0013-1302-006	150-40 11th Ave, Whitestone, NY		



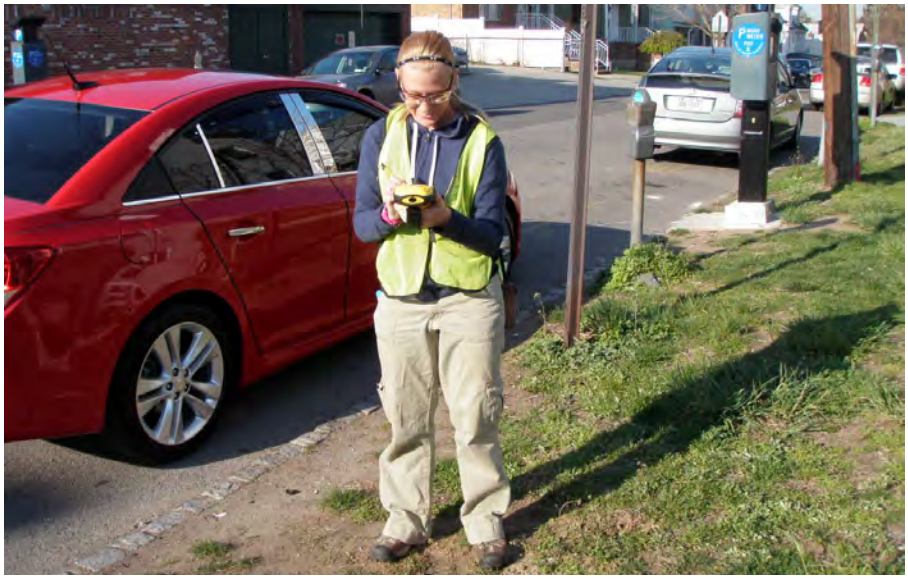
Photograph 3 – View of Weston personnel decontaminating auger heads.

Photograph 4 – View of soil intervals from sample location 2101-S08.

Photographs

Contract No./TDD Number	Site Name/Location	Date	Page
EP-S5-06-04	Neo Smelting and Refining / PA/SI Sampling	4/25/13 – 4/26/13	Page 3 of 5
S05-0013-1302-006	150-40 11th Ave, Whitestone, NY		

Photograph 5 – View of Weston personnel collecting rinsate blank 2101-RIN01 from decontaminated auger head.

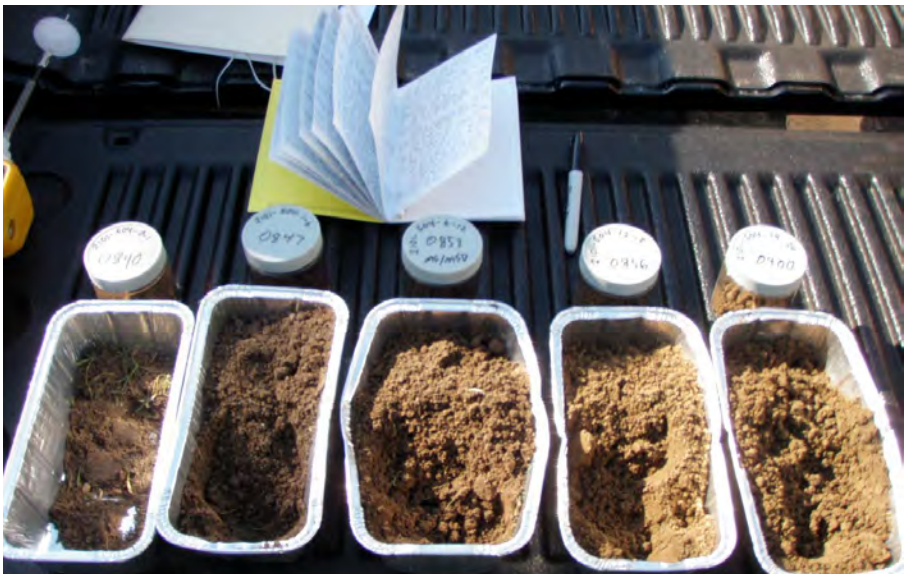


Photograph 6 – View of Weston personnel collecting GPS coordinates at sample location 2101-S09.

Photographs

Contract No./TDD Number	Site Name/Location	Date	Page
EP-S5-06-04	Neo Smelting and Refining / PA/SI Sampling	4/25/13 – 4/26/13	Page 4 of 5
S05-0013-1302-006	150-40 11th Ave, Whitestone, NY		

Photograph 7 – View of Weston personnel augering at sample location 2101-S13.



Photograph 8 – View of soil intervals from sample location 2101-S04.

Photographs

Contract No./TDD Number	Site Name/Location	Date	Page
EP-S5-06-04	Neo Smelting and Refining / PA/SI Sampling	4/25/13 – 4/26/13	Page 5 of 5
S05-0013-1302-006	150-40 11th Ave, Whitestone, NY		

Photograph 9 – View of borehole filled in after sampling at sample location 2101-S04.

Photograph 10 – View of borehole filled in after sampling at sample location 2101-S09.

WESTON SOLUTIONS, INC.
205 CAMPUS DRIVE
EDISON, NEW JERSEY 08837
732-417-5800 • FAX: 732-417-5801

The Trusted Integrator for Sustainable Solutions

March 14, 2013

Mr. Andrew Fessler, Work Assignment Manager
U.S. Environmental Protection Agency
290 Broadway - 18th Floor
New York, NY 10007-1866

Document Control No.: 2099-2A-BCFR

Subject: **Abbreviated Preliminary Assessment Checklist**
Neo Smelting and Refining
Contract No.: EP-S5-06-04, TDD No.: S05-0013-1302-006

Dear Mr. Fessler,

Weston Solutions, Inc. (WESTON®) is pleased to submit the final Abbreviated Preliminary Assessment Checklist for the Neo Smelting and Refining site in Whitestone, New York. This submittal includes an electronic copy of the checklist. If you have any questions, please contact me at (732) 417-5814.

Very truly yours,

WESTON SOLUTIONS, INC.

Denise Breen
Assistant Project Scientist

enclosure

cc: C. Romano, EPA (w/o enclosure)
W.S. Butterfield, WESTON (w/o enclosure)
file

ABBREVIATED PRELIMINARY ASSESSMENT CHECKLIST

This checklist can be used to help the site investigator determine if an Abbreviated Preliminary Assessment (APA) is warranted. This checklist should document the rationale for the decision on whether further steps in the site investigation process are required under CERCLA. Use additional sheets, if necessary.

Checklist Preparer: Denise Breen /Assistant Project Scientist (Name/Title) — March 14, 2013 (Date)

205 Campus Drive, Edison NJ 08837 (Address) — (732) 417-5814 (Phone)

denise.breen@westonsolutions.com (E-Mail Address)

Site Name: Neo Smelting and Refining

Previous Names (if any): Neo Metal & Chemical Corp

Site Location: 150-40 11th Ave.. (Street)

Whitestone (City) New York (ST) 11357 (Zip)

4516 (Block) 16 (Lot)

Latitude: + 40.791706 **Longitude:** - 73.81365*

* The site location coordinates were obtained from a Global Positioning System (GPS) point collected during the off-site reconnaissance on November 13, 2012. The point was collected from the estimated facility entrance of the former smelting building.

Describe the release (or potential release) and its probable nature:

The Neo Smelting and Refining (Neo) facility was operational as a secondary smelter from approximately 1940 until sometime after 1958. The 1940 New York City (NYC) Municipal Archives Tax Photo shows the northwest corner of the original facility as "Neo Smelting and Refining". Sanborn ™ Maps indicate "Metal Reeling" facility at the location in 1941 and "Metal Refining" in 1942 and 1950. According to City Directories for 1942-1944, Neo Metal & Chemical Corp was located at the subject property, whereas in 1944-1948, City Directories show the occupant as Neo-Smelting & Refining. A 1958 court case involving the loss of cadmium metal belonging to Neo-Smelting and Refining indicates that Neo was still in operation at this time; although Sanborn ™ Maps dating 1981-2006 indicate Metal Scrap Warehouse on the subject property, Neo is not specified. Sometime between 2006 and 2008, the warehouse was converted to the current residential building, Whitestone Manor Condominiums. The northwest corner of the former Neo facility is currently the entrance area to the Whitestone Manor Condominiums.

The surrounding properties are primarily residential and commercial. The historical building is still on site, converted to a condominium complex with no significant changes to configuration. Exposed soil is present at nearly all surrounding residential properties, as well as in in the rights-of-way between the sidewalks and the streets. The nearest exposed soil considered to be exposed during the operational history of the smelting facility are located west in the backyard of 150-24 11th Ave and west-northwest in the backyard of 150-25 12th Ave. Smelting is a key process in lead production that involves heating lead ore or recovered lead with chemical reducing agents. Secondary smelting processes can be responsible for releasing large amounts of lead contamination into the surrounding environment; therefore, the potential of a lead release to the surrounding residential properties existed for nearly two decades.

Part 1 - Superfund Eligibility Evaluation

If all answers are "no" go on to Part 2, otherwise proceed to Part 3.	**YES**	**NO**
1. Is the site currently in CERCLIS or an "alias" of another site?	☒	☐
2. Is the site being addressed by some other remedial program (Federal, State, or Tribal)?	☐	☒
3. Are the hazardous substances potentially released at the site regulated under a statutory exclusion (e.g., petroleum, natural gas, natural gas liquids, synthetic gas usable for fuel, normal application of fertilizer, release located in a workplace, naturally occurring, or regulated by the NRC, UMTRCA, or OSHA)?	☐	☒
4. Are the hazardous substances potentially released at the site excluded by policy considerations (i.e., deferred to RCRA corrective action)?	☐	☒
5. Is there sufficient documentation to demonstrate that no potential for a release that could cause adverse environmental or human health impacts exists (e.g., comprehensive remedial investigation equivalent data showing no release above ARARs, completed removal action, documentation showing that no hazardous substance releases have occurred, or an EPA approved risk assessment completed)?	☐	☒

Please explain all "yes" answer(s).

The CERCLIS ID is NYN000206646; the site is not currently on the National Priorities List (NPL).

Part 2 - Initial Site Evaluation

For Part 2, if information is not available to make a "yes" or "no" response, further investigation may be needed. In these cases, determine whether an APA is appropriate. Exhibit 1 parallels the questions in Part 2. Use Exhibit 1 to make decisions in Part 3.

If the answer is "no" to any of questions 1, 2, or 3, proceed directly to Part 3.	**YES**	**NO**
1. Does the site have a release or a potential to release?	☒	☐
2. Does the site have uncontained sources containing CERCLA eligible substances?	Unknown – EPA plans to collect samples.	
3. Does the site have documented on-site, adjacent, or nearby targets?	☒	☐

If the answers to questions 1, 2, and 3 above were all "yes" then answer the questions below before proceeding to Part 3.	**YES**	**NO**
4. Does documentation indicate that a target (e.g., drinking water wells, drinking surface water intakes, etc.) has been exposed to a hazardous substance released from the site?	☐	☒
5. Is there an apparent release at the site with no documentation of exposed targets, but there are targets on site or immediately adjacent to the site?	☐	☒
6. Is there an apparent release and no documented on-site targets or targets immediately adjacent to the site, but there are nearby targets (e.g., targets within 1 mile)?	☐	☒
7. Is there no indication of a hazardous substance release, and there are uncontained sources containing CERCLA hazardous substances, but there is a potential to release with targets present on site or in proximity to the site?	☒	☐

EXHIBIT 1
SITE ASSESSMENT DECISION GUIDELINES FOR A SITE

Exhibit 1 identifies different types of site information and provides some possible recommendations for further site assessment activities based on that information. You will use Exhibit 1 in determining the need for further action at the site, based on the answers to the questions in Part 2. Please use your professional judgment when evaluating a site. Your judgment may be different from the general recommendations for a site given below.

Suspected/Documented Site Conditions		APA	Full PA	PA/SI	SI
1. There are no releases or potential to release.		Yes	No	No	No
2. No uncontained sources with CERCLA-eligible substances are present on site.		Yes	No	No	No
3. There are no on-site, adjacent, or nearby targets.		Yes	No	No	No
4. There is documentation indicating that a target (e.g., drinking water wells, drinking surface water intakes, etc.) has been exposed to a hazardous substance released from the site.	Option 1: APA →SI	Yes	No	No	Yes
	Option 2: PA/SI	No	No	Yes	NA
5. There is an apparent release at the site with no documentation of exposed targets, but there are targets on site or immediately adjacent to the site.	Option 1: APA →SI	Yes	No	No	Yes
	Option 2: PA/SI	No	No	Yes	NA
6. There is an apparent release and no documented on-site targets and no documented targets immediately adjacent to the site, but there are nearby targets. Nearby targets are those targets that are located within 1 mile of the site and have a relatively high likelihood of exposure to a hazardous substance migration from the site.		No	Yes	No	No
7. There is no indication of a hazardous substance release, and there are uncontained sources containing CERCLA hazardous substances, but there is a potential to release with targets present on site or in proximity to the site.		No	Yes	No	No

Part 3 - EPA Site Assessment Decision

When completing Part 3, use Part 2 and Exhibit 1 to select the appropriate decision. For example, if the answer to question 1 in Part 2 was "no," then an APA may be performed and the "NFRAP" box below should be checked. Additionally, if the answer to question 4 in Part 2 is "yes," then you have two options (as indicated in Exhibit 1): Option 1 --conduct an APA and check the "Lower Priority SI" or "Higher Priority SI" box below; or Option 2 -- proceed with a combined PA/SI assessment.

Check the box that applies based on the conclusions of the APA:

- ☐ NFRAP
- ☒ Higher Priority SI
- ☐ Lower Priority SI
- ☐ Defer to RCRA Subtitle C
- ☐ Defer to NRC
- ☐ Refer to Removal Program - further site assessment needed
- ☐ Refer to Removal Program - NFRAP
- ☐ Site is being addressed as part of another CERCLIS site
- ☐ Other: _____

Regional EPA Reviewer: Andrew Fessler / Andrew Fessler — Print Name/Signature

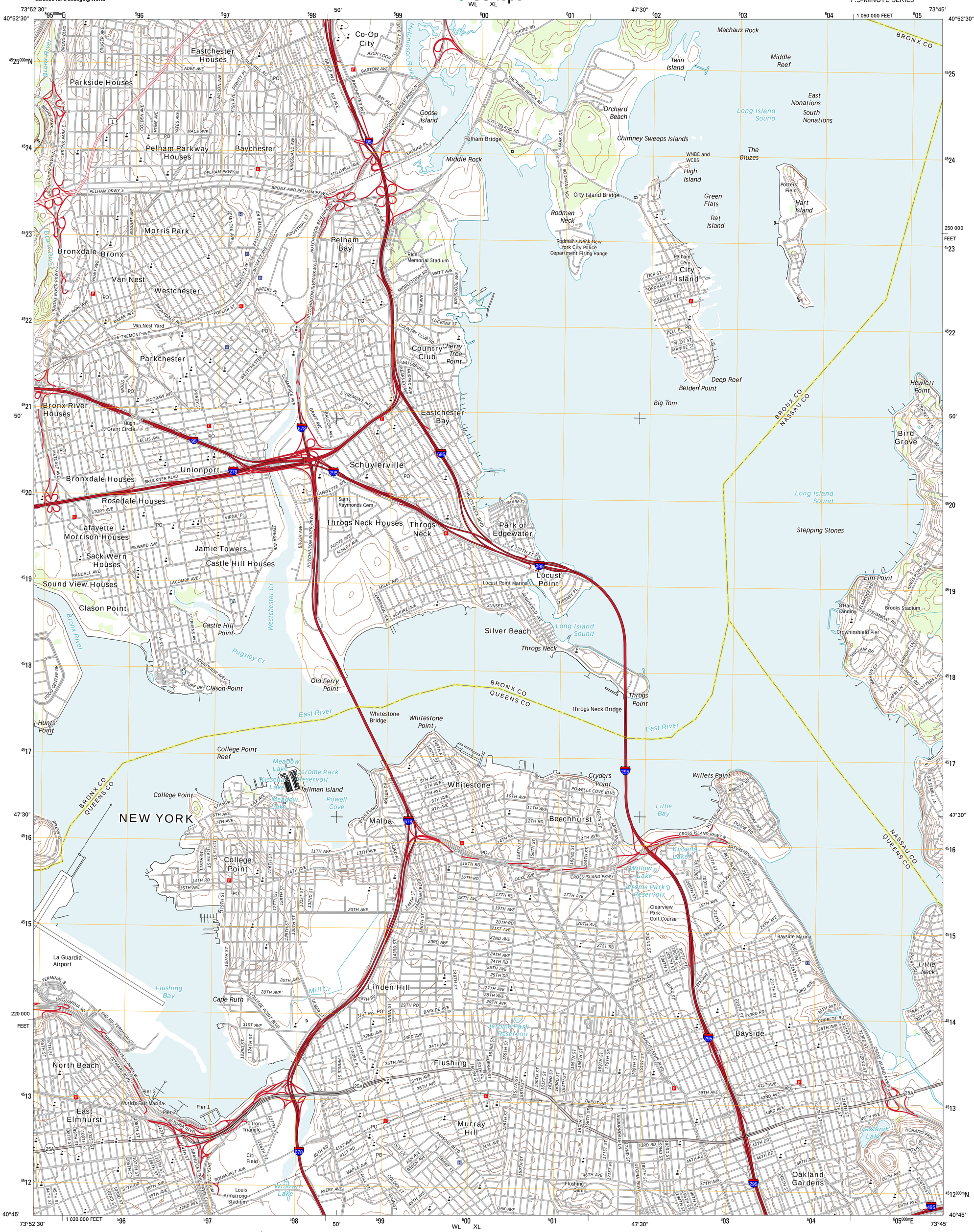
5/13/13 — Date

PLEASE EXPLAIN THE RATIONALE FOR YOUR DECISION: The Higher Priority SI decision is based on the historic presence of a secondary smelter at this location coupled with the presence of nearby residential properties with exposed soil. The secondary smelting processes can be responsible for releasing large amounts of lead contamination into the surrounding environment; therefore, the potential of a lead release to the surrounding residential properties existed for nearly two decades. SI sampling can be used to determine if on-site waste sources are present and if nearby targets are exposed to site-related contamination.

U.S. DEPARTMENT OF THE INTERIOR
U. S. GEOLOGICAL SURVEY

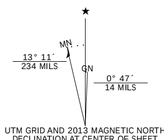
The National Map US Topo WL XL

FLUSHING QUADRANGLE
NEW YORK
7.5-MINUTE SERIES



Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and 1 000-meter grid: Universal Transverse Mercator, Zone 18T
10 000-foot ticks: New York Coordinate System of 1983 (long island and east zones)

Imagery.....NAIP, July 2011
Roads.....©2006-2012 TomTom
Names.....GNIS, 2012
Hydrography.....National Hydrography Dataset, 2011
Contours.....National Elevation Dataset, 1998
Boundaries.....Census, IBWC, IBC, USGS, 1972 - 2012



UTM GRID AND 2013 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

U.S. National Grid
100,000-m Square ID
600 WL XL
Grid Zone Designation 18T

SCALE 1:24 000

1 0.5 0 KILOMETERS 1 2
1000 500 0 METERS 1000 2000
1 0.5 0 1
MILES
1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000
FEET

CONTOUR INTERVAL 10 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the National Geospatial Program US Topo Product Standard, 2011.
A metadata file associated with this product is draft version 0.6.7

QUADRANGLE LOCATION

Yonkers	Mount Vernon	Mamaroneck
Central Park	Flushing	Sea Cliff
Brooklyn	Jamaica	Lynbrook

ADJOINING 7.5' QUADRANGLES

ROAD CLASSIFICATION

Interstate Route
US Route
Ramp
State Route
Local Road
4WD

Interstate Route US Route State Route

FLUSHING, NY
2013

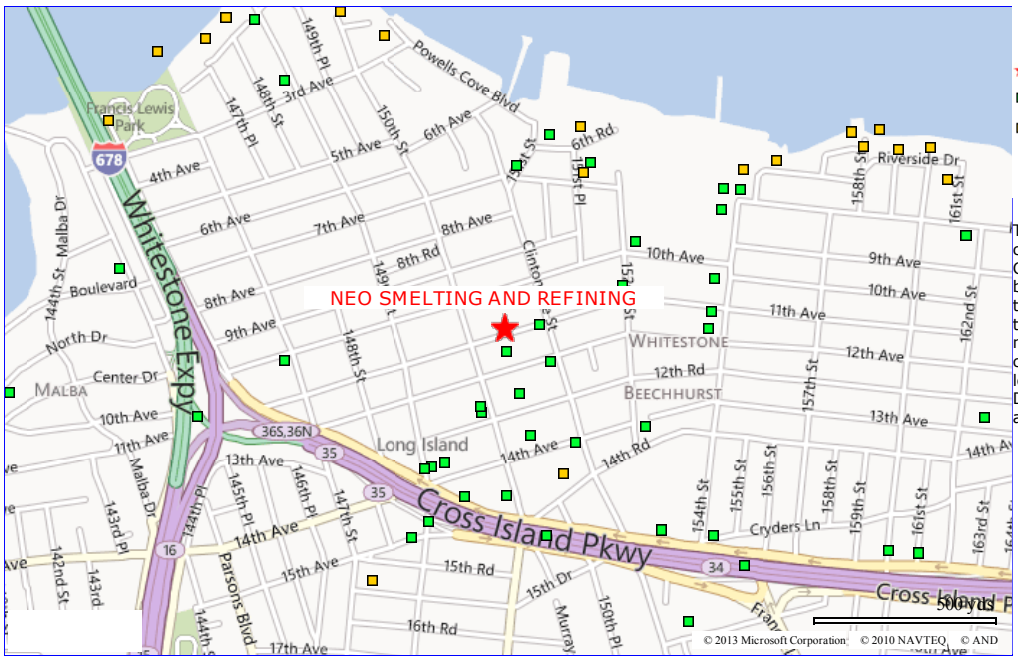
Facility Registry System (FRS)

Facility Detail Report

Report an Error

NEO SMELTING AND REFINING

150-40 11TH AVE
WHITESTONE, NY 11357
EPA Registry Id: 110054363363



Legend

- ★ Selected Facility
- ■ EPA Facility of Interest
- ■ State/Tribe Facility of Interest

The facility locations displayed come from the FRS Spatial Coordinates tables. They are the best representative locations for the displayed facilities based on the accuracy of the collection method and quality assurance checks performed against each location. The North American Datum of 1983 is used to display all coordinates.

Environmental Interests

Information System	Information System ID	Environmental Interest Type	Data Source	Last Updated Date	Supplemental Environmental Interests:
COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION AND LIABILITY INFORMATION SYSTEM	NYN000206646	SUPERFUND	CERCLIS		

Additional EPA Reports: MyEnvironment Site Demographics Watershed Report

Standard Industrial Classification Codes (SIC)

No SIC Codes returned.

National Industry Classification System Codes (NAICS)

No NAICS Codes returned.

Facility Codes and Flags

EPA Region:	02
Duns Number:	
Congressional District Number:	05
Legislative District Number:	
HUC Code/ Watershed:	02030201 / NORTHERN LONG ISLAND
US Mexico Border Indicator:	NO
Federal Facility:	
Tribal Land:	

Facility Mailing Addresses

No Facility Mailing Addresses returned.

Contacts

No Contacts returned.

Alternative Names

No Alternative Names returned.

Organizations

No Organizations returned.

Query executed on: MAY-13-2013

Additional information for CERCLIS or TRI sites:

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NY County FIPS Codes - Census

County FIPS code is three digits long and is often preceded with a two digit state code. When combined the five digits uniquely define all 3,219 counties in the United States.

The FIPS code for New York State 36. The FIPS codes for the 62 counties in NYS are listed below.

County FIPS	County Name
001	Albany County
003	Allegany County
005	Bronx County
007	Broome County
009	Cattaraugus County
011	Cayuga County
013	Chautauqua County
015	Chemung County
017	Chenango County
019	Clinton County
021	Columbia County
023	Cortland County
025	Delaware County
027	Dutchess County
029	Erie County
031	Essex County
033	Franklin County
035	Fulton County
037	Genesee County
039	Greene County
041	Hamilton County
043	Herkimer County
045	Jefferson County
047	Kings County
049	Lewis County
051	Livingston County
053	Madison County
055	Monroe County
057	Montgomery County

The counties New York City are:

- 005 - Bronx
- 047 - Kings (Brooklyn)
- 061 - New York (Manhattan)
- 081 - Queens
- 085 - Richmond (Staten Island)

059	Nassau County
061	New York County
063	Niagara County
065	Oneida County
067	Onondaga County
069	Ontario County
071	Orange County
073	Orleans County
075	Oswego County
077	Otsego County
079	Putnam County
081	Queens County
083	Rensselaer County
085	Richmond County
087	Rockland County
089	St. Lawrence County
091	Saratoga County
093	Schenectady County
095	Schoharie County
097	Schuyler County
099	Seneca County
101	Steuben County
103	Suffolk County
105	Sullivan County
107	Tioga County
109	Tompkins County
111	Ulster County
113	Warren County
115	Washington County
117	Wayne County
119	Westchester County
121	Wyoming County
123	Yates County

Assistance in using these or any other data resources is available on-site in the DSSC during reference hours or by emailing dssc.data@columbia.edu.

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Look Up a ZIP Code™

By Address By Company Cities by ZIP Code™

Still Have Questions?
Browse our FAQs ›

You entered:

Look up another ZIP Code™ ›

150-40 11TH AVENUE
WHITESTONE NY

Here's the full address, using standard abbreviations and formatting...

15040 11TH AVE
WHITESTONE NY **11357-1806**

Hide Mailing Industry Details

Carrier Route	C019
County	QUEENS
Delivery Point Code	40
Check Digit	4
Commercial Mail Receiving Agency	N
LAC™	
eLOT™	0131
eLOT Ascending/Descending Indicator	A
Record Type Code	S
PMB Designator	
PMB Number	
Default Flag	
EWS Flag	
DPV Confirmation Indicator	Y

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Neo Smelting & Refining
150-40 11th Ave
Whitestone, NY 11357

Inquiry Number: 3458359.13
November 19, 2012

The EDR-City Directory Abstract

Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

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City Directory Images

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Abstract is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Abstract includes a search and abstract of available city directory data. For each address, the directory lists the name of the corresponding occupant at five year intervals.

Business directories including city, cross reference and telephone directories were reviewed, if available, at approximately five year intervals for the years spanning 1922 through 2012. This report compiles information gathered in this review by geocoding the latitude and longitude of properties identified and gathering information about properties within 100 feet of the target property.

A summary of the information obtained is provided in the text of this report.

RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. An "X" indicates where information was identified in the source and provided in this report.

Year	Source	TP	Adjoining	Text Abstract	Source Image
2012	Cole Information Services	X	X	X	-
2007	Cole Information Services	-	X	X	-
2005	Hill-Donnelly Information Services	X	X	X	-
2000	Cole Information Services	X	X	X	-
1996	NYNEX	-	-	-	-
1991	NYNEX Information Resource Company	-	-	-	-
1983	New York Telephone	-	-	-	-
1976	New York Telephone	-	-	-	-
1970	New York Telephone	-	X	X	-
1967	New York Telephone	-	-	-	-
1962	New York Telephone Directory	-	-	-	-
1950	New York Telephone	-	-	-	-
1945	New York Telephone	-	-	-	-
1939	New York Telephone Company	-	X	X	-
1934	R. L. Polk & Co.	-	X	X	-
1922	The Metropolitan Directory Co.	-	-	-	-

FINDINGS

TARGET PROPERTY INFORMATION

ADDRESS

150-40 11th Ave
Whitestone, NY 11357

FINDINGS DETAIL

Target Property research detail.

11TH AVE

15040 11TH AVE

Year	*Uses*	*Source*
2012	LA FAMIGLIA DI BUGEY INC	Cole Information Services
2005	La Famiglia Di Bugey Inc	Hill-Donnelly Information Services
	Lakeside Technical Enterprises	Hill-Donnelly Information Services
	Minerva Audio Visual Inc	Hill-Donnelly Information Services
	New Advantage Inc	Hill-Donnelly Information Services
	Stefan Juliana	Hill-Donnelly Information Services
2000	Advantage Inc	Cole Information Services
	Creatv Irn Inc	Cole Information Services
	La Fmgl Di Bgy Inc	Cole Information Services
	Lksd Tech Inc	Cole Information Services
	Lksd Techl Inc	Cole Information Services
	Stefan Julian	Cole Information Services

FINDINGS

ADJOINING PROPERTY DETAIL

The following Adjoining Property addresses were researched for this report. Detailed findings are provided for each address.

11TH AVE

15029 11TH AVE

Year	Uses	Source
2005	HLarosa RA A	Hill-Donnelly Information Services

15035 11TH AVE

Year	Uses	Source
2007	HERBALIFE	Cole Information Services
	ROBERT JELOVCIC INDEPENDENT HERBALIF	Cole Information Services
2005	h Jelovdc Silvio o	Hill-Donnelly Information Services
	h Maurovic Milka AV	Hill-Donnelly Information Services
2000	Milka Maurovic	Cole Information Services
1970	Julig Robt	New York Telephone
1934	Meehan Jas Hazel tnsmith	R. L. Polk & Co.
	Tursi Biaggio Nicholetta icemn	R. L. Polk & Co.

15041 11TH AVE

Year	Uses	Source
2005	H Yang Kin AO	Hill-Donnelly Information Services
2000	Kin P Yang	Cole Information Services
1934	Grotz Louise	R. L. Polk & Co.
	Grotz Martha wid Geo	R. L. Polk & Co.

15042 11TH AVE

Year	Uses	Source
2012	FIERCE MARTIAL ARTS	Cole Information Services
2005	Bella Coffee Inc	Hill-Donnelly Information Services
	Eclipse Screens Of Ny i R 718357 70780 s	Hill-Donnelly Information Services
2000	Bella Coffee Inc	Cole Information Services

15044 11TH AVE

Year	Uses	Source
2012	LAWRENCE EXTERIOR RESTORATION GROUP	Cole Information Services

FINDINGS

Year	Uses	Source
2012	PST CONSTRUCTION CORP	Cole Information Services
	G K C INDUSTRIES	Cole Information Services
	TINDEL REPLACEMENT WINDOWS INCORPORA	Cole Information Services
2007	GKC INDUSTRIES INC	Cole Information Services
	PST CONSTRUCTION CORP	Cole Information Services
	TINDEL REPLACEMENT WINDOWS INC	Cole Information Services
	LAWRENCE EXTERIOR RESTORATION CORP	Cole Information Services
2005	Duffner & Voigt Contracting	Hill-Donnelly Information Services
	Duffner & Voigt Contrctng	Hill-Donnelly Information Services
	Tindel Replacement Windows Inc	Hill-Donnelly Information Services
2000	Tindel Rplcmnt Inc	Cole Information Services
	Lawrence Restor	Cole Information Services
	Pro Plbg & Htg Corp	Cole Information Services

15045 11TH AVE

Year	Uses	Source
2005	H Hassett Frank	Hill-Donnelly Information Services
2000	F Hassett	Cole Information Services
	Frank Hassett	Cole Information Services
1939	Harustyak Geo	New York Telephone Company

15049 11TH AVE

Year	Uses	Source
2005	H Datta Madhu	Hill-Donnelly Information Services
2000	Madhu Datta	Cole Information Services

15050 11TH AVE

Year	Uses	Source
2012	YSL IRON WORK	Cole Information Services
2007	IRON WORKS BY Y S L INC	Cole Information Services
2005	Ironworks By Ysl Inc	Hill-Donnelly Information Services
	Ysl Creative Iron Works Inc	Hill-Donnelly Information Services
2000	Ironworks YSL Inc	Cole Information Services

11TH ST

15035 11TH ST

Year	Uses	Source
1934	Maxwell Arth L Anna city firemn	R. L. Polk & Co.

FINDINGS

15041 11TH ST

Year	***Uses***	***Source***
1934	Grotz Mary	R. L. Polk & Co.

FINDINGS

TARGET PROPERTY: ADDRESS NOT IDENTIFIED IN RESEARCH SOURCE

The following Target Property addresses were researched for this report, and the addresses were not identified in the research source.

Address Researched	Address Not Identified in Research Source
150-40 11th Ave	2007, 1996, 1991, 1983, 1976, 1970, 1967, 1962, 1950, 1945, 1939, 1934, 1922

ADJOINING PROPERTY: ADDRESSES NOT IDENTIFIED IN RESEARCH SOURCE

The following Adjoining Property addresses were researched for this report, and the addresses were not identified in research source.

Address Researched	Address Not Identified in Research Source
15029 11TH AVE	2012, 2007, 2000, 1996, 1991, 1983, 1976, 1970, 1967, 1962, 1950, 1945, 1939, 1934, 1922
15035 11TH AVE	2012, 2007, 1996, 1991, 1983, 1976, 1967, 1962, 1950, 1945, 1939, 1922
15035 11TH AVE	2012, 2005, 2000, 1996, 1991, 1983, 1976, 1970, 1967, 1962, 1950, 1945, 1939, 1934, 1922
15035 11TH ST	2012, 2007, 2005, 2000, 1996, 1991, 1983, 1976, 1970, 1967, 1962, 1950, 1945, 1939, 1922
15041 11TH AVE	2012, 2007, 1996, 1991, 1983, 1976, 1970, 1967, 1962, 1950, 1945, 1939, 1922
15041 11TH ST	2012, 2007, 2005, 2000, 1996, 1991, 1983, 1976, 1970, 1967, 1962, 1950, 1945, 1939, 1922
15042 11TH AVE	2012, 2007, 1996, 1991, 1983, 1976, 1970, 1967, 1962, 1950, 1945, 1939, 1934, 1922
15042 11TH AVE	2007, 2005, 2000, 1996, 1991, 1983, 1976, 1970, 1967, 1962, 1950, 1945, 1939, 1934, 1922
15044 11TH AVE	2005, 2000, 1996, 1991, 1983, 1976, 1970, 1967, 1962, 1950, 1945, 1939, 1934, 1922
15044 11TH AVE	2012, 2007, 1996, 1991, 1983, 1976, 1970, 1967, 1962, 1950, 1945, 1939, 1934, 1922
15045 11TH AVE	2012, 2007, 1996, 1991, 1983, 1976, 1970, 1967, 1962, 1950, 1945, 1934, 1922
15049 11TH AVE	2012, 2007, 1996, 1991, 1983, 1976, 1970, 1967, 1962, 1950, 1945, 1939, 1934, 1922
15050 11TH AVE	2012, 2007, 1996, 1991, 1983, 1976, 1970, 1967, 1962, 1950, 1945, 1939, 1934, 1922
15050 11TH AVE	2005, 2000, 1996, 1991, 1983, 1976, 1970, 1967, 1962, 1950, 1945, 1939, 1934, 1922

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent flood of encroachment so that the 1% annual chance flood can be ca in flood heights.

OTHER FLOOD AREAS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0112F

FIRM

FLOOD INSURANCE RATE MAP

CITY OF
NEW YORK, NEW YORK
BRONX, RICHMOND, NEW YORK, QUEENS, AND KINGS COUNTIES

PANEL 112 OF 457

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
NEW YORK, CITY OF	360497	0112	F

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
3604970112F

MAP REVISED
SEPTEMBER 5, 2007

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

Definitions of FEMA Flood Zone Designations

Flood zones are geographic areas that the FEMA has defined according to varying levels of flood risk. These zones are depicted on a community's Flood Insurance Rate Map (FIRM) or Flood Hazard Boundary Map. Each zone reflects the severity or type of flooding in the area.

Moderate to Low Risk Areas

In communities that participate in the NFIP, flood insurance is available to all property owners and renters in these zones:

ZONE	DESCRIPTION
B and X (shaded)	Area of moderate flood hazard, usually the area between the limits of the 100-year and 500-year floods. Are also used to designate base floodplains of lesser hazards, such as areas protected by levees from 100-year flood, or shallow flooding areas with average depths of less than one foot or drainage areas less than 1 square mile.
C and X (unshaded)	Area of minimal flood hazard, usually depicted on FIRMs as above the 500-year flood level.

High Risk Areas

In communities that participate in the NFIP, mandatory flood insurance purchase requirements apply to all of these zones:

ZONE	DESCRIPTION
A	Areas with a 1% annual chance of flooding and a 26% chance of flooding over the life of a 30-year mortgage. Because detailed analyses are not performed for such areas; no depths or base flood elevations are shown within these zones.
AE	The base floodplain where base flood elevations are provided. AE Zones are now used on new format FIRMs instead of A1-A30 Zones.
A1-30	These are known as numbered A Zones (e.g., A7 or A14). This is the base floodplain where the FIRM shows a BFE (old format).
AH	Areas with a 1% annual chance of shallow flooding, usually in the form of a pond, with an average depth ranging from 1 to 3 feet. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Base flood elevations derived from detailed analyses are shown at selected intervals within these zones.
AO	River or stream flood hazard areas, and areas with a 1% or greater chance of shallow flooding each year, usually in the form of sheet flow, with an average depth ranging from 1 to 3 feet. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Average flood depths derived from detailed analyses are shown within these zones.
AR	Areas with a temporarily increased flood risk due to the building or restoration of a flood control system (such as a levee or a dam). Mandatory flood insurance purchase requirements will apply, but rates will not exceed the rates for unnumbered A zones if the structure is built or restored in compliance with Zone AR floodplain

	management regulations.
A99	Areas with a 1% annual chance of flooding that will be protected by a Federal flood control system where construction has reached specified legal requirements. No depths or base flood elevations are shown within these zones.

High Risk - Coastal Areas

In communities that participate in the NFIP, mandatory flood insurance purchase requirements apply to all of these zones:

ZONE	DESCRIPTION
V	Coastal areas with a 1% or greater chance of flooding and an additional hazard associated with storm waves. These areas have a 26% chance of flooding over the life of a 30-year mortgage. No base flood elevations are shown within these zones.
VE, V1 - 30	Coastal areas with a 1% or greater chance of flooding and an additional hazard associated with storm waves. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Base flood elevations derived from detailed analyses are shown at selected intervals within these zones.

Undetermined Risk Areas

ZONE	DESCRIPTION
D	Areas with possible but undetermined flood hazards. No flood hazard analysis has been conducted. Flood insurance rates are commensurate with the uncertainty of the flood risk.

FEMA Map Service Center, P.O. Box 3617 Oakton, Virginia 22124-9617 Phone: (877) 336-2627
Adobe Acrobat Reader required to view certain documents. Click here to dow nload.

Neo
150-40 11th Avenue
Whitestone, NY 11357

Inquiry Number: 3492209.3
January 10, 2013

The EDR Aerial Photo Decade Package

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

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Date EDR Searched Historical Sources:

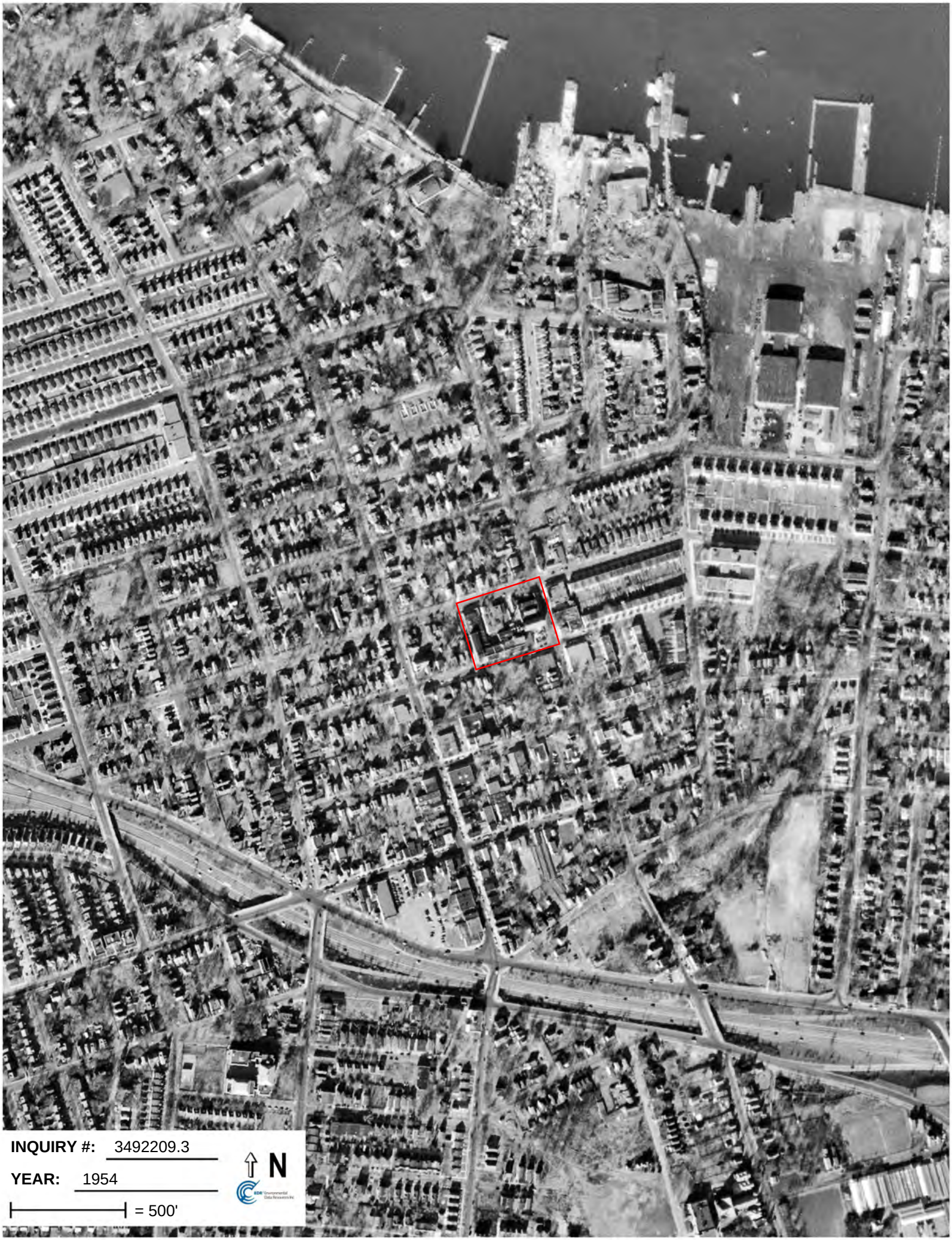
Aerial Photography January 10, 2013

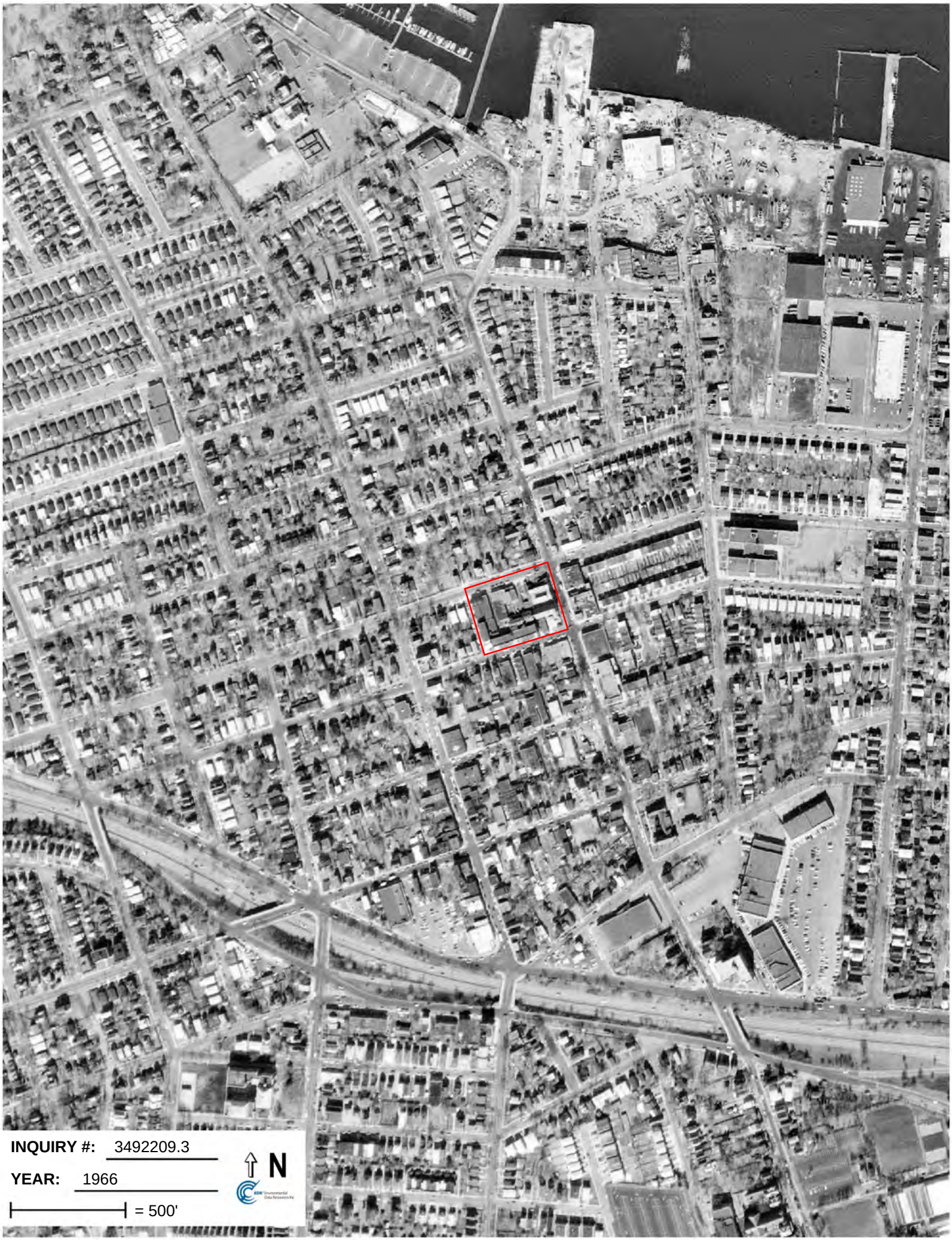
Target Property:

150-40 11th Avenue

Whitestone, NY 11357

Year	***Scale***	***Details***	***Source***
1954	Aerial Photograph. Scale: 1"=500'	Panel #: 40073-G7, Flushing, NY;/Flight Date: January 08, 1954	EDR
1966	Aerial Photograph. Scale: 1"=500'	Panel #: 40073-G7, Flushing, NY;/Flight Date: February 23, 1966	EDR
1975	Aerial Photograph. Scale: 1"=500'	Panel #: 40073-G7, Flushing, NY;/Flight Date: April 01, 1975	EDR
1984	Aerial Photograph. Scale: 1"=500'	Panel #: 40073-G7, Flushing, NY;/Flight Date: April 27, 1984	EDR
1994	Aerial Photograph. Scale: 1"=500'	Panel #: 40073-G7, Flushing, NY;/DOQQ - acquisition dates: April 08, 1994	EDR
2006	Aerial Photograph. Scale: 1"=500'	Panel #: 40073-G7, Flushing, NY;/Flight Year: 2006	EDR


INQUIRY #: 3492209.3
YEAR: 1954
= 500'
N


INQUIRY #: 3492209.3
YEAR: 1966
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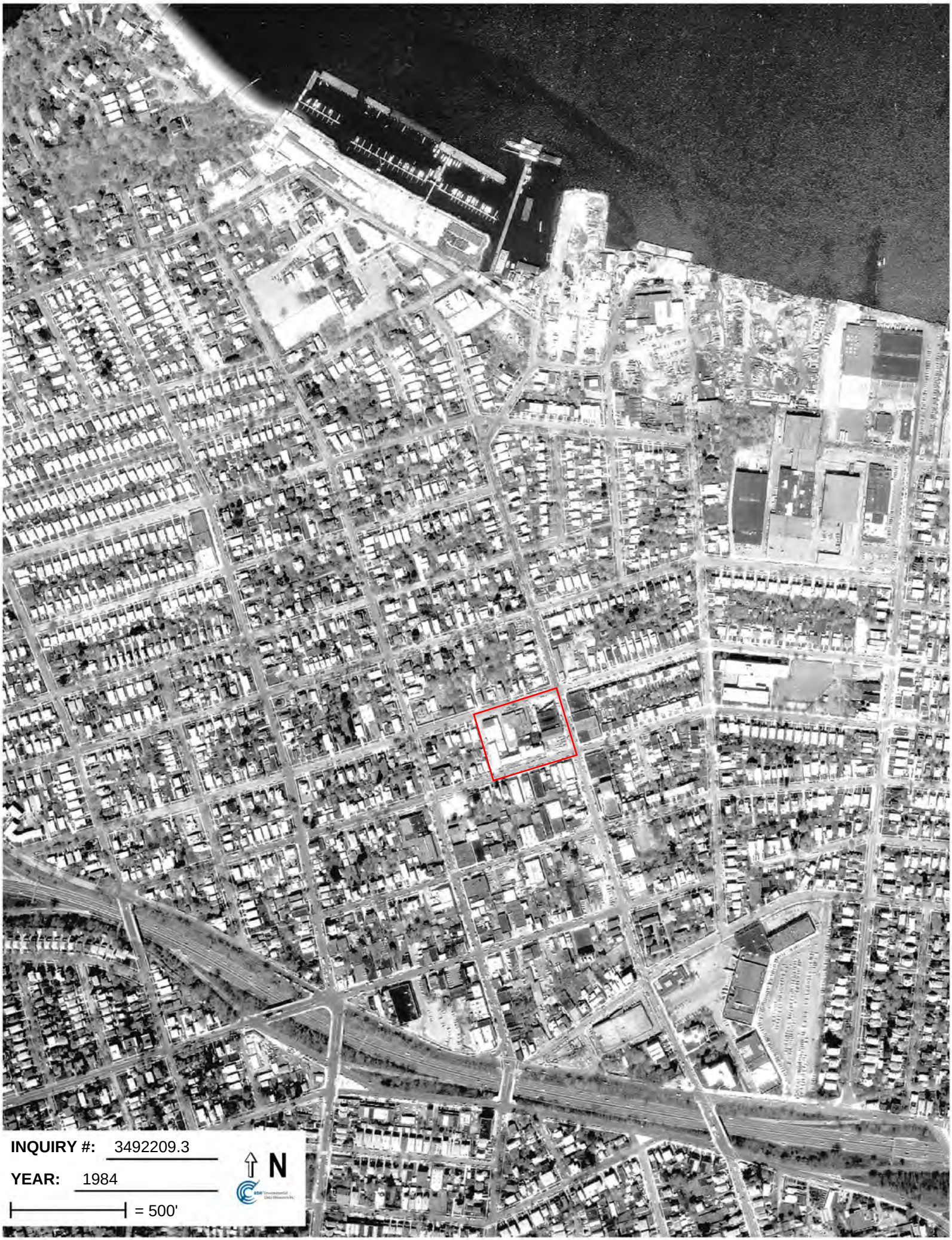
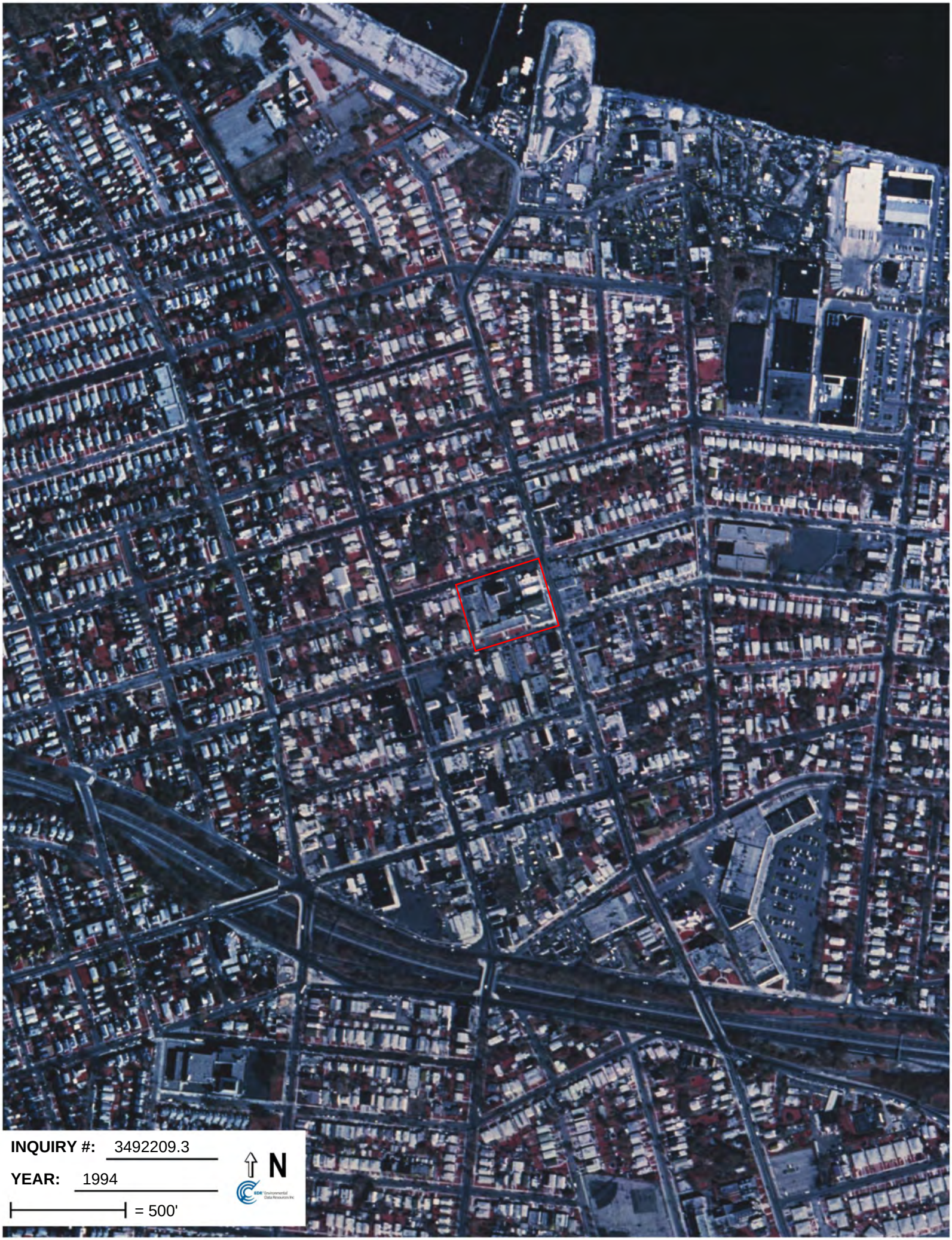
K-146-25
INQUIRY #: 3492209.3
YEAR: 1975
= 500'
N


INQUIRY #: 3492209.3
YEAR: 1984
= 500'
N


INQUIRY #: 3492209.3
YEAR: 1994
= 500'
N

INQUIRY #: 3492209.3
YEAR: 2006
= 500'
N

Neo Smelting & Refining
150-40 11th Ave
Whitestone, NY 11357

Inquiry Number: 3458359.14
November 19, 2012

Certified Sanborn® Map Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

11/19/12

Site Name:
Neo Smelting & Refining
150-40 11th Ave
Whitestone, NY 11357

Client Name:
Weston Solutions, Inc.
205 Campus Drive
Edison, NJ 08837

EDR Inquiry # 3458359.14

Contact: Gerry Gilliland

EDR® Environmental Data Resources Inc

The complete Sanborn Library collection has been searched by EDR, and fire insurance maps covering the target property location provided by Weston Solutions, Inc. were identified for the years listed below. The certified Sanborn Library search results in this report can be authenticated by visiting www.edrnet.com/sanborn and entering the certification number. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by Sanborn Library LLC, the copyright holder for the collection.

Certified Sanborn Results:

Site Name: Neo Smelting & Refining
Address: 150-40 11th Ave
City, State, Zip: Whitestone, NY 11357
Cross Street:
P.O. # 20405016013202700
Project: NYSmelterSites
Certification # 1CBC-4B11-A8CD

Maps Provided:

2006	1999	1991	1950
2005	1996	1989	1942
2004	1995	1988	1941
2003	1994	1986	1916
2002	1993	1983	1903
2001	1992	1981	

Sanborn® Library search results
Certification # 1CBC-4B11-A8CD

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- ✓ University Publications of America
- ✓ EDR Private Collection

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Sanborn Sheet Thumbnails

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2006 Source Sheets

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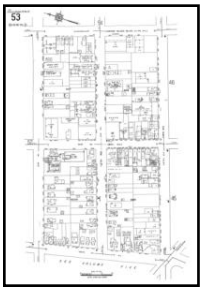


Volume 23, Sheet 53

2005 Source Sheets

Volume 23, Sheet 51

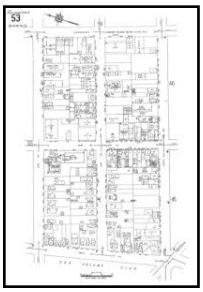
Volume 23, Sheet 52

Volume 23, Sheet 53

2004 Source Sheets

Volume 23, Sheet 51

Volume 23, Sheet 52



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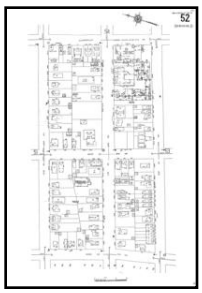
2003 Source Sheets

Volume 23, Sheet 51



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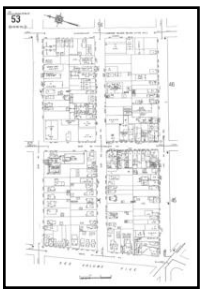

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2002 Source Sheets

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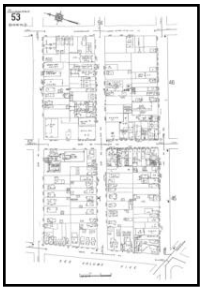

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2001 Source Sheets

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1999 Source Sheets

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1996 Source Sheets

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1986 Source Sheets

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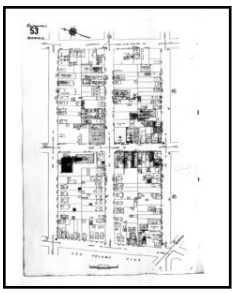

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1983 Source Sheets

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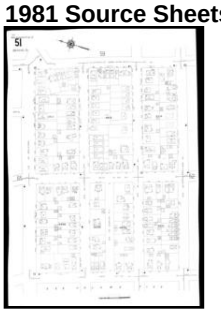
1981 Source Sheets



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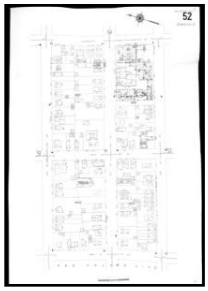

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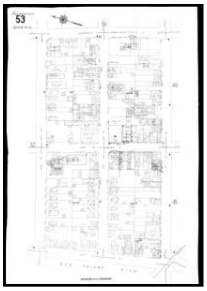

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1950 Source Sheets

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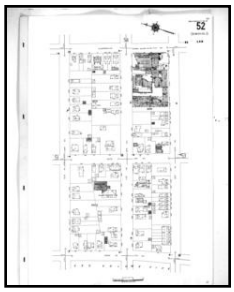

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1942 Source Sheets

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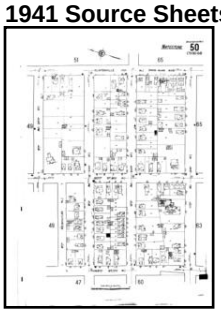
1941 Source Sheets



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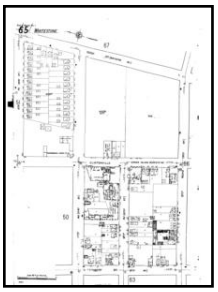

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1903 Source Sheets

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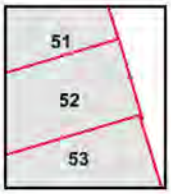

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N

2005 Certified Sanborn Map

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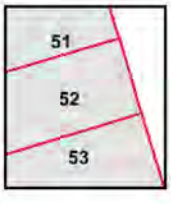

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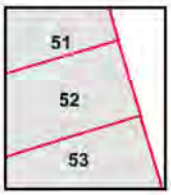

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2003 Certified Sanborn Map

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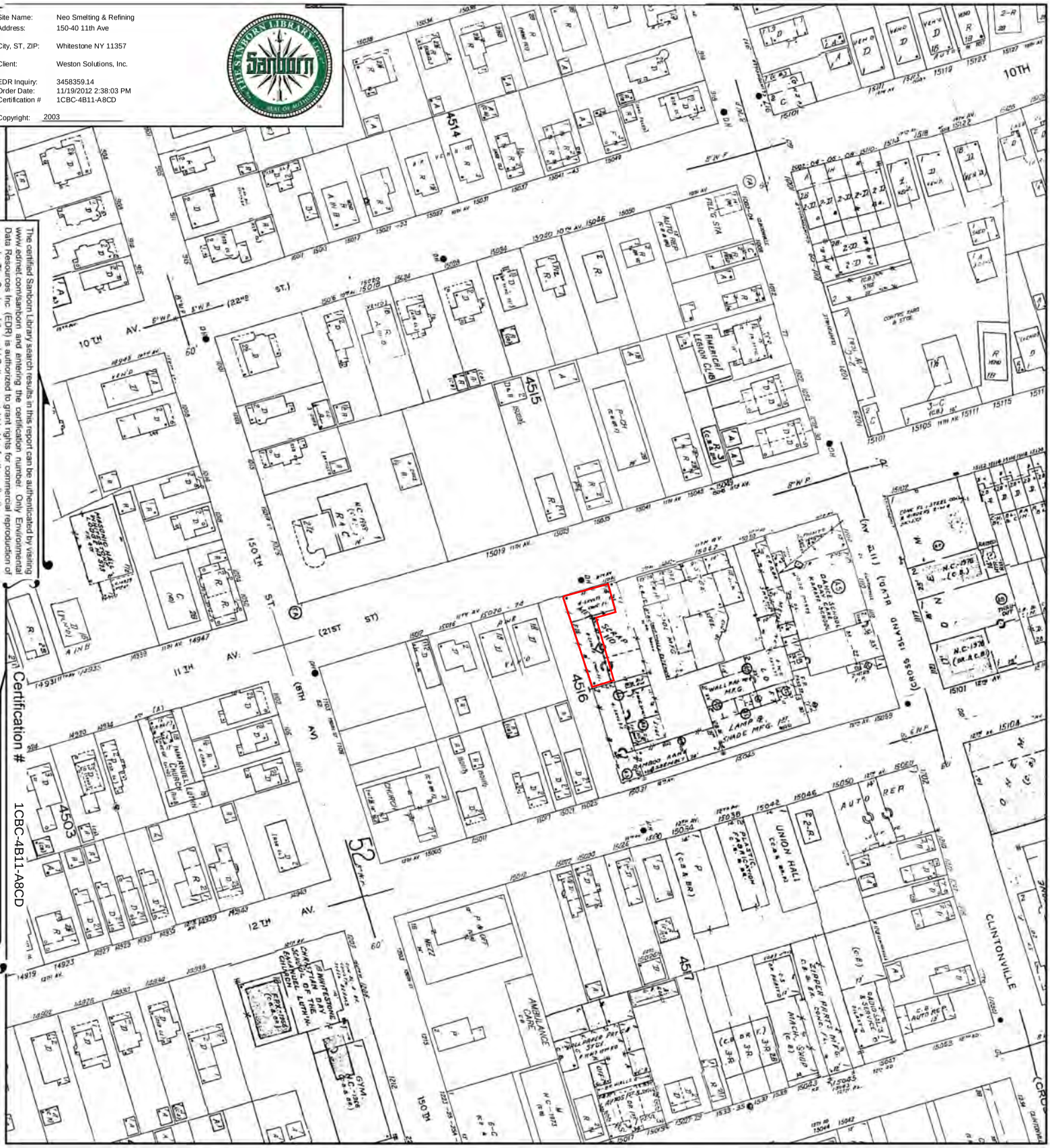

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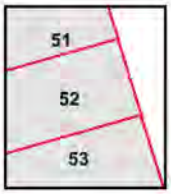

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2002 Certified Sanborn Map

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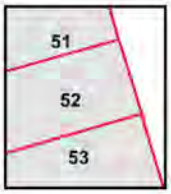

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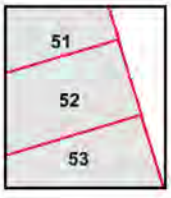

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1999 Certified Sanborn Map

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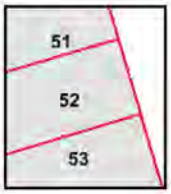

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1996 Certified Sanborn Map

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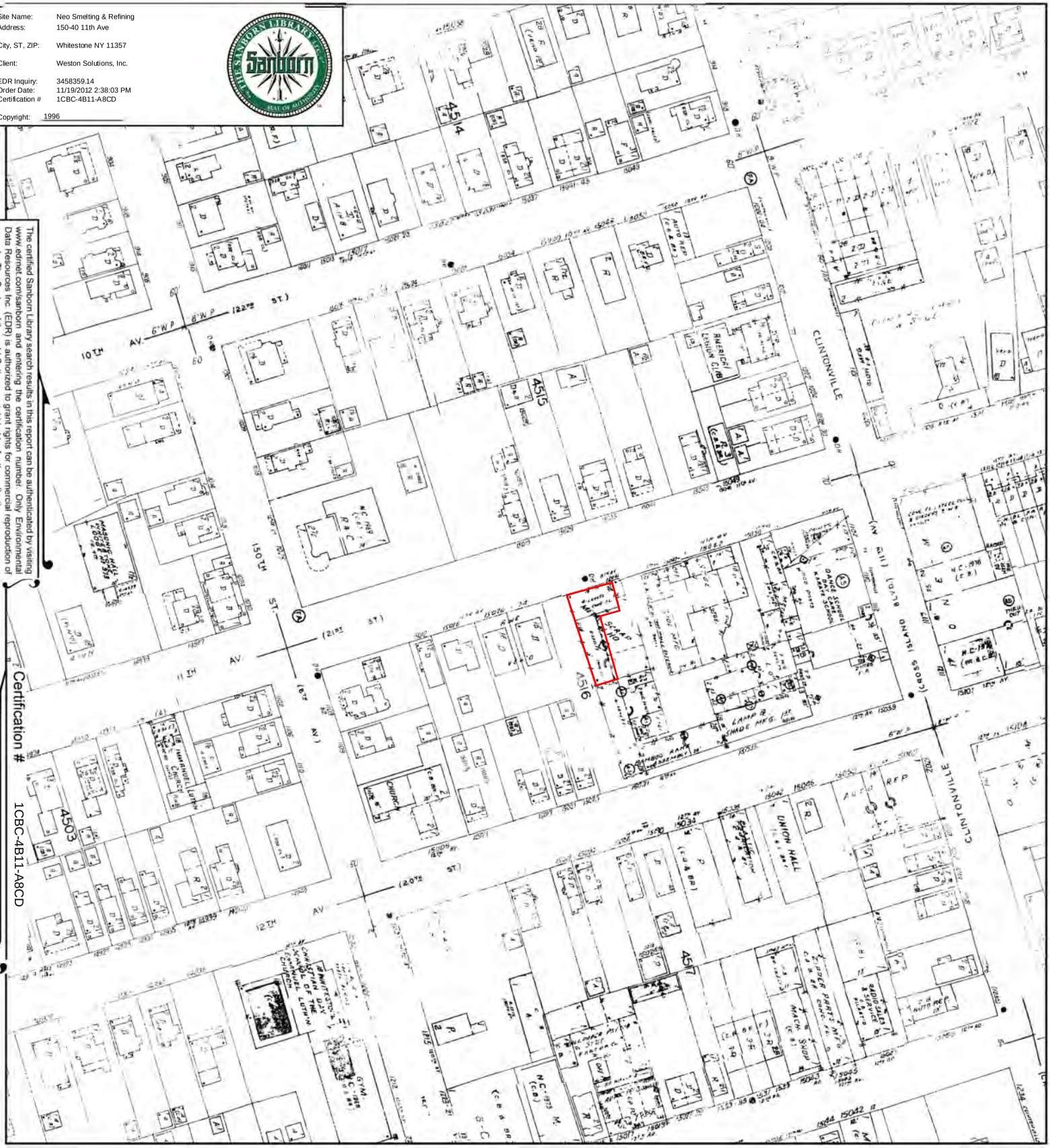

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1995 Certified Sanborn Map

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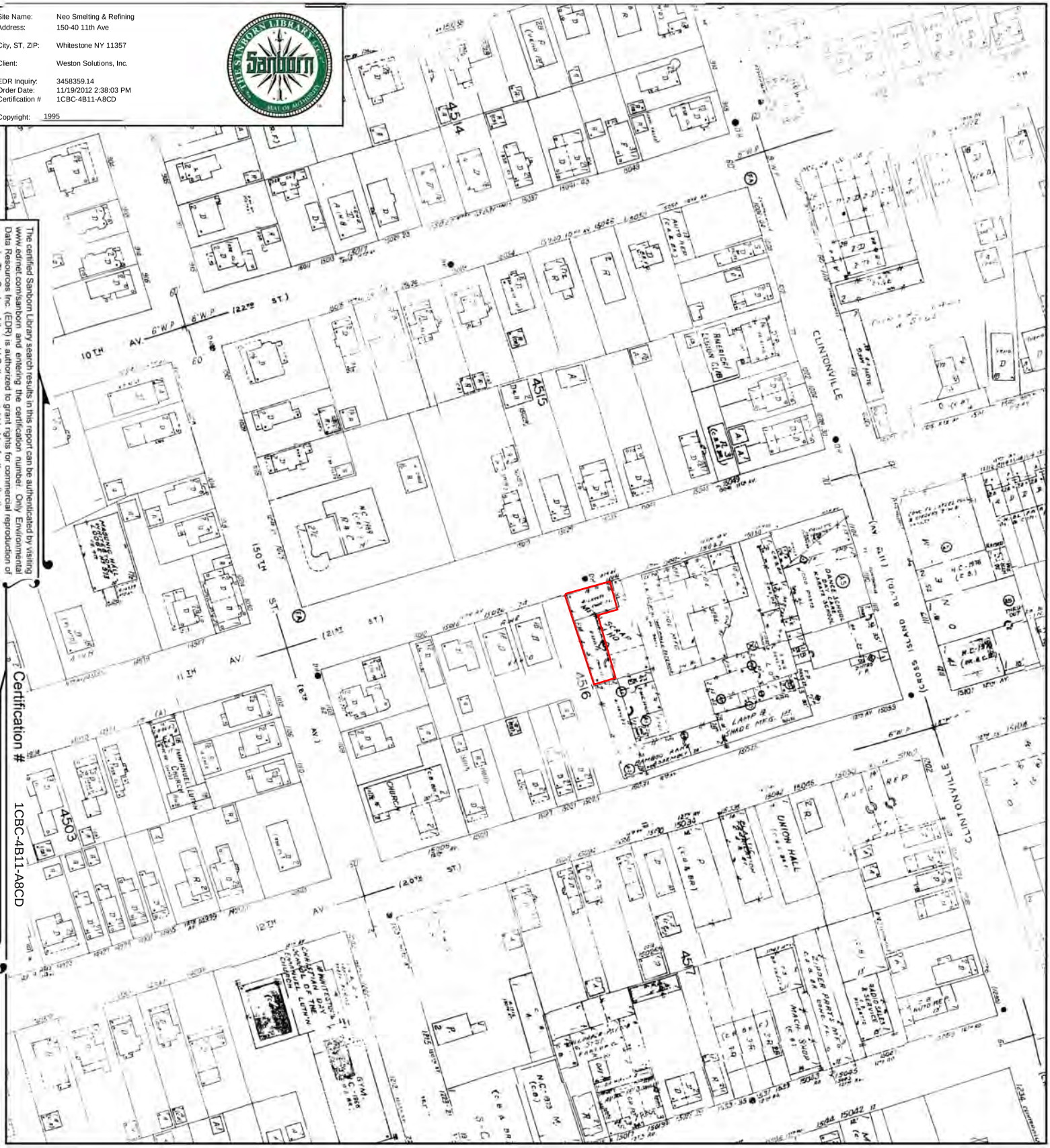

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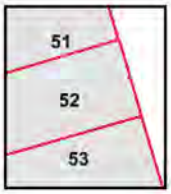

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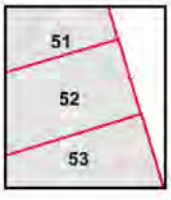

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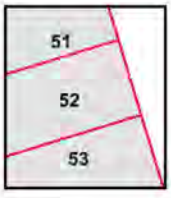

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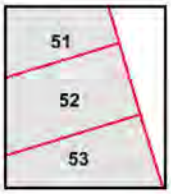

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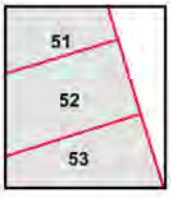

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1989 Certified Sanborn Map

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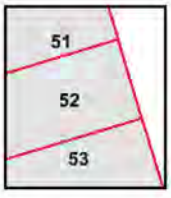

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N

1988 Certified Sanborn Map

Site Name: Neo Smelting & Refining
Address: 150-40 11th Ave

City, ST, ZIP: Whitestone NY 11357

Client: Weston Solutions, Inc.

EDR Inquiry: 3458359.14
Order Date: 11/19/2012 2:38:03 PM
Certification # 1CBC-4B11-A8CD

Copyright: 1988

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Certification # 1CBC-4B11-A8CD

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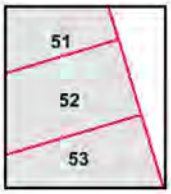
0 Feet 150 300 600



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N

1986 Certified Sanborn Map

Site Name: Neo Smelting & Refining
Address: 150-40 11th Ave
City, ST, ZIP: Whitestone NY 11357
Client: Weston Solutions, Inc.
EDR Inquiry: 3458359.14
Order Date: 11/19/2012 2:38:03 PM
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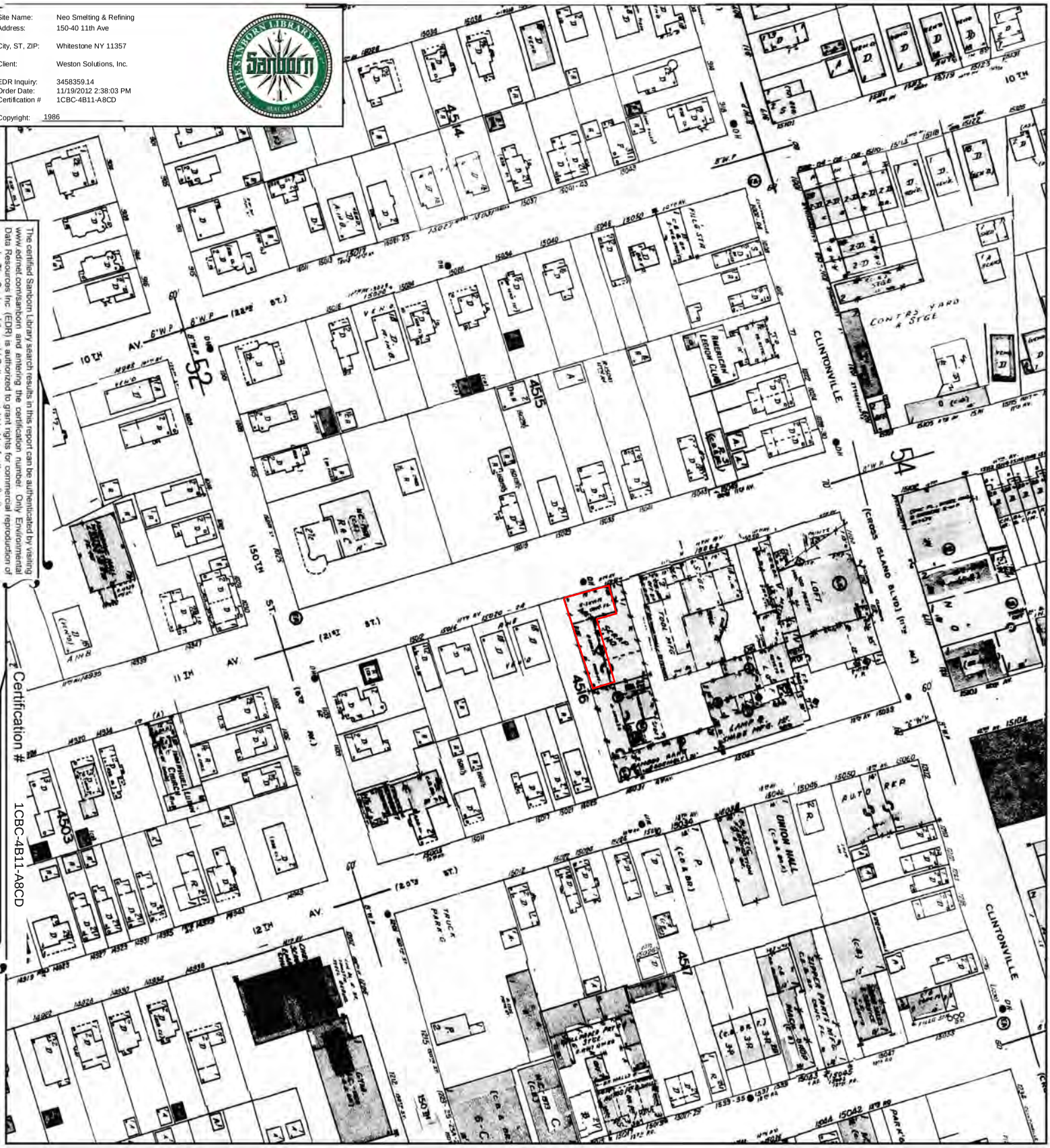
Certification # 1CBC-4B11-A8CD



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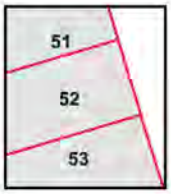

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N

1983 Certified Sanborn Map

Site Name: Neo Smelting & Refining
Address: 150-40 11th Ave

City, ST, ZIP: Whitestone NY 11357

Client: Weston Solutions, Inc.

EDR Inquiry: 3458359.14
Order Date: 11/19/2012 2:38:03 PM
Certification # 1CBC-4B11-A8CD

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Certification # 1CBC-4B11-A8CD

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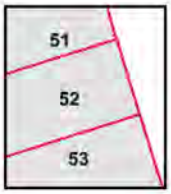
0 Feet 150 300 600



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N

1981 Certified Sanborn Map

Site Name: Neo Smelting & Refining
Address: 150-40 11th Ave

City, ST, ZIP: Whitestone NY 11357

Client: Weston Solutions, Inc.

EDR Inquiry: 3458359.14
Order Date: 11/19/2012 2:38:03 PM
Certification # 1CBC-4B11-A8CD

Copyright: 1981

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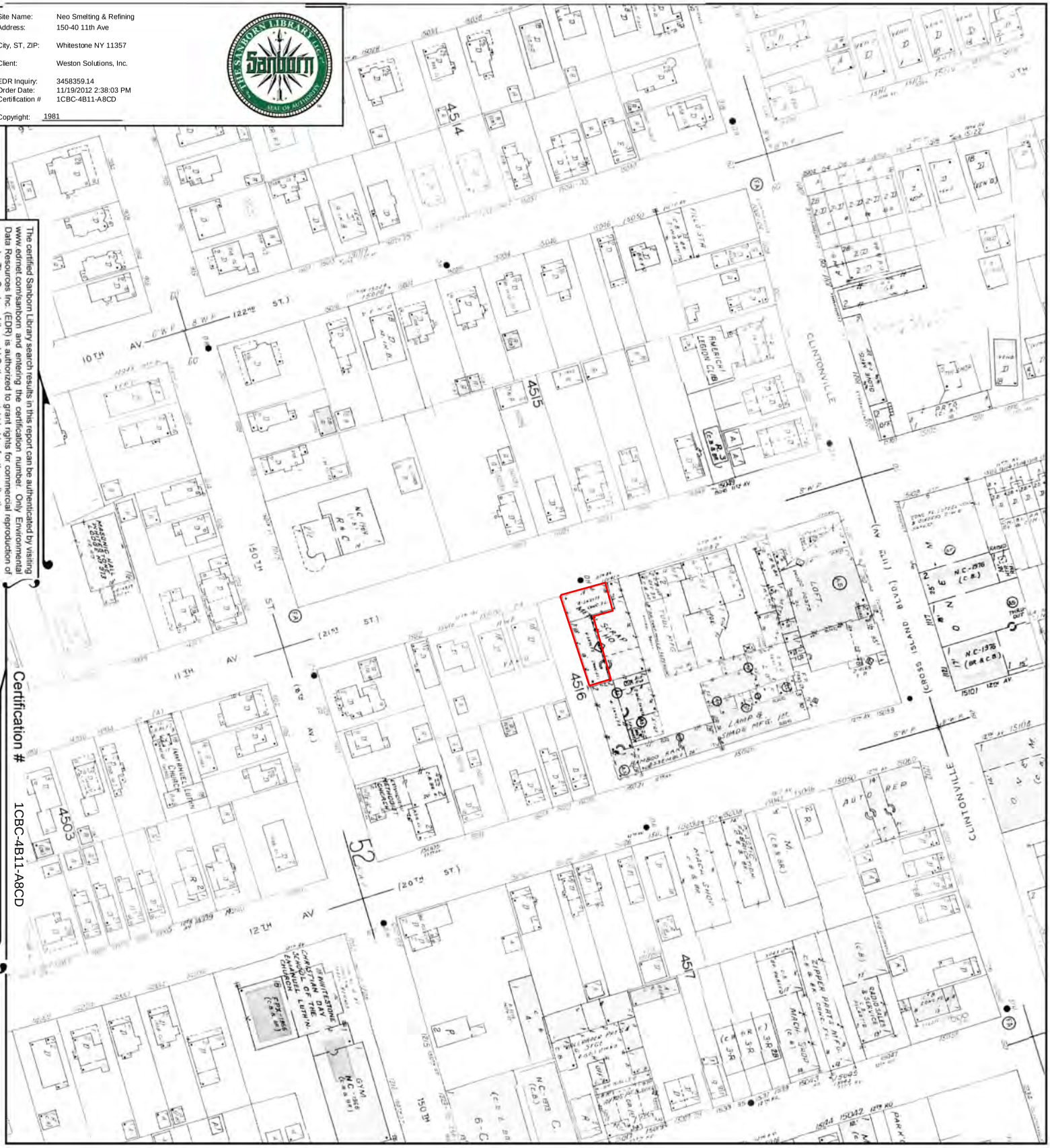
Certification # 1CBC-4B11-A8CD



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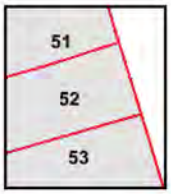

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N

1950 Certified Sanborn Map

Site Name: Neo Smelting & Refining
Address: 150-40 11th Ave
City, ST, ZIP: Whitestone NY 11357
Client: Weston Solutions, Inc.
EDR Inquiry: 3458359.14
Order Date: 11/19/2012 2:38:03 PM
Certification # 1CBC-4B11-A8CD
Copyright: 1950

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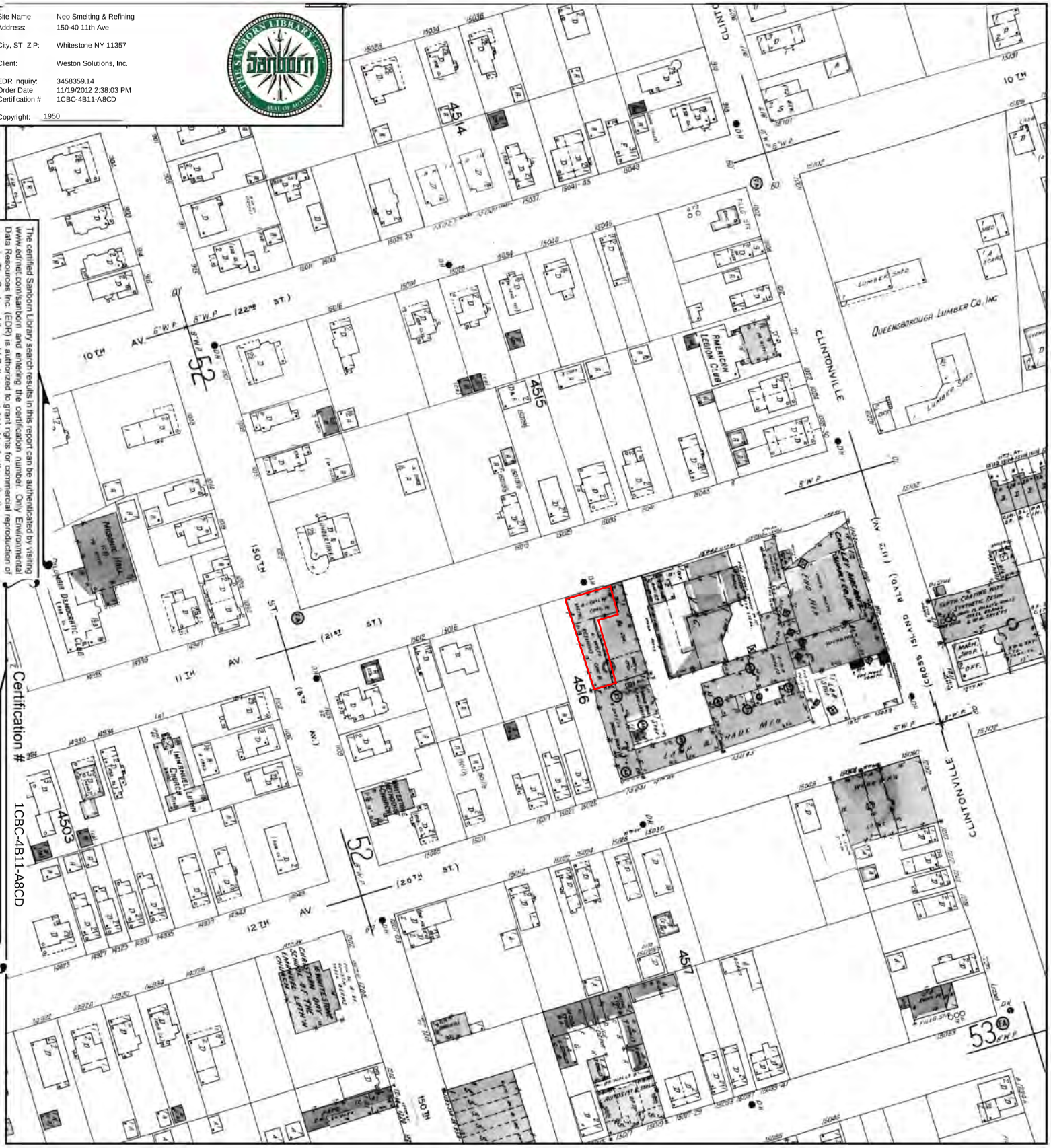
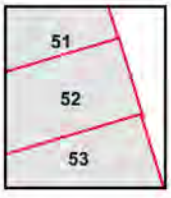
Certification # 1CBC-4B11-A8CD



This Certified Sanborn Map combines the following sheets.
Outlined areas indicate map sheets within the collection.

0 Feet 150 300 600



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N

1942 Certified Sanborn Map

Site Name: Neo Smelting & Refining
Address: 150-40 11th Ave

City, ST, ZIP: Whitestone NY 11357

Client: Weston Solutions, Inc.

EDR Inquiry: 3458359.14
Order Date: 11/19/2012 2:38:03 PM
Certification # 1CBC-4B11-A8CD

Copyright: 1942

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Certification # 1CBC-4B11-A8CD

This Certified Sanborn Map combines the following sheets.
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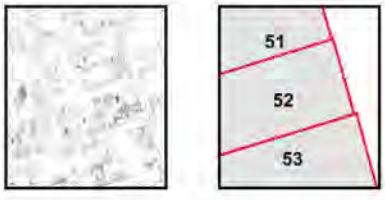
0 Feet 150 300 600



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Volume 23, Sheet 52
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N

1941 Certified Sanborn Map

Site Name: Neo Smelting & Refining
Address: 150-40 11th Ave

City, ST, ZIP: Whitestone NY 11357

Client: Weston Solutions, Inc.

EDR Inquiry: 3458359.14
Order Date: 11/19/2012 2:38:03 PM
Certification # 1CBC-4B11-A8CD

Copyright: 1941

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Certification # 1CBC-4B11-A8CD

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0 Feet 150 300 600

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N

1916 Certified Sanborn Map

Site Name: Neo Smelting & Refining
Address: 150-40 11th Ave

City, ST, ZIP: Whitestone NY 11357

Client: Weston Solutions, Inc.

EDR Inquiry: 3458359.14
Order Date: 11/19/2012 2:38:03 PM
Certification # 1CBC-4B11-A8CD

Copyright: 1916

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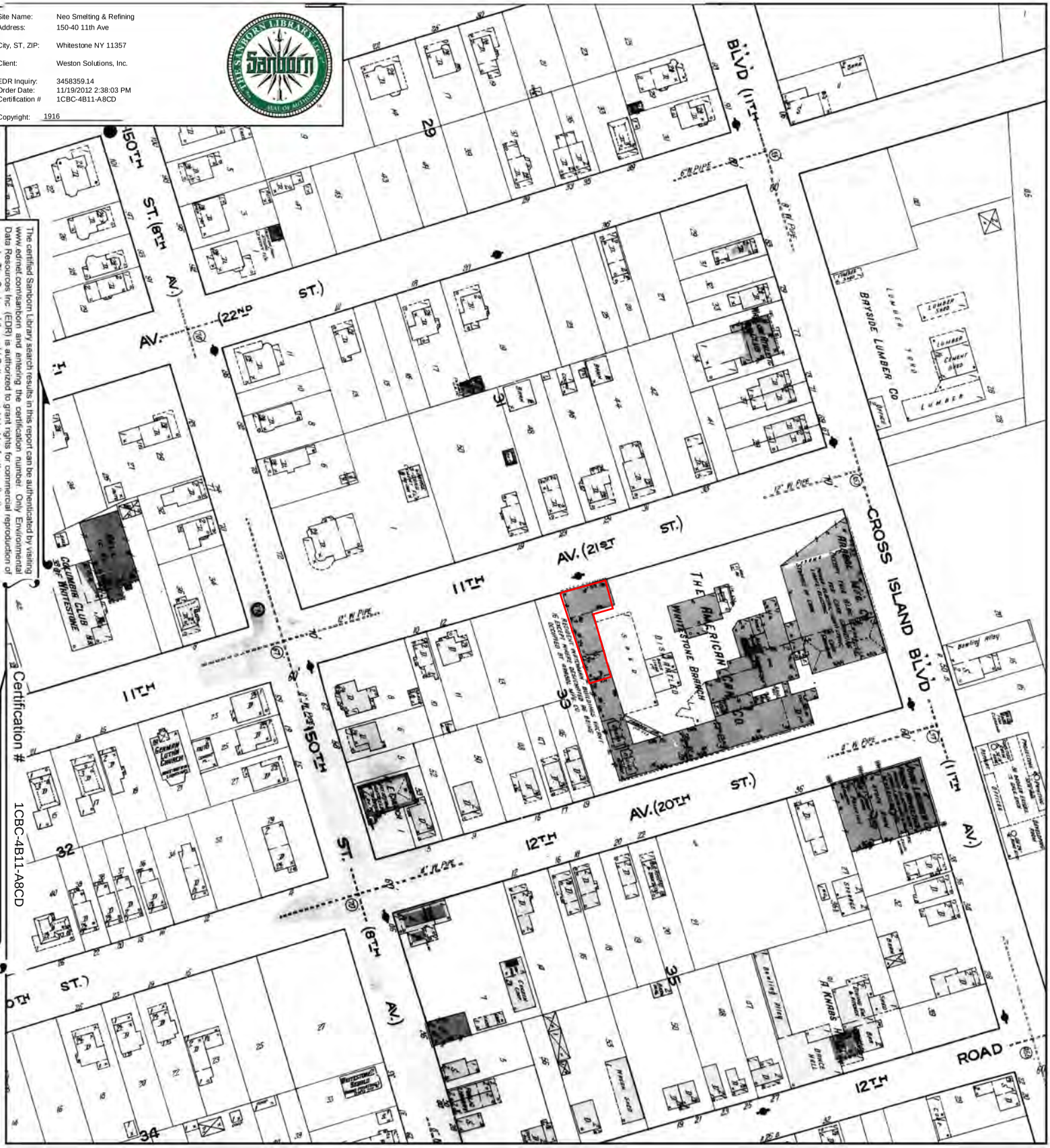
Certification # 1CBC-4B11-A8CD



This Certified Sanborn Map combines the following sheets.
Outlined areas indicate map sheets within the collection.

0 Feet 150 300 600

Volume 5, Sheet 50
Volume 5, Sheet 63
Volume 5, Sheet 65

N

1903 Certified Sanborn Map

Site Name: Neo Smelting & Refining
Address: 150-40 11th Ave

City, ST, ZIP: Whitestone NY 11357

Client: Weston Solutions, Inc.

EDR Inquiry: 3458359.14
Order Date: 11/19/2012 2:38:03 PM
Certification # 1CBC-4B11-A8CD

Copyright: 1903

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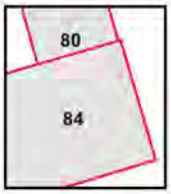
Certification # 1CBC-4B11-A8CD

This Certified Sanborn Map combines the following sheets.
Outlined areas indicate map sheets within the collection.

0 Feet 150 300 600



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N

Neo Smelting and Refining
150-40 11th Avenue
Whitestone, NY 11357

Inquiry Number: 3608869.1s
May 17, 2013

The EDR Radius Map™ Report with GeoCheck®

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
Toll Free: 800.352.0050
www.edrnet.com

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-05) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

150-40 11TH AVENUE
WHITESTONE, NY 11357

COORDINATES

Latitude (North):	40.7917000 - 40° 47' 30.12''
Longitude (West):	73.8139000 - 73° 48' 50.04''
Universal Tranverse Mercator:	Zone 18
UTM X (Meters):	600069.9
UTM Y (Meters):	4516099.5
Elevation:	49 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	40073-G7 FLUSHING, NY
Most Recent Revision:	1995

AERIAL PHOTOGRAPHY IN THIS REPORT

Photo Year:	2011
Source:	USDA

TARGET PROPERTY SEARCH RESULTS

The target property was identified in the following records. For more information on this property see page 8 of the attached EDR Radius Map report:

Site	Database(s)	EPA ID
NEO SMELTING & REFINING 150-40 11TH AVE WHITESTONE, NY	LEAD SMELTERS	N/A
NEO SMELTING AND REFINING 150-40 11TH AVE WHITESTONE, NY 11357	CERCLIS	NYN000206646

EXECUTIVE SUMMARY

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ---------- National Priority List
Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY ---------- Federal Facility Site Information listing

Federal CERCLIS NFRAP site List

CERC-NFRAP ---------- CERCLIS No Further Remedial Action Planned

Federal RCRA CORRACTS facilities list

CORRACTS ---------- Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-SQG ---------- RCRA - Small Quantity Generators

Federal institutional controls / engineering controls registries

US ENG CONTROLS ---------- Engineering Controls Sites List
US INST CONTROL ---------- Sites with Institutional Controls
LUCIS ---------- Land Use Control Information System

Federal ERNS list

ERNS ---------- Emergency Response Notification System

State- and tribal - equivalent CERCLIS

SHWS ---------- Inactive Hazardous Waste Disposal Sites in New York State
VAPOR REOPENED ---------- Vapor Intrusion Legacy Site List

EXECUTIVE SUMMARY

State and tribal leaking storage tank lists

HIST LTANKS ---- Listing of Leaking Storage Tanks
INDIAN LUST ---- Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

TANKS ---- Storage Tank Faciliy Listing
CBS UST ---- Chemical Bulk Storage Database
MOSF UST ---- Major Oil Storage Facilities Database
CBS AST ---- Chemical Bulk Storage Database
MOSF AST ---- Major Oil Storage Facilities Database
MOSF ---- Major Oil Storage Facility Site Listing
CBS ---- Chemical Bulk Storage Site Listing
INDIAN UST ---- Underground Storage Tanks on Indian Land
FEMA UST ---- Underground Storage Tank Listing

State and tribal institutional control / engineering control registries

ENG CONTROLS ---- Registry of Engineering Controls
INST CONTROL ---- Registry of Institutional Controls
RES DECL ---- Restrictive Declarations Listing

State and tribal voluntary cleanup sites

INDIAN VCP ---- Voluntary Cleanup Priority Listing
VCP ---- Voluntary Cleanup Agreements

State and tribal Brownfields sites

ERP ---- Environmental Restoration Program Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ---- A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

DEBRIS REGION 9 ---- Torres Martinez Reservation Illegal Dump Site Locations
ODI ---- Open Dump Inventory
SWRCY ---- Registered Recycling Facility List
SWTIRE ---- Registered Waste Tire Storage & Facility List
INDIAN ODI ---- Report on the Status of Open Dumps on Indian Lands

Local Lists of Hazardous waste / Contaminated Sites

US CDL ---- Clandestine Drug Labs
DEL SHWS ---- Delisted Registry Sites
US HIST CDL ---- National Clandestine Laboratory Register

Local Lists of Registered Storage Tanks

HIST AST ---- Historical Petroleum Bulk Storage Database

EXECUTIVE SUMMARY

Local Land Records

LIENS 2 ---------- CERCLA Lien Information
LIENS ---------- Spill Liens Information

Records of Emergency Release Reports

HMIRS ---------- Hazardous Materials Information Reporting System
NY Hist Spills ---------- SPILLS Database
SPILLS 90 ---------- SPILLS 90 data from FirstSearch
SPILLS 80 ---------- SPILLS 80 data from FirstSearch

Other Ascertainable Records

DOT OPS ---------- Incident and Accident Data
DOD ---------- Department of Defense Sites
FUDS ---------- Formerly Used Defense Sites
CONSENT ---------- Superfund (CERCLA) Consent Decrees
ROD ---------- Records Of Decision
UMTRA ---------- Uranium Mill Tailings Sites
US MINES ---------- Mines Master Index File
TRIS ---------- Toxic Chemical Release Inventory System
TSCA ---------- Toxic Substances Control Act
FTTS ---------- FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
HIST FTTS ---------- FIFRA/TSCA Tracking System Administrative Case Listing
SSTS ---------- Section 7 Tracking Systems
ICIS ---------- Integrated Compliance Information System
PADS ---------- PCB Activity Database System
MLTS ---------- Material Licensing Tracking System
RADINFO ---------- Radiation Information Database
FINDS ---------- Facility Index System/Facility Registry System
RAATS ---------- RCRA Administrative Action Tracking System
RMP ---------- Risk Management Plans
HSWDS ---------- Hazardous Substance Waste Disposal Site Inventory
UIC ---------- Underground Injection Control Wells
SPDES ---------- State Pollutant Discharge Elimination System
AIRS ---------- Air Emissions Data
E DESIGNATION ---------- E DESIGNATION SITE LISTING
INDIAN RESERV ---------- Indian Reservations
SCRD DRYCLEANERS ---------- State Coalition for Remediation of Drycleaners Listing
COAL ASH ---------- Coal Ash Disposal Site Listing
PRP ---------- Potentially Responsible Parties
COAL ASH EPA ---------- Coal Combustion Residues Surface Impoundments List
Financial Assurance ---------- Financial Assurance Information Listing
2020 COR ACTION ---------- 2020 Corrective Action Program List
US AIRS ---------- Aerometric Information Retrieval System Facility Subsystem
PCB TRANSFORMER ---------- PCB Transformer Registration Database
US FIN ASSUR ---------- Financial Assurance Information
EPA WATCH LIST ---------- EPA WATCH LIST
COAL ASH DOE ---------- Steam-Electric Plant Operation Data

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP ---------- EDR Proprietary Manufactured Gas Plants

EXECUTIVE SUMMARY

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

Federal RCRA generators list

RCRA-CESQG: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

A review of the RCRA-CESQG list, as provided by EDR, and dated 02/12/2013 has revealed that there is 1 RCRA-CESQG site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
SMILE CLEANERS	***14-24 150TH ST***	***S 1/8 - 1/4 (0.215 mi.)***	***J42***	***116***

State and tribal landfill and/or solid waste disposal site lists

SWF/LF: The Solid Waste Facilities/Landfill Sites records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. The data come from the list.

A review of the SWF/LF list, as provided by EDR, and dated 01/07/2013 has revealed that there is 1 SWF/LF site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
GRACE ASSOCIATES	151-21 6 ROAD	NNE 1/4 - 1/2 (0.316 mi.)	N63	231

State and tribal leaking storage tank lists

LTANKS: Leaking Storage Tank Incident Reports. These records contain an inventory of reported leaking storage tank incidents reported from 4/1/86 through the most recent update. They can be either leaking

underground storage tanks or leaking aboveground storage tanks. The causes of the incidents are tank test failures, tank failures or tank overfills

A review of the LTANKS list, as provided by EDR, and dated 04/05/2013 has revealed that there are 18 LTANKS sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
RESIDENCE Spill Number/Closed Date: 0413426 / 4/5/2005	14-20 150 ST.	S 1/8 - 1/4 (0.212 mi.)	J40	114
JRS AUTOMOTIVE REPAIR Spill Number/Closed Date: 9213668 / Not Reported Spill Number/Closed Date: 9005195 / 9/25/1992	***149-10 14TH AVENUE***	***SSW 1/4 - 1/2 (0.254 mi.)***	***59***	***174***
M S FUEL INC. Spill Number/Closed Date: 9001764 / 3/4/2003	***150-17 CROSS ISLAND PAR***	***SSE 1/4 - 1/2 (0.302 mi.)***	***60***	***192***
RESIDENCE Spill Number/Closed Date: 9409114 / 10/7/1994	***147-20 10TH AVE***	***W 1/4 - 1/2 (0.315 mi.)***	***62***	***229***
15 AVE- CROSS ISLAND PKWY Spill Number/Closed Date: 9415282 / 2/27/1995	15 AVE- CROSS ISLAND PK	WSW 1/4 - 1/2 (0.326 mi.)	65	233
Not reported Spill Number/Closed Date: 0205582 / 8/29/2002	150-65 CROSS ISLAND PAR	SSE 1/4 - 1/2 (0.336 mi.)	66	234
MOBILE #17HHC Spill Number/Closed Date: 0209634 / 5/27/2003	***15-04 149TH STREET***	***SSW 1/4 - 1/2 (0.344 mi.)***	***67***	***235***
153-45 CROSS ISLAND PKWY Spill Number/Closed Date: 9003326 / 9/30/1992	153-45 CROSS ISLAND PKW	SE 1/4 - 1/2 (0.395 mi.)	68	241
13-32 146TH ST/QUEENS Spill Number/Closed Date: 9011213 / 1/22/1991	13-32 146TH STREET	SW 1/4 - 1/2 (0.451 mi.)	69	242
GETTY GAS Spill Number/Closed Date: 0210440 / 7/14/2004 Spill Number/Closed Date: 0402801 / Not Reported	***17-46 CLINTONVILLE ST***	***SSE 1/4 - 1/2 (0.455 mi.)***	***70***	***243***
RESIDENCE Spill Number/Closed Date: 0402791 / 2/1/2006	14-19 146TH ST.	SW 1/4 - 1/2 (0.474 mi.)	72	251

Lower Elevation	Address	Direction / Distance	Map ID	Page
150-42 11TH AVE Spill Number/Closed Date: 9406584 / 8/8/2012	150-42 11TH AVENUE	NE 0 - 1/8 (0.001 mi.)	A3	9
10-02 CLINTONVILLE ST. Spill Number/Closed Date: 9308250 / 9/5/1995	***10-02 CLINTONVILLE ST.***	***NNE 0 - 1/8 (0.098 mi.)***	***D18***	***27***
151-13 TWELVE ROAD Spill Number/Closed Date: 9309632 / 11/9/1993	151-13 12TH RD	SE 1/8 - 1/4 (0.156 mi.)	G35	89
152-20 11TH AV/QUNS/PS193 Spill Number/Closed Date: 9101757 / 1/15/2004	152-20 11TH AVENUE	ENE 1/8 - 1/4 (0.197 mi.)	I37	103
152-20 11TH AVE Spill Number/Closed Date: 9300401 / 6/30/2006 Spill Number/Closed Date: 9914175 / 1/15/2004	152-20 11TH AVE	ENE 1/8 - 1/4 (0.216 mi.)	I44	131
CLOSED-LACKOF RECENT INFO Spill Number/Closed Date: 8806403 / 3/4/2003	151045 6TH ROAD	NNE 1/4 - 1/2 (0.320 mi.)	N64	232
3-04 150TH STREET Spill Number/Closed Date: 9210722 / 12/16/1992	3-04 150TH STREET	NNW 1/4 - 1/2 (0.466 mi.)	71	250

EXECUTIVE SUMMARY

State and tribal registered storage tank lists

UST: The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data come from the Department of Environmental Conservation's Petroleum Bulk Storage (PBS) Database

A review of the UST list, as provided by EDR, and dated 04/02/2013 has revealed that there are 9 UST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
WHITESTONE FACTORIES	***150-31 12TH AVENUE***	***SSE 0 - 1/8 (0.108 mi.)***	***E22***	***44***
150-47A 12TH ROAD	***150-47 12TH ROAD***	***SSE 0 - 1/8 (0.122 mi.)***	***E23***	***49***
NORTHERN TIRE SHOP	***150-47 14TH AVE***	***SSE 1/8 - 1/4 (0.190 mi.)***	***36***	***91***
RANSHAW FUEL OIL	***151-01 14TH AVE***	***SE 1/8 - 1/4 (0.203 mi.)***	***38***	***104***
149-56 14TH AVE	***149-56 14TH AVE***	***SSW 1/8 - 1/4 (0.219 mi.)***	***K48***	***140***

Lower Elevation	Address	Direction / Distance	Map ID	Page
SKS PETROLEUM INC.	10-02 CLINTONVILLE STRE	NNE 0 - 1/8 (0.099 mi.)	D19	29
WHITESTON EXXON SERVICE #0796	***12-46 CLINTONVILLE ST***	***SE 1/8 - 1/4 (0.147 mi.)***	***G33***	***76***
PUBLIC SCHOOL 193 - QUEENS	***152-20 11TH AVENUE***	***ENE 1/8 - 1/4 (0.216 mi.)***	***I46***	***135***
FULLER TOOL CO. INC.	***152-35 10TH AVENUE***	***ENE 1/8 - 1/4 (0.250 mi.)***	***M58***	***171***

AST: The Aboveground Storage Tank database contains registered ASTs. The data come from the Department of Environmental Conservation's Petroleum Bulk Storage (PBS) Database.

A review of the AST list, as provided by EDR, and dated 04/02/2013 has revealed that there is 1 AST site within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
SKS PETROLEUM INC.	10-02 CLINTONVILLE STRE	NNE 0 - 1/8 (0.099 mi.)	D20	36

State and tribal Brownfields sites

BROWNFIELDS: Brownfields Site List

A review of the BROWNFIELDS list, as provided by EDR, and dated 03/21/2013 has revealed that there is 1 BROWNFIELDS site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
KINGS POINT DEPOT	***151-45 6TH RD***	***NNE 1/4 - 1/2 (0.305 mi.)***	***N61***	***220***

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Registered Storage Tanks

EXECUTIVE SUMMARY

HIST UST: The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data come from the Department of Environmental Conservation's Petroleum Bulk Storage (PBS) Database

A review of the HIST UST list, as provided by EDR, and dated 01/01/2002 has revealed that there are 9 HIST UST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
WHITESTONE FACTORIES	***150-31 12TH AVENUE***	***SSE 0 - 1/8 (0.108 mi.)***	***E22***	***44***
150-47A 12TH ROAD	***150-47 12TH ROAD***	***SSE 0 - 1/8 (0.122 mi.)***	***E23***	***49***
NORTHERN TIRE SHOP	***150-47 14TH AVE***	***SSE 1/8 - 1/4 (0.190 mi.)***	***36***	***91***
RANSHAW FUEL OIL	***151-01 14TH AVE***	***SE 1/8 - 1/4 (0.203 mi.)***	***38***	***104***
149-56 14TH AVE	***149-56 14TH AVE***	***SSW 1/8 - 1/4 (0.219 mi.)***	***K48***	***140***

Lower Elevation	Address	Direction / Distance	Map ID	Page
TENTH AVE. AUTO SERV. CORPORAT	10-02 CLINTONVILLE ST	NNE 0 - 1/8 (0.099 mi.)	D21	38
WHITESTON EXXON SERVICE #0796	***12-46 CLINTONVILLE ST***	***SE 1/8 - 1/4 (0.147 mi.)***	***G33***	***76***
PUBLIC SCHOOL 193 - QUEENS	***152-20 11TH AVENUE***	***ENE 1/8 - 1/4 (0.216 mi.)***	***I46***	***135***
FULLER TOOL CO. INC.	***152-35 10TH AVENUE***	***ENE 1/8 - 1/4 (0.250 mi.)***	***M58***	***171***

Records of Emergency Release Reports

NY Spills: Data collected on spills reported to NYSDEC. is required by one or more of the following: Article 12 of the Navigation Law, 6 NYCRR Section 613.8 (from PBS regs), or 6 NYCRR Section 595.2 (from CBS regs). It includes spills active as of April 1, 1986, as well as spills occurring since this date.

A review of the NY Spills list, as provided by EDR, and dated 04/05/2013 has revealed that there are 4 NY Spills sites within approximately 0.125 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
POLE 20088 Spill Number/Closed Date: 0005119 / 10/24/2001	10-09 150TH ST	WNW 0 - 1/8 (0.083 mi.)	12	22

Lower Elevation	Address	Direction / Distance	Map ID	Page
150-49 11TH AVENUE Spill Number/Closed Date: 9413130 / 1/2/1995	150-49 11TH AVENUE	ENE 0 - 1/8 (0.009 mi.)	A4	10
Not reported Spill Number/Closed Date: 0207789 / 6/30/2003	151-11 11TH AV	ENE 0 - 1/8 (0.086 mi.)	C14	24
10-02 CLINTONVILLE ST. Spill Number/Closed Date: 9905457 / 7/19/2001	***10-02 CLINTONVILLE ST.***	***NNE 0 - 1/8 (0.098 mi.)***	***D18***	***27***

Other Ascertainable Records

RCRA NonGen / NLR: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

A review of the RCRA NonGen / NLR list, as provided by EDR, and dated 02/12/2013 has revealed that

there are 12 RCRA NonGen / NLR sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
RAMANO CLEANERS INC	***12-39 150TH ST***	***S 1/8 - 1/4 (0.134 mi.)***	***F27***	***61***
STAR CLEANERS	***12-56 150TH ST***	***S 1/8 - 1/4 (0.141 mi.)***	***H30***	***65***
NORTHERN TIRE SHOP	***150-47 14TH AVE***	***SSE 1/8 - 1/4 (0.190 mi.)***	***36***	***91***
J & S FRENCH CLEANERS CO	***14-24 150TH ST***	***S 1/8 - 1/4 (0.215 mi.)***	***J43***	***121***
US POSTAL SERVICE	***14-44 150TH ST - WHITES***	***S 1/8 - 1/4 (0.230 mi.)***	***J52***	***145***
FUJI PHOTO FILM USA INC	***730 FRANKLIN AVE***	***SSW 1/8 - 1/4 (0.239 mi.)***	***L53***	***147***
FUJI PHOTO FILM USA INC	***14928 14TH AVE***	***SSW 1/8 - 1/4 (0.239 mi.)***	***L54***	***151***

Lower Elevation	Address	Direction / Distance	Map ID	Page
LARRYS AUTO COLLISION	***150-54 12TH AVE***	***SE 0 - 1/8 (0.056 mi.)***	***B9***	***13***
ACTION DIAGNOSTIC CENTER	***11-12 CLINTONVILLE ST***	***ENE 0 - 1/8 (0.073 mi.)***	***C11***	***20***
NYC BD OF ED - PUBLIC SCHOOL 1	***152-20 11TH AVE***	***ENE 1/8 - 1/4 (0.216 mi.)***	***I45***	***133***
KINRAY INC	***152-35 10TH AVE***	***ENE 1/8 - 1/4 (0.248 mi.)***	***M56***	***154***
KINRAY INC	***152-35 10TH AVE***	***ENE 1/8 - 1/4 (0.250 mi.)***	***M57***	***156***

MANIFEST: Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

A review of the MANIFEST list, as provided by EDR, and dated 02/01/2013 has revealed that there are 11 MANIFEST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
VILLAGE FRENCH CLEANERS	***12-39 150TH STREET***	***S 1/8 - 1/4 (0.134 mi.)***	***F26***	***61***
STAR CLEANERS	***12-56 150TH ST***	***S 1/8 - 1/4 (0.141 mi.)***	***H30***	***65***
NORTHERN TIRE SHOP	***150-47 14TH AVE***	***SSE 1/8 - 1/4 (0.190 mi.)***	***36***	***91***
SMILE DRY CLEANERS	***14-24 150TH STREET***	***S 1/8 - 1/4 (0.215 mi.)***	***J41***	***115***
J & S FRENCH CLEANERS CO	***14-24 150TH ST***	***S 1/8 - 1/4 (0.215 mi.)***	***J43***	***121***
US POSTAL SERVICE	***14-44 150TH ST - WHITES***	***S 1/8 - 1/4 (0.230 mi.)***	***J52***	***145***
FUJI PHOTO FILM USA INC	***730 FRANKLIN AVE***	***SSW 1/8 - 1/4 (0.239 mi.)***	***L53***	***147***
CONSOLIDATED EDISON	14RD & 152 ST	SE 1/8 - 1/4 (0.246 mi.)	55	153

Lower Elevation	Address	Direction / Distance	Map ID	Page
LARRYS AUTO COLLISION	***150-54 12TH AVE***	***SE 0 - 1/8 (0.056 mi.)***	***B9***	***13***
NYC BD OF ED - PUBLIC SCHOOL 1	***152-20 11TH AVE***	***ENE 1/8 - 1/4 (0.216 mi.)***	***I45***	***133***
KINRAY INC	***152-35 10TH AVE***	***ENE 1/8 - 1/4 (0.250 mi.)***	***M57***	***156***

DRYCLEANERS: A listing of all registered drycleaning facilities.

A review of the DRYCLEANERS list, as provided by EDR, and dated 04/19/2013 has revealed that there are 4 DRYCLEANERS sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
VILLAGE FRENCH CLEANERS	***12-39 150TH STREET***	***S 1/8 - 1/4 (0.134 mi.)***	***F26***	***61***
STAR CLEANERS	12-56 150TH STREET	S 1/8 - 1/4 (0.141 mi.)	H31	75
SMILE DRY CLEANERS	***14-24 150TH STREET***	***S 1/8 - 1/4 (0.215 mi.)***	***J41***	***115***

Lower Elevation	Address	Direction / Distance	Map ID	Page
NEW ON TIME CLEANER & TAILOR	151-11 11TH AVE	ENE 0 - 1/8 (0.086 mi.)	C13	23

EXECUTIVE SUMMARY

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR US Hist Auto Stat: EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

A review of the EDR US Hist Auto Stat list, as provided by EDR, has revealed that there are 9 EDR US Hist Auto Stat sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
Not reported	15042 12TH AVE	SSE 0 - 1/8 (0.055 mi.)	B6	12
Not reported	15042 12TH RD	SSE 0 - 1/8 (0.123 mi.)	E24	60
Not reported	15018 12TH RD	S 1/8 - 1/4 (0.126 mi.)	F25	61
Not reported	1434 150TH ST	S 1/8 - 1/4 (0.223 mi.)	J51	145

Lower Elevation	Address	Direction / Distance	Map ID	Page
Not reported	15054 12TH AVE	SSE 0 - 1/8 (0.057 mi.)	B10	19
Not reported	1015 CLINTONVILLE ST	NE 0 - 1/8 (0.094 mi.)	D16	25
Not reported	1002 CLINTONVILLE ST	NNE 0 - 1/8 (0.097 mi.)	D17	26
Not reported	1230 CLINTONVILLE ST	SE 1/8 - 1/4 (0.139 mi.)	G29	64
Not reported	1246 CLINTONVILLE ST	SE 1/8 - 1/4 (0.148 mi.)	G34	89

EDR US Hist Cleaners: EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

A review of the EDR US Hist Cleaners list, as provided by EDR, has revealed that there are 9 EDR US Hist Cleaners sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
Not reported	1106 150TH ST	WSW 0 - 1/8 (0.054 mi.)	5	11
Not reported	1241 150TH ST	S 1/8 - 1/4 (0.136 mi.)	F28	63
Not reported	1256 150TH ST	S 1/8 - 1/4 (0.143 mi.)	H32	76
Not reported	14832 11TH AVE	WSW 1/8 - 1/4 (0.211 mi.)	39	113
Not reported	1424 150TH ST	S 1/8 - 1/4 (0.216 mi.)	J47	140
Not reported	14955 14TH AVE	SSW 1/8 - 1/4 (0.220 mi.)	K49	143
Not reported	14956 14TH AVE	SSW 1/8 - 1/4 (0.220 mi.)	K50	144

Lower Elevation	Address	Direction / Distance	Map ID	Page
Not reported	15050 12TH AVE	SSE 0 - 1/8 (0.056 mi.)	B7	12

EXECUTIVE SUMMARY

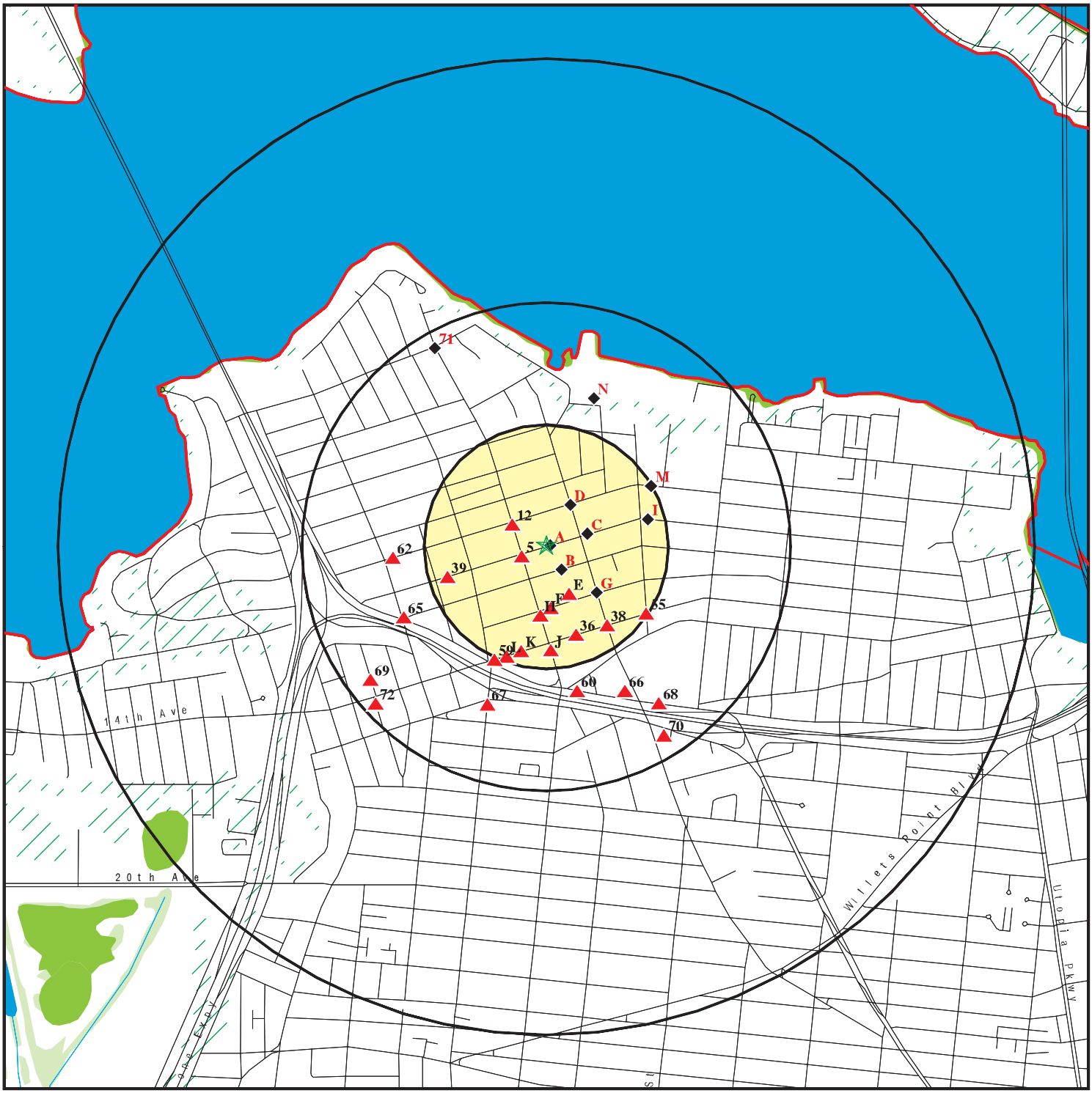
Lower Elevation	Address	Direction / Distance	Map ID	Page
Not reported	15111 11TH AVE	ENE 0 - 1/8 (0.089 mi.)	C15	25

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 21 records.

Site Name		Database(s)
CONSOLIDATED EDISON CO		MANIFEST
CONSOLIDATED EDISON CO		MANIFEST
CONSOLIDATED EDISON CO		MANIFEST
CONSOLIDATED EDISON CO		MANIFEST
CONSOLIDATED EDISON CO		MANIFEST
NYNEX		MANIFEST
CONSOLIDATED EDISON CO		MANIFEST
CONSOLIDATED EDISON CO	#3000	MANIFEST
CONSOLIDATED EDISON CO		MANIFEST
CONSOLIDATED EDISON CO		MANIFEST
CONSOLIDATED EDISON CO		MANIFEST
CONSOLIDATED EDISON CO	4294	MANIFEST
CONSOLIDATED EDISON CO		MANIFEST
CONSOLIDATED EDISON CO		MANIFEST
CONSOLIDATED EDISON CO		MANIFEST
CONSOLIDATED EDISON CO		MANIFEST
CONSOLIDATED EDISON CO		MANIFEST
CON ED WHITESTONE EXPWY EAST		MANIFEST
PYROLYTIC TECHNOLOGIES CORP.		SWF/LF
WHITESTONE AUTO REPAIR		RCRA NonGen / NLR, FINDS
CON EDISON		RCRA-CESQG

OVERVIEW MAP - 3608869.1s



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- County Boundary
- Oil & Gas pipelines from USGS
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Neo Smelting and Refining	CLIENT: Weston Solutions, Inc.
ADDRESS: 150-40 11th Avenue Whitestone NY 11357	CONTACT: Denise Breen
LAT/LONG: 40.7917 / 73.8139	INQUIRY #: 3608869.1s DATE: May 17, 2013 9:21 am

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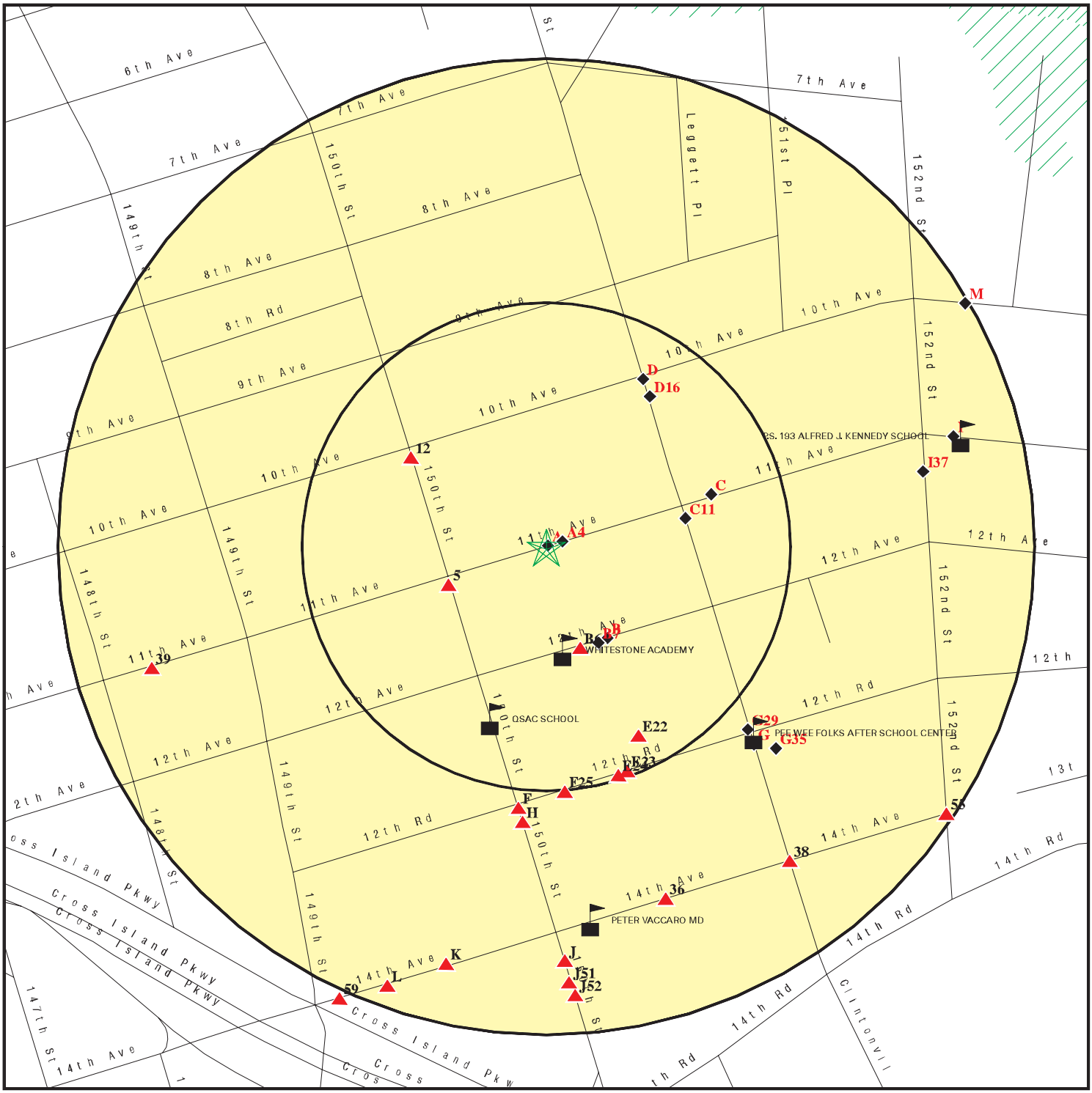
DETAIL MAP - 3608869.1s



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Oil & Gas pipelines from USGS
- 100-year flood zone
- 500-year flood zone

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Neo Smelting and Refining	CLIENT: Weston Solutions, Inc.
ADDRESS: 150-40 11th Avenue Whitestone NY 11357	CONTACT: Denise Breen
LAT/LONG: 40.7917 / 73.8139	INQUIRY #: 3608869.1s DATE: May 17, 2013 9:22 am

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	TP		NR	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
CERCLIS	0.500	1	0	0	0	NR	NR	1
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site List								
CERC-NFRAP	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-CESQG	0.250		0	1	NR	NR	NR	1
Federal institutional controls / engineering controls registries								
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
LUCIS	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
State- and tribal - equivalent CERCLIS								
SHWS	1.000		0	0	0	0	NR	0
VAPOR REOPENED	1.000		0	0	0	0	NR	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	1	NR	NR	1
State and tribal leaking storage tank lists								
LTANKS	0.500		2	4	12	NR	NR	18
HIST LTANKS	0.500		0	0	0	NR	NR	0
INDIAN LUST	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
State and tribal registered storage tank lists								
TANKS	0.250		0	0	NR	NR	NR	0
UST	0.250		3	6	NR	NR	NR	9
CBS UST	0.250		0	0	NR	NR	NR	0
MOSF UST	0.500		0	0	0	NR	NR	0
AST	0.250		1	0	NR	NR	NR	1
CBS AST	0.250		0	0	NR	NR	NR	0
MOSF AST	0.500		0	0	0	NR	NR	0
MOSF	0.500		0	0	0	NR	NR	0
CBS	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
FEMA UST	0.250		0	0	NR	NR	NR	0
State and tribal institutional control / engineering control registries								
ENG CONTROLS	0.500		0	0	0	NR	NR	0
INST CONTROL	0.500		0	0	0	NR	NR	0
RES DECL	0.125		0	NR	NR	NR	NR	0
State and tribal voluntary cleanup sites								
INDIAN VCP	0.500		0	0	0	NR	NR	0
VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
ERP	0.500		0	0	0	NR	NR	0
BROWNFIELDS	0.500		0	0	1	NR	NR	1
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
SWTIRE	0.500		0	0	0	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US CDL	TP		NR	NR	NR	NR	NR	0
DEL SHWS	1.000		0	0	0	0	NR	0
US HIST CDL	TP		NR	NR	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
HIST UST	0.250		3	6	NR	NR	NR	9
HIST AST	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
Local Land Records								
LIENS 2	TP		NR	NR	NR	NR	NR	0
LIENS	TP		NR	NR	NR	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0
NY Spills	0.125		4	NR	NR	NR	NR	4
NY Hist Spills	0.125		0	NR	NR	NR	NR	0
SPILLS 90	0.125		0	NR	NR	NR	NR	0
SPILLS 80	0.125		0	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		2	10	NR	NR	NR	12
DOT OPS	TP		NR	NR	NR	NR	NR	0
DOD	1.000		0	0	0	0	NR	0
FUDS	1.000		0	0	0	0	NR	0
CONSENT	1.000		0	0	0	0	NR	0
ROD	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
RMP	TP		NR	NR	NR	NR	NR	0
HSWDS	0.500		0	0	0	NR	NR	0
UIC	TP		NR	NR	NR	NR	NR	0
MANIFEST	0.250		2	10	NR	NR	NR	12
DRYCLEANERS	0.250		1	3	NR	NR	NR	4
SPDES	TP		NR	NR	NR	NR	NR	0
AIRS	TP		NR	NR	NR	NR	NR	0
E DESIGNATION	0.125		0	NR	NR	NR	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
COAL ASH	0.500		0	0	0	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
Financial Assurance	TP		NR	NR	NR	NR	NR	0
LEAD SMELTERS	TP	1	NR	NR	NR	NR	NR	1
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR US Hist Auto Stat	0.250		5	4	NR	NR	NR	9
EDR US Hist Cleaners	0.250		3	6	NR	NR	NR	9

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

A1 **NEO SMELTING & REFINING** **LEAD SMELTERS** **1014201550**
Target **150-40 11TH AVE** **N/A**
Property **WHITESTONE, NY**

Site 1 of 4 in cluster A

Actual:
49 ft.

Lead Smelter Sites:

Site number:	287
Street map and/or aerial photo:	Y
Sanborn fire ins map ref.:	Not reported
Comments:	SMD1950,1963
DJS match to SMD 48-49:	Not reported

A2 **NEO SMELTING AND REFINING** **CERCLIS** **1015754901**
Target **150-40 11TH AVE** **NYN000206646**
Property **WHITESTONE, NY 11357**

Site 2 of 4 in cluster A

Actual:
49 ft.

CERCLIS:

Site ID:	0206646
EPA ID:	NYN000206646
Facility County:	QUEENS
Short Name:	NEO SMELTING AND REFINING
Congressional District:	Not reported
IFMS ID:	Not reported
SMSA Number:	Not reported
USGC Hydro Unit:	Not reported
Federal Facility:	Not a Federal Facility
DMNSN Number:	0.00000
Site Orphan Flag:	Not reported
RCRA ID:	Not reported
USGS Quadrangle:	Not reported
Site Init By Prog:	S
NFRAP Flag:	Not reported
Parent ID:	Not reported
RST Code:	Not reported
EPA Region:	02
Classification:	Not reported
Site Settings Code:	Not reported
NPL Status:	Not on the NPL
DMNSN Unit Code:	Not reported
RBRAC Code:	Not reported
RResp Fed Agency Code:	Not reported
Non NPL Status:	PA Start Needed
Non NPL Status Date:	11/28/12
Site Fips Code:	36081
CC Concurrence Date:	/ /
CC Concurrence FY:	Not reported
Alias EPA ID:	Not reported
Site FUDS Flag:	Not reported
Alias Comments:	Not reported

Site Description: Not reported

CERCLIS Assessment History:

Action Code:	001
Action:	PRE-CERCLIS SCREENING
Date Started:	/ /

NEO SMELTING AND REFINING (Continued) **1015754901**

Date Completed:	11/28/12
Priority Level:	Not reported
Operable Unit:	SITEWIDE
Primary Responsibility:	EPA Fund-Financed
Planning Status:	Not reported
Urgency Indicator:	Not reported
Action Anomaly:	Not reported

Action Code:	001
Action:	DISCOVERY
Date Started:	/ /
Date Completed:	11/28/12
Priority Level:	Not reported
Operable Unit:	SITEWIDE
Primary Responsibility:	EPA Fund-Financed
Planning Status:	Not reported
Urgency Indicator:	Not reported
Action Anomaly:	Not reported

A3 **150-42 11TH AVE** **LTANKS** **S104275710**
NE **150-42 11TH AVENUE** **N/A**
< 1/8 **WHITESTONE, NY**
0.001 mi.
6 ft. **Site 3 of 4 in cluster A**

Relative:
Lower

Actual:
48 ft.

LTANKS:

Site ID:	195157
Spill Number/Closed Date:	9406584 / 8/8/2012
Spill Date:	8/15/1994
Spill Cause:	Tank Test Failure
Spill Source:	Unknown
Spill Class:	Known release that creates potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
Cleanup Ceased:	Not reported
Cleanup Meets Standard:	False
SWIS:	4101
Investigator:	VXBREVDO
Referred To:	Not reported
Reported to Dept:	8/15/1994
CID:	Not reported
Water Affected:	Not reported
Spill Notifier:	DEC
Last Inspection:	Not reported
Recommended Penalty:	False
UST Involvement:	False
Remediation Phase:	0
Date Entered In Computer:	10/20/1994
Spill Record Last Update:	8/8/2012
Spiller Name:	Not reported
Spiller Company:	DENAM TOOL CO
Spiller Address:	Not reported
Spiller City,St,Zip:	ZZ
Spiller County:	001
Spiller Contact:	Not reported
Spiller Phone:	Not reported
Spiller Extention:	Not reported

150-42 11TH AVE (Continued) **S104275710**

DEC Region: 2
DER Facility ID: 162607
DEC Memo: Prior to Sept, 2004 data translation this spill Lead_DEC Field was "MILLER"6/25/08: Reassigned from Vadim Brevdo to Kartik Chanda. (Chanda)08/08/2012 - V. BrevdoNo information or analytical data is available to confirm impacts to soil or groundwater. Area is paved. Mix of residential 1-2 family homes, commercial and industrial development. No exposure threat or threat to the environment appear to exist. Spill case is closed effective August 8, 2012. V. Brevdo
Remarks: EX. & INVESTIGATE

Material:
Site ID: 195157
Operable Unit ID: 1000992
Operable Unit: 01
Material ID: 379618
Material Code: 0001A
Material Name: #2 Fuel Oil
Case No.: Not reported
Material FA: Petroleum
Quantity: -1
Units: Pounds
Recovered: No
Resource Affected: Not reported
Oxygenate: False

Tank Test:
Site ID: 195157
Spill Tank Test: 1543046
Tank Number: Not reported
Tank Size: 0
Test Method: 00
Leak Rate: 0
Gross Fail: Not reported
Modified By: Spills
Last Modified: 10/1/2004
Test Method: Unknown

A4 **150-49 11TH AVENUE** **NY Spills** **S102672763**
ENE **150-49 11TH AVENUE** **N/A**
< 1/8 **WHITESTONE, NY**
0.009 mi.
47 ft. **Site 4 of 4 in cluster A**

Relative:
Lower

Actual:
47 ft.

SPILLS:
Facility ID: 9413130
DER Facility ID: 130824
Facility Type: ER
Site ID: 154267
DEC Region: 2
Spill Date: 1/2/1995
Spill Number/Closed Date: 9413130 / 1/2/1995
Spill Cause: Equipment Failure
Spill Class: Not reported
SWIS: 4101
Investigator: O'DOWD

150-49 11TH AVENUE (Continued) **S102672763**

Referred To:	Not reported
Reported to Dept:	1/2/1995
CID:	Not reported
Water Affected:	Not reported
Spill Source:	Private Dwelling
Spill Notifier:	Other
Cleanup Ceased:	1/2/1995
Cleanup Meets Std:	True
Last Inspection:	Not reported
Recommended Penalty:	False
UST Trust:	False
Remediation Phase:	0
Date Entered In Computer:	1/31/1995
Spill Record Last Update:	11/19/2003
Spiller Name:	Not reported
Spiller Company:	PETRO
Spiller Address:	Not reported
Spiller City,St,Zip:	NY
Spiller Company:	999
Contact Name:	Not reported
Contact Phone:	Not reported
DEC Memo:	Prior to Sept, 2004 data translation this spill Lead_DEC Field was "0'DOWD"
Remarks:	LEAK IN LINE- CLEANED WITH SPEEDY DRY

Material:

Site ID:	154267
Operable Unit ID:	1006751
Operable Unit:	01
Material ID:	375405
Material Code:	0001A
Material Name:	#2 Fuel Oil
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	1
Units:	Gallons
Recovered:	Yes
Resource Affected:	Not reported
Oxygenate:	False

Tank Test:

---

5 **EDR US Hist Cleaners** **1014975058**
WSW **1106 150TH ST** **N/A**
< 1/8 **WHITESTONE, NY 11357**
0.054 mi.
283 ft.

Relative:
Higher

Actual:
65 ft.

EDR Historical Cleaners:

Name:	STEAMASTER CARPET CLEANING
Year:	2011
Address:	1106 150TH ST
Name:	STEAMASTER CARPET CLEANING
Year:	2012
Address:	1106 150TH ST

B6 **EDR US Hist Auto Stat** **1015238894**
SSE **15042 12TH AVE** **N/A**
< 1/8 **WHITESTONE, NY 11357**
0.055 mi.
288 ft. **Site 1 of 5 in cluster B**

Relative:
Higher

Actual:
53 ft.

EDR Historical Auto Stations:
Name: IAL E & A AUTO DETAILING
Year: 2007
Address: 15042 12TH AVE

B7 **EDR US Hist Cleaners** **1014996525**
SSE **15050 12TH AVE** **N/A**
< 1/8 **WHITESTONE, NY 11357**
0.056 mi.
295 ft. **Site 2 of 5 in cluster B**

Relative:
Lower

Actual:
48 ft.

EDR Historical Cleaners:
Name: BIRCHWOOD COIN LAUNDRIES INC
Year: 2003
Address: 15050 12TH AVE

Name: BIRCHWOOD COIN LAUNDRIES INC
Year: 2004
Address: 15050 12TH AVE

Name: BIRCHWOOD COIN LAUNDRIES INC
Year: 2006
Address: 15050 12TH AVE

Name: BIRCHWOOD COIN LAUNDRIES INC
Year: 2009
Address: 15050 12TH AVE

B8 **LARRY'S AUTO COLLISION** **MANIFEST** **S109787465**
SE **150-54 12TH AVE** **N/A**
< 1/8 **WHITESTONE, NY 11357**
0.056 mi.
297 ft. **Site 3 of 5 in cluster B**

Relative:
Lower

Actual:
46 ft.

CT MANIFEST:

Waste:
Manifest No: CTF0514839
Waste Occurence: 1
UNNA: 1993
Hazard Class: 3
US Dot Description: FLAMMABLE LIQUID N.O.S.
No of Containers: 001
Container Type: TT
Quantity: 225
Weight/Volume: G
Additional Description: Not reported
Handling Code: Not reported
Date Record Was Last Modified: 4/26/2004
DEO Who Last Modified Record: IG

Waste CD:

LARRY'S AUTO COLLISION (Continued) **S109787465**

Manifest No: CTF0514839
Waste Occurence: 1
EPA Waste Code: D001
Recycled Waste?: F
Date Record Was Last Modified: 4/26/2004
DEO Who Last Modified Record: IG

Detail:
Year: 1997
Manifest ID: CTF0514839
TSDF EPA ID: CTD072138969
TSDF Name: ENVIRONMENTAL WASTE RESOURCES
TSDF Address: 130 FREIGHT ST. WATERBURY
TSDF City,St,Zip: CT 06725
TSDF Country: USA
TSDF Telephone: Not reported
Transport Date: 3/24/1997
Transporter EPA ID: NJD080631369
Transporter Name: ADVANCED ENVIRONMENTAL TECHNICAL SERVICE
Transporter Country: USA
Transporter Phone: Not reported
Trans 2 Date: Not reported
Trans 2 EPA ID: Not reported
Trans 2 Name: Not reported
Trans 2 Address: Not reported
Trans 2 City,St,Zip: CT
Trans 2 Country: USA
Trans 2 Phone: Not reported
EPA ID: NYR000009837
Generator Phone: Not reported
Generator Mailing Addr: 150-54 12TH AVE.
Generator Mailing Town: WHITESTONE
Generator Mailing State: NY
Generator Mailing Zip: Not reported
Generator Mailing Country: USA
Special Handling: Not reported
Discrepancies: Not reported
Date Shipped: 3/24/1997
Date Received: 3/24/1997
Last modified date: 4/26/2004
Last modified by: IG
Comments: Not reported

B9 **LARRYS AUTO COLLISION** **RCRA NonGen / NLR** **1004759411**
SE **150-54 12TH AVE** **FINDS** **NYR000009837**
< 1/8 **WHITESTONE, NY 11357** **MANIFEST**
0.056 mi.
297 ft. **Site 4 of 5 in cluster B**

Relative:
Lower

Actual:
46 ft.

RCRA NonGen / NLR:
Date form received by agency: 01/01/2007
Facility name: LARRYS AUTO COLLISION
Facility address: 150-54 12TH AVE
WHITESTONE, NY 11357
EPA ID: NYR000009837
Mailing address: 12TH AVE

LARRYS AUTO COLLISION (Continued) **1004759411**

WHITESTONE, NY 11357
Contact: LAWRENCE CHIANESE
Contact address: 12TH AVE
WHITESTONE, NY 11357
Contact country: US
Contact telephone: (718) 767-5378
Contact email: Not reported
EPA Region: 02
Classification: Non-Generator
Description: Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:
Owner/operator name: JOSEPH LEONE
Owner/operator address: 7 HAMILTON CT
GLEN HEAD, NY 11545
Owner/operator country: Not reported
Owner/operator telephone: (516) 674-6092
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: 01/01/0001
Owner/Op end date: Not reported

Owner/operator name: JOSEPH LEONE
Owner/operator address: 7 HAMILTON CT
GLEN HEAD, NY 11545
Owner/operator country: US
Owner/operator telephone: (516) 674-6092
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: 01/01/2001
Owner/Op end date: Not reported

Owner/operator name: JOSEPH LEONE
Owner/operator address: 7 HAMILTON CT
GLEN HEAD, NY 11545
Owner/operator country: US
Owner/operator telephone: (516) 674-6092
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: 01/01/2001
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No

LARRYS AUTO COLLISION (Continued) **1004759411**

Used oil transfer facility: No
Used oil transporter: No

Historical Generators:
Date form received by agency: 01/01/2006
Facility name: LARRYS AUTO COLLISION
Classification: Not a generator, verified

Date form received by agency: 03/25/2002
Facility name: LARRYS AUTO COLLISION
Classification: Small Quantity Generator

Date form received by agency: 07/31/1995
Facility name: LARRYS AUTO COLLISION
Classification: Conditionally Exempt Small Quantity Generator

Hazardous Waste Summary:
Waste code: D001
Waste name: IGNITABLE HAZARDOUS WASTES ARE THOSE WASTES WHICH HAVE A FLASHPOINT OF LESS THAN 140 DEGREES FAHRENHEIT AS DETERMINED BY A PENSKY-MARTENS CLOSED CUP FLASH POINT TESTER. ANOTHER METHOD OF DETERMINING THE FLASH POINT OF A WASTE IS TO REVIEW THE MATERIAL SAFETY DATA SHEET, WHICH CAN BE OBTAINED FROM THE MANUFACTURER OR DISTRIBUTOR OF THE MATERIAL. LACQUER THINNER IS AN EXAMPLE OF A COMMONLY USED SOLVENT WHICH WOULD BE CONSIDERED AS IGNITABLE HAZARDOUS WASTE.

Waste code: D035
Waste name: METHYL ETHYL KETONE

Waste code: D039
Waste name: TETRACHLOROETHYLENE

Waste code: D040
Waste name: TRICHLOROETHYLENE

Waste code: F003
Waste name: THE FOLLOWING SPENT NON-HALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NON-HALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NON-HALOGENATED SOLVENTS, AND, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005, AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

Waste code: F005
Waste name: THE FOLLOWING SPENT NON-HALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NON-HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

LARRYS AUTO COLLISION (Continued) **1004759411**

Violation Status: No violations found

FINDS:

Registry ID: 110004516328

Environmental Interest/Information System

AFS (Aerometric Information Retrieval System (AIRS) Facility Subsystem) replaces the former Compliance Data System (CDS), the National Emission Data System (NEDS), and the Storage and Retrieval of Aerometric Data (SAROAD). AIRS is the national repository for information concerning airborne pollution in the United States. AFS is used to track emissions and compliance data from industrial plants. AFS data are utilized by states to prepare State Implementation Plans to comply with regulatory programs and by EPA as an input for the estimation of total national emissions. AFS is undergoing a major redesign to support facility operating permits required under Title V of the Clean Air Act.

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

FIS (New York - Facility Information System) is New York's Department of Environmental Conservation (DEC) information system for tracking environmental facility information found across the State.

NY MANIFEST:

EPA ID:	NYR000009837
Country:	USA
Mailing Name:	LARRY'S AUTO COLLISION
Mailing Contact:	LARRY CHIANESE
Mailing Address:	150-54 12TH AVE
Mailing Address 2:	Not reported
Mailing City:	WHITESTONE
Mailing State:	NY
Mailing Zip:	11357
Mailing Zip4:	Not reported
Mailing Country:	USA
Mailing Phone:	718-767-5378

Document ID:	NJA2181980
Manifest Status:	Completed copy
Trans1 State ID:	10339
Trans2 State ID:	Not reported
Generator Ship Date:	950829
Trans1 Recv Date:	950829
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	950831
Part A Recv Date:	950912
Part B Recv Date:	950914
Generator EPA ID:	NYR000009837

LARRYS AUTO COLLISION (Continued) **1004759411**

Trans1 EPA ID:	NJD986608941
Trans2 EPA ID:	Not reported
TSDF ID:	NJD002454544
Waste Code:	F003 - UNKNOWN
Quantity:	00110
Units:	G - Gallons (liquids only)* (8.3 pounds)
Number of Containers:	001
Container Type:	TT - Cargo tank, tank trucks
Handling Method:	R Material recovery of more than 75 percent of the total material.
Specific Gravity:	100
Year:	95

Document ID:	CTF0514839
Manifest Status:	Completed after the designated time period for a TSDF to get a copy to the DEC
Trans1 State ID:	P207055IL
Trans2 State ID:	Not reported
Generator Ship Date:	970324
Trans1 Recv Date:	970324
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	970327
Part A Recv Date:	970407
Part B Recv Date:	970422
Generator EPA ID:	NYR000009837
Trans1 EPA ID:	NJD080631369
Trans2 EPA ID:	Not reported
TSDF ID:	CTD072138969
Waste Code:	F005 - UNKNOWN
Quantity:	01654
Units:	P - Pounds
Number of Containers:	001
Container Type:	TT - Cargo tank, tank trucks
Handling Method:	B Incineration, heat recovery, burning.
Specific Gravity:	100
Year:	97

Document ID:	MAM1392160
Manifest Status:	Not reported
Trans1 State ID:	NJD080631369
Trans2 State ID:	Not reported
Generator Ship Date:	03/21/2001
Trans1 Recv Date:	03/21/2001
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	03/27/2001
Part A Recv Date:	Not reported
Part B Recv Date:	Not reported
Generator EPA ID:	NYR000009837
Trans1 EPA ID:	MAD053452637
Trans2 EPA ID:	Not reported
TSDF ID:	P2987091L
Waste Code:	F003 - UNKNOWN
Quantity:	00055
Units:	G - Gallons (liquids only)* (8.3 pounds)
Number of Containers:	001
Container Type:	TT - Cargo tank, tank trucks
Handling Method:	B Incineration, heat recovery, burning.

LARRYS AUTO COLLISION (Continued) **1004759411**

Specific Gravity: 01.00
Year: 2001

Document ID: NJA3094502
Manifest Status: Not reported
Trans1 State ID: NJD080631369
Trans2 State ID: Not reported
Generator Ship Date: 06/26/2000
Trans1 Recv Date: 06/26/2000
Trans2 Recv Date: Not reported
TSD Site Recv Date: 07/07/2000
Part A Recv Date: Not reported
Part B Recv Date: Not reported
Generator EPA ID: NYR000009837
Trans1 EPA ID: NJD002454544
Trans2 EPA ID: Not reported
TSDF ID: 50160
Waste Code: F003 - UNKNOWN
Quantity: 00045
Units: G - Gallons (liquids only)* (8.3 pounds)
Number of Containers: 001
Container Type: TT - Cargo tank, tank trucks
Handling Method: R Material recovery of more than 75 percent of the total material.
Specific Gravity: 01.00
Year: 2000

Document ID: MAM1118230
Manifest Status: Not reported
Trans1 State ID: NJD080631369
Trans2 State ID: Not reported
Generator Ship Date: 12/27/1999
Trans1 Recv Date: 12/27/1999
Trans2 Recv Date: Not reported
TSD Site Recv Date: 12/29/1999
Part A Recv Date: Not reported
Part B Recv Date: Not reported
Generator EPA ID: NYR000009837
Trans1 EPA ID: MAD053452637
Trans2 EPA ID: Not reported
TSDF ID: P298709IL
Waste Code: F003 - UNKNOWN
Quantity: 00055
Units: G - Gallons (liquids only)* (8.3 pounds)
Number of Containers: 001
Container Type: TT - Cargo tank, tank trucks
Handling Method: B Incineration, heat recovery, burning.
Specific Gravity: 01.00
Year: 99

Document ID: ILA9094735
Manifest Status: Not reported
Trans1 State ID: SCR000075150
Trans2 State ID: Not reported
Generator Ship Date: 05/06/2002

LARRYS AUTO COLLISION (Continued) **1004759411**

Trans1 Recv Date:	05/06/2002
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	05/14/2002
Part A Recv Date:	Not reported
Part B Recv Date:	Not reported
Generator EPA ID:	NYR000009837
Trans1 EPA ID:	ILD980613913
Trans2 EPA ID:	Not reported
TSDF ID:	UPW151288
Waste Code:	F005 - UNKNOWN
Quantity:	00460
Units:	P - Pounds
Number of Containers:	001
Container Type:	DM - Metal drums, barrels
Handling Method:	B Incineration, heat recovery, burning.
Specific Gravity:	01.00
Year:	2002

Document ID:	ILA9094743
Manifest Status:	Not reported
Trans1 State ID:	SCR000075150
Trans2 State ID:	NJD071629976
Generator Ship Date:	06/05/2002
Trans1 Recv Date:	06/05/2002
Trans2 Recv Date:	06/07/2002
TSD Site Recv Date:	06/14/2002
Part A Recv Date:	Not reported
Part B Recv Date:	Not reported
Generator EPA ID:	NYR000009837
Trans1 EPA ID:	ILD980613913
Trans2 EPA ID:	Not reported
TSDF ID:	UPW151288
Waste Code:	F005 - UNKNOWN
Quantity:	00036
Units:	P - Pounds
Number of Containers:	001
Container Type:	DM - Metal drums, barrels
Handling Method:	R Material recovery of more than 75 percent of the total material.
Specific Gravity:	01.00
Year:	2002

B10 **EDR US Hist Auto Stat** **1015239180**
SSE **15054 12TH AVE** **N/A**
< 1/8 **WHITESTONE, NY 11357**
0.057 mi.
301 ft. **Site 5 of 5 in cluster B**

Relative:
Lower

Actual:
46 ft.

EDR Historical Auto Stations:

Name:	LARRYS AUTO COLLISION
Year:	1999
Address:	15054 12TH AVE

Name:	LARRYS AUTO COLLISION
Year:	2000
Address:	15054 12TH AVE

Name:	LARRYS AUTO COLLISION

(Continued) **1015239180**

Year: 2001
Address: 15054 12TH AVE

Name: CHIANESE COLLISION SERVICE INC
Year: 2002
Address: 15054 12TH AVE

Name: LARRYS AUTO COLLISION
Year: 2003
Address: 15054 12TH AVE

Name: LARRYS AUTO COLLISION
Year: 2004
Address: 15054 12TH AVE

Name: CHIANESE COLLISION SVSC
Year: 2005
Address: 15054 12TH AVE

Name: LARRYS AUTO COLLISION
Year: 2006
Address: 15054 12TH AVE

Name: FASTLANE COLLISION
Year: 2007
Address: 15054 12TH AVE

Name: CHIANESE COLLISION SVSC
Year: 2008
Address: 15054 12TH AVE

Name: FASTLANE COLLISION
Year: 2009
Address: 15054 12TH AVE

Name: LARRYS AUTO COLLISION
Year: 2010
Address: 15054 12TH AVE

Name: FASTLANE COLLISION
Year: 2011
Address: 15054 12TH AVE

Name: FASTLANE COLLISION
Year: 2012
Address: 15054 12TH AVE

C11 **ACTION DIAGNOSTIC CENTER** **RCRA NonGen / NLR** **1000259303**
ENE **11-12 CLINTONVILLE ST** **FINDS** **NYD056905144**
< 1/8 **WHITESTONE, NY 11357**
0.073 mi.
384 ft. **Site 1 of 4 in cluster C**

Relative:
Lower

Actual:
34 ft.

RCRA NonGen / NLR:
Date form received by agency: 01/01/2007
Facility name: ACTION DIAGNOSTIC CENTER
Facility address: 11-12 CLINTONVILLE ST
WHITESTONE, NY 113571814

ACTION DIAGNOSTIC CENTER (Continued) **1000259303**

EPA ID: NYD056905144
Mailing address: CLINTONVILLE ST
WHITESTONE, NY 11357
Contact: Not reported
Contact address: CLINTONVILLE ST
WHITESTONE, NY 11357
Contact country: US
Contact telephone: Not reported
Contact email: Not reported
EPA Region: 02
Classification: Non-Generator
Description: Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:
Owner/operator name: CHARLES LIPPERT
Owner/operator address: NOT REQUIRED
NOT REQUIRED, WY 99999
Owner/operator country: US
Owner/operator telephone: (212) 555-1212
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Owner/operator name: CHARLES LIPPERT
Owner/operator address: NOT REQUIRED
NOT REQUIRED, WY 99999
Owner/operator country: US
Owner/operator telephone: (212) 555-1212
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Historical Generators:
Date form received by agency: 01/01/2006
Facility name: ACTION DIAGNOSTIC CENTER
Classification: Not a generator, verified

ACTION DIAGNOSTIC CENTER (Continued) **1000259303**

Date form received by agency: 07/08/1999
Facility name: ACTION DIAGNOSTIC CENTER
Classification: Not a generator, verified

Date form received by agency: 11/12/1986
Facility name: ACTION DIAGNOSTIC CENTER
Classification: Small Quantity Generator

Violation Status: No violations found

FINDS:

Registry ID: 110004360744

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

12
WNW
< 1/8
0.083 mi.
438 ft.

Relative:
Higher

Actual:
78 ft.

POLE 20088 **NY Spills** **S104787791**
10-09 150TH ST **N/A**
QUEENS, NY

SPILLS:

Facility ID:	0005119
DER Facility ID:	240196
Facility Type:	ER
Site ID:	296824
DEC Region:	2
Spill Date:	7/29/2000
Spill Number/Closed Date:	0005119 / 10/24/2001
Spill Cause:	Equipment Failure
Spill Class:	Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
SWIS:	4101
Investigator:	JHOCONNE
Referred To:	Not reported
Reported to Dept:	7/29/2000
CID:	382
Water Affected:	Not reported
Spill Source:	Commercial/Industrial
Spill Notifier:	Responsible Party
Cleanup Ceased:	Not reported
Cleanup Meets Std:	False
Last Inspection:	Not reported
Recommended Penalty:	False
UST Trust:	False
Remediation Phase:	0
Date Entered In Computer:	7/29/2000
Spill Record Last Update:	10/24/2001
Spiller Name:	CALLER
Spiller Company:	CON ED

POLE 20088 (Continued) **S104787791**

Spiller Address: 4 IRVING
Spiller City,St,Zip: MANHATTAN, NY
Spiller Company: 001
Contact Name: TED ROBICHAUD
Contact Phone: (212) 580-6763
DEC Memo: Prior to Sept, 2004 data translation this spill Lead_DEC Field was "O'CONNELL"Con Ed e2mis Notes:7/29/00 1qt oil onto 5'X5' area of grass between pole and curb. Affected areas were cleaned, grass removed and replaced with new sod. #9 bagged the transformer. Sample of transformer returned <1ppm PCB.
Remarks: 1 qt oil on curb beneath pole. spill due to leaky transformer. clean up pending crew status con ed 132-607

Material:
Site ID: 296824
Operable Unit ID: 827538
Operable Unit: 01
Material ID: 549857
Material Code: 0020A
Material Name: TRANSFORMER OIL
Case No.: Not reported
Material FA: Petroleum
Quantity: 0
Units: Gallons
Recovered: No
Resource Affected: Not reported
Oxygenate: False

Tank Test:

C13 **NEW ON TIME CLEANER & TAILOR** **DRYCLEANERS** **S110247448**
ENE **151-11 11TH AVE** **N/A**
< 1/8 **WHITESTONE, NY 11357**
0.086 mi.
452 ft. **Site 2 of 4 in cluster C**

Relative:
Lower

Actual:
31 ft.

DRYCLEANERS:
Facility ID: DROP SHOP
Phone Number: Not reported
Region: 2
Registration Effective Date: N/A
Inspection Date: 07JUN1
Install Date: Not reported
Drop Shop: Not reported
Shutdown: Not reported
Alternate Solvent: Not reported
Current Business: DROP SHOP

C14 **NY Spills** **S106008807**
ENE **151-11 11TH AV** **N/A**
< 1/8 **QUEENS, NY**
0.086 mi.
452 ft. **Site 3 of 4 in cluster C**

Relative: **Lower**

Actual: **31 ft.**

SPILLS:

Facility ID:	0207789
DER Facility ID:	67539
Facility Type:	ER
Site ID:	71364
DEC Region:	2
Spill Date:	10/28/2002
Spill Number/Closed Date:	0207789 / 6/30/2003
Spill Cause:	Housekeeping
Spill Class:	Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
SWIS:	4101
Investigator:	RWAUSTIN
Referred To:	Not reported
Reported to Dept:	10/28/2002
CID:	270
Water Affected:	Not reported
Spill Source:	Private Dwelling
Spill Notifier:	Fire Department
Cleanup Ceased:	Not reported
Cleanup Meets Std:	False
Last Inspection:	Not reported
Recommended Penalty:	False
UST Trust:	False
Remediation Phase:	0
Date Entered In Computer:	10/28/2002
Spill Record Last Update:	6/30/2003
Spiller Name:	MARIO
Spiller Company:	MARIO TUCCIARONE
Spiller Address:	151-11 11TH AV
Spiller City,St,Zip:	QUEENS, NY
Spiller Company:	001
Contact Name:	CALLER
Contact Phone:	Not reported
DEC Memo:	Prior to Sept, 2004 data translation this spill Lead_DEC Field was "AUSTIN"CALLED FF RIBISI (FDNY): FIRE WAS BROUGHT UNDER CONTROL.CALLED PROPERTY: MARIO TUCCIARONE, WHO PROMISED TO VISIT LOCATION AND START CLEAN-UP.CALLED PROPERTY AGAIN AT 11.56 HRS. FOR CLEAN-UP UPDATE.LEFT MESSAGE WITH ANSWERING SYSTEM. E.R. MARIO TUCCIARONE CALLED AT 2.30PM TO CONFIRM THAT:1. FIRE WAS CAUSED WHEN A CIGARETTE WAS THROWN ON A SMALL POOL OF WATER WHICH HAD A "GASOLENE SHEEN".2. THE FIRE DEPARTMENT TOOK CARE OF THE FIRE AND ORDERED THAT THE PROPERTY BE CLEANED OF ALL PETROLEUM AND OTHER CHEMICALS WHICH ARE STORED IN DRUMS.3. AN ECO FROM THE DEC ALSO VISITED THE LOCATION. 4. FURTHER CLEAN UP WAS WILL BE DONE TOMORROW, TUESDAY 10/29/20026/30/03 - AUSTIN - DUE TO MINOR AMOUNT OF FUEL INVOLVED, SPILL CLOSED OUT IN DATABASE - TIPPLE ORIG. ASSIGNED THIS SPILL - END
Remarks:	a cigerette was thrown into oil which caught fire

Material:

Site ID:	71364
Operable Unit ID:	859376
Operable Unit:	01
Material ID:	514798

(Continued) **S106008807**

Material Code:	0022
Material Name:	Waste Oil/Used Oil
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	50
Units:	Gallons
Recovered:	No
Resource Affected:	Not reported
Oxygenate:	False

Tank Test:

C15 **EDR US Hist Cleaners** **1014996901**
ENE **15111 11TH AVE** **N/A**
< 1/8 **WHITESTONE, NY 11357**
0.089 mi.
468 ft. **Site 4 of 4 in cluster C**

Relative:
Lower

Actual:
31 ft.

EDR Historical Cleaners:

Name:	ON TIME CLEANERS AND TAILORS INC
Year:	2005
Address:	15111 11TH AVE
Name:	ON TIME CLEANERS & TAILORS INC
Year:	2007
Address:	15111 11TH AVE
Name:	ON TIME CLEANERS & TAILORS
Year:	2010
Address:	15111 11TH AVE
Name:	ON TIME CLEANERS & TAILORS
Year:	2011
Address:	15111 11TH AVE

D16 **EDR US Hist Auto Stat** **1015127869**
NE **1015 CLINTONVILLE ST** **N/A**
< 1/8 **WHITESTONE, NY 11357**
0.094 mi.
494 ft. **Site 1 of 6 in cluster D**

Relative:
Lower

Actual:
33 ft.

EDR Historical Auto Stations:

Name:	11 AVE AUTO REPAIR
Year:	2001
Address:	1015 CLINTONVILLE ST

D17
NNE
< 1/8
0.097 mi.
514 ft.

1002 CLINTONVILLE ST
WHITESTONE, NY 11357

Site 2 of 6 in cluster D

EDR US Hist Auto Stat **1015121469**
N/A

Relative:
Lower

Actual:
34 ft.

EDR Historical Auto Stations:

Name: TENTH AVE AUTO SVCE CORPORATION
Year: 1999
Address: 1002 CLINTONVILLE ST

Name: TENTH AVE AUTO SVCE CORPORATION
Year: 2000
Address: 1002 CLINTONVILLE ST

Name: TENTH AVE AUTO SERVICE CORP
Year: 2001
Address: 1002 CLINTONVILLE ST

Name: TENTH AVE AUTO SERVICE CORP
Year: 2002
Address: 1002 CLINTONVILLE ST

Name: TENTH AVE AUTO SERVICE CORP
Year: 2003
Address: 1002 CLINTONVILLE ST

Name: TENTH AVE AUTO SERVICE CORP
Year: 2004
Address: 1002 CLINTONVILLE ST

Name: TENTH AVE AUTO SERVICE CORP
Year: 2005
Address: 1002 CLINTONVILLE ST

Name: TENTH AVE AUTO SERVICE CORP
Year: 2006
Address: 1002 CLINTONVILLE ST

Name: TENTH AVE AUTO SERVICE CORP
Year: 2007
Address: 1002 CLINTONVILLE ST

Name: TENTH AVE AUTO SERVICE CORP
Year: 2008
Address: 1002 CLINTONVILLE ST

Name: TENTH AVE AUTO SERVICE CORP
Year: 2009
Address: 1002 CLINTONVILLE ST

Name: TENTH AVENUE AUTOMOBILE SERVICES
Year: 2011
Address: 1002 CLINTONVILLE ST

Name: TENTH AVENUE AUTOMOBILE SERVICES
Year: 2012
Address: 1002 CLINTONVILLE ST

D18 **10-02 CLINTONVILLE ST.** **LTANKS** **S104193684**
NNE **10-02 CLINTONVILLE ST.** **NY Spills** **N/A**
< 1/8 **WHITESTONE, NY**
0.098 mi.
520 ft. **Site 3 of 6 in cluster D**

Relative:
Lower

Actual:
34 ft.

LTANKS:

Site ID:	78936
Spill Number/Closed Date:	9308250 / 9/5/1995
Spill Date:	8/3/1993
Spill Cause:	Tank Overfill
Spill Source:	Gasoline Station
Spill Class:	Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
Cleanup Ceased:	9/5/1995
Cleanup Meets Standard:	True
SWIS:	4101
Investigator:	CAMMISA
Referred To:	Not reported
Reported to Dept:	8/13/1993
CID:	Not reported
Water Affected:	Not reported
Spill Notifier:	Tank Tester
Last Inspection:	Not reported
Recommended Penalty:	False
UST Involvement:	True
Remediation Phase:	0
Date Entered In Computer:	10/8/1993
Spill Record Last Update:	2/4/2003
Spiller Name:	Not reported
Spiller Company:	GERRYS AUTO SERVICE
Spiller Address:	10-02 CLINTONVILLE ST
Spiller City,St,Zip:	WHITESTONE, NY
Spiller County:	001
Spiller Contact:	Not reported
Spiller Phone:	Not reported
Spiller Extention:	Not reported
DEC Region:	2
DER Facility ID:	73413
DEC Memo:	Not reported
Remarks:	UPON INSPECTION FOUND OVERFILL PROBLEM BY FILL PORT AND IN STREET ADJACENT - HILL PORT PHOTOS TAKEN.

Material:

Site ID:	78936
Operable Unit ID:	989782
Operable Unit:	01
Material ID:	394485
Material Code:	0008
Material Name:	Diesel
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	0
Units:	Gallons
Recovered:	No
Resource Affected:	Not reported
Oxygenate:	False

10-02 CLINTONVILLE ST. (Continued) **S104193684**

Tank Test:

SPILLS:

Facility ID:	9905457
DER Facility ID:	216006
Facility Type:	ER
Site ID:	265096
DEC Region:	2
Spill Date:	2/1/1999
Spill Number/Closed Date:	9905457 / 7/19/2001
Spill Cause:	Unknown
Spill Class:	Known release that creates potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
SWIS:	4101
Investigator:	JMROMMEL
Referred To:	Not reported
Reported to Dept:	8/5/1999
CID:	211
Water Affected:	Not reported
Spill Source:	Gasoline Station
Spill Notifier:	Other
Cleanup Ceased:	Not reported
Cleanup Meets Std:	False
Last Inspection:	Not reported
Recommended Penalty:	False
UST Trust:	False
Remediation Phase:	0
Date Entered In Computer:	8/5/1999
Spill Record Last Update:	3/17/2003
Spiller Name:	HENRY BRUSIC
Spiller Company:	10TH AV AUTO SERVICE
Spiller Address:	10-02 CLINTONVILLE AV
Spiller City,St,Zip:	WHITE STONE, NY
Spiller Company:	001
Contact Name:	HOWARD KALLMAN
Contact Phone:	(718) 626-8083
DEC Memo:	Prior to Sept, 2004 data translation this spill Lead_DEC Field was "ROMMEL"01-02-01Spoke to Danny at American Environmental.They removed eight 550s during February 1999 and installed three 4000 gallon tanks were reinstalled in the same excavation. Approximately 600 tons of contaminated soil was removed from the site, endpoint samples were collected. American Environmental will submit the results of the enpoint samples and disposal documentation.
Remarks:	during tank removal soil contamination found

Material:

Site ID:	265096
Operable Unit ID:	1079990
Operable Unit:	01
Material ID:	301749
Material Code:	0009
Material Name:	Gasoline
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	0
Units:	Gallons

10-02 CLINTONVILLE ST. (Continued) **S104193684**

Recovered: No
Resource Affected: Not reported
Oxygenate: False

Tank Test:

D19 **SKS PETROLEUM INC.** **UST** **U004064626**
NNE **10-02 CLINTONVILLE STREET** **N/A**
< 1/8 **WHITESTONE, NY 11357**
0.099 mi.
524 ft. **Site 4 of 6 in cluster D**

Relative:
Lower

Actual:
34 ft.

UST:
Id/Status: 2-360074 / Active
Region: STATE
DEC Region: 2
Program Type: PBS
Expiration Date: 2018/02/17
UTM X: 600139.72158999997
UTM Y: 4516438.04268

Affiliation Records:
Site Id: 18126
Affiliation Type: Mail Contact
Company Name: TENTH AVENUE AUTO SERVICE CORP.
Contact Type: Not reported
Contact Name: HENRY BRUSIC
Address1: 10-02 CLINTONVILLE STREET
Address2: Not reported
City: WHITESTONE
State: NY
Zip Code: 11357
Country Code: 001
Phone: (718) 746-3651
Phone Ext: Not reported
Email: HBRUSIC1@AOL.COM
Fax Number: Not reported
Modified By: NRLOMBAR
Date Last Modified: 10/27/2011

Site Id: 18126
Affiliation Type: On-Site Operator
Company Name: SKS PETROLEUM INC.
Contact Type: Not reported
Contact Name: MAKHAN SINGH
Address1: Not reported
Address2: Not reported
City: Not reported
State: NN
Zip Code: Not reported
Country Code: 001
Phone: (917) 603-6667
Phone Ext: Not reported
Email: Not reported
Fax Number: Not reported
Modified By: NRLOMBAR
Date Last Modified: 10/27/2011

SKS PETROLEUM INC. (Continued) **U004064626**

Site Id:	18126
Affiliation Type:	Emergency Contact
Company Name:	HAYMELI ENTERPRISES, INC.
Contact Type:	Not reported
Contact Name:	HENRY BRUSIC
Address1:	Not reported
Address2:	Not reported
City:	Not reported
State:	NN
Zip Code:	Not reported
Country Code:	999
Phone:	(347) 992-7314
Phone Ext:	Not reported
Email:	Not reported
Fax Number:	Not reported
Modified By:	NRLOMBAR
Date Last Modified:	10/27/2011

Site Id:	18126
Affiliation Type:	Facility Owner
Company Name:	HENRY BRUSIC/HAYMELI ENTERPRISES, INC.
Contact Type:	PRES.
Contact Name:	HENRY BRUSIC
Address1:	1002 CLINTONVILLE ST.
Address2:	Not reported
City:	WHITESTONE
State:	NY
Zip Code:	11357
Country Code:	001
Phone:	(718) 746-3651
Phone Ext:	Not reported
Email:	Not reported
Fax Number:	Not reported
Modified By:	MSBAPTIS
Date Last Modified:	2/25/2013

Tank Info:

Site ID:	18126
Tank Number:	001
Tank ID:	20537
Tank Status:	Closed - Removed
Tank Type:	Steel/carbon steel
Pipe Model:	Not reported

Equipment Records:

I00 - Overfill - None
B00 - Tank External Protection - None
A00 - Tank Internal Protection - None
J02 - Dispenser - Suction Dispenser
C00 - Pipe Location - No Piping
F00 - Pipe External Protection - None
D00 - Pipe Type - No Piping
G00 - Tank Secondary Containment - None
H99 - Tank Leak Detection - Other

Install Date:	Not reported
Capacity Gallons:	550

SKS PETROLEUM INC. (Continued) **U004064626**

Tightness Test Method: 03
Next Test Date: Not reported
Date Tank Closed: 11/01/1998
Tank Location: 5
Tank Type: Steel/carbon steel
Date Test: 12/01/1993
Registered: True
Modified By: TRANSLAT
Last Modified: 03/04/2004

Site ID: 18126

Tank Number: 002
Tank ID: 20538
Tank Status: Closed - Removed
Tank Type: Steel/carbon steel
Pipe Model: Not reported

Equipment Records:
I00 - Overfill - None
B00 - Tank External Protection - None
A00 - Tank Internal Protection - None
J02 - Dispenser - Suction Dispenser
C00 - Pipe Location - No Piping
F00 - Pipe External Protection - None
D00 - Pipe Type - No Piping
G00 - Tank Secondary Containment - None
H99 - Tank Leak Detection - Other

Install Date: Not reported
Capacity Gallons: 550
Tightness Test Method: 03
Next Test Date: Not reported
Date Tank Closed: 11/01/1998
Tank Location: 5
Tank Type: Steel/carbon steel
Date Test: 12/01/1993
Registered: True
Modified By: TRANSLAT
Last Modified: 03/04/2004

Site ID: 18126

Tank Number: 003
Tank ID: 20539
Tank Status: Closed - Removed
Tank Type: Steel/carbon steel
Pipe Model: Not reported

Equipment Records:
I00 - Overfill - None
B00 - Tank External Protection - None
A00 - Tank Internal Protection - None
J02 - Dispenser - Suction Dispenser
C00 - Pipe Location - No Piping
F00 - Pipe External Protection - None
D00 - Pipe Type - No Piping
G00 - Tank Secondary Containment - None
H99 - Tank Leak Detection - Other

SKS PETROLEUM INC. (Continued) **U004064626**

Install Date: Not reported
Capacity Gallons: 550
Tightness Test Method: 03
Next Test Date: Not reported
Date Tank Closed: 11/01/1998
Tank Location: 5
Tank Type: Steel/carbon steel
Date Test: 12/01/1993
Registered: True
Modified By: TRANSLAT
Last Modified: 03/04/2004

Site ID: 18126

Tank Number: 004
Tank ID: 20540
Tank Status: Closed - Removed
Tank Type: Steel/carbon steel
Pipe Model: Not reported

Equipment Records:

I00 - Overfill - None
B00 - Tank External Protection - None
A00 - Tank Internal Protection - None
J02 - Dispenser - Suction Dispenser
C00 - Pipe Location - No Piping
F00 - Pipe External Protection - None
D00 - Pipe Type - No Piping
G00 - Tank Secondary Containment - None
H99 - Tank Leak Detection - Other

Install Date: Not reported
Capacity Gallons: 550
Tightness Test Method: 03
Next Test Date: Not reported
Date Tank Closed: 11/01/1998
Tank Location: 5
Tank Type: Steel/carbon steel
Date Test: 12/01/1993
Registered: True
Modified By: TRANSLAT
Last Modified: 03/04/2004

Site ID: 18126

Tank Number: 005
Tank ID: 20541
Tank Status: Closed - Removed
Tank Type: Steel/carbon steel
Pipe Model: Not reported

Equipment Records:

I00 - Overfill - None
B00 - Tank External Protection - None
A00 - Tank Internal Protection - None
J02 - Dispenser - Suction Dispenser
C00 - Pipe Location - No Piping
F00 - Pipe External Protection - None
D00 - Pipe Type - No Piping

SKS PETROLEUM INC. (Continued) **U004064626**

G00 - Tank Secondary Containment - None
H99 - Tank Leak Detection - Other

Install Date:	Not reported
Capacity Gallons:	550
Tightness Test Method:	03
Next Test Date:	Not reported
Date Tank Closed:	11/01/1998
Tank Location:	5
Tank Type:	Steel/carbon steel
Date Test:	12/01/1993
Registered:	True
Modified By:	TRANSLAT
Last Modified:	03/04/2004
Site ID:	18126
Tank Number:	006
Tank ID:	20542
Tank Status:	Closed - Removed
Tank Type:	Steel/carbon steel
Pipe Model:	Not reported

Equipment Records:

I00 - Overfill - None
B00 - Tank External Protection - None
A00 - Tank Internal Protection - None
J02 - Dispenser - Suction Dispenser
C00 - Pipe Location - No Piping
F00 - Pipe External Protection - None
D00 - Pipe Type - No Piping
G00 - Tank Secondary Containment - None
H99 - Tank Leak Detection - Other

Install Date:	Not reported
Capacity Gallons:	550
Tightness Test Method:	03
Next Test Date:	Not reported
Date Tank Closed:	11/01/1998
Tank Location:	5
Tank Type:	Steel/carbon steel
Date Test:	12/01/1993
Registered:	True
Modified By:	TRANSLAT
Last Modified:	03/04/2004
Site ID:	18126
Tank Number:	007
Tank ID:	20543
Tank Status:	Closed - Removed
Tank Type:	Steel/carbon steel
Pipe Model:	Not reported

Equipment Records:

I00 - Overfill - None
B00 - Tank External Protection - None
A00 - Tank Internal Protection - None
J02 - Dispenser - Suction Dispenser
C00 - Pipe Location - No Piping

SKS PETROLEUM INC. (Continued) **U004064626**

F00 - Pipe External Protection - None
D00 - Pipe Type - No Piping
G00 - Tank Secondary Containment - None
H99 - Tank Leak Detection - Other

Install Date: Not reported
Capacity Gallons: 550
Tightness Test Method: 03
Next Test Date: Not reported
Date Tank Closed: 11/01/1998
Tank Location: 5
Tank Type: Steel/carbon steel
Date Test: 12/01/1993
Registered: True
Modified By: TRANSLAT
Last Modified: 03/04/2004

Site ID: 18126

Tank Number: 008
Tank ID: 20544
Tank Status: Closed - Removed
Tank Type: Steel/carbon steel
Pipe Model: Not reported

Equipment Records:

I00 - Overfill - None
B00 - Tank External Protection - None
A00 - Tank Internal Protection - None
J02 - Dispenser - Suction Dispenser
C00 - Pipe Location - No Piping
F00 - Pipe External Protection - None
D00 - Pipe Type - No Piping
G00 - Tank Secondary Containment - None
H99 - Tank Leak Detection - Other

Install Date: Not reported
Capacity Gallons: 550
Tightness Test Method: 03
Next Test Date: Not reported
Date Tank Closed: 11/01/1998
Tank Location: 5
Tank Type: Steel/carbon steel
Date Test: 12/01/1993
Registered: True
Modified By: TRANSLAT
Last Modified: 03/04/2004

Site ID: 18126

Tank Number: 009
Tank ID: 53896
Tank Status: In Service
Tank Type: Fiberglass coated steel
Pipe Model: Not reported

Equipment Records:

C02 - Pipe Location - Underground/On-ground
F02 - Pipe External Protection - Original Sacrificial Anode
H01 - Tank Leak Detection - Interstitial - Electronic Monitoring

SKS PETROLEUM INC. (Continued) **U004064626**

I02 - Overfill - High Level Alarm
K01 - Spill Prevention - Catch Basin
G04 - Tank Secondary Containment - Double-Walled (Underground)
E00 - Piping Secondary Containment - None
F01 - Pipe External Protection - Painted/Asphalt Coating
H05 - Tank Leak Detection - In-Tank System (ATG)
L01 - Piping Leak Detection - Interstitial - Electronic Monitoring
A00 - Tank Internal Protection - None
D02 - Pipe Type - Galvanized Steel
J02 - Dispenser - Suction Dispenser
B05 - Tank External Protection - Jacketed

Install Date: 12/01/1998
Capacity Gallons: 4000
Tightness Test Method: NN
Next Test Date: Not reported
Date Tank Closed: Not reported
Tank Location: 5
Tank Type: Fiberglass coated steel
Date Test: Not reported
Registered: True
Modified By: MSBAPTIS
Last Modified: 02/25/2013

Site ID: 18126

Tank Number: 10
Tank ID: 55139
Tank Status: In Service
Tank Type: Fiberglass coated steel
Pipe Model: Not reported

Equipment Records:

C02 - Pipe Location - Underground/On-ground
F02 - Pipe External Protection - Original Sacrificial Anode
H01 - Tank Leak Detection - Interstitial - Electronic Monitoring
I02 - Overfill - High Level Alarm
K01 - Spill Prevention - Catch Basin
G04 - Tank Secondary Containment - Double-Walled (Underground)
E00 - Piping Secondary Containment - None
F01 - Pipe External Protection - Painted/Asphalt Coating
H05 - Tank Leak Detection - In-Tank System (ATG)
L01 - Piping Leak Detection - Interstitial - Electronic Monitoring
A00 - Tank Internal Protection - None
D02 - Pipe Type - Galvanized Steel
J02 - Dispenser - Suction Dispenser
B05 - Tank External Protection - Jacketed

Install Date: 12/01/1998
Capacity Gallons: 4000
Tightness Test Method: NN
Next Test Date: Not reported
Date Tank Closed: Not reported
Tank Location: 5
Tank Type: Fiberglass coated steel
Date Test: Not reported
Registered: True
Modified By: MSBAPTIS
Last Modified: 02/25/2013

SKS PETROLEUM INC. (Continued) **U004064626**

Site ID: 18126

Tank Number: 11
Tank ID: 55140
Tank Status: In Service
Tank Type: Fiberglass coated steel
Pipe Model: Not reported

Equipment Records:
C02 - Pipe Location - Underground/On-ground
F02 - Pipe External Protection - Original Sacrificial Anode
H01 - Tank Leak Detection - Interstitial - Electronic Monitoring
I02 - Overfill - High Level Alarm
K01 - Spill Prevention - Catch Basin
G04 - Tank Secondary Containment - Double-Walled (Underground)
E00 - Piping Secondary Containment - None
F01 - Pipe External Protection - Painted/Asphalt Coating
H05 - Tank Leak Detection - In-Tank System (ATG)
L01 - Piping Leak Detection - Interstitial - Electronic Monitoring
A00 - Tank Internal Protection - None
D02 - Pipe Type - Galvanized Steel
J02 - Dispenser - Suction Dispenser
B05 - Tank External Protection - Jacketed

Install Date: 12/01/1998
Capacity Gallons: 4000
Tightness Test Method: NN
Next Test Date: Not reported
Date Tank Closed: Not reported
Tank Location: 5
Tank Type: Fiberglass coated steel
Date Test: Not reported
Registered: True
Modified By: MSBAPTIS
Last Modified: 02/25/2013

D20 **SKS PETROLEUM INC.** **AST** **A100296267**
NNE **10-02 CLINTONVILLE STREET** **N/A**
< 1/8 **WHITESTONE, NY 11357**
0.099 mi.
524 ft. **Site 5 of 6 in cluster D**

Relative:
Lower

Actual:
34 ft.

AST:
Region: STATE
DEC Region: 2
Site Status: Active
Facility Id: 2-360074
Program Type: PBS
UTM X: 600139.72158999997
UTM Y: 4516438.04268
Expiration Date: 2018/02/17

Affiliation Records:
Site Id: 18126
Affiliation Type: Mail Contact
Company Name: TENTH AVENUE AUTO SERVICE CORP.
Contact Type: Not reported
Contact Name: HENRY BRUSIC
Address1: 10-02 CLINTONVILLE STREET
Address2: Not reported

SKS PETROLEUM INC. (Continued) **A100296267**

City:	WHITESTONE
State:	NY
Zip Code:	11357
Country Code:	001
Phone:	(718) 746-3651
Phone Ext:	Not reported
Email:	HBRUSIC1@AOL.COM
Fax Number:	Not reported
Modified By:	NRLOMBAR
Date Last Modified:	10/27/2011

Site Id:	18126
Affiliation Type:	On-Site Operator
Company Name:	SKS PETROLEUM INC.
Contact Type:	Not reported
Contact Name:	MAKHAN SINGH
Address1:	Not reported
Address2:	Not reported
City:	Not reported
State:	NN
Zip Code:	Not reported
Country Code:	001
Phone:	(917) 603-6667
Phone Ext:	Not reported
Email:	Not reported
Fax Number:	Not reported
Modified By:	NRLOMBAR
Date Last Modified:	10/27/2011

Site Id:	18126
Affiliation Type:	Emergency Contact
Company Name:	HAYMELI ENTERPRISES, INC.
Contact Type:	Not reported
Contact Name:	HENRY BRUSIC
Address1:	Not reported
Address2:	Not reported
City:	Not reported
State:	NN
Zip Code:	Not reported
Country Code:	999
Phone:	(347) 992-7314
Phone Ext:	Not reported
Email:	Not reported
Fax Number:	Not reported
Modified By:	NRLOMBAR
Date Last Modified:	10/27/2011

Site Id:	18126
Affiliation Type:	Facility Owner
Company Name:	HENRY BRUSIC/HAYMELI ENTERPRISES, INC.
Contact Type:	PRES.
Contact Name:	HENRY BRUSIC
Address1:	1002 CLINTONVILLE ST.
Address2:	Not reported
City:	WHITESTONE
State:	NY
Zip Code:	11357

SKS PETROLEUM INC. (Continued) **A100296267**

Country Code:	001
Phone:	(718) 746-3651
Phone Ext:	Not reported
Email:	Not reported
Fax Number:	Not reported
Modified By:	MSBAPTIS
Date Last Modified:	2/25/2013

Tank Info:

Tank Number:	12
Tank Id:	181830

Equipment Records:

C01 - Pipe Location - Aboveground
E00 - Piping Secondary Containment - None
H00 - Tank Leak Detection - None
A00 - Tank Internal Protection - None
J02 - Dispenser - Suction Dispenser
F00 - Pipe External Protection - None
I04 - Overfill - Product Level Gauge (A/G)
K01 - Spill Prevention - Catch Basin
D00 - Pipe Type - No Piping
G00 - Tank Secondary Containment - None
B00 - Tank External Protection - None
L00 - Piping Leak Detection - None

Tank Location:	3
Tank Type:	Steel/Carbon Steel/Iron
Tank Status:	In Service
Pipe Model:	Not reported
Install Date:	12/01/1998
Capacity Gallons:	275
Tightness Test Method:	NN
Date Test:	Not reported
Next Test Date:	Not reported
Date Tank Closed:	Not reported
Register:	True
Modified By:	MSBAPTIS
Last Modified:	02/25/2013

D21 **TENTH AVE. AUTO SERV. CORPORATION** **HIST UST** **U000404122**
NNE **10-02 CLINTONVILLE ST** **N/A**
< 1/8 **WHITESTONE, NY 11357**
0.099 mi.
524 ft. **Site 6 of 6 in cluster D**

Relative:
Lower

Actual:
34 ft.

HIST UST:

PBS Number:	2-360074
SPDES Number:	Not reported
Emergency Contact:	HENRY BRUSIC
Emergency Telephone:	(718) 746-3651
Operator:	HENRY BRUSIC
Operator Telephone:	(718) 746-3651
Owner Name:	TENTH AVENUE AUTO SERVICE CORPORATION
Owner Address:	10-02 CLINTONVILLE STREET
Owner City,St,Zip:	WHITESTONE, NY 11357
Owner Telephone:	(718) 746-3651
Owner Type:	Corporate/Commercial

TENTH AVE. AUTO SERV. CORPORATION (Continued) **U000404122**

Owner Subtype:	Not reported
Mailing Name:	TENTH AVENUE AUTO SERV. CORPORATION
Mailing Address:	10-02 CLINTONVILLE STREET
Mailing Address 2:	Not reported
Mailing City,St,Zip:	WHITESTONE, NY 11357
Mailing Contact:	HENRY BRUSIC
Mailing Telephone:	(718) 476-3651
Owner Mark:	Second Owner
Facility Status:	1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility.
Facility Addr2:	10002 CLINTONVILLE ST
SWIS ID:	6301
Old PBS Number:	Not reported
Facility Type:	RETAIL GASOLINE SALES
Inspected Date:	Not reported
Inspector:	Not reported
Inspection Result:	Not reported
Federal ID:	Not reported
Certification Flag:	False
Certification Date:	02/19/1998
Expiration Date:	02/17/2003
Renew Flag:	False
Renewal Date:	Not reported
Total Capacity:	12000
FAMT:	True
Facility Screen:	No Missing Data
Owner Screen:	No Missing Data
Tank Screen:	No Missing Data
Dead Letter:	False
CBS Number:	Not reported
Town or City:	NEW YORK CITY
County Code:	63
Town or City:	01
Region:	2
Tank Id:	001
Tank Location:	UNDERGROUND
Tank Status:	Closed-Removed
Install Date:	Not reported
Capacity (gals):	550
Product Stored:	UNLEADED GASOLINE
Tank Type:	Steel/carbon steel
Tank Internal:	Not reported
Tank External:	Not reported
Pipe Location:	Not reported
Pipe Type:	Not reported
Pipe Internal:	Not reported
Pipe External:	Not reported
Second Containment:	None
Leak Detection:	Other
Overfill Prot:	Not reported
Dispenser:	Suction
Date Tested:	12/01/1993
Next Test Date:	Not reported
Missing Data for Tank:	Minor Data Missing
Date Closed:	11/01/1998

TENTH AVE. AUTO SERV. CORPORATION (Continued) **U000404122**

Test Method:	Horner EZ Check
Deleted:	False
Updated:	True
Lat/long:	Not reported

Tank Id:	002
Tank Location:	UNDERGROUND
Tank Status:	Closed-Removed
Install Date:	Not reported
Capacity (gals):	550
Product Stored:	UNLEADED GASOLINE
Tank Type:	Steel/carbon steel
Tank Internal:	Not reported
Tank External:	Not reported
Pipe Location:	Not reported
Pipe Type:	Not reported
Pipe Internal:	Not reported
Pipe External:	Not reported
Second Containment:	None
Leak Detection:	Other
Overfill Prot:	Not reported
Dispenser:	Suction
Date Tested:	12/01/1993
Next Test Date:	Not reported
Missing Data for Tank:	Minor Data Missing
Date Closed:	11/01/1998
Test Method:	Horner EZ Check
Deleted:	False
Updated:	True
Lat/long:	Not reported

Tank Id:	003
Tank Location:	UNDERGROUND
Tank Status:	Closed-Removed
Install Date:	Not reported
Capacity (gals):	550
Product Stored:	DIESEL
Tank Type:	Steel/carbon steel
Tank Internal:	Not reported
Tank External:	Not reported
Pipe Location:	Not reported
Pipe Type:	Not reported
Pipe Internal:	Not reported
Pipe External:	Not reported
Second Containment:	None
Leak Detection:	Other
Overfill Prot:	Not reported
Dispenser:	Suction
Date Tested:	12/01/1993
Next Test Date:	Not reported
Missing Data for Tank:	Minor Data Missing
Date Closed:	11/01/1998
Test Method:	Horner EZ Check
Deleted:	False
Updated:	True

TENTH AVE. AUTO SERV. CORPORATION (Continued) **U000404122**

Lat/long: Not reported

Tank Id: 004
Tank Location: UNDERGROUND
Tank Status: Closed-Removed
Install Date: Not reported
Capacity (gals): 550
Product Stored: DIESEL
Tank Type: Steel/carbon steel
Tank Internal: Not reported
Tank External: Not reported
Pipe Location: Not reported
Pipe Type: Not reported
Pipe Internal: Not reported
Pipe External: Not reported
Second Containment: None
Leak Detection: Other
Overfill Prot: Not reported
Dispenser: Suction
Date Tested: 12/01/1993
Next Test Date: Not reported
Missing Data for Tank: Minor Data Missing
Date Closed: 11/01/1998
Test Method: Horner EZ Check
Deleted: False
Updated: True
Lat/long: Not reported

Tank Id: 005
Tank Location: UNDERGROUND
Tank Status: Closed-Removed
Install Date: Not reported
Capacity (gals): 550
Product Stored: UNLEADED GASOLINE
Tank Type: Steel/carbon steel
Tank Internal: Not reported
Tank External: Not reported
Pipe Location: Not reported
Pipe Type: Not reported
Pipe Internal: Not reported
Pipe External: Not reported
Second Containment: None
Leak Detection: Other
Overfill Prot: Not reported
Dispenser: Suction
Date Tested: 12/01/1993
Next Test Date: Not reported
Missing Data for Tank: Minor Data Missing
Date Closed: 11/01/1998
Test Method: Horner EZ Check
Deleted: False
Updated: True
Lat/long: Not reported

TENTH AVE. AUTO SERV. CORPORATION (Continued) **U000404122**

Tank Id:	006
Tank Location:	UNDERGROUND
Tank Status:	Closed-Removed
Install Date:	Not reported
Capacity (gals):	550
Product Stored:	UNLEADED GASOLINE
Tank Type:	Steel/carbon steel
Tank Internal:	Not reported
Tank External:	Not reported
Pipe Location:	Not reported
Pipe Type:	Not reported
Pipe Internal:	Not reported
Pipe External:	Not reported
Second Containment:	None
Leak Detection:	Other
Overfill Prot:	Not reported
Dispenser:	Suction
Date Tested:	12/01/1993
Next Test Date:	Not reported
Missing Data for Tank:	Minor Data Missing
Date Closed:	11/01/1998
Test Method:	Horner EZ Check
Deleted:	False
Updated:	True
Lat/long:	Not reported

Tank Id:	007
Tank Location:	UNDERGROUND
Tank Status:	Closed-Removed
Install Date:	Not reported
Capacity (gals):	550
Product Stored:	UNLEADED GASOLINE
Tank Type:	Steel/carbon steel
Tank Internal:	Not reported
Tank External:	Not reported
Pipe Location:	Not reported
Pipe Type:	Not reported
Pipe Internal:	Not reported
Pipe External:	Not reported
Second Containment:	None
Leak Detection:	Other
Overfill Prot:	Not reported
Dispenser:	Suction
Date Tested:	12/01/1993
Next Test Date:	Not reported
Missing Data for Tank:	Minor Data Missing
Date Closed:	11/01/1998
Test Method:	Horner EZ Check
Deleted:	False
Updated:	True
Lat/long:	Not reported

Tank Id:	008
Tank Location:	UNDERGROUND
Tank Status:	Closed-Removed

TENTH AVE. AUTO SERV. CORPORATION (Continued) **U000404122**

Install Date:	Not reported
Capacity (gals):	550
Product Stored:	UNLEADED GASOLINE
Tank Type:	Steel/carbon steel
Tank Internal:	Not reported
Tank External:	Not reported
Pipe Location:	Not reported
Pipe Type:	Not reported
Pipe Internal:	Not reported
Pipe External:	Not reported
Second Containment:	None
Leak Detection:	Other
Overfill Prot:	Not reported
Dispenser:	Suction
Date Tested:	12/01/1993
Next Test Date:	Not reported
Missing Data for Tank:	Minor Data Missing
Date Closed:	11/01/1998
Test Method:	Horner EZ Check
Deleted:	False
Updated:	True
Lat/long:	Not reported

Tank Id:	009
Tank Location:	UNDERGROUND
Tank Status:	In Service
Install Date:	19981201
Capacity (gals):	4000
Product Stored:	UNLEADED GASOLINE
Tank Type:	Fiberglass coated steel
Tank Internal:	None
Tank External:	Jacketed
Pipe Location:	Underground
Pipe Type:	GALVANIZED STEEL
Pipe Internal:	None
Pipe External:	12
Second Containment:	Vault (w/access)
Leak Detection:	14
Overfill Prot:	High Level Alarm, Catch Basin
Dispenser:	Suction
Date Tested:	Not reported
Next Test Date:	Not reported
Missing Data for Tank:	No Missing Data
Date Closed:	Not reported
Test Method:	Not reported
Deleted:	False
Updated:	True
Lat/long:	Not reported

Tank Id:	10
Tank Location:	UNDERGROUND
Tank Status:	In Service
Install Date:	19981201
Capacity (gals):	4000
Product Stored:	UNLEADED GASOLINE

TENTH AVE. AUTO SERV. CORPORATION (Continued) **U000404122**

Tank Type:	Fiberglass coated steel
Tank Internal:	None
Tank External:	Jacketed
Pipe Location:	Underground
Pipe Type:	GALVANIZED STEEL
Pipe Internal:	None
Pipe External:	12
Second Containment:	Vault (w/access)
Leak Detection:	14
Overfill Prot:	High Level Alarm, Catch Basin
Dispenser:	Suction
Date Tested:	Not reported
Next Test Date:	Not reported
Missing Data for Tank:	No Missing Data
Date Closed:	Not reported
Test Method:	Not reported
Deleted:	False
Updated:	True
Lat/long:	Not reported

Tank Id:	11
Tank Location:	UNDERGROUND
Tank Status:	In Service
Install Date:	19981201
Capacity (gals):	4000
Product Stored:	DIESEL
Tank Type:	Fiberglass coated steel
Tank Internal:	None
Tank External:	Jacketed
Pipe Location:	Underground
Pipe Type:	GALVANIZED STEEL
Pipe Internal:	None
Pipe External:	12
Second Containment:	Vault (w/access)
Leak Detection:	14
Overfill Prot:	High Level Alarm, Catch Basin
Dispenser:	Suction
Date Tested:	Not reported
Next Test Date:	Not reported
Missing Data for Tank:	No Missing Data
Date Closed:	Not reported
Test Method:	Not reported
Deleted:	False
Updated:	True
Lat/long:	Not reported

E22 **WHITESTONE FACTORIES** **UST** **U001835840**
SSE **150-31 12TH AVENUE** **HIST UST** **N/A**
< 1/8 **WHITESTONE, NY 11357**
0.108 mi.
568 ft. **Site 1 of 3 in cluster E**

Relative:
Higher

Actual:
52 ft.

UST:

Id/Status:	2-306509 / Unregulated
Region:	STATE
DEC Region:	2
Program Type:	PBS

WHITESTONE FACTORIES (Continued) **U001835840**

Expiration Date: N/A
UTM X: 600072.57859000005
UTM Y: 4516224.0688399998

Affiliation Records:
Site Id: 14048
Affiliation Type: Facility Owner
Company Name: JESSE MCGUIRE
Contact Type: Not reported
Contact Name: Not reported
Address1: 135 POST AVENUE
Address2: Not reported
City: WESTBURY
State: NY
Zip Code: 11590
Country Code: 001
Phone: (718) 784-0055
Phone Ext: Not reported
Email: Not reported
Fax Number: Not reported
Modified By: TRANSLAT
Date Last Modified: 3/4/2004

Site Id: 14048
Affiliation Type: Mail Contact
Company Name: WHITESTONE FACTORIES
Contact Type: Not reported
Contact Name: JESSE MCGUIRE
Address1: 150-31 12TH AVENUE
Address2: Not reported
City: WHITESTONE
State: NY
Zip Code: 11357
Country Code: 001
Phone: (718) 784-0055
Phone Ext: Not reported
Email: Not reported
Fax Number: Not reported
Modified By: TRANSLAT
Date Last Modified: 3/4/2004

Site Id: 14048
Affiliation Type: On-Site Operator
Company Name: WHITESTONE FACTORIES
Contact Type: Not reported
Contact Name: JESSE MCGUIRE
Address1: Not reported
Address2: Not reported
City: Not reported
State: NN
Zip Code: Not reported
Country Code: 001
Phone: (718) 784-0055
Phone Ext: Not reported
Email: Not reported
Fax Number: Not reported
Modified By: TRANSLAT
Date Last Modified: 3/4/2004

WHITESTONE FACTORIES (Continued) **U001835840**

Site Id:	14048
Affiliation Type:	Emergency Contact
Company Name:	JESSE MCGUIRE
Contact Type:	Not reported
Contact Name:	JESSE MCGUIRE
Address1:	Not reported
Address2:	Not reported
City:	Not reported
State:	NN
Zip Code:	Not reported
Country Code:	001
Phone:	(718) 784-0055
Phone Ext:	Not reported
Email:	Not reported
Fax Number:	Not reported
Modified By:	TRANSLAT
Date Last Modified:	3/4/2004

Tank Info:

Site ID:	14048
Tank Number:	01
Tank ID:	16487
Tank Status:	Closed - Removed
Tank Type:	Steel/carbon steel
Pipe Model:	Not reported

Equipment Records:

I00 - Overfill - None
B00 - Tank External Protection - None
A00 - Tank Internal Protection - None
D01 - Pipe Type - Steel/Carbon Steel/Iron
J02 - Dispenser - Suction Dispenser
C00 - Pipe Location - No Piping
F00 - Pipe External Protection - None
H00 - Tank Leak Detection - None
G00 - Tank Secondary Containment - None

Install Date:	Not reported
Capacity Gallons:	5000
Tightness Test Method:	02
Next Test Date:	Not reported
Date Tank Closed:	09/01/1994
Tank Location:	5
Tank Type:	Steel/carbon steel
Date Test:	05/01/1988
Registered:	True
Modified By:	TRANSLAT
Last Modified:	03/04/2004
Site ID:	14048
Tank Number:	02
Tank ID:	16486
Tank Status:	Closed - Removed
Tank Type:	Steel/carbon steel
Pipe Model:	Not reported

WHITESTONE FACTORIES (Continued) **U001835840**

Equipment Records:

I00 - Overfill - None
B00 - Tank External Protection - None
A00 - Tank Internal Protection - None
D01 - Pipe Type - Steel/Carbon Steel/Iron
J02 - Dispenser - Suction Dispenser
C00 - Pipe Location - No Piping
F00 - Pipe External Protection - None
H00 - Tank Leak Detection - None
G00 - Tank Secondary Containment - None

Install Date:	Not reported
Capacity Gallons:	3000
Tightness Test Method:	02
Next Test Date:	Not reported
Date Tank Closed:	09/01/1994
Tank Location:	5
Tank Type:	Steel/carbon steel
Date Test:	05/01/1988
Registered:	True
Modified By:	TRANSLAT
Last Modified:	03/04/2004

HIST UST:

PBS Number:	2-306509
SPDES Number:	Not reported
Emergency Contact:	JESSE MCGUIRE
Emergency Telephone:	(718) 784-0055
Operator:	JESSE MCGUIRE
Operator Telephone:	(718) 784-0055
Owner Name:	JESSE MCGUIRE
Owner Address:	135 POST AVENUE
Owner City,St,Zip:	WESTBURY, NY 11590
Owner Telephone:	(718) 784-0055
Owner Type:	Corporate/Commercial
Owner Subtype:	Not reported
Mailing Name:	WHITESTONE FACTORIES
Mailing Address:	150-31 12TH AVENUE
Mailing Address 2:	Not reported
Mailing City,St,Zip:	WHITESTONE, NY 11357
Mailing Contact:	JESSE MCGUIRE
Mailing Telephone:	(718) 784-0055
Owner Mark:	Second Owner
Facility Status:	2 - Unregulated by PBS (the total capacity is less than 1,101 gallons) and Subpart 360-14.
Facility Addr2:	150031 12 AVE
SWIS ID:	6301
Old PBS Number:	Not reported
Facility Type:	MANUFACTURING
Inspected Date:	Not reported
Inspector:	Not reported
Inspection Result:	Not reported
Federal ID:	Not reported
Certification Flag:	False
Certification Date:	Not reported
Expiration Date:	09/21/1999
Renew Flag:	False

WHITESTONE FACTORIES (Continued) **U001835840**

Renewal Date:	Not reported
Total Capacity:	0
FAMT:	True
Facility Screen:	No Missing Data
Owner Screen:	Minor Data Missing
Tank Screen:	0
Dead Letter:	False
CBS Number:	Not reported
Town or City:	NEW YORK CITY
County Code:	63
Town or City:	01
Region:	2

Tank Id:	01
Tank Location:	UNDERGROUND
Tank Status:	Closed-Removed
Install Date:	Not reported
Capacity (gals):	5000
Product Stored:	NOS 1,2, OR 4 FUEL OIL
Tank Type:	Steel/carbon steel
Tank Internal:	Not reported
Tank External:	Not reported
Pipe Location:	Not reported
Pipe Type:	STEEL/IRON
Pipe Internal:	Not reported
Pipe External:	Not reported
Second Containment:	None
Leak Detection:	None
Overfill Prot:	Not reported
Dispenser:	Suction
Date Tested:	05/01/1988
Next Test Date:	Not reported
Missing Data for Tank:	Minor Data Missing
Date Closed:	09/01/1994
Test Method:	Tank Auditor
Deleted:	False
Updated:	True
Lat/long:	Not reported

Tank Id:	02
Tank Location:	UNDERGROUND
Tank Status:	Closed-Removed
Install Date:	Not reported
Capacity (gals):	3000
Product Stored:	NOS 1,2, OR 4 FUEL OIL
Tank Type:	Steel/carbon steel
Tank Internal:	Not reported
Tank External:	Not reported
Pipe Location:	Not reported
Pipe Type:	STEEL/IRON
Pipe Internal:	Not reported
Pipe External:	Not reported
Second Containment:	None
Leak Detection:	None
Overfill Prot:	Not reported
Dispenser:	Suction

WHITESTONE FACTORIES (Continued) **U001835840**

Date Tested:	05/01/1988
Next Test Date:	Not reported
Missing Data for Tank:	Minor Data Missing
Date Closed:	09/01/1994
Test Method:	Tank Auditor
Deleted:	False
Updated:	True
Lat/long:	Not reported

E23 **150-47A 12TH ROAD** **UST** **U003128198**
SSE **150-47 12TH ROAD** **HIST UST** **N/A**
< 1/8 **WHITESTONE, NY 11357**
0.122 mi.
644 ft. **Site 2 of 3 in cluster E**

Relative:
Higher

Actual:
58 ft.

UST:

Id/Status:	2-600191 / Unregulated
Region:	STATE
DEC Region:	2
Program Type:	PBS
Expiration Date:	N/A
UTM X:	600135.90330000001
UTM Y:	4516127.88607

Affiliation Records:

Site Id:	22174
Affiliation Type:	Facility Owner
Company Name:	CHARLES LIPPERT
Contact Type:	Not reported
Contact Name:	Not reported
Address1:	150-47A 12TH ROAD
Address2:	Not reported
City:	WHITESTONE
State:	NY
Zip Code:	11357
Country Code:	001
Phone:	(718) 767-0044
Phone Ext:	Not reported
Email:	Not reported
Fax Number:	Not reported
Modified By:	TRANSLAT
Date Last Modified:	3/4/2004

Site Id:	22174
Affiliation Type:	Mail Contact
Company Name:	ROBERT T BUSCEMI-ARCHITECT P C
Contact Type:	Not reported
Contact Name:	ROBERT T BUSCEMI
Address1:	THE LANDMARK BUILDING-SUITE 407
Address2:	99 TULIP AVENUE
City:	FLORAL PARK
State:	NY
Zip Code:	11001
Country Code:	001
Phone:	(516) 437-4180
Phone Ext:	Not reported
Email:	Not reported
Fax Number:	Not reported

150-47A 12TH ROAD (Continued) **U003128198**

Modified By:	TRANSLAT
Date Last Modified:	3/4/2004
Site Id:	22174
Affiliation Type:	On-Site Operator
Company Name:	150-47A 12TH ROAD
Contact Type:	Not reported
Contact Name:	CHARLES LIPPERT
Address1:	Not reported
Address2:	Not reported
City:	Not reported
State:	NN
Zip Code:	Not reported
Country Code:	001
Phone:	(718) 767-1196
Phone Ext:	Not reported
Email:	Not reported
Fax Number:	Not reported
Modified By:	TRANSLAT
Date Last Modified:	3/4/2004
Site Id:	22174
Affiliation Type:	Emergency Contact
Company Name:	CHARLES LIPPERT
Contact Type:	Not reported
Contact Name:	GERRARD LIPPERT
Address1:	Not reported
Address2:	Not reported
City:	Not reported
State:	NN
Zip Code:	Not reported
Country Code:	001
Phone:	(718) 225-6282
Phone Ext:	Not reported
Email:	Not reported
Fax Number:	Not reported
Modified By:	TRANSLAT
Date Last Modified:	3/4/2004

Tank Info:

Site ID:	22174
Tank Number:	001
Tank ID:	41481
Tank Status:	Closed Prior to Micro Conversion, 03/91
Tank Type:	Steel/carbon steel
Pipe Model:	Not reported

Equipment Records:

A00 - Tank Internal Protection - None
D02 - Pipe Type - Galvanized Steel
J02 - Dispenser - Suction Dispenser
F00 - Pipe External Protection - None
H00 - Tank Leak Detection - None
B00 - Tank External Protection - None
C02 - Pipe Location - Underground/On-ground
G03 - Tank Secondary Containment - Vault (w/o access)

150-47A 12TH ROAD (Continued) **U003128198**

I00 - Overfill - None
Install Date: 07/01/1991
Capacity Gallons: 550
Tightness Test Method: NN
Next Test Date: Not reported
Date Tank Closed: 07/01/1991
Tank Location: 5
Tank Type: Steel/carbon steel
Date Test: Not reported
Registered: True
Modified By: TRANSLAT
Last Modified: 03/04/2004

Site ID: 22174

Tank Number: 002
Tank ID: 41482
Tank Status: Closed Prior to Micro Conversion, 03/91
Tank Type: Steel/carbon steel
Pipe Model: Not reported

Equipment Records:

A00 - Tank Internal Protection - None
D02 - Pipe Type - Galvanized Steel
J02 - Dispenser - Suction Dispenser
H00 - Tank Leak Detection - None
F00 - Pipe External Protection - None
B00 - Tank External Protection - None
C02 - Pipe Location - Underground/On-ground
G03 - Tank Secondary Containment - Vault (w/o access)
I00 - Overfill - None
Install Date: 07/01/1991
Capacity Gallons: 550
Tightness Test Method: NN
Next Test Date: Not reported
Date Tank Closed: 07/01/1991
Tank Location: 5
Tank Type: Steel/carbon steel
Date Test: Not reported
Registered: True
Modified By: TRANSLAT
Last Modified: 03/04/2004

Site ID: 22174

Tank Number: 003
Tank ID: 41483
Tank Status: Closed Prior to Micro Conversion, 03/91
Tank Type: Steel/carbon steel
Pipe Model: Not reported

Equipment Records:

A00 - Tank Internal Protection - None
D02 - Pipe Type - Galvanized Steel
J02 - Dispenser - Suction Dispenser
F00 - Pipe External Protection - None
H00 - Tank Leak Detection - None
B00 - Tank External Protection - None

150-47A 12TH ROAD (Continued) **U003128198**

C02 - Pipe Location - Underground/On-ground
G03 - Tank Secondary Containment - Vault (w/o access)
I00 - Overfill - None

Install Date: 07/01/1991
Capacity Gallons: 550
Tightness Test Method: NN
Next Test Date: Not reported
Date Tank Closed: 07/01/1991
Tank Location: 5
Tank Type: Steel/carbon steel
Date Test: Not reported
Registered: True
Modified By: TRANSLAT
Last Modified: 03/04/2004

Site ID: 22174

Tank Number: 004
Tank ID: 41484
Tank Status: Closed Prior to Micro Conversion, 03/91
Tank Type: Steel/carbon steel
Pipe Model: Not reported

Equipment Records:

A00 - Tank Internal Protection - None
D02 - Pipe Type - Galvanized Steel
J02 - Dispenser - Suction Dispenser
F00 - Pipe External Protection - None
H00 - Tank Leak Detection - None
B00 - Tank External Protection - None
C02 - Pipe Location - Underground/On-ground
G03 - Tank Secondary Containment - Vault (w/o access)
I00 - Overfill - None

Install Date: 07/01/1991
Capacity Gallons: 550
Tightness Test Method: NN
Next Test Date: Not reported
Date Tank Closed: 07/01/1991
Tank Location: 5
Tank Type: Steel/carbon steel
Date Test: Not reported
Registered: True
Modified By: TRANSLAT
Last Modified: 03/04/2004

Site ID: 22174

Tank Number: 005
Tank ID: 41485
Tank Status: Closed Prior to Micro Conversion, 03/91
Tank Type: Steel/carbon steel
Pipe Model: Not reported

Equipment Records:

A00 - Tank Internal Protection - None
D02 - Pipe Type - Galvanized Steel
J02 - Dispenser - Suction Dispenser
F00 - Pipe External Protection - None

150-47A 12TH ROAD (Continued) **U003128198**

H00 - Tank Leak Detection - None
B00 - Tank External Protection - None
C02 - Pipe Location - Underground/On-ground
G03 - Tank Secondary Containment - Vault (w/o access)
I00 - Overfill - None

Install Date: 07/01/1991
Capacity Gallons: 550
Tightness Test Method: NN
Next Test Date: Not reported
Date Tank Closed: 07/01/1991
Tank Location: 5
Tank Type: Steel/carbon steel
Date Test: Not reported
Registered: True
Modified By: TRANSLAT
Last Modified: 03/04/2004

Site ID: 22174

Tank Number: 006
Tank ID: 41486
Tank Status: Closed Prior to Micro Conversion, 03/91
Tank Type: Steel/carbon steel
Pipe Model: Not reported

Equipment Records:

A00 - Tank Internal Protection - None
D02 - Pipe Type - Galvanized Steel
J02 - Dispenser - Suction Dispenser
F00 - Pipe External Protection - None
H00 - Tank Leak Detection - None
B00 - Tank External Protection - None
C02 - Pipe Location - Underground/On-ground
G03 - Tank Secondary Containment - Vault (w/o access)
I00 - Overfill - None

Install Date: 07/01/1991
Capacity Gallons: 550
Tightness Test Method: NN
Next Test Date: Not reported
Date Tank Closed: 07/01/1991
Tank Location: 5
Tank Type: Steel/carbon steel
Date Test: Not reported
Registered: True
Modified By: TRANSLAT
Last Modified: 03/04/2004

Site ID: 22174

Tank Number: 007
Tank ID: 41487
Tank Status: Closed Prior to Micro Conversion, 03/91
Tank Type: Steel/carbon steel
Pipe Model: Not reported

Equipment Records:

A00 - Tank Internal Protection - None
D02 - Pipe Type - Galvanized Steel

150-47A 12TH ROAD (Continued) **U003128198**

J02 - Dispenser - Suction Dispenser
F00 - Pipe External Protection - None
H00 - Tank Leak Detection - None
B00 - Tank External Protection - None
C02 - Pipe Location - Underground/On-ground
G03 - Tank Secondary Containment - Vault (w/o access)
I00 - Overfill - None

Install Date: 07/01/1991
Capacity Gallons: 550
Tightness Test Method: NN
Next Test Date: Not reported
Date Tank Closed: 07/01/1991
Tank Location: 5
Tank Type: Steel/carbon steel
Date Test: Not reported
Registered: True
Modified By: TRANSLAT
Last Modified: 03/04/2004

Site ID: 22174

Tank Number: 008
Tank ID: 41488
Tank Status: Closed Prior to Micro Conversion, 03/91
Tank Type: Steel/carbon steel
Pipe Model: Not reported

Equipment Records:

A00 - Tank Internal Protection - None
D02 - Pipe Type - Galvanized Steel
J02 - Dispenser - Suction Dispenser
F00 - Pipe External Protection - None
H00 - Tank Leak Detection - None
B00 - Tank External Protection - None
C02 - Pipe Location - Underground/On-ground
G03 - Tank Secondary Containment - Vault (w/o access)
I00 - Overfill - None

Install Date: 07/01/1991
Capacity Gallons: 550
Tightness Test Method: NN
Next Test Date: Not reported
Date Tank Closed: 07/01/1991
Tank Location: 5
Tank Type: Steel/carbon steel
Date Test: Not reported
Registered: True
Modified By: TRANSLAT
Last Modified: 03/04/2004

Site ID: 22174

Tank Number: 009
Tank ID: 41489
Tank Status: Closed Prior to Micro Conversion, 03/91
Tank Type: Steel/carbon steel
Pipe Model: Not reported

Equipment Records:

150-47A 12TH ROAD (Continued) **U003128198**

A00 - Tank Internal Protection - None
D02 - Pipe Type - Galvanized Steel
J02 - Dispenser - Suction Dispenser
H00 - Tank Leak Detection - None
F00 - Pipe External Protection - None
B00 - Tank External Protection - None
C02 - Pipe Location - Underground/On-ground
G03 - Tank Secondary Containment - Vault (w/o access)
I00 - Overfill - None

Install Date:	07/01/1991
Capacity Gallons:	550
Tightness Test Method:	NN
Next Test Date:	Not reported
Date Tank Closed:	07/01/1991
Tank Location:	5
Tank Type:	Steel/carbon steel
Date Test:	Not reported
Registered:	True
Modified By:	TRANSLAT
Last Modified:	03/04/2004

HIST UST:

PBS Number:	2-600191
SPDES Number:	Not reported
Emergency Contact:	GERRARD LIPPERT
Emergency Telephone:	(718) 225-6282
Operator:	CHARLES LIPPERT
Operator Telephone:	(718) 767-1196
Owner Name:	CHARLES LIPPERT
Owner Address:	150-47A 12TH ROAD
Owner City,St,Zip:	WHITESTONE, NY 11357
Owner Telephone:	(718) 767-0044
Owner Type:	Private Resident
Owner Subtype:	Not reported
Mailing Name:	ROBERT T BUSCEMI-ARCHITECT P C
Mailing Address:	THE LANDMARK BUILDING-SUITE 407
Mailing Address 2:	99 TULIP AVENUE
Mailing City,St,Zip:	FLORAL PARK, NY 11001
Mailing Contact:	ROBERT T BUSCEMI
Mailing Telephone:	(516) 437-4180
Owner Mark:	First Owner
Facility Status:	2 - Unregulated by PBS (the total capacity is less than 1,101 gallons) and Subpart 360-14.
Facility Addr2:	150047 12TH ROAD
SWIS ID:	6301
Old PBS Number:	Not reported
Facility Type:	Not reported
Inspected Date:	Not reported
Inspector:	Not reported
Inspection Result:	Not reported
Federal ID:	Not reported
Certification Flag:	False
Certification Date:	Not reported
Expiration Date:	06/28/1996
Renew Flag:	False
Renewal Date:	Not reported
Total Capacity:	0

150-47A 12TH ROAD (Continued) **U003128198**

FAMT:	True
Facility Screen:	Minor Data Missing
Owner Screen:	Minor Data Missing
Tank Screen:	0
Dead Letter:	False
CBS Number:	Not reported
Town or City:	NEW YORK CITY
County Code:	63
Town or City:	01
Region:	2

Tank Id:	001
Tank Location:	UNDERGROUND
Tank Status:	Closed Before April 1, 1991
Install Date:	19910701
Capacity (gals):	550
Product Stored:	UNLEADED GASOLINE
Tank Type:	Steel/carbon steel
Tank Internal:	None
Tank External:	None
Pipe Location:	Underground
Pipe Type:	GALVANIZED STEEL
Pipe Internal:	None
Pipe External:	None
Second Containment:	Diking
Leak Detection:	None
Overfill Prot:	None
Dispenser:	Suction
Date Tested:	Not reported
Next Test Date:	Not reported
Missing Data for Tank:	No Missing Data
Date Closed:	07/01/1991
Test Method:	Not reported
Deleted:	False
Updated:	True
Lat/long:	Not reported

Tank Id:	002
Tank Location:	UNDERGROUND
Tank Status:	Closed Before April 1, 1991
Install Date:	19910701
Capacity (gals):	550
Product Stored:	UNLEADED GASOLINE
Tank Type:	Steel/carbon steel
Tank Internal:	None
Tank External:	None
Pipe Location:	Underground
Pipe Type:	GALVANIZED STEEL
Pipe Internal:	None
Pipe External:	None
Second Containment:	Diking
Leak Detection:	None
Overfill Prot:	None
Dispenser:	Suction
Date Tested:	Not reported
Next Test Date:	Not reported

150-47A 12TH ROAD (Continued) **U003128198**

Missing Data for Tank: No Missing Data
Date Closed: 07/01/1991
Test Method: Not reported
Deleted: False
Updated: True
Lat/long: Not reported

Tank Id: 003
Tank Location: UNDERGROUND
Tank Status: Closed Before April 1, 1991
Install Date: 19910701
Capacity (gals): 550
Product Stored: UNLEADED GASOLINE
Tank Type: Steel/carbon steel
Tank Internal: None
Tank External: None
Pipe Location: Underground
Pipe Type: GALVANIZED STEEL
Pipe Internal: None
Pipe External: None
Second Containment: Diking
Leak Detection: None
Overfill Prot: None
Dispenser: Suction
Date Tested: Not reported
Next Test Date: Not reported
Missing Data for Tank: No Missing Data
Date Closed: 07/01/1991
Test Method: Not reported
Deleted: False
Updated: True
Lat/long: Not reported

Tank Id: 004
Tank Location: UNDERGROUND
Tank Status: Closed Before April 1, 1991
Install Date: 19910701
Capacity (gals): 550
Product Stored: UNLEADED GASOLINE
Tank Type: Steel/carbon steel
Tank Internal: None
Tank External: None
Pipe Location: Underground
Pipe Type: GALVANIZED STEEL
Pipe Internal: None
Pipe External: None
Second Containment: Diking
Leak Detection: None
Overfill Prot: None
Dispenser: Suction
Date Tested: Not reported
Next Test Date: Not reported
Missing Data for Tank: No Missing Data
Date Closed: 07/01/1991
Test Method: Not reported

150-47A 12TH ROAD (Continued) **U003128198**

Deleted:	False
Updated:	True
Lat/long:	Not reported

Tank Id:	005
Tank Location:	UNDERGROUND
Tank Status:	Closed Before April 1, 1991
Install Date:	19910701
Capacity (gals):	550
Product Stored:	UNLEADED GASOLINE
Tank Type:	Steel/carbon steel
Tank Internal:	None
Tank External:	None
Pipe Location:	Underground
Pipe Type:	GALVANIZED STEEL
Pipe Internal:	None
Pipe External:	None
Second Containment:	Diking
Leak Detection:	None
Overfill Prot:	None
Dispenser:	Suction
Date Tested:	Not reported
Next Test Date:	Not reported
Missing Data for Tank:	No Missing Data
Date Closed:	07/01/1991
Test Method:	Not reported
Deleted:	False
Updated:	True
Lat/long:	Not reported

Tank Id:	006
Tank Location:	UNDERGROUND
Tank Status:	Closed Before April 1, 1991
Install Date:	19910701
Capacity (gals):	550
Product Stored:	UNLEADED GASOLINE
Tank Type:	Steel/carbon steel
Tank Internal:	None
Tank External:	None
Pipe Location:	Underground
Pipe Type:	GALVANIZED STEEL
Pipe Internal:	None
Pipe External:	None
Second Containment:	Diking
Leak Detection:	None
Overfill Prot:	None
Dispenser:	Suction
Date Tested:	Not reported
Next Test Date:	Not reported
Missing Data for Tank:	No Missing Data
Date Closed:	07/01/1991
Test Method:	Not reported
Deleted:	False
Updated:	True
Lat/long:	Not reported

150-47A 12TH ROAD (Continued) **U003128198**

Tank Id:	007
Tank Location:	UNDERGROUND
Tank Status:	Closed Before April 1, 1991
Install Date:	19910701
Capacity (gals):	550
Product Stored:	UNLEADED GASOLINE
Tank Type:	Steel/carbon steel
Tank Internal:	None
Tank External:	None
Pipe Location:	Underground
Pipe Type:	GALVANIZED STEEL
Pipe Internal:	None
Pipe External:	None
Second Containment:	Diking
Leak Detection:	None
Overfill Prot:	None
Dispenser:	Suction
Date Tested:	Not reported
Next Test Date:	Not reported
Missing Data for Tank:	No Missing Data
Date Closed:	07/01/1991
Test Method:	Not reported
Deleted:	False
Updated:	True
Lat/long:	Not reported

Tank Id:	008
Tank Location:	UNDERGROUND
Tank Status:	Closed Before April 1, 1991
Install Date:	19910701
Capacity (gals):	550
Product Stored:	UNLEADED GASOLINE
Tank Type:	Steel/carbon steel
Tank Internal:	None
Tank External:	None
Pipe Location:	Underground
Pipe Type:	GALVANIZED STEEL
Pipe Internal:	None
Pipe External:	None
Second Containment:	Diking
Leak Detection:	None
Overfill Prot:	None
Dispenser:	Suction
Date Tested:	Not reported
Next Test Date:	Not reported
Missing Data for Tank:	No Missing Data
Date Closed:	07/01/1991
Test Method:	Not reported
Deleted:	False
Updated:	True
Lat/long:	Not reported

Tank Id:	009
Tank Location:	UNDERGROUND
Tank Status:	Closed Before April 1, 1991

150-47A 12TH ROAD (Continued) **U003128198**

Install Date:	19910701
Capacity (gals):	550
Product Stored:	UNLEADED GASOLINE
Tank Type:	Steel/carbon steel
Tank Internal:	None
Tank External:	None
Pipe Location:	Underground
Pipe Type:	GALVANIZED STEEL
Pipe Internal:	None
Pipe External:	None
Second Containment:	Diking
Leak Detection:	None
Overfill Prot:	None
Dispenser:	Suction
Date Tested:	Not reported
Next Test Date:	Not reported
Missing Data for Tank:	No Missing Data
Date Closed:	07/01/1991
Test Method:	Not reported
Deleted:	False
Updated:	True
Lat/long:	Not reported

E24 **EDR US Hist Auto Stat** **1015238895**
SSE **15042 12TH RD** **N/A**
< 1/8 **WHITESTONE, NY 11357**
0.123 mi.
648 ft. **Site 3 of 3 in cluster E**

Relative:
Higher

Actual:
60 ft.

EDR Historical Auto Stations:

Name:	IAL E & A AUTO DETAILING
Year:	2003
Address:	15042 12TH RD
Name:	E & A AUTO DTLNG & BODY WORKS
Year:	2004
Address:	15042 12TH RD
Name:	IAL E & A AUTO DETAILING
Year:	2008
Address:	15042 12TH RD
Name:	IAL E & A AUTO DETAILING
Year:	2010
Address:	15042 12TH RD
Name:	IAL E & A AUTO DETAILING
Year:	2011
Address:	15042 12TH RD
Name:	IAL E & A AUTO DETAILING
Year:	2012
Address:	15042 12TH RD

F25
South
1/8-1/4
0.126 mi.
664 ft.

15018 12TH RD
WHITESTONE, NY 11357

Site 1 of 4 in cluster F

EDR US Hist Auto Stat **1015238313**
N/A

Relative:
Higher

Actual:
68 ft.

EDR Historical Auto Stations:

Name:	FOUR TWOS PRIVATE CAR SERVICE
Year:	2002
Address:	15018 12TH RD

F26
South
1/8-1/4
0.134 mi.
710 ft.

VILLAGE FRENCH CLEANERS
12-39 150TH STREET
WHITESTONE, NY 11357

Site 2 of 4 in cluster F

MANIFEST **S110247804**
DRYCLEANERS **N/A**

Relative:
Higher

Actual:
73 ft.

NY MANIFEST:

EPA ID:	NYD982278541
Country:	USA
Mailing Name:	VILLAGE FRENCH CLEANERS
Mailing Contact:	VILLAGE FRENCH CLEANERS
Mailing Address:	12-39 150TH STREET
Mailing Address 2:	Not reported
Mailing City:	WHITESTONE
Mailing State:	NY
Mailing Zip:	11357
Mailing Zip4:	Not reported
Mailing Country:	USA
Mailing Phone:	718-767-0822

NY MANIFEST:

No Manifest Records Available

DRYCLEANERS:

Facility ID:	2-6302-00729
Phone Number:	718-767-0822
Region:	Not reported
Registration Effective Date:	N/A
Inspection Date:	04MAR25
Install Date:	87
Drop Shop:	Not reported
Shutdown:	Y
Alternate Solvent:	Not reported
Current Business:	Not reported

F27
South
1/8-1/4
0.134 mi.
710 ft.

RAMANO CLEANERS INC
12-39 150TH ST
QUEENS, NY 11357

Site 3 of 4 in cluster F

RCRA NonGen / NLR **1004756836**
FINDS **NYD982278541**

Relative:
Higher

Actual:
73 ft.

RCRA NonGen / NLR:

Date form received by agency:	01/01/2007
Facility name:	RAMANO CLEANERS INC
Facility address:	12-39 150TH ST
	QUEENS, NY 11357

RAMANO CLEANERS INC (Continued) **1004756836**

EPA ID: NYD982278541
Mailing address: 150TH ST
QUEENS, NY 11357
Contact: NICHOLAS ROMANO
Contact address: 150TH ST
QUEENS, NY 11357
Contact country: US
Contact telephone: (718) 767-0822
Contact email: Not reported
EPA Region: 02
Classification: Non-Generator
Description: Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:
Owner/operator name: ROMANO CLEANERS INC
Owner/operator address: 12-39 150TH ST
QUEENS, NY 11357
Owner/operator country: US
Owner/operator telephone: (718) 767-0822
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Owner/operator name: ROMANO CLEANERS INC
Owner/operator address: 12-39 150TH ST
QUEENS, NY 11357
Owner/operator country: US
Owner/operator telephone: (718) 767-0822
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Historical Generators:
Date form received by agency: 01/01/2006
Facility name: RAMANO CLEANERS INC
Classification: Not a generator, verified

RAMANO CLEANERS INC (Continued) **1004756836**

Date form received by agency: 03/29/1996
Facility name: RAMANO CLEANERS INC
Classification: Conditionally Exempt Small Quantity Generator

Violation Status: No violations found

FINDS:

Registry ID: 110008026233

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

F28 **EDR US Hist Cleaners** **1014984335**
South **1241 150TH ST** **N/A**
1/8-1/4 **WHITESTONE, NY 11357**
0.136 mi.
720 ft. **Site 4 of 4 in cluster F**

Relative:
Higher

Actual:
72 ft.

EDR Historical Cleaners:

Name: WHITESTONE VILLAGE LAUNDROMAT
Year: 1999
Address: 1241 150TH ST

Name: WHITESTONE VILLAGE LAUNDROMAT
Year: 2000
Address: 1241 150TH ST

Name: MAGIC LAUNDROMAT INC
Year: 2003
Address: 1241 150TH ST

Name: WHITESTONE LAUNDROMAT
Year: 2005
Address: 1241 150TH ST

Name: WHITESTONE LAUNDROMAT
Year: 2006
Address: 1241 150TH ST

Name: WHITESTONE LAUNDROMAT
Year: 2007
Address: 1241 150TH ST

Name: WHITESTONE LAUNDROMAT
Year: 2008
Address: 1241 150TH ST

Name: WHITESTONE LAUNDROMAT
Year: 2009
Address: 1241 150TH ST

(Continued) **1014984335**

Name: WHITESTONE LAUNDROMAT
Year: 2010
Address: 1241 150TH ST

Name: WHITESTONE LAUNDROMAT
Year: 2011
Address: 1241 150TH ST

Name: WHITESTONE LAUNDROMAT
Year: 2012
Address: 1241 150TH ST

G29 **EDR US Hist Auto Stat** **1015188755**
SE **1230 CLINTONVILLE ST** **N/A**
1/8-1/4 **WHITESTONE, NY 11357**
0.139 mi.
736 ft. **Site 1 of 4 in cluster G**

Relative:
Lower

Actual:
45 ft.

EDR Historical Auto Stations:

Name: REACTION AUTO SERVICE
Year: 2001
Address: 1230 CLINTONVILLE ST

Name: REACTION AUTO SERVICE CTR
Year: 2002
Address: 1230 CLINTONVILLE ST

Name: REACTION AUTO SERVICE CTR
Year: 2003
Address: 1230 CLINTONVILLE ST

Name: AZ AUTOMOTIVE INC
Year: 2004
Address: 1230 CLINTONVILLE ST

Name: REACTION AUTO SERVICE CENTER
Year: 2005
Address: 1230 CLINTONVILLE ST

Name: AZ AUTOMOTIVE INC
Year: 2006
Address: 1230 CLINTONVILLE ST

Name: REACTION AUTO SERVICE CENTER
Year: 2007
Address: 1230 CLINTONVILLE ST

Name: REACTION AUTO SERVICE CENTER
Year: 2008
Address: 1230 CLINTONVILLE ST

Name: REACTION AUTOMOBILE SERVICE CENTER
Year: 2011
Address: 1230 CLINTONVILLE ST

Name: REACTION AUTO SVCE CENTER
Year: 2012
Address: 1230 CLINTONVILLE ST

H30 **STAR CLEANERS** **RCRA NonGen / NLR** **1000350990**
South **12-56 150TH ST** **FINDS** **NYD072736697**
1/8-1/4 **WHITESTONE, NY 11357** **MANIFEST**
0.141 mi.
746 ft. **Site 1 of 3 in cluster H**

Relative:
Higher

Actual:
72 ft.

RCRA NonGen / NLR:

Date form received by agency:	01/01/2007
Facility name:	STAR CLEANERS
Facility address:	12-56 150TH ST WHITESTONE, NY 11357
EPA ID:	NYD072736697
Mailing address:	150TH ST WHITESTONE, NY 11357
Contact:	Not reported
Contact address:	150TH ST WHITESTONE, NY 11357
Contact country:	US
Contact telephone:	Not reported
Contact email:	Not reported
EPA Region:	02
Classification:	Non-Generator
Description:	Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:

Owner/operator name:	KEN GAINER
Owner/operator address:	NOT REQUIRED NOT REQUIRED, WY 99999
Owner/operator country:	US
Owner/operator telephone:	(212) 555-1212
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Owner/operator name:	KEN GAINER
Owner/operator address:	NOT REQUIRED NOT REQUIRED, WY 99999
Owner/operator country:	US
Owner/operator telephone:	(212) 555-1212
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No

STAR CLEANERS (Continued) **1000350990**

Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Historical Generators:
Date form received by agency: 01/01/2006
Facility name: STAR CLEANERS
Classification: Not a generator, verified

Date form received by agency: 03/30/1995
Facility name: STAR CLEANERS
Classification: Not a generator, verified

Date form received by agency: 07/16/1985
Facility name: STAR CLEANERS
Classification: Large Quantity Generator

Violation Status: No violations found

FINDS:

Registry ID: 110004367514

Environmental Interest/Information System

AFS (Aerometric Information Retrieval System (AIRS) Facility Subsystem) replaces the former Compliance Data System (CDS), the National Emission Data System (NEDS), and the Storage and Retrieval of Aerometric Data (SAROAD). AIRS is the national repository for information concerning airborne pollution in the United States. AFS is used to track emissions and compliance data from industrial plants. AFS data are utilized by states to prepare State Implementation Plans to comply with regulatory programs and by EPA as an input for the estimation of total national emissions. AFS is undergoing a major redesign to support facility operating permits required under Title V of the Clean Air Act.

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

FIS (New York - Facility Information System) is New York's Department of Environmental Conservation (DEC) information system for tracking environmental facility information found across the State.

NY MANIFEST:
EPA ID: NYD072736697
Country: USA
Mailing Name: STAR CLEANERS
Mailing Contact: STAR CLEANERS
Mailing Address: 12-56 150TH STREET
Mailing Address 2: Not reported
Mailing City: WHITESTONE
Mailing State: NY

STAR CLEANERS (Continued) **1000350990**

Mailing Zip: 11357
Mailing Zip4: Not reported
Mailing Country: USA
Mailing Phone: 718-767-1866

Document ID: NYC1586665
Manifest Status: Completed after the designated time period for a TSDF to get a copy to the DEC
Trans1 State ID: AP4503NY
Trans2 State ID: Not reported
Generator Ship Date: 920424
Trans1 Recv Date: 920424
Trans2 Recv Date: Not reported
TSD Site Recv Date: 920424
Part A Recv Date: Not reported
Part B Recv Date: 920601
Generator EPA ID: NYD072736697
Trans1 EPA ID: ILD051060408
Trans2 EPA ID: Not reported
TSDF ID: NYD980785760
Waste Code: F002 - HALO SOLV + STILL BOTTOMS FM REC OF SOLV
Quantity: 00195
Units: P - Pounds
Number of Containers: 001
Container Type: DF - Fiberboard or plastic drums (glass)
Handling Method: B Incineration, heat recovery, burning.
Specific Gravity: 100
Year: 92

Document ID: NYC1854066
Manifest Status: Completed copy
Trans1 State ID: AP4503NY
Trans2 State ID: Not reported
Generator Ship Date: 920925
Trans1 Recv Date: 920925
Trans2 Recv Date: Not reported
TSD Site Recv Date: 920925
Part A Recv Date: 921022
Part B Recv Date: 921006
Generator EPA ID: NYD072736697
Trans1 EPA ID: ILD051060408
Trans2 EPA ID: Not reported
TSDF ID: NYD980785760
Waste Code: F002 - HALO SOLV + STILL BOTTOMS FM REC OF SOLV
Quantity: 00195
Units: P - Pounds
Number of Containers: 001
Container Type: DF - Fiberboard or plastic drums (glass)
Handling Method: B Incineration, heat recovery, burning.
Specific Gravity: 100
Year: 92

Document ID: NYC1812756
Manifest Status: Completed copy
Trans1 State ID: AP4503NY

STAR CLEANERS (Continued) **1000350990**

Trans2 State ID:	Not reported
Generator Ship Date:	920825
Trans1 Recv Date:	920825
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	920825
Part A Recv Date:	920904
Part B Recv Date:	920903
Generator EPA ID:	NYD072736697
Trans1 EPA ID:	ILD051060408
Trans2 EPA ID:	Not reported
TSDF ID:	NYD980785760
Waste Code:	F002 - HALO SOLV + STILL BOTTOMS FM REC OF SOLV
Quantity:	00060
Units:	P - Pounds
Number of Containers:	001
Container Type:	DM - Metal drums, barrels
Handling Method:	B Incineration, heat recovery, burning.
Specific Gravity:	100
Year:	92

Document ID:	NYC3483674
Manifest Status:	Completed copy
Trans1 State ID:	AP4503NY
Trans2 State ID:	Not reported
Generator Ship Date:	950223
Trans1 Recv Date:	950223
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	950223
Part A Recv Date:	950308
Part B Recv Date:	950307
Generator EPA ID:	NYD072736697
Trans1 EPA ID:	ILD984908202
Trans2 EPA ID:	Not reported
TSDF ID:	NYD980785760
Waste Code:	F002 - HALO SOLV + STILL BOTTOMS FM REC OF SOLV
Quantity:	00060
Units:	P - Pounds
Number of Containers:	001
Container Type:	DM - Metal drums, barrels
Handling Method:	B Incineration, heat recovery, burning.
Specific Gravity:	100
Year:	95

Document ID:	NYC3664765
Manifest Status:	Completed copy
Trans1 State ID:	AP4503NY
Trans2 State ID:	Not reported
Generator Ship Date:	950907
Trans1 Recv Date:	950907
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	950907
Part A Recv Date:	950919
Part B Recv Date:	950919
Generator EPA ID:	NYD072736697
Trans1 EPA ID:	ILD984908202

STAR CLEANERS (Continued) **1000350990**

Trans2 EPA ID:	Not reported
TSDF ID:	NYD980785760
Waste Code:	F002 - HALO SOLV + STILL BOTTOMS FM REC OF SOLV
Quantity:	00060
Units:	P - Pounds
Number of Containers:	001
Container Type:	DM - Metal drums, barrels
Handling Method:	B Incineration, heat recovery, burning.
Specific Gravity:	100
Year:	95

Document ID:	NYC3846262
Manifest Status:	Completed copy
Trans1 State ID:	AP4503NY
Trans2 State ID:	Not reported
Generator Ship Date:	950518
Trans1 Recv Date:	950518
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	950518
Part A Recv Date:	950531
Part B Recv Date:	950525
Generator EPA ID:	NYD072736697
Trans1 EPA ID:	ILD984908202
Trans2 EPA ID:	Not reported
TSDF ID:	NYD980785760
Waste Code:	F002 - HALO SOLV + STILL BOTTOMS FM REC OF SOLV
Quantity:	00060
Units:	P - Pounds
Number of Containers:	001
Container Type:	DM - Metal drums, barrels
Handling Method:	B Incineration, heat recovery, burning.
Specific Gravity:	100
Year:	95

Document ID:	NYA9833488
Manifest Status:	Completed copy
Trans1 State ID:	AP4503NY
Trans2 State ID:	Not reported
Generator Ship Date:	891222
Trans1 Recv Date:	891222
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	891222
Part A Recv Date:	891229
Part B Recv Date:	900103
Generator EPA ID:	NYD072736697
Trans1 EPA ID:	ILD051060408
Trans2 EPA ID:	Not reported
TSDF ID:	NYD980785760
Waste Code:	F002 - HALO SOLV + STILL BOTTOMS FM REC OF SOLV
Quantity:	00195
Units:	P - Pounds
Number of Containers:	001
Container Type:	DF - Fiberboard or plastic drums (glass)
Handling Method:	B Incineration, heat recovery, burning.
Specific Gravity:	100

STAR CLEANERS (Continued) **1000350990**

Year: 89

Document ID: NYA9771085
Manifest Status: Completed copy
Trans1 State ID: AP4503NY
Trans2 State ID: Not reported
Generator Ship Date: 891109
Trans1 Recv Date: 891109
Trans2 Recv Date: Not reported
TSD Site Recv Date: 891109
Part A Recv Date: 891120
Part B Recv Date: 891121
Generator EPA ID: NYD072736697
Trans1 EPA ID: ILD051060408
Trans2 EPA ID: Not reported
TSDF ID: NYD980785760
Waste Code: F002 - HALO SOLV + STILL BOTTOMS FM REC OF SOLV
Quantity: 00080
Units: P - Pounds
Number of Containers: 001
Container Type: CF - Fiber or plastic boxes, cartons
Handling Method: B Incineration, heat recovery, burning.
Specific Gravity: 100
Year: 89

Document ID: NYC5934633
Manifest Status: Not reported
Trans1 State ID: ILD984908202
Trans2 State ID: SCD987574647
Generator Ship Date: 09/28/1999
Trans1 Recv Date: 09/28/1999
Trans2 Recv Date: 10/06/1999
TSD Site Recv Date: 10/13/1999
Part A Recv Date: Not reported
Part B Recv Date: Not reported
Generator EPA ID: NYD072736697
Trans1 EPA ID: OHD980587364
Trans2 EPA ID: Not reported
TSDF ID: NYAP4503
Waste Code: F002 - HALO SOLV + STILL BOTTOMS FM REC OF SOLV
Quantity: 00195
Units: P - Pounds
Number of Containers: 001
Container Type: DF - Fiberboard or plastic drums (glass)
Handling Method: B Incineration, heat recovery, burning.
Specific Gravity: 01.00
Year: 99

Document ID: NYC6016397
Manifest Status: Not reported
Trans1 State ID: ILD984908202
Trans2 State ID: SCR000074591
Generator Ship Date: 12/21/1999
Trans1 Recv Date: 12/21/1999

STAR CLEANERS (Continued) **1000350990**

Trans2 Recv Date:	12/29/1999
TSD Site Recv Date:	12/30/1999
Part A Recv Date:	Not reported
Part B Recv Date:	Not reported
Generator EPA ID:	NYD072736697
Trans1 EPA ID:	OHD980587364
Trans2 EPA ID:	Not reported
TSDF ID:	NYAP4503
Waste Code:	F002 - HALO SOLV + STILL BOTTOMS FM REC OF SOLV
Quantity:	00060
Units:	P - Pounds
Number of Containers:	001
Container Type:	DF - Fiberboard or plastic drums (glass)
Handling Method:	B Incineration, heat recovery, burning.
Specific Gravity:	01.00
Year:	99

Document ID:	NYC2051482
Manifest Status:	Completed copy
Trans1 State ID:	AP4503NY
Trans2 State ID:	Not reported
Generator Ship Date:	921217
Trans1 Recv Date:	921217
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	921217
Part A Recv Date:	930108
Part B Recv Date:	921230
Generator EPA ID:	NYD072736697
Trans1 EPA ID:	ILD051060408
Trans2 EPA ID:	Not reported
TSDF ID:	NYD980785760
Waste Code:	F002 - HALO SOLV + STILL BOTTOMS FM REC OF SOLV
Quantity:	00060
Units:	P - Pounds
Number of Containers:	001
Container Type:	DM - Metal drums, barrels
Handling Method:	B Incineration, heat recovery, burning.
Specific Gravity:	100
Year:	92

Document ID:	NYC1729214
Manifest Status:	Completed copy
Trans1 State ID:	AP4503NY
Trans2 State ID:	Not reported
Generator Ship Date:	920716
Trans1 Recv Date:	920716
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	920716
Part A Recv Date:	920729
Part B Recv Date:	920724
Generator EPA ID:	NYD072736697
Trans1 EPA ID:	ILD051060408
Trans2 EPA ID:	Not reported
TSDF ID:	NYD980785760
Waste Code:	F002 - HALO SOLV + STILL BOTTOMS FM REC OF SOLV

STAR CLEANERS (Continued) **1000350990**

Quantity:	00060
Units:	P - Pounds
Number of Containers:	001
Container Type:	DM - Metal drums, barrels
Handling Method:	B Incineration, heat recovery, burning.
Specific Gravity:	100
Year:	92

Document ID:	NYC2336128
Manifest Status:	Completed copy
Trans1 State ID:	AP4503NY
Trans2 State ID:	Not reported
Generator Ship Date:	930603
Trans1 Recv Date:	930603
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	930603
Part A Recv Date:	930621
Part B Recv Date:	930611
Generator EPA ID:	NYD072736697
Trans1 EPA ID:	ILD984908202
Trans2 EPA ID:	Not reported
TSDF ID:	NYD980785760
Waste Code:	F002 - HALO SOLV + STILL BOTTOMS FM REC OF SOLV
Quantity:	00060
Units:	P - Pounds
Number of Containers:	001
Container Type:	DM - Metal drums, barrels
Handling Method:	B Incineration, heat recovery, burning.
Specific Gravity:	100
Year:	93

Document ID:	NYC2101307
Manifest Status:	Completed copy
Trans1 State ID:	AP4503NY
Trans2 State ID:	Not reported
Generator Ship Date:	930114
Trans1 Recv Date:	930114
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	930114
Part A Recv Date:	930128
Part B Recv Date:	930126
Generator EPA ID:	NYD072736697
Trans1 EPA ID:	ILD051060408
Trans2 EPA ID:	Not reported
TSDF ID:	NYD980785760
Waste Code:	F002 - HALO SOLV + STILL BOTTOMS FM REC OF SOLV
Quantity:	00060
Units:	P - Pounds
Number of Containers:	001
Container Type:	DM - Metal drums, barrels
Handling Method:	B Incineration, heat recovery, burning.
Specific Gravity:	100
Year:	93

STAR CLEANERS (Continued) **1000350990**

Document ID:	NYA9713777
Manifest Status:	Completed copy
Trans1 State ID:	Not reported
Trans2 State ID:	Not reported
Generator Ship Date:	890913
Trans1 Recv Date:	890913
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	890913
Part A Recv Date:	890919
Part B Recv Date:	890920
Generator EPA ID:	NYD072736697
Trans1 EPA ID:	ILD051060408
Trans2 EPA ID:	Not reported
TSDF ID:	NYD980785760
Waste Code:	F002 - HALO SOLV + STILL BOTTOMS FM REC OF SOLV
Quantity:	00195
Units:	P - Pounds
Number of Containers:	001
Container Type:	DF - Fiberboard or plastic drums (glass)
Handling Method:	R Material recovery of more than 75 percent of the total material.
Specific Gravity:	100
Year:	89

Document ID:	NYC0077736
Manifest Status:	Completed copy
Trans1 State ID:	000000000
Trans2 State ID:	000000000
Generator Ship Date:	900129
Trans1 Recv Date:	900129
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	900129
Part A Recv Date:	900215
Part B Recv Date:	900207
Generator EPA ID:	NYD072736697
Trans1 EPA ID:	ILD051060408
Trans2 EPA ID:	Not reported
TSDF ID:	NYD980785760
Waste Code:	F002 - HALO SOLV + STILL BOTTOMS FM REC OF SOLV
Quantity:	00060
Units:	P - Pounds
Number of Containers:	001
Container Type:	DM - Metal drums, barrels
Handling Method:	B Incineration, heat recovery, burning.
Specific Gravity:	100
Year:	90

Document ID:	NYC0035638
Manifest Status:	Completed copy
Trans1 State ID:	000000000
Trans2 State ID:	000000000
Generator Ship Date:	900102
Trans1 Recv Date:	900102
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	900102
Part A Recv Date:	900111

STAR CLEANERS (Continued) **1000350990**

Part B Recv Date:	900108
Generator EPA ID:	NYD072736697
Trans1 EPA ID:	ILD051060408
Trans2 EPA ID:	Not reported
TSDF ID:	NYD980785760
Waste Code:	F002 - HALO SOLV + STILL BOTTOMS FM REC OF SOLV
Quantity:	00060
Units:	P - Pounds
Number of Containers:	001
Container Type:	DM - Metal drums, barrels
Handling Method:	B Incineration, heat recovery, burning.
Specific Gravity:	100
Year:	90

Document ID:	NYC0137733
Manifest Status:	Completed after the designated time period for a TSDF to get a copy to the DEC
Trans1 State ID:	000000000
Trans2 State ID:	000000000
Generator Ship Date:	900227
Trans1 Recv Date:	900227
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	900227
Part A Recv Date:	900326
Part B Recv Date:	900308
Generator EPA ID:	NYD072736697
Trans1 EPA ID:	ILD051060408
Trans2 EPA ID:	Not reported
TSDF ID:	NYD980785760
Waste Code:	F002 - HALO SOLV + STILL BOTTOMS FM REC OF SOLV
Quantity:	00060
Units:	P - Pounds
Number of Containers:	001
Container Type:	DM - Metal drums, barrels
Handling Method:	R Material recovery of more than 75 percent of the total material.
Specific Gravity:	100
Year:	90

Document ID:	NYC0188302
Manifest Status:	Completed copy
Trans1 State ID:	000000000
Trans2 State ID:	000000000
Generator Ship Date:	900326
Trans1 Recv Date:	900326
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	900326
Part A Recv Date:	900416
Part B Recv Date:	900406
Generator EPA ID:	NYD072736697
Trans1 EPA ID:	ILD051060408
Trans2 EPA ID:	Not reported
TSDF ID:	NYD980785760
Waste Code:	F002 - HALO SOLV + STILL BOTTOMS FM REC OF SOLV
Quantity:	00195
Units:	P - Pounds
Number of Containers:	001

STAR CLEANERS (Continued) **1000350990**

Container Type:	DM - Metal drums, barrels
Handling Method:	R Material recovery of more than 75 percent of the total material.
Specific Gravity:	100
Year:	90

Document ID:	NYC0234336
Manifest Status:	Completed after the designated time period for a TSDF to get a copy to the DEC
Trans1 State ID:	000000000
Trans2 State ID:	000000000
Generator Ship Date:	900424
Trans1 Recv Date:	900424
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	900424
Part A Recv Date:	900705
Part B Recv Date:	900503
Generator EPA ID:	NYD072736697
Trans1 EPA ID:	ILD051060408
Trans2 EPA ID:	Not reported
TSDF ID:	NYD980785760
Waste Code:	F002 - HALO SOLV + STILL BOTTOMS FM REC OF SOLV
Quantity:	00060
Units:	P - Pounds
Number of Containers:	001
Container Type:	DM - Metal drums, barrels
Handling Method:	B Incineration, heat recovery, burning.
Specific Gravity:	100
Year:	90

Click this hyperlink while viewing on your computer to access
112 additional NY_MANIFEST: record(s) in the EDR Site Report.

H31 **STAR CLEANERS** **DRYCLEANERS** **S110247981**
South **12-56 150TH STREET** **N/A**
1/8-1/4 **WHITESTONE, NY 11357**
0.141 mi.
746 ft. **Site 2 of 3 in cluster H**

Relative:
Higher

Actual:
72 ft.

DRYCLEANERS:

Facility ID:	2-6302-00198
Phone Number:	718-767-1866
Region:	Not reported
Registration Effective Date:	N/A
Inspection Date:	04MAR25
Install Date:	94'04
Drop Shop:	Not reported
Shutdown:	Y
Alternate Solvent:	Not reported
Current Business:	Not reported

H32 **EDR US Hist Cleaners** **1014985065**
South **1256 150TH ST** **N/A**
1/8-1/4 **WHITESTONE, NY 11357**
0.143 mi.
755 ft. **Site 3 of 3 in cluster H**

Relative:
Higher

Actual:
72 ft.

EDR Historical Cleaners:

Name:	STAR CLEANERS
Year:	2001
Address:	1256 150TH ST
Name:	STAR CLEANERS
Year:	2002
Address:	1256 150TH ST

G33 **WHITESTON EXXON SERVICE #0796** **UST** **U000396246**
SE **12-46 CLINTONVILLE ST** **HIST UST** **N/A**
1/8-1/4 **WHITESTONE, NY 11357**
0.147 mi.
775 ft. **Site 2 of 4 in cluster G**

Relative:
Lower

Actual:
46 ft.

UST:

Id/Status:	2-188689 / Unregulated
Region:	STATE
DEC Region:	2
Program Type:	PBS
Expiration Date:	N/A
UTM X:	600237.47202999995
UTM Y:	4516136.4783899998

Affiliation Records:

Site Id:	5724
Affiliation Type:	Emergency Contact
Company Name:	EXXON COMPANY, USA
Contact Type:	Not reported
Contact Name:	EXXON COMPANY USA
Address1:	Not reported
Address2:	Not reported
City:	Not reported
State:	NN
Zip Code:	Not reported
Country Code:	999
Phone:	(800) 992-3647
Phone Ext:	Not reported
Email:	Not reported
Fax Number:	Not reported
Modified By:	BKFALVEY
Date Last Modified:	4/25/2007
Site Id:	5724
Affiliation Type:	Facility Owner
Company Name:	EXXON COMPANY, USA
Contact Type:	Not reported
Contact Name:	Not reported
Address1:	4950 DACOMA STREET
Address2:	Not reported
City:	HOUSTON
State:	TX
Zip Code:	77092
Country Code:	001

WHITESTON EXXON SERVICE #0796 (Continued) **U000396246**

Phone:	(800) 992-3647
Phone Ext:	Not reported
Email:	Not reported
Fax Number:	Not reported
Modified By:	TRANSLAT
Date Last Modified:	3/4/2004

Site Id:	5724
Affiliation Type:	Mail Contact
Company Name:	EXXON COMPANY, USA
Contact Type:	Not reported
Contact Name:	Not reported
Address1:	4950 DACOMA STREET
Address2:	Not reported
City:	HOUSTON
State:	TX
Zip Code:	77092
Country Code:	001
Phone:	(800) 992-3647
Phone Ext:	Not reported
Email:	Not reported
Fax Number:	Not reported
Modified By:	TRANSLAT
Date Last Modified:	3/4/2004

Site Id:	5724
Affiliation Type:	On-Site Operator
Company Name:	WHITESTON EXXON SERVICE #0796
Contact Type:	Not reported
Contact Name:	ALFRED T MONTELEONE
Address1:	Not reported
Address2:	Not reported
City:	Not reported
State:	NN
Zip Code:	Not reported
Country Code:	001
Phone:	(718) 746-9579
Phone Ext:	Not reported
Email:	Not reported
Fax Number:	Not reported
Modified By:	TRANSLAT
Date Last Modified:	3/4/2004

Tank Info:

Site ID:	5724

Tank Number:	001
Tank ID:	40269
Tank Status:	Closed Prior to Micro Conversion, 03/91
Tank Type:	Steel/carbon steel
Pipe Model:	Not reported

Equipment Records:

B00 - Tank External Protection - None
I00 - Overfill - None
G03 - Tank Secondary Containment - Vault (w/o access)
C00 - Pipe Location - No Piping

WHITESTON EXXON SERVICE #0796 (Continued) **U000396246**

F00 - Pipe External Protection - None
H00 - Tank Leak Detection - None
A00 - Tank Internal Protection - None
D02 - Pipe Type - Galvanized Steel
J02 - Dispenser - Suction Dispenser

Install Date: 12/01/1972
Capacity Gallons: 550
Tightness Test Method: NN
Next Test Date: Not reported
Date Tank Closed: Not reported
Tank Location: 5
Tank Type: Steel/carbon steel
Date Test: Not reported
Registered: True
Modified By: TRANSLAT
Last Modified: 03/04/2004

Site ID: 5724

Tank Number: 002
Tank ID: 40270
Tank Status: Closed Prior to Micro Conversion, 03/91
Tank Type: Steel/carbon steel
Pipe Model: Not reported

Equipment Records:

B00 - Tank External Protection - None
I00 - Overfill - None
C00 - Pipe Location - No Piping
F00 - Pipe External Protection - None
G00 - Tank Secondary Containment - None
H00 - Tank Leak Detection - None
A00 - Tank Internal Protection - None
D02 - Pipe Type - Galvanized Steel
J02 - Dispenser - Suction Dispenser

Install Date: 12/01/1972
Capacity Gallons: 550
Tightness Test Method: NN
Next Test Date: Not reported
Date Tank Closed: Not reported
Tank Location: 5
Tank Type: Steel/carbon steel
Date Test: Not reported
Registered: True
Modified By: TRANSLAT
Last Modified: 03/04/2004

Site ID: 5724

Tank Number: 003
Tank ID: 40271
Tank Status: Closed Prior to Micro Conversion, 03/91
Tank Type: Steel/carbon steel
Pipe Model: Not reported

Equipment Records:

B00 - Tank External Protection - None
I00 - Overfill - None

WHITESTON EXXON SERVICE #0796 (Continued) **U000396246**

G00 - Tank Secondary Containment - None
C00 - Pipe Location - No Piping
F00 - Pipe External Protection - None
H00 - Tank Leak Detection - None
A00 - Tank Internal Protection - None
D02 - Pipe Type - Galvanized Steel
J02 - Dispenser - Suction Dispenser

Install Date: 12/01/1972
Capacity Gallons: 550
Tightness Test Method: NN
Next Test Date: Not reported
Date Tank Closed: Not reported
Tank Location: 5
Tank Type: Steel/carbon steel
Date Test: Not reported
Registered: True
Modified By: TRANSLAT
Last Modified: 03/04/2004

Site ID: 5724

Tank Number: 004
Tank ID: 40272
Tank Status: Closed Prior to Micro Conversion, 03/91
Tank Type: Steel/carbon steel
Pipe Model: Not reported

Equipment Records:

B00 - Tank External Protection - None
I00 - Overfill - None
C00 - Pipe Location - No Piping
F00 - Pipe External Protection - None
G00 - Tank Secondary Containment - None
H00 - Tank Leak Detection - None
A00 - Tank Internal Protection - None
D02 - Pipe Type - Galvanized Steel
J02 - Dispenser - Suction Dispenser

Install Date: 12/01/1972
Capacity Gallons: 550
Tightness Test Method: NN
Next Test Date: Not reported
Date Tank Closed: Not reported
Tank Location: 5
Tank Type: Steel/carbon steel
Date Test: Not reported
Registered: True
Modified By: TRANSLAT
Last Modified: 03/04/2004

Site ID: 5724

Tank Number: 005
Tank ID: 40273
Tank Status: Closed Prior to Micro Conversion, 03/91
Tank Type: Steel/carbon steel
Pipe Model: Not reported

Equipment Records:

WHITESTON EXXON SERVICE #0796 (Continued) **U000396246**

B00 - Tank External Protection - None
I00 - Overfill - None
G00 - Tank Secondary Containment - None
C00 - Pipe Location - No Piping
F00 - Pipe External Protection - None
H00 - Tank Leak Detection - None
A00 - Tank Internal Protection - None
D02 - Pipe Type - Galvanized Steel
J02 - Dispenser - Suction Dispenser

Install Date:	12/01/1972
Capacity Gallons:	550
Tightness Test Method:	NN
Next Test Date:	Not reported
Date Tank Closed:	Not reported
Tank Location:	5
Tank Type:	Steel/carbon steel
Date Test:	Not reported
Registered:	True
Modified By:	TRANSLAT
Last Modified:	03/04/2004
Site ID:	5724
Tank Number:	006
Tank ID:	40274
Tank Status:	Closed Prior to Micro Conversion, 03/91
Tank Type:	Steel/carbon steel
Pipe Model:	Not reported

Equipment Records:

B00 - Tank External Protection - None
I00 - Overfill - None
C00 - Pipe Location - No Piping
F00 - Pipe External Protection - None
G00 - Tank Secondary Containment - None
H00 - Tank Leak Detection - None
A00 - Tank Internal Protection - None
D02 - Pipe Type - Galvanized Steel
J02 - Dispenser - Suction Dispenser

Install Date:	12/01/1972
Capacity Gallons:	550
Tightness Test Method:	NN
Next Test Date:	Not reported
Date Tank Closed:	Not reported
Tank Location:	5
Tank Type:	Steel/carbon steel
Date Test:	Not reported
Registered:	True
Modified By:	TRANSLAT
Last Modified:	03/04/2004
Site ID:	5724
Tank Number:	007
Tank ID:	40275
Tank Status:	Closed Prior to Micro Conversion, 03/91
Tank Type:	Steel/carbon steel
Pipe Model:	Not reported

WHITESTON EXXON SERVICE #0796 (Continued) **U000396246**

Equipment Records:
B00 - Tank External Protection - None
I00 - Overfill - None
G00 - Tank Secondary Containment - None
C00 - Pipe Location - No Piping
F00 - Pipe External Protection - None
H00 - Tank Leak Detection - None
A00 - Tank Internal Protection - None
D02 - Pipe Type - Galvanized Steel
J02 - Dispenser - Suction Dispenser

Install Date:	12/01/1972
Capacity Gallons:	550
Tightness Test Method:	NN
Next Test Date:	Not reported
Date Tank Closed:	Not reported
Tank Location:	5
Tank Type:	Steel/carbon steel
Date Test:	Not reported
Registered:	True
Modified By:	TRANSLAT
Last Modified:	03/04/2004
Site ID:	5724
Tank Number:	008
Tank ID:	40276
Tank Status:	Closed Prior to Micro Conversion, 03/91
Tank Type:	Steel/carbon steel
Pipe Model:	Not reported

Equipment Records:
B00 - Tank External Protection - None
I00 - Overfill - None
C00 - Pipe Location - No Piping
F00 - Pipe External Protection - None
G00 - Tank Secondary Containment - None
H00 - Tank Leak Detection - None
A00 - Tank Internal Protection - None
D02 - Pipe Type - Galvanized Steel
J02 - Dispenser - Suction Dispenser

Install Date:	12/01/1972
Capacity Gallons:	550
Tightness Test Method:	NN
Next Test Date:	Not reported
Date Tank Closed:	Not reported
Tank Location:	5
Tank Type:	Steel/carbon steel
Date Test:	Not reported
Registered:	True
Modified By:	TRANSLAT
Last Modified:	03/04/2004
Site ID:	5724
Tank Number:	009
Tank ID:	40277
Tank Status:	Closed Prior to Micro Conversion, 03/91

WHITESTON EXXON SERVICE #0796 (Continued) **U000396246**

Tank Type: Steel/carbon steel
Pipe Model: Not reported

Equipment Records:

B00 - Tank External Protection - None
I00 - Overfill - None
G00 - Tank Secondary Containment - None
C00 - Pipe Location - No Piping
F00 - Pipe External Protection - None
H00 - Tank Leak Detection - None
A00 - Tank Internal Protection - None
D02 - Pipe Type - Galvanized Steel
J02 - Dispenser - Suction Dispenser

Install Date: 12/01/1972
Capacity Gallons: 550
Tightness Test Method: NN
Next Test Date: Not reported
Date Tank Closed: Not reported
Tank Location: 5
Tank Type: Steel/carbon steel
Date Test: Not reported
Registered: True
Modified By: TRANSLAT
Last Modified: 03/04/2004

Site ID: 5724

Tank Number: 010
Tank ID: 40278
Tank Status: Closed Prior to Micro Conversion, 03/91
Tank Type: Steel/carbon steel
Pipe Model: Not reported

Equipment Records:

B00 - Tank External Protection - None
I00 - Overfill - None
G00 - Tank Secondary Containment - None
C00 - Pipe Location - No Piping
F00 - Pipe External Protection - None
H00 - Tank Leak Detection - None
A00 - Tank Internal Protection - None
D02 - Pipe Type - Galvanized Steel
J02 - Dispenser - Suction Dispenser

Install Date: 12/01/1972
Capacity Gallons: 550
Tightness Test Method: NN
Next Test Date: Not reported
Date Tank Closed: Not reported
Tank Location: 5
Tank Type: Steel/carbon steel
Date Test: Not reported
Registered: True
Modified By: TRANSLAT
Last Modified: 03/04/2004

Site ID: 5724

Tank Number: 011

WHITESTON EXXON SERVICE #0796 (Continued) **U000396246**

Tank ID: 40279
Tank Status: Closed Prior to Micro Conversion, 03/91
Tank Type: Steel/carbon steel
Pipe Model: Not reported

Equipment Records:
B00 - Tank External Protection - None
I00 - Overfill - None
G00 - Tank Secondary Containment - None
C00 - Pipe Location - No Piping
F00 - Pipe External Protection - None
H00 - Tank Leak Detection - None
A00 - Tank Internal Protection - None
D02 - Pipe Type - Galvanized Steel
J02 - Dispenser - Suction Dispenser

Install Date: 12/01/1972
Capacity Gallons: 550
Tightness Test Method: NN
Next Test Date: Not reported
Date Tank Closed: Not reported
Tank Location: 5
Tank Type: Steel/carbon steel
Date Test: Not reported
Registered: True
Modified By: TRANSLAT
Last Modified: 03/04/2004

HIST UST:
PBS Number: 2-188689
SPDES Number: Not reported
Emergency Contact: EXXON COMPANY USA
Emergency Telephone: (800) 992-3647
Operator: ALFRED T MONTELEONE
Operator Telephone: (718) 746-9579
Owner Name: EXXON COMPANY USA
Owner Address: 4950 DACOMA STREET
Owner City,St,Zip: HOUSTON, TX 77092
Owner Telephone: (800) 992-3647
Owner Type: Not reported
Owner Subtype: Not reported
Mailing Name: EXXON COMPANY USA
Mailing Address: 4950 DACOMA STREET
Mailing Address 2: Not reported
Mailing City,St,Zip: HOUSTON, TX 77092
Mailing Contact: Not reported
Mailing Telephone: (800) 992-3647
Owner Mark: First Owner
Facility Status: 2 - Unregulated by PBS (the total capacity is less than 1,101 gallons) and Subpart 360-14.
Facility Addr2: 12046 CLINTONVILLE ST
SWIS ID: 6301
Old PBS Number: Not reported
Facility Type: Not reported
Inspected Date: Not reported
Inspector: Not reported
Inspection Result: Not reported
Federal ID: Not reported

WHITESTON EXXON SERVICE #0796 (Continued) **U000396246**

Certification Flag:	False
Certification Date:	06/05/1987
Expiration Date:	06/05/1992
Renew Flag:	False
Renewal Date:	Not reported
Total Capacity:	0
FAMT:	True
Facility Screen:	Minor Data Missing
Owner Screen:	Minor Data Missing
Tank Screen:	0
Dead Letter:	False
CBS Number:	Not reported
Town or City:	NEW YORK CITY
County Code:	63
Town or City:	01
Region:	2

Tank Id:	001
Tank Location:	UNDERGROUND
Tank Status:	Closed Before April 1, 1991
Install Date:	19721201
Capacity (gals):	550
Product Stored:	LEADED GASOLINE
Tank Type:	Steel/carbon steel
Tank Internal:	Not reported
Tank External:	Not reported
Pipe Location:	Not reported
Pipe Type:	GALVANIZED STEEL
Pipe Internal:	Not reported
Pipe External:	Not reported
Second Containment:	Diking
Leak Detection:	None
Overfill Prot:	Not reported
Dispenser:	Suction
Date Tested:	Not reported
Next Test Date:	Not reported
Missing Data for Tank:	Minor Data Missing
Date Closed:	Not reported
Test Method:	Not reported
Deleted:	False
Updated:	False
Lat/long:	Not reported

Tank Id:	002
Tank Location:	UNDERGROUND
Tank Status:	Closed Before April 1, 1991
Install Date:	19721201
Capacity (gals):	550
Product Stored:	LEADED GASOLINE
Tank Type:	Steel/carbon steel
Tank Internal:	Not reported
Tank External:	Not reported
Pipe Location:	Not reported
Pipe Type:	GALVANIZED STEEL
Pipe Internal:	Not reported
Pipe External:	Not reported

WHITESTON EXXON SERVICE #0796 (Continued) **U000396246**

Second Containment:	None
Leak Detection:	None
Overfill Prot:	Not reported
Dispenser:	Suction
Date Tested:	Not reported
Next Test Date:	Not reported
Missing Data for Tank:	Minor Data Missing
Date Closed:	Not reported
Test Method:	Not reported
Deleted:	False
Updated:	False
Lat/long:	Not reported

Tank Id:	003
Tank Location:	UNDERGROUND
Tank Status:	Closed Before April 1, 1991
Install Date:	19721201
Capacity (gals):	550
Product Stored:	UNLEADED GASOLINE
Tank Type:	Steel/carbon steel
Tank Internal:	Not reported
Tank External:	Not reported
Pipe Location:	Not reported
Pipe Type:	GALVANIZED STEEL
Pipe Internal:	Not reported
Pipe External:	Not reported
Second Containment:	None
Leak Detection:	None
Overfill Prot:	Not reported
Dispenser:	Suction
Date Tested:	Not reported
Next Test Date:	Not reported
Missing Data for Tank:	Minor Data Missing
Date Closed:	Not reported
Test Method:	Not reported
Deleted:	False
Updated:	False
Lat/long:	Not reported

Tank Id:	004
Tank Location:	UNDERGROUND
Tank Status:	Closed Before April 1, 1991
Install Date:	19721201
Capacity (gals):	550
Product Stored:	UNLEADED GASOLINE
Tank Type:	Steel/carbon steel
Tank Internal:	Not reported
Tank External:	Not reported
Pipe Location:	Not reported
Pipe Type:	GALVANIZED STEEL
Pipe Internal:	Not reported
Pipe External:	Not reported
Second Containment:	None
Leak Detection:	None
Overfill Prot:	Not reported

WHITESTON EXXON SERVICE #0796 (Continued) **U000396246**

Dispenser:	Suction
Date Tested:	Not reported
Next Test Date:	Not reported
Missing Data for Tank:	Minor Data Missing
Date Closed:	Not reported
Test Method:	Not reported
Deleted:	False
Updated:	False
Lat/long:	Not reported

Tank Id:	005
Tank Location:	UNDERGROUND
Tank Status:	Closed Before April 1, 1991
Install Date:	19721201
Capacity (gals):	550
Product Stored:	UNLEADED GASOLINE
Tank Type:	Steel/carbon steel
Tank Internal:	Not reported
Tank External:	Not reported
Pipe Location:	Not reported
Pipe Type:	GALVANIZED STEEL
Pipe Internal:	Not reported
Pipe External:	Not reported
Second Containment:	None
Leak Detection:	None
Overfill Prot:	Not reported
Dispenser:	Suction
Date Tested:	Not reported
Next Test Date:	Not reported
Missing Data for Tank:	Minor Data Missing
Date Closed:	Not reported
Test Method:	Not reported
Deleted:	False
Updated:	False
Lat/long:	Not reported

Tank Id:	006
Tank Location:	UNDERGROUND
Tank Status:	Closed Before April 1, 1991
Install Date:	19721201
Capacity (gals):	550
Product Stored:	UNLEADED GASOLINE
Tank Type:	Steel/carbon steel
Tank Internal:	Not reported
Tank External:	Not reported
Pipe Location:	Not reported
Pipe Type:	GALVANIZED STEEL
Pipe Internal:	Not reported
Pipe External:	Not reported
Second Containment:	None
Leak Detection:	None
Overfill Prot:	Not reported
Dispenser:	Suction
Date Tested:	Not reported
Next Test Date:	Not reported

WHITESTON EXXON SERVICE #0796 (Continued) **U000396246**

Missing Data for Tank:	Minor Data Missing
Date Closed:	Not reported
Test Method:	Not reported
Deleted:	False
Updated:	False
Lat/long:	Not reported

Tank Id:	007
Tank Location:	UNDERGROUND
Tank Status:	Closed Before April 1, 1991
Install Date:	19721201
Capacity (gals):	550
Product Stored:	UNLEADED GASOLINE
Tank Type:	Steel/carbon steel
Tank Internal:	Not reported
Tank External:	Not reported
Pipe Location:	Not reported
Pipe Type:	GALVANIZED STEEL
Pipe Internal:	Not reported
Pipe External:	Not reported
Second Containment:	None
Leak Detection:	None
Overfill Prot:	Not reported
Dispenser:	Suction
Date Tested:	Not reported
Next Test Date:	Not reported
Missing Data for Tank:	Minor Data Missing
Date Closed:	Not reported
Test Method:	Not reported
Deleted:	False
Updated:	False
Lat/long:	Not reported

Tank Id:	008
Tank Location:	UNDERGROUND
Tank Status:	Closed Before April 1, 1991
Install Date:	19721201
Capacity (gals):	550
Product Stored:	UNLEADED GASOLINE
Tank Type:	Steel/carbon steel
Tank Internal:	Not reported
Tank External:	Not reported
Pipe Location:	Not reported
Pipe Type:	GALVANIZED STEEL
Pipe Internal:	Not reported
Pipe External:	Not reported
Second Containment:	None
Leak Detection:	None
Overfill Prot:	Not reported
Dispenser:	Suction
Date Tested:	Not reported
Next Test Date:	Not reported
Missing Data for Tank:	Minor Data Missing
Date Closed:	Not reported
Test Method:	Not reported

WHITESTON EXXON SERVICE #0796 (Continued) **U000396246**

Deleted:	False
Updated:	False
Lat/long:	Not reported

Tank Id:	009
Tank Location:	UNDERGROUND
Tank Status:	Closed Before April 1, 1991
Install Date:	19721201
Capacity (gals):	550
Product Stored:	UNLEADED GASOLINE
Tank Type:	Steel/carbon steel
Tank Internal:	Not reported
Tank External:	Not reported
Pipe Location:	Not reported
Pipe Type:	GALVANIZED STEEL
Pipe Internal:	Not reported
Pipe External:	Not reported
Second Containment:	None
Leak Detection:	None
Overfill Prot:	Not reported
Dispenser:	Suction
Date Tested:	Not reported
Next Test Date:	Not reported
Missing Data for Tank:	Minor Data Missing
Date Closed:	Not reported
Test Method:	Not reported
Deleted:	False
Updated:	False
Lat/long:	Not reported

Tank Id:	010
Tank Location:	UNDERGROUND
Tank Status:	Closed Before April 1, 1991
Install Date:	19721201
Capacity (gals):	550
Product Stored:	UNLEADED GASOLINE
Tank Type:	Steel/carbon steel
Tank Internal:	Not reported
Tank External:	Not reported
Pipe Location:	Not reported
Pipe Type:	GALVANIZED STEEL
Pipe Internal:	Not reported
Pipe External:	Not reported
Second Containment:	None
Leak Detection:	None
Overfill Prot:	Not reported
Dispenser:	Suction
Date Tested:	Not reported
Next Test Date:	Not reported
Missing Data for Tank:	Minor Data Missing
Date Closed:	Not reported
Test Method:	Not reported
Deleted:	False
Updated:	False
Lat/long:	Not reported

WHITESTON EXXON SERVICE #0796 (Continued) **U000396246**

Tank Id:	011
Tank Location:	UNDERGROUND
Tank Status:	Closed Before April 1, 1991
Install Date:	19721201
Capacity (gals):	550
Product Stored:	UNKNOWN
Tank Type:	Steel/carbon steel
Tank Internal:	Not reported
Tank External:	Not reported
Pipe Location:	Not reported
Pipe Type:	GALVANIZED STEEL
Pipe Internal:	Not reported
Pipe External:	Not reported
Second Containment:	None
Leak Detection:	None
Overfill Prot:	Not reported
Dispenser:	Suction
Date Tested:	Not reported
Next Test Date:	Not reported
Missing Data for Tank:	Minor Data Missing
Date Closed:	Not reported
Test Method:	Not reported
Deleted:	False
Updated:	False
Lat/long:	Not reported

G34 **EDR US Hist Auto Stat** **1015191965**
SE **1246 CLINTONVILLE ST** **N/A**
1/8-1/4 **WHITESTONE, NY 11357**
0.148 mi.
779 ft. **Site 3 of 4 in cluster G**

Relative:
Lower

Actual:
46 ft.

EDR Historical Auto Stations:

Name:	WHITESTONE EXXON SVCE STATION
Year:	1999
Address:	1246 CLINTONVILLE ST
Name:	WHITESTONE EXXON SVCE STATION
Year:	2000
Address:	1246 CLINTONVILLE ST
Name:	WHITESTONE EXXON SERVICE STTN
Year:	2001
Address:	1246 CLINTONVILLE ST

G35 **151-13 TWELVE ROAD** **LTANKS** **S102672264**
SE **151-13 12TH RD** **N/A**
1/8-1/4 **WHITESTONE, NY**
0.156 mi.
826 ft. **Site 4 of 4 in cluster G**

Relative:
Lower

Actual:
47 ft.

LTANKS:

Site ID:	323197
Spill Number/Closed Date:	9309632 / 11/9/1993
Spill Date:	11/9/1993
Spill Cause:	Tank Overfill

151-13 TWELVE ROAD (Continued) **S102672264**

Spill Source:	Private Dwelling
Spill Class:	Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
Cleanup Ceased:	11/9/1993
Cleanup Meets Standard:	True
SWIS:	4101
Investigator:	JMKRIMGO
Referred To:	Not reported
Reported to Dept:	11/9/1993
CID:	Not reported
Water Affected:	Not reported
Spill Notifier:	Other
Last Inspection:	Not reported
Recommended Penalty:	False
UST Involvement:	False
Remediation Phase:	0
Date Entered In Computer:	11/10/1993
Spill Record Last Update:	5/24/2004
Spiller Name:	Not reported
Spiller Company:	PETRO
Spiller Address:	3616 NINETEENTH AVE
Spiller City,St,Zip:	ZZ
Spiller County:	001
Spiller Contact:	Not reported
Spiller Phone:	Not reported
Spiller Extention:	Not reported
DEC Region:	2
DER Facility ID:	260355
DEC Memo:	Prior to Sept, 2004 data translation this spill Lead_DEC Field was "J. KRIMGOLD"
Remarks:	SERVICE MAN SENT TO CLEAR UP.

Material:

Site ID:	323197
Operable Unit ID:	988718
Operable Unit:	01
Material ID:	392290
Material Code:	0001A
Material Name:	#2 Fuel Oil
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	-1
Units:	Pounds
Recovered:	No
Resource Affected:	Not reported
Oxygenate:	False

Tank Test:

36 NORTHERN TIRE SHOP — **RCRA NonGen / NLR** — **1000407939**
SSE 150-47 14TH AVE — **FINDS** — **NYD009705567**
1/8-1/4 WHITESTONE, NY 11357 — **UST**
0.190 mi. — **HIST UST**
1004 ft. — **MANIFEST**

Relative: Higher

Actual: 65 ft.

RCRA NonGen / NLR:

Date form received by agency:	01/01/2007
Facility name:	NORTHERN TIRE SHOP
Facility address:	150-47 14TH AVE WHITESTONE, NY 11357
EPA ID:	NYD009705567
Mailing address:	226TH ST BAYSIDE, NY 11364
Contact:	Not reported
Contact address:	226TH ST BAYSIDE, NY 11364
Contact country:	US
Contact telephone:	Not reported
Contact email:	Not reported
EPA Region:	02
Classification:	Non-Generator
Description:	Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:

Owner/operator name:	RICHARD JOSEPHINE MARILYN & ANGELA TROTT
Owner/operator address:	78-38 226TH ST BAYSIDE, NY 11364
Owner/operator country:	US
Owner/operator telephone:	(718) 217-8678
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	01/01/2001
Owner/Op end date:	Not reported

Owner/operator name:	RICHARD JOSEPHINE MARILYN & ANGELA TROTT
Owner/operator address:	78-38 226TH ST BAYSIDE, NY 11364
Owner/operator country:	US
Owner/operator telephone:	(718) 217-8678
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	01/01/2001
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No

NORTHERN TIRE SHOP (Continued) **1000407939**

Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Historical Generators:
Date form received by agency: 01/01/2006
Facility name: NORTHERN TIRE SHOP
Classification: Not a generator, verified

Date form received by agency: 04/22/2002
Facility name: NORTHERN TIRE SHOP
Classification: Not a generator, verified

Date form received by agency: 11/20/2001
Facility name: NORTHERN TIRE SHOP
Classification: Small Quantity Generator

Date form received by agency: 07/08/1999
Facility name: NORTHERN TIRE SHOP
Classification: Not a generator, verified

Date form received by agency: 10/16/1986
Facility name: NORTHERN TIRE SHOP
Classification: Small Quantity Generator

Violation Status: No violations found

FINDS:

Registry ID: 110004343087

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

UST:
Id/Status: 2-607118 / Unregulated
Region: STATE
DEC Region: 2
Program Type: PBS
Expiration Date: N/A
UTM X: 600169.02437
UTM Y: 4516025.0771700004

Affiliation Records:
Site Id: 28972
Affiliation Type: Facility Owner
Company Name: RICHARD, JOSEPHINE & MARILYN GULDE; ANGELA TROTTA
Contact Type: Not reported
Contact Name: Not reported
Address1: 78-38 226TH STREET
Address2: Not reported

NORTHERN TIRE SHOP (Continued) **1000407939**

City:	BAYSIDE
State:	NY
Zip Code:	11364
Country Code:	001
Phone:	(718) 217-8678
Phone Ext:	Not reported
Email:	Not reported
Fax Number:	Not reported
Modified By:	TRANSLAT
Date Last Modified:	3/4/2004

Site Id:	28972
Affiliation Type:	Mail Contact
Company Name:	RICHARD GULDE
Contact Type:	Not reported
Contact Name:	RICHARD GULDE
Address1:	78-38 226TH STREET
Address2:	Not reported
City:	BAYSIDE
State:	NY
Zip Code:	11364
Country Code:	001
Phone:	(718) 217-8678
Phone Ext:	Not reported
Email:	Not reported
Fax Number:	Not reported
Modified By:	TRANSLAT
Date Last Modified:	3/4/2004

Site Id:	28972
Affiliation Type:	On-Site Operator
Company Name:	NORTHERN TIRE SHOP
Contact Type:	Not reported
Contact Name:	Not reported
Address1:	Not reported
Address2:	Not reported
City:	Not reported
State:	NN
Zip Code:	Not reported
Country Code:	001
Phone:	Not reported
Phone Ext:	Not reported
Email:	Not reported
Fax Number:	Not reported
Modified By:	TRANSLAT
Date Last Modified:	3/4/2004

Site Id:	28972
Affiliation Type:	Emergency Contact
Company Name:	RICHARD, JOSEPHINE & MARILYN GULDE; ANGELA TROTTA
Contact Type:	Not reported
Contact Name:	RICH GULDE
Address1:	Not reported
Address2:	Not reported
City:	Not reported
State:	NN
Zip Code:	Not reported

NORTHERN TIRE SHOP (Continued) **1000407939**

Country Code: 001
Phone: (718) 217-8678
Phone Ext: Not reported
Email: Not reported
Fax Number: Not reported
Modified By: TRANSLAT
Date Last Modified: 3/4/2004

Tank Info:
Site ID: 28972

Tank Number: 001
Tank ID: 62341
Tank Status: Closed - Removed
Tank Type: Steel/carbon steel
Pipe Model: Not reported

Equipment Records:
I00 - Overfill - None
B00 - Tank External Protection - None
C02 - Pipe Location - Underground/On-ground
F00 - Pipe External Protection - None
G00 - Tank Secondary Containment - None
H00 - Tank Leak Detection - None
A00 - Tank Internal Protection - None
D01 - Pipe Type - Steel/Carbon Steel/Iron
J02 - Dispenser - Suction Dispenser
Install Date: Not reported
Capacity Gallons: 550
Tightness Test Method: NN
Next Test Date: Not reported
Date Tank Closed: 10/01/2001
Tank Location: 5
Tank Type: Steel/carbon steel
Date Test: Not reported
Registered: True
Modified By: TRANSLAT
Last Modified: 03/04/2004

Site ID: 28972

Tank Number: 002
Tank ID: 62342
Tank Status: Closed - Removed
Tank Type: Steel/carbon steel
Pipe Model: Not reported

Equipment Records:
I00 - Overfill - None
B00 - Tank External Protection - None
C02 - Pipe Location - Underground/On-ground
F00 - Pipe External Protection - None
G00 - Tank Secondary Containment - None
H00 - Tank Leak Detection - None
A00 - Tank Internal Protection - None
D01 - Pipe Type - Steel/Carbon Steel/Iron
J02 - Dispenser - Suction Dispenser
Install Date: Not reported

NORTHERN TIRE SHOP (Continued) **1000407939**

Capacity Gallons: 550
Tightness Test Method: NN
Next Test Date: Not reported
Date Tank Closed: 10/01/2001
Tank Location: 5
Tank Type: Steel/carbon steel
Date Test: Not reported
Registered: True
Modified By: TRANSLAT
Last Modified: 03/04/2004

Site ID: 28972

Tank Number: 003
Tank ID: 62343
Tank Status: Closed - Removed
Tank Type: Steel/carbon steel
Pipe Model: Not reported

Equipment Records:
I00 - Overfill - None
B00 - Tank External Protection - None
C02 - Pipe Location - Underground/On-ground
F00 - Pipe External Protection - None
G00 - Tank Secondary Containment - None
H00 - Tank Leak Detection - None
A00 - Tank Internal Protection - None
D01 - Pipe Type - Steel/Carbon Steel/Iron
J02 - Dispenser - Suction Dispenser
Install Date: Not reported
Capacity Gallons: 550
Tightness Test Method: NN
Next Test Date: Not reported
Date Tank Closed: 10/01/2001
Tank Location: 5
Tank Type: Steel/carbon steel
Date Test: Not reported
Registered: True
Modified By: TRANSLAT
Last Modified: 03/04/2004

Site ID: 28972

Tank Number: 004
Tank ID: 62344
Tank Status: Closed - Removed
Tank Type: Steel/carbon steel
Pipe Model: Not reported

Equipment Records:
I00 - Overfill - None
B00 - Tank External Protection - None
C02 - Pipe Location - Underground/On-ground
F00 - Pipe External Protection - None
G00 - Tank Secondary Containment - None
H00 - Tank Leak Detection - None
A00 - Tank Internal Protection - None
D01 - Pipe Type - Steel/Carbon Steel/Iron

NORTHERN TIRE SHOP (Continued) **1000407939**

J02 - Dispenser - Suction Dispenser
Install Date: Not reported
Capacity Gallons: 550
Tightness Test Method: NN
Next Test Date: Not reported
Date Tank Closed: 10/01/2001
Tank Location: 5
Tank Type: Steel/carbon steel
Date Test: Not reported
Registered: True
Modified By: TRANSLAT
Last Modified: 03/04/2004

Site ID: 28972

Tank Number: 005
Tank ID: 62345
Tank Status: Closed - Removed
Tank Type: Steel/carbon steel
Pipe Model: Not reported

Equipment Records:

I00 - Overfill - None
B00 - Tank External Protection - None
C02 - Pipe Location - Underground/On-ground
F00 - Pipe External Protection - None
G00 - Tank Secondary Containment - None
H00 - Tank Leak Detection - None
A00 - Tank Internal Protection - None
D01 - Pipe Type - Steel/Carbon Steel/Iron
J02 - Dispenser - Suction Dispenser
Install Date: Not reported
Capacity Gallons: 550
Tightness Test Method: NN
Next Test Date: Not reported
Date Tank Closed: 10/01/2001
Tank Location: 5
Tank Type: Steel/carbon steel
Date Test: Not reported
Registered: True
Modified By: TRANSLAT
Last Modified: 03/04/2004

Site ID: 28972

Tank Number: 006
Tank ID: 62554
Tank Status: Closed - Removed
Tank Type: Steel/carbon steel
Pipe Model: Not reported

Equipment Records:

I00 - Overfill - None
B00 - Tank External Protection - None
C02 - Pipe Location - Underground/On-ground
F00 - Pipe External Protection - None
G00 - Tank Secondary Containment - None
J00 - Dispenser - None

NORTHERN TIRE SHOP (Continued) **1000407939**

A00 - Tank Internal Protection - None
D01 - Pipe Type - Steel/Carbon Steel/Iron
H00 - Tank Leak Detection - None

Install Date:	Not reported
Capacity Gallons:	275
Tightness Test Method:	NN
Next Test Date:	Not reported
Date Tank Closed:	10/01/2001
Tank Location:	5
Tank Type:	Steel/carbon steel
Date Test:	Not reported
Registered:	True
Modified By:	TRANSLAT
Last Modified:	03/04/2004

HIST UST:

PBS Number:	2-607118
SPDES Number:	Not reported
Emergency Contact:	RICH GULDE
Emergency Telephone:	(718) 217-8678
Operator:	Not reported
Operator Telephone:	Not reported
Owner Name:	RICHARD, JOSEPHINE & MARILYN GULDE; ANGELA TROTTA
Owner Address:	78-38 226TH STREET
Owner City,St,Zip:	BAYSIDE, NY 11364
Owner Telephone:	(718) 217-8678
Owner Type:	Private Resident
Owner Subtype:	Not reported
Mailing Name:	RICHARD GULDE
Mailing Address:	78-38 226TH STREET
Mailing Address 2:	Not reported
Mailing City,St,Zip:	BAYSIDE, NY 11364
Mailing Contact:	RICHARD GULDE
Mailing Telephone:	(718) 217-8678
Owner Mark:	First Owner
Facility Status:	2 - Unregulated by PBS (the total capacity is less than 1,101 gallons) and Subpart 360-14.
Facility Addr2:	Not reported
SWIS ID:	6301
Old PBS Number:	Not reported
Facility Type:	RETAIL GASOLINE SALES
Facility Type:	OTHER RETAIL SALES
Inspected Date:	Not reported
Inspector:	Not reported
Inspection Result:	Not reported
Federal ID:	Not reported
Certification Flag:	False
Certification Date:	Not reported
Expiration Date:	10/25/2006
Renew Flag:	False
Renewal Date:	Not reported
Total Capacity:	0
FAMT:	True
Facility Screen:	Major Data Missing (which is on the certificate)
Owner Screen:	Minor Data Missing
Tank Screen:	0
Dead Letter:	False

NORTHERN TIRE SHOP (Continued) **1000407939**

CBS Number: Not reported
Town or City: NEW YORK CITY
County Code: 63
Town or City: 01
Region: 2

Tank Id: 001
Tank Location: UNDERGROUND
Tank Status: Closed-Removed
Install Date: Not reported
Capacity (gals): 550
Product Stored: UNLEADED GASOLINE
Tank Type: Steel/carbon steel
Tank Internal: None
Tank External: None
Pipe Location: Underground
Pipe Type: STEEL/IRON
Pipe Internal: None
Pipe External: None
Second Containment: None
Leak Detection: None
Overfill Prot: None
Dispenser: Suction
Date Tested: Not reported
Next Test Date: Not reported
Missing Data for Tank: No Missing Data
Date Closed: 10/01/2001
Test Method: Not reported
Deleted: False
Updated: True
Lat/long: Not reported

Tank Id: 002
Tank Location: UNDERGROUND
Tank Status: Closed-Removed
Install Date: Not reported
Capacity (gals): 550
Product Stored: UNLEADED GASOLINE
Tank Type: Steel/carbon steel
Tank Internal: None
Tank External: None
Pipe Location: Underground
Pipe Type: STEEL/IRON
Pipe Internal: None
Pipe External: None
Second Containment: None
Leak Detection: None
Overfill Prot: None
Dispenser: Suction
Date Tested: Not reported
Next Test Date: Not reported
Missing Data for Tank: No Missing Data
Date Closed: 10/01/2001
Test Method: Not reported
Deleted: False
Updated: True

NORTHERN TIRE SHOP (Continued) **1000407939**

Lat/long: Not reported

Tank Id: 003
Tank Location: UNDERGROUND
Tank Status: Closed-Removed
Install Date: Not reported
Capacity (gals): 550
Product Stored: UNLEADED GASOLINE
Tank Type: Steel/carbon steel
Tank Internal: None
Tank External: None
Pipe Location: Underground
Pipe Type: STEEL/IRON
Pipe Internal: None
Pipe External: None
Second Containment: None
Leak Detection: None
Overfill Prot: None
Dispenser: Suction
Date Tested: Not reported
Next Test Date: Not reported
Missing Data for Tank: No Missing Data
Date Closed: 10/01/2001
Test Method: Not reported
Deleted: False
Updated: True
Lat/long: Not reported

Tank Id: 004
Tank Location: UNDERGROUND
Tank Status: Closed-Removed
Install Date: Not reported
Capacity (gals): 550
Product Stored: UNLEADED GASOLINE
Tank Type: Steel/carbon steel
Tank Internal: None
Tank External: None
Pipe Location: Underground
Pipe Type: STEEL/IRON
Pipe Internal: None
Pipe External: None
Second Containment: None
Leak Detection: None
Overfill Prot: None
Dispenser: Suction
Date Tested: Not reported
Next Test Date: Not reported
Missing Data for Tank: No Missing Data
Date Closed: 10/01/2001
Test Method: Not reported
Deleted: False
Updated: True
Lat/long: Not reported

NORTHERN TIRE SHOP (Continued) **1000407939**

Tank Id:	005
Tank Location:	UNDERGROUND
Tank Status:	Closed-Removed
Install Date:	Not reported
Capacity (gals):	550
Product Stored:	UNLEADED GASOLINE
Tank Type:	Steel/carbon steel
Tank Internal:	None
Tank External:	None
Pipe Location:	Underground
Pipe Type:	STEEL/IRON
Pipe Internal:	None
Pipe External:	None
Second Containment:	None
Leak Detection:	None
Overfill Prot:	None
Dispenser:	Suction
Date Tested:	Not reported
Next Test Date:	Not reported
Missing Data for Tank:	No Missing Data
Date Closed:	10/01/2001
Test Method:	Not reported
Deleted:	False
Updated:	True
Lat/long:	Not reported

Tank Id:	006
Tank Location:	UNDERGROUND
Tank Status:	Closed-Removed
Install Date:	Not reported
Capacity (gals):	275
Product Stored:	UNKNOWN
Tank Type:	Steel/carbon steel
Tank Internal:	None
Tank External:	None
Pipe Location:	Underground
Pipe Type:	STEEL/IRON
Pipe Internal:	None
Pipe External:	None
Second Containment:	None
Leak Detection:	None
Overfill Prot:	None
Dispenser:	Not reported
Date Tested:	Not reported
Next Test Date:	Not reported
Missing Data for Tank:	Minor Data Missing
Date Closed:	10/01/2001
Test Method:	Not reported
Deleted:	False
Updated:	True
Lat/long:	Not reported

NY MANIFEST:

EPA ID:	NYD009705567
Country:	USA
Mailing Name:	NORTHERN TIRE

NORTHERN TIRE SHOP (Continued) **1000407939**

Mailing Contact:	NORTHERN TIRE
Mailing Address:	150-47 14TH AVENUE
Mailing Address 2:	Not reported
Mailing City:	WHITESTONE
Mailing State:	NY
Mailing Zip:	11357
Mailing Zip4:	Not reported
Mailing Country:	USA
Mailing Phone:	212-767-7754

Document ID:	NYA3119692
Manifest Status:	Completed copy
Trans1 State ID:	IL009
Trans2 State ID:	Not reported
Generator Ship Date:	861114
Trans1 Recv Date:	861114
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	861114
Part A Recv Date:	861128
Part B Recv Date:	861128
Generator EPA ID:	NYD009705567
Trans1 EPA ID:	ILD000805911
Trans2 EPA ID:	Not reported
TSDF ID:	NYD980785760
Waste Code:	D001 - NON-LISTED IGNITABLE WASTES
Quantity:	00270
Units:	P - Pounds
Number of Containers:	006
Container Type:	DM - Metal drums, barrels
Handling Method:	R Material recovery of more than 75 percent of the total material.
Specific Gravity:	100
Year:	86

Document ID:	NYA3107463
Manifest Status:	Completed copy
Trans1 State ID:	IL009
Trans2 State ID:	Not reported
Generator Ship Date:	861205
Trans1 Recv Date:	861205
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	861205
Part A Recv Date:	861211
Part B Recv Date:	861211
Generator EPA ID:	NYD009705567
Trans1 EPA ID:	ILD000805911
Trans2 EPA ID:	Not reported
TSDF ID:	NYD980785760
Waste Code:	D001 - NON-LISTED IGNITABLE WASTES
Quantity:	00045
Units:	P - Pounds
Number of Containers:	001
Container Type:	DM - Metal drums, barrels
Handling Method:	R Material recovery of more than 75 percent of the total material.
Specific Gravity:	100
Year:	86

NORTHERN TIRE SHOP (Continued) **1000407939**

Document ID:	NYA3869100
Manifest Status:	Completed copy
Trans1 State ID:	IL009
Trans2 State ID:	Not reported
Generator Ship Date:	861222
Trans1 Recv Date:	861222
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	861222
Part A Recv Date:	861231
Part B Recv Date:	861231
Generator EPA ID:	NYD009705567
Trans1 EPA ID:	ILD000805911
Trans2 EPA ID:	Not reported
TSDF ID:	NYD980785760
Waste Code:	D001 - NON-LISTED IGNITABLE WASTES
Quantity:	00045
Units:	P - Pounds
Number of Containers:	001
Container Type:	DM - Metal drums, barrels
Handling Method:	R Material recovery of more than 75 percent of the total material.
Specific Gravity:	100
Year:	86

Document ID:	NYA3912750
Manifest Status:	Completed copy
Trans1 State ID:	IL009
Trans2 State ID:	Not reported
Generator Ship Date:	870105
Trans1 Recv Date:	870105
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	870105
Part A Recv Date:	870113
Part B Recv Date:	870113
Generator EPA ID:	NYD009705567
Trans1 EPA ID:	ILD000805911
Trans2 EPA ID:	Not reported
TSDF ID:	NYD980785760
Waste Code:	D001 - NON-LISTED IGNITABLE WASTES
Quantity:	00045
Units:	P - Pounds
Number of Containers:	001
Container Type:	DM - Metal drums, barrels
Handling Method:	R Material recovery of more than 75 percent of the total material.
Specific Gravity:	100
Year:	87

Document ID:	NYA6480702
Manifest Status:	Completed copy
Trans1 State ID:	Not reported
Trans2 State ID:	Not reported
Generator Ship Date:	870128
Trans1 Recv Date:	870128
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	870128
Part A Recv Date:	870204

NORTHERN TIRE SHOP (Continued) **1000407939**

Part B Recv Date:	870204
Generator EPA ID:	NYD009705567
Trans1 EPA ID:	ILD000805911
Trans2 EPA ID:	Not reported
TSDF ID:	NYD980785760
Waste Code:	D001 - NON-LISTED IGNITABLE WASTES
Quantity:	00045
Units:	P - Pounds
Number of Containers:	001
Container Type:	DM - Metal drums, barrels
Handling Method:	R Material recovery of more than 75 percent of the total material.
Specific Gravity:	100
Year:	87

I37 **152-20 11TH AV/QUNS/PS193** **LTANKS** **S100153665**
ENE **152-20 11TH AVENUE** **N/A**
1/8-1/4 **NEW YORK CITY, NY**
0.197 mi.
1039 ft. **Site 1 of 4 in cluster I**

Relative:
Lower

Actual:
26 ft.

LTANKS:

Site ID:	131752
Spill Number/Closed Date:	9101757 / 1/15/2004
Spill Date:	5/14/1991
Spill Cause:	Tank Test Failure
Spill Source:	Institutional, Educational, Gov., Other
Spill Class:	Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
Cleanup Ceased:	Not reported
Cleanup Meets Standard:	False
SWIS:	4101
Investigator:	SMSANGES
Referred To:	Not reported
Reported to Dept:	5/14/1991
CID:	Not reported
Water Affected:	Not reported
Spill Notifier:	Tank Tester
Last Inspection:	Not reported
Recommended Penalty:	False
UST Involvement:	False
Remediation Phase:	0
Date Entered In Computer:	5/15/1991
Spill Record Last Update:	1/15/2004
Spiller Name:	Not reported
Spiller Company:	NYC BD OF EDUCATION
Spiller Address:	301 RYDER AVENUE
Spiller City,St,Zip:	BRONX, NY
Spiller County:	001
Spiller Contact:	Not reported
Spiller Phone:	Not reported
Spiller Extention:	Not reported
DEC Region:	2
DER Facility ID:	113516
DEC Memo:	Prior to Sept, 2004 data translation this spill Lead_DEC Field was "SANGESLAND"tanks were retested and passed on:Tank 001 - 3/15/2000Tank 002 - 1/3/2001
Remarks:	7.5K TANK, SYSTEM TEST,FAILED AINLAY WITH A GROSS LEAK, WILL EXCAVATE,REPAIR & RETEST.

152-20 11TH AV/QUNS/PS193 (Continued) **S100153665**

Material:
Site ID:	131752
Operable Unit ID:	955342
Operable Unit:	01
Material ID:	424304
Material Code:	0002A
Material Name:	#4 Fuel Oil
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	-1
Units:	Pounds
Recovered:	No
Resource Affected:	Not reported
Oxygenate:	False

Tank Test:
Site ID:	131752
Spill Tank Test:	1538547
Tank Number:	Not reported
Tank Size:	0
Test Method:	00
Leak Rate:	0
Gross Fail:	Not reported
Modified By:	Spills
Last Modified:	10/1/2004
Test Method:	Unknown

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38 **RANSHAW FUEL OIL** **UST U001834786**
SE **151-01 14TH AVE** **HIST UST N/A**
1/8-1/4 **WHITESTONE, NY 11357**
0.203 mi.
1074 ft.

Relative:
Higher

Actual:
63 ft.

UST:
Id/Status:	2-236705 / Unregulated
Region:	STATE
DEC Region:	2
Program Type:	PBS
Expiration Date:	N/A
UTM X:	600276.65315999999
UTM Y:	4516059.8439300004

Affiliation Records:
Site Id:	8785
Affiliation Type:	Facility Owner
Company Name:	CLEANTHIS MEIMAROGLOU
Contact Type:	Not reported
Contact Name:	Not reported
Address1:	85-18 167TH ST
Address2:	Not reported
City:	JAMMICA
State:	NY
Zip Code:	11432
Country Code:	001
Phone:	(718) 523-1038
Phone Ext:	Not reported

RANSHAW FUEL OIL (Continued) **U001834786**

Email:	Not reported
Fax Number:	Not reported
Modified By:	TRANSLAT
Date Last Modified:	3/4/2004

Site Id:	8785
Affiliation Type:	Mail Contact
Company Name:	RANSHAW FUEL OIL
Contact Type:	Not reported
Contact Name:	Not reported
Address1:	151-01 14TH AVE
Address2:	P.O. BOX 461
City:	WHITESTONE
State:	NY
Zip Code:	11357-998
Country Code:	001
Phone:	(718) 767-8600
Phone Ext:	Not reported
Email:	Not reported
Fax Number:	Not reported
Modified By:	TRANSLAT
Date Last Modified:	3/4/2004

Site Id:	8785
Affiliation Type:	On-Site Operator
Company Name:	RANSHAW FUEL OIL
Contact Type:	Not reported
Contact Name:	CLEANTHIS MEIMAROGLOU
Address1:	Not reported
Address2:	Not reported
City:	Not reported
State:	NN
Zip Code:	Not reported
Country Code:	001
Phone:	(718) 767-7100
Phone Ext:	Not reported
Email:	Not reported
Fax Number:	Not reported
Modified By:	TRANSLAT
Date Last Modified:	3/4/2004

Site Id:	8785
Affiliation Type:	Emergency Contact
Company Name:	CLEANTHIS MEIMAROGLOU
Contact Type:	Not reported
Contact Name:	CLEANTHIS MEIMAROGLOU
Address1:	Not reported
Address2:	Not reported
City:	Not reported
State:	NN
Zip Code:	Not reported
Country Code:	001
Phone:	(718) 523-1038
Phone Ext:	Not reported
Email:	Not reported
Fax Number:	Not reported
Modified By:	TRANSLAT

RANSHAW FUEL OIL (Continued) **U001834786**

Date Last Modified: 3/4/2004

Tank Info:
Site ID: 8785

Tank Number: 001
Tank ID: 12697
Tank Status: Closed - Removed
Tank Type: Steel/carbon steel
Pipe Model: Not reported

Equipment Records:
F00 - Pipe External Protection - None
I04 - Overfill - Product Level Gauge (A/G)
C00 - Pipe Location - No Piping
A00 - Tank Internal Protection - None
B00 - Tank External Protection - None
G00 - Tank Secondary Containment - None
H99 - Tank Leak Detection - Other
D02 - Pipe Type - Galvanized Steel
J02 - Dispenser - Suction Dispenser
Install Date: 12/01/1965
Capacity Gallons: 550
Tightness Test Method: NN
Next Test Date: Not reported
Date Tank Closed: 05/01/1989
Tank Location: 5
Tank Type: Steel/carbon steel
Date Test: Not reported
Registered: True
Modified By: TRANSLAT
Last Modified: 03/04/2004

Site ID: 8785

Tank Number: 002
Tank ID: 12698
Tank Status: Closed - Removed
Tank Type: Steel/carbon steel
Pipe Model: Not reported

Equipment Records:
C00 - Pipe Location - No Piping
F00 - Pipe External Protection - None
I04 - Overfill - Product Level Gauge (A/G)
A00 - Tank Internal Protection - None
D02 - Pipe Type - Galvanized Steel
J02 - Dispenser - Suction Dispenser
G00 - Tank Secondary Containment - None
H99 - Tank Leak Detection - Other
B00 - Tank External Protection - None
Install Date: 12/01/1965
Capacity Gallons: 550
Tightness Test Method: NN
Next Test Date: Not reported
Date Tank Closed: 05/01/1989
Tank Location: 5
Tank Type: Steel/carbon steel

RANSHAW FUEL OIL (Continued) **U001834786**

Date Test:	Not reported
Registered:	True
Modified By:	TRANSLAT
Last Modified:	03/04/2004
Site ID:	8785
Tank Number:	003
Tank ID:	12699
Tank Status:	Closed - Removed
Tank Type:	Steel/carbon steel
Pipe Model:	Not reported

Equipment Records:

C00 - Pipe Location - No Piping
F00 - Pipe External Protection - None
I04 - Overfill - Product Level Gauge (A/G)
A00 - Tank Internal Protection - None
D02 - Pipe Type - Galvanized Steel
J02 - Dispenser - Suction Dispenser
G00 - Tank Secondary Containment - None
H99 - Tank Leak Detection - Other
B00 - Tank External Protection - None

Install Date:	12/01/1965
Capacity Gallons:	550
Tightness Test Method:	NN
Next Test Date:	Not reported
Date Tank Closed:	05/01/1989
Tank Location:	5
Tank Type:	Steel/carbon steel
Date Test:	Not reported
Registered:	True
Modified By:	TRANSLAT
Last Modified:	03/04/2004
Site ID:	8785
Tank Number:	004
Tank ID:	12700
Tank Status:	Closed - Removed
Tank Type:	Steel/carbon steel
Pipe Model:	Not reported

Equipment Records:

C00 - Pipe Location - No Piping
F00 - Pipe External Protection - None
I04 - Overfill - Product Level Gauge (A/G)
A00 - Tank Internal Protection - None
D02 - Pipe Type - Galvanized Steel
J02 - Dispenser - Suction Dispenser
G00 - Tank Secondary Containment - None
H99 - Tank Leak Detection - Other
B00 - Tank External Protection - None

Install Date:	12/01/1965
Capacity Gallons:	550
Tightness Test Method:	NN
Next Test Date:	Not reported
Date Tank Closed:	05/01/1989

RANSHAW FUEL OIL (Continued) **U001834786**

Tank Location: 5
Tank Type: Steel/carbon steel
Date Test: Not reported
Registered: True
Modified By: TRANSLAT
Last Modified: 03/04/2004

Site ID: 8785

Tank Number: 005
Tank ID: 12701
Tank Status: Closed - Removed
Tank Type: Steel/carbon steel
Pipe Model: Not reported

Equipment Records:
C00 - Pipe Location - No Piping
F00 - Pipe External Protection - None
I04 - Overfill - Product Level Gauge (A/G)
A00 - Tank Internal Protection - None
D02 - Pipe Type - Galvanized Steel
J02 - Dispenser - Suction Dispenser
G00 - Tank Secondary Containment - None
H99 - Tank Leak Detection - Other
B00 - Tank External Protection - None
Install Date: 12/01/1965
Capacity Gallons: 550
Tightness Test Method: NN
Next Test Date: Not reported
Date Tank Closed: 05/01/1989
Tank Location: 5
Tank Type: Steel/carbon steel
Date Test: Not reported
Registered: True
Modified By: TRANSLAT
Last Modified: 03/04/2004

Site ID: 8785

Tank Number: 006
Tank ID: 12702
Tank Status: Closed - Removed
Tank Type: Steel/carbon steel
Pipe Model: Not reported

Equipment Records:
C00 - Pipe Location - No Piping
F00 - Pipe External Protection - None
I04 - Overfill - Product Level Gauge (A/G)
B00 - Tank External Protection - None
G00 - Tank Secondary Containment - None
H99 - Tank Leak Detection - Other
A00 - Tank Internal Protection - None
D02 - Pipe Type - Galvanized Steel
J02 - Dispenser - Suction Dispenser
Install Date: 12/01/1965
Capacity Gallons: 550
Tightness Test Method: NN

RANSHAW FUEL OIL (Continued) **U001834786**

Next Test Date:	Not reported
Date Tank Closed:	05/01/1989
Tank Location:	5
Tank Type:	Steel/carbon steel
Date Test:	Not reported
Registered:	True
Modified By:	TRANSLAT
Last Modified:	03/04/2004
Site ID:	8785
Tank Number:	007
Tank ID:	12703
Tank Status:	Closed - Removed
Tank Type:	Steel/carbon steel
Pipe Model:	Not reported

Equipment Records:

C00 - Pipe Location - No Piping
F00 - Pipe External Protection - None
I04 - Overfill - Product Level Gauge (A/G)
G00 - Tank Secondary Containment - None
H99 - Tank Leak Detection - Other
A00 - Tank Internal Protection - None
D02 - Pipe Type - Galvanized Steel
J02 - Dispenser - Suction Dispenser
B00 - Tank External Protection - None

Install Date:	12/01/1979
Capacity Gallons:	2000
Tightness Test Method:	NN
Next Test Date:	Not reported
Date Tank Closed:	05/01/1989
Tank Location:	5
Tank Type:	Steel/carbon steel
Date Test:	Not reported
Registered:	True
Modified By:	TRANSLAT
Last Modified:	03/04/2004

HIST UST:

PBS Number:	2-236705
SPDES Number:	Not reported
Emergency Contact:	CLEANTHIS MEIMAROGLOU
Emergency Telephone:	(718) 523-1038
Operator:	CLEANTHIS MEIMAROGLOU
Operator Telephone:	(718) 767-7100
Owner Name:	CLEANTHIS MEIMAROGLOU
Owner Address:	85-18 167TH ST
Owner City,St,Zip:	JAMMICA, NY 11432
Owner Telephone:	(718) 523-1038
Owner Type:	Not reported
Owner Subtype:	Not reported
Mailing Name:	RANSHAW FUEL OIL
Mailing Address:	151-01 14TH AVE
Mailing Address 2:	P.O. BOX 461
Mailing City,St,Zip:	WHITESTONE, NY 11357-998
Mailing Contact:	Not reported

RANSHAW FUEL OIL (Continued) **U001834786**

Mailing Telephone:	(718) 767-8600
Owner Mark:	First Owner
Facility Status:	2 - Unregulated by PBS (the total capacity is less than 1,101 gallons) and Subpart 360-14.
Facility Addr2:	151001 14TH ST
SWIS ID:	6301
Old PBS Number:	Not reported
Facility Type:	Not reported
Inspected Date:	Not reported
Inspector:	Not reported
Inspection Result:	Not reported
Federal ID:	Not reported
Certification Flag:	False
Certification Date:	09/19/1987
Expiration Date:	09/19/1992
Renew Flag:	False
Renewal Date:	Not reported
Total Capacity:	0
FAMT:	True
Facility Screen:	Minor Data Missing
Owner Screen:	Minor Data Missing
Tank Screen:	0
Dead Letter:	False
CBS Number:	Not reported
Town or City:	NEW YORK CITY
County Code:	63
Town or City:	01
Region:	2

Tank Id:	001
Tank Location:	UNDERGROUND
Tank Status:	Closed-Removed
Install Date:	19651201
Capacity (gals):	550
Product Stored:	UNLEADED GASOLINE
Tank Type:	Steel/carbon steel
Tank Internal:	Not reported
Tank External:	Not reported
Pipe Location:	Not reported
Pipe Type:	GALVANIZED STEEL
Pipe Internal:	Not reported
Pipe External:	Not reported
Second Containment:	None
Leak Detection:	Other
Overfill Prot:	Product Level Gauge
Dispenser:	Suction
Date Tested:	Not reported
Next Test Date:	Not reported
Missing Data for Tank:	Minor Data Missing
Date Closed:	05/01/1989
Test Method:	Not reported
Deleted:	False
Updated:	True
Lat/long:	Not reported

Tank Id:	002

RANSHAW FUEL OIL (Continued) **U001834786**

Tank Location:	UNDERGROUND
Tank Status:	Closed-Removed
Install Date:	19651201
Capacity (gals):	550
Product Stored:	UNLEADED GASOLINE
Tank Type:	Steel/carbon steel
Tank Internal:	Not reported
Tank External:	Not reported
Pipe Location:	Not reported
Pipe Type:	GALVANIZED STEEL
Pipe Internal:	Not reported
Pipe External:	Not reported
Second Containment:	None
Leak Detection:	Other
Overfill Prot:	Product Level Gauge
Dispenser:	Suction
Date Tested:	Not reported
Next Test Date:	Not reported
Missing Data for Tank:	Minor Data Missing
Date Closed:	05/01/1989
Test Method:	Not reported
Deleted:	False
Updated:	True
Lat/long:	Not reported

Tank Id:	003
Tank Location:	UNDERGROUND
Tank Status:	Closed-Removed
Install Date:	19651201
Capacity (gals):	550
Product Stored:	UNLEADED GASOLINE
Tank Type:	Steel/carbon steel
Tank Internal:	Not reported
Tank External:	Not reported
Pipe Location:	Not reported
Pipe Type:	GALVANIZED STEEL
Pipe Internal:	Not reported
Pipe External:	Not reported
Second Containment:	None
Leak Detection:	Other
Overfill Prot:	Product Level Gauge
Dispenser:	Suction
Date Tested:	Not reported
Next Test Date:	Not reported
Missing Data for Tank:	Minor Data Missing
Date Closed:	05/01/1989
Test Method:	Not reported
Deleted:	False
Updated:	True
Lat/long:	Not reported

Tank Id:	004
Tank Location:	UNDERGROUND
Tank Status:	Closed-Removed
Install Date:	19651201

RANSHAW FUEL OIL (Continued) **U001834786**

Capacity (gals):	550
Product Stored:	UNLEADED GASOLINE
Tank Type:	Steel/carbon steel
Tank Internal:	Not reported
Tank External:	Not reported
Pipe Location:	Not reported
Pipe Type:	GALVANIZED STEEL
Pipe Internal:	Not reported
Pipe External:	Not reported
Second Containment:	None
Leak Detection:	Other
Overfill Prot:	Product Level Gauge
Dispenser:	Suction
Date Tested:	Not reported
Next Test Date:	Not reported
Missing Data for Tank:	Minor Data Missing
Date Closed:	05/01/1989
Test Method:	Not reported
Deleted:	False
Updated:	True
Lat/long:	Not reported

Tank Id:	005
Tank Location:	UNDERGROUND
Tank Status:	Closed-Removed
Install Date:	19651201
Capacity (gals):	550
Product Stored:	UNLEADED GASOLINE
Tank Type:	Steel/carbon steel
Tank Internal:	Not reported
Tank External:	Not reported
Pipe Location:	Not reported
Pipe Type:	GALVANIZED STEEL
Pipe Internal:	Not reported
Pipe External:	Not reported
Second Containment:	None
Leak Detection:	Other
Overfill Prot:	Product Level Gauge
Dispenser:	Suction
Date Tested:	Not reported
Next Test Date:	Not reported
Missing Data for Tank:	Minor Data Missing
Date Closed:	05/01/1989
Test Method:	Not reported
Deleted:	False
Updated:	True
Lat/long:	Not reported

Tank Id:	006
Tank Location:	UNDERGROUND
Tank Status:	Closed-Removed
Install Date:	19651201
Capacity (gals):	550
Product Stored:	UNLEADED GASOLINE
Tank Type:	Steel/carbon steel

RANSHAW FUEL OIL (Continued) **U001834786**

Tank Internal:	Not reported
Tank External:	Not reported
Pipe Location:	Not reported
Pipe Type:	GALVANIZED STEEL
Pipe Internal:	Not reported
Pipe External:	Not reported
Second Containment:	None
Leak Detection:	Other
Overfill Prot:	Product Level Gauge
Dispenser:	Suction
Date Tested:	Not reported
Next Test Date:	Not reported
Missing Data for Tank:	Minor Data Missing
Date Closed:	05/01/1989
Test Method:	Not reported
Deleted:	False
Updated:	True
Lat/long:	Not reported

Tank Id:	007
Tank Location:	UNDERGROUND
Tank Status:	Closed-Removed
Install Date:	19791201
Capacity (gals):	2000
Product Stored:	UNLEADED GASOLINE
Tank Type:	Steel/carbon steel
Tank Internal:	Not reported
Tank External:	Not reported
Pipe Location:	Not reported
Pipe Type:	GALVANIZED STEEL
Pipe Internal:	Not reported
Pipe External:	Not reported
Second Containment:	None
Leak Detection:	Other
Overfill Prot:	Product Level Gauge
Dispenser:	Suction
Date Tested:	Not reported
Next Test Date:	Not reported
Missing Data for Tank:	Minor Data Missing
Date Closed:	05/01/1989
Test Method:	Not reported
Deleted:	False
Updated:	True
Lat/long:	Not reported

39
WSW
1/8-1/4
0.211 mi.
1115 ft.

14832 11TH AVE
WHITESTONE, NY 11357

EDR US Hist Cleaners **1014995279**
N/A

Relative:
Higher

Actual:
76 ft.

EDR Historical Cleaners:

Name:	ROMA LAUNDRY INC
Year:	2006
Address:	14832 11TH AVE
Name:	ROMA LAUNDRY INC

(Continued) **1014995279**

Year: 2007
Address: 14832 11TH AVE

Name: ROMA LAUNDRY INC
Year: 2008
Address: 14832 11TH AVE

Name: ROMA LAUNDRY INC
Year: 2009
Address: 14832 11TH AVE

J40 **RESIDENCE** **LTANKS** **S106868981**
South **14-20 150 ST.** **N/A**
1/8-1/4 **WHITESTONE, NY**
0.212 mi.
1120 ft. **Site 1 of 7 in cluster J**

Relative:
Higher

Actual:
71 ft.

LTANKS:
Site ID: 342531
Spill Number/Closed Date: 0413426 / 4/5/2005
Spill Date: 3/25/2005
Spill Cause: Tank Overfill
Spill Source: Private Dwelling
Spill Class: Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
Cleanup Ceased: Not reported
Cleanup Meets Standard: True
SWIS: 4101
Investigator: MXTIPPLE
Referred To: Not reported
Reported to Dept: 3/25/2005
CID: 408
Water Affected: Not reported
Spill Notifier: Responsible Party
Last Inspection: Not reported
Recommended Penalty: False
UST Involvement: False
Remediation Phase: 0
Date Entered In Computer: 3/25/2005
Spill Record Last Update: 4/5/2005
Spiller Name: THOMAS BUTLER
Spiller Company: CONSUMERS ENERGY GROUP
Spiller Address: 222 VARICK AVE.
Spiller City,St,Zip: BROOKLYN, NY 11237
Spiller County: 001
Spiller Contact: JOESPH DAGOSTINO
Spiller Phone: (718) 746-9267
Spiller Extention: Not reported
DEC Region: 2
DER Facility ID: 288882
DEC Memo: 4/5/05 Tipple spoke with store owner at spill location, spill cleaned, NFA
Remarks: material is on the vent pipe and on the side of the tank. Has been cleaned up

Material:
Site ID: 342531

RESIDENCE (Continued) **S106868981**

Operable Unit ID:	1101258
Operable Unit:	01
Material ID:	581394
Material Code:	0001A
Material Name:	#2 Fuel Oil
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	1
Units:	Gallons
Recovered:	Yes
Resource Affected:	Not reported
Oxygenate:	False

Tank Test:

J41 **SMILE DRY CLEANERS** **MANIFEST** **S106436301**
South **14-24 150TH STREET** **DRYCLEANERS** **N/A**
1/8-1/4 **WHITESTONE, NY 11357**
0.215 mi.
1136 ft. **Site 2 of 7 in cluster J**

Relative:
Higher

Actual:
70 ft.

NY MANIFEST:

EPA ID:	NYD046136909
Country:	USA
Mailing Name:	SMILE DRY CLEANERS
Mailing Contact:	SMILE DRY CLEANERS
Mailing Address:	14-24 150TH STREET
Mailing Address 2:	Not reported
Mailing City:	WHITESTONE
Mailing State:	NY
Mailing Zip:	11357
Mailing Zip4:	Not reported
Mailing Country:	USA
Mailing Phone:	718-767-3026

NY MANIFEST:

No Manifest Records Available

DRYCLEANERS:

Facility ID:	2-6302-00628
Phone Number:	718-767-3026
Region:	Not reported
Registration Effective Date:	2/20/2003 14:16:13:643
Inspection Date:	07SEP28
Install Date:	90/03
Drop Shop:	Not reported
Shutdown:	Not reported
Alternate Solvent:	Not reported
Current Business:	Not reported

J42 **SMILE CLEANERS** **RCRA-CESQG** **1004756336**
South **14-24 150TH ST** **FINDS** **NYD046136909**
1/8-1/4 **WHITESTONE, NY 11357** **US AIRS**
0.215 mi.
1136 ft. **Site 3 of 7 in cluster J**

Relative:
Higher

Actual:
70 ft.

RCRA-CESQG:

Date form received by agency:	01/01/2007
Facility name:	SMILE CLEANERS
Facility address:	14-24 150TH ST WHITESTONE, NY 11357
EPA ID:	NYD046136909
Mailing address:	150TH ST WHITESTONE, NY 11357
Contact:	JEWAN PARK
Contact address:	150TH ST WHITESTONE, NY 11357
Contact country:	US
Contact telephone:	(718) 767-3026
Contact email:	Not reported
EPA Region:	02
Classification:	Conditionally Exempt Small Quantity Generator
Description:	Handler: generates 100 kg or less of hazardous waste per calendar month, and accumulates 1000 kg or less of hazardous waste at any time; or generates 1 kg or less of acutely hazardous waste per calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste

Owner/Operator Summary:

Owner/operator name:	SMILE CLEANERS
Owner/operator address:	14-24 150TH ST WHITESTONE, NY 11357
Owner/operator country:	US
Owner/operator telephone:	(718) 767-3026
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Owner/operator name:	SMILE CLEANERS
Owner/operator address:	14-24 150TH ST WHITESTONE, NY 11357
Owner/operator country:	US
Owner/operator telephone:	(718) 767-3026
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

SMILE CLEANERS (Continued) **1004756336**

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Historical Generators:
Date form received by agency: 01/01/2006
Facility name: SMILE CLEANERS
Classification: Conditionally Exempt Small Quantity Generator

Date form received by agency: 06/06/2000
Facility name: SMILE CLEANERS
Classification: Conditionally Exempt Small Quantity Generator

Violation Status: No violations found

FINDS:

Registry ID: 110004356269

Environmental Interest/Information System

AFS (Aerometric Information Retrieval System (AIRS) Facility Subsystem) replaces the former Compliance Data System (CDS), the National Emission Data System (NEDS), and the Storage and Retrieval of Aerometric Data (SAROAD). AIRS is the national repository for information concerning airborne pollution in the United States. AFS is used to track emissions and compliance data from industrial plants. AFS data are utilized by states to prepare State Implementation Plans to comply with regulatory programs and by EPA as an input for the estimation of total national emissions. AFS is undergoing a major redesign to support facility operating permits required under Title V of the Clean Air Act.

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

FIS (New York - Facility Information System) is New York's Department of Environmental Conservation (DEC) information system for tracking environmental facility information found across the State.

SMILE CLEANERS (Continued) **1004756336**

AIRS (AFS):

Airs Minor Details:

EPA plant ID:	110019709822
Plant name:	SMILE CLEANERS
Plant address:	14-24 150TH ST WHITESTONE, NY 113571750
County:	QUEENS
Region code:	02
Dunn & Bradst #:	Not reported
Air quality cntrl region:	043
Sic code:	7216
Sic code desc:	DRYCLEANING PLANTS, EXCEPT RUG
North Am. industrial classf:	812320
NAIC code description:	Drycleaning and Laundry Services (except Coin-Operated)
Default compliance status:	IN COMPLIANCE WITH PROCEDURAL REQUIREMENTS
Default classification:	POTENTIAL UNCONTROLLED EMISSIONS < 100 TONS/YEAR
Govt facility:	ALL OTHER FACILITIES NOT OWNED OR OPERATED BY A FEDERAL, STATE, OR LOCAL GOVERNMENT
Current HPV:	Not reported

Compliance and Enforcement Major Issues:

Air program:	SIP SOURCE
National action type:	Not reported
Date achieved:	00000
Penalty amount:	Not reported
Air program:	SIP SOURCE
National action type:	Not reported
Date achieved:	00000
Penalty amount:	Not reported

Historical Compliance Minor Sources:

State compliance status:	IN COMPLIANCE WITH PROCEDURAL REQUIREMENTS
Hist compliance date:	1001
Air prog code hist file:	M
State compliance status:	IN COMPLIANCE WITH PROCEDURAL REQUIREMENTS
Hist compliance date:	1002
Air prog code hist file:	M
State compliance status:	IN COMPLIANCE WITH PROCEDURAL REQUIREMENTS
Hist compliance date:	1004
Air prog code hist file:	0
State compliance status:	IN COMPLIANCE WITH PROCEDURAL REQUIREMENTS
Hist compliance date:	1101
Air prog code hist file:	0
State compliance status:	IN COMPLIANCE WITH PROCEDURAL REQUIREMENTS
Hist compliance date:	1102
Air prog code hist file:	M
State compliance status:	IN COMPLIANCE WITH PROCEDURAL REQUIREMENTS

SMILE CLEANERS (Continued) **1004756336**

Hist compliance date: 1103
Air prog code hist file: M

State compliance status: IN COMPLIANCE WITH PROCEDURAL REQUIREMENTS
Hist compliance date: 1201
Air prog code hist file: 0

State compliance status: IN COMPLIANCE WITH PROCEDURAL REQUIREMENTS
Hist compliance date: 1202
Air prog code hist file: 0

State compliance status: IN COMPLIANCE WITH PROCEDURAL REQUIREMENTS
Hist compliance date: 1203
Air prog code hist file: M

State compliance status: IN COMPLIANCE WITH PROCEDURAL REQUIREMENTS
Hist compliance date: 1204
Air prog code hist file: M

State compliance status: IN COMPLIANCE WITH PROCEDURAL REQUIREMENTS
Hist compliance date: 1001
Air prog code hist file: 0

State compliance status: IN COMPLIANCE WITH PROCEDURAL REQUIREMENTS
Hist compliance date: 1002
Air prog code hist file: 0

State compliance status: IN COMPLIANCE WITH PROCEDURAL REQUIREMENTS
Hist compliance date: 1003
Air prog code hist file: 0

State compliance status: IN COMPLIANCE WITH PROCEDURAL REQUIREMENTS
Hist compliance date: 1003
Air prog code hist file: M

State compliance status: IN COMPLIANCE WITH PROCEDURAL REQUIREMENTS
Hist compliance date: 1004
Air prog code hist file: M

State compliance status: IN COMPLIANCE WITH PROCEDURAL REQUIREMENTS
Hist compliance date: 1101
Air prog code hist file: M

State compliance status: IN COMPLIANCE WITH PROCEDURAL REQUIREMENTS
Hist compliance date: 1102
Air prog code hist file: 0

State compliance status: IN COMPLIANCE WITH PROCEDURAL REQUIREMENTS
Hist compliance date: 1103
Air prog code hist file: 0

State compliance status: IN COMPLIANCE WITH PROCEDURAL REQUIREMENTS
Hist compliance date: 1104
Air prog code hist file: 0

State compliance status: IN COMPLIANCE WITH PROCEDURAL REQUIREMENTS
Hist compliance date: 1104

SMILE CLEANERS (Continued) **1004756336**

Air prog code hist file: M

State compliance status: IN COMPLIANCE WITH PROCEDURAL REQUIREMENTS
Hist compliance date: 1201
Air prog code hist file: M

State compliance status: IN COMPLIANCE WITH PROCEDURAL REQUIREMENTS
Hist compliance date: 1202
Air prog code hist file: M

State compliance status: IN COMPLIANCE WITH PROCEDURAL REQUIREMENTS
Hist compliance date: 1203
Air prog code hist file: 0

State compliance status: IN COMPLIANCE WITH PROCEDURAL REQUIREMENTS
Hist compliance date: 1204
Air prog code hist file: 0

Compliance & Violation Data by Minor Sources:
Air program code: SIP SOURCE
Plant air program pollutant: Not reported
Default pollutant classification: POTENTIAL UNCONTROLLED EMISSIONS < 100 TONS/YEAR
Def. poll. compliance status: IN COMPLIANCE WITH PROCEDURAL REQUIREMENTS
Def. attainment/non attnmnt: ATTAINMENT AREA FOR GIVEN POLLUTANT
Repeat violator date: Not reported
Turnover compliance: Not reported

Air program code: MACT (SECTION 63 NESHAPS)
Plant air program pollutant: Not reported
Default pollutant classification: POTENTIAL UNCONTROLLED EMISSIONS < 100 TONS/YEAR
Def. poll. compliance status: IN COMPLIANCE WITH PROCEDURAL REQUIREMENTS
Def. attainment/non attnmnt: ATTAINMENT AREA FOR GIVEN POLLUTANT
Repeat violator date: Not reported
Turnover compliance: Not reported

Air program code: MACT (SECTION 63 NESHAPS)
Plant air program pollutant: Not reported
Default pollutant classification: POTENTIAL UNCONTROLLED EMISSIONS < 100 TONS/YEAR
Def. poll. compliance status: IN COMPLIANCE WITH PROCEDURAL REQUIREMENTS
Def. attainment/non attnmnt: UNCLASSIFIED
Repeat violator date: Not reported
Turnover compliance: Not reported

Air program code: MACT (SECTION 63 NESHAPS)
Plant air program pollutant: Not reported
Default pollutant classification: POTENTIAL UNCONTROLLED EMISSIONS < 100 TONS/YEAR
Def. poll. compliance status: IN COMPLIANCE WITH PROCEDURAL REQUIREMENTS
Def. attainment/non attnmnt: ATTAINMENT AREA FOR GIVEN POLLUTANT
Repeat violator date: Not reported
Turnover compliance: Not reported

J43 **J & S FRENCH CLEANERS CO** **RCRA NonGen / NLR** **1000151620**
South **14-24 150TH ST** **MANIFEST** **NYD982528911**
1/8-1/4 **WHITESTONE, NY 11357**
0.215 mi.
1136 ft. **Site 4 of 7 in cluster J**

Relative:
Higher

Actual:
70 ft.

RCRA NonGen / NLR:

Date form received by agency:	01/01/2007
Facility name:	J & S FRENCH CLEANERS CO
Facility address:	14-24 150TH ST WHITESTONE, NY 113571750
EPA ID:	NYD982528911
Mailing address:	150TH ST WHITESTONE, NY 11357
Contact:	Not reported
Contact address:	150TH ST WHITESTONE, NY 11357
Contact country:	US
Contact telephone:	Not reported
Contact email:	Not reported
EPA Region:	02
Classification:	Non-Generator
Description:	Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:

Owner/operator name:	JAMES LEE
Owner/operator address:	NOT REQUIRED NOT REQUIRED, WY 99999
Owner/operator country:	US
Owner/operator telephone:	(212) 555-1212
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Owner/operator name:	JAMES LEE
Owner/operator address:	NOT REQUIRED NOT REQUIRED, WY 99999
Owner/operator country:	US
Owner/operator telephone:	(212) 555-1212
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No

J & S FRENCH CLEANERS CO (Continued) **1000151620**

Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Historical Generators:
Date form received by agency: 01/01/2006
Facility name: J & S FRENCH CLEANERS CO
Classification: Not a generator, verified

Date form received by agency: 07/08/1999
Facility name: J & S FRENCH CLEANERS CO
Classification: Not a generator, verified

Date form received by agency: 02/08/1988
Facility name: J & S FRENCH CLEANERS CO
Classification: Small Quantity Generator

Violation Status: No violations found

NY MANIFEST:
EPA ID: NYD982528911
Country: USA
Mailing Name: J & S CLEANERS
Mailing Contact: J & S CLEANERS
Mailing Address: 14-24 150 STREET
Mailing Address 2: Not reported
Mailing City: WHITESTONE
Mailing State: NY
Mailing Zip: 11357
Mailing Zip4: Not reported
Mailing Country: USA
Mailing Phone: 718-767-3026

Document ID: NYA9833411
Manifest Status: Completed copy
Trans1 State ID: AP4503NY
Trans2 State ID: Not reported
Generator Ship Date: 891222
Trans1 Recv Date: 891222
Trans2 Recv Date: Not reported
TSD Site Recv Date: 891222
Part A Recv Date: 891228
Part B Recv Date: 900103
Generator EPA ID: NYD982528911
Trans1 EPA ID: ILD051060408
Trans2 EPA ID: Not reported
TSDF ID: NYD980785760
Waste Code: F002 - HALO SOLV + STILL BOTTOMS FM REC OF SOLV
Quantity: 00120
Units: P - Pounds
Number of Containers: 002
Container Type: DM - Metal drums, barrels
Handling Method: B Incineration, heat recovery, burning.
Specific Gravity: 100
Year: 89

J & S FRENCH CLEANERS CO (Continued) **1000151620**

Document ID:	NYA9633025
Manifest Status:	Completed copy
Trans1 State ID:	000000000
Trans2 State ID:	000000000
Generator Ship Date:	890815
Trans1 Recv Date:	890815
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	890815
Part A Recv Date:	890818
Part B Recv Date:	890823
Generator EPA ID:	NYD982528911
Trans1 EPA ID:	ILD051060408
Trans2 EPA ID:	Not reported
TSDF ID:	NYD980785760
Waste Code:	F002 - HALO SOLV + STILL BOTTOMS FM REC OF SOLV
Quantity:	00080
Units:	P - Pounds
Number of Containers:	001
Container Type:	DF - Fiberboard or plastic drums (glass)
Handling Method:	R Material recovery of more than 75 percent of the total material.
Specific Gravity:	100
Year:	89

Document ID:	NYA9713698
Manifest Status:	Completed copy
Trans1 State ID:	Not reported
Trans2 State ID:	Not reported
Generator Ship Date:	890913
Trans1 Recv Date:	890913
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	890913
Part A Recv Date:	890918
Part B Recv Date:	890920
Generator EPA ID:	NYD982528911
Trans1 EPA ID:	ILD051060408
Trans2 EPA ID:	Not reported
TSDF ID:	NYD980785760
Waste Code:	F002 - HALO SOLV + STILL BOTTOMS FM REC OF SOLV
Quantity:	00080
Units:	P - Pounds
Number of Containers:	001
Container Type:	CF - Fiber or plastic boxes, cartons
Handling Method:	R Material recovery of more than 75 percent of the total material.
Specific Gravity:	100
Year:	89

Document ID:	NYA8704012
Manifest Status:	Completed after the designated time period for a TSDF to get a copy to the DEC
Trans1 State ID:	NYAM6252
Trans2 State ID:	Not reported
Generator Ship Date:	880308
Trans1 Recv Date:	880308
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	880308
Part A Recv Date:	880404

J & S FRENCH CLEANERS CO (Continued) **1000151620**

Part B Recv Date:	880315
Generator EPA ID:	NYD982528911
Trans1 EPA ID:	ILD051060408
Trans2 EPA ID:	Not reported
TSDF ID:	NYD980785760
Waste Code:	F002 - HALO SOLV + STILL BOTTOMS FM REC OF SOLV
Quantity:	00080
Units:	P - Pounds
Number of Containers:	001
Container Type:	CF - Fiber or plastic boxes, cartons
Handling Method:	R Material recovery of more than 75 percent of the total material.
Specific Gravity:	100
Year:	88

Document ID:	NYA6785155
Manifest Status:	Completed copy
Trans1 State ID:	NYAM6252
Trans2 State ID:	Not reported
Generator Ship Date:	880331
Trans1 Recv Date:	880331
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	880331
Part A Recv Date:	880404
Part B Recv Date:	880412
Generator EPA ID:	NYD982528911
Trans1 EPA ID:	ILD051060408
Trans2 EPA ID:	Not reported
TSDF ID:	NYD980785760
Waste Code:	F002 - HALO SOLV + STILL BOTTOMS FM REC OF SOLV
Quantity:	00080
Units:	P - Pounds
Number of Containers:	001
Container Type:	CF - Fiber or plastic boxes, cartons
Handling Method:	R Material recovery of more than 75 percent of the total material.
Specific Gravity:	100
Year:	88

Document ID:	NYA8778644
Manifest Status:	Completed copy
Trans1 State ID:	NYAM6252
Trans2 State ID:	Not reported
Generator Ship Date:	880428
Trans1 Recv Date:	880428
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	880428
Part A Recv Date:	880503
Part B Recv Date:	880502
Generator EPA ID:	NYD982528911
Trans1 EPA ID:	ILD051060408
Trans2 EPA ID:	Not reported
TSDF ID:	NYD980785760
Waste Code:	F002 - HALO SOLV + STILL BOTTOMS FM REC OF SOLV
Quantity:	00080
Units:	P - Pounds
Number of Containers:	001

J & S FRENCH CLEANERS CO (Continued) **1000151620**

Container Type: CF - Fiber or plastic boxes, cartons
Handling Method: R Material recovery of more than 75 percent of the total material.
Specific Gravity: 100
Year: 88

Document ID: NYA8779476
Manifest Status: Completed copy
Trans1 State ID: NYAM6252
Trans2 State ID: Not reported
Generator Ship Date: 880524
Trans1 Recv Date: 880524
Trans2 Recv Date: Not reported
TSD Site Recv Date: 880524
Part A Recv Date: 880603
Part B Recv Date: 880601
Generator EPA ID: NYD982528911
Trans1 EPA ID: ILD051060408
Trans2 EPA ID: Not reported
TSDF ID: NYD980785760
Waste Code: F002 - HALO SOLV + STILL BOTTOMS FM REC OF SOLV
Quantity: 00080
Units: P - Pounds
Number of Containers: 001
Container Type: CF - Fiber or plastic boxes, cartons
Handling Method: R Material recovery of more than 75 percent of the total material.
Specific Gravity: 100
Year: 88

Document ID: NYA8901099
Manifest Status: Completed copy
Trans1 State ID: AY9381
Trans2 State ID: Not reported
Generator Ship Date: 880622
Trans1 Recv Date: 880622
Trans2 Recv Date: Not reported
TSD Site Recv Date: 880622
Part A Recv Date: 880628
Part B Recv Date: 880628
Generator EPA ID: NYD982528911
Trans1 EPA ID: ILD051060408
Trans2 EPA ID: Not reported
TSDF ID: NYD980785760
Waste Code: F002 - HALO SOLV + STILL BOTTOMS FM REC OF SOLV
Quantity: 00080
Units: P - Pounds
Number of Containers: 001
Container Type: CF - Fiber or plastic boxes, cartons
Handling Method: R Material recovery of more than 75 percent of the total material.
Specific Gravity: 100
Year: 88

Document ID: NYA9081527
Manifest Status: Completed copy
Trans1 State ID: AY9381

J & S FRENCH CLEANERS CO (Continued) **1000151620**

Trans2 State ID:	Not reported
Generator Ship Date:	880916
Trans1 Recv Date:	880916
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	880916
Part A Recv Date:	880920
Part B Recv Date:	880923
Generator EPA ID:	NYD982528911
Trans1 EPA ID:	ILD051060408
Trans2 EPA ID:	Not reported
TSDF ID:	NYD980785760
Waste Code:	F002 - HALO SOLV + STILL BOTTOMS FM REC OF SOLV
Quantity:	00080
Units:	P - Pounds
Number of Containers:	001
Container Type:	CF - Fiber or plastic boxes, cartons
Handling Method:	R Material recovery of more than 75 percent of the total material.
Specific Gravity:	100
Year:	88

Document ID:	NYA9344902
Manifest Status:	Completed copy
Trans1 State ID:	LP3931NY
Trans2 State ID:	Not reported
Generator Ship Date:	890307
Trans1 Recv Date:	890307
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	890307
Part A Recv Date:	890314
Part B Recv Date:	890313
Generator EPA ID:	NYD982528911
Trans1 EPA ID:	ILD051060408
Trans2 EPA ID:	Not reported
TSDF ID:	NYD980785760
Waste Code:	F002 - HALO SOLV + STILL BOTTOMS FM REC OF SOLV
Quantity:	00080
Units:	P - Pounds
Number of Containers:	001
Container Type:	CF - Fiber or plastic boxes, cartons
Handling Method:	R Material recovery of more than 75 percent of the total material.
Specific Gravity:	100
Year:	89

Document ID:	NYA9071583
Manifest Status:	Completed copy
Trans1 State ID:	AY9381
Trans2 State ID:	Not reported
Generator Ship Date:	881013
Trans1 Recv Date:	881013
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	881013
Part A Recv Date:	881018
Part B Recv Date:	881018
Generator EPA ID:	NYD982528911
Trans1 EPA ID:	ILD051060408

J & S FRENCH CLEANERS CO (Continued) **1000151620**

Trans2 EPA ID:	Not reported
TSDF ID:	NYD980785760
Waste Code:	F002 - HALO SOLV + STILL BOTTOMS FM REC OF SOLV
Quantity:	00080
Units:	P - Pounds
Number of Containers:	001
Container Type:	CF - Fiber or plastic boxes, cartons
Handling Method:	R Material recovery of more than 75 percent of the total material.
Specific Gravity:	100
Year:	88

Document ID:	NYA9166048
Manifest Status:	Completed copy
Trans1 State ID:	AY9381
Trans2 State ID:	Not reported
Generator Ship Date:	881207
Trans1 Recv Date:	881207
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	881207
Part A Recv Date:	881227
Part B Recv Date:	881216
Generator EPA ID:	NYD982528911
Trans1 EPA ID:	ILD051060408
Trans2 EPA ID:	Not reported
TSDF ID:	NYD980785760
Waste Code:	F002 - HALO SOLV + STILL BOTTOMS FM REC OF SOLV
Quantity:	00080
Units:	P - Pounds
Number of Containers:	001
Container Type:	CF - Fiber or plastic boxes, cartons
Handling Method:	R Material recovery of more than 75 percent of the total material.
Specific Gravity:	100
Year:	88

Document ID:	NYA9392826
Manifest Status:	Completed copy
Trans1 State ID:	AY9381NY
Trans2 State ID:	Not reported
Generator Ship Date:	890403
Trans1 Recv Date:	890403
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	890403
Part A Recv Date:	890413
Part B Recv Date:	890411
Generator EPA ID:	NYD982528911
Trans1 EPA ID:	ILD051060408
Trans2 EPA ID:	Not reported
TSDF ID:	NYD980785760
Waste Code:	F002 - HALO SOLV + STILL BOTTOMS FM REC OF SOLV
Quantity:	00080
Units:	P - Pounds
Number of Containers:	001
Container Type:	CF - Fiber or plastic boxes, cartons
Handling Method:	R Material recovery of more than 75 percent of the total material.
Specific Gravity:	100

J & S FRENCH CLEANERS CO (Continued) **1000151620**

Year: 89

Document ID: NYA9226146
Manifest Status: Completed copy
Trans1 State ID: NYLP3931
Trans2 State ID: Not reported
Generator Ship Date: 890111
Trans1 Recv Date: 890111
Trans2 Recv Date: Not reported
TSD Site Recv Date: 890111
Part A Recv Date: 890120
Part B Recv Date: 890118
Generator EPA ID: NYD982528911
Trans1 EPA ID: ILD051060408
Trans2 EPA ID: Not reported
TSDF ID: NYD980785760
Waste Code: F002 - HALO SOLV + STILL BOTTOMS FM REC OF SOLV
Quantity: 00080
Units: P - Pounds
Number of Containers: 001
Container Type: CF - Fiber or plastic boxes, cartons
Handling Method: R Material recovery of more than 75 percent of the total material.
Specific Gravity: 100
Year: 89

Document ID: NYA9532811
Manifest Status: Completed copy
Trans1 State ID: 000000000
Trans2 State ID: 000000000
Generator Ship Date: 890620
Trans1 Recv Date: 890620
Trans2 Recv Date: Not reported
TSD Site Recv Date: 890620
Part A Recv Date: 890622
Part B Recv Date: 890626
Generator EPA ID: NYD982528911
Trans1 EPA ID: ILD051060408
Trans2 EPA ID: Not reported
TSDF ID: NYD980785760
Waste Code: F002 - HALO SOLV + STILL BOTTOMS FM REC OF SOLV
Quantity: 00080
Units: P - Pounds
Number of Containers: 001
Container Type: DM - Metal drums, barrels
Handling Method: R Material recovery of more than 75 percent of the total material.
Specific Gravity: 100
Year: 89

Document ID: NYA9668979
Manifest Status: Completed copy
Trans1 State ID: AP4503NY
Trans2 State ID: Not reported
Generator Ship Date: 891013
Trans1 Recv Date: 891013

J & S FRENCH CLEANERS CO (Continued) **1000151620**

Trans2 Recv Date:	Not reported
TSD Site Recv Date:	891013
Part A Recv Date:	891017
Part B Recv Date:	891019
Generator EPA ID:	NYD982528911
Trans1 EPA ID:	ILD051060408
Trans2 EPA ID:	Not reported
TSDF ID:	NYD980785760
Waste Code:	F002 - HALO SOLV + STILL BOTTOMS FM REC OF SOLV
Quantity:	00060
Units:	P - Pounds
Number of Containers:	001
Container Type:	DM - Metal drums, barrels
Handling Method:	R Material recovery of more than 75 percent of the total material.
Specific Gravity:	100
Year:	89

Document ID:	NYA9585156
Manifest Status:	Completed copy
Trans1 State ID:	000000000
Trans2 State ID:	000000000
Generator Ship Date:	890717
Trans1 Recv Date:	890717
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	890717
Part A Recv Date:	890720
Part B Recv Date:	890721
Generator EPA ID:	NYD982528911
Trans1 EPA ID:	ILD051060408
Trans2 EPA ID:	Not reported
TSDF ID:	NYD980785760
Waste Code:	F002 - HALO SOLV + STILL BOTTOMS FM REC OF SOLV
Quantity:	00080
Units:	P - Pounds
Number of Containers:	001
Container Type:	CF - Fiber or plastic boxes, cartons
Handling Method:	R Material recovery of more than 75 percent of the total material.
Specific Gravity:	100
Year:	89

Document ID:	NYA9771017
Manifest Status:	Completed copy
Trans1 State ID:	000000000
Trans2 State ID:	000000000
Generator Ship Date:	891117
Trans1 Recv Date:	891117
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	891117
Part A Recv Date:	891127
Part B Recv Date:	891129
Generator EPA ID:	NYD982528911
Trans1 EPA ID:	ILD051060408
Trans2 EPA ID:	Not reported
TSDF ID:	NYD980785760
Waste Code:	F002 - HALO SOLV + STILL BOTTOMS FM REC OF SOLV

J & S FRENCH CLEANERS CO (Continued) **1000151620**

Quantity:	00060
Units:	P - Pounds
Number of Containers:	001
Container Type:	CF - Fiber or plastic boxes, cartons
Handling Method:	B Incineration, heat recovery, burning.
Specific Gravity:	100
Year:	89

Document ID:	NYA9485166
Manifest Status:	Completed copy
Trans1 State ID:	AP4503NY
Trans2 State ID:	Not reported
Generator Ship Date:	890523
Trans1 Recv Date:	890523
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	890523
Part A Recv Date:	890531
Part B Recv Date:	890530
Generator EPA ID:	NYD982528911
Trans1 EPA ID:	ILD051060408
Trans2 EPA ID:	Not reported
TSDF ID:	NYD980785760
Waste Code:	F002 - HALO SOLV + STILL BOTTOMS FM REC OF SOLV
Quantity:	00080
Units:	P - Pounds
Number of Containers:	001
Container Type:	CF - Fiber or plastic boxes, cartons
Handling Method:	R Material recovery of more than 75 percent of the total material.
Specific Gravity:	100
Year:	89

Document ID:	NYA9432246
Manifest Status:	Completed copy
Trans1 State ID:	LP3931NY
Trans2 State ID:	Not reported
Generator Ship Date:	890428
Trans1 Recv Date:	890428
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	890428
Part A Recv Date:	890522
Part B Recv Date:	890509
Generator EPA ID:	NYD982528911
Trans1 EPA ID:	ILD051060408
Trans2 EPA ID:	Not reported
TSDF ID:	NYD980785760
Waste Code:	F002 - HALO SOLV + STILL BOTTOMS FM REC OF SOLV
Quantity:	00080
Units:	P - Pounds
Number of Containers:	001
Container Type:	CF - Fiber or plastic boxes, cartons
Handling Method:	R Material recovery of more than 75 percent of the total material.
Specific Gravity:	100
Year:	89

J & S FRENCH CLEANERS CO (Continued) **1000151620**

Click this hyperlink while viewing on your computer to access additional NY_MANIFEST: detail in the EDR Site Report.

I44 **152-20 11TH AVE** **LTANKS** **S104516785**
ENE **152-20 11TH AVE** **N/A**
1/8-1/4 **WHITESTONE, NY**
0.216 mi.
1140 ft. **Site 2 of 4 in cluster I**

Relative:
Lower

Actual:
23 ft.

LTANKS:

Site ID:	203994
Spill Number/Closed Date:	9300401 / 6/30/2006
Spill Date:	4/8/1993
Spill Cause:	Tank Test Failure
Spill Source:	Institutional, Educational, Gov., Other
Spill Class:	Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
Cleanup Ceased:	Not reported
Cleanup Meets Standard:	False
SWIS:	4101
Investigator:	RWAUSTIN
Referred To:	Not reported
Reported to Dept:	4/8/1993
CID:	Not reported
Water Affected:	Not reported
Spill Notifier:	Tank Tester
Last Inspection:	Not reported
Recommended Penalty:	False
UST Involvement:	False
Remediation Phase:	0
Date Entered In Computer:	4/9/1993
Spill Record Last Update:	6/30/2006
Spiller Name:	Not reported
Spiller Company:	SAME
Spiller Address:	Not reported
Spiller City,St,Zip:	ZZ
Spiller County:	001
Spiller Contact:	Not reported
Spiller Phone:	Not reported
Spiller Extention:	Not reported
DEC Region:	2
DER Facility ID:	169628
DEC Memo:	Prior to Sept, 2004 data translation this spill Lead_DEC Field was "AUSTIN"7/6/04 - AUSTIN - TRANSFERRED FROM KOON TANG FOR REASSIGNMENT - END6/30/2006- Closed; related spill indicates that the tank test passed.
Remarks:	EID

Material:

Site ID:	203994
Operable Unit ID:	979084
Operable Unit:	01
Material ID:	401161
Material Code:	0002A
Material Name:	#4 Fuel Oil
Case No.:	Not reported

152-20 11TH AVE (Continued) **S104516785**

Material FA:	Petroleum
Quantity:	0
Units:	Pounds
Recovered:	No
Resource Affected:	Not reported
Oxygenate:	False

Tank Test:

Site ID:	203994
Spill Tank Test:	1541388
Tank Number:	Not reported
Tank Size:	0
Test Method:	00
Leak Rate:	0
Gross Fail:	Not reported
Modified By:	Spills
Last Modified:	10/1/2004
Test Method:	Unknown

Site ID:	203995
Spill Number/Closed Date:	9914175 / 1/15/2004
Spill Date:	3/15/2000
Spill Cause:	Tank Test Failure
Spill Source:	Institutional, Educational, Gov., Other
Spill Class:	Known release that creates potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
Cleanup Ceased:	Not reported
Cleanup Meets Standard:	False
SWIS:	4101
Investigator:	SMSANGES
Referred To:	Not reported
Reported to Dept:	3/15/2000
CID:	207
Water Affected:	Not reported
Spill Notifier:	Tank Tester
Last Inspection:	Not reported
Recommended Penalty:	False
UST Involvement:	False
Remediation Phase:	0
Date Entered In Computer:	3/15/2000
Spill Record Last Update:	1/15/2004
Spiller Name:	Not reported
Spiller Company:	BOARD OF ED
Spiller Address:	Not reported
Spiller City,St,Zip:	ZZ
Spiller County:	001
Spiller Contact:	FRANK CARDELLO
Spiller Phone:	(718) 391-6832
Spiller Extention:	Not reported
DEC Region:	2
DER Facility ID:	169628
DEC Memo:	Prior to Sept, 2004 data translation this spill Lead_DEC Field was "SANGESLAND"Tank 001 passed on 3/15/2000Tank 002 failed on 3/15/2000 -repaired/retested 1/3/2001 -passed
Remarks:	gross failtank contained #4 fuel oil

152-20 11TH AVE (Continued) **S104516785**

Material:

Tank Test:

Site ID:	203995
Spill Tank Test:	1548141
Tank Number:	1
Tank Size:	7500
Test Method:	03
Leak Rate:	0
Gross Fail:	Not reported
Modified By:	Spills
Last Modified:	10/1/2004
Test Method:	Horner EZ Check I or II

I45 **NYC BD OF ED - PUBLIC SCHOOL 193 QUEENS** **RCRA NonGen / NLR** **1004759459**
ENE **152-20 11TH AVE** **FINDS** **NYR000010892**
1/8-1/4 **QUEENS, NY 11357** **MANIFEST**
0.216 mi.
1140 ft. **Site 3 of 4 in cluster I**

Relative:
Lower

Actual:
23 ft.

RCRA NonGen / NLR:

Date form received by agency:	01/01/2007
Facility name:	NYC BD OF ED - PUBLIC SCHOOL 193 QUEENS
Facility address:	152-20 11TH AVE QUEENS, NY 11357
EPA ID:	NYR000010892
Mailing address:	11TH AVE QUEENS, NY 11357
Contact:	ROBERT GUASTA
Contact address:	11TH AVE QUEENS, NY 11357
Contact country:	US
Contact telephone:	(718) 349-5590
Contact email:	Not reported
EPA Region:	02
Classification:	Non-Generator
Description:	Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:

Owner/operator name:	NYC BOARD OF EDUCATION
Owner/operator address:	28-11 QUEENS PLZ N LONG ISLAND CITY, NY 11101
Owner/operator country:	US
Owner/operator telephone:	(718) 349-5600
Legal status:	Municipal
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Owner/operator name:	NYC BOARD OF EDUCATION
Owner/operator address:	28-11 QUEENS PLZ N LONG ISLAND CITY, NY 11101
Owner/operator country:	US
Owner/operator telephone:	(718) 349-5600
Legal status:	Municipal

NYC BD OF ED - PUBLIC SCHOOL 193 QUEENS (Continued) **1004759459**

Owner/Operator Type: Operator
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Historical Generators:
Date form received by agency: 01/01/2006
Facility name: NYC BD OF ED - PUBLIC SCHOOL 193 QUEENS
Classification: Not a generator, verified

Date form received by agency: 08/08/1995
Facility name: NYC BD OF ED - PUBLIC SCHOOL 193 QUEENS
Classification: Conditionally Exempt Small Quantity Generator

Violation Status: No violations found

FINDS:

Registry ID: 110008091698

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

NY MANIFEST:
EPA ID: NYR000010892
Country: USA
Mailing Name: NYC BOARD OF EDUCATION
Mailing Contact: JACK BRUCCULERI
Mailing Address: 28-11 QUEENS PLAZA NORTH
Mailing Address 2: Not reported
Mailing City: LONG ISLAND CITY
Mailing State: NY
Mailing Zip: 11101
Mailing Zip4: Not reported

NYC BD OF ED - PUBLIC SCHOOL 193 QUEENS (Continued) **1004759459**

Mailing Country:	USA
Mailing Phone:	718-961-6094
Document ID:	NJA2116874
Manifest Status:	Completed after the designated time period for a TSDF to get a copy to the DEC
Trans1 State ID:	50082
Trans2 State ID:	S6993
Generator Ship Date:	950812
Trans1 Recv Date:	950812
Trans2 Recv Date:	951012
TSD Site Recv Date:	951012
Part A Recv Date:	Not reported
Part B Recv Date:	951024
Generator EPA ID:	NYR000010892
Trans1 EPA ID:	NY0000551218
Trans2 EPA ID:	NJD980772768
TSDF ID:	NJD991291105
Waste Code:	D008 - LEAD 5.0 MG/L TCLP
Quantity:	00100
Units:	P - Pounds
Number of Containers:	001
Container Type:	DM - Metal drums, barrels
Handling Method:	L Landfill.
Specific Gravity:	100
Year:	95

I46 **PUBLIC SCHOOL 193 - QUEENS** **UST** **U000409271**
ENE **152-20 11TH AVENUE** **HIST UST** **N/A**
1/8-1/4 **WHITESTONE, NY 11357**
0.216 mi.
1140 ft. **Site 4 of 4 in cluster I**

Relative:
Lower

Actual:
23 ft.

UST:

Id/Status:	2-352950 / Active
Region:	STATE
DEC Region:	2
Program Type:	PBS
Expiration Date:	2013/06/28
UTM X:	600407.54017000005
UTM Y:	4516395.3736100001

Affiliation Records:

Site Id:	17489
Affiliation Type:	Emergency Contact
Company Name:	NEW YORK CITY DEPARTMENT OF EDUCATION
Contact Type:	Not reported
Contact Name:	SCHOOL SAFETY
Address1:	Not reported
Address2:	Not reported
City:	Not reported
State:	NN
Zip Code:	Not reported
Country Code:	999
Phone:	(718) 935-3300
Phone Ext:	Not reported
Email:	Not reported
Fax Number:	Not reported

PUBLIC SCHOOL 193 - QUEENS (Continued) **U000409271**

Modified By:	DMMOLOUG
Date Last Modified:	4/1/2013
Site Id:	17489
Affiliation Type:	Mail Contact
Company Name:	NEW YORK CITY DEPARTMENT OF EDUCATION
Contact Type:	Not reported
Contact Name:	JAMES A. MERLO
Address1:	FIELD OPERATIONS-FUEL DIVISION
Address2:	44-36 VERNON BOULEVARD
City:	LONG ISLAND CITY
State:	NY
Zip Code:	11101
Country Code:	001
Phone:	(718) 349-5738
Phone Ext:	Not reported
Email:	JMERLO@SCHOOLS.NYC.GOV
Fax Number:	Not reported
Modified By:	dxliving
Date Last Modified:	9/2/2008
Site Id:	17489
Affiliation Type:	On-Site Operator
Company Name:	PUBLIC SCHOOL 193 - QUEENS
Contact Type:	Not reported
Contact Name:	PLANT OPERATIONS
Address1:	Not reported
Address2:	Not reported
City:	Not reported
State:	NN
Zip Code:	Not reported
Country Code:	001
Phone:	(718) 349-5400
Phone Ext:	Not reported
Email:	Not reported
Fax Number:	Not reported
Modified By:	TRANSLAT
Date Last Modified:	3/4/2004
Site Id:	17489
Affiliation Type:	Facility Owner
Company Name:	NEW YORK CITY DEPARTMENT OF EDUCATION
Contact Type:	MANAGER, FUEL DIVISION
Contact Name:	JAMES A. MERLO
Address1:	44-36 VERNON BOULEVARD
Address2:	Not reported
City:	LONG ISLAND CITY
State:	NY
Zip Code:	11101
Country Code:	001
Phone:	(718) 349-5738
Phone Ext:	Not reported
Email:	Not reported
Fax Number:	Not reported
Modified By:	GDBREEN
Date Last Modified:	1/2/2013

PUBLIC SCHOOL 193 - QUEENS (Continued) **U000409271**

Tank Info:

Site ID:	17489
Tank Number:	001
Tank ID:	34264
Tank Status:	In Service
Tank Type:	Steel/carbon steel
Pipe Model:	Not reported

Equipment Records:

G00 - Tank Secondary Containment - None
C01 - Pipe Location - Aboveground
E00 - Piping Secondary Containment - None
F01 - Pipe External Protection - Painted/Asphalt Coating
H00 - Tank Leak Detection - None
B01 - Tank External Protection - Painted/Asphalt Coating
I04 - Overfill - Product Level Gauge (A/G)
A00 - Tank Internal Protection - None
D01 - Pipe Type - Steel/Carbon Steel/Iron
J02 - Dispenser - Suction Dispenser
L00 - Piping Leak Detection - None

Install Date:	03/18/1953
Capacity Gallons:	7500
Tightness Test Method:	21
Next Test Date:	11/16/2014
Date Tank Closed:	Not reported
Tank Location:	5
Tank Type:	Steel/carbon steel
Date Test:	11/16/2009
Registered:	True
Modified By:	BKFALVEY
Last Modified:	03/26/2010
Site ID:	17489
Tank Number:	002
Tank ID:	34265
Tank Status:	In Service
Tank Type:	Steel/carbon steel
Pipe Model:	Not reported

Equipment Records:

C01 - Pipe Location - Aboveground
E00 - Piping Secondary Containment - None
F01 - Pipe External Protection - Painted/Asphalt Coating
H00 - Tank Leak Detection - None
B01 - Tank External Protection - Painted/Asphalt Coating
I04 - Overfill - Product Level Gauge (A/G)
G03 - Tank Secondary Containment - Vault (w/o access)
A00 - Tank Internal Protection - None
D01 - Pipe Type - Steel/Carbon Steel/Iron
J02 - Dispenser - Suction Dispenser
L00 - Piping Leak Detection - None

Install Date:	03/18/1953
Capacity Gallons:	7500
Tightness Test Method:	21
Next Test Date:	11/16/2014
Date Tank Closed:	Not reported

PUBLIC SCHOOL 193 - QUEENS (Continued) **U000409271**

Tank Location:	5
Tank Type:	Steel/carbon steel
Date Test:	11/16/2009
Registered:	True
Modified By:	BKFALVEY
Last Modified:	09/14/2010

HIST UST:

PBS Number:	2-352950
SPDES Number:	Not reported
Emergency Contact:	SCHOOL SAFETY
Emergency Telephone:	(212) 979-3300
Operator:	PLANT OPERATION
Operator Telephone:	(718) 391-6000
Owner Name:	CITY OF NEW YORK C/O BOARD OF EDUCATION
Owner Address:	28-11 QUEENS PLAZA NORTH
Owner City,St,Zip:	LONG ISLAND CITY, NY 11101
Owner Telephone:	(718) 391-6832
Owner Type:	Local Government
Owner Subtype:	Not reported
Mailing Name:	BOARD OF EDUCATION
Mailing Address:	28-11 QUEENS PLAZA NORTH
Mailing Address 2:	Not reported
Mailing City,St,Zip:	LONG ISLAND CITY, NY 11101
Mailing Contact:	FRANK CARDELLO NTROL
Mailing Telephone:	(718) 391-6832
Owner Mark:	First Owner
Facility Status:	1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility.
Facility Addr2:	152020 11 AV
SWIS ID:	6301
Old PBS Number:	Not reported
Facility Type:	SCHOOL
Inspected Date:	Not reported
Inspector:	Not reported
Inspection Result:	Not reported
Federal ID:	Not reported
Certification Flag:	False
Certification Date:	08/17/2001
Expiration Date:	06/28/2003
Renew Flag:	False
Renewal Date:	Not reported
Total Capacity:	15000
FAMT:	True
Facility Screen:	No Missing Data
Owner Screen:	Minor Data Missing
Tank Screen:	Minor Data Missing
Dead Letter:	False
CBS Number:	Not reported
Town or City:	NEW YORK CITY
County Code:	63
Town or City:	01
Region:	2

Tank Id:	001
Tank Location:	UNDERGROUND, VAULTED, WITH ACCESS

PUBLIC SCHOOL 193 - QUEENS (Continued) **U000409271**

Tank Status:	In Service
Install Date:	Not reported
Capacity (gals):	7500
Product Stored:	NOS 1,2, OR 4 FUEL OIL
Tank Type:	Steel/carbon steel
Tank Internal:	Not reported
Tank External:	Not reported
Pipe Location:	Not reported
Pipe Type:	STEEL/IRON
Pipe Internal:	Not reported
Pipe External:	Not reported
Second Containment:	Diking
Leak Detection:	None
Overfill Prot:	Product Level Gauge
Dispenser:	Suction
Date Tested:	03/01/1993
Next Test Date:	Not reported
Missing Data for Tank:	Minor Data Missing
Date Closed:	Not reported
Test Method:	Horner EZ Check
Deleted:	False
Updated:	True
Lat/long:	Not reported

Tank Id:	002
Tank Location:	UNDERGROUND, VAULTED, WITH ACCESS
Tank Status:	In Service
Install Date:	Not reported
Capacity (gals):	7500
Product Stored:	NOS 1,2, OR 4 FUEL OIL
Tank Type:	Steel/carbon steel
Tank Internal:	Not reported
Tank External:	Not reported
Pipe Location:	Not reported
Pipe Type:	STEEL/IRON
Pipe Internal:	Not reported
Pipe External:	Not reported
Second Containment:	Diking
Leak Detection:	None
Overfill Prot:	Product Level Gauge
Dispenser:	Suction
Date Tested:	01/03/2001
Next Test Date:	Not reported
Missing Data for Tank:	Minor Data Missing
Date Closed:	Not reported
Test Method:	21
Deleted:	False
Updated:	True
Lat/long:	Not reported

J47 **EDR US Hist Cleaners** **1014993131**
South **1424 150TH ST** **N/A**
1/8-1/4 **WHITESTONE, NY 11357**
0.216 mi.
1142 ft. **Site 5 of 7 in cluster J**

Relative:
Higher

Actual:
70 ft.

EDR Historical Cleaners:

Name:	SMILE CLEANER
Year:	2006
Address:	1424 150TH ST
Name:	SMILE CLEANERS
Year:	2010
Address:	1424 150TH ST
Name:	SMILE CLEANERS
Year:	2011
Address:	1424 150TH ST
Name:	SMILE CLEANERS
Year:	2012
Address:	1424 150TH ST

K48 **149-56 14TH AVE** **UST** **U001833416**
SSW **149-56 14TH AVE** **HIST UST** **N/A**
1/8-1/4 **WHITESTONE, NY 11357**
0.219 mi.
1156 ft. **Site 1 of 3 in cluster K**

Relative:
Higher

Actual:
68 ft.

UST:

Id/Status:	2-152250 / Active
Region:	STATE
DEC Region:	2
Program Type:	PBS
Expiration Date:	1997/06/18
UTM X:	599996.60407999996
UTM Y:	4515957.6816800004

Affiliation Records:

Site Id:	4753
Affiliation Type:	Facility Owner
Company Name:	JUDAH WIEDERKEHR
Contact Type:	Not reported
Contact Name:	Not reported
Address1:	149-56 14TH AVE
Address2:	Not reported
City:	WHITESTONE
State:	NY
Zip Code:	11357
Country Code:	001
Phone:	(718) 767-3700
Phone Ext:	Not reported
Email:	Not reported
Fax Number:	Not reported
Modified By:	TRANSLAT
Date Last Modified:	3/4/2004
Site Id:	4753
Affiliation Type:	Mail Contact
Company Name:	JUDAH WIEDERKEHR

149-56 14TH AVE (Continued) **U001833416**

Contact Type:	Not reported
Contact Name:	Not reported
Address1:	149-56 14TH AVE
Address2:	Not reported
City:	WHITESTONE
State:	NY
Zip Code:	11357
Country Code:	001
Phone:	(718) 767-3700
Phone Ext:	Not reported
Email:	Not reported
Fax Number:	Not reported
Modified By:	TRANSLAT
Date Last Modified:	3/4/2004

Site Id:	4753
Affiliation Type:	On-Site Operator
Company Name:	149-56 14TH AVE
Contact Type:	Not reported
Contact Name:	JUDAH WIEDERKEHR
Address1:	Not reported
Address2:	Not reported
City:	Not reported
State:	NN
Zip Code:	Not reported
Country Code:	001
Phone:	(718) 767-3700
Phone Ext:	Not reported
Email:	Not reported
Fax Number:	Not reported
Modified By:	TRANSLAT
Date Last Modified:	3/4/2004

Site Id:	4753
Affiliation Type:	Emergency Contact
Company Name:	JUDAH WIEDERKEHR
Contact Type:	Not reported
Contact Name:	JUDAH WIEDERKEHR
Address1:	Not reported
Address2:	Not reported
City:	Not reported
State:	NN
Zip Code:	Not reported
Country Code:	001
Phone:	(718) 767-3700
Phone Ext:	Not reported
Email:	Not reported
Fax Number:	Not reported
Modified By:	TRANSLAT
Date Last Modified:	3/4/2004

Tank Info:

Site ID:	4753

Tank Number:	001
Tank ID:	8782
Tank Status:	In Service

149-56 14TH AVE (Continued) **U001833416**

Tank Type: Steel/carbon steel
Pipe Model: Not reported

Equipment Records:

C03 - Pipe Location - Aboveground/Underground Combination
H00 - Tank Leak Detection - None
B00 - Tank External Protection - None
G00 - Tank Secondary Containment - None
F00 - Pipe External Protection - None
A00 - Tank Internal Protection - None
D10 - Pipe Type - Copper
J02 - Dispenser - Suction Dispenser
L09 - Piping Leak Detection - Exempt Suction Piping
I00 - Overfill - None

Install Date: Not reported
Capacity Gallons: 1500
Tightness Test Method: 03
Next Test Date: 05/01/2003
Date Tank Closed: Not reported
Tank Location: 5
Tank Type: Steel/carbon steel
Date Test: 05/01/1998
Registered: True
Modified By: TRANSLAT
Last Modified: 03/04/2004

HIST UST:

PBS Number: 2-152250
SPDES Number: Not reported
Emergency Contact: JUDAH WIEDERKEHR
Emergency Telephone: (718) 767-3700
Operator: JUDAH WIEDERKEHR
Operator Telephone: (718) 767-3700
Owner Name: JUDAH WIEDERKEHR
Owner Address: 149-56 14TH AVE
Owner City,St,Zip: WHITESTONE, NY 11357
Owner Telephone: (718) 767-3700
Owner Type: Not reported
Owner Subtype: Not reported
Mailing Name: JUDAH WIEDERKEHR
Mailing Address: 149-56 14TH AVE
Mailing Address 2: Not reported
Mailing City,St,Zip: WHITESTONE, NY 11357
Mailing Contact: Not reported
Mailing Telephone: (718) 767-3700
Owner Mark: First Owner
Facility Status: 1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility.
Facility Addr2: 149056 14TH AVE
SWIS ID: 6301
Old PBS Number: Not reported
Facility Type: OTHER
Inspected Date: Not reported
Inspector: Not reported
Inspection Result: Not reported
Federal ID: Not reported

149-56 14TH AVE (Continued) **U001833416**

Certification Flag:	False
Certification Date:	05/29/1992
Expiration Date:	06/18/1997
Renew Flag:	False
Renewal Date:	Not reported
Total Capacity:	1500
FAMT:	True
Facility Screen:	No Missing Data
Owner Screen:	Minor Data Missing
Tank Screen:	Minor Data Missing
Dead Letter:	False
CBS Number:	Not reported
Town or City:	NEW YORK CITY
County Code:	63
Town or City:	01
Region:	2
Tank Id:	001
Tank Location:	UNDERGROUND
Tank Status:	In Service
Install Date:	Not reported
Capacity (gals):	1500
Product Stored:	NOS 1,2, OR 4 FUEL OIL
Tank Type:	Steel/carbon steel
Tank Internal:	None
Tank External:	Not reported
Pipe Location:	Aboveground/Underground Combination
Pipe Type:	FIBERGLASS COATED STEEL
Pipe Internal:	None
Pipe External:	None
Second Containment:	None
Leak Detection:	None
Overfill Prot:	None
Dispenser:	Suction
Date Tested:	05/01/1998
Next Test Date:	05/01/2003
Missing Data for Tank:	Minor Data Missing
Date Closed:	Not reported
Test Method:	Horner EZ Check
Deleted:	False
Updated:	True
Lat/long:	Not reported

K49 **EDR US Hist Cleaners** **1014995571**
SSW **14955 14TH AVE** **N/A**
1/8-1/4 **WHITESTONE, NY 11357**
0.220 mi.
1159 ft. **Site 2 of 3 in cluster K**

Relative:
Higher

Actual:
67 ft.

EDR Historical Cleaners:

Name:	14TH AVE CLEANERS
Year:	2003
Address:	14955 14TH AVE
Name:	14TH AVE CLEANERS
Year:	2004
Address:	14955 14TH AVE

K50
SSW
1/8-1/4
0.220 mi.
1161 ft.

14956 14TH AVE
WHITESTONE, NY 11357

Site 3 of 3 in cluster K

EDR US Hist Cleaners **1014995572**
N/A

Relative:
Higher

Actual:
68 ft.

EDR Historical Cleaners:

Name:	14TH AVENUE LAUNDROMAT INCORPORATED
Year:	1999
Address:	14956 14TH AVE
Name:	14TH AVENUE LAUNDROMAT INCORPORATED
Year:	2000
Address:	14956 14TH AVE
Name:	HB LAUNDROMAT
Year:	2003
Address:	14956 14TH AVE
Name:	Q & Y LAUNDROMAT INC
Year:	2004
Address:	14956 14TH AVE
Name:	14TH AVE LAUNDROMAT
Year:	2004
Address:	14956 14TH AVE
Name:	HB LAUNDROMAT
Year:	2004
Address:	14956 14TH AVE
Name:	14 AVE LAUNDROMAT
Year:	2005
Address:	14956 14TH AVE
Name:	Q & Y LAUNDROMAT INC
Year:	2005
Address:	14956 14TH AVE
Name:	14 AVENUE LAUNDROMAT
Year:	2010
Address:	14956 14TH AVE
Name:	14 AVENUE LAUNDROMAT
Year:	2011
Address:	14956 14TH AVE
Name:	14 AVE LAUNDROMAT
Year:	2012
Address:	14956 14TH AVE

J51
South
1/8-1/4
0.223 mi.
1179 ft.

1434 150TH ST
WHITESTONE, NY 11357

Site 6 of 7 in cluster J

EDR US Hist Auto Stat **1015227813**
N/A

Relative:
Higher

Actual:
70 ft.

EDR Historical Auto Stations:

Name:	ACT MOBILE COMMUNICATE
Year:	2001
Address:	1434 150TH ST
Name:	ACT MOBILE COMMUNICATIONS INC
Year:	2002
Address:	1434 150TH ST

J52
South
1/8-1/4
0.230 mi.
1214 ft.

US POSTAL SERVICE
14-44 150TH ST - WHITESTONE ST
FLUSHING, NY 11357

Site 7 of 7 in cluster J

RCRA NonGen / NLR **1004762084**
FINDS **NYR000093377**
MANIFEST

Relative:
Higher

Actual:
70 ft.

RCRA NonGen / NLR:

Date form received by agency:	01/01/2007
Facility name:	US POSTAL SERVICE
Facility address:	14-44 150TH ST - WHITESTONE ST FLUSHING, NY 113579998
EPA ID:	NYR000093377
Mailing address:	150TH ST - WHITESTONE STA FLUSHING, NY 113579998
Contact:	ROBERT SKRIYANEK
Contact address:	150TH ST - WHITESTONE STA FLUSHING, NY 113579998
Contact country:	US
Contact telephone:	(718) 529-7220
Contact email:	Not reported
EPA Region:	02
Classification:	Non-Generator
Description:	Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:

Owner/operator name:	PANAGIS ALEXANDRATOS
Owner/operator address:	14-34 150TH ST FLUSHING, NY 11357
Owner/operator country:	US
Owner/operator telephone:	(212) 555-1212
Legal status:	Federal
Owner/Operator Type:	Operator
Owner/Op start date:	01/01/2001
Owner/Op end date:	Not reported
Owner/operator name:	PANAGIS ALEXANDRATOS
Owner/operator address:	14-34 150TH ST FLUSHING, NY 11357
Owner/operator country:	US
Owner/operator telephone:	(212) 555-1212
Legal status:	Federal
Owner/Operator Type:	Owner
Owner/Op start date:	01/01/2001
Owner/Op end date:	Not reported

US POSTAL SERVICE (Continued) **1004762084**

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Historical Generators:
Date form received by agency: 01/01/2006
Facility name: US POSTAL SERVICE
Classification: Not a generator, verified

Date form received by agency: 07/30/2003
Facility name: US POSTAL SERVICE
Classification: Not a generator, verified

Date form received by agency: 01/18/2001
Facility name: US POSTAL SERVICE
Classification: Conditionally Exempt Small Quantity Generator

Violation Status: No violations found

FINDS:

Registry ID: 110004566657

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

NY MANIFEST:
EPA ID: NYR000093377
Country: USA
Mailing Name: US POSTAL SVC
Mailing Contact: PUSHPA PATEL
Mailing Address: 78-02 LIBERTY AVE
Mailing Address 2: Not reported
Mailing City: OZONE PARK
Mailing State: NY
Mailing Zip: 11417
Mailing Zip4: 1045

US POSTAL SERVICE (Continued) **1004762084**

Mailing Country:	USA
Mailing Phone:	718-529-7220
Document ID:	NJA3204508
Manifest Status:	Not reported
Trans1 State ID:	NJR000016279
Trans2 State ID:	Not reported
Generator Ship Date:	01/24/2001
Trans1 Recv Date:	01/24/2001
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	02/02/2001
Part A Recv Date:	Not reported
Part B Recv Date:	Not reported
Generator EPA ID:	NYR000093377
Trans1 EPA ID:	NJD991291105
Trans2 EPA ID:	Not reported
TSDF ID:	50178
Waste Code:	D001 - NON-LISTED IGNITABLE WASTES
Quantity:	00434
Units:	P - Pounds
Number of Containers:	001
Container Type:	DM - Metal drums, barrels
Handling Method:	B Incineration, heat recovery, burning.
Specific Gravity:	01.00
Waste Code:	D002 - NON-LISTED CORROSIVE WASTES
Quantity:	00440
Units:	P - Pounds
Number of Containers:	001
Container Type:	DM - Metal drums, barrels
Handling Method:	T Chemical, physical, or biological treatment.
Specific Gravity:	01.00
Year:	2001

L53 **FUJI PHOTO FILM USA INC** **RCRA NonGen / NLR** **1006817452**
SSW **730 FRANKLIN AVE** **FINDS** **NYR000115634**
1/8-1/4 **FRANKLIN SQUARE, NY 11010** **MANIFEST**
0.239 mi.
1262 ft. **Site 1 of 2 in cluster L**

Relative:
Higher

Actual:
62 ft.

RCRA NonGen / NLR:

Date form received by agency:	01/01/2007
Facility name:	FUJI PHOTO FILM USA INC
Facility address:	730 FRANKLIN AVE FRANKLIN SQUARE, NY 11010
EPA ID:	NYR000115634
Mailing address:	SUMMIT LAKE DR - 2ND FL VALHALLA, NY 105951356
Contact:	JOSEPHINE CARPENITO
Contact address:	SUMMIT LAKE DR - 2ND FL VALHALLA, NY 105951356
Contact country:	US
Contact telephone:	(914) 789-8359
Contact email:	Not reported
EPA Region:	02
Classification:	Non-Generator
Description:	Handler: Non-Generators do not presently generate hazardous waste

FUJI PHOTO FILM USA INC (Continued) **1006817452**

Owner/Operator Summary:
Owner/operator name: WALGREENS
Owner/operator address: NOT REQUIRED
NOT REQUIRED, NY 99999
Owner/operator country: US
Owner/operator telephone: (212) 555-1212
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: 12/31/1979
Owner/Op end date: Not reported

Owner/operator name: RAY TORRES
Owner/operator address: NOT REQUIRED
NOT REQUIRED, NY 99999
Owner/operator country: US
Owner/operator telephone: (212) 555-1212
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: 05/12/2003
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Historical Generators:
Date form received by agency: 01/01/2006
Facility name: FUJI PHOTO FILM USA INC
Classification: Conditionally Exempt Small Quantity Generator

Date form received by agency: 04/26/2004
Facility name: FUJI PHOTO FILM USA INC
Classification: Not a generator, verified

Date form received by agency: 05/14/2003
Facility name: FUJI PHOTO FILM USA INC
Classification: Small Quantity Generator

Violation Status: No violations found

FINDS:

Registry ID: 110014445902

FUJI PHOTO FILM USA INC (Continued) **1006817452**

Environmental Interest/Information System

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

NY MANIFEST:

EPA ID:	NYR000115634
Country:	USA
Mailing Name:	FUJIFILM / WALGREENS TRAINING STORE 4688
Mailing Contact:	N/S
Mailing Address:	14928 14TH AVE
Mailing Address 2:	Not reported
Mailing City:	WHITESTONE
Mailing State:	NY
Mailing Zip:	11357
Mailing Zip4:	Not reported
Mailing Country:	USA
Mailing Phone:	732-567-2030

Document ID:	MAQ0100226
Manifest Status:	Not reported
Trans1 State ID:	TXR000050930
Trans2 State ID:	Not reported
Generator Ship Date:	10/02/2003
Trans1 Recv Date:	10/02/2003
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	10/15/2003
Part A Recv Date:	Not reported
Part B Recv Date:	Not reported
Generator EPA ID:	NYR000115634
Trans1 EPA ID:	MAD982755639
Trans2 EPA ID:	Not reported
TSDF ID:	NY55817JL
Waste Code:	D011 - SILVER 5.0 MG/L TCLP
Quantity:	00220
Units:	P - Pounds
Number of Containers:	001
Container Type:	DF - Fiberboard or plastic drums (glass)
Handling Method:	R Material recovery of more than 75 percent of the total material.
Specific Gravity:	01.00
Year:	2003

Document ID:	MAQ0174520
Manifest Status:	Not reported
Trans1 State ID:	TXR000050930
Trans2 State ID:	MOR000505347
Generator Ship Date:	12/11/2003
Trans1 Recv Date:	12/11/2003
Trans2 Recv Date:	12/23/2003
TSD Site Recv Date:	12/23/2003
Part A Recv Date:	Not reported

FUJI PHOTO FILM USA INC (Continued) **1006817452**

Part B Recv Date:	Not reported
Generator EPA ID:	NYR000115634
Trans1 EPA ID:	MAD982755639
Trans2 EPA ID:	Not reported
TSDF ID:	NY58746JL
Waste Code:	D011 - SILVER 5.0 MG/L TCLP
Quantity:	00980
Units:	P - Pounds
Number of Containers:	003
Container Type:	DF - Fiberboard or plastic drums (glass)
Handling Method:	T Chemical, physical, or biological treatment.
Specific Gravity:	00.83
Year:	2003

Document ID:	Not reported
Manifest Status:	Not reported
Trans1 State ID:	CTD983872698
Trans2 State ID:	NJD054126164
Generator Ship Date:	2010-06-11
Trans1 Recv Date:	2010-06-11
Trans2 Recv Date:	2010-06-17
TSD Site Recv Date:	2010-07-08
Part A Recv Date:	Not reported
Part B Recv Date:	Not reported
Generator EPA ID:	NYR000115634
Trans1 EPA ID:	Not reported
Trans2 EPA ID:	Not reported
TSDF ID:	OHD083377010
Waste Code:	Not reported
Quantity:	1.0
Units:	P - Pounds
Number of Containers:	1.0
Container Type:	CF - Fiber or plastic boxes, cartons
Handling Method:	B Incineration, heat recovery, burning.
Specific Gravity:	1.0
Year:	2010
Manifest Tracking Num:	007142575JJK
Import Ind:	N
Export Ind:	N
Discr Quantity Ind:	N
Discr Type Ind:	N
Discr Residue Ind:	N
Discr Partial Reject Ind:	N
Discr Full Reject Ind:	N
Manifest Ref Num:	Not reported
Alt Fac RCRA Id:	Not reported
Alt Fac Sign Date:	Not reported
Mgmt Method Type Code:	H061

Document ID:	Not reported
Manifest Status:	Not reported
Trans1 State ID:	CTD983872698
Trans2 State ID:	NJD054126164
Generator Ship Date:	2010-06-11
Trans1 Recv Date:	2010-06-11

FUJI PHOTO FILM USA INC (Continued) **1006817452**

Trans2 Recv Date:	2010-06-17
TSD Site Recv Date:	2010-07-08
Part A Recv Date:	Not reported
Part B Recv Date:	Not reported
Generator EPA ID:	NYR000115634
Trans1 EPA ID:	Not reported
Trans2 EPA ID:	Not reported
TSDF ID:	OHD083377010
Waste Code:	Not reported
Quantity:	3.0
Units:	P - Pounds
Number of Containers:	1.0
Container Type:	CF - Fiber or plastic boxes, cartons
Handling Method:	B Incineration, heat recovery, burning.
Specific Gravity:	1.0
Year:	2010
Manifest Tracking Num:	007142575JJK
Import Ind:	N
Export Ind:	N
Discr Quantity Ind:	N
Discr Type Ind:	N
Discr Residue Ind:	N
Discr Partial Reject Ind:	N
Discr Full Reject Ind:	N
Manifest Ref Num:	Not reported
Alt Fac RCRA Id:	Not reported
Alt Fac Sign Date:	Not reported
Mgmt Method Type Code:	H061

L54 **FUJI PHOTO FILM USA INC** **RCRA NonGen / NLR** **1006817451**
SSW **14928 14TH AVE** **FINDS** **NYR000115626**
1/8-1/4 **WHITESTONE, NY 11357**
0.239 mi.
1262 ft. **Site 2 of 2 in cluster L**

Relative:
Higher

Actual:
62 ft.

RCRA NonGen / NLR:

Date form received by agency:	01/01/2007
Facility name:	FUJI PHOTO FILM USA INC
Facility address:	14928 14TH AVE WHITESTONE, NY 11357
EPA ID:	NYR000115626
Mailing address:	SUMMIT LAKE DR - 2ND FL VALHALLA, NY 105951356
Contact:	JOSEPHINE CARPENITO
Contact address:	SUMMIT LAKE DR - 2ND FL VALHALLA, NY 105951356
Contact country:	US
Contact telephone:	(914) 789-8359
Contact email:	Not reported
EPA Region:	02
Classification:	Non-Generator
Description:	Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:

Owner/operator name:	RAY TORRES
Owner/operator address:	NOT REQUIRED NOT REQUIRED, NY 99999

FUJI PHOTO FILM USA INC (Continued) **1006817451**

Owner/operator country: US
Owner/operator telephone: (212) 555-1212
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: 05/01/2003
Owner/Op end date: Not reported

Owner/operator name: WALGREENS
Owner/operator address: NOT REQUIRED
NOT REQUIRED, NY 99999
Owner/operator country: US
Owner/operator telephone: (212) 555-1212
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: 12/31/1979
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Historical Generators:
Date form received by agency: 01/01/2006
Facility name: FUJI PHOTO FILM USA INC
Classification: Not a generator, verified

Date form received by agency: 04/26/2004
Facility name: FUJI PHOTO FILM USA INC
Classification: Not a generator, verified

Date form received by agency: 05/14/2003
Facility name: FUJI PHOTO FILM USA INC
Classification: Small Quantity Generator

Violation Status: No violations found

FINDS:

Registry ID: 110014445886

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport,

FUJI PHOTO FILM USA INC (Continued) **1006817451**

and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

55
SE
1/8-1/4
0.246 mi.
1300 ft.

CONSOLIDATED EDISON
14RD & 152 ST
QUEENS, NY

MANIFEST **1009241114**
N/A

Relative:
Higher

Actual:
53 ft.

NY MANIFEST:

EPA ID:	NYP004094868
Country:	USA
Mailing Name:	CONSOLIDATED EDISON
Mailing Contact:	FRANKLIN MURRAY
Mailing Address:	4 IRVING PLACE RM 828
Mailing Address 2:	Not reported
Mailing City:	NEW YORK
Mailing State:	NY
Mailing Zip:	10003
Mailing Zip4:	Not reported
Mailing Country:	USA
Mailing Phone:	212-460-2808

Document ID:	NYE0744183
Manifest Status:	Not reported
Trans1 State ID:	NYD006982359
Trans2 State ID:	Not reported
Generator Ship Date:	01/08/2002
Trans1 Recv Date:	01/08/2002
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	01/09/2002
Part A Recv Date:	Not reported
Part B Recv Date:	Not reported
Generator EPA ID:	NYP004094868
Trans1 EPA ID:	NYD980593636
Trans2 EPA ID:	Not reported
TSDF ID:	20856AD
Waste Code:	B002 - PETROLEUM OIL WITH 50 BUT < 500 PPM PCB
Quantity:	00698
Units:	K - Kilograms (2.2 pounds)
Number of Containers:	001
Container Type:	TT - Cargo tank, tank trucks
Handling Method:	T Chemical, physical, or biological treatment.
Specific Gravity:	01.00
Year:	2002

M56 **KINRAY INC** **RCRA NonGen / NLR** **1004759179**
ENE **152-35 10TH AVE** **FINDS** **NYN008009862**
1/8-1/4 **WHITESTONE, NY 11537**
0.248 mi.
1310 ft. **Site 1 of 3 in cluster M**

Relative:
Lower

Actual:
19 ft.

RCRA NonGen / NLR:

Date form received by agency:	01/01/2007
Facility name:	KINRAY INC
Facility address:	152-35 10TH AVE WHITESTONE, NY 11537
EPA ID:	NYN008009862
Mailing address:	10TH AVE WHITESTONE, NY 11537
Contact:	BILL BODINGER
Contact address:	10TH AVE WHITESTONE, NY 11537
Contact country:	US
Contact telephone:	(718) 767-1234
Contact email:	Not reported
EPA Region:	02
Land type:	Private
Classification:	Non-Generator
Description:	Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:

Owner/operator name:	KINRAY INC
Owner/operator address:	152-35 10TH AVE WHITESTONE, NY 11537
Owner/operator country:	US
Owner/operator telephone:	(718) 767-1234
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	01/01/2001
Owner/Op end date:	Not reported

Owner/operator name:	KINRAY INC
Owner/operator address:	152-35 10TH AVE WHITESTONE, NY 11537
Owner/operator country:	US
Owner/operator telephone:	(718) 767-1234
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	01/01/2001
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No

KINRAY INC (Continued) **1004759179**

Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Historical Generators:
Date form received by agency: 01/01/2006
Facility name: KINRAY INC
Classification: Not a generator, verified

Date form received by agency: 08/15/2001
Facility name: KINRAY INC
Classification: Not a generator, verified

Violation Status: No violations found

Evaluation Action Summary:
Evaluation date: 07/27/2001
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: EPA

FINDS:

Registry ID: 110004514785

Environmental Interest/Information System

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

ICIS (Integrated Compliance Information System) is the Integrated Compliance Information System and provides a database that, when complete, will contain integrated Enforcement and Compliance information across most of EPA's programs. The vision for ICIS is to replace EPA's independent databases that contain Enforcement data with a single repository for that information. Currently, ICIS contains all Federal Administrative and Judicial enforcement actions. This information is maintained in ICIS by EPA in the Regional offices and it Headquarters. A future release of ICIS will replace the Permit Compliance System (PCS) which supports the NPDES and will integrate that information with Federal actions already in the system. ICIS also has the capability to track other activities occurring in the Region that support Compliance and Enforcement programs. These include; Incident Tracking, Compliance Assistance, and Compliance Monitoring.

M57 **KINRAY INC** **RCRA NonGen / NLR** **1004759336**
ENE **152-35 10TH AVE** **MANIFEST** **NYR000006833**
1/8-1/4 **WHITESTONE, NY 11357**
0.250 mi.
1320 ft. **Site 2 of 3 in cluster M**

Relative:
Lower

Actual:
19 ft.

RCRA NonGen / NLR:

Date form received by agency:	10/15/2012
Facility name:	KINRAY INC
Facility address:	152-35 10TH AVE WHITESTONE, NY 11357
EPA ID:	NYR000006833
Mailing address:	10TH AVE WHITESTONE, NY 11357
Contact:	PAUL M FRAKER
Contact address:	10TH AVE WHITESTONE, NY 11357
Contact country:	US
Contact telephone:	(347) 438-2632
Contact email:	PAUL.FRAKER@KINRAY.COM
EPA Region:	02
Classification:	Non-Generator
Description:	Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:

Owner/operator name:	CARDINAL HEALTH
Owner/operator address:	Not reported Not reported
Owner/operator country:	US
Owner/operator telephone:	Not reported
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	01/01/2010
Owner/Op end date:	Not reported

Owner/operator name:	CARDINAL HEALTH
Owner/operator address:	CARDINAL PLACE DUBLIN, OH 43017
Owner/operator country:	US
Owner/operator telephone:	(614) 757-5000
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	01/01/2010
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No

KINRAY INC (Continued) **1004759336**

Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Historical Generators:

Date form received by agency: 07/06/2012
Facility name: KINRAY INC
Classification: Large Quantity Generator

Date form received by agency: 01/01/2007
Facility name: KINRAY INC
Site name: KONICA USA AT KINRAY
Classification: Not a generator, verified

Date form received by agency: 01/01/2006
Facility name: KINRAY INC
Site name: KONICA USA AT KINRAY
Classification: Not a generator, verified

Date form received by agency: 06/19/1995
Facility name: KINRAY INC
Site name: KONICA USA AT KINRAY
Classification: Conditionally Exempt Small Quantity Generator

Hazardous Waste Summary:

Waste code: D001
Waste name: IGNITABLE HAZARDOUS WASTES ARE THOSE WASTES WHICH HAVE A FLASHPOINT OF LESS THAN 140 DEGREES FAHRENHEIT AS DETERMINED BY A PENSKY-MARTENS CLOSED CUP FLASH POINT TESTER. ANOTHER METHOD OF DETERMINING THE FLASH POINT OF A WASTE IS TO REVIEW THE MATERIAL SAFETY DATA SHEET, WHICH CAN BE OBTAINED FROM THE MANUFACTURER OR DISTRIBUTOR OF THE MATERIAL. LACQUER THINNER IS AN EXAMPLE OF A COMMONLY USED SOLVENT WHICH WOULD BE CONSIDERED AS IGNITABLE HAZARDOUS WASTE.

Waste code: D002
Waste name: A WASTE WHICH HAS A PH OF LESS THAN 2 OR GREATER THAN 12.5 IS CONSIDERED TO BE A CORROSIVE HAZARDOUS WASTE. SODIUM HYDROXIDE, A CAUSTIC SOLUTION WITH A HIGH PH, IS OFTEN USED BY INDUSTRIES TO CLEAN OR DEGREASE PARTS. HYDROCHLORIC ACID, A SOLUTION WITH A LOW PH, IS USED BY MANY INDUSTRIES TO CLEAN METAL PARTS PRIOR TO PAINTING. WHEN THESE CAUSTIC OR ACID SOLUTIONS BECOME CONTAMINATED AND MUST BE DISPOSED, THE WASTE WOULD BE A CORROSIVE HAZARDOUS WASTE.

Waste code: D007
Waste name: CHROMIUM

Waste code: D011
Waste name: SILVER

Waste code: D022
Waste name: CHLOROFORM

Waste code: P001
Waste name: 2H-1-BENZOPYRAN-2-ONE, 4-HYDROXY-3-(3-OXO-1-PHENYLBUTYL)-, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3%

KINRAY INC (Continued) **1004759336**

Waste code: P075
Waste name: NICOTINE, & SALTS

Waste code: U002
Waste name: ACETONE (I)

Waste code: U010
Waste name: AZIRINO[2',3':3,4]PYRROLO[1,2-A]INDOLE-4,7-DIONE, 6-AMINO-8-[[(AMINOCARBONYL)OXY]METHYL]-1,1A,2,8,8A,8B-HEXAHYDRO-8A-METHOXY-5-METHYL-, [1AS-(1AALPHA, 8BETA,8AALPHA,8BALPHA)]-

Waste code: U035
Waste name: BENZENEBUTANOIC ACID, 4-[BIS(2-CHLOROETHYL)AMINO]-

Waste code: U058
Waste name: CYCLOPHOSPHAMIDE

Waste code: U059
Waste name: DAUNOMYCIN

Waste code: U089
Waste name: DIETHYLSTILBESTEROL

Waste code: U150
Waste name: MELPHALAN

Waste code: U206
Waste name: GLUCOPYRANOSE, 2-DEOXY-2-(3-METHYL-3-NITROSOUREIDO)-, D-

Waste code: U237
Waste name: 2,4-(1H,3H)-PYRIMIDINEDIONE, 5-[BIS(2-CHLOROETHYL)AMINO]-

Waste code: B007
Waste name: B007

Violation Status: No violations found

NY MANIFEST:
EPA ID: NYR000006833
Country: USA
Mailing Name: CARDINAL HEALTH
Mailing Contact: CARDINAL HEALTH
Mailing Address: 152-35 10TH AVE
Mailing Address 2: Not reported
Mailing City: QUEENS
Mailing State: NY
Mailing Zip: 11357
Mailing Zip4: Not reported
Mailing Country: USA
Mailing Phone: 718-767-4225

Document ID: TXA0061638
Manifest Status: Completed after the designated time period for a TSDF to get a copy to the DEC
Trans1 State ID: Not reported
Trans2 State ID: 40582
Generator Ship Date: 950626

KINRAY INC (Continued) **1004759336**

Trans1 Recv Date:	950626
Trans2 Recv Date:	950720
TSD Site Recv Date:	950720
Part A Recv Date:	Not reported
Part B Recv Date:	950814
Generator EPA ID:	NYR000006833
Trans1 EPA ID:	ILD984908202
Trans2 EPA ID:	NYD980769947
TSDF ID:	TXD077603371
Waste Code:	D011 - SILVER 5.0 MG/L TCLP
Quantity:	00060
Units:	G - Gallons (liquids only)* (8.3 pounds)
Number of Containers:	002
Container Type:	DF - Fiberboard or plastic drums (glass)
Handling Method:	B Incineration, heat recovery, burning.
Specific Gravity:	100
Year:	95

Document ID:	Not reported
Manifest Status:	Not reported
Trans1 State ID:	PAR000524041
Trans2 State ID:	PAD982661381
Generator Ship Date:	2012-08-02
Trans1 Recv Date:	2012-08-02
Trans2 Recv Date:	2012-08-02
TSD Site Recv Date:	2012-08-10
Part A Recv Date:	Not reported
Part B Recv Date:	Not reported
Generator EPA ID:	NYR000006833
Trans1 EPA ID:	Not reported
Trans2 EPA ID:	Not reported
TSDF ID:	PAD085690592
Waste Code:	Not reported
Quantity:	30.0
Units:	P - Pounds
Number of Containers:	1.0
Container Type:	DF - Fiberboard or plastic drums (glass)
Handling Method:	L Landfill.
Specific Gravity:	1.0
Year:	2012
Manifest Tracking Num:	005695023FLE
Import Ind:	N
Export Ind:	N
Discr Quantity Ind:	N
Discr Type Ind:	N
Discr Residue Ind:	N
Discr Partial Reject Ind:	N
Discr Full Reject Ind:	N
Manifest Ref Num:	Not reported
Alt Fac RCRA Id:	Not reported
Alt Fac Sign Date:	Not reported
Mgmt Method Type Code:	H141

Document ID:	Not reported
Manifest Status:	Not reported

KINRAY INC (Continued) **1004759336**

Trans1 State ID:	PAR000524041
Trans2 State ID:	PAD982661381
Generator Ship Date:	2012-08-02
Trans1 Recv Date:	2012-08-02
Trans2 Recv Date:	2012-08-02
TSD Site Recv Date:	2012-08-10
Part A Recv Date:	Not reported
Part B Recv Date:	Not reported
Generator EPA ID:	NYR000006833
Trans1 EPA ID:	Not reported
Trans2 EPA ID:	Not reported
TSDF ID:	PAD085690592
Waste Code:	Not reported
Quantity:	200.0
Units:	P - Pounds
Number of Containers:	1.0
Container Type:	DF - Fiberboard or plastic drums (glass)
Handling Method:	L Landfill.
Specific Gravity:	1.0
Year:	2012
Manifest Tracking Num:	005695023FLE
Import Ind:	N
Export Ind:	N
Discr Quantity Ind:	N
Discr Type Ind:	N
Discr Residue Ind:	N
Discr Partial Reject Ind:	N
Discr Full Reject Ind:	N
Manifest Ref Num:	Not reported
Alt Fac RCRA Id:	Not reported
Alt Fac Sign Date:	Not reported
Mgmt Method Type Code:	H141

Document ID:	Not reported
Manifest Status:	Not reported
Trans1 State ID:	PAR000524041
Trans2 State ID:	PAD982661381
Generator Ship Date:	2012-08-02
Trans1 Recv Date:	2012-08-02
Trans2 Recv Date:	2012-08-02
TSD Site Recv Date:	2012-08-10
Part A Recv Date:	Not reported
Part B Recv Date:	Not reported
Generator EPA ID:	NYR000006833
Trans1 EPA ID:	Not reported
Trans2 EPA ID:	Not reported
TSDF ID:	PAD085690592
Waste Code:	Not reported
Quantity:	1900.0
Units:	P - Pounds
Number of Containers:	6.0
Container Type:	DF - Fiberboard or plastic drums (glass)
Handling Method:	L Landfill.
Specific Gravity:	1.0
Year:	2012
Manifest Tracking Num:	005695023FLE

KINRAY INC (Continued) **1004759336**

Import Ind:	N
Export Ind:	N
Discr Quantity Ind:	N
Discr Type Ind:	N
Discr Residue Ind:	N
Discr Partial Reject Ind:	N
Discr Full Reject Ind:	N
Manifest Ref Num:	Not reported
Alt Fac RCRA Id:	Not reported
Alt Fac Sign Date:	Not reported
Mgmt Method Type Code:	H141

Document ID:	Not reported
Manifest Status:	Not reported
Trans1 State ID:	PAR000524041
Trans2 State ID:	PAD982661381
Generator Ship Date:	2012-08-02
Trans1 Recv Date:	2012-08-02
Trans2 Recv Date:	2012-08-02
TSD Site Recv Date:	2012-08-10
Part A Recv Date:	Not reported
Part B Recv Date:	Not reported
Generator EPA ID:	NYR000006833
Trans1 EPA ID:	Not reported
Trans2 EPA ID:	Not reported
TSDF ID:	PAD085690592
Waste Code:	Not reported
Quantity:	4900.0
Units:	P - Pounds
Number of Containers:	20.0
Container Type:	DF - Fiberboard or plastic drums (glass)
Handling Method:	L Landfill.
Specific Gravity:	1.0
Year:	2012
Manifest Tracking Num:	005695023FLE
Import Ind:	N
Export Ind:	N
Discr Quantity Ind:	N
Discr Type Ind:	N
Discr Residue Ind:	N
Discr Partial Reject Ind:	N
Discr Full Reject Ind:	N
Manifest Ref Num:	Not reported
Alt Fac RCRA Id:	Not reported
Alt Fac Sign Date:	Not reported
Mgmt Method Type Code:	H141

Document ID:	Not reported
Manifest Status:	Not reported
Trans1 State ID:	PAR000524041
Trans2 State ID:	PAD982661381
Generator Ship Date:	2012-08-02
Trans1 Recv Date:	2012-08-02
Trans2 Recv Date:	2012-08-02
TSD Site Recv Date:	2012-08-10

KINRAY INC (Continued) **1004759336**

Part A Recv Date:	Not reported
Part B Recv Date:	Not reported
Generator EPA ID:	NYR000006833
Trans1 EPA ID:	Not reported
Trans2 EPA ID:	Not reported
TSDF ID:	PAD085690592
Waste Code:	Not reported
Quantity:	50.0
Units:	P - Pounds
Number of Containers:	1.0
Container Type:	DF - Fiberboard or plastic drums (glass)
Handling Method:	L Landfill.
Specific Gravity:	1.0
Year:	2012
Manifest Tracking Num:	005695023FLE
Import Ind:	N
Export Ind:	N
Discr Quantity Ind:	N
Discr Type Ind:	N
Discr Residue Ind:	N
Discr Partial Reject Ind:	N
Discr Full Reject Ind:	N
Manifest Ref Num:	Not reported
Alt Fac RCRA Id:	Not reported
Alt Fac Sign Date:	Not reported
Mgmt Method Type Code:	H141

Document ID:	Not reported
Manifest Status:	Not reported
Trans1 State ID:	PAR000524041
Trans2 State ID:	PAD982661381
Generator Ship Date:	2012-08-02
Trans1 Recv Date:	2012-08-02
Trans2 Recv Date:	2012-08-02
TSD Site Recv Date:	2012-08-10
Part A Recv Date:	Not reported
Part B Recv Date:	Not reported
Generator EPA ID:	NYR000006833
Trans1 EPA ID:	Not reported
Trans2 EPA ID:	Not reported
TSDF ID:	PAD085690592
Waste Code:	Not reported
Quantity:	50.0
Units:	P - Pounds
Number of Containers:	1.0
Container Type:	DF - Fiberboard or plastic drums (glass)
Handling Method:	L Landfill.
Specific Gravity:	1.0
Year:	2012
Manifest Tracking Num:	005695023FLE
Import Ind:	N
Export Ind:	N
Discr Quantity Ind:	N
Discr Type Ind:	N
Discr Residue Ind:	N
Discr Partial Reject Ind:	N

KINRAY INC (Continued) **1004759336**

Discr Full Reject Ind:	N
Manifest Ref Num:	Not reported
Alt Fac RCRA Id:	Not reported
Alt Fac Sign Date:	Not reported
Mgmt Method Type Code:	H141

Document ID:	Not reported
Manifest Status:	Not reported
Trans1 State ID:	PAR000524041
Trans2 State ID:	PAD982661381
Generator Ship Date:	2012-08-02
Trans1 Recv Date:	2012-08-02
Trans2 Recv Date:	2012-08-02
TSD Site Recv Date:	2012-08-10
Part A Recv Date:	Not reported
Part B Recv Date:	Not reported
Generator EPA ID:	NYR000006833
Trans1 EPA ID:	Not reported
Trans2 EPA ID:	Not reported
TSDF ID:	PAD085690592
Waste Code:	Not reported
Quantity:	860.0
Units:	P - Pounds
Number of Containers:	4.0
Container Type:	DF - Fiberboard or plastic drums (glass)
Handling Method:	L Landfill.
Specific Gravity:	1.0
Year:	2012
Manifest Tracking Num:	005695023FLE
Import Ind:	N
Export Ind:	N
Discr Quantity Ind:	N
Discr Type Ind:	N
Discr Residue Ind:	N
Discr Partial Reject Ind:	N
Discr Full Reject Ind:	N
Manifest Ref Num:	Not reported
Alt Fac RCRA Id:	Not reported
Alt Fac Sign Date:	Not reported
Mgmt Method Type Code:	H141

Document ID:	Not reported
Manifest Status:	Not reported
Trans1 State ID:	PAR000524041
Trans2 State ID:	PAD982661381
Generator Ship Date:	2012-08-02
Trans1 Recv Date:	2012-08-02
Trans2 Recv Date:	2012-08-02
TSD Site Recv Date:	2012-08-10
Part A Recv Date:	Not reported
Part B Recv Date:	Not reported
Generator EPA ID:	NYR000006833
Trans1 EPA ID:	Not reported
Trans2 EPA ID:	Not reported
TSDF ID:	PAD085690592

KINRAY INC (Continued) **1004759336**

Waste Code:	Not reported
Quantity:	20.0
Units:	P - Pounds
Number of Containers:	1.0
Container Type:	DF - Fiberboard or plastic drums (glass)
Handling Method:	L Landfill.
Specific Gravity:	1.0
Year:	2012
Manifest Tracking Num:	005695023FLE
Import Ind:	N
Export Ind:	N
Discr Quantity Ind:	N
Discr Type Ind:	N
Discr Residue Ind:	N
Discr Partial Reject Ind:	N
Discr Full Reject Ind:	N
Manifest Ref Num:	Not reported
Alt Fac RCRA Id:	Not reported
Alt Fac Sign Date:	Not reported
Mgmt Method Type Code:	H141

Document ID:	Not reported
Manifest Status:	Not reported
Trans1 State ID:	PAR000524041
Trans2 State ID:	PAD982661381
Generator Ship Date:	2012-08-02
Trans1 Recv Date:	2012-08-02
Trans2 Recv Date:	2012-08-02
TSD Site Recv Date:	2012-08-10
Part A Recv Date:	Not reported
Part B Recv Date:	Not reported
Generator EPA ID:	NYR000006833
Trans1 EPA ID:	Not reported
Trans2 EPA ID:	Not reported
TSDF ID:	PAD085690592
Waste Code:	Not reported
Quantity:	30.0
Units:	P - Pounds
Number of Containers:	1.0
Container Type:	DF - Fiberboard or plastic drums (glass)
Handling Method:	L Landfill.
Specific Gravity:	1.0
Year:	2012
Manifest Tracking Num:	005695023FLE
Import Ind:	N
Export Ind:	N
Discr Quantity Ind:	N
Discr Type Ind:	N
Discr Residue Ind:	N
Discr Partial Reject Ind:	N
Discr Full Reject Ind:	N
Manifest Ref Num:	Not reported
Alt Fac RCRA Id:	Not reported
Alt Fac Sign Date:	Not reported
Mgmt Method Type Code:	H141

KINRAY INC (Continued) **1004759336**

Document ID:	Not reported
Manifest Status:	Not reported
Trans1 State ID:	PAR000524041
Trans2 State ID:	PAD982661381
Generator Ship Date:	2012-08-02
Trans1 Recv Date:	2012-08-02
Trans2 Recv Date:	2012-08-02
TSD Site Recv Date:	2012-08-10
Part A Recv Date:	Not reported
Part B Recv Date:	Not reported
Generator EPA ID:	NYR000006833
Trans1 EPA ID:	Not reported
Trans2 EPA ID:	Not reported
TSDF ID:	PAD085690592
Waste Code:	Not reported
Quantity:	200.0
Units:	P - Pounds
Number of Containers:	1.0
Container Type:	DF - Fiberboard or plastic drums (glass)
Handling Method:	L Landfill.
Specific Gravity:	1.0
Year:	2012
Manifest Tracking Num:	005695023FLE
Import Ind:	N
Export Ind:	N
Discr Quantity Ind:	N
Discr Type Ind:	N
Discr Residue Ind:	N
Discr Partial Reject Ind:	N
Discr Full Reject Ind:	N
Manifest Ref Num:	Not reported
Alt Fac RCRA Id:	Not reported
Alt Fac Sign Date:	Not reported
Mgmt Method Type Code:	H141

Document ID:	Not reported
Manifest Status:	Not reported
Trans1 State ID:	PAR000524041
Trans2 State ID:	PAD982661381
Generator Ship Date:	2012-08-02
Trans1 Recv Date:	2012-08-02
Trans2 Recv Date:	2012-08-02
TSD Site Recv Date:	2012-08-10
Part A Recv Date:	Not reported
Part B Recv Date:	Not reported
Generator EPA ID:	NYR000006833
Trans1 EPA ID:	Not reported
Trans2 EPA ID:	Not reported
TSDF ID:	PAD085690592
Waste Code:	Not reported
Quantity:	1900.0
Units:	P - Pounds
Number of Containers:	6.0
Container Type:	DF - Fiberboard or plastic drums (glass)
Handling Method:	L Landfill.
Specific Gravity:	1.0

KINRAY INC (Continued) **1004759336**

Year:	2012
Manifest Tracking Num:	005695023FLE
Import Ind:	N
Export Ind:	N
Discr Quantity Ind:	N
Discr Type Ind:	N
Discr Residue Ind:	N
Discr Partial Reject Ind:	N
Discr Full Reject Ind:	N
Manifest Ref Num:	Not reported
Alt Fac RCRA Id:	Not reported
Alt Fac Sign Date:	Not reported
Mgmt Method Type Code:	H141

Document ID:	Not reported
Manifest Status:	Not reported
Trans1 State ID:	PAR000524041
Trans2 State ID:	PAD982661381
Generator Ship Date:	2012-08-02
Trans1 Recv Date:	2012-08-02
Trans2 Recv Date:	2012-08-02
TSD Site Recv Date:	2012-08-10
Part A Recv Date:	Not reported
Part B Recv Date:	Not reported
Generator EPA ID:	NYR000006833
Trans1 EPA ID:	Not reported
Trans2 EPA ID:	Not reported
TSDF ID:	PAD085690592
Waste Code:	Not reported
Quantity:	4900.0
Units:	P - Pounds
Number of Containers:	20.0
Container Type:	DF - Fiberboard or plastic drums (glass)
Handling Method:	L Landfill.
Specific Gravity:	1.0
Year:	2012
Manifest Tracking Num:	005695023FLE
Import Ind:	N
Export Ind:	N
Discr Quantity Ind:	N
Discr Type Ind:	N
Discr Residue Ind:	N
Discr Partial Reject Ind:	N
Discr Full Reject Ind:	N
Manifest Ref Num:	Not reported
Alt Fac RCRA Id:	Not reported
Alt Fac Sign Date:	Not reported
Mgmt Method Type Code:	H141

Document ID:	Not reported
Manifest Status:	Not reported
Trans1 State ID:	PAR000524041
Trans2 State ID:	PAD982661381
Generator Ship Date:	2012-08-02
Trans1 Recv Date:	2012-08-02

KINRAY INC (Continued) **1004759336**

Trans2 Recv Date:	2012-08-02
TSD Site Recv Date:	2012-08-10
Part A Recv Date:	Not reported
Part B Recv Date:	Not reported
Generator EPA ID:	NYR000006833
Trans1 EPA ID:	Not reported
Trans2 EPA ID:	Not reported
TSDF ID:	PAD085690592
Waste Code:	Not reported
Quantity:	50.0
Units:	P - Pounds
Number of Containers:	1.0
Container Type:	DF - Fiberboard or plastic drums (glass)
Handling Method:	L Landfill.
Specific Gravity:	1.0
Year:	2012
Manifest Tracking Num:	005695023FLE
Import Ind:	N
Export Ind:	N
Discr Quantity Ind:	N
Discr Type Ind:	N
Discr Residue Ind:	N
Discr Partial Reject Ind:	N
Discr Full Reject Ind:	N
Manifest Ref Num:	Not reported
Alt Fac RCRA Id:	Not reported
Alt Fac Sign Date:	Not reported
Mgmt Method Type Code:	H141

Document ID:	Not reported
Manifest Status:	Not reported
Trans1 State ID:	PAR000524041
Trans2 State ID:	PAD982661381
Generator Ship Date:	2012-08-02
Trans1 Recv Date:	2012-08-02
Trans2 Recv Date:	2012-08-02
TSD Site Recv Date:	2012-08-10
Part A Recv Date:	Not reported
Part B Recv Date:	Not reported
Generator EPA ID:	NYR000006833
Trans1 EPA ID:	Not reported
Trans2 EPA ID:	Not reported
TSDF ID:	PAD085690592
Waste Code:	Not reported
Quantity:	50.0
Units:	P - Pounds
Number of Containers:	1.0
Container Type:	DF - Fiberboard or plastic drums (glass)
Handling Method:	L Landfill.
Specific Gravity:	1.0
Year:	2012
Manifest Tracking Num:	005695023FLE
Import Ind:	N
Export Ind:	N
Discr Quantity Ind:	N
Discr Type Ind:	N

KINRAY INC (Continued) **1004759336**

Discr Residue Ind:	N
Discr Partial Reject Ind:	N
Discr Full Reject Ind:	N
Manifest Ref Num:	Not reported
Alt Fac RCRA Id:	Not reported
Alt Fac Sign Date:	Not reported
Mgmt Method Type Code:	H141

Document ID:	Not reported
Manifest Status:	Not reported
Trans1 State ID:	PAR000524041
Trans2 State ID:	PAD982661381
Generator Ship Date:	2012-08-02
Trans1 Recv Date:	2012-08-02
Trans2 Recv Date:	2012-08-02
TSD Site Recv Date:	2012-08-10
Part A Recv Date:	Not reported
Part B Recv Date:	Not reported
Generator EPA ID:	NYR000006833
Trans1 EPA ID:	Not reported
Trans2 EPA ID:	Not reported
TSDF ID:	PAD085690592
Waste Code:	Not reported
Quantity:	860.0
Units:	P - Pounds
Number of Containers:	4.0
Container Type:	DF - Fiberboard or plastic drums (glass)
Handling Method:	L Landfill.
Specific Gravity:	1.0
Year:	2012
Manifest Tracking Num:	005695023FLE
Import Ind:	N
Export Ind:	N
Discr Quantity Ind:	N
Discr Type Ind:	N
Discr Residue Ind:	N
Discr Partial Reject Ind:	N
Discr Full Reject Ind:	N
Manifest Ref Num:	Not reported
Alt Fac RCRA Id:	Not reported
Alt Fac Sign Date:	Not reported
Mgmt Method Type Code:	H141

Document ID:	Not reported
Manifest Status:	Not reported
Trans1 State ID:	PAR000524041
Trans2 State ID:	PAD982661381
Generator Ship Date:	2012-08-02
Trans1 Recv Date:	2012-08-02
Trans2 Recv Date:	2012-08-02
TSD Site Recv Date:	2012-08-10
Part A Recv Date:	Not reported
Part B Recv Date:	Not reported
Generator EPA ID:	NYR000006833
Trans1 EPA ID:	Not reported

KINRAY INC (Continued) **1004759336**

Trans2 EPA ID:	Not reported
TSDF ID:	PAD085690592
Waste Code:	Not reported
Quantity:	20.0
Units:	P - Pounds
Number of Containers:	1.0
Container Type:	DF - Fiberboard or plastic drums (glass)
Handling Method:	L Landfill.
Specific Gravity:	1.0
Year:	2012
Manifest Tracking Num:	005695023FLE
Import Ind:	N
Export Ind:	N
Discr Quantity Ind:	N
Discr Type Ind:	N
Discr Residue Ind:	N
Discr Partial Reject Ind:	N
Discr Full Reject Ind:	N
Manifest Ref Num:	Not reported
Alt Fac RCRA Id:	Not reported
Alt Fac Sign Date:	Not reported
Mgmt Method Type Code:	H141

Document ID:	Not reported
Manifest Status:	Not reported
Trans1 State ID:	NYD082785429
Trans2 State ID:	PAD982661381
Generator Ship Date:	2012-10-24
Trans1 Recv Date:	2012-10-24
Trans2 Recv Date:	2012-10-25
TSD Site Recv Date:	2012-10-31
Part A Recv Date:	Not reported
Part B Recv Date:	Not reported
Generator EPA ID:	NYR000006833
Trans1 EPA ID:	Not reported
Trans2 EPA ID:	Not reported
TSDF ID:	RID040098352
Waste Code:	Not reported
Quantity:	38.0
Units:	P - Pounds
Number of Containers:	1.0
Container Type:	DF - Fiberboard or plastic drums (glass)
Handling Method:	B Incineration, heat recovery, burning.
Specific Gravity:	1.0
Year:	2012
Manifest Tracking Num:	005713766FLE
Import Ind:	N
Export Ind:	N
Discr Quantity Ind:	N
Discr Type Ind:	N
Discr Residue Ind:	N
Discr Partial Reject Ind:	N
Discr Full Reject Ind:	N
Manifest Ref Num:	Not reported
Alt Fac RCRA Id:	Not reported
Alt Fac Sign Date:	Not reported

KINRAY INC (Continued) **1004759336**

Mgmt Method Type Code: H141

Document ID: Not reported
Manifest Status: Not reported
Trans1 State ID: NYD082785429
Trans2 State ID: PAD982661381
Generator Ship Date: 2012-10-24
Trans1 Recv Date: 2012-10-24
Trans2 Recv Date: 2012-10-25
TSD Site Recv Date: 2012-10-31
Part A Recv Date: Not reported
Part B Recv Date: Not reported
Generator EPA ID: NYR000006833
Trans1 EPA ID: Not reported
Trans2 EPA ID: Not reported
TSDF ID: RID040098352
Waste Code: Not reported
Quantity: 12.0
Units: P - Pounds
Number of Containers: 1.0
Container Type: DF - Fiberboard or plastic drums (glass)
Handling Method: B Incineration, heat recovery, burning.
Specific Gravity: 1.0
Year: 2012
Manifest Tracking Num: 005713766FLE
Import Ind: N
Export Ind: N
Discr Quantity Ind: N
Discr Type Ind: N
Discr Residue Ind: N
Discr Partial Reject Ind: N
Discr Full Reject Ind: N
Manifest Ref Num: Not reported
Alt Fac RCRA Id: Not reported
Alt Fac Sign Date: Not reported
Mgmt Method Type Code: H141

Document ID: Not reported
Manifest Status: Not reported
Trans1 State ID: NYD082785429
Trans2 State ID: PAD982661381
Generator Ship Date: 2012-10-24
Trans1 Recv Date: 2012-10-24
Trans2 Recv Date: 2012-10-25
TSD Site Recv Date: 2012-10-31
Part A Recv Date: Not reported
Part B Recv Date: Not reported
Generator EPA ID: NYR000006833
Trans1 EPA ID: Not reported
Trans2 EPA ID: Not reported
TSDF ID: RID040098352
Waste Code: Not reported
Quantity: 45.0
Units: P - Pounds
Number of Containers: 1.0

KINRAY INC (Continued) **1004759336**

Container Type:	DF - Fiberboard or plastic drums (glass)
Handling Method:	B Incineration, heat recovery, burning.
Specific Gravity:	1.0
Year:	2012
Manifest Tracking Num:	005713766FLE
Import Ind:	N
Export Ind:	N
Discr Quantity Ind:	N
Discr Type Ind:	N
Discr Residue Ind:	N
Discr Partial Reject Ind:	N
Discr Full Reject Ind:	N
Manifest Ref Num:	Not reported
Alt Fac RCRA Id:	Not reported
Alt Fac Sign Date:	Not reported
Mgmt Method Type Code:	H141

Click this hyperlink while viewing on your computer to access
9 additional NY_MANIFEST: record(s) in the EDR Site Report.

M58 **FULLER TOOL CO. INC.** **UST** **U001842023**
ENE **152-35 10TH AVENUE** **HIST UST** **N/A**
1/8-1/4 **WHITESTONE, NY 11357**
0.250 mi.
1320 ft. **Site 3 of 3 in cluster M**

Relative:
Lower

Actual:
19 ft.

UST:

Id/Status:	2-601662 / Unregulated
Region:	STATE
DEC Region:	2
Program Type:	PBS
Expiration Date:	N/A
UTM X:	600421.12291999999
UTM Y:	4516519.9110200005

Affiliation Records:

Site Id:	23624
Affiliation Type:	Facility Owner
Company Name:	FULLER TOOL CO. INC.
Contact Type:	Not reported
Contact Name:	Not reported
Address1:	152-35 10TH AVENUE
Address2:	Not reported
City:	WHITESTONE
State:	NY
Zip Code:	11357
Country Code:	001
Phone:	(718) 767-8700
Phone Ext:	Not reported
Email:	Not reported
Fax Number:	Not reported
Modified By:	TRANSLAT
Date Last Modified:	3/4/2004

Site Id:	23624
Affiliation Type:	Mail Contact
Company Name:	R.G.J. CONTRACTING INC.
Contact Type:	Not reported

FULLER TOOL CO. INC. (Continued) **U001842023**

Contact Name:	DANIEL ROB.
Address1:	35-56 9TH STREET
Address2:	Not reported
City:	LONG ISLAND CITY
State:	NY
Zip Code:	11106
Country Code:	001
Phone:	(718) 721-3400
Phone Ext:	Not reported
Email:	Not reported
Fax Number:	Not reported
Modified By:	TRANSLAT
Date Last Modified:	3/4/2004

Site Id:	23624
Affiliation Type:	On-Site Operator
Company Name:	FULLER TOOL CO. INC.
Contact Type:	Not reported
Contact Name:	SHELDON SILVERSTEIN
Address1:	Not reported
Address2:	Not reported
City:	Not reported
State:	NN
Zip Code:	Not reported
Country Code:	001
Phone:	(718) 767-8700
Phone Ext:	Not reported
Email:	Not reported
Fax Number:	Not reported
Modified By:	TRANSLAT
Date Last Modified:	3/4/2004

Site Id:	23624
Affiliation Type:	Emergency Contact
Company Name:	FULLER TOOL CO. INC.
Contact Type:	Not reported
Contact Name:	SHELDON SILVERSTEIN
Address1:	Not reported
Address2:	Not reported
City:	Not reported
State:	NN
Zip Code:	Not reported
Country Code:	001
Phone:	(718) 767-8700
Phone Ext:	Not reported
Email:	Not reported
Fax Number:	Not reported
Modified By:	TRANSLAT
Date Last Modified:	3/4/2004

Tank Info:

Site ID:	23624

Tank Number:	001
Tank ID:	47381
Tank Status:	Closed - In Place
Tank Type:	Steel/carbon steel

FULLER TOOL CO. INC. (Continued) **U001842023**

Pipe Model: Not reported

Equipment Records:

A00 - Tank Internal Protection - None
D01 - Pipe Type - Steel/Carbon Steel/Iron
J02 - Dispenser - Suction Dispenser
B01 - Tank External Protection - Painted/Asphalt Coating
G00 - Tank Secondary Containment - None
I00 - Overfill - None
C03 - Pipe Location - Aboveground/Underground Combination
F01 - Pipe External Protection - Painted/Asphalt Coating
H00 - Tank Leak Detection - None

Install Date: Not reported
Capacity Gallons: 3500
Tightness Test Method: 11
Next Test Date: Not reported
Date Tank Closed: 11/01/1993
Tank Location: 5
Tank Type: Steel/carbon steel
Date Test: 11/01/1993
Registered: True
Modified By: TRANSLAT
Last Modified: 03/04/2004

HIST UST:

PBS Number: 2-601662
SPDES Number: Not reported
Emergency Contact: SHELDON SILVERSTEIN
Emergency Telephone: (718) 767-8700
Operator: SHELDON SILVERSTEIN
Operator Telephone: (718) 767-8700
Owner Name: FULLER TOOL CO. INC.
Owner Address: 152-35 10TH AVENUE
Owner City,St,Zip: WHITESTONE, NY 11357
Owner Telephone: (718) 767-8700
Owner Type: Corporate/Commercial
Owner Subtype: Not reported
Mailing Name: R.G.J. CONTRACTING INC.
Mailing Address: 35-56 9TH STREET
Mailing Address 2: Not reported
Mailing City,St,Zip: LONG ISLAND CITY, NY 11106
Mailing Contact: DANIEL ROB.
Mailing Telephone: (718) 721-3400
Owner Mark: First Owner
Facility Status: 2 - Unregulated by PBS (the total capacity is less than 1,101 gallons) and Subpart 360-14.
Facility Addr2: 152035 10TH AVENUE
SWIS ID: 6301
Old PBS Number: Not reported
Facility Type: MANUFACTURING
Inspected Date: Not reported
Inspector: Not reported
Inspection Result: Not reported
Federal ID: Not reported
Certification Flag: False
Certification Date: Not reported
Expiration Date: 12/14/1998

FULLER TOOL CO. INC. (Continued) **U001842023**

Renew Flag:	False
Renewal Date:	Not reported
Total Capacity:	0
FAMT:	True
Facility Screen:	No Missing Data
Owner Screen:	Minor Data Missing
Tank Screen:	0
Dead Letter:	False
CBS Number:	Not reported
Town or City:	NEW YORK CITY
County Code:	63
Town or City:	01
Region:	2
Tank Id:	001
Tank Location:	UNDERGROUND
Tank Status:	Closed-In Place
Install Date:	Not reported
Capacity (gals):	3500
Product Stored:	NOS 1,2, OR 4 FUEL OIL
Tank Type:	Steel/carbon steel
Tank Internal:	None
Tank External:	Painted/Asphalt Coating
Pipe Location:	Aboveground/Underground Combination
Pipe Type:	STEEL/IRON
Pipe Internal:	None
Pipe External:	Painted/Asphalt Coating
Second Containment:	None
Leak Detection:	None
Overfill Prot:	None
Dispenser:	Suction
Date Tested:	11/01/1993
Next Test Date:	Not reported
Missing Data for Tank:	No Missing Data
Date Closed:	11/01/1993
Test Method:	Leak Computer [ACUTEST]
Deleted:	False
Updated:	True
Lat/long:	Not reported

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59 **JRS AUTOMOTIVE REPAIR** **LTANKS** **U003297750**
SSW **149-10 14TH AVENUE** **UST** **N/A**
1/4-1/2 **WHITESTONE, NY 11357** **HIST UST**
0.254 mi. **AST**
1343 ft. **HIST AST**
MANIFEST

Relative:
Higher

Actual:
57 ft.

LTANKS:

Site ID:	143694
Spill Number/Closed Date:	9213668 / Not Reported
Spill Date:	3/11/1993
Spill Cause:	Tank Test Failure
Spill Source:	Gasoline Station
Spill Class:	Known release that creates potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
Cleanup Ceased:	11/22/2006
Cleanup Meets Standard:	False
SWIS:	4101

JRS AUTOMOTIVE REPAIR (Continued) **U003297750**

Investigator:	aaobliga
Referred To:	CHEMICAL OXIDATION
Reported to Dept:	3/11/1993
CID:	Not reported
Water Affected:	Not reported
Spill Notifier:	Tank Tester
Last Inspection:	Not reported
Recommended Penalty:	False
UST Involvement:	True
Remediation Phase:	5
Date Entered In Computer:	3/12/1993
Spill Record Last Update:	3/11/2011
Spiller Name:	DAVE MCNEIL
Spiller Company:	SHELL OIL
Spiller Address:	30 JERICHO TPKE
Spiller City,St,Zip:	JERICHO, NY 11753-
Spiller County:	001
Spiller Contact:	SHELL OIL
Spiller Phone:	(203) 571-3136
Spiller Extention:	Not reported
DEC Region:	2
DER Facility ID:	122520
DEC Memo:	Reassigned from Tomasello to Mulqueen 4/18/95. 10/10/95: This is additional information about material spilled from the translation of the old spill file: SUPER REG. & REG. 12/95 SHELL WILL BE ADDRESSING DISSOLVED PHASE AT SITE WITH SVES AND INSITU STRIPPING SYSTEM. DTW=20'.12/96: PRODUCT RECOVER WITH PASSIVE BAILERS (107.87 TOTAL). SHELL TO ID SOURCE AND GET MORE AGGRESSIVE WITH PRODUCT RECOVERY DURING TANK UPGRADES. 07/97: REQUESTED FURTHER DELINEATION OFF SITE.10/97: MET WITH ENVIROTRAC, FOUND EVIDENCE OF PETROLEUM ABBUTTING CROSS ISLAND PARKWAY.Summary (1/21/04 KMF):6/93 Monitoring wells 1-3 were installed.5/94 Product observed in well 1 and a PRB was installed.12/94 Wells 4,5&6 were installed.10/95 Product was observed in wells 5&6 and PRBs were installed.10/96 Product observed in well 2 and a PRB was installed.6/97 Site upgrade was performed. Two previously abandoned 550gal USTs and one 550gal used oil UST were removed from site. Additional activities included the upgrade of three 4000gal gas USTs, the re-abandonment with foam of two 550gal USTs and the installation of new dispenser islands and double walled product lines. Subsurface piping for the SVE system and one additional SVE well was installed during upgrade.9/97 Off-site investigation conducted during which product was observed in shallow hand dug excavation adjacent to Cross Island Pkwy. CAP was discussed that included installation of down gradient MWs of well points on shoulder of Cross Island.12/97 STIP effective. RAP/CAP approved. Included installation of SVE and additional MWs.1/98 SVE system installed and activated.3/98 Eight MWs installed on shoulder of Cross Island. Product detected in four. ORM socks installed in four other wells.8/5/99 ORC is not working on this site. By 9/15/99 EnviroTrac will submit to the DEC a proposal outlining a more aggressive remediation technology, possibly a biological product.3/00 Two MWs installed on easement between Cross Island and site.11/00 SVE system shut off due to blower failure.4/01 SVE repaired and restarted.11/01 SVE blower seized up and system shut down.4/02 Three MWs installed along Cross Island.8/02 Two new SVE wells installed in vicinity of MW-6 to aid design.10/30/02 SVE system upgraded to 10HP blower and system restarted. Due to electrical problems, the system was down for

JRS AUTOMOTIVE REPAIR (Continued) **U003297750**

the month of November. System was restarted 12/02.12/6/02 Phoenix requests approval to conduct hydrogen peroxide injection testing to address off-site dissolved contamination. Down gradient of the site, across the Cross Island Parkway service road, is a steep wooded area which would make it difficult to install a remedial system. In addition, there is no electricity available on the south side of the service road. Phoenix proposes injection of 1000gal of 10% hydrogen peroxide solution into monitoring well MW-16. This well was chosen since sampling shows consistent elevated BTEX with no LNAPL in over 2 years. MW-16 also has several downgradient MWs to allow for changes in DO, pH, Temp. and BTEX concentrations.8/8/03 Approved peroxide injection test workplan.9/10/03 Access letter sent to Phoenix to obtain sidewalk/street opening permits to perform test.12/1/03 Reassigned from Sangesland to K Foley.1/20/04 Paul Sherwood, Phoenix Env., called to inform me that peroxide injection test (approved by S.Sangesland) was completed and appears effective. They are proposing usage on site. Requested they submit a formal workplan with supporting results of test to the Dept for review/approval. 6/8/04 Met with Phoenix Env. and R. Rule, Shell. Discussed detrmining hydraulics on site with pumping test. 8/11/04 Received emailed copy of RAP proposing peroxide injection. No free product on site.8/31/04 Sent letter with comments on RAP. Required further delineation northwest of MW-14 and west of MW-17, pumping test, surrounding property sketch and registration of former tanks. Investigation summary report due 10/8/04. Revised RAP due 10/29/04.9/3/04 Tank Excavation Assessment received. From 1/5-1/23/04, Phoenix oversaw the station decommissioning. Three 4000gal gas USTs were cleaned and removed. Tanks and piping were observed to be in good condition. During excavation, eleven 550gal USTs were discovered. Nine had been filled with grout and two had been filled with expanding foam. All were cleaned out and removed. A total of 943tons of soil was excavated to approx 16-17'bgs.Soil along sidewalls and from bottom of excavation was screened by PID. Readings ranged from 0.0ppmv to 550ppmv. Groundwater was not encountered. 14 endpoint soil samples were collected for analysis by 8260. Only one compound from one sample was detected above cleanup objectives(8320ppb of 1,3,5-trimethylbenzene from 550 bottom).10/4/04 Spoke to P. Sherwood, Phoenix. Having permit delays. Performed pumping test. Expect to have collected all field data by the end of this week. Should be able to get report 2 weeks following collection of data(by 10/22/04).10/22/04 The area west of 149th St overpass was accessed with the permission of NYC Parks. The permit allowed for the hand excavation of soil borings and installation of MWs along the retaining wall adjacent to the Cross Island Pkwy. Three borings were advanced by hand auger and screened by PID. A soil samples from immediately above the water table(1.25-1.5') and the sample exhibiting the highest reading was submitted for 8260+MTBE/8270 analysis. Soil showed hits for BTEX in MW-23(2.25-2.5') and some in MW-24(2.25-2.5') and MW-25(2.5-2.5'). 2" PVS wells were installed at each boring. GW results not yet back from lab.The GW pump test was conducted on RW-4 on 9/15/04. GW recovery averaged approx 3gpm. During the second test, recovery rates decreased to less than 1gpm. The water level in the test well was drawn down to the depth of the drop pipe, however significant drawdown was not seen in surrounding wells. By the conclusion of the second test, drawdown at 20' from the test well was approximately 0.5'. It is not expected that an extraction system would influence offsite GW concentrations. 11/23/04 Met with P. Sherwood, B.

JRS AUTOMOTIVE REPAIR (Continued) **U003297750**

Hoashi(Phoenix) and R. Rule(Shell). Previously tried excavation around MW-21 and were unsuccessful due to excessive utilities in the area. Rommel approved pilot test for peroxide injection. Additional testing will be conducted on wells RW-1, RW-3, RW-7 and RW-8. Approx 400gal of 5% hydrogen peroxide will be pumped into the wells which will be monitored daily for three days and then continue on a weekly basis. If DO readings after one month indicate the peroxide is migrating away from the injection wells, additional monthly applications will be conducted and DO concentrations will be monitored further downgradient. When adequate field and lab data has been collected, a recommendation will be made on the effective influence that continued injections will have on dissolved hydrocarbons downgradient of the site.12/17/04 P. Sherwood, Phoenix, called to inform me the injection of peroxide to start monday.4/6/05 Received a closure report for a 550gal heating oil UST which was removed 2/9/05. It was in poor condition with advanced corrosion and pinholes, however soils did not indicate a failure. Endpoints were collected for 8260+MTBE and 8270. One post-ex sample exhibited concentrations of (1) PAH slightly above TAGM cleanup objectives. No further action necessary for this tank.375gal of peroxide solution injected into select wells on 4/4/05 and 4/22/05.5/31/05 2Q05- Sampled twelve wells. 0.05' LNAPL in MW-6.Well ID - BTEX/MTBE(ppb)MW-1 5737/NDMW-2 1/NDMW-3 3/NDMW-4 ND/NDMW-5 30/NDMW-9 20540/41100MW-10 3038/1360MW-12 19881/5860MW-14 17440/7930MW-16 42740/<50MW-20 1/2MW-21 22030/2770SAIC will continue with quarterly sampling and submit a plan to reduce frequency of monitoring at several off-site locations in addition to proposing a method to recover on-site product.12/23/05 Recevied 3Q05 report from SAIC. Samples collected 8/9/05 from 5 wells. MW-17 was dry. MW-6,21,22 all had a sheen present on the surface. DTW 14.1-19.2'bgs. Flow to the SW. BTEX ranged from ND(MW-3,4) to 34960ppb(MW-16). MTBE ranged from ND(MW-1,3,4,5) to 74ppb(MW-16). To evaluate additional remedial options.2/1/06 Source soils have been removed. Need more agressive action on-site to treat groundwater. To propose combination pump and treat in an amended RAP. Revise CAP of STIP.6/12/06 - Obligado - Spill transferred from Foley to Obligado -3/28/06 4Q05 - DTW 12.36-17.81'bgs. Five wells gauged and sampled. MW-2 and MW-7 were not sampled. MW-6, MW-21 and MW-22 all had free phase product present at 0.04', 0.05' and 0.02'.6/7/06 - Obligado - Transferred from Foley to Obligado 8/17/06 - Obligado - Phone call from property owner Ms. Cassidy (Cassery?) (516) 867-0374. She inquired about the status of the site. I told her that the site still had ground water contamination. Gave her SAIC and Longshore Environmental Contact info.9/8/06 - Obligado - Shell Portfolio meeting at the DEC. Plan to bring a mobile dual phase system to the site. They will park it and run it continuously for a certain period of time. I will send them a STIP with a 12/31/06 deadline for RAP.9/29/06 - Obligado - Sent Stipulation Agreement. 11/6/06 - Obligado - Review 1Q06 report. 7 monitoring wells were gauged and sampled. BTEX ranged from ND to 46070 ppb (mW16) and MTBE ranged from ND to 353 ppb. LNAPL sheen in MW21. DTW 17 to 21 ft bgs, gw flow to southwest. 11/9/06 - Obligado - Review 2Q06 report. 7 samples collected on May 25, 3006. LNAPL in MW21 (0.04 ft). BTEX ranged from ND to 36,450 ppb (MW22). MTBE ranged from ND to 424 ppb (MW22). GW at 13.30 to 17.48 ft bgs, flow to the southwest. 0.1 gallons of LNAPL recovered this quarter, 196.47 gallons todate. 11/10/06 - Obligado - Revised Stipulation to allow 150 days for implementation and resent.11/22/06 - Obligado -

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STIPULATION executed by Oliva.12/29/06 - Obilgado - In compliance with STIP agreement, I received RAP pdf via email from Kevin Heaphy of GES.1/31/07 - Obligado - Received hardcopy Remedial Action Plan and electronic CD with pdf version.2/9/07 - Obligado - Review update reports:Review 3Q06 Report. Gauging and sampling of 8 monitoring wells on 9/26/06. BTEX from ND to 51,690 ug/L (MW21). MTBE from ND to 166 ug/L in MW22. LNAPL not detected. DTW from 14.32 (MW2) to 19.12 (MW17).Review 4Q06 Report. Guaged and sampled 8 monitoring wells on November 8, 2006. LNAPL detected in MW22 (0.04 ft). DTW 12.62 (MW6) to 18.83 (MW17). BTEX from ND to 26,220 ug/L. MTBE from ND to 91.8 (MW16). High vacuum extraction pilot test conducted at MW21 and MW-22 to identify hydraulic connectivity. 2/16/07 - Obligado - Review RAP. It proposes surfactant flushing/vacuum extraction event followed by In-situ chemical oxidation. Chemox plan proposes peroxide/activated persulfate/ozone injection. Peroxide and activated persulfate will be injected into shallow injection point, while Ozone will be injected into deeper point. Proposes up to 2000 gallons of an 8-17% hydrogen peroxide solution, up to 400 gallons of a 15% solution of sodium persulfate, and 1.5 pounds of ozone during a typical 2 day event. Called Heather Cloud to discuss. 2/20/07 - Obligado - Sent email to Heather Cloud required a revised RAP addressing following Department concerns 1)is site geology ammenable to peroxide injection? 2)has a complete utility survey been performed? 3)what about off-site? 4) peroxide previously injected with no success, why will this injection work? 5)sample rw4,rw6,rw7 (central portion of the site with no data) and include data in revised RAP. Adjust or add injection points accordingly. 6) also sample for metals and sulfate. Due date for revised RAP is 3/20/07.3/22/07 - Obligado - Received Revised RAP. GES sampled RW4 and found 93000 ppb VOCs and RW7 had strong gasoline odor and RW6 had 0.01 ft product. According to Revised RAP they will modify injection wells accordingly. GES states that off-site areas showed decreases after previous injections, confirming that chemical oxidants follow pathways that contaminants ahve migrated, thereby addressing contamination in the source and downgradient areas. A complete utility survey will be completed prior to the pilot test. Pre and post injection monitoring weill include metals and sulfate.4/18/07 - Obligado - After review of the Revised RAP emailed H. Cloud requesting a RAP implemntation schedule.5/3/07 - Obligado - Received RAP implemenation schedule. Implementation schedule: May 2007 - Utility Survey May 30, 2007 - Well Development & Surfactant Injection May 31, 2007 - HIT Event Jun 2007 - Baseline ground water sampling Sep 2007 - Chemical Oxidation Pilot Test October 2007 - Injection Well Installation Nov 07/Feb 08/May 08/Aug 08 - Quarterly Chemical Oxidation Injection Events Dec 07/Mar 08/Jun 08/Sep 08 - Quartelry GW Sampling Events - Jul 07/Oct 07/Jan 08/Apr 08 - Quarterly Site Status Update Reports - 5/9/07 - Obligado - Met Matt Scheiferstein onsite to look at off-site well locations. 5/11/07 - Obligado - Called H. Cloud to discuss off-site well sampling. Left message to call back DEC.5/15/07 - Obligado - Called D. Vought to discuss off-site well sampling. Left message to call back DEC.5/16/07 - Obligado - Emailed GES and Shell. DEC requires continuing off-site sampling along cross island parkway. Sent RAP approval letter with modification requiring sampling of additional wells. 10/3/07 - Obligado - Review 2Q07 report. Work performed - May 1 - Guaged and sampled montoirng wells. LNAPL not detected in any of the wells. BTEX from ND to 70,160 ug/L (RW4). MTBE ND to 675 ug/L (RW4)May 15 - public and private markout. May 30, 2007 - injected approximately 100

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gallons of a 2% surfactant solution into MW6.May 31, 2007 - Performed high vaccum recover event on MW6 adn MW21 to recover the injected surfactant solution and any liquid phase hydrocarbons released. Proposed plans - Baseline sampling in July 2007. Chemical injection pilot event in August 2007. 10/4/07 - Obligado - Portfolio meeting with Rob Rule of Shell, Heather Cloud of GES, Eric Harvey of GES, and myself. GES completed the Utility survey, well development, surfactant injection, the HIT event, the baseline ground water sampling, and the chemical oxidation pilot test. During the pilot test they had difficulty getting the formation to accept the peroxide. The site has more of a silty sand soil, as opposed to a sandy soil which they were expecting. Since they had difficulty introducing the peroxide, they didn't bother to try and introduce the persulfate. They did find that during soil sampling they did not have a lot of soil impacts, so they don't need to use as much peroxide as they thought they needed. I will get an update report in January 08 on the status of the injection events. They did do the sampling along Cross Island Exress way, still high BTEX in a couple of those wells. 11/26/07 - Obligado - Received a phone call from the site owner. I gave her a update of what is goiong on at the site with regards to site remediation. 12/20/07 - Obligado - Review 3rd Quarter 07 update report. Wells sampled in July 12, 2007, LNAPL not detected. BTEX from ND to 39210 ug/L (MW16) and MTBE ND to 1240 ug/L. August 2007 - 3 Nested wells installed for hydrogen peroxide adn ozone injection. September 11 and 12, 2007, chemical injection pilot test performed with 280 gallons of 6% hydrogen peroxide and 0.5 lbs of ozone. Proposes submitting a Feasibility Study Report in December 2007.3/12/08 - Obligado - Reviewed Feasibility Test Report. The report concludes that chem ox is a viable remedial strategy. Reductions in VOC concentrations were detected in 2 of the 3 injection wells post pilot test. The report recommneds 4 to 6 events on a bimonthly basis. Sent email approval of the report and requested update project schedule.Obligado - Review 4Q07 update report. No LNAPL detected. BTEX from 3.33 ug/L (MW5) to 55,300 ug/L (MW16). MTBE from ND to 79 ug/L (IW2). 3/18/08 - Obligado - Received phone call from Mrs. Bobby Gene Casserly. She is the property owner. She was inquiring about remedial status. I told her Shell was implementing a RAP for Chemical Oxidation. She said the lease expires in December 2008. I told her that any new development would have to address environmental concerns. Remediation could proceed in conjuction redevelopment or remedial systems can be installed around or under developments. but Department must be involved.5/12/08 - Obligado - Review 1Q08 update Report - Work performed - Quarterly sampling in February 08. BTEX range is from ND to 47,900 ug/L (MW16). MTBE range is from ND to 1660 ug/L (MW9). 5/15/08 - Obligado - Received letter from Heather Cloud/GES. Shell requests to hold off on implementation of the RAP and pursue alternate strategy including AS/SVE. I called Heather Cloud left message to call back DEC. 5/22/08 - Obligado - Sent approval of proposal to to AS/SVE pilot test. Pilot test report is due August 22, 2008.9/16/08 - Obligado - Meeting with GES,Shell, DEC. We discussed the AS/SVE pilot test. According to report AS/SVE was feasible but they thought that chemox would be a better plan. They are going to proceed with the approved ChemOx injection plan. 2/24/09 - Obligado - Meeting with Shell, GES, DEC. They have been proceeding with Injection events. The conducted ISCO events in October and November. Will submit workplan for borings on site and upgradient well.3/31/09 - Obligado - Reviewed and sent approval for

JRS AUTOMOTIVE REPAIR (Continued) **U003297750**

Investigaiton workplan - one boring east of MW2 to evaluate presence of trapped product and one montiring well upgradient.11/9/09 - Obligado - Meeting with Shell, GES, DEC. Next chemical oxidation event scheduled for January 2010. Shell will look into historic concentrations at off-site monitoringwells MW-23, MW-24 and MW-25 and evaluate if wells should be abandoned. Shell will submit a workplan for off-site investigation. 3/10/10 - Obligado - Approved IWP for soil borings along Cross Island Pkwy.8/9/10- Obligado - I reviewed the 2nd Quarter 2010 monitoring report. Todate 7 chemox injections have taken place. The propose to conduct 1 more event. BTEX concentrations have decreased in some wells, however, some wells have shown little to no improvement. Still up to 39,000 ug/L BTEX in SVE-1. I also reviewed a work plan to advance 5 soil borings on site after the 8th injection event to evaluate the remaining soil impacts. 3/9/11 - Obligado - REview 4Q10 report. December 6 through December 10, 2010 - Conducted the 9th ISCO event, which included the injection ofapproximately 2,169 gallons of 15% hydrogen peroxide solution, 612 gallons of 12% sodium persulfate solution 60 gallons of 12% ferrous sulfate solution, 56 gallons of 12% EDTA iron solution and approximately 2.31 pounds of ozone. Additionally, pressurized air was injected intermediately for the dispersion of peroxide in the subsurface, and SVE was utilized for off-gas control. BTEX up to 55,000 ug/L in RW-4 on-site. Off-site 23,000 ug/L in MW12. Proposes to conduct the 10th ISCO event in March. Effectiveness of ISCO at this site is questionable.

Remarks: 2 SUPER REG. 4K - GROSS. 2 REG. 4K - GROSS. EX ISO & REPAIR & RETEST.

Material:

Site ID:	143694
Operable Unit ID:	977767
Operable Unit:	01
Material ID:	403436
Material Code:	0009
Material Name:	Gasoline
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	0
Units:	Pounds
Recovered:	No
Resource Affected:	Not reported
Oxygenate:	True
Site ID:	143694
Operable Unit ID:	977767
Operable Unit:	01
Material ID:	572959
Material Code:	1213A
Material Name:	MTBE (METHYL-TERT-BUTYL ETHER)
Case No.:	01634044
Material FA:	Hazardous Material
Quantity:	Not reported
Units:	Not reported
Recovered:	Not reported
Resource Affected:	Not reported
Oxygenate:	True

Tank Test:

JRS AUTOMOTIVE REPAIR (Continued) **U003297750**

Site ID:	143694
Spill Tank Test:	1541263
Tank Number:	Not reported
Tank Size:	0
Test Method:	00
Leak Rate:	0
Gross Fail:	Not reported
Modified By:	Spills
Last Modified:	10/1/2004
Test Method:	Unknown

Site ID:	301512
Spill Number/Closed Date:	9005195 / 9/25/1992
Spill Date:	8/9/1990
Spill Cause:	Tank Failure
Spill Source:	Gasoline Station
Spill Class:	Known release that creates potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
Cleanup Ceased:	9/25/1992
Cleanup Meets Standard:	True
SWIS:	4101
Investigator:	SULLIVAN
Referred To:	Not reported
Reported to Dept:	8/10/1990
CID:	Not reported
Water Affected:	Not reported
Spill Notifier:	Responsible Party
Last Inspection:	Not reported
Recommended Penalty:	False
UST Involvement:	True
Remediation Phase:	0
Date Entered In Computer:	8/14/1990
Spill Record Last Update:	10/19/2004
Spiller Name:	Not reported
Spiller Company:	shell oil
Spiller Address:	Not reported
Spiller City,St,Zip:	NY
Spiller County:	999
Spiller Contact:	Not reported
Spiller Phone:	Not reported
Spiller Extention:	Not reported
DEC Region:	2
DER Facility ID:	122520
DEC Memo:	Not reported
Remarks:	STATION INVENTORY INDICATES A LOSS OF PRODUCT, WILL DO A TEN DAY INVENTORY CONTROL CHECK, IF NECESSARY A TEST WILL BE DONE ON THE TANK. Not reported

Material:

Site ID:	301512
Operable Unit ID:	942749
Operable Unit:	01
Material ID:	436248
Material Code:	0009
Material Name:	Gasoline
Case No.:	Not reported

JRS AUTOMOTIVE REPAIR (Continued) **U003297750**

Material FA: Petroleum
Quantity: 400
Units: Gallons
Recovered: No
Resource Affected: Not reported
Oxygenate: False

Tank Test:

UST:
Id/Status: 2-190527 / Unregulated
Region: STATE
DEC Region: 2
Program Type: PBS
Expiration Date: N/A
UTM X: 599906.09707000002
UTM Y: 4515942.1362399999

Affiliation Records:
Site Id: 5885
Affiliation Type: Facility Owner
Company Name: MOTIVA ENTERPRISES, LLC
Contact Type: Not reported
Contact Name: Not reported
Address1: 520 ALLENS AVE., BLDG. 2
Address2: Not reported
City: PROVIDENCE
State: RI
Zip Code: 02905
Country Code: 001
Phone: (401) 429-2277
Phone Ext: Not reported
Email: Not reported
Fax Number: Not reported
Modified By: TRANSLAT
Date Last Modified: 3/4/2004

Site Id: 5885
Affiliation Type: Mail Contact
Company Name: MOTIVA ENTERPRISES, LLC
Contact Type: Not reported
Contact Name: PERMIT COORDINATOR
Address1: 520 ALLENS AVENUE
Address2: BUILDING 2
City: PROVIDENCE
State: RI
Zip Code: 02905
Country Code: 001
Phone: (401) 429-2277
Phone Ext: Not reported
Email: Not reported
Fax Number: Not reported
Modified By: NRLOMBAR
Date Last Modified: 5/25/2005

Site Id: 5885

JRS AUTOMOTIVE REPAIR (Continued) **U003297750**

Affiliation Type:	On-Site Operator
Company Name:	JRS AUTOMOTIVE REPAIR
Contact Type:	Not reported
Contact Name:	KEN SCHLIESSMAN
Address1:	Not reported
Address2:	Not reported
City:	Not reported
State:	NN
Zip Code:	Not reported
Country Code:	001
Phone:	(718) 746-9801
Phone Ext:	Not reported
Email:	Not reported
Fax Number:	Not reported
Modified By:	TRANSLAT
Date Last Modified:	3/4/2004

Site Id:	5885
Affiliation Type:	Emergency Contact
Company Name:	MOTIVA ENTERPRISES, LLC
Contact Type:	Not reported
Contact Name:	CHEM TREC
Address1:	Not reported
Address2:	Not reported
City:	Not reported
State:	NN
Zip Code:	Not reported
Country Code:	999
Phone:	(800) 424-9300
Phone Ext:	Not reported
Email:	Not reported
Fax Number:	Not reported
Modified By:	NRLOMBAR
Date Last Modified:	12/20/2006

Tank Info:

Site ID:	5885
Tank Number:	001
Tank ID:	6917
Tank Status:	Closed - Removed
Tank Type:	Steel/carbon steel
Pipe Model:	Not reported

Equipment Records:

C02 - Pipe Location - Underground/On-ground
I03 - Overfill - Automatic Shut-Off
B00 - Tank External Protection - None
D99 - Pipe Type - Other
K01 - Spill Prevention - Catch Basin
A01 - Tank Internal Protection - Epoxy Liner
G00 - Tank Secondary Containment - None
J02 - Dispenser - Suction Dispenser
H05 - Tank Leak Detection - In-Tank System (ATG)
F99 - Pipe External Protection - Other

Install Date:	12/01/1971
Capacity Gallons:	4000

JRS AUTOMOTIVE REPAIR (Continued) **U003297750**

Tightness Test Method: 20
Next Test Date: Not reported
Date Tank Closed: 01/01/2004
Tank Location: 5
Tank Type: Steel/carbon steel
Date Test: 07/11/2001
Registered: True
Modified By: TRANSLAT
Last Modified: 03/04/2004

Site ID: 5885

Tank Number: 002
Tank ID: 6918
Tank Status: Closed - Removed
Tank Type: Steel/carbon steel
Pipe Model: Not reported

Equipment Records:
C02 - Pipe Location - Underground/On-ground
I03 - Overfill - Automatic Shut-Off
B00 - Tank External Protection - None
D99 - Pipe Type - Other
K01 - Spill Prevention - Catch Basin
G00 - Tank Secondary Containment - None
A00 - Tank Internal Protection - None
J02 - Dispenser - Suction Dispenser
H05 - Tank Leak Detection - In-Tank System (ATG)
F99 - Pipe External Protection - Other

Install Date: 12/01/1975
Capacity Gallons: 4000
Tightness Test Method: 20
Next Test Date: Not reported
Date Tank Closed: 01/01/2004
Tank Location: 5
Tank Type: Steel/carbon steel
Date Test: 07/11/2001
Registered: True
Modified By: TRANSLAT
Last Modified: 03/04/2004

Site ID: 5885

Tank Number: 003
Tank ID: 6919
Tank Status: Closed - Removed
Tank Type: Steel/carbon steel
Pipe Model: Not reported

Equipment Records:
C02 - Pipe Location - Underground/On-ground
I03 - Overfill - Automatic Shut-Off
B00 - Tank External Protection - None
D99 - Pipe Type - Other
K01 - Spill Prevention - Catch Basin
A01 - Tank Internal Protection - Epoxy Liner
G00 - Tank Secondary Containment - None
J02 - Dispenser - Suction Dispenser

JRS AUTOMOTIVE REPAIR (Continued) **U003297750**

H05 - Tank Leak Detection - In-Tank System (ATG)
F99 - Pipe External Protection - Other

Install Date:	12/01/1975
Capacity Gallons:	4000
Tightness Test Method:	20
Next Test Date:	Not reported
Date Tank Closed:	01/01/2004
Tank Location:	5
Tank Type:	Steel/carbon steel
Date Test:	07/11/2001
Registered:	True
Modified By:	TRANSLAT
Last Modified:	03/04/2004
Site ID:	5885
Tank Number:	005
Tank ID:	6921
Tank Status:	Closed - Removed
Tank Type:	Steel/carbon steel
Pipe Model:	Not reported

Equipment Records:

C02 - Pipe Location - Underground/On-ground
H00 - Tank Leak Detection - None
B00 - Tank External Protection - None
F00 - Pipe External Protection - None
G00 - Tank Secondary Containment - None
A00 - Tank Internal Protection - None
D02 - Pipe Type - Galvanized Steel
J02 - Dispenser - Suction Dispenser
I00 - Overfill - None

Install Date:	12/01/1963
Capacity Gallons:	550
Tightness Test Method:	NN
Next Test Date:	Not reported
Date Tank Closed:	01/01/2004
Tank Location:	5
Tank Type:	Steel/carbon steel
Date Test:	Not reported
Registered:	True
Modified By:	TRANSLAT
Last Modified:	03/04/2004

HIST UST:

PBS Number:	2-190527
SPDES Number:	Not reported
Emergency Contact:	CHEM TREC
Emergency Telephone:	(800) 424-9300
Operator:	KEN SCHLIESSMAN
Operator Telephone:	(718) 746-9801
Owner Name:	MOTIVA ENTERPRISES, LLC.
Owner Address:	1100 LOUISIANA ST., STE. 200
Owner City,St,Zip:	HOUSTON, TX 77002
Owner Telephone:	(713) 277-8000
Owner Type:	Corporate/Commercial
Owner Subtype:	Not reported

JRS AUTOMOTIVE REPAIR (Continued) **U003297750**

Mailing Name:	MOTIVA ENTERPRISES, LLC.
Mailing Address:	3 EDGEWATER DR.,
Mailing Address 2:	SUITE 202
Mailing City,St,Zip:	NORWOOD, MA 02062
Mailing Contact:	JENNIFER VARNERIN
Mailing Telephone:	(781) 551-5409
Owner Mark:	Second Owner
Facility Status:	1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility.
Facility Addr2:	149010 14TH AVE
SWIS ID:	6301
Old PBS Number:	Not reported
Facility Type:	RETAIL GASOLINE SALES
Inspected Date:	Not reported
Inspector:	Not reported
Inspection Result:	Not reported
Federal ID:	Not reported
Certification Flag:	False
Certification Date:	09/14/2001
Expiration Date:	04/26/2004
Renew Flag:	False
Renewal Date:	Not reported
Total Capacity:	12250
FAMT:	True
Facility Screen:	No Missing Data
Owner Screen:	No Missing Data
Tank Screen:	Minor Data Missing
Dead Letter:	False
CBS Number:	Not reported
Town or City:	NEW YORK CITY
County Code:	63
Town or City:	01
Region:	2

Tank Id:	001
Tank Location:	UNDERGROUND
Tank Status:	In Service
Install Date:	19711201
Capacity (gals):	4000
Product Stored:	UNLEADED GASOLINE
Tank Type:	Steel/carbon steel
Tank Internal:	Epoxy Liner
Tank External:	Painted/Asphalt Coating
Pipe Location:	Underground
Pipe Type:	OTHER
Pipe Internal:	Other
Pipe External:	Other
Second Containment:	None
Leak Detection:	In-tank System
Overfill Prot:	Automatic Shut-Off, Catch Basin
Dispenser:	Suction
Date Tested:	07/11/2001
Next Test Date:	07/11/2006
Missing Data for Tank:	No Missing Data
Date Closed:	Not reported
Test Method:	USTest 2000

JRS AUTOMOTIVE REPAIR (Continued) **U003297750**

Deleted:	False
Updated:	True
Lat/long:	Not reported

Tank Id:	002
Tank Location:	UNDERGROUND
Tank Status:	In Service
Install Date:	19751201
Capacity (gals):	4000
Product Stored:	UNLEADED GASOLINE
Tank Type:	Steel/carbon steel
Tank Internal:	Epoxy Liner
Tank External:	Painted/Asphalt Coating
Pipe Location:	Underground
Pipe Type:	OTHER
Pipe Internal:	Other
Pipe External:	Other
Second Containment:	None
Leak Detection:	In-tank System
Overfill Prot:	Automatic Shut-Off, Catch Basin
Dispenser:	Suction
Date Tested:	07/11/2001
Next Test Date:	07/11/2006
Missing Data for Tank:	No Missing Data
Date Closed:	Not reported
Test Method:	USTest 2000
Deleted:	False
Updated:	True
Lat/long:	Not reported

Tank Id:	003
Tank Location:	UNDERGROUND
Tank Status:	In Service
Install Date:	19751201
Capacity (gals):	4000
Product Stored:	UNLEADED GASOLINE
Tank Type:	Steel/carbon steel
Tank Internal:	Epoxy Liner
Tank External:	Painted/Asphalt Coating
Pipe Location:	Underground
Pipe Type:	OTHER
Pipe Internal:	Other
Pipe External:	Other
Second Containment:	None
Leak Detection:	In-tank System
Overfill Prot:	Automatic Shut-Off, Catch Basin
Dispenser:	Suction
Date Tested:	07/11/2001
Next Test Date:	07/11/2006
Missing Data for Tank:	No Missing Data
Date Closed:	Not reported
Test Method:	USTest 2000
Deleted:	False
Updated:	True
Lat/long:	Not reported

JRS AUTOMOTIVE REPAIR (Continued) **U003297750**

Tank Id:	005
Tank Location:	UNDERGROUND
Tank Status:	Tank Converted To Non-Regulated Use
Install Date:	19631201
Capacity (gals):	550
Product Stored:	NOS 1,2, OR 4 FUEL OIL
Tank Type:	Steel/carbon steel
Tank Internal:	None
Tank External:	Painted/Asphalt Coating
Pipe Location:	Underground
Pipe Type:	GALVANIZED STEEL
Pipe Internal:	None
Pipe External:	Painted/Asphalt Coating
Second Containment:	None
Leak Detection:	Groundwater Well
Overfill Prot:	None
Dispenser:	Suction
Date Tested:	Not reported
Next Test Date:	Not reported
Missing Data for Tank:	No Missing Data
Date Closed:	08/01/1996
Test Method:	Not reported
Deleted:	False
Updated:	True
Lat/long:	Not reported

AST:

Region:	STATE
DEC Region:	2
Site Status:	Unregulated
Facility Id:	2-190527
Program Type:	PBS
UTM X:	599906.09707000002
UTM Y:	4515942.1362399999
Expiration Date:	N/A

Affiliation Records:

Site Id:	5885
Affiliation Type:	Facility Owner
Company Name:	MOTIVA ENTERPRISES, LLC
Contact Type:	Not reported
Contact Name:	Not reported
Address1:	520 ALLENS AVE., BLDG. 2
Address2:	Not reported
City:	PROVIDENCE
State:	RI
Zip Code:	02905
Country Code:	001
Phone:	(401) 429-2277
Phone Ext:	Not reported
Email:	Not reported
Fax Number:	Not reported
Modified By:	TRANSLAT
Date Last Modified:	3/4/2004

Site Id:	5885
Affiliation Type:	Mail Contact

JRS AUTOMOTIVE REPAIR (Continued) **U003297750**

Company Name:	MOTIVA ENTERPRISES, LLC
Contact Type:	Not reported
Contact Name:	PERMIT COORDINATOR
Address1:	520 ALLENS AVENUE
Address2:	BUILDING 2
City:	PROVIDENCE
State:	RI
Zip Code:	02905
Country Code:	001
Phone:	(401) 429-2277
Phone Ext:	Not reported
Email:	Not reported
Fax Number:	Not reported
Modified By:	NRLOMBAR
Date Last Modified:	5/25/2005

Site Id:	5885
Affiliation Type:	On-Site Operator
Company Name:	JRS AUTOMOTIVE REPAIR
Contact Type:	Not reported
Contact Name:	KEN SCHLIESSMAN
Address1:	Not reported
Address2:	Not reported
City:	Not reported
State:	NN
Zip Code:	Not reported
Country Code:	001
Phone:	(718) 746-9801
Phone Ext:	Not reported
Email:	Not reported
Fax Number:	Not reported
Modified By:	TRANSLAT
Date Last Modified:	3/4/2004

Site Id:	5885
Affiliation Type:	Emergency Contact
Company Name:	MOTIVA ENTERPRISES, LLC
Contact Type:	Not reported
Contact Name:	CHEM TREC
Address1:	Not reported
Address2:	Not reported
City:	Not reported
State:	NN
Zip Code:	Not reported
Country Code:	999
Phone:	(800) 424-9300
Phone Ext:	Not reported
Email:	Not reported
Fax Number:	Not reported
Modified By:	NRLOMBAR
Date Last Modified:	12/20/2006

Tank Info:

Tank Number:	004
Tank Id:	6920

JRS AUTOMOTIVE REPAIR (Continued) **U003297750**

Equipment Records:

G00 - Tank Secondary Containment - None
J00 - Dispenser - None
C01 - Pipe Location - Aboveground
H00 - Tank Leak Detection - None
I03 - Overfill - Automatic Shut-Off
B00 - Tank External Protection - None
F00 - Pipe External Protection - None
I04 - Overfill - Product Level Gauge (A/G)
A00 - Tank Internal Protection - None
D02 - Pipe Type - Galvanized Steel

Tank Location:	1
Tank Type:	Steel/Carbon Steel/Iron
Tank Status:	Closed - Removed
Pipe Model:	Not reported
Install Date:	07/01/1997
Capacity Gallons:	250
Tightness Test Method:	NN
Date Test:	Not reported
Next Test Date:	Not reported
Date Tank Closed:	01/01/2004
Register:	True
Modified By:	TRANSLAT
Last Modified:	03/04/2004

HIST AST:

PBS Number:	2-190527
SWIS Code:	6301
Operator:	KEN SCHLIESSMAN
Facility Phone:	(718) 746-9801
Facility Addr2:	149010 14TH AVE
Facility Type:	RETAIL GASOLINE SALES
Emergency:	CHEM TREC
Emergency Tel:	(800) 424-9300
Old PBSNO:	Not reported
Date Inspected:	Not reported
Inspector:	Not reported
Result of Inspection:	Not reported
Owner Name:	MOTIVA ENTERPRISES, LLC.
Owner Address:	1100 LOUISIANA ST., STE. 200
Owner City,St,Zip:	HOUSTON, TX 77002
Federal ID:	Not reported
Owner Tel:	(713) 277-8000
Owner Type:	Corporate/Commercial
Owner Subtype:	Not reported
Mailing Contact:	JENNIFER VARNERIN
Mailing Name:	MOTIVA ENTERPRISES, LLC.
Mailing Address:	3 EDGEWATER DR.,
Mailing Address 2:	SUITE 202
Mailing City,St,Zip:	NORWOOD, MA 02062
Mailing Telephone:	(781) 551-5409
Owner Mark:	Second Owner
Facility Status:	1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility.
Certification Flag:	False

JRS AUTOMOTIVE REPAIR (Continued) **U003297750**

Certification Date:	09/14/2001
Expiration:	04/26/2004
Renew Flag:	False
Renew Date:	Not reported
Total Capacity:	12250
FAMT:	True
Facility Screen:	No Missing Data
Owner Screen:	No Missing Data
Tank Screen:	Minor Data Missing
Dead Letter:	False
CBS Number:	Not reported
Town or City:	NEW YORK CITY
County Code:	63
Town or City Code:	01
Region:	2

Tank ID:	004
Tank Location:	ABOVEGROUND
Tank Status:	In Service
Install Date:	19970701
Capacity (Gal):	250
Product Stored:	USED OIL
Tank Type:	Steel/carbon steel
Tank Internal:	0
Tank External:	00
Pipe Location:	Aboveground
Pipe Type:	GALVANIZED STEEL
Pipe Internal:	None
Pipe External:	00
Tank Containment:	Vault (w/access)
Leak Detection:	00
Overfill Protection:	34
Dispenser Method:	Not reported
Date Tested:	Not reported
Next Test Date:	Not reported
Missing Data for Tank:	Minor Data Missing
Date Closed:	Not reported
Test Method:	Not reported
Deleted:	False
Updated:	True
SPDES Number:	Not reported
Lat/Long:	Not reported

NY MANIFEST:

EPA ID:	NYD987003654
Country:	USA
Mailing Name:	SHELL OIL COMPANY
Mailing Contact:	STEPHANIE RICE
Mailing Address:	P.O. BOX 4540
Mailing Address 2:	Not reported
Mailing City:	HOUSTON
Mailing State:	TX
Mailing Zip:	77210
Mailing Zip4:	Not reported
Mailing Country:	USA
Mailing Phone:	713-421-2258

JRS AUTOMOTIVE REPAIR (Continued) **U003297750**

NY MANIFEST:
No Manifest Records Available

60
SSE
1/4-1/2
0.302 mi.
1595 ft.

M S FUEL INC.
150-17 CROSS ISLAND PARKWAY
WHITESTONE, NY 11357

LTANKS **U000412071**
UST **N/A**
HIST UST
NY Spills

Relative:
Higher

Actual:
61 ft.

LTANKS:

Site ID:	225951
Spill Number/Closed Date:	9001764 / 3/4/2003
Spill Date:	4/17/1990
Spill Cause:	Tank Test Failure
Spill Source:	Gasoline Station
Spill Class:	Known release that creates a file or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
Cleanup Ceased:	Not reported
Cleanup Meets Standard:	False
SWIS:	4101
Investigator:	KMFOLEY
Referred To:	Not reported
Reported to Dept:	5/15/1990
CID:	Not reported
Water Affected:	Not reported
Spill Notifier:	Responsible Party
Last Inspection:	Not reported
Recommended Penalty:	False
UST Involvement:	True
Remediation Phase:	0
Date Entered In Computer:	5/17/1990
Spill Record Last Update:	11/23/2004
Spiller Name:	Not reported
Spiller Company:	CITYGAS
Spiller Address:	Not reported
Spiller City,St,Zip:	ZZ
Spiller County:	001
Spiller Contact:	Not reported
Spiller Phone:	Not reported
Spiller Extention:	Not reported
DEC Region:	2
DER Facility ID:	186510
DEC Memo:	3/04/2003 - Closed Due To The Nature / Extent Of The Spill Report1/8/04 Reference Spill #9705304.(Kmf)
Remarks:	5K TANK, OWNER CLAIMS THAT TANK FAILURE WAS DUE TO INVENTORY RECORDS.CLOSED DUE TO LACK OF ANY RECENT INFO - DOES NOT MEET ANY CLEANUP REQUIREMENTS.

Material:

Site ID:	225951
Operable Unit ID:	941622
Operable Unit:	01
Material ID:	440089
Material Code:	0009
Material Name:	Gasoline
Case No.:	Not reported
Material FA:	Petroleum

M S FUEL INC. (Continued) **U000412071**

Quantity: 400
Units: Gallons
Recovered: No
Resource Affected: Not reported
Oxygenate: False

Tank Test:
Site ID: 225951
Spill Tank Test: 1537076
Tank Number: Not reported
Tank Size: 0
Test Method: 00
Leak Rate: 0
Gross Fail: Not reported
Modified By: Spills
Last Modified: 10/1/2004
Test Method: Unknown

UST:
Id/Status: 2-600357 / Active
Region: STATE
DEC Region: 2
Program Type: PBS
Expiration Date: 2013/08/06
UTM X: 600178.38876999996
UTM Y: 4515769.7255699998

Affiliation Records:
Site Id: 22340
Affiliation Type: Facility Owner
Company Name: SHAD GASOLINE SERVICES INC.
Contact Type: Not reported
Contact Name: Not reported
Address1: 147-12 14TH AVENUE
Address2: Not reported
City: WHITESTONE
State: NY
Zip Code: 11357
Country Code: 001
Phone: (718) 746-4833
Phone Ext: Not reported
Email: Not reported
Fax Number: Not reported
Modified By: NRLOMBAR
Date Last Modified: 6/2/2010

Site Id: 22340
Affiliation Type: Mail Contact
Company Name: M S FUEL INC.
Contact Type: Not reported
Contact Name: MAKHAN SINGH
Address1: 150-17 CROSS ISLAND PARKWAY
Address2: Not reported
City: WHITESTONE
State: NY
Zip Code: 11357

M S FUEL INC. (Continued) **U000412071**

Country Code:	001
Phone:	(718) 746-5415
Phone Ext:	Not reported
Email:	Not reported
Fax Number:	Not reported
Modified By:	NRLOMBAR
Date Last Modified:	6/21/2010
Site Id:	22340
Affiliation Type:	On-Site Operator
Company Name:	M S FUEL INC.
Contact Type:	Not reported
Contact Name:	MAKHAN SINGH
Address1:	Not reported
Address2:	Not reported
City:	Not reported
State:	NN
Zip Code:	Not reported
Country Code:	001
Phone:	(718) 746-5415
Phone Ext:	Not reported
Email:	Not reported
Fax Number:	Not reported
Modified By:	NRLOMBAR
Date Last Modified:	6/16/2010
Site Id:	22340
Affiliation Type:	Emergency Contact
Company Name:	SHAD GASOLINE SERVICES INC.
Contact Type:	Not reported
Contact Name:	MAKHAN SINGH
Address1:	Not reported
Address2:	Not reported
City:	Not reported
State:	NN
Zip Code:	Not reported
Country Code:	999
Phone:	(917) 603-6667
Phone Ext:	Not reported
Email:	Not reported
Fax Number:	Not reported
Modified By:	NRLOMBAR
Date Last Modified:	6/16/2010

Tank Info:

Site ID:	22340
Tank Number:	001
Tank ID:	42329
Tank Status:	Closed - Removed
Tank Type:	Steel/carbon steel
Pipe Model:	Not reported

Equipment Records:

C02 - Pipe Location - Underground/On-ground
G03 - Tank Secondary Containment - Vault (w/o access)
I00 - Overfill - None

M S FUEL INC. (Continued) **U000412071**

F01 - Pipe External Protection - Painted/Asphalt Coating
H00 - Tank Leak Detection - None
B01 - Tank External Protection - Painted/Asphalt Coating
A00 - Tank Internal Protection - None
D01 - Pipe Type - Steel/Carbon Steel/Iron
J02 - Dispenser - Suction Dispenser

Install Date: 12/01/1942
Capacity Gallons: 550
Tightness Test Method: 03
Next Test Date: Not reported
Date Tank Closed: 06/01/1997
Tank Location: 5
Tank Type: Steel/carbon steel
Date Test: 01/01/1996
Registered: True
Modified By: TRANSLAT
Last Modified: 03/04/2004

Site ID: 22340

Tank Number: 002
Tank ID: 42330
Tank Status: Closed - Removed
Tank Type: Steel/carbon steel
Pipe Model: Not reported

Equipment Records:

C02 - Pipe Location - Underground/On-ground
G03 - Tank Secondary Containment - Vault (w/o access)
I00 - Overfill - None
F01 - Pipe External Protection - Painted/Asphalt Coating
H00 - Tank Leak Detection - None
B01 - Tank External Protection - Painted/Asphalt Coating
A00 - Tank Internal Protection - None
D01 - Pipe Type - Steel/Carbon Steel/Iron
J02 - Dispenser - Suction Dispenser

Install Date: 12/01/1942
Capacity Gallons: 550
Tightness Test Method: 03
Next Test Date: Not reported
Date Tank Closed: 06/01/1997
Tank Location: 5
Tank Type: Steel/carbon steel
Date Test: 01/01/1996
Registered: True
Modified By: TRANSLAT
Last Modified: 03/04/2004

Site ID: 22340

Tank Number: 003
Tank ID: 42331
Tank Status: Closed - Removed
Tank Type: Steel/carbon steel
Pipe Model: Not reported

Equipment Records:

C02 - Pipe Location - Underground/On-ground

M S FUEL INC. (Continued) **U000412071**

G03 - Tank Secondary Containment - Vault (w/o access)
I00 - Overfill - None
F01 - Pipe External Protection - Painted/Asphalt Coating
H00 - Tank Leak Detection - None
B01 - Tank External Protection - Painted/Asphalt Coating
A00 - Tank Internal Protection - None
D01 - Pipe Type - Steel/Carbon Steel/Iron
J02 - Dispenser - Suction Dispenser

Install Date: 12/01/1958
Capacity Gallons: 550
Tightness Test Method: 03
Next Test Date: Not reported
Date Tank Closed: 06/01/1997
Tank Location: 5
Tank Type: Steel/carbon steel
Date Test: 01/01/1996
Registered: True
Modified By: TRANSLAT
Last Modified: 03/04/2004

Site ID: 22340

Tank Number: 004
Tank ID: 42332
Tank Status: Closed - Removed
Tank Type: Steel/carbon steel
Pipe Model: Not reported

Equipment Records:

C02 - Pipe Location - Underground/On-ground
G03 - Tank Secondary Containment - Vault (w/o access)
I00 - Overfill - None
F01 - Pipe External Protection - Painted/Asphalt Coating
H00 - Tank Leak Detection - None
B01 - Tank External Protection - Painted/Asphalt Coating
A00 - Tank Internal Protection - None
D01 - Pipe Type - Steel/Carbon Steel/Iron
J02 - Dispenser - Suction Dispenser

Install Date: 12/01/1942
Capacity Gallons: 550
Tightness Test Method: 03
Next Test Date: Not reported
Date Tank Closed: 06/01/1997
Tank Location: 5
Tank Type: Steel/carbon steel
Date Test: 01/01/1996
Registered: True
Modified By: TRANSLAT
Last Modified: 03/04/2004

Site ID: 22340

Tank Number: 005
Tank ID: 42333
Tank Status: Closed - Removed
Tank Type: Steel/carbon steel
Pipe Model: Not reported

M S FUEL INC. (Continued) **U000412071**

Equipment Records:
C02 - Pipe Location - Underground/On-ground
G03 - Tank Secondary Containment - Vault (w/o access)
I00 - Overfill - None
B01 - Tank External Protection - Painted/Asphalt Coating
F01 - Pipe External Protection - Painted/Asphalt Coating
H00 - Tank Leak Detection - None
A00 - Tank Internal Protection - None
D01 - Pipe Type - Steel/Carbon Steel/Iron
J02 - Dispenser - Suction Dispenser

Install Date: 12/01/1942
Capacity Gallons: 550
Tightness Test Method: 03
Next Test Date: Not reported
Date Tank Closed: 06/01/1997
Tank Location: 5
Tank Type: Steel/carbon steel
Date Test: 01/01/1996
Registered: True
Modified By: TRANSLAT
Last Modified: 03/04/2004

Site ID: 22340

Tank Number: 006
Tank ID: 42334
Tank Status: Closed - Removed
Tank Type: Steel/carbon steel
Pipe Model: Not reported

Equipment Records:
C02 - Pipe Location - Underground/On-ground
G03 - Tank Secondary Containment - Vault (w/o access)
I00 - Overfill - None
F01 - Pipe External Protection - Painted/Asphalt Coating
H00 - Tank Leak Detection - None
B01 - Tank External Protection - Painted/Asphalt Coating
A00 - Tank Internal Protection - None
D01 - Pipe Type - Steel/Carbon Steel/Iron
J02 - Dispenser - Suction Dispenser

Install Date: 12/01/1942
Capacity Gallons: 550
Tightness Test Method: 03
Next Test Date: Not reported
Date Tank Closed: 06/01/1997
Tank Location: 5
Tank Type: Steel/carbon steel
Date Test: 01/01/1996
Registered: True
Modified By: TRANSLAT
Last Modified: 03/04/2004

Site ID: 22340

Tank Number: 007
Tank ID: 42335
Tank Status: Closed - Removed

M S FUEL INC. (Continued) **U000412071**

Tank Type:	Steel/carbon steel
Pipe Model:	Not reported
Equipment Records:	
	C02 - Pipe Location - Underground/On-ground
	G03 - Tank Secondary Containment - Vault (w/o access)
	I00 - Overfill - None
	B01 - Tank External Protection - Painted/Asphalt Coating
	F01 - Pipe External Protection - Painted/Asphalt Coating
	H00 - Tank Leak Detection - None
	A00 - Tank Internal Protection - None
	D01 - Pipe Type - Steel/Carbon Steel/Iron
	J02 - Dispenser - Suction Dispenser
Install Date:	12/01/1942
Capacity Gallons:	550
Tightness Test Method:	03
Next Test Date:	Not reported
Date Tank Closed:	06/01/1997
Tank Location:	5
Tank Type:	Steel/carbon steel
Date Test:	01/01/1996
Registered:	True
Modified By:	TRANSLAT
Last Modified:	03/04/2004
Site ID:	22340
Tank Number:	008
Tank ID:	42336
Tank Status:	Closed - Removed
Tank Type:	Steel/carbon steel
Pipe Model:	Not reported
Equipment Records:	
	C02 - Pipe Location - Underground/On-ground
	G03 - Tank Secondary Containment - Vault (w/o access)
	I00 - Overfill - None
	F01 - Pipe External Protection - Painted/Asphalt Coating
	H00 - Tank Leak Detection - None
	B01 - Tank External Protection - Painted/Asphalt Coating
	A00 - Tank Internal Protection - None
	D01 - Pipe Type - Steel/Carbon Steel/Iron
	J02 - Dispenser - Suction Dispenser
Install Date:	12/01/1942
Capacity Gallons:	550
Tightness Test Method:	03
Next Test Date:	Not reported
Date Tank Closed:	06/01/1997
Tank Location:	5
Tank Type:	Steel/carbon steel
Date Test:	01/01/1996
Registered:	True
Modified By:	TRANSLAT
Last Modified:	03/04/2004
Site ID:	22340
Tank Number:	009

M S FUEL INC. (Continued) **U000412071**

Tank ID:	46853
Tank Status:	Closed - Removed
Tank Type:	Steel/carbon steel
Pipe Model:	Not reported

Equipment Records:

C02 - Pipe Location - Underground/On-ground
I00 - Overfill - None
G00 - Tank Secondary Containment - None
B01 - Tank External Protection - Painted/Asphalt Coating
F01 - Pipe External Protection - Painted/Asphalt Coating
H00 - Tank Leak Detection - None
A00 - Tank Internal Protection - None
D01 - Pipe Type - Steel/Carbon Steel/Iron

Install Date:	12/01/1942
Capacity Gallons:	550
Tightness Test Method:	03
Next Test Date:	Not reported
Date Tank Closed:	06/01/1997
Tank Location:	5
Tank Type:	Steel/carbon steel
Date Test:	01/01/1995
Registered:	True
Modified By:	TRANSLAT
Last Modified:	03/04/2004
Site ID:	22340
Tank Number:	010
Tank ID:	52744
Tank Status:	In Service
Tank Type:	Steel/carbon steel
Pipe Model:	D

Equipment Records:

C02 - Pipe Location - Underground/On-ground
H01 - Tank Leak Detection - Interstitial - Electronic Monitoring
I02 - Overfill - High Level Alarm
H05 - Tank Leak Detection - In-Tank System (ATG)
A01 - Tank Internal Protection - Epoxy Liner
D06 - Pipe Type - Fiberglass Reinforced Plastic (FRP)
G04 - Tank Secondary Containment - Double-Walled (Underground)
L07 - Piping Leak Detection - Pressurized Piping Leak Detector
F04 - Pipe External Protection - Fiberglass
K01 - Spill Prevention - Catch Basin
J01 - Dispenser - Pressurized Dispenser
B05 - Tank External Protection - Jacketed
E04 - Piping Secondary Containment - Double-Walled (Underground)

Install Date:	06/01/1997
Capacity Gallons:	4000
Tightness Test Method:	00
Next Test Date:	Not reported
Date Tank Closed:	Not reported
Tank Location:	5
Tank Type:	Steel/carbon steel
Date Test:	Not reported
Registered:	True
Modified By:	NRLOMBAR

M S FUEL INC. (Continued) **U000412071**

Last Modified: 06/16/2010

Site ID: 22340

Tank Number: 011
Tank ID: 52745
Tank Status: In Service
Tank Type: Steel/carbon steel
Pipe Model: D

Equipment Records:

J01 - Dispenser - Pressurized Dispenser
F04 - Pipe External Protection - Fiberglass
K01 - Spill Prevention - Catch Basin
C02 - Pipe Location - Underground/On-ground
H01 - Tank Leak Detection - Interstitial - Electronic Monitoring
I02 - Overfill - High Level Alarm
D06 - Pipe Type - Fiberglass Reinforced Plastic (FRP)
G04 - Tank Secondary Containment - Double-Walled (Underground)
L07 - Piping Leak Detection - Pressurized Piping Leak Detector
A01 - Tank Internal Protection - Epoxy Liner
H05 - Tank Leak Detection - In-Tank System (ATG)
B05 - Tank External Protection - Jacketed
E04 - Piping Secondary Containment - Double-Walled (Underground)

Install Date: 06/01/1997
Capacity Gallons: 4000
Tightness Test Method: 00
Next Test Date: Not reported
Date Tank Closed: Not reported
Tank Location: 5
Tank Type: Steel/carbon steel
Date Test: Not reported
Registered: True
Modified By: NRLOMBAR
Last Modified: 06/16/2010

Site ID: 22340

Tank Number: 012
Tank ID: 52746
Tank Status: In Service
Tank Type: Steel/carbon steel
Pipe Model: D

Equipment Records:

B05 - Tank External Protection - Jacketed
E04 - Piping Secondary Containment - Double-Walled (Underground)
F04 - Pipe External Protection - Fiberglass
K01 - Spill Prevention - Catch Basin
J01 - Dispenser - Pressurized Dispenser
D06 - Pipe Type - Fiberglass Reinforced Plastic (FRP)
G04 - Tank Secondary Containment - Double-Walled (Underground)
L07 - Piping Leak Detection - Pressurized Piping Leak Detector
C02 - Pipe Location - Underground/On-ground
H01 - Tank Leak Detection - Interstitial - Electronic Monitoring
I02 - Overfill - High Level Alarm
H05 - Tank Leak Detection - In-Tank System (ATG)
A01 - Tank Internal Protection - Epoxy Liner

M S FUEL INC. (Continued) **U000412071**

Install Date:	06/01/1997
Capacity Gallons:	4000
Tightness Test Method:	00
Next Test Date:	Not reported
Date Tank Closed:	Not reported
Tank Location:	5
Tank Type:	Steel/carbon steel
Date Test:	Not reported
Registered:	True
Modified By:	NRLOMBAR
Last Modified:	06/16/2010
Site ID:	22340
Tank Number:	013
Tank ID:	52747
Tank Status:	In Service
Tank Type:	Steel/carbon steel
Pipe Model:	D

Equipment Records:

D06 - Pipe Type - Fiberglass Reinforced Plastic (FRP)
G04 - Tank Secondary Containment - Double-Walled (Underground)
L07 - Piping Leak Detection - Pressurized Piping Leak Detector
J01 - Dispenser - Pressurized Dispenser
F04 - Pipe External Protection - Fiberglass
K01 - Spill Prevention - Catch Basin
C02 - Pipe Location - Underground/On-ground
H01 - Tank Leak Detection - Interstitial - Electronic Monitoring
I02 - Overfill - High Level Alarm
A01 - Tank Internal Protection - Epoxy Liner
H05 - Tank Leak Detection - In-Tank System (ATG)
B05 - Tank External Protection - Jacketed
E04 - Piping Secondary Containment - Double-Walled (Underground)

Install Date:	06/01/1997
Capacity Gallons:	4000
Tightness Test Method:	00
Next Test Date:	Not reported
Date Tank Closed:	Not reported
Tank Location:	5
Tank Type:	Steel/carbon steel
Date Test:	Not reported
Registered:	True
Modified By:	NRLOMBAR
Last Modified:	12/23/2010
Site ID:	22340
Tank Number:	014
Tank ID:	52998
Tank Status:	Closed - Removed
Tank Type:	Steel/carbon steel
Pipe Model:	Not reported

Equipment Records:

C02 - Pipe Location - Underground/On-ground
I00 - Overfill - None
G00 - Tank Secondary Containment - None

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B00 - Tank External Protection - None
H00 - Tank Leak Detection - None
F00 - Pipe External Protection - None
A00 - Tank Internal Protection - None
D01 - Pipe Type - Steel/Carbon Steel/Iron

Install Date: Not reported
Capacity Gallons: 550
Tightness Test Method: NN
Next Test Date: Not reported
Date Tank Closed: 07/01/1997
Tank Location: 5
Tank Type: Steel/carbon steel
Date Test: Not reported
Registered: True
Modified By: TRANSLAT
Last Modified: 03/04/2004

Site ID: 22340

Tank Number: 015
Tank ID: 52999
Tank Status: Closed - Removed
Tank Type: Steel/carbon steel
Pipe Model: Not reported

Equipment Records:

C02 - Pipe Location - Underground/On-ground
I00 - Overfill - None
G00 - Tank Secondary Containment - None
B00 - Tank External Protection - None
F00 - Pipe External Protection - None
H00 - Tank Leak Detection - None
A00 - Tank Internal Protection - None
D01 - Pipe Type - Steel/Carbon Steel/Iron

Install Date: Not reported
Capacity Gallons: 550
Tightness Test Method: NN
Next Test Date: Not reported
Date Tank Closed: 07/01/1997
Tank Location: 5
Tank Type: Steel/carbon steel
Date Test: Not reported
Registered: True
Modified By: TRANSLAT
Last Modified: 03/04/2004

Site ID: 22340

Tank Number: 016
Tank ID: 53000
Tank Status: Closed - Removed
Tank Type: Steel/carbon steel
Pipe Model: Not reported

Equipment Records:

C02 - Pipe Location - Underground/On-ground
I00 - Overfill - None
G00 - Tank Secondary Containment - None

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B00 - Tank External Protection - None
F00 - Pipe External Protection - None
H00 - Tank Leak Detection - None
A00 - Tank Internal Protection - None
D01 - Pipe Type - Steel/Carbon Steel/Iron

Install Date:	Not reported
Capacity Gallons:	550
Tightness Test Method:	NN
Next Test Date:	Not reported
Date Tank Closed:	07/01/1997
Tank Location:	5
Tank Type:	Steel/carbon steel
Date Test:	Not reported
Registered:	True
Modified By:	TRANSLAT
Last Modified:	03/04/2004

HIST UST:

PBS Number:	2-600357
SPDES Number:	Not reported
Emergency Contact:	SINGH
Emergency Telephone:	(718) 349-0555
Operator:	150-17 CROSS ISLAND PKWY INC.
Operator Telephone:	(718) 746-5415
Owner Name:	SHAD GASOLINE SERVICES INC.
Owner Address:	147-12 14TH AVENUE
Owner City,St,Zip:	WHITESTONE, NY 11357
Owner Telephone:	(718) 746-4833
Owner Type:	Corporate/Commercial
Owner Subtype:	Not reported
Mailing Name:	150-17 CROSS ISLAND PKWY. INC.
Mailing Address:	276 NORTH HENRY STREET
Mailing Address 2:	Not reported
Mailing City,St,Zip:	BROOKLYN, NY 11222
Mailing Contact:	SINGH
Mailing Telephone:	(718) 349-0555
Owner Mark:	Second Owner
Facility Status:	1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility.
Facility Addr2:	Not reported
SWIS ID:	6301
Old PBS Number:	Not reported
Facility Type:	RETAIL GASOLINE SALES
Inspected Date:	Not reported
Inspector:	Not reported
Inspection Result:	Not reported
Federal ID:	Not reported
Certification Flag:	False
Certification Date:	02/04/2000
Expiration Date:	08/06/2003
Renew Flag:	False
Renewal Date:	Not reported
Total Capacity:	16000
FAMT:	True
Facility Screen:	No Missing Data
Owner Screen:	Minor Data Missing

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Tank Screen:	No Missing Data
Dead Letter:	False
CBS Number:	Not reported
Town or City:	NEW YORK CITY
County Code:	63
Town or City:	01
Region:	2

Tank Id:	001
Tank Location:	UNDERGROUND
Tank Status:	Closed-Removed
Install Date:	19421201
Capacity (gals):	550
Product Stored:	UNLEADED GASOLINE
Tank Type:	Steel/carbon steel
Tank Internal:	None
Tank External:	Painted/Asphalt Coating
Pipe Location:	Underground
Pipe Type:	STEEL/IRON
Pipe Internal:	None
Pipe External:	Painted/Asphalt Coating
Second Containment:	Diking
Leak Detection:	None
Overfill Prot:	None
Dispenser:	Suction
Date Tested:	01/01/1996
Next Test Date:	Not reported
Missing Data for Tank:	No Missing Data
Date Closed:	06/01/1997
Test Method:	Horner EZ Check
Deleted:	False
Updated:	True
Lat/long:	Not reported

Tank Id:	002
Tank Location:	UNDERGROUND
Tank Status:	Closed-Removed
Install Date:	19421201
Capacity (gals):	550
Product Stored:	UNLEADED GASOLINE
Tank Type:	Steel/carbon steel
Tank Internal:	None
Tank External:	Painted/Asphalt Coating
Pipe Location:	Underground
Pipe Type:	STEEL/IRON
Pipe Internal:	None
Pipe External:	Painted/Asphalt Coating
Second Containment:	Diking
Leak Detection:	None
Overfill Prot:	None
Dispenser:	Suction
Date Tested:	01/01/1996
Next Test Date:	Not reported
Missing Data for Tank:	No Missing Data
Date Closed:	06/01/1997
Test Method:	Horner EZ Check

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Deleted: False
Updated: True
Lat/long: Not reported

Tank Id: 003
Tank Location: UNDERGROUND
Tank Status: Closed-Removed
Install Date: 19581201
Capacity (gals): 550
Product Stored: UNLEADED GASOLINE
Tank Type: Steel/carbon steel
Tank Internal: None
Tank External: Painted/Asphalt Coating
Pipe Location: Underground
Pipe Type: STEEL/IRON
Pipe Internal: None
Pipe External: Painted/Asphalt Coating
Second Containment: Diking
Leak Detection: None
Overfill Prot: None
Dispenser: Suction
Date Tested: 01/01/1996
Next Test Date: Not reported
Missing Data for Tank: No Missing Data
Date Closed: 06/01/1997
Test Method: Horner EZ Check
Deleted: False
Updated: True
Lat/long: Not reported

Tank Id: 004
Tank Location: UNDERGROUND
Tank Status: Closed-Removed
Install Date: 19421201
Capacity (gals): 550
Product Stored: UNLEADED GASOLINE
Tank Type: Steel/carbon steel
Tank Internal: None
Tank External: Painted/Asphalt Coating
Pipe Location: Underground
Pipe Type: STEEL/IRON
Pipe Internal: None
Pipe External: Painted/Asphalt Coating
Second Containment: Diking
Leak Detection: None
Overfill Prot: None
Dispenser: Suction
Date Tested: 01/01/1996
Next Test Date: Not reported
Missing Data for Tank: No Missing Data
Date Closed: 06/01/1997
Test Method: Horner EZ Check
Deleted: False
Updated: True
Lat/long: Not reported

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Tank Id: 005
Tank Location: UNDERGROUND
Tank Status: Closed-Removed
Install Date: 19421201
Capacity (gals): 550
Product Stored: UNLEADED GASOLINE
Tank Type: Steel/carbon steel
Tank Internal: None
Tank External: Painted/Asphalt Coating
Pipe Location: Underground
Pipe Type: STEEL/IRON
Pipe Internal: None
Pipe External: Painted/Asphalt Coating
Second Containment: Diking
Leak Detection: None
Overfill Prot: None
Dispenser: Suction
Date Tested: 01/01/1996
Next Test Date: Not reported
Missing Data for Tank: No Missing Data
Date Closed: 06/01/1997
Test Method: Horner EZ Check
Deleted: False
Updated: True
Lat/long: Not reported

Tank Id: 006
Tank Location: UNDERGROUND
Tank Status: Closed-Removed
Install Date: 19421201
Capacity (gals): 550
Product Stored: UNLEADED GASOLINE
Tank Type: Steel/carbon steel
Tank Internal: None
Tank External: Painted/Asphalt Coating
Pipe Location: Underground
Pipe Type: STEEL/IRON
Pipe Internal: None
Pipe External: Painted/Asphalt Coating
Second Containment: Diking
Leak Detection: None
Overfill Prot: None
Dispenser: Suction
Date Tested: 01/01/1996
Next Test Date: Not reported
Missing Data for Tank: No Missing Data
Date Closed: 06/01/1997
Test Method: Horner EZ Check
Deleted: False
Updated: True
Lat/long: Not reported

Tank Id: 007
Tank Location: UNDERGROUND
Tank Status: Closed-Removed

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Install Date:	19421201
Capacity (gals):	550
Product Stored:	UNLEADED GASOLINE
Tank Type:	Steel/carbon steel
Tank Internal:	None
Tank External:	Painted/Asphalt Coating
Pipe Location:	Underground
Pipe Type:	STEEL/IRON
Pipe Internal:	None
Pipe External:	Painted/Asphalt Coating
Second Containment:	Diking
Leak Detection:	None
Overfill Prot:	None
Dispenser:	Suction
Date Tested:	01/01/1996
Next Test Date:	Not reported
Missing Data for Tank:	No Missing Data
Date Closed:	06/01/1997
Test Method:	Horner EZ Check
Deleted:	False
Updated:	True
Lat/long:	Not reported

Tank Id:	008
Tank Location:	UNDERGROUND
Tank Status:	Closed-Removed
Install Date:	19421201
Capacity (gals):	550
Product Stored:	UNLEADED GASOLINE
Tank Type:	Steel/carbon steel
Tank Internal:	None
Tank External:	Painted/Asphalt Coating
Pipe Location:	Underground
Pipe Type:	STEEL/IRON
Pipe Internal:	None
Pipe External:	Painted/Asphalt Coating
Second Containment:	Diking
Leak Detection:	None
Overfill Prot:	None
Dispenser:	Suction
Date Tested:	01/01/1996
Next Test Date:	Not reported
Missing Data for Tank:	No Missing Data
Date Closed:	06/01/1997
Test Method:	Horner EZ Check
Deleted:	False
Updated:	True
Lat/long:	Not reported

Tank Id:	009
Tank Location:	UNDERGROUND
Tank Status:	Closed-Removed
Install Date:	19421201
Capacity (gals):	550
Product Stored:	UNKNOWN

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Tank Type: Steel/carbon steel
Tank Internal: None
Tank External: Painted/Asphalt Coating
Pipe Location: Underground
Pipe Type: STEEL/IRON
Pipe Internal: None
Pipe External: Painted/Asphalt Coating
Second Containment: None
Leak Detection: None
Overfill Prot: None
Dispenser: Gravity
Date Tested: 01/01/1995
Next Test Date: Not reported
Missing Data for Tank: No Missing Data
Date Closed: 06/01/1997
Test Method: Horner EZ Check
Deleted: False
Updated: True
Lat/long: Not reported

Tank Id: 010
Tank Location: UNDERGROUND
Tank Status: In Service
Install Date: 19970601
Capacity (gals): 4000
Product Stored: UNLEADED GASOLINE
Tank Type: Other
Tank Internal: Epoxy Liner
Tank External: Painted/Asphalt Coating
Pipe Location: Underground
Pipe Type: FIBERGLASS REINFORCED PLASTIC
Pipe Internal: None
Pipe External: None
Second Containment: Vault (w/access)
Leak Detection: 14
Overfill Prot: High Level Alarm, Catch Basin
Dispenser: Submersible
Date Tested: Not reported
Next Test Date: 06/01/2007
Missing Data for Tank: No Missing Data
Date Closed: Not reported
Test Method: Not reported
Deleted: False
Updated: True
Lat/long: Not reported

Tank Id: 011
Tank Location: UNDERGROUND
Tank Status: In Service
Install Date: 19970601
Capacity (gals): 4000
Product Stored: UNLEADED GASOLINE
Tank Type: Other
Tank Internal: Epoxy Liner
Tank External: Painted/Asphalt Coating

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Pipe Location:	Underground
Pipe Type:	FIBERGLASS REINFORCED PLASTIC
Pipe Internal:	None
Pipe External:	None
Second Containment:	Vault (w/access)
Leak Detection:	14
Overfill Prot:	High Level Alarm, Catch Basin
Dispenser:	Submersible
Date Tested:	Not reported
Next Test Date:	06/01/2007
Missing Data for Tank:	No Missing Data
Date Closed:	Not reported
Test Method:	Not reported
Deleted:	False
Updated:	True
Lat/long:	Not reported

Tank Id:	012
Tank Location:	UNDERGROUND
Tank Status:	In Service
Install Date:	19970601
Capacity (gals):	4000
Product Stored:	UNLEADED GASOLINE
Tank Type:	Other
Tank Internal:	Epoxy Liner
Tank External:	Painted/Asphalt Coating
Pipe Location:	Underground
Pipe Type:	FIBERGLASS REINFORCED PLASTIC
Pipe Internal:	None
Pipe External:	None
Second Containment:	Vault (w/access)
Leak Detection:	14
Overfill Prot:	High Level Alarm, Catch Basin
Dispenser:	Submersible
Date Tested:	Not reported
Next Test Date:	06/01/2007
Missing Data for Tank:	No Missing Data
Date Closed:	Not reported
Test Method:	Not reported
Deleted:	False
Updated:	True
Lat/long:	Not reported

Tank Id:	013
Tank Location:	UNDERGROUND
Tank Status:	In Service
Install Date:	19970601
Capacity (gals):	4000
Product Stored:	UNLEADED GASOLINE
Tank Type:	Other
Tank Internal:	Epoxy Liner
Tank External:	Painted/Asphalt Coating
Pipe Location:	Underground
Pipe Type:	FIBERGLASS REINFORCED PLASTIC
Pipe Internal:	None

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Pipe External: None
Second Containment: Vault (w/access)
Leak Detection: 14
Overfill Prot: High Level Alarm, Catch Basin
Dispenser: Submersible
Date Tested: Not reported
Next Test Date: 06/01/2007
Missing Data for Tank: No Missing Data
Date Closed: Not reported
Test Method: Not reported
Deleted: False
Updated: True
Lat/long: Not reported

Tank Id: 014
Tank Location: UNDERGROUND
Tank Status: Closed-Removed
Install Date: Not reported
Capacity (gals): 550
Product Stored: UNLEADED GASOLINE
Tank Type: Steel/carbon steel
Tank Internal: None
Tank External: None
Pipe Location: Underground
Pipe Type: STEEL/IRON
Pipe Internal: None
Pipe External: None
Second Containment: None
Leak Detection: None
Overfill Prot: None
Dispenser: 0
Date Tested: Not reported
Next Test Date: Not reported
Missing Data for Tank: No Missing Data
Date Closed: 07/01/1997
Test Method: Not reported
Deleted: False
Updated: True
Lat/long: Not reported

Tank Id: 015
Tank Location: UNDERGROUND
Tank Status: Closed-Removed
Install Date: Not reported
Capacity (gals): 550
Product Stored: UNLEADED GASOLINE
Tank Type: Steel/carbon steel
Tank Internal: None
Tank External: None
Pipe Location: Underground
Pipe Type: STEEL/IRON
Pipe Internal: None
Pipe External: None
Second Containment: None
Leak Detection: None

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Overfill Prot:	None
Dispenser:	0
Date Tested:	Not reported
Next Test Date:	Not reported
Missing Data for Tank:	No Missing Data
Date Closed:	07/01/1997
Test Method:	Not reported
Deleted:	False
Updated:	True
Lat/long:	Not reported

Tank Id:	016
Tank Location:	UNDERGROUND
Tank Status:	Closed-Removed
Install Date:	Not reported
Capacity (gals):	550
Product Stored:	UNLEADED GASOLINE
Tank Type:	Steel/carbon steel
Tank Internal:	None
Tank External:	None
Pipe Location:	Underground
Pipe Type:	STEEL/IRON
Pipe Internal:	None
Pipe External:	None
Second Containment:	None
Leak Detection:	None
Overfill Prot:	None
Dispenser:	0
Date Tested:	Not reported
Next Test Date:	Not reported
Missing Data for Tank:	No Missing Data
Date Closed:	07/01/1997
Test Method:	Not reported
Deleted:	False
Updated:	True
Lat/long:	Not reported

SPILLS:

Facility ID:	9705304
DER Facility ID:	186510
Facility Type:	ER
Site ID:	225953
DEC Region:	2
Spill Date:	8/1/1997
Spill Number/Closed Date:	9705304 / Not Reported
Spill Cause:	Deliberate
Spill Class:	Known release that creates potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
SWIS:	4101
Investigator:	AXDORONO
Referred To:	REMEDIATION IS IN PROGRESS
Reported to Dept:	8/1/1997
CID:	205
Water Affected:	Not reported
Spill Source:	Non Major Facility > 1,100 gal
Spill Notifier:	Other

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Cleanup Ceased:	Not reported
Cleanup Meets Std:	False
Last Inspection:	Not reported
Recommended Penalty:	False
UST Trust:	True
Remediation Phase:	4
Date Entered In Computer:	8/1/1997
Spill Record Last Update:	3/11/2013
Spiller Name:	SUMAN KHANNA
Spiller Company:	CITYGAS
Spiller Address:	276 N. HENRY ST
Spiller City,St,Zip:	BROOKLYN, NY
Spiller Company:	001
Contact Name:	FRED SHAYA
Contact Phone:	(718) 746-4833
DEC Memo:	5/1/98 Received Preliminary Site Investigation report prepared by ASTEM Labs, dated April 1998.1/8/04 Reassigned from Sigona to K Foley. See also spill #9001764. (KMF)10/13/06 Reassign from Foley to Tang. (Sun)10/30/06 Reassigned from Tang to Sun. (JS/MS)8/2/07: File review - No significant contamination in soils detected by ASTEM labs. Highest VOA's were present at a depth of 20-25 feet. Depth to groundwater is approx 23-25 feet. Highest concentrations of benzene in groundwater were detected in MW-2(11.3ppb) and MW-3(6.2ppb). GW flow is south to southwesterly direction. ASTEM feels no soil or GW remediation is needed at the site and recommends natural attenuation. MS to obtain current site status and obtain report showing effectiveness of natural attenuation. (JS/MS)10/17/07: Received GW analyticals and reviewing for possible closure. (JS/MS)05/13/08: GW contaminated. Notify ASTEM, SSI necessary (JS/MM)7/9/08: No report received. Send 2nd letter or refer to legal. (JS/MM)08/11/08: Transferred to Kolleeny/Mandac (JK/MM)8/12/08: EGR Environmental retained; requested extension (JK/MM)10/27/08: Have not received SSI from EGR; failure to comply? (JK/MM)11/14/08: Received pdf of Nov. 10, 2008 Supplemental Subsurface Investigation report (in eDocs) by EG&R Environmental Services, via email from Kulveer "Kal" Gill of EG&R. Sent email to Kal requesting hard copy of report. Will review. - J. Kolleeny12/1/08: Preliminary review of SSIR complete. Letter and email sent to Mr. Fred Shaya giving permission to proceed with EG&R's recommendation to remove free product from MW-4. Upon final review of the report, the Department will respond to all recommendations made by EG&R. (JK/KG)12/29/08: Spoke with Kal Gil about installing more wells to delineate plume. I told him I need a map with the proposed well locations, surrounding property sketch, and location of former/current USTs. He said there was less than 0.5 inches of product in MW-4. He said someone tried to bail the product once since RA was approved, but due to the snow they were unable. They will be going within the week. He asked me to email him details of where we would like the wells and what information is needed. Email to Kal:"Mr. Gill,I have looked over the Supplemental Subsurface Investigation report dated November 10, 2008. In order to better delineate the groundwater contamination plume, additional monitoring wells need to be installed. Per our conversation today, here are our suggestions of approximate locations for the additional wells (subsurface utilities and structures permitting). The report recommended installing one well down-gradient of existing well MW-4. Based on the available groundwater data, two down-gradient wells should be installed on the opposite side of the service road - one to

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the southwest of MW-4 and one to the south-southeast of MW-4. If these suggested locations are not feasible, then one well should be installed in the sidewalk to the west-northwest of MW-4 (i.e., down-gradient of well MW-1). Additionally, two side-gradient wells should be installed on the opposite side of 150th Place, one well to the east of well MW-3 and one to the east of MW-2. Soil should be screened during drilling and samples collected for laboratory analysis. Please prepare a brief work plan for the additional well installation. The work plan should include a diagram showing the proposed monitoring well locations and the locations of the former and current USTs, and identifying the streets adjoining the site and the surrounding property usage.Please send me the investigation work plan as a pdf file and as a hard copy in the mail. Let me know if you have any questions or comments." (JK/KG)02/09/09: Sent email to Kal requesting update on product recovery activities and work plan that needs to be submitted. (JK/KG)02/24/09: Sent letter to Mr. Shaya requesting a subsurface investigation work plan be submitted by 03/27/09. The work plan should include the installation of 4 wells, as described in the 12/29/08 email to EG&R. (JK/KG)03/23/09: Rec'd message on 3/20/09 from Kal Gil. Spoke to Kal on 3/23/09. He said he will need an extension to submit the work plan due to the location of proposed off-site wells. Tomorrow, when he returns to the office, he will send a request via email with a date he will be able to submit the plan. He said the owner has given him approval to move forward with the work. (JK/KG)04/21/09: Rec'd call from Kal Gil. He said the work plan is ready but he is in the process of getting permission to install wells on adjacent private property. If permission is granted, he will submit the work plan with the locations of the proposed wells. No groundwater samples have been collected since 9/4/08 sampling event. Product recovery has continued and there is no longer product in MW-4.(JK/KG)05/20/09: Spoke to Kal Gil. He sent a draft of the work plan and will send a finalized work plan once the location of the wells is determined. He has not been able to reach the adjacent property owners and will most likely be installing the wells in the sidewalk. (JK/KG) 06/17/09: Kal called and asked if it would be okay to install 1" wells across 150th Place due to utilities. I told him that it was okay, but if free product is encountered, a larger diameter well will need to be installed. The well to be installed downgradient of MW-1 will be a 2" well. Kal will send the final work plan by the end of the week and will the include details of past product recovery activities at MW-4. (JK/KG)07/02/09: Kal Gill called and I told him that I am still waiting for the final work plan. he said he would make the changes I requested and include a map with the proposed well locations. (JK/KG)07/13/09: Rec'd Supplemental Subsurface Investigation Work Plan dated 7/8/2009 from EG&R. (JK/KG)07/16/09: Sent a letter to Shaya approving the work plan. The scope of work includes installation of additional wells, collection of soil and groundwater samples, slug tests, and submission of an investigation summary report. The summary report is due 9/18/09. (JK/KG)07/20/09: A Stipulation Agreement was issued to Fred Shaya. The signed copy is due back by 8/5/09. (JK/KG)07/27/09: The signed Stip was rec'd on 7/24/09 and forwarded to the Regional Director on 7/27/09. (JK/KG)07/29/09: The stip was executed on 7/28/09. (JK/KG)08/06/09: Kal Gil called and said the wells have been installed. (JK/KG)09/03/09: Spoke to Kal Gil. He said he will need an extension of the 9/18 deadline. I told him to send a request via email. The wells have not been sampled or surveyed. He said he tried

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to sample the wells but there was very slow recharge and a lot of silt in them. They need to be developed. (JK/KG) 09/25/09: A request for an extension was never rec'd. Contacted Kal Gil and he said he would submit the request tomorrow. (JK/KG) 09/30/09: Follow up with Gil and RP to ensure wells are sampled and a report is submitted. (JK/KG)11/03/2009: This spill case was transferred to A. Doronova. - ADThe report was not submitted yet. AD05/2010: called and left a message to Kal Gill of EGR. AD06/03/2010: Was informed by Steven Sangesland of Spills Prevention and Response Section of DER that they received a call from an owner of the neighboring site that he discovered a petroleum staining soil (4-5' bgs) with strong odor while instaling an electric pole on his property. He reported it as a gasoline. Name of the owner is Mr. Geno Romano,phone: (917)418-5222. His property address is: 150-26 14th Street, Whitestone, NY. (Block - 4680, Lot - 01).Contacted Mr. Gill of ERG to discuss this call. Requested to call Mr. Romano and to schedule the site meeting with him. Asked him about site investigation results. According to Mr. Gill elevated levels of VOCs were detected in new wells. EGR plans to propose in-situ chemical oxidation. Requested to expedite submission of the report and the RAP to DEC. Contacted Mr. Romano. Was told by him, that the contamination was discovered on last week. Mr. Romano contacted his attorney, later received from him DEC spill hotline phone number and reported the contamination today. He informed me that contamination was discovered 50' from the property line with the gas station. Staining soil was discovered at the depth of 4 to 5 ' bgs. There was strong petroleum odor. Gave him contact information of Mr. Gill.According to the site reports, depth to groundwater is 20 to 25 feet bgs. The contaminated soil at MR. Romano's site was at the depth of 5 feet bgs. GW flow direction is to the south and historically was consistent. Mr. Romano's site is to the north of the gas station. Site monitoring wells near the property line did not historically have a free product, and the latest wells monitoring results state that these wells do not exhibit free product. Former UST field located on the south-east side if the property. Based on all these data, it is possible that the contamination reported by Mr. Romano is not originated from this gas station site.Later called Mr. Gill of EGR. He told me that a site visit was scheduled for tomorrow. He will also meet at the site with Mr. Romano. Will visit the site. AD06/04/2010: Visited the site. Met at the site with Mr. Santokh Singh (site tenant - business owner), Mr. Kal Gill of EGR and Mr. Geno Romano - neighbor. Observed the site location. Took some pictures. Visited the neighboring site where contamination was found. The property of Mr. Romano is used as a parking lot for trucks. There are 6 drums with fuel oil at his site. The distance between property boundary and the place where contaminated soil was found - apprx. 50 feet. There is a monitoring well downgradient from the location with the contaminated soil and the levels of contamination in this well are insignificant. The property of gas station is sloped to the south. There is no heating oil UST or AST at the site. No any UST, or waste oil tanks, or hydroulic lifts were located in the auto repair boilding, which is located along the property boundary. Floor of the building is cemented. The building is empty and currently is not in use. Spoke with Mr. Gill. Requested to submit a work plan for supplemental investigation along the property line to establish origin of contamination at the Mr. Romano's site. Also requested to check Sanborn Fire Insurance maps for this property to verify locations of the old tanks, which were removed back in 1997 from the

M S FUEL INC. (Continued) **U000412071**

gas station. AD06/23/2010: Received an e-mail from K. Gill of EGR Env. saying:"Ms. Doronova: Please note that recently Mr. Santokh Singh has sold the business but the property owner remains the same.Fred Shaya (Property Owner) - 917-575-5563 Santokh Singh-(347)386-6906Present Operator Makhan Singh -(917)603-6667 Sincerely, Kal GillEnvironmental Engineer/ Project ManagerE G & R Environmental (A Division of Universe Resources LLC)45 Julie CourtSomerset, NJ 08873" www.egrenvironmental.com Cell: (732) 690-0659Office:(732)226-3201Fax: (732)384-9501kgill@egrenvironmenatal.com"07/13/2010: Contacted Mr. Shaya. He told me that site cleanup will be performed by new operator - Mr. Makhan Singh. Called and left a message to Mr. Singh. AD07/20/2010: Called and spoke with Mr. M. Singh. he is not sure if it is his responsibility to clean up the site. Asked him to review his contract with the owner of the site to clarify this issue. Mr. Singh will find out regarding this matter today and will call back tomorrow. The Stipulation Agreement for the site was signed by the owner - Mr. Shaya. AD08/2010: Called and left a messages few times to Mr. M. Singh. AD09/07/2010: Called and spoke with Mr. M. Singh and Mr. Shaya. Mr. Singh said that he is not responsible for the site cleanup and referred to Mr. Shaya. Mr. Shaya told me that according to the contract - operator is responsible for cleaning the spill. Explained Mr. Shaya that he signed the Stip with DEC. He asked to send him an official letter from DEC regarding the Stip on his home address:Fred Shaya147-12 14th AveWhitestone, Ny 11357Will issue a letter. AD09/10/2010: issued and sent a Notice of Violation letter to Mr. Shaya. Response is due october 8, 2010. DL pdf copy to eDocs. AD10/01/2010: Received an e-mail from K. Gill:"Ms. Doronova: Remedial Investigation Report dated Sept 29, 2010 was mailed to your office this morning. USPS receipt is attached. Sincerely, Kal GillEnvironmental Engineer/ Project ManagerE G & R Environmental (A Division of Universe Resources LLC)45 Julie CourtSomerset, NJ 08873 www.egrenvironmental.comCell: (732) 690-0659Office:(732)226-3201Fax: (732)384-9501kgill@egrenvironmenatal.com"DL the report to eDocs. Will review. AD10/15/2010: Reviewed the Remedial Investigation Report, submitted by EG&R Environmental Services. The report presents soil and groundwater sampling results and concludes that the analytical data do not indicate the presence of residual soil contamination in the areas of additional investigation, while significant groundwater contamination was detected both on and off-site. Based on the data, EG&R recommends to perform supplemental subsurface investigation in the vicinity of the UST field and MW-4, which continuously exhibits free product. Discussed the recommendations with J. Kolleeny od DEC. Will issue an approval letter. AD10/21/2010: Issued an approval letter for this recommendation, with the following comment:"A brief work plan for supplemental investigation, with a site plan indicating proposedlocations for soil borings, should be submitted to DEC for its review and approval."DL pdf copy of the letter to eDocs. AD01/13/2011: Received an e-mail from K. Gill saying:"Ms. Doronova, As per our recent conversation, a copy of supplemental Investigation Workplan is attached. A hard (an digital) will be mailed to your office today. Please do not hesitate to contact me, if you require additional information.Sincerely, Kal GillEnvironmental Engineer/ Project ManagerE G & R Environmental (A Division of Universe Resources LLC)45 Julie CourtSomerset, NJ 08873 www.egrenvironmental.comCell: (732) 690-0659Office:(732)226-3201Fax: (732)384-9501kgill@egrenvironmenatal.com"Will review. AD01/21/2011:

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Reviewed the work plan. The work plan proposes to perform a supplemental subsurface investigation in the vicinity of the UST field and well MW-4, which has historically exhibited free product, by advancing ten soil borings and collecting soil samples for laboratory analysis. A report summarizing all findings will be prepared and submitted to DEC. One additional soil boring should be installed to the northwest od well MW-4. DL the work plan to eDocs. AD01/25/2011: Discussed the work plan with J. Kolleeny of DEC. Later issued and sent an approval letter saying that the Department approves the work plan with the following comments:"One additional soil boring should be advanced to the northwest of well MW-3 to fully delineate residual contamination;Based on the results of the investigation, a detailed remedial action work plan should be prepared and submitted to DEC."Dl the pdf copy of the letter to eDocs. AD04/01/2011: Received an e-mail from K. Gill of EGR saying:"Ms. Doronova: Site Investigation for 150-17 Cross Island Parkway is scheduled on April 06-07,2011. Thanks.Sincerely, Kal Gill"AD04/12/2011: Received an e-mail from EGR:"Ms. Doronova, Site Investigation for 150-17 Cross Island Parkway was conducted on April 06-07,2011. Thanks. Sincerely, Kal Gill"AD06/28/2011: Called and spoke with Mr. Shaya regarding site status. He said that EGR had done some work at the site, adn asked if I received any reports from them. Called and spoke with Mr. Gill of EGR. He said that they are working on the report and on a remedial work plan. He will send me an e-mail summarizing update info with an approximate date of submission of the report. AD08/26/2011: Called and left a message to kall Gill of EGR Env. regarding status of the report. AD08/30/2011: Received a phone call from Mr. Gill of EGR. He said that investigation was performed, and a summary report is ready. Currently due to Irene storm their office is out of power, so Mr. Gill anticipate that the report will be submitted to us next week. AD01/09/2012: Received a RAP from Mr. Gill. DL pdf copy of the RAP to eDocs. Will review. AD03/07/2012: Reviewed the work plan. It proposes for site remediation chemical oxidation which includes applying a solid peroxygen Legacy IPC-14FR. Legacy IPC-14FR contains sodium carbonate peroxyhydrate, which is composed of sodium carbonate and hydrogen peroxide. EGR proposes to inject oxidant in a 10-foot injection interval. Further, the injections will be implemented in four separate batches and the subsequent injection points will be offset from the original injection points, 10-foot spacing will effectively be only 5-foot spacing or less by the end of the treatment.The injection of Legacy IPC-14FR will be performed in the two separate injection events. Injection of oxidant will be accomplished using a total of 58 injection points. A direct-push technology via geoprobe equipment will be employed to deliver oxidant to the treatment zone.EGR plans to use for the baseline data for the concentrations of site contaminants in soil and groundwater data available from the soil and groundwater sampling conducted in 2010. This data will be used to compare to post-treatment concentrations in soil and groundwater. During the monitoring phase, soil samples (from the aquifer zone) will also be collected in addition to the groundwater samples.In order to validate the effectiveness of chemical oxidation treatment, soil and groundwater samples will be collected from the existing monitoring wells. - (This is questionable proposal.)Additionally, at the beginning of each batch of injection, geoprobe equipment will be used to collect soil and groundwater samples at two to three additional locations to evaluate the effectiveness of the treatment.

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At the end of the treatment, posttreatment sampling will be conducted. The soil and groundwater samples will be analyzed for the site contaminants. Additionally, the groundwater samples will be analyzed for sodium (to evaluate the impacts from injection of oxidant chemical). In all groundwater samples, the following field parameters will be measured:pH; Dissolved Oxygen; Oxidation-Reduction Potential; Conductivity.Groundwater levels will also be measured before and during the application to obtain indications of the radius of influence for the treatment.Current baseline GW sampling should be performed at the site. Additional info for Legacy IPC-14FR is need to be submitted. Locations for the proposed injection point are questionable. To discuss the RAP with J. Kolleeny of DEC. AD04/05/2012: Discussed the work plan with J. Kolleeny of DEC. Will contact the consultant regarding DEC remarks. AD04/11/2012; Called and spoke with Mr. Gill of EGR regarding the work plan abd DEC comments to it. Mr. Gill promised to submit additional data. AD04/26/2012: Called and spoke with Mr. Gill regarding data submission. He told that Mr. Shaya did not paid for the preparation of the RAP yet, so EGR cannot do any changes untill they receive a payment from the site owner. To issue a letter. Changed site priority to P1. AD05/11/2012: Issued and sent a letter to Mr. Shaya. Response is due June 1, 2012. DL pdf copy of the letter to eDocs. AD06/25/2012: Received the following e-mail from Charles Sosik of EBC saying:"Ainura,Mike Sandhu the operator of the station returned from India last night. He was there for 6 months! We are meeting tomorrow and he has given us the go ahead to move forward with the remedial program. We will first perform a round of groundwater sampling and resurvey the wells for evaluation of gtroundwater flow. As soon as the baseline data comes in we will prepare a Remedial Action Plan and submit to you for approval. Please call with questions. Thanks. Charles B. Sosik, P.G.PrincipalEBCEnvironmental Business ConsultantsPh: 631.504.6000 ext. 112Fax: 631.924.2870Cell: 631.357.4927csosik@ebcincny.com"AD07/13/2012: Received the following e-amil from Mr. Sosik of EBC:"Ainura, we are doing a round of groundwater sampling and will resurvey the wells today to establish current baseline conditions in preparation of a remedial action work plan. Please call with questions, Thanks. Charles B. Sosik, P.G.PrincipalEB C"AD08/30/2012: Spoke with Mr. Singh (tenant and station operator). He requested a meeting with DEC to discuss the site. Scheduled the meeting for September 6, 2012.09/06/2012: I and Jon Kolleeny of DEC met with the site owner - Mr. Fred Shaya, site operator - Mr. Makham Singh and their consultant - Charles Sosik of EBC. The site conditions and the next course of actions were diccussed at the meeting. It was decided that a work plan for additional delineation and chemical oxidation will be prepared and submitted to DEC for review and approval. Also, a groundwater sampling report was submitted to DEC for review this morning. DL the pdf copy of the report to eDocs. Will review. AD09/27/2012: Reviewed the report. It states that EBC performed a baseline sampling round at the site on July 13th, 2012. The work consisted of locating, sampling, and surveying all of the existing wells on the Site to establish baseline conditions. Groundwater flow is to the south-southwest direction.VOCs:All 7 monitoring wells sampled showed concentrations of petroleum VOCs above standards. Inthe two off-site monitoring wells (MW-5 and MW-6), the only compound detected slightlyabove its corresponding GQS was benzene. The majority of contamination was limited togroundwater monitoring wells MW-2, MW-3,

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and MW-4 with total VOCs of 21,574 ppb, 11,734 ppb, and 38,546 ppb respectively. Total VOCs in the other wells ranged from 7.9 ppb to 323.1 ppb.EBC states that the results of this investigation indicate that groundwater at the site is impacted by gasoline-related VOCs as previously reported. Minor detections in benzene reported in wells MW-5 and MW-6 to the east are likely related to surface runoff and are not site related. The majority of the contamination is limited to the area where the existing and former tanks were (MW-2, MW-3) with the distribution to MW-4 and MW-7 reflecting the groundwater flow direction. No free product was encountered during sampling.Based on the high levels of VOCs detected in the groundwater beneath the site, EBC willprepare and submit a Remedial Action Work Plan to the NYSDEC. AD09/28/2012: Received the following e-mail from C. Sosik:"Ainura, see attached Remedial Work Plan as discussed with you and Jonathan. The owner was able to documentation on endpoint samples from the tank excavation which we attached as an appendix. Please let me know if you have any questions and if OK to proceed. We will begin with on-site markouts and then install the wells as shown. Thanks.Charles B. Sosik, P.G.PrincipalEB CEnvironmental Business ConsultantsPh: 631.504.6000 ext. 112Fax: 631.924.2870Cell: 631.357.4927csosik@ebcincny.com"Will review. AD10/03/2012: Reviewed the work plan. EBC proposes in-situ remediation through the injection of chemical oxidants. Chemical oxidant injections will be performed via injection points installed upgradient of the source area (tank field). In total 11 injection point are proposed.EBC will use chelated iron activated sodium persulfate as the oxidant for this project. Groundwater quality will be monitored quarterly by collecting groundwater samples from four most contaminated monitoring wells including three existing wells (MW2-MW4) and a new well (MW8) to be installed downgradient of the tank pad between MW2 and MW4. Will discuss the IP locations with J. Kolleeny. AD10/04/2012; Discussed the work plan with J. Kolleeny of DEC. Called and spoke with Mr. Sosik of EBC. They will do utility markouts to determine IP locations, and EBC will discuss with DEC their final locations. Issued and sent an approval letter to Mr. Shaya with the following comment:" After all utility mark outs have been completed at the site, the finalized locations for the proposed injection points should be submitted to DEC for review and approval."DL pdf copy of the letter to eDocs. AD02/12/2013: Received the following e-mail from C. Sosik:"Ainura, the oxidant injection wells are scheduled for installation tomorrow. Please let me know if you want to meet to review the locations. Thanks. Charles B. Sosik, P.G."AD

Remarks: CALLER PULLING THREE OLD 550 GALLON TANKS, STATED THAT TANKS WERE FULL OF WATER.

Material:

Site ID:	225953
Operable Unit ID:	1051313
Operable Unit:	01
Material ID:	2159400
Material Code:	1213A
Material Name:	MTBE (METHYL-TERT-BUTYL ETHER)
Case No.:	01634044
Material FA:	Hazardous Material
Quantity:	Not reported
Units:	Not reported
Recovered:	Not reported
Resource Affected:	Not reported

M S FUEL INC. (Continued) **U000412071**

Oxygenate:	True
Site ID:	225953
Operable Unit ID:	1051313
Operable Unit:	01
Material ID:	2159401
Material Code:	2645A
Material Name:	BTEX
Case No.:	Not reported
Material FA:	Oxygenates
Quantity:	Not reported
Units:	Not reported
Recovered:	Not reported
Resource Affected:	Not reported
Oxygenate:	True
Site ID:	225953
Operable Unit ID:	1051313
Operable Unit:	01
Material ID:	334522
Material Code:	0009
Material Name:	Gasoline
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	0
Units:	Gallons
Recovered:	No
Resource Affected:	Not reported
Oxygenate:	True
Site ID:	225953
Operable Unit ID:	1051313
Operable Unit:	01
Material ID:	334521
Material Code:	0008
Material Name:	Diesel
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	0
Units:	Gallons
Recovered:	No
Resource Affected:	Not reported
Oxygenate:	True

Tank Test:

Facility ID:	9208820
DER Facility ID:	186510
Facility Type:	ER
Site ID:	225952
DEC Region:	2
Spill Date:	10/30/1992
Spill Number/Closed Date:	9208820 / 10/30/1992
Spill Cause:	Unknown
Spill Class:	Known release that creates potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
SWIS:	4101
Investigator:	KSTANG
Referred To:	Not reported

M S FUEL INC. (Continued) **U000412071**

Reported to Dept:	10/30/1992
CID:	Not reported
Water Affected:	Not reported
Spill Source:	Tank Truck
Spill Notifier:	Responsible Party
Cleanup Ceased:	10/30/1992
Cleanup Meets Std:	True
Last Inspection:	Not reported
Recommended Penalty:	False
UST Trust:	False
Remediation Phase:	0
Date Entered In Computer:	11/4/1992
Spill Record Last Update:	2/5/2004
Spiller Name:	Not reported
Spiller Company:	Not reported
Spiller Address:	Not reported
Spiller City,St,Zip:	***Update***, ZZ
Spiller Company:	001
Contact Name:	Not reported
Contact Phone:	Not reported
DEC Memo:	Prior to Sept, 2004 data translation this spill Lead_DEC Field was "TANG"
Remarks:	SPIL CONTAINED ON CONCRETE-TO HAVECONTRACTOR CLEAN UP,NYCDEP CONFIRMED CLEANUP

Material:

Site ID:	225952
Operable Unit ID:	972359
Operable Unit:	01
Material ID:	405898
Material Code:	0009
Material Name:	Gasoline
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	-1
Units:	Pounds
Recovered:	No
Resource Affected:	Not reported
Oxygenate:	False

Tank Test:

N61 **KINGS POINT DEPOT** **RCRA-CESQG** **1000694360**
NNE **151-45 6TH RD** **FINDS** **NYD987006723**
1/4-1/2 **WHITESTONE, NY 11357** **MANIFEST**
0.305 mi. **NY Spills**
1609 ft. **Site 1 of 3 in cluster N** **BROWNFIELDS**

Relative:
Lower

Actual:
8 ft.

RCRA-CESQG:

Date form received by agency:	01/01/2007
Facility name:	KINGS POINT DEPOT
Facility address:	151-45 6TH RD WHITESTONE, NY 11357
EPA ID:	NYD987006723
Mailing address:	HUDSON ST STE 412 NEW YORK, NY 10014
Contact:	C FOLLINI

KINGS POINT DEPOT (Continued) **1000694360**

Contact address: HUDSON ST STE 412
NEW YORK, NY 10014
Contact country: US
Contact telephone: (212) 929-5414
Contact email: Not reported
EPA Region: 02
Land type: Private
Classification: Conditionally Exempt Small Quantity Generator
Description: Handler: generates 100 kg or less of hazardous waste per calendar month, and accumulates 1000 kg or less of hazardous waste at any time; or generates 1 kg or less of acutely hazardous waste per calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste

Owner/Operator Summary:
Owner/operator name: KINGS POINT TAVESTORS LLC
Owner/operator address: 421 HUDSON ST
NEW YORK, NY 10014
Owner/operator country: US
Owner/operator telephone: (212) 929-5414
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: 01/01/2001
Owner/Op end date: Not reported

Owner/operator name: KINGS POINT TAVESTORS LLC
Owner/operator address: 421 HUDSON ST
NEW YORK, NY 10014
Owner/operator country: US
Owner/operator telephone: (212) 929-5414
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: 01/01/2001
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No

KINGS POINT DEPOT (Continued) **1000694360**

Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Historical Generators:
Date form received by agency: 01/01/2006
Facility name: KINGS POINT DEPOT
Classification: Conditionally Exempt Small Quantity Generator

Date form received by agency: 07/11/2002
Facility name: KINGS POINT DEPOT
Classification: Large Quantity Generator

Date form received by agency: 07/08/1999
Facility name: KINGS POINT DEPOT
Classification: Not a generator, verified

Date form received by agency: 07/14/1992
Facility name: KINGS POINT DEPOT
Classification: Small Quantity Generator

Violation Status: No violations found

Evaluation Action Summary:
Evaluation date: 06/05/2007
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

FINDS:

Registry ID: 110009482023

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

NY MANIFEST:
EPA ID: NYD987006723
Country: USA
Mailing Name: ANTHONY GRACE & SONS
Mailing Contact: C J FOLLINI
Mailing Address: 421 HUDSON ST STE 412
Mailing Address 2: Not reported
Mailing City: NEW YORK
Mailing State: NY
Mailing Zip: 10014
Mailing Zip4: Not reported
Mailing Country: USA

KINGS POINT DEPOT (Continued) **1000694360**

Mailing Phone: 212-929-5414

Document ID: NYG3225114
Manifest Status: Not reported
Trans1 State ID: NYD049178296
Trans2 State ID: NYR000065169
Generator Ship Date: 07/23/2002
Trans1 Recv Date: 07/23/2002
Trans2 Recv Date: 07/23/2002
TSD Site Recv Date: 07/31/2002
Part A Recv Date: Not reported
Part B Recv Date: Not reported
Generator EPA ID: NYD987006723
Trans1 EPA ID: NYD049178296
Trans2 EPA ID: Not reported
TSDF ID: AD67882
Waste Code: D001 - NON-LISTED IGNITABLE WASTES
Quantity: 01600
Units: G - Gallons (liquids only)* (8.3 pounds)
Number of Containers: 030
Container Type: DM - Metal drums, barrels
Handling Method: B Incineration, heat recovery, burning.
Specific Gravity: 01.30
Year: 2002

Document ID: NYG3098898
Manifest Status: Not reported
Trans1 State ID: NJD054126164
Trans2 State ID: OHD077772895
Generator Ship Date: 01/21/2003
Trans1 Recv Date: 01/21/2003
Trans2 Recv Date: 01/22/2003
TSD Site Recv Date: 01/22/2003
Part A Recv Date: Not reported
Part B Recv Date: Not reported
Generator EPA ID: NYD987006723
Trans1 EPA ID: OHD066060609
Trans2 EPA ID: Not reported
TSDF ID: 0440347ME
Waste Code: D001 - NON-LISTED IGNITABLE WASTES
Quantity: 00495
Units: G - Gallons (liquids only)* (8.3 pounds)
Number of Containers: 009
Container Type: DM - Metal drums, barrels
Handling Method: B Incineration, heat recovery, burning.
Specific Gravity: 01.00
Year: 2003

Document ID: NYG3227661
Manifest Status: Not reported
Trans1 State ID: NYR000065169
Trans2 State ID: Not reported
Generator Ship Date: 03/14/2003
Trans1 Recv Date: 03/14/2003

KINGS POINT DEPOT (Continued) **1000694360**

Trans2 Recv Date:	Not reported
TSD Site Recv Date:	03/26/2003
Part A Recv Date:	Not reported
Part B Recv Date:	Not reported
Generator EPA ID:	NYD987006723
Trans1 EPA ID:	NYD049178296
Trans2 EPA ID:	Not reported
TSDF ID:	Not reported
Waste Code:	D001 - NON-LISTED IGNITABLE WASTES
Quantity:	03000
Units:	P - Pounds
Number of Containers:	007
Container Type:	DM - Metal drums, barrels
Handling Method:	T Chemical, physical, or biological treatment.
Specific Gravity:	01.00
Waste Code:	D018 - BENZENE 0.5 MG/L TCLP
Quantity:	03500
Units:	P - Pounds
Number of Containers:	007
Container Type:	DM - Metal drums, barrels
Handling Method:	L Landfill.
Specific Gravity:	01.00
Year:	2003

SPILLS:

Facility ID:	9214054
DER Facility ID:	173000
Facility Type:	ER
Site ID:	177675
DEC Region:	2
Spill Date:	3/23/1993
Spill Number/Closed Date:	9214054 / 5/30/1993
Spill Cause:	Deliberate
Spill Class:	Known release that creates potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
SWIS:	4101
Investigator:	TOMASELLO
Referred To:	Not reported
Reported to Dept:	3/23/1993
CID:	Not reported
Water Affected:	Not reported
Spill Source:	Commercial/Industrial
Spill Notifier:	Federal Government
Cleanup Ceased:	5/30/1993
Cleanup Meets Std:	True
Last Inspection:	Not reported
Recommended Penalty:	False
UST Trust:	False
Remediation Phase:	0
Date Entered In Computer:	3/30/1993
Spill Record Last Update:	7/20/2005
Spiller Name:	Not reported
Spiller Company:	ANTHONY GRACE REPAIR SHOP
Spiller Address:	151-45 6TH RD.
Spiller City,St,Zip:	WHITESTONE, NY
Spiller Company:	001
Contact Name:	Not reported

KINGS POINT DEPOT (Continued) **1000694360**

Contact Phone:	Not reported
DEC Memo:	Not reported
Remarks:	SLOPPY HOUSEKEEPING AT SITE. ONGOING.

Material:

Site ID:	177675
Operable Unit ID:	981488
Operable Unit:	01
Material ID:	400271
Material Code:	0022
Material Name:	Waste Oil/Used Oil
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	-1
Units:	Pounds
Recovered:	No
Resource Affected:	Not reported
Oxygenate:	False

Tank Test:

Facility ID:	0211453
DER Facility ID:	173000
Facility Type:	ER
Site ID:	325811
DEC Region:	2
Spill Date:	2/18/2003
Spill Number/Closed Date:	0211453 / Not Reported
Spill Cause:	Unknown
Spill Class:	Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
SWIS:	4101
Investigator:	VXBREVDO
Referred To:	PROPOSED BCP C241091
Reported to Dept:	2/18/2003
CID:	281
Water Affected:	Not reported
Spill Source:	Commercial/Industrial
Spill Notifier:	Other
Cleanup Ceased:	Not reported
Cleanup Meets Std:	False
Last Inspection:	Not reported
Recommended Penalty:	False
UST Trust:	False
Remediation Phase:	1
Date Entered In Computer:	2/18/2003
Spill Record Last Update:	12/16/2011
Spiller Name:	CJ FOLINI
Spiller Company:	SAME
Spiller Address:	Not reported
Spiller City,St,Zip:	ZZ
Spiller Company:	001
Contact Name:	CHRIS TOMASELLO
Contact Phone:	(516) 924-9259
DEC Memo:	ARAKHAN 2/19 DIRTY DIRT LETTER SENT.2/25/03 TJDSite visit. Total of (14) UST's have been removed from site,(13) 550 gallon tanks & (1)

KINGS POINT DEPOT (Continued) **1000694360**

3,000 gaollon. An estimated 10,000 gallon AST is also located on South East corner of property, it is reported to be half full with an unknown asphalt product. All tank excavations are currently open and exhibit obvious petroleum contamination. Center excavation in rear (north) of building contains an unknown volume of waste oil floating on water. Tradewinds reports this product has been pumped and is recharging into excavation. Another buried tank was identified at time of inspection, unknown size, located near abandonned dispenser on south side of property. Surface contamination was noted throughout the property. Drums containing unknown liquids were observed throughout property.Complete subsurface investigation of soils/groundwater is required in both source (tank) areas and other areas of concern on property. 7/22/03 TJDDemeo contacted CJ Folini to determine status of investigation/remediation of site. Mr. Folini states other than tank removals no other work has been performed. He further states tank closure report has been prepared but is with attorney's office for final approval.Mr. Folini states his attorney is Scott Furman @ 212-508 6750. Demeo was directed to contact attorney directly for additional information. Demeo called attorney and spoke with partner (John Curran) who states he will research matter and get back to DEC on tank closure report status.IVI Environemtal Also contacxted to obtain analytical results from geoprobe investigation conducted in 11/01. IVI states client was prospective purchaser who did not win bid. IVI further states that client did not pay bill and IVI will likely not release data without full payment and client approval.see also spills 0108301 & 92140545/27/04 TJDRP has not submitted results of investigation. Letter sent requiring all outstanding documentation within 30 days.6/1/04 TJDSite inspection with ECO Mat. Two seperate PBS registrations are active on this site 2-600192 & 2-600207. PBS 2-600192 has nine (9) tanks active at location and PBS 2-600207 has (22) closed out of service tanks. Based on interviews with site representatives the registration for 2-600207 is the active registration for this site. ECO Mat issued (5) violations to Kings Point Investors. Site owner C.J. Folini has stated he will obtain a copy of the tank closure report and forward it to my attention within 1 week.A remediation work plan is required.9/20/04 TJDSubsuface Investigation Report prepared and submitted by Leggette, Brashears & Graham. Investigation included the installation of 22 soil borings and 10 temporary monitoring wells. The laboratory results presented reveal no exceedances of TAGM 4046 allowable concentrations for VOC's. For SVOC's there were some minor exceedances noted. Additionally there were several VOC's in groundwater detected above ground water quality standards.Further review of the report reveals field observations do not correlate with the laboratory analysis. 12 of the 22 boring logs included with the report (Appendix I) have PID measurements of between 100 ppm to 1,642 ppm all with driller/geologist remarks which document strong odors detected during sampling. Laboratory analysis of the above samples did not reveal a single VOC TAGM exceedance. The investigation performed did not include all areas of concern on the subject property. No investigation of (2) 2,000 gal UST diesel tanks was documented.9/20/04 TJDSite transferred, as per Austin, DeMeo >>> Rommel.9/28/04 Transferred from Rommel to K Foley.2/22/05 Spoke to Michael Morris, ATC (212-353-8280 X345). His client is potential buyer and is now doing due diligence. Would like to redevelop property as residential. 5/25/05 M. Morris, ATC- Will be submitting

KINGS POINT DEPOT (Continued) **1000694360**

workplan for additional investigation and remedial action.2/6/05
Possible BCP site. Application under C241091.3/22/06 Reassigned from Foley to Tang.(KMF)

Remarks: SOIL CONTAMINATION DISCOVERED DURING EXCAVATION AT ABOVE LOCATION.TANKS ON SITE ARE BEING REMOVED. FURTHER TESTING AND EXCAVATION TO BE PERFORMED. CONTACT CALLER FOR FURTHER INFORMATION.

Material:

Site ID:	325811
Operable Unit ID:	862618
Operable Unit:	01
Material ID:	511240
Material Code:	0066A
Material Name:	UNKNOWN PETROLEUM
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	0
Units:	Gallons
Recovered:	No
Resource Affected:	Not reported
Oxygenate:	False

Tank Test:

Facility ID:	0108301
DER Facility ID:	173000
Facility Type:	ER
Site ID:	208493
DEC Region:	2
Spill Date:	11/15/2001
Spill Number/Closed Date:	0108301 / 7/22/2003
Spill Cause:	Unknown
Spill Class:	Known release that creates potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
SWIS:	4101
Investigator:	TJDEMEO
Referred To:	Not reported
Reported to Dept:	11/15/2001
CID:	322
Water Affected:	Not reported
Spill Source:	Commercial/Industrial
Spill Notifier:	Other
Cleanup Ceased:	Not reported
Cleanup Meets Std:	False
Last Inspection:	Not reported
Recommended Penalty:	False
UST Trust:	True
Remediation Phase:	0
Date Entered In Computer:	11/15/2001
Spill Record Last Update:	7/22/2003
Spiller Name:	Not reported
Spiller Company:	Not reported
Spiller Address:	151-45 6TH ROAD
Spiller City,St,Zip:	WHITESTONE, NY
Spiller Company:	001
Contact Name:	Not reported

KINGS POINT DEPOT (Continued) **1000694360**

Contact Phone: Not reported
DEC Memo: Prior to Sept, 2004 data translation this spill Lead_DEC Field was "DEMEO" CALLED CHUCK MULLIGAN ON 11/15/01 AT 16.00 HRS. WILL SUBMITT REPORT TO DEC. REPORT RECEIVED 1/10/02.7/22/03 TJDsee spill # 0211453
Remarks: caller did soil & water samples for a buyer - lab results showcontamination

Material:
Site ID: 208493
Operable Unit ID: 845541
Operable Unit: 01
Material ID: 529551
Material Code: 0008
Material Name: Diesel
Case No.: Not reported
Material FA: Petroleum
Quantity: 0
Units: Gallons
Recovered: No
Resource Affected: Not reported
Oxygenate: False
Site ID: 208493
Operable Unit ID: 845541
Operable Unit: 01
Material ID: 529552
Material Code: 0009
Material Name: Gasoline
Case No.: Not reported
Material FA: Petroleum
Quantity: 0
Units: Gallons
Recovered: No
Resource Affected: Not reported
Oxygenate: False

Tank Test:

BROWNFIELDS:
Program: BCP
Site Code: 355872
Site Description: Location:The Waterpointe-Whitestone site is located in an urban portion of Whitestone, Queens County, at 151-45 6th Road. Site Features:The site is generally flat with most of the site's surface soils being historic fill. All the tenants have vacated and all structures on site have been demolished.Current Zoning/Uses:Currently, the site is zoned manufacturing. The site is presently vacant. Future use of this site is expected to be for residential use.The site is surrounded by residences to the south and east, the East River to the north and industry to the west.Historic Uses:Prior uses of the site that appear to have led to site contamination include a metal shop, boat manufacturer and shooting range until circa 1950, an asphalt plant which operated from approximately 1952 to 1992, concrete manufacturing which was conducted concurrently with the asphalt operations until approximately 1986-1988. From the early 1980's to 2009, a maintenance garage for trucks and buses operated on-site.Site Geology and

KINGS POINT DEPOT (Continued) **1000694360**

Hydrogeology: The site is approximately seven feet above mean sea level. However, the average difference in the elevation from high to low tide is 8.5 feet. Groundwater is typically at a depth of 8 feet, but is highly variable. Groundwater flows north to the East River during low tide and backs up on site during high tide.

Env Problem: Nature and Extent of Contamination: Prior to remediation, the primary contaminants of concern were PAH's and petroleum products. The Remedial Work Plan was sunstantially completed. Significantly impacted soil was removed, however, some minor contamination remains in soil at the site above 'Unrestricted' levels. Groundwater is marginally contaminated with Volatile Organic Compounds from an off-site source. This Remaining Contamination will be managed through Institutional Controls and a Site Management Plan, allowing for the site's intended use as a 'Residential' property.After remediation, unapproved importation of fill occurred. The Department is working with the remedial party to resolve the issue.

Health Problem: People are not drinking the contaminated groundwater because the area is served by a public water supply that is not affected by this contamination. Volatile organic compounds in the groundwater may move into the soil vapor (air spaces within the soil), which in turn may move into overlying buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings is referred to as soil vapor intrusion. The potential exists for people to inhale site contaminants in indoor air due to soil vapor intrusion in any future on-site building development and occupancy. Furthermore, environmental sampling indicates soil vapor may migrate off-site.

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62 **RESIDENCE** **LTANKS** **S104195679**
West **147-20 10TH AVE** **NY Spills** **N/A**
1/4-1/2 **WHITESTONE, NY**
0.315 mi.
1662 ft.

Relative:
Higher

Actual:
75 ft.

LTANKS:

Site ID:	61964
Spill Number/Closed Date:	9409114 / 10/7/1994
Spill Date:	10/7/1994
Spill Cause:	Tank Overfill
Spill Source:	Private Dwelling
Spill Class:	Not reported
Cleanup Ceased:	10/7/1994
Cleanup Meets Standard:	True
SWIS:	4101
Investigator:	O'DOWD
Referred To:	Not reported
Reported to Dept:	10/7/1994
CID:	Not reported
Water Affected:	Not reported
Spill Notifier:	Responsible Party
Last Inspection:	Not reported
Recommended Penalty:	False
UST Involvement:	False
Remediation Phase:	0
Date Entered In Computer:	11/4/1994
Spill Record Last Update:	11/4/1994
Spiller Name:	Not reported
Spiller Company:	PETRO HEAT & POWER

RESIDENCE (Continued) **S104195679**

Spiller Address:	36-16 19TH AVENUE
Spiller City,St,Zip:	ASTORIA, NY
Spiller County:	001
Spiller Contact:	Not reported
Spiller Phone:	Not reported
Spiller Extention:	Not reported
DEC Region:	2
DER Facility ID:	60121
DEC Memo:	Not reported
Remarks:	CUSTOMER CALLED FOR OIL, TANK ALMOST FILL. PETRO HEAT & POWER CLEANING UP WITH SPEEDY DRY. NO CALL BACK

Material:

Site ID:	61964
Operable Unit ID:	1003110
Operable Unit:	01
Material ID:	378544
Material Code:	0001A
Material Name:	#2 Fuel Oil
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	2
Units:	Gallons
Recovered:	No
Resource Affected:	Not reported
Oxygenate:	False

Tank Test:

SPILLS:

Facility ID:	9907796
DER Facility ID:	66051
Facility Type:	ER
Site ID:	69472
DEC Region:	2
Spill Date:	9/28/1999
Spill Number/Closed Date:	9907796 / 9/28/1999
Spill Cause:	Other
Spill Class:	Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
SWIS:	4101
Investigator:	SMMARTIN
Referred To:	Not reported
Reported to Dept:	9/28/1999
CID:	252
Water Affected:	Not reported
Spill Source:	Private Dwelling
Spill Notifier:	Responsible Party
Cleanup Ceased:	Not reported
Cleanup Meets Std:	False
Last Inspection:	Not reported
Recommended Penalty:	False
UST Trust:	False
Remediation Phase:	0
Date Entered In Computer:	9/28/1999

RESIDENCE (Continued) **S104195679**

Spill Record Last Update:	9/28/1999
Spiller Name:	CALLER
Spiller Company:	PETRO OIL
Spiller Address:	171 EAST AMES CT
Spiller City,St,Zip:	PLAINVIEW, NY -
Spiller Company:	001
Contact Name:	MR FRED WALSH
Contact Phone:	(718) 767-1139
DEC Memo:	Prior to Sept, 2004 data translation this spill Lead_DEC Field was "MARTINKAT"
Remarks:	APPROX 1 PINT SPILLED ON TO LAWN-MATERIAL CAME FROM VENT PIPEWHILE DELIVERING OIL TO RESIDENCE-PETRO HAS CLEANED UP SPILL.

Material:

Site ID:	69472
Operable Unit ID:	1082067
Operable Unit:	01
Material ID:	300480
Material Code:	0001A
Material Name:	#2 Fuel Oil
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	0
Units:	Gallons
Recovered:	No
Resource Affected:	Not reported
Oxygenate:	False

Tank Test:

N63 **GRACE ASSOCIATES** **SWF/LF** **S105841244**
NNE **151-21 6 ROAD** **N/A**
1/4-1/2 **WHITESTONE, NY 11357**
0.316 mi.
1670 ft. **Site 2 of 3 in cluster N**

Relative:
Lower

Actual:
9 ft.

SWF/LF:

Flag:	INACTIVE
Region Code:	2
Phone Number:	7187676500
Owner Name:	Grahel Associates
Owner Type:	Private
Owner Address:	151-45 6th Road
Owner Addr2:	Not reported
Owner City,St,Zip:	Whitestone, NY 11357-1206
Owner Email:	Not reported
Owner Phone:	Not reported
Contact Name:	A.GRACE
Contact Address:	Not reported
Contact Addr2:	Not reported
Contact City,St,Zip:	Not reported
Contact Email:	Not reported
Contact Phone:	Not reported
Activity Desc:	C&D processing - registration
Activity Number:	[41W65]
Active:	No
East Coordinate:	600200

GRACE ASSOCIATES (Continued) **S105841244**

North Coordinate: 4516900
Accuracy Code: 2.1 - NYSDEC 100 m grid collection
Regulatory Status: Not reported
Waste Type: Not reported
Authorization #: 2-6302-00117
Authorization Date: Not reported
Expiration Date: Not reported

N64 **CLOSED-LACKOF RECENT INFO** **LTANKS** **S100167601**
NNE **151045 6TH ROAD** **N/A**
1/4-1/2 **NEW YORK CITY, NY**
0.320 mi.
1687 ft. **Site 3 of 3 in cluster N**

Relative:
Lower

Actual:
8 ft.

LTANKS:
Site ID: 135642
Spill Number/Closed Date: 8806403 / 3/4/2003
Spill Date: 10/31/1988
Spill Cause: Tank Test Failure
Spill Source: Commercial/Industrial
Spill Class: Known release that creates a file or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
Cleanup Ceased: Not reported
Cleanup Meets Standard: False
SWIS: 4101
Investigator: ADMIN. CLOSED
Referred To: Not reported
Reported to Dept: 10/31/1988
CID: Not reported
Water Affected: Not reported
Spill Notifier: Tank Tester
Last Inspection: Not reported
Recommended Penalty: False
UST Involvement: True
Remediation Phase: 0
Date Entered In Computer: 11/3/1988
Spill Record Last Update: 3/4/2003
Spiller Name: Not reported
Spiller Company: EDENWALD CONTRACTOR
Spiller Address: 151-45 6TH ROAD
Spiller City,St,Zip: WHITESTONE, NY
Spiller County: 001
Spiller Contact: Not reported
Spiller Phone: Not reported
Spiller Extention: Not reported
DEC Region: 2
DER Facility ID: 116469
DEC Memo: Not reported
Remarks: 5(550 GALLON TANKS) FAILED AIR PRESSURE TEST WITH UNREADABLE LEAK RATE, NOTIFIED OWNER OF THE TANK TEST FAILURE.CLOSED DUE TO LACK OF ANY RECENT INFO - DOES NOT MEET ANY CLEANUP REQUIREMENTS.

Material:
Site ID: 135642
Operable Unit ID: 921577
Operable Unit: 01
Material ID: 454747

CLOSED-LACKOF RECENT INFO (Continued) **S100167601**

Material Code:	0009
Material Name:	Gasoline
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	-1
Units:	Pounds
Recovered:	No
Resource Affected:	Not reported
Oxygenate:	False

Tank Test:

Site ID:	135642
Spill Tank Test:	1534833
Tank Number:	Not reported
Tank Size:	0
Test Method:	00
Leak Rate:	0
Gross Fail:	Not reported
Modified By:	Spills
Last Modified:	10/1/2004
Test Method:	Unknown

65
WSW
1/4-1/2
0.326 mi.
1719 ft.

Relative:
Higher

Actual:
55 ft.

15 AVE- CROSS ISLAND PKWY **LTANKS** **S101509000**
15 AVE- CROSS ISLAND PKWY **N/A**
QUEENS, NY

LTANKS:

Site ID:	175855
Spill Number/Closed Date:	9415282 / 2/27/1995
Spill Date:	2/22/1995
Spill Cause:	Tank Failure
Spill Source:	Commercial Vehicle
Spill Class:	Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
Cleanup Ceased:	2/27/1995
Cleanup Meets Standard:	True
SWIS:	4101
Investigator:	JMKRIMGO
Referred To:	Not reported
Reported to Dept:	2/22/1995
CID:	Not reported
Water Affected:	Not reported
Spill Notifier:	Local Agency
Last Inspection:	Not reported
Recommended Penalty:	False
UST Involvement:	False
Remediation Phase:	0
Date Entered In Computer:	3/23/1995
Spill Record Last Update:	9/30/2004
Spiller Name:	Not reported
Spiller Company:	UNKNOWN
Spiller Address:	Not reported
Spiller City,St,Zip:	NY
Spiller County:	999

15 AVE- CROSS ISLAND PKWY (Continued) **S101509000**

Spiller Contact:	Not reported
Spiller Phone:	Not reported
Spiller Extention:	Not reported
DEC Region:	2
DER Facility ID:	147806
DEC Memo:	Prior to Sept, 2004 data translation this spill Lead_DEC Field was "KRIMGOLD"
Remarks:	NYS DOT TRUCK WHICH IS LEAKING DIESEL, CLEANED UP BY DOT

Material:

Site ID:	175855
Operable Unit ID:	1012599
Operable Unit:	01
Material ID:	370463
Material Code:	0008
Material Name:	Diesel
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	15
Units:	Not reported
Recovered:	No
Resource Affected:	Not reported
Oxygenate:	False

Tank Test:

66
SSE
1/4-1/2
0.336 mi.
1775 ft.

Relative:
Higher

Actual:
82 ft.

150-65 CROSS ISLAND PARKW **LTANKS** **S105996621**
WHITESTONE, NY **N/A**

LTANKS:

Site ID:	280407
Spill Number/Closed Date:	0205582 / 8/29/2002
Spill Date:	7/29/2002
Spill Cause:	Tank Overfill
Spill Source:	Commercial/Industrial
Spill Class:	Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
Cleanup Ceased:	Not reported
Cleanup Meets Standard:	False
SWIS:	4101
Investigator:	MXTIPPLE
Referred To:	Not reported
Reported to Dept:	8/28/2002
CID:	405
Water Affected:	Not reported
Spill Notifier:	Responsible Party
Last Inspection:	Not reported
Recommended Penalty:	False
UST Involvement:	False
Remediation Phase:	0
Date Entered In Computer:	8/28/2002
Spill Record Last Update:	8/29/2002
Spiller Name:	Not reported

(Continued) **S105996621**

Spiller Company:	ISLAND TRANSPORTATION
Spiller Address:	299 EDISON AVE
Spiller City,St,Zip:	WEST BABYLON, NY 11709-
Spiller County:	001
Spiller Contact:	HECTOR CAPINERI
Spiller Phone:	(631) 694-4497
Spiller Extention:	Not reported
DEC Region:	2
DER Facility ID:	227680
DEC Memo:	Prior to Sept, 2004 data translation this spill Lead_DEC Field was "TIPPLE"8/29/02 old sunoco station, spilled 3 gal. of diesel about a month ago.
Remarks:	caller states spill occurred at the fill point on the tank - all has been cleaned up

Material:

Site ID:	280407
Operable Unit ID:	858202
Operable Unit:	01
Material ID:	519781
Material Code:	0008
Material Name:	Diesel
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	3
Units:	Gallons
Recovered:	3
Resource Affected:	Not reported
Oxygenate:	False

Tank Test:

67
SSW
1/4-1/2
0.344 mi.
1818 ft.

MOBILE #17HHC
15-04 149TH STREET
WHITESTONE, NY

LTANKS **S105997682**
NY Spills **N/A**

Relative:
Higher

Actual:
49 ft.

LTANKS:

Site ID:	302610
Spill Number/Closed Date:	0209634 / 5/27/2003
Spill Date:	12/19/2002
Spill Cause:	Tank Test Failure
Spill Source:	Gasoline Station
Spill Class:	Known release that creates potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
Cleanup Ceased:	Not reported
Cleanup Meets Standard:	False
SWIS:	4101
Investigator:	JXDRUMM
Referred To:	Not reported
Reported to Dept:	12/19/2002
CID:	211
Water Affected:	Not reported
Spill Notifier:	Tank Tester
Last Inspection:	Not reported

MOBILE #17HHC (Continued) **S105997682**

Recommended Penalty:	False
UST Involvement:	True
Remediation Phase:	0
Date Entered In Computer:	12/19/2002
Spill Record Last Update:	9/11/2003
Spiller Name:	MELISSA WINSOR
Spiller Company:	EXXONMOBIL
Spiller Address:	3225 GALLOWS ROAD
Spiller City,St,Zip:	FAIRFAX, VA 22037
Spiller County:	001
Spiller Contact:	STEVE ANASTOS
Spiller Phone:	(703) 846-3393
Spiller Extention:	Not reported
DEC Region:	2
DER Facility ID:	244470
DEC Memo:	Prior to Sept, 2004 data translation this spill Lead_DEC Field was "DRUMM"This spill site has been transferred from DEC Sigona to RemedialBureau B, on August 4, 2003.This spill site is consolidated under Spill No. 9007553.
Remarks:	Mobil notified and ceased deliveries - no wet portion of tank

Material:

Site ID:	302610
Operable Unit ID:	862845
Operable Unit:	01
Material ID:	513061
Material Code:	0009
Material Name:	Gasoline
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	0
Units:	Gallons
Recovered:	No
Resource Affected:	Not reported
Oxygenate:	False

Tank Test:

Site ID:	302610
Spill Tank Test:	1527855
Tank Number:	1 &2
Tank Size:	4000
Test Method:	03
Leak Rate:	0
Gross Fail:	Not reported
Modified By:	Spills
Last Modified:	10/1/2004
Test Method:	Horner EZ Check I or II

SPILLS:

Facility ID:	0205395
DER Facility ID:	244470
Facility Type:	ER
Site ID:	302609
DEC Region:	2
Spill Date:	8/22/2002

MOBILE #17HHC (Continued) **S105997682**

Spill Number/Closed Date:	0205395 / 5/27/2003
Spill Cause:	Housekeeping
Spill Class:	Known release that creates potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
SWIS:	4101
Investigator:	JXDRUMM
Referred To:	Not reported
Reported to Dept:	8/22/2002
CID:	365
Water Affected:	Not reported
Spill Source:	Gasoline Station
Spill Notifier:	Affected Persons
Cleanup Ceased:	Not reported
Cleanup Meets Std:	False
Last Inspection:	Not reported
Recommended Penalty:	False
UST Trust:	True
Remediation Phase:	0
Date Entered In Computer:	8/22/2002
Spill Record Last Update:	9/11/2003
Spiller Name:	Not reported
Spiller Company:	EXXONMOBIL
Spiller Address:	Not reported
Spiller City,St,Zip:	ZZ -
Spiller Company:	001
Contact Name:	FRED BARILLA
Contact Phone:	(631) 420-5095
DEC Memo:	Prior to Sept, 2004 data translation this spill Lead_DEC Field was "DRUMM"This spill site has been transferred from DEC Sigona to RemedialBureau B, on August 4, 2003.This spill site is consolidated under Spill No. 9007553.ExxonMobil must submit the results of the borings and well installations proposed by Groundwater & Environmental Service, Inc (GES), in its plans dated, December 19, 2002 and April 16, 2003, along with a proposed corrective action plan (CAP) to contain and eliminate the full extent of free product, saturated soils and groundwater contamination in accordance DEC's standards and guidance. The CAP must also document the removal of the improperly closed 4,000 gallon tank in accordance with 6 NYCRR 613.9 and 40 CFR 280.72. This CAP must be submitted for DEC review and approval by August 15, 2003.
Remarks:	DISCOVERED IN A MONITORING WELL & HAS BEEN BAILED OUT - THEY ARE GOING TO DISCUSS OPTIONS WITH THEIR CLIENT

Material:

Site ID:	302609
Operable Unit ID:	856832
Operable Unit:	01
Material ID:	519594
Material Code:	0009
Material Name:	Gasoline
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	0
Units:	Gallons
Recovered:	No
Resource Affected:	Not reported
Oxygenate:	False

MOBILE #17HHC (Continued) **S105997682**

Tank Test:

Facility ID:	0912641
DER Facility ID:	244470
Facility Type:	ER
Site ID:	425545
DEC Region:	2
Spill Date:	3/3/2010
Spill Number/Closed Date:	0912641 / 8/19/2011
Spill Cause:	Other
Spill Class:	Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
SWIS:	4101
Investigator:	smsanges
Referred To:	Not reported
Reported to Dept:	3/4/2010
CID:	Not reported
Water Affected:	Not reported
Spill Source:	Gasoline Station
Spill Notifier:	Other
Cleanup Ceased:	Not reported
Cleanup Meets Std:	False
Last Inspection:	Not reported
Recommended Penalty:	False
UST Trust:	False
Remediation Phase:	0
Date Entered In Computer:	3/4/2010
Spill Record Last Update:	8/19/2011
Spiller Name:	KEN DRAKE
Spiller Company:	EXXON MOBIL
Spiller Address:	15-04 149TH ST
Spiller City,St,Zip:	WHITESTONE, NY
Spiller Company:	999
Contact Name:	KEN DRAKE
Contact Phone:	(908) 730-2614
DEC Memo:	Reporting for this spill will be covered under spill # 9007553
Remarks:	Caller reporting monitoring wells showing .02 feet of an unknown petroleum. Wells MP-7, HV-4, and MW-17. Clean up pending.

Material:

Site ID:	425545
Operable Unit ID:	1181262
Operable Unit:	01
Material ID:	2175332
Material Code:	0066A
Material Name:	UNKNOWN PETROLEUM
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	Not reported
Units:	Gallons
Recovered:	Not reported
Resource Affected:	Not reported
Oxygenate:	False

Tank Test:

MOBILE #17HHC (Continued) **S105997682**

Facility ID:	0812805
DER Facility ID:	244470
Facility Type:	ER
Site ID:	410448
DEC Region:	2
Spill Date:	2/25/2009
Spill Number/Closed Date:	0812805 / 2/25/2009
Spill Cause:	Housekeeping
Spill Class:	Possible release with minimal potential for fire or hazard or Known release with no damage. DEC Response. Willing Responsible Party. Corrective action taken.
SWIS:	4101
Investigator:	RMPIPER
Referred To:	Not reported
Reported to Dept:	2/25/2009
CID:	Not reported
Water Affected:	Not reported
Spill Source:	Gasoline Station
Spill Notifier:	Other
Cleanup Ceased:	Not reported
Cleanup Meets Std:	False
Last Inspection:	Not reported
Recommended Penalty:	False
UST Trust:	False
Remediation Phase:	0
Date Entered In Computer:	2/25/2009
Spill Record Last Update:	2/25/2009
Spiller Name:	ED SAVARESE
Spiller Company:	UNKNOWN
Spiller Address:	15-04 149TH ST
Spiller City,St,Zip:	WHITESTONE, NY
Spiller Company:	999
Contact Name:	ED SAVARESE
Contact Phone:	Not reported
DEC Memo:	Technician found sludge in monitoring well adjacent to waste oil tank. This spill is closed and referred to spill 9007553
Remarks:	Caller states an unknown customer poured an unknown petroleum down a monitoring well head on 02/17 and contacted the environmental company. This date contamination was found during investigation. Cross ref spill # 90-07553

Material:

Site ID:	410448
Operable Unit ID:	1166933
Operable Unit:	01
Material ID:	2158450
Material Code:	0066A
Material Name:	UNKNOWN PETROLEUM
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	Not reported
Units:	Not reported
Recovered:	Not reported
Resource Affected:	Not reported
Oxygenate:	False

Tank Test:

MOBILE #17HHC (Continued) **S105997682**

Facility ID:	0509555
DER Facility ID:	342039
Facility Type:	ER
Site ID:	355347
DEC Region:	2
Spill Date:	11/9/2005
Spill Number/Closed Date:	0509555 / 11/9/2005
Spill Cause:	Other
Spill Class:	Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
SWIS:	4101
Investigator:	JJDRUMM
Referred To:	Not reported
Reported to Dept:	11/9/2005
CID:	444
Water Affected:	Not reported
Spill Source:	Gasoline Station
Spill Notifier:	Other
Cleanup Ceased:	Not reported
Cleanup Meets Std:	False
Last Inspection:	Not reported
Recommended Penalty:	False
UST Trust:	False
Remediation Phase:	0
Date Entered In Computer:	11/9/2005
Spill Record Last Update:	1/17/2008
Spiller Name:	RICHARD CAPUTO
Spiller Company:	MOBILE #17HHC
Spiller Address:	1504 149TH STREET
Spiller City,St,Zip:	WHITE STONE, NY
Spiller Company:	001
Contact Name:	RICHARD CAPUTO
Contact Phone:	(631) 218-0612
DEC Memo:	consolidated into spill #9007553
Remarks:	WHILE INSTALLING MONITORING WELLS, FOUND CONTAMINATION: RE: SPILL # 90-07553

Material:

Site ID:	355347
Operable Unit ID:	1112714
Operable Unit:	01
Material ID:	2102757
Material Code:	0009
Material Name:	Gasoline
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	0
Units:	Gallons
Recovered:	No
Resource Affected:	Not reported
Oxygenate:	False

Tank Test:

68
SE
1/4-1/2
0.395 mi.
2085 ft.

153-45 CROSS ISLAND PKWY
153-45 CROSS ISLAND PKWY
NEW YORK CITY, NY

LTANKS **S100146107**
N/A

Relative:
Higher

Actual:
68 ft.

LTANKS:

Site ID:	167504
Spill Number/Closed Date:	9003326 / 9/30/1992
Spill Date:	6/22/1990
Spill Cause:	Tank Test Failure
Spill Source:	Commercial/Industrial
Spill Class:	Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
Cleanup Ceased:	9/30/1992
Cleanup Meets Standard:	False
SWIS:	4101
Investigator:	BATTISTA
Referred To:	Not reported
Reported to Dept:	6/22/1990
CID:	Not reported
Water Affected:	Not reported
Spill Notifier:	Tank Tester
Last Inspection:	Not reported
Recommended Penalty:	False
UST Involvement:	False
Remediation Phase:	0
Date Entered In Computer:	6/27/1990
Spill Record Last Update:	5/12/1994
Spiller Name:	Not reported
Spiller Company:	F.W. WOOLWORTH
Spiller Address:	153-45 CROSS ISLAND PKWY
Spiller City,St,Zip:	WHITESTONE, NY
Spiller County:	001
Spiller Contact:	Not reported
Spiller Phone:	Not reported
Spiller Extention:	Not reported
DEC Region:	2
DER Facility ID:	141141
DEC Memo:	Not reported
Remarks:	3K TANK SYSTEM FAILED HORNER EZY CHECK WITH A LEAK RATE OF -.1167GPH, WILL EXCAVATE, ISOLATE & RETEST.

Material:

Site ID:	167504
Operable Unit ID:	941194
Operable Unit:	01
Material ID:	438025
Material Code:	0001A
Material Name:	#2 Fuel Oil
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	-1
Units:	Not reported
Recovered:	No
Resource Affected:	Not reported
Oxygenate:	False

153-45 CROSS ISLAND PKWY (Continued) **S100146107**

Tank Test:

Site ID:	167504
Spill Tank Test:	1537228
Tank Number:	Not reported
Tank Size:	0
Test Method:	00
Leak Rate:	0
Gross Fail:	Not reported
Modified By:	Spills
Last Modified:	10/1/2004
Test Method:	Unknown

69
SW
1/4-1/2
0.451 mi.
2383 ft.

13-32 146TH ST/QUEENS **LTANKS** **S100146744**
13-32 146TH STREET **N/A**
NEW YORK CITY, NY

Relative:
Higher

Actual:
83 ft.

LTANKS:

Site ID:	69744
Spill Number/Closed Date:	9011213 / 1/22/1991
Spill Date:	1/22/1991
Spill Cause:	Tank Failure
Spill Source:	Private Dwelling
Spill Class:	Not reported
Cleanup Ceased:	1/22/1991
Cleanup Meets Standard:	True
SWIS:	4101
Investigator:	TOMASELLO
Referred To:	Not reported
Reported to Dept:	1/22/1991
CID:	Not reported
Water Affected:	Not reported
Spill Notifier:	Responsible Party
Last Inspection:	Not reported
Recommended Penalty:	False
UST Involvement:	False
Remediation Phase:	0
Date Entered In Computer:	3/15/1991
Spill Record Last Update:	9/30/2004
Spiller Name:	Not reported
Spiller Company:	Not reported
Spiller Address:	Not reported
Spiller City,St,Zip:	***Update***, ZZ
Spiller County:	001
Spiller Contact:	Not reported
Spiller Phone:	Not reported
Spiller Extention:	Not reported
DEC Region:	2
DER Facility ID:	66287
DEC Memo:	Not reported
Remarks:	TANK HAS CRACK,OIL LEAKED FROM CRACK,SORBENT USED TO CLEAN UP.

Material:

Site ID:	69744
Operable Unit ID:	951367

13-32 146TH ST/QUEENS (Continued) **S100146744**

Operable Unit:	01
Material ID:	427765
Material Code:	0001A
Material Name:	#2 Fuel Oil
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	1
Units:	Gallons
Recovered:	No
Resource Affected:	Not reported
Oxygenate:	False

Tank Test:

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70 **GETTY GAS** **LTANKS S105997926**
SSE **17-46 CLINTONVILLE ST** **NY Spills N/A**
1/4-1/2 **WHITESTONE, NY**
0.455 mi.
2404 ft.

Relative:
Higher

Actual:
73 ft.

LTANKS:

Site ID:	120128
Spill Number/Closed Date:	0210440 / 7/14/2004
Spill Date:	1/16/2003
Spill Cause:	Tank Test Failure
Spill Source:	Gasoline Station
Spill Class:	Known release that creates potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
Cleanup Ceased:	Not reported
Cleanup Meets Standard:	False
SWIS:	4101
Investigator:	JMROMMEL
Referred To:	Not reported
Reported to Dept:	1/16/2003
CID:	365
Water Affected:	Not reported
Spill Notifier:	Tank Tester
Last Inspection:	Not reported
Recommended Penalty:	False
UST Involvement:	True
Remediation Phase:	0
Date Entered In Computer:	1/16/2003
Spill Record Last Update:	7/14/2004
Spiller Name:	RICH FINKELSTEIN
Spiller Company:	SPEEDY MART
Spiller Address:	17-46 CLINTONVILLE ST
Spiller City,St,Zip:	WHITESTONE, NY
Spiller County:	001
Spiller Contact:	RICH FINKELSTEIN
Spiller Phone:	(516) 935-5481
Spiller Extention:	Not reported
DEC Region:	2
DER Facility ID:	104323
DEC Memo:	Prior to Sept, 2004 data translation this spill Lead_DEC Field was "ROMMEL"1/16/03 - AUSTIN, DDO - TTF LETTER SENT TO RICHARD FINKELSTEIN12/2/2003 transferred from Sangesland to

GETTY GAS (Continued) **S105997926**

Rommel07/14/04Site consolidated under spill number 0402433.See 0402433 for status. Rommel
Remarks: bleived to be tank #2 - customer was advised not to put any more fuel in the tank - caller's co is not going to uncover - unk further info

Material:
Site ID: 120128
Operable Unit ID: 861685
Operable Unit: 01
Material ID: 513824
Material Code: 0009
Material Name: Gasoline
Case No.: Not reported
Material FA: Petroleum
Quantity: 0
Units: Gallons
Recovered: No
Resource Affected: Not reported
Oxygenate: False

Tank Test:
Site ID: 120128
Spill Tank Test: 1527949
Tank Number: Not reported
Tank Size: 2000
Test Method: 03
Leak Rate: 0
Gross Fail: F
Modified By: Spills
Last Modified: 10/1/2004
Test Method: Horner EZ Check I or II

Site ID: 120130
Spill Number/Closed Date: 0402801 / Not Reported
Spill Date: 6/14/2004
Spill Cause: Tank Test Failure
Spill Source: Unknown
Spill Class: Possible release with minimal potential for fire or hazard or Known release with no damage. DEC Response. Willing Responsible Party. Corrective action taken.
Cleanup Ceased: 9/14/2007
Cleanup Meets Standard: False
SWIS: 4101
Investigator: SKCARLSO
Referred To: DELAY - OWNER FROM AREA AFFECTED BY HURRICANE SAND
Reported to Dept: 6/14/2004
CID: 444
Water Affected: Not reported
Spill Notifier: Responsible Party
Last Inspection: Not reported
Recommended Penalty: False
UST Involvement: False
Remediation Phase: 1
Date Entered In Computer: 6/14/2004
Spill Record Last Update: 12/3/2012

GETTY GAS (Continued) **S105997926**

Spiller Name:	RISCHARD FINKLESTEIN
Spiller Company:	Not reported
Spiller Address:	17-46 CLINTONVILLE ST
Spiller City,St,Zip:	WHITESTONE, NY
Spiller County:	001
Spiller Contact:	RISCHARD FINKLESTEIN
Spiller Phone:	(718) 767-2699
Spiller Extention:	Not reported
DEC Region:	2
DER Facility ID:	104323
DEC Memo:	Prior to Sept, 2004 data translation this spill Lead_DEC Field was "KRIMGOLD"Determined site was Getty - therefore DEC lead switched to VoughtGetty site managed by Vought.4/20/05-Vought-See also closed spill #s: 0210440, 9414561 and 0402433 at same location. Vought called Bill Klein (Franklin 718-762-5200). Bill Klein stated that work was done for ART (Bob Acaro 718-234-0024). Vought called Richard Finklestein (718-767-2699) and left message with Jatar Singh (who indicated that tanks were going to be removed)to have Finklestein return call. Vought called 516-935-5481 (number on PBS registration) and left message to return call to DEC. Vought sent letter requiring: 1)islolation and retesting of tank or tank removal (standard tank testing letter) 2)if tanks were removed then endpoint sampling, groundwater sampling, locations of remote fills and dispenser islands and site plan. Public school located across Clintonville Street. Site address may also be known as 1746 154th Street.4/21/05-Vought-Received message from Finkelstein (516-935-5481). Vought returned his call and left message to return call.08/31/2005 - Feng - Transferred from Vought to Feng.2/13/2006 - Feng - Spoke with Connie from Richard Finklestein's office. She stated that they are working on to get the report. The consultant who handled the project passed away. She hope would get the report in the next few weeks. emailed (speedymart1746@aol.com) for Feng's contact information. 2/23/2006 - Feng - Call from Patty (Environmental Management) indicated 3 large tanks were pulled and tank closure report will be done in next few weeks. There might be 10 more 550-gallon USTs abandoned onsite without registration. She is trying to find more information on these USTs. (RJF)8/15/2006 - Feng - Tank Closure Report, dated 6/16/2006, by Environmental Management Solution (EMI). 1 (4,000-gallon) gasoline single walled UST, 2 (2,000-gallon) gasoline single walled USTs, 2 dispenser islands and associated underground piping, 8 (550-gallon) gasoline USTs, 1 (550-gallon) waste oil UST and 1 (550-gallon) heating oil UST were removed off site. New tanks, 1 (10,000-gallon) and 1 (6,000-gallon) gasoline USTs were installed in the same tank pit subsequent to tank removal. 2 new dispenser islands removed during excavation activities were reinstalled in the same area along 154th Street. Impacted soil was removed down to 11 to 12 feet bg throughout the excavation until proximity to the sidewalk along 17th Road, Clintonville Road, 154th Street and the building prevented further removal and total of 15 endpoint samples were collected. Soil contamination found in the endpoint samples, S-4, S-5, S-13 along 154th Street, S-11 and S-12 in the former 8 (550-gallon) tank field. Sent letter to Stop Enterprise and requested an Investigation WorkPlan for groundwater sampling. Letter also faxed to Pat Badding (EMI). (RJF)10/6/2006 - Feng - Spoke to Richard Finklestein. He stated that he talked to the consultant, Pat Badding (EMS) about 5 days before the due date of the work plan, and Pat Badding will be sending the work plan. Mr. Finklestein will

GETTY GAS (Continued) **S105997926**

call the consultant for the status of work plan. (RJF)10/17/2006 - Feng - Call from Mostafa (HydroTech, 631-457-0031). It is not feasible to install wells in the S-4, S-5 and S-13 area due to the pump islands and the canopy. 3 GeoProbe temporary wells will be installed in the sidewalk near the S-4, S-5 and S-13 area. 1 groundwater will be collected from the existing well in the former 4,000-gallon UST area. 1 groundwater will be collected from the existing well in the former 550-gallon USTs area. (RJF)2/16/2007 - Feng - Contacted HydroTech and HydroTech said they don't have this job anymore. Emailed to R. Finklestein and asked for the work plan/report of soil boring/wells installation. (RJF)2/22/2007 - Feng - Spoke to C. Murphy. She had foward the email to Mr. Finklestein and asked him to respond the email. (RJF)Consent order executed 9/14/2007.9/19/2007 - Feng - Spoke with Charlie Schmidgall of Agressive Environmental (631-224-1680). He will submit a work plan for subsurface investigation in a couple days. (RJF) 10/19/2007 - Feng - Reviewed the Investigation Work Plan, submitted by Agressive Environmental, dated 10/3/2007. Spoke with Charles Schmidgall (Agressive Environmental). The new tanks located in the middle of the site. DEC requires one more well to be install in the former tank area. Well screen interval to be at least 4' above water table, 6' below water table. Groundwater sample for 8260/8270 analysis. Soil will be screened with PID. Prior to the installation all utilities will be located and marked out. DEC also requires the investigation report to be included the boring logs, well installation log, sample analyticals, site plan, conclusion and recommendation. (RJF)10/30/2007 - Feng - Revised map with wells location, by email dated 10/22/2007. DEC requires the well, W-6, to be as close as possible to the former tank field area. Sent Charles S. the map with required well location. Approval letter sent to Mr. Richard Finklestein (Stop Enterprise) with the comments of noted in 10/19/2007. (RJF)12/6/2007 - Feng - Reviewed the Subsurface Investigation Phase II - Environmental Assessment, dated 11/29/2007, submitted by Aggressive Environmental. AE has installed 6 monitoring wells onsite. No soil samples were taken. 6 groundwater samples were collected and high concentration of BTEX (max 82,260 ppb) and MTBE (max 159,000 ppb) were detected. Letter to Richard Finklestein (STOP Enterprise). DEC requires 1) Quarterly Monitoring. 2) Sensitive Receptor Survey by 1/25/2008. 3) Supplemental Investigation Work Plan (determine groundwater flow and include the existing USTs in the site plan) by 1/11/2008. (RJF)2/21/2008 - Feng - Reviewed the Site Investigation Work Plan for Follow-up Work, 2/1/2008, by Aggressive Environmental. Comments to AE via email. 1) soil samples needed. 2) Wells screen interval length. 3) additional further offsite delineation including: east and west sidewalk of 154th Street, east and west sidewalk of Clintonville Street, and north sidewalk of 18th Ave. Need a new site plan with the wells location. (RJF)3/14/2008 - Feng - Reviewed the Revised Site Investigation Work Plan for Follow-up work, by Aggressive Environmental. Additional wells were required at further offsite. Revised wells location map is submitted. (RJF)3/17/2008 - Feng - Approve the Revised Site Investigation Work Plan for Follow-up work. 12 wells will be installed. Approval letter to Stop Enterprise. (RJF)3/5/09 - Carlson: Case reassigned to Carlson. Phone number for Aggressive Environmental has been disconnected. Called Mr. Richard Finkelstein at 516-935-5481. No one picked up the phone and there was no answering machine. Called 718-767-2699 and left message with station manager for Mr.

GETTY GAS (Continued) **S105997926**

Finkelstein to return call. 3/9/09 - Carlson: Issued letter to Mr. Finkelstein noting that RIR is overdue. Report required by 4/9/09 or case will be referred to legal for enforcement.3/27/09 - Carlson: Approved extension to June 9, 2009 for RIR submittal.4/20/09 - Carlson: Reviewed revised workplan dated 4/13/09. Six wells are present on site or directly adjacent to the site. Five off-site wells proposed. Sent email requiring a sixth well directly adjacent to the site, to the SE of W-5. Revised workplan due 5/20/09.5/22/09 - Carlson: Approved workplan for installation of 6 monitoring wells. RIR will be submitted 60 days after receipt of DOT sidewalk permit.7/21/09 - Carlson: Received email notification - drilling scheduled for 7/29/09.11/12/09 - Carlson: Reviewed phase II report. LNAPL found in on-site well. Issued letter required a delineation work plan in 30 days, and approved VEFR as an IRM. This site is under a Consent Order with the USEPA.owner: Finkelstein, Richard USEPA: LaReau, Meghan 1/6/10 - Carlson: Received work plan. Plan states upgradient well location not accessible. Emailed Dawn Vought to schedule site meeting to discuss accessibility.1/13/2010 - Carlson: Met with Dawn Vought on site. Well required in driveway if not accessible on sidewalk. Well on 17th road may be moved to school side of street. Revised work plan required in 30 days.2/4/2010 - Carlson: Reviewed 4th Quarter 2009 Update Report. Sheen present in MW3 and MW6. Emailed dawn vought - why haven't EFR/EVR events been initiated yet? Received email from Dawn Vought, owner is broke.2/17/2010 - Carlson: Received revised work plan. Work plan proposed installation of four temporary wells. Sent email - permanent wells required. Revised work plan required.4/20/2010 - Carlson: Reviewed revised work plan dated 3/15/2010. Sent email requiring permanent monitoring wells. Revised work plan due in 30 days.4/21/2010 - Carlson: Received email from dawn vought. Replied to email - two locations may be completed as borings, the other two locations must be completed as monitoring wells, revised work plan required.6/22/2010 - Carlson: Approved revised work plan. Four soil borings to be completed. Two borings to be completed as monitoring wells. RIR due 9/22/2010. 7/7/2010 - Carlson: Spoke to Dawn Vought. 30 day extension granted for RIR submittal - due 10/22/2010.1/11/11 - Breen: Andre handed me a paper copy of a CA Rich investigation report received 11-4-10. This report had been languishing in his incoming pile. This report is not in e-docs. 2/17/11 - Breen: Dis-approval letter sent to Dawn at dvought@rarichinc.com. and to owner Richard Finkelstein via USPS first class. John Urda says he has an enforcement case against the owner, but has not started it yet. If we have something to add, we should let John know. 7/2/12 - Carlson: Spoke to USEPA Joe Martin (212-637-4247). Site is in violation of the consent order. We have not received any recent submittals. Sent email to Legal Divison to enforce the consent order.8/6/12 - Breen: 8-6-12. Consultant Robert Sander called about Clintonville gas station, Spill 0402801, PBS 2-356867. He said that the owner (Finklestein) received strong words from the US Attorney directing him to submit a remediation plan quickly. Robert told me there are 13 wells, one of which has 8-inches of free product and one across the street with traces of FP. I passed this information along to Sarah. 8/7/12 - Carlson: Replied to Robert Sander at Maximum Env. They received a violation letter from Attorney General's office. Sent email requiring submission of a quarterly report in 21 days and RAP in 51 days. Weekly recovery should be initiated if LNAPL is present.8/9/12 - Carlson: Spoke to Robert Sander, LNAPL in two wells, weekly gauging and recovery initiated. He

GETTY GAS (Continued) **S105997926**

proposed to install two 4'' recovery wells. He will send brief workplan with proposed locations and well design. He will send update report and workplan.8/20/12 - Carlson: Reviewed 8/13/12 letter/report. LNAPL in three wells. Wells sampled on 7/18/12. Drafted letter requiring RAWP, weekly recovery, and quarterly reporting. 9/20/12 - Carlson: Reviewed weekly gauging/recovery results and letter report dated 9/14/12. Report proposed installation of one 4" recovery well and four 1" piezometer wells. Proposed a pilot test VEFR event and measurement of ROI during VEFR event. Sent email to Robert Sander - revised site plan required with locations of proposed wells. Are 1" piezometers temporary or permanent wells? Revised site plan due in 10 days.9/27/12 - Carlson: Reviewed revised site plan submitted on 9/24/12. Four permanent 1" piezometer wells proposed to be installed just for the pilot test. Sent email: they don't need to install so many additional wells just for the pilot test. Suggested they install the recovery well and one 1" piezometer well, additional 1" wells can be installed later if the they need additional vacuum/pressure data. Received email response - they want to install the four proposed piezometer wells and the proposed recovery well. Reviewed well gauging/recovery data for 9/19/2012 event. No LNAPL present on 9/19/12.10/1/12 - Carlson: Received weekly gauging email. No LNAPL for second week, next week's gauging event to be skipped as per the protocal. 10/10/12 - Carlson: Issued conditional workplan approval letter. Soil sampling required during installation of P4 and RW1.11/30/12 - Carlson: Reviewed the following:10/16/12 email from Mr. Robert Sander. Gauging and recovery data from 10/11/12 submitted. depth to water 7.67 ft bg - 13.29 ft bg. no LNAPL present. 10/24/12 email from Mr. Rober Sander. Well gauging and recovery data from 10/17/12. Notes LNAPL "droplets" present (not measurable) in MW1 and MW3. Samples collected from all wells except MW7 because it purged dry. Gauging visits changed to monthly because no LNAPL (except for droplets?)10/31/12 email from Robert Sander. Next monitoring well gauging scheduled for 11/14/12. Groundwater report from October 2012 sampling event to be submitted. "Planning continues for upcoming Pilot Study".11/8/12 email from Robert Sander. Next monitoring well gauging scheduled for 11/14/12. Groundwater report from October 2012 sampling event to be submitted. Pilot Study delayed due to hurricane Sandy.reviewed groundwater sampling report dated 11/14/12. Wells sampled on 10/17/12. MW7 not sampled because it was dry. Maximum TVOCs 65ppm in MW1. 11/21/12 email from Robert Sander. gauging conducted on 11/14/12. no product found. extension requested for pilot study implementation. 12/3/12 - Carlson: Reviewed quarterly update report dated 11/14/12 and weekly gauging and recovery data. 11/21/12 email from Mr. Robert Sander requested an extension for pilot test study completion. Issued email stating that an extension request should request a specific length of time (30 days, 45 days, ...). VEFR will likely not be too effective because there has been no LNAPL the last several sampling events. Soil samples collected during pilot study must be evaluated, final RAWP must address both soil and gw contamination.

Remarks: TEST WAS DONE ON ISOLATED TANK, FAILED BECUASE OF WATER INTRUSION

Material:

Tank Test:

Site ID: 120130

GETTY GAS (Continued) **S105997926**

Spill Tank Test:	1529355
Tank Number:	2-356857
Tank Size:	2000
Test Method:	03
Leak Rate:	0
Gross Fail:	Not reported
Modified By:	Spills
Last Modified:	10/1/2004
Test Method:	Horner EZ Check I or II

SPILLS:

Facility ID:	0402433
DER Facility ID:	104323
Facility Type:	ER
Site ID:	120129
DEC Region:	2
Spill Date:	6/4/2004
Spill Number/Closed Date:	0402433 / 4/20/2005
Spill Cause:	Equipment Failure
Spill Class:	Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
SWIS:	4101
Investigator:	JBVOUGHT
Referred To:	Not reported
Reported to Dept:	6/4/2004
CID:	407
Water Affected:	Not reported
Spill Source:	Gasoline Station
Spill Notifier:	Other
Cleanup Ceased:	Not reported
Cleanup Meets Std:	False
Last Inspection:	Not reported
Recommended Penalty:	False
UST Trust:	True
Remediation Phase:	0
Date Entered In Computer:	6/4/2004
Spill Record Last Update:	4/20/2005
Spiller Name:	RICHARD FINKLESTIEN
Spiller Company:	GETTY GAS
Spiller Address:	17-46 CLINTONVILLE ST
Spiller City,St,Zip:	WHITESTONE, NY 11356
Spiller Company:	001
Contact Name:	RICHARD FINKLESTIEN
Contact Phone:	(718) 767-2699
DEC Memo:	Prior to Sept, 2004 data translation this spill Lead_DEC Field was "VOUGHT"07/14/04Site consolidated under 0402433.See also 0210440 and 9414561. Rommel4/20/05-Vought-This spill closed and referred to open spill #0402801 at same location.
Remarks:	Cleaning is pending.

Material:

Site ID:	120129
Operable Unit ID:	884116
Operable Unit:	01
Material ID:	490052
Material Code:	0009

GETTY GAS (Continued) **S105997926**

Material Name:	Gasoline
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	2
Units:	Gallons
Recovered:	No
Resource Affected:	Not reported
Oxygenate:	False

Tank Test:

71
NNW
1/4-1/2
0.466 mi.
2463 ft.

3-04 150TH STREET **LTANKS** **S102672034**
3-04 150TH STREET **N/A**
WHITESTONE, NY

Relative:
Lower

Actual:
31 ft.

LTANKS:

Site ID:	288386
Spill Number/Closed Date:	9210722 / 12/16/1992
Spill Date:	12/7/1992
Spill Cause:	Tank Overfill
Spill Source:	Private Dwelling
Spill Class:	Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
Cleanup Ceased:	12/16/1992
Cleanup Meets Standard:	True
SWIS:	4101
Investigator:	KSTANG
Referred To:	Not reported
Reported to Dept:	12/16/1992
CID:	Not reported
Water Affected:	Not reported
Spill Notifier:	Other
Last Inspection:	Not reported
Recommended Penalty:	False
UST Involvement:	False
Remediation Phase:	0
Date Entered In Computer:	12/17/1992
Spill Record Last Update:	9/30/2004
Spiller Name:	Not reported
Spiller Company:	Not reported
Spiller Address:	Not reported
Spiller City,St,Zip:	***Update***, ZZ
Spiller County:	001
Spiller Contact:	Not reported
Spiller Phone:	Not reported
Spiller Extention:	Not reported
DEC Region:	2
DER Facility ID:	233580
DEC Memo:	Prior to Sept, 2004 data translation this spill Lead_DEC Field was "TANG"
Remarks:	CONTAINED IN BASEMENT CLEANUP COMPLETE BY MILRO

Material:

Site ID:	288386

3-04 150TH STREET (Continued) **S102672034**

Operable Unit ID:	977360
Operable Unit:	01
Material ID:	404165
Material Code:	0001A
Material Name:	#2 Fuel Oil
Case No.:	Not reported
Material FA:	Petroleum
Quantity:	5
Units:	Gallons
Recovered:	No
Resource Affected:	Not reported
Oxygenate:	False

Tank Test:

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72 **RESIDENCE** **LTANKS** **S106471882**
SW **14-19 146TH ST.** **N/A**
1/4-1/2 **WHITESTONE, NY**
0.474 mi.
2505 ft.

Relative:
Higher

Actual:
85 ft.

LTANKS:

Site ID:	66596
Spill Number/Closed Date:	0402791 / 2/1/2006
Spill Date:	6/14/2004
Spill Cause:	Tank Test Failure
Spill Source:	Private Dwelling
Spill Class:	Possible release with minimal potential for fire or hazard or Known release with no damage. DEC Response. Willing Responsible Party. Corrective action taken.
Cleanup Ceased:	2/1/2006
Cleanup Meets Standard:	False
SWIS:	4101
Investigator:	JMKRIMGO
Referred To:	Not reported
Reported to Dept:	6/14/2004
CID:	444
Water Affected:	Not reported
Spill Notifier:	Local Agency
Last Inspection:	Not reported
Recommended Penalty:	False
UST Involvement:	False
Remediation Phase:	0
Date Entered In Computer:	6/14/2004
Spill Record Last Update:	2/1/2006
Spiller Name:	ADRIANNA
Spiller Company:	RESDENCE
Spiller Address:	147-19 146TH ST.
Spiller City,St,Zip:	WHITESTONE, NY
Spiller County:	001
Spiller Contact:	ADRIANNA
Spiller Phone:	(917) 678-6543
Spiller Extention:	Not reported
DEC Region:	2
DER Facility ID:	63746
DEC Memo:	Prior to Sept, 2004 data translation this spill Lead_DEC Field was

RESIDENCE (Continued) **S106471882**

"KRIMGOLD"Sent Tank Test Failure letter01/31/06 remedial Bureau E Staff contacted contractor, Dry As A Bone 516.678-5115 to get further information on tank test failure. Left message on answering machine.02/01/06 Staff spoke with Dry as a Bone. They indicated that they only performed tank test and did not do any repair or remedial work. Dry as a Bone Rep provided necessary information to close spill.
Not reported
Remarks: Not reported

Material:

Tank Test:
Site ID: 66596
Spill Tank Test: 1529354
Tank Number: 001
Tank Size: 550
Test Method: 03
Leak Rate: 0
Gross Fail: Not reported
Modified By: Spills
Last Modified: 10/1/2004
Test Method: Horner EZ Check I or II

Count: 21 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
COLLEGE POINT	1014396847	CON EDISON	123 9TH AVE	11356	RCRA-CESQG
COLLEGE POINT	S105841790	PYROLYTIC TECHNOLOGIES CORP.	PYRO TECH COLLEGE PT	11356	SWF/LF
QUEENS COUNTY	S112139919	CONSOLIDATED EDISON CO	#6802 1 STATE ST PLAZA		MANIFEST
QUEENS COUNTY	S112139726	CONSOLIDATED EDISON CO	10TH ST AND AVE B VAULT 6200		MANIFEST
QUEENS COUNTY	S112139733	CONSOLIDATED EDISON CO	10TH AVENUE MH4136		MANIFEST
QUEENS COUNTY	S112140247	CONSOLIDATED EDISON CO	MH22464 11TH ST & 36 AVE		MANIFEST
QUEENS COUNTY	S112139579	CONSOLIDATED EDISON CO	65 EAST 12TH STREET V5493		MANIFEST
QUEENS COUNTY	S112139489	NYNEX	WEST 12TH ST AND CONV OF W 4TH		MANIFEST
QUEENS COUNTY	S112140102	CONSOLIDATED EDISON CO	MH47162 12TH AVE & 56 ST		MANIFEST
QUEENS COUNTY	S112209750	CONSOLIDATED EDISON CO #3000	ROUTE 133 AND STONE		MANIFEST
QUEENS COUNTY	S112140018	CONSOLIDATED EDISON CO	V7106 155 N 11TH ST		MANIFEST
QUEENS COUNTY	S112139725	CONSOLIDATED EDISON CO	18TH ST - 11TH AVE MH3761		MANIFEST
QUEENS COUNTY	S112139837	CONSOLIDATED EDISON CO	38TH AND 39TH ST AND 10TH AVE		MANIFEST
QUEENS COUNTY	S112209732	CONSOLIDATED EDISON CO 4294	50TH STREET AND 10TH AVENUE		MANIFEST
QUEENS COUNTY	S112140017	CONSOLIDATED EDISON CO	MH 58355 - 11TH AVE		MANIFEST
QUEENS COUNTY	S112139926	CONSOLIDATED EDISON CO	V0730 9TH AVE & 162 ST		MANIFEST
QUEENS COUNTY	S112140223	CONSOLIDATED EDISON CO	16642 35 AVE & 9TH ST		MANIFEST
QUEENS COUNTY	S112140070	CONSOLIDATED EDISON CO	TM1025 W 9TH ST & SMHH ST		MANIFEST
QUEENS COUNTY	S112139872	CONSOLIDATED EDISON CO	V8319 W17TH ST & 9TH AVE		MANIFEST
WHITESTONE	1004755521	WHITESTONE AUTO REPAIR	1230 CLINTONVILLE ST	11357	RCRA NonGen / NLR, FINDS
WHITESTONE	1009243402	CON ED WHITESTONE EXPWY EAST	SERVICE RD & 10TH AVE	11357	MANIFEST

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 02/01/2013
Date Data Arrived at EDR: 03/01/2013
Date Made Active in Reports: 03/13/2013
Number of Days to Update: 12

Source: EPA
Telephone: N/A
Last EDR Contact: 05/09/2013
Next Scheduled EDR Contact: 07/22/2013
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 02/01/2013
Date Data Arrived at EDR: 03/01/2013
Date Made Active in Reports: 03/13/2013
Number of Days to Update: 12

Source: EPA
Telephone: N/A
Last EDR Contact: 05/09/2013
Next Scheduled EDR Contact: 07/22/2013
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal Delisted NPL site list

DELISTED NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 02/01/2013
Date Data Arrived at EDR: 03/01/2013
Date Made Active in Reports: 03/13/2013
Number of Days to Update: 12

Source: EPA
Telephone: N/A
Last EDR Contact: 05/09/2013
Next Scheduled EDR Contact: 07/22/2013
Data Release Frequency: Quarterly

Federal CERCLIS list

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 02/04/2013
Date Data Arrived at EDR: 03/01/2013
Date Made Active in Reports: 03/13/2013
Number of Days to Update: 12

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 04/05/2013
Next Scheduled EDR Contact: 06/10/2013
Data Release Frequency: Quarterly

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 07/31/2012
Date Data Arrived at EDR: 10/09/2012
Date Made Active in Reports: 12/20/2012
Number of Days to Update: 72

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 04/10/2013
Next Scheduled EDR Contact: 07/22/2013
Data Release Frequency: Varies

Federal CERCLIS NFRAP site List

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Date of Government Version: 02/05/2013
Date Data Arrived at EDR: 03/01/2013
Date Made Active in Reports: 03/13/2013
Number of Days to Update: 12

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 04/05/2013
Next Scheduled EDR Contact: 03/11/2013
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 02/12/2013
Date Data Arrived at EDR: 02/21/2013
Date Made Active in Reports: 02/27/2013
Number of Days to Update: 6

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 05/02/2013
Next Scheduled EDR Contact: 07/15/2013
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 02/12/2013
Date Data Arrived at EDR: 02/15/2013
Date Made Active in Reports: 02/27/2013
Number of Days to Update: 12

Source: Environmental Protection Agency
Telephone: (212) 637-3660
Last EDR Contact: 05/02/2013
Next Scheduled EDR Contact: 07/15/2013
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 02/12/2013
Date Data Arrived at EDR: 02/15/2013
Date Made Active in Reports: 02/27/2013
Number of Days to Update: 12

Source: Environmental Protection Agency
Telephone: (212) 637-3660
Last EDR Contact: 05/02/2013
Next Scheduled EDR Contact: 07/15/2013
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 02/12/2013
Date Data Arrived at EDR: 02/15/2013
Date Made Active in Reports: 02/27/2013
Number of Days to Update: 12

Source: Environmental Protection Agency
Telephone: (212) 637-3660
Last EDR Contact: 05/02/2013
Next Scheduled EDR Contact: 07/15/2013
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 02/12/2013
Date Data Arrived at EDR: 02/15/2013
Date Made Active in Reports: 02/27/2013
Number of Days to Update: 12

Source: Environmental Protection Agency
Telephone: (212) 637-3660
Last EDR Contact: 05/02/2013
Next Scheduled EDR Contact: 07/15/2013
Data Release Frequency: Varies

Federal institutional controls / engineering controls registries

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 03/14/2013
Date Data Arrived at EDR: 03/29/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 42

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 03/11/2013
Next Scheduled EDR Contact: 06/24/2013
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 03/14/2013
Date Data Arrived at EDR: 03/29/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 42

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 03/11/2013
Next Scheduled EDR Contact: 06/24/2013
Data Release Frequency: Varies

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 12/09/2005
Date Data Arrived at EDR: 12/11/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 31

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 02/18/2013
Next Scheduled EDR Contact: 06/03/2013
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 01/17/2013
Date Made Active in Reports: 02/15/2013
Number of Days to Update: 29

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 04/02/2013
Next Scheduled EDR Contact: 07/15/2013
Data Release Frequency: Annually

State- and tribal - equivalent CERCLIS

SHWS: Inactive Hazardous Waste Disposal Sites in New York State

Referred to as the State Superfund Program, the Inactive Hazardous Waste Disposal Site Remedial Program is the cleanup program for inactive hazardous waste sites and now includes hazardous substance sites

Date of Government Version: 03/21/2013
Date Data Arrived at EDR: 03/21/2013
Date Made Active in Reports: 05/03/2013
Number of Days to Update: 43

Source: Department of Environmental Conservation
Telephone: 518-402-9622
Last EDR Contact: 03/21/2013
Next Scheduled EDR Contact: 06/03/2013
Data Release Frequency: Annually

VAPOR REOPENED: Vapor Intrustion Legacy Site List

New York is currently re-evaluating previous assumptions and decisions regarding the potential for soil vapor intrusion exposures at sites. As a result, all past, current, and future contaminated sites will be evaluated to determine whether these sites have the potential for exposures related to soil vapor intrusion.

Date of Government Version: 01/01/2013
Date Data Arrived at EDR: 02/20/2013
Date Made Active in Reports: 03/15/2013
Number of Days to Update: 23

Source: Department of Environmenal Conservation
Telephone: 518-402-9814
Last EDR Contact: 02/20/2013
Next Scheduled EDR Contact: 06/03/2013
Data Release Frequency: Varies

State and tribal landfill and/or solid waste disposal site lists

SWF/LF: Facility Register

Solid Waste Facilities/Landfill Sites. SWF/LF type records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. Depending on the state, these may be active or inactive facilities or open dumps that failed to meet RCRA Subtitle D Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 01/07/2013
Date Data Arrived at EDR: 01/09/2013
Date Made Active in Reports: 01/16/2013
Number of Days to Update: 7

Source: Department of Environmental Conservation
Telephone: 518-457-2051
Last EDR Contact: 04/08/2013
Next Scheduled EDR Contact: 07/22/2013
Data Release Frequency: Semi-Annually

State and tribal leaking storage tank lists

LTANKS: Spills Information Database

Leaking Storage Tank Incident Reports. These records contain an inventory of reported leaking storage tank incidents reported from 4/1/86 through the most recent update. They can be either leaking underground storage tanks or leaking aboveground storage tanks. The causes of the incidents are tank test failures, tank failures or tank overfills.

Date of Government Version: 04/05/2013
Date Data Arrived at EDR: 04/05/2013
Date Made Active in Reports: 05/08/2013
Number of Days to Update: 33

Source: Department of Environmental Conservation
Telephone: 518-402-9549
Last EDR Contact: 04/05/2013
Next Scheduled EDR Contact: 06/03/2013
Data Release Frequency: Varies

HIST LTANKS: Listing of Leaking Storage Tanks

A listing of leaking underground and aboveground storage tanks. The causes of the incidents are tank test failures, tank failures or tank overfills. In 2002, the Department of Environmental Conservation stopped providing updates to its original Spills Information Database. This database includes fields that are no longer available from the NYDEC as of January 1, 2002. Current information may be found in the NY LTANKS database. Department of Environmental Conservation.

Date of Government Version: 01/01/2002
Date Data Arrived at EDR: 07/08/2005
Date Made Active in Reports: 07/14/2005
Number of Days to Update: 6

Source: Department of Environmental Conservation
Telephone: 518-402-9549
Last EDR Contact: 07/07/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 02/05/2013
Date Data Arrived at EDR: 02/06/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 65

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Quarterly

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 08/27/2012
Date Data Arrived at EDR: 08/28/2012
Date Made Active in Reports: 10/16/2012
Number of Days to Update: 49
Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Quarterly

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 09/12/2011
Date Data Arrived at EDR: 09/13/2011
Date Made Active in Reports: 11/11/2011
Number of Days to Update: 59
Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 02/28/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 43
Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Varies

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 09/28/2012
Date Data Arrived at EDR: 11/01/2012
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 162
Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 05/01/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 02/06/2013
Date Data Arrived at EDR: 02/08/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 63
Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Semi-Annually

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 03/01/2013
Date Data Arrived at EDR: 03/01/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 42
Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Quarterly

State and tribal registered storage tank lists

TANKS: Storage Tank Faciliy Listing
This database contains records of facilities that are or have been regulated under Bulk Storage Program. Tank information for these facilities may not be releasable by the state agency.

Date of Government Version: 04/02/2013
Date Data Arrived at EDR: 04/03/2013
Date Made Active in Reports: 05/03/2013
Number of Days to Update: 30

Source: Department of Environmental Conservation
Telephone: 518-402-9543
Last EDR Contact: 04/03/2013
Next Scheduled EDR Contact: 07/15/2013
Data Release Frequency: Quarterly

UST: Petroleum Bulk Storage (PBS) Database
Facilities that have petroleum storage capacities in excess of 1,100 gallons and less than 400,000 gallons.

Date of Government Version: 04/02/2013
Date Data Arrived at EDR: 04/03/2013
Date Made Active in Reports: 05/03/2013
Number of Days to Update: 30

Source: Department of Environmental Conservation
Telephone: 518-402-9549
Last EDR Contact: 04/03/2013
Next Scheduled EDR Contact: 07/15/2013
Data Release Frequency: No Update Planned

CBS UST: Chemical Bulk Storage Database
Facilities that store regulated hazardous substances in underground tanks of any size

Date of Government Version: 01/01/2002
Date Data Arrived at EDR: 02/20/2002
Date Made Active in Reports: 03/22/2002
Number of Days to Update: 30

Source: NYSDEC
Telephone: 518-402-9549
Last EDR Contact: 10/24/2005
Next Scheduled EDR Contact: 01/23/2006
Data Release Frequency: No Update Planned

MOSF UST: Major Oil Storage Facilities Database
Facilities that may be onshore facilities or vessels, with petroleum storage capacities of 400,000 gallons or greater.

Date of Government Version: 01/01/2002
Date Data Arrived at EDR: 02/20/2002
Date Made Active in Reports: 03/22/2002
Number of Days to Update: 30

Source: NYSDEC
Telephone: 518-402-9549
Last EDR Contact: 07/25/2005
Next Scheduled EDR Contact: 10/24/2005
Data Release Frequency: Varies

AST: Petroleum Bulk Storage
Registered Aboveground Storage Tanks.

Date of Government Version: 04/02/2013
Date Data Arrived at EDR: 04/03/2013
Date Made Active in Reports: 05/03/2013
Number of Days to Update: 30

Source: Department of Environmental Conservation
Telephone: 518-402-9549
Last EDR Contact: 04/03/2013
Next Scheduled EDR Contact: 07/15/2013
Data Release Frequency: No Update Planned

CBS AST: Chemical Bulk Storage Database
Facilities that store regulated hazardous substances in aboveground tanks with capacities of 185 gallons or greater, and/or in underground tanks of any size.

Date of Government Version: 01/01/2002
Date Data Arrived at EDR: 02/20/2002
Date Made Active in Reports: 03/22/2002
Number of Days to Update: 30

Source: NYSDEC
Telephone: 518-402-9549
Last EDR Contact: 07/25/2005
Next Scheduled EDR Contact: 10/24/2005
Data Release Frequency: No Update Planned

MOSF AST: Major Oil Storage Facilities Database
Facilities that may be onshore facilities or vessels, with petroleum storage capacities of 400,000 gallons or greater.

Date of Government Version: 01/01/2002
Date Data Arrived at EDR: 02/20/2002
Date Made Active in Reports: 03/22/2002
Number of Days to Update: 30

Source: NYSDEC
Telephone: 518-402-9549
Last EDR Contact: 07/25/2005
Next Scheduled EDR Contact: 10/24/2005
Data Release Frequency: No Update Planned

CBS: Chemical Bulk Storage Site Listing

These facilities store regulated hazardous substances in aboveground tanks with capacities of 185 gallons or greater, and/or in underground tanks of any size

Date of Government Version: 04/02/2013
Date Data Arrived at EDR: 04/03/2013
Date Made Active in Reports: 05/03/2013
Number of Days to Update: 30

Source: Department of Environmental Conservation
Telephone: 518-402-9549
Last EDR Contact: 04/03/2013
Next Scheduled EDR Contact: 07/15/2013
Data Release Frequency: Quarterly

MOSF: Major Oil Storage Facility Site Listing

These facilities may be onshore facilities or vessels, with petroleum storage capacities of 400,000 gallons or greater.

Date of Government Version: 04/02/2013
Date Data Arrived at EDR: 04/03/2013
Date Made Active in Reports: 05/03/2013
Number of Days to Update: 30

Source: Department of Environmental Conservation
Telephone: 518-402-9549
Last EDR Contact: 04/03/2013
Next Scheduled EDR Contact: 07/15/2013
Data Release Frequency: Quarterly

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 02/06/2013
Date Data Arrived at EDR: 02/08/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 63

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Semi-Annually

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 09/28/2012
Date Data Arrived at EDR: 11/07/2012
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 156

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Varies

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 08/02/2012
Date Data Arrived at EDR: 08/03/2012
Date Made Active in Reports: 11/05/2012
Number of Days to Update: 94

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 05/10/2011
Date Data Arrived at EDR: 05/11/2011
Date Made Active in Reports: 06/14/2011
Number of Days to Update: 34

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Semi-Annually

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 02/28/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 43

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 08/27/2012
Date Data Arrived at EDR: 08/28/2012
Date Made Active in Reports: 10/16/2012
Number of Days to Update: 49

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Quarterly

INDIAN UST R10: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 02/05/2013
Date Data Arrived at EDR: 02/06/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 65

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Quarterly

INDIAN UST R9: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 02/21/2013
Date Data Arrived at EDR: 02/26/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 45

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Quarterly

FEMA UST: Underground Storage Tank Listing

A listing of all FEMA owned underground storage tanks.

Date of Government Version: 01/01/2010
Date Data Arrived at EDR: 02/16/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 55

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 04/18/2013
Next Scheduled EDR Contact: 07/29/2013
Data Release Frequency: Varies

State and tribal institutional control / engineering control registries

ENG CONTROLS: Registry of Engineering Controls

Environmental Remediation sites that have engineering controls in place.

Date of Government Version: 03/21/2013
Date Data Arrived at EDR: 03/21/2013
Date Made Active in Reports: 05/03/2013
Number of Days to Update: 43

Source: Department of Environmental Conservation
Telephone: 518-402-9553
Last EDR Contact: 03/21/2013
Next Scheduled EDR Contact: 06/03/2013
Data Release Frequency: Quarterly

INST CONTROL: Registry of Institutional Controls
Environmental Remediation sites that have institutional controls in place.

Date of Government Version: 03/21/2013
Date Data Arrived at EDR: 03/21/2013
Date Made Active in Reports: 05/03/2013
Number of Days to Update: 43
Source: Department of Environmental Conservation
Telephone: 518-402-9553
Last EDR Contact: 03/21/2013
Next Scheduled EDR Contact: 06/03/2013
Data Release Frequency: Quarterly

RES DECL: Restrictive Declarations Listing
A restrictive declaration is a covenant running with the land which binds the present and future owners of the property. As a condition of certain special permits, the City Planning Commission may require an applicant to sign and record a restrictive declaration that places specified conditions on the future use and development of the property. Certain restrictive declarations are indicated by a D on zoning maps.

Date of Government Version: 11/18/2010
Date Data Arrived at EDR: 12/23/2010
Date Made Active in Reports: 02/11/2011
Number of Days to Update: 50
Source: NYC Department of City Planning
Telephone: 212-720-3401
Last EDR Contact: 03/29/2013
Next Scheduled EDR Contact: 07/08/2013
Data Release Frequency: No Update Planned

State and tribal voluntary cleanup sites

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng
A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27
Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 09/28/2012
Date Data Arrived at EDR: 10/02/2012
Date Made Active in Reports: 10/16/2012
Number of Days to Update: 14
Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 04/05/2013
Next Scheduled EDR Contact: 07/15/2013
Data Release Frequency: Varies

VCP: Voluntary Cleanup Agreements
New York established its Voluntary Cleanup Program (VCP) to address the environmental, legal and financial barriers that often hinder the redevelopment and reuse of contaminated properties. The Voluntary Cleanup Program was developed to enhance private sector cleanup of brownfields by enabling parties to remediate sites using private rather than public funds and to reduce the development pressures on "greenfield" sites.

Date of Government Version: 03/21/2013
Date Data Arrived at EDR: 03/21/2013
Date Made Active in Reports: 05/03/2013
Number of Days to Update: 43
Source: Department of Environmental Conservation
Telephone: 518-402-9711
Last EDR Contact: 03/21/2013
Next Scheduled EDR Contact: 06/03/2013
Data Release Frequency: Semi-Annually

State and tribal Brownfields sites

ERP: Environmental Restoration Program Listing
In an effort to spur the cleanup and redevelopment of brownfields, New Yorkers approved a $200 million Environmental Restoration or Brownfields Fund as part of the $1.75 billion Clean Water/Clean Air Bond Act of 1996 (1996 Bond Act). Enhancements to the program were enacted on October 7, 2003. Under the Environmental Restoration Program, the State provides grants to municipalities to reimburse up to 90 percent of on-site eligible costs and 100% of off-site eligible costs for site investigation and remediation activities. Once remediated, the property may then be reused for commercial, industrial, residential or public use.

Date of Government Version: 03/21/2013
Date Data Arrived at EDR: 03/21/2013
Date Made Active in Reports: 05/03/2013
Number of Days to Update: 43

Source: Department of Environmental Conservation
Telephone: 518-402-9622
Last EDR Contact: 03/21/2013
Next Scheduled EDR Contact: 06/03/2013
Data Release Frequency: Quarterly

BROWNFIELDS: Brownfields Site List

A Brownfield is any real property where redevelopment or re-use may be complicated by the presence or potential presence of a hazardous waste, petroleum, pollutant, or contaminant.

Date of Government Version: 03/21/2013
Date Data Arrived at EDR: 03/21/2013
Date Made Active in Reports: 05/03/2013
Number of Days to Update: 43

Source: Department of Environmental Conservation
Telephone: 518-402-9764
Last EDR Contact: 03/21/2013
Next Scheduled EDR Contact: 06/03/2013
Data Release Frequency: Semi-Annually

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 12/10/2012
Date Data Arrived at EDR: 12/11/2012
Date Made Active in Reports: 12/20/2012
Number of Days to Update: 9

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 03/26/2013
Next Scheduled EDR Contact: 07/08/2013
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

ODI: Open Dump Inventory

An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations

A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: No Update Planned

SWRCY: Registered Recycling Facility List

A listing of recycling facilities.

Date of Government Version: 01/07/2013
Date Data Arrived at EDR: 01/09/2013
Date Made Active in Reports: 01/16/2013
Number of Days to Update: 7

Source: Department of Environmental Conservation
Telephone: 518-402-8705
Last EDR Contact: 04/08/2013
Next Scheduled EDR Contact: 07/22/2013
Data Release Frequency: Semi-Annually

SWTIRE: Registered Waste Tire Storage & Facility List
A listing of facilities registered to accept waste tires.

Date of Government Version: 08/01/2006
Date Data Arrived at EDR: 11/15/2006
Date Made Active in Reports: 11/30/2006
Number of Days to Update: 15

Source: Department of Environmental Conservation
Telephone: 518-402-8694
Last EDR Contact: 04/26/2013
Next Scheduled EDR Contact: 08/05/2013
Data Release Frequency: Annually

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands
Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 05/03/2013
Next Scheduled EDR Contact: 08/19/2013
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US CDL: Clandestine Drug Labs
A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 03/04/2013
Date Data Arrived at EDR: 03/12/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 59

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 03/04/2013
Next Scheduled EDR Contact: 06/17/2013
Data Release Frequency: Quarterly

DEL SHWS: Delisted Registry Sites
A database listing of sites delisted from the Registry of Inactive Hazardous Waste Disposal Sites.

Date of Government Version: 03/21/2013
Date Data Arrived at EDR: 03/21/2013
Date Made Active in Reports: 05/03/2013
Number of Days to Update: 43

Source: Department of Environmental Conservation
Telephone: 518-402-9622
Last EDR Contact: 03/21/2013
Next Scheduled EDR Contact: 06/03/2013
Data Release Frequency: Annually

US HIST CDL: National Clandestine Laboratory Register
A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 09/01/2007
Date Data Arrived at EDR: 11/19/2008
Date Made Active in Reports: 03/30/2009
Number of Days to Update: 131

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

Local Lists of Registered Storage Tanks

HIST UST: Historical Petroleum Bulk Storage Database

These facilities have petroleum storage capacities in excess of 1,100 gallons and less than 400,000 gallons. This database contains detailed information per site. It is no longer updated due to the sensitive nature of the information involved. See UST for more current data.

Date of Government Version: 01/01/2002
Date Data Arrived at EDR: 06/02/2006
Date Made Active in Reports: 07/20/2006
Number of Days to Update: 48

Source: Department of Environmental Conservation
Telephone: 518-402-9549
Last EDR Contact: 10/23/2006
Next Scheduled EDR Contact: 01/22/2007
Data Release Frequency: Varies

HIST AST: Historical Petroleum Bulk Storage Database

These facilities have petroleum storage capabilities in excess of 1,100 gallons and less than 400,000 gallons. This database contains detailed information per site. No longer updated due to the sensitive nature of the information involved. See AST for more current data.

Date of Government Version: 01/01/2002
Date Data Arrived at EDR: 06/02/2006
Date Made Active in Reports: 07/20/2006
Number of Days to Update: 48

Source: Department of Environmental Conservation
Telephone: 518-402-9549
Last EDR Contact: 10/23/2006
Next Scheduled EDR Contact: 01/22/2007
Data Release Frequency: No Update Planned

Local Land Records

LIENS 2: CERCLA Lien Information

A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 02/06/2013
Date Data Arrived at EDR: 04/25/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 15

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Varies

LIENS: Spill Liens Information

Lien information from the Oil Spill Fund.

Date of Government Version: 02/22/2013
Date Data Arrived at EDR: 02/27/2013
Date Made Active in Reports: 03/15/2013
Number of Days to Update: 16

Source: Office of the State Comptroller
Telephone: 518-474-9034
Last EDR Contact: 05/13/2013
Next Scheduled EDR Contact: 08/26/2013
Data Release Frequency: Varies

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/27/2013
Number of Days to Update: 55

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 04/02/2013
Next Scheduled EDR Contact: 07/15/2013
Data Release Frequency: Annually

SPILLS: Spills Information Database

Data collected on spills reported to NYSDEC as required by one or more of the following: Article 12 of the Navigation Law, 6 NYCRR Section 613.8 (from PBS regs), or 6 NYCRR Section 595.2 (from CBS regs). It includes spills active as of April 1, 1986, as well as spills occurring since this date.

Date of Government Version: 04/05/2013
Date Data Arrived at EDR: 04/05/2013
Date Made Active in Reports: 05/08/2013
Number of Days to Update: 33

Source: Department of Environmental Conservation
Telephone: 518-402-9549
Last EDR Contact: 04/05/2013
Next Scheduled EDR Contact: 06/03/2013
Data Release Frequency: Varies

HIST SPILLS: SPILLS Database

This database contains records of chemical and petroleum spill incidents. Under State law, petroleum and hazardous chemical spills that can impact the waters of the state must be reported by the spiller (and, in some cases, by anyone who has knowledge of the spills). In 2002, the Department of Environmental Conservation stopped providing updates to its original Spills Information Database. This database includes fields that are no longer available from the NYDEC as of January 1, 2002. Current information may be found in the NY SPILLS database. Department of Environmental Conservation.

Date of Government Version: 01/01/2002
Date Data Arrived at EDR: 07/08/2005
Date Made Active in Reports: 07/14/2005
Number of Days to Update: 6

Source: Department of Environmental Conservation
Telephone: 518-402-9549
Last EDR Contact: 07/07/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SPILLS 80: SPILLS80 data from FirstSearch

Spills 80 includes those spill and release records available from FirstSearch databases prior to 1990. Typically, they may include chemical, oil and/or hazardous substance spills recorded before 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 80.

Date of Government Version: 11/02/2010
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 03/07/2013
Number of Days to Update: 63

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 12/14/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/12/2013
Number of Days to Update: 40

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 02/12/2013
Date Data Arrived at EDR: 02/15/2013
Date Made Active in Reports: 02/27/2013
Number of Days to Update: 12

Source: Environmental Protection Agency
Telephone: (212) 637-3660
Last EDR Contact: 05/02/2013
Next Scheduled EDR Contact: 07/15/2013
Data Release Frequency: Varies

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 07/31/2012
Date Data Arrived at EDR: 08/07/2012
Date Made Active in Reports: 09/18/2012
Number of Days to Update: 42

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 05/07/2013
Next Scheduled EDR Contact: 08/19/2013
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 04/19/2013
Next Scheduled EDR Contact: 07/29/2013
Data Release Frequency: Semi-Annually

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 02/26/2013
Date Made Active in Reports: 03/13/2013
Number of Days to Update: 15

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 03/11/2013
Next Scheduled EDR Contact: 06/24/2013
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 01/15/2013
Date Made Active in Reports: 03/13/2013
Number of Days to Update: 57

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 04/01/2013
Next Scheduled EDR Contact: 07/15/2013
Data Release Frequency: Varies

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 12/18/2012
Date Data Arrived at EDR: 03/13/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 30

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 03/13/2013
Next Scheduled EDR Contact: 06/24/2013
Data Release Frequency: Annually

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 09/14/2010
Date Data Arrived at EDR: 10/07/2011
Date Made Active in Reports: 03/01/2012
Number of Days to Update: 146

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 02/25/2013
Next Scheduled EDR Contact: 06/10/2013
Data Release Frequency: Varies

US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 02/05/2013
Date Data Arrived at EDR: 04/18/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 22

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 03/06/2013
Next Scheduled EDR Contact: 06/17/2013
Data Release Frequency: Semi-Annually

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 09/01/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 131

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 02/26/2013
Next Scheduled EDR Contact: 06/10/2013
Data Release Frequency: Annually

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 09/29/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 64

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 03/28/2013
Next Scheduled EDR Contact: 07/08/2013
Data Release Frequency: Every 4 Years

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 02/25/2013
Next Scheduled EDR Contact: 06/10/2013
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 02/25/2013
Next Scheduled EDR Contact: 06/10/2013
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing

A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing

A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77
Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 07/20/2011
Date Data Arrived at EDR: 11/10/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 61
Source: Environmental Protection Agency
Telephone: 202-564-5088
Last EDR Contact: 04/15/2013
Next Scheduled EDR Contact: 07/29/2013
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 11/01/2012
Date Data Arrived at EDR: 01/16/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 114
Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 04/19/2013
Next Scheduled EDR Contact: 07/29/2013
Data Release Frequency: Annually

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 06/21/2011
Date Data Arrived at EDR: 07/15/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 60
Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 03/11/2013
Next Scheduled EDR Contact: 06/24/2013
Data Release Frequency: Quarterly

RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 04/09/2013
Date Data Arrived at EDR: 04/11/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 29

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 04/11/2013
Next Scheduled EDR Contact: 07/22/2013
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 10/23/2011
Date Data Arrived at EDR: 12/13/2011
Date Made Active in Reports: 03/01/2012
Number of Days to Update: 79

Source: EPA
Telephone: (212) 637-3000
Last EDR Contact: 03/12/2013
Next Scheduled EDR Contact: 06/24/2013
Data Release Frequency: Quarterly

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 05/08/2012
Date Data Arrived at EDR: 05/25/2012
Date Made Active in Reports: 07/10/2012
Number of Days to Update: 46

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 02/26/2013
Date Made Active in Reports: 04/19/2013
Number of Days to Update: 52

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 02/26/2013
Next Scheduled EDR Contact: 06/10/2013
Data Release Frequency: Biennially

HSWDS: Hazardous Substance Waste Disposal Site Inventory

The list includes any known or suspected hazardous substance waste disposal sites. Also included are sites delisted from the Registry of Inactive Hazardous Waste Disposal Sites and non-Registry sites that U.S. EPA Preliminary Assessment (PA) reports or Site Investigation (SI) reports were prepared. Hazardous Substance Waste Disposal Sites are eligible to be Superfund sites now that the New York State Superfund has been refinanced and changed. This means that the study inventory has served its purpose and will no longer be maintained as a separate entity. The last version of the study inventory is frozen in time. The sites on the study will not automatically be made Superfund sites, rather each site will be further evaluated for listing on the Registry. So overtime they will be added to the registry or not.

Date of Government Version: 01/01/2003
Date Data Arrived at EDR: 10/20/2006
Date Made Active in Reports: 11/30/2006
Number of Days to Update: 41

Source: Department of Environmental Conservation
Telephone: 518-402-9564
Last EDR Contact: 05/26/2009
Next Scheduled EDR Contact: 08/24/2009
Data Release Frequency: No Update Planned

UIC: Underground Injection Control Wells

A listing of enhanced oil recovery underground injection wells.

Date of Government Version: 03/11/2013
Date Data Arrived at EDR: 03/13/2013
Date Made Active in Reports: 05/03/2013
Number of Days to Update: 51

Source: Department of Environmental Conservation
Telephone: 518-402-8056
Last EDR Contact: 03/13/2013
Next Scheduled EDR Contact: 06/24/2013
Data Release Frequency: Quarterly

NY MANIFEST: Facility and Manifest Data

Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 02/01/2013
Date Data Arrived at EDR: 02/07/2013
Date Made Active in Reports: 03/15/2013
Number of Days to Update: 36

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 05/09/2013
Next Scheduled EDR Contact: 08/19/2013
Data Release Frequency: Annually

DRYCLEANERS: Registered Drycleaners

A listing of all registered drycleaning facilities.

Date of Government Version: 04/19/2013
Date Data Arrived at EDR: 04/19/2013
Date Made Active in Reports: 05/03/2013
Number of Days to Update: 14

Source: Department of Environmental Conservation
Telephone: 518-402-8403
Last EDR Contact: 03/18/2013
Next Scheduled EDR Contact: 07/01/2013
Data Release Frequency: Varies

SPDES: State Pollutant Discharge Elimination System

New York State has a state program which has been approved by the United States Environmental Protection Agency for the control of wastewater and stormwater discharges in accordance with the Clean Water Act. Under New York State law the program is known as the State Pollutant Discharge Elimination System (SPDES) and is broader in scope than that required by the Clean Water Act in that it controls point source discharges to groundwaters as well as surface waters.

Date of Government Version: 01/28/2013
Date Data Arrived at EDR: 01/30/2013
Date Made Active in Reports: 03/15/2013
Number of Days to Update: 44

Source: Department of Environmental Conservation
Telephone: 518-402-8233
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 07/29/2013
Data Release Frequency: No Update Planned

AIRS: Air Emissions Data

Point source emissions inventory data.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 08/02/2012
Date Made Active in Reports: 10/03/2012
Number of Days to Update: 62

Source: Department of Environmental Conservation
Telephone: 518-402-8452
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Annually

E DESIGNATION: E DESIGNATION SITE LISTING

The (E (Environmental)) designation would ensure that sampling and remediation take place on the subject properties, and would avoid any significant impacts related to hazardous materials at these locations. The (E) designations would require that the fee owner of the sites conduct a testing and sampling protocol, and remediation where appropriate, to the satisfaction of the NYCDEP before the issuance of a building permit by the Department of Buildings pursuant to the provisions of Section 11-15 of the Zoning Resolution (Environmental Requirements). The (E) designations also include a mandatory construction-related health and safety plan which must be approved by NYCDEP.

Date of Government Version: 03/20/2013
Date Data Arrived at EDR: 03/29/2013
Date Made Active in Reports: 05/03/2013
Number of Days to Update: 35

Source: New York City Department of City Planning
Telephone: 718-595-6658
Last EDR Contact: 03/26/2013
Next Scheduled EDR Contact: 07/08/2013
Data Release Frequency: Varies

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 12/08/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 34

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 04/19/2013
Next Scheduled EDR Contact: 07/29/2013
Data Release Frequency: Semi-Annually

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 03/07/2011
Date Data Arrived at EDR: 03/09/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 54

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 05/06/2013
Next Scheduled EDR Contact: 08/05/2013
Data Release Frequency: Varies

US AIRS MINOR: Air Facility System Data

A listing of minor source facilities.

Date of Government Version: 01/23/2013
Date Data Arrived at EDR: 01/30/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-5962
Last EDR Contact: 04/01/2013
Next Scheduled EDR Contact: 07/15/2013
Data Release Frequency: Annually

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 04/19/2013
Next Scheduled EDR Contact: 07/29/2013
Data Release Frequency: N/A

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 02/18/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 81
Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 05/10/2013
Next Scheduled EDR Contact: 08/26/2013
Data Release Frequency: Quarterly

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 03/04/2013
Date Data Arrived at EDR: 03/15/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 56
Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 02/19/2013
Next Scheduled EDR Contact: 06/03/2013
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 11/11/2011
Date Data Arrived at EDR: 05/18/2012
Date Made Active in Reports: 05/25/2012
Number of Days to Update: 7
Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 02/15/2013
Next Scheduled EDR Contact: 05/27/2013
Data Release Frequency: Varies

COAL ASH: Coal Ash Disposal Site Listing

A listing of coal ash disposal site locations.

Date of Government Version: 01/08/2013
Date Data Arrived at EDR: 01/09/2013
Date Made Active in Reports: 01/16/2013
Number of Days to Update: 7
Source: Department of Environmental Conservation
Telephone: 518-402-8660
Last EDR Contact: 04/08/2013
Next Scheduled EDR Contact: 07/22/2013
Data Release Frequency: Varies

COAL ASH DOE: Sleam-Electric Plan Operation Data

A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 04/18/2013
Next Scheduled EDR Contact: 07/29/2013
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List

A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 08/17/2010
Date Data Arrived at EDR: 01/03/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 77

Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 03/15/2013
Next Scheduled EDR Contact: 06/24/2013
Data Release Frequency: Varies

Financial Assurance 2: Financial Assurance Information Listing

A listing of financial assurance information for hazardous waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 10/31/2008
Date Data Arrived at EDR: 11/25/2008
Date Made Active in Reports: 12/11/2008
Number of Days to Update: 16

Source: Department of Environmental Conservation
Telephone: 518-402-8712
Last EDR Contact: 04/08/2013
Next Scheduled EDR Contact: 07/22/2013
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing

Financial assurance information.

Date of Government Version: 04/11/2013
Date Data Arrived at EDR: 04/11/2013
Date Made Active in Reports: 05/03/2013
Number of Days to Update: 22

Source: Department of Environmental Conservation
Telephone: 518-402-8660
Last EDR Contact: 04/08/2013
Next Scheduled EDR Contact: 07/22/2013
Data Release Frequency: Quarterly

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 01/29/2013
Date Data Arrived at EDR: 02/14/2013
Date Made Active in Reports: 02/27/2013
Number of Days to Update: 13

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 04/08/2013
Next Scheduled EDR Contact: 07/22/2013
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites

A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)

The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 01/23/2013
Date Data Arrived at EDR: 01/30/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-5962
Last EDR Contact: 04/01/2013
Next Scheduled EDR Contact: 07/15/2013
Data Release Frequency: Annually

PRP: Potentially Responsible Parties
A listing of verified Potentially Responsible Parties

Date of Government Version: 12/02/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 03/13/2013
Number of Days to Update: 69

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 04/04/2013
Next Scheduled EDR Contact: 07/15/2013
Data Release Frequency: Quarterly

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 02/01/2011
Date Data Arrived at EDR: 10/19/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 83

Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 05/03/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Varies

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR US Hist Auto Stat: EDR Exclusive Historic Gas Stations
EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR US Hist Cleaners: EDR Exclusive Historic Dry Cleaners
EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR US Hist Cleaners: EDR Proprietary Historic Dry Cleaners - Cole

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: N/A
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR US Hist Auto Stat: EDR Proprietary Historic Gas Stations - Cole

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: N/A
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

CORTLAND COUNTY:

Cortland County Storage Tank Listing
A listing of aboveground storage tank sites located in Cortland County.

Date of Government Version: 03/12/2013
Date Data Arrived at EDR: 03/13/2013
Date Made Active in Reports: 05/03/2013
Number of Days to Update: 51

Source: Cortland County Health Department
Telephone: 607-753-5035
Last EDR Contact: 05/06/2013
Next Scheduled EDR Contact: 08/19/2013
Data Release Frequency: Quarterly

Cortland County Storage Tank Listing
A listing of underground storage tank sites located in Cortland County.

Date of Government Version: 03/12/2013
Date Data Arrived at EDR: 03/13/2013
Date Made Active in Reports: 05/03/2013
Number of Days to Update: 51

Source: Cortland County Health Department
Telephone: 607-753-5035
Last EDR Contact: 05/06/2013
Next Scheduled EDR Contact: 08/19/2013
Data Release Frequency: Quarterly

NASSAU COUNTY:

Registered Tank Database
A listing of aboveground storage tank sites located in Nassau County.

Date of Government Version: 05/21/2003
Date Data Arrived at EDR: 05/27/2003
Date Made Active in Reports: 06/09/2003
Number of Days to Update: 13

Source: Nassau County Health Department
Telephone: 516-571-3314
Last EDR Contact: 04/08/2013
Next Scheduled EDR Contact: 07/22/2013
Data Release Frequency: No Update Planned

Storage Tank Database
A listing of aboveground storage tank sites located in Nassau County.

Date of Government Version: 02/15/2011
Date Data Arrived at EDR: 02/23/2011
Date Made Active in Reports: 03/29/2011
Number of Days to Update: 34

Source: Nassau County Office of the Fire Marshal
Telephone: 516-572-1000
Last EDR Contact: 05/03/2013
Next Scheduled EDR Contact: 08/19/2013
Data Release Frequency: Varies

Registered Tank Database

A listing of underground storage tank sites located in Nassau County.

Date of Government Version: 05/21/2003
Date Data Arrived at EDR: 05/27/2003
Date Made Active in Reports: 06/09/2003
Number of Days to Update: 13

Source: Nassau County Health Department
Telephone: 516-571-3314
Last EDR Contact: 04/08/2013
Next Scheduled EDR Contact: 07/22/2013
Data Release Frequency: No Update Planned

Storage Tank Database

A listing of underground storage tank sites located in Nassau County.

Date of Government Version: 02/15/2011
Date Data Arrived at EDR: 02/23/2011
Date Made Active in Reports: 03/29/2011
Number of Days to Update: 34

Source: Nassau County Office of the Fire Marshal
Telephone: 516-572-1000
Last EDR Contact: 05/03/2013
Next Scheduled EDR Contact: 08/19/2013
Data Release Frequency: Varies

ROCKLAND COUNTY:

Petroleum Bulk Storage Database

A listing of aboveground storage tank sites located in Rockland County.

Date of Government Version: 04/08/2013
Date Data Arrived at EDR: 04/10/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 30

Source: Rockland County Health Department
Telephone: 914-364-2605
Last EDR Contact: 03/11/2013
Next Scheduled EDR Contact: 06/24/2013
Data Release Frequency: Quarterly

Petroleum Bulk Storage Database

A listing of underground storage tank sites located in Rockland County.

Date of Government Version: 04/08/2013
Date Data Arrived at EDR: 04/10/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 30

Source: Rockland County Health Department
Telephone: 914-364-2605
Last EDR Contact: 03/11/2013
Next Scheduled EDR Contact: 06/24/2013
Data Release Frequency: Quarterly

SUFFOLK COUNTY:

Storage Tank Database

A listing of aboveground storage tank sites located in Suffolk County.

Date of Government Version: 09/13/2006
Date Data Arrived at EDR: 01/11/2007
Date Made Active in Reports: 02/07/2007
Number of Days to Update: 27

Source: Suffolk County Department of Health Services
Telephone: 631-854-2521
Last EDR Contact: 05/03/2013
Next Scheduled EDR Contact: 08/19/2013
Data Release Frequency: Annually

Storage Tank Database

A listing of underground storage tank sites located in Suffolk County.

Date of Government Version: 09/13/2006
Date Data Arrived at EDR: 01/11/2007
Date Made Active in Reports: 02/07/2007
Number of Days to Update: 27

Source: Suffolk County Department of Health Services
Telephone: 631-854-2521
Last EDR Contact: 05/03/2013
Next Scheduled EDR Contact: 08/19/2013
Data Release Frequency: Annually

WESTCHESTER COUNTY:

Listing of Storage Tanks
A listing of aboveground storage tank sites located in Westchester County.

Date of Government Version: 02/20/2013
Date Data Arrived at EDR: 02/21/2013
Date Made Active in Reports: 03/15/2013
Number of Days to Update: 22

Source: Westchester County Department of Health
Telephone: 914-813-5161
Last EDR Contact: 05/06/2013
Next Scheduled EDR Contact: 08/19/2013
Data Release Frequency: Varies

Listing of Storage Tanks
A listing of underground storage tank sites located in Westchester County.

Date of Government Version: 02/20/2013
Date Data Arrived at EDR: 02/21/2013
Date Made Active in Reports: 03/15/2013
Number of Days to Update: 22

Source: Westchester County Department of Health
Telephone: 914-813-5161
Last EDR Contact: 05/06/2013
Next Scheduled EDR Contact: 08/19/2013
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 02/18/2013
Date Data Arrived at EDR: 02/18/2013
Date Made Active in Reports: 03/21/2013
Number of Days to Update: 31

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 02/18/2013
Next Scheduled EDR Contact: 06/03/2013
Data Release Frequency: Annually

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 07/19/2012
Date Made Active in Reports: 08/28/2012
Number of Days to Update: 40

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 04/19/2013
Next Scheduled EDR Contact: 07/29/2013
Data Release Frequency: Annually

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 07/23/2012
Date Made Active in Reports: 09/18/2012
Number of Days to Update: 57

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 04/23/2013
Next Scheduled EDR Contact: 08/05/2013
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 06/22/2012
Date Made Active in Reports: 07/31/2012
Number of Days to Update: 39

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 02/25/2013
Next Scheduled EDR Contact: 06/10/2013
Data Release Frequency: Annually

VT MANIFEST: Hazardous Waste Manifest Data
Hazardous waste manifest information.

Date of Government Version: 02/15/2013
Date Data Arrived at EDR: 02/21/2013
Date Made Active in Reports: 03/15/2013
Number of Days to Update: 22

Source: Department of Environmental Conservation
Telephone: 802-241-3443
Last EDR Contact: 01/21/2013
Next Scheduled EDR Contact: 05/06/2013
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 07/19/2012
Date Made Active in Reports: 09/27/2012
Number of Days to Update: 70

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 03/18/2013
Next Scheduled EDR Contact: 07/01/2013
Data Release Frequency: Annually

Oil/Gas Pipelines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

Electric Power Transmission Line Data
Source: Rextag Strategies Corp.
Telephone: (281) 769-2247
U.S. Electric Transmission and Power Plants Systems Digital GIS Data

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Day Care Providers
Source: Department of Health
Telephone: 212-676-2444

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Freshwater Wetlands
Source: Department of Environmental Conservation
Telephone: 518-402-8961

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

NEO SMELTING AND REFINING
150-40 11TH AVENUE
WHITESTONE, NY 11357

TARGET PROPERTY COORDINATES

Latitude (North):	40.7917 - 40° 47' 30.12''
Longitude (West):	73.8139 - 73° 48' 50.04''
Universal Tranverse Mercator:	Zone 18
UTM X (Meters):	600069.9
UTM Y (Meters):	4516099.5
Elevation:	49 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	40073-G7 FLUSHING, NY
Most Recent Revision:	1995

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principal investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

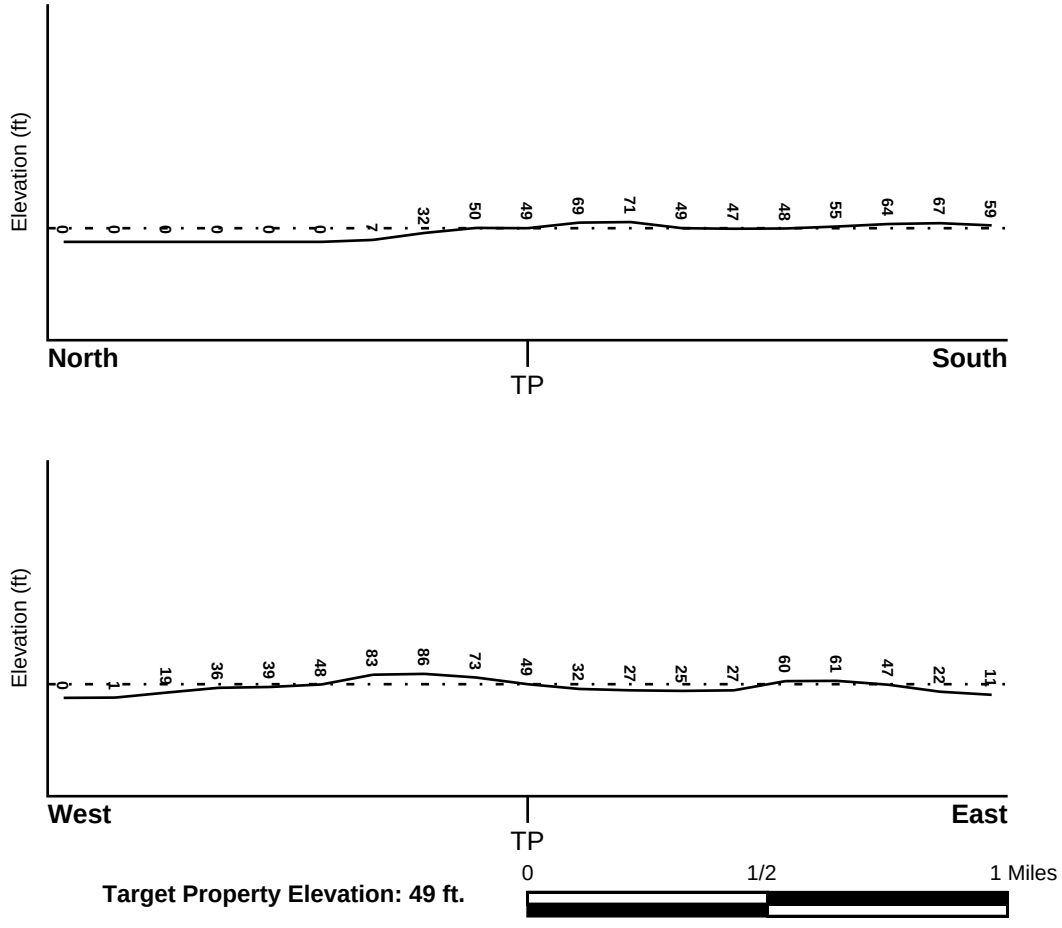
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General NE

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Target Property Elevation: 49 ft.

Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Target Property County	FEMA Flood Electronic Data
QUEENS, NY	YES - refer to the Overview Map and Detail Map

Flood Plain Panel at Target Property: 360497 - FEMA DFIRM Flood data

Additional Panels in search area: Not Reported

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
FLUSHING	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

Era:	Mesozoic
System:	Cretaceous
Series:	Upper Cretaceous
Code:	uK *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratified Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps. The following information is based on Soil Conservation Service STATSGO data.

Soil Component Name: URBAN LAND

Soil Surface Texture: variable

Hydrologic Group: Not reported

Soil Drainage Class: Not reported

Hydric Status: Soil does not meet the requirements for a hydric soil.

Corrosion Potential - Uncoated Steel: Not Reported

Depth to Bedrock Min: > 10 inches

Depth to Bedrock Max: > 10 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification			
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil	Permeability Rate (in/hr)	Soil Reaction (pH)
1	0 inches	6 inches	variable	Not reported	Not reported	Max: 0.00 Min: 0.00	Max: 0.00 Min: 0.00

OTHER SOIL TYPES IN AREA

Based on Soil Conservation Service STATSGO data, the following additional subordinant soil types may appear within the general area of target property.

Soil Surface Textures: silt loam
loamy sand
sandy loam
fine sandy loam

Surficial Soil Types: silt loam
loamy sand
sandy loam
fine sandy loam

Shallow Soil Types: sandy loam

Deeper Soil Types: unweathered bedrock
very gravelly - loamy sand
stratified
sandy loam

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	USGS40000832988	1/8 - 1/4 Mile NW
A2	USGS40000832916	1/4 - 1/2 Mile East
A3	USGS40000832934	1/4 - 1/2 Mile East
4	USGS40000833023	1/4 - 1/2 Mile NE
5	USGS40000832633	1/2 - 1 Mile SSW
6	USGS40000832632	1/2 - 1 Mile SSE
7	USGS40000832560	1/2 - 1 Mile South
B8	USGS40000832644	1/2 - 1 Mile SW
B9	USGS40000832640	1/2 - 1 Mile SW
B10	USGS40000832569	1/2 - 1 Mile SW
B11	USGS40000832641	1/2 - 1 Mile SW
B12	USGS40000832643	1/2 - 1 Mile SW
B13	USGS40000832642	1/2 - 1 Mile SW
14	USGS40000833164	1/2 - 1 Mile NW
15	USGS40000832933	1/2 - 1 Mile East

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No Wells Found		

PHYSICAL SETTING SOURCE MAP - 3608869.1s

- County Boundary
- Major Roads
- Contour Lines
- Airports
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons
- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil, gas or related wells

SITE NAME:	Neo Smelting and Refining	CLIENT:	Weston Solutions, Inc.
ADDRESS:	150-40 11th Avenue Whitestone NY 11357	CONTACT:	Denise Breen
		INQUIRY #:	3608869.1s
LAT/LONG:	40.7917 / 73.8139	DATE:	May 17, 2013 9:22 am

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

1
NW | **FED USGS** | **USGS40000832988**
1/8 - 1/4 Mile
Higher

Org. Identifier:	USGS-NY		
Formal name:	USGS New York Water Science Center		
Monloc Identifier:	USGS-404736073490201		
Monloc name:	Q 1222. 1		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	02030201	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	40.7934347
Longitude:	-73.8168007	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	Not Reported
Vert measure units:	Not Reported	Vertacc measure val:	Not Reported
Vert accmeasure units:	Not Reported		
Vertcollection method:	Not Reported		
Vert coord refsys:	Not Reported	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	23
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 365

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1971-05-12		0.72	1970-04-30		1.32
1969-11-03		1.57	1969-04-30		3.47
1968-10-29		0.77	1968-05-01		1.70
1967-10-30		0.64	1967-05-02		2.25
1966-10-02		1.34	1966-04-29		2.69
1965-11-03		1.45	1965-06-18		2.07
1965-05-03		3.01	1964-11-02		1.81
1964-05-22		3.61	1964-05-14		3.08
1963-04-29		1.93	1962-12-04		2.66
1962-05-01		3.48	1962-02-01		2.33
1961-12-20		2.74	1961-11-27		2.47
1961-10-31		2.33	1961-10-02		1.89
1961-08-29		2.19	1961-08-01		2.45
1961-05-31		4.01	1961-04-27		3.95
1961-04-20		4.06	1961-03-28		4.41
1961-02-28		3.61	1961-02-01		3.53
1961-01-03		3.61	1960-11-29		3.11
1960-11-02		3.04	1960-09-27		2.56
1960-08-29		2.33	1960-07-26		1.76
1960-06-28		2.08	1960-06-01		2.77
1960-05-02		2.70	1960-03-28		2.76
1960-03-01		3.65	1960-02-02		3.44
1959-12-31		3.22	1959-11-25		2.53
1959-10-30		1.18	1959-10-05		1.44

Ground-water levels, continued.

Date	Feet below Surface	Feet to Sealevel
1959-09-01		1.54
1959-07-02		1.94
1959-05-05		3.36
1959-03-04		3.14
1959-01-05		4.04
1958-09-30		2.22
1958-07-25		1.71
1958-05-28		1.74
1958-03-31		2.26
1958-01-24		3.04
1957-11-22		2.09
1957-09-24		1.31
1957-07-24		0.77
1957-05-28		2.83
1957-03-26		3.15
1957-01-24		2.21
1956-11-28		2.68
1956-09-26		1.61
1956-07-31		1.96
1956-06-04		2.51
1956-03-28		2.71
1956-02-03		2.28
1955-12-02		2.57
1955-10-05		1.74
1955-07-29		0.81
1955-05-26		2.82
1955-03-30		4.62
1955-01-24		3.76
1954-12-02		2.92
1954-09-22		1.78
1954-07-27		1.19
1954-05-24		2.87
1954-03-24		2.20
1954-01-25		2.07
1953-11-23		1.64
1953-09-28		1.05
1953-08-14		1.38
1953-06-24		2.39
1953-04-28		2.86
1953-03-02		1.95
1952-12-29		1.27
1952-11-07		1.21
1952-09-03		1.42
1952-07-28		1.27
1952-06-03		2.08
1952-03-26		1.95
1951-12-21		0.85
1951-11-01		0.51
1951-08-29		0.46
1951-06-26		1.36
1951-04-26		2.14
1951-02-28		2.30
1950-12-19		1.61
1950-11-01		1.04
1950-08-30		0.49
1959-07-30		1.12
1959-05-28		2.85
1959-03-26		3.48
1959-01-28		3.47
1958-12-08		3.82
1958-08-26		1.60
1958-06-27		1.37
1958-05-01		2.00
1958-03-06		2.10
1957-12-20		2.47
1957-10-28		1.89
1957-08-23		0.55
1957-06-27		1.49
1957-04-25		3.09
1957-02-26		3.15
1956-12-18		2.73
1956-10-26		1.74
1956-08-31		1.47
1956-07-03		1.71
1956-05-03		2.67
1956-03-05		2.41
1955-12-24		2.13
1955-11-07		2.88
1955-08-26		1.34
1955-06-23		2.43
1955-04-28		5.02
1955-03-01		3.94
1954-12-30		3.67
1954-11-04		2.09
1954-08-25		1.14
1954-07-01		1.76
1954-04-26		2.29
1954-02-23		2.10
1953-12-19		1.80
1953-11-02		1.44
1953-08-26		1.90
1953-07-30		1.26
1953-05-27		2.70
1953-03-27		1.92
1953-02-12		1.73
1952-12-08		1.25
1952-09-24		1.32
1952-08-27		1.47
1952-06-25		1.67
1952-05-04		1.68
1952-02-19		1.76
1951-11-29		0.64
1951-09-27		0.18
1951-07-25		0.59
1951-05-29		1.90
1951-03-28		2.17
1951-02-01		1.62
1950-11-29		1.84
1950-09-25		0.66
1950-07-25		0.61

Ground-water levels, continued.

Date	Feet below Surface	Feet to Sealevel
1950-06-27		0.81
1950-04-26		0.99
1950-02-27		0.99
1949-12-29		0.69
1949-10-27		0.97
1949-08-26		0.68
1949-07-01		0.94
1949-04-26		2.04
1949-02-24		1.98
1948-12-30		1.90
1948-11-04		1.90
1948-08-31		1.66
1948-06-29		1.64
1948-05-06		2.09
1948-02-28		1.49
1948-01-02		1.35
1947-11-03		1.49
1947-09-03		2.06
1947-07-11		1.46
1947-05-29		2.29
1947-03-30		1.43
1947-01-28		1.48
1946-11-26		2.26
1946-09-27		2.03
1946-07-31		1.66
1946-06-04		2.73
1946-04-03		3.97
1946-02-08		3.47
1945-12-01		4.35
1945-10-08		2.34
1945-08-04		2.39
1945-06-01		2.83
1945-04-05		2.94
1945-01-27		1.62
1944-12-02		2.49
1944-09-30		1.66
1944-07-29		1.96
1944-05-27		3.12
1944-04-01		2.59
1944-01-29		2.34
1943-11-27		2.26
1943-09-25		2.01
1943-07-31		2.41
1943-05-29		2.71
1943-03-27		2.87
1943-01-30		2.78
1942-12-26		2.24
1942-12-12		2.28
1942-11-28		2.77
1942-11-14		2.31
1942-10-31		1.96
1942-10-17		1.88
1942-10-03		1.70
1942-09-19		1.74
1942-09-05		1.88
1950-05-25		1.08
1950-03-28		1.07
1950-01-24		0.88
1949-11-29		0.93
1949-09-28		0.65
1949-08-01		0.65
1949-05-31		2.07
1949-03-28		1.88
1949-01-24		1.89
1948-12-08		2.23
1948-10-05		0.88
1948-07-26		1.43
1948-05-25		1.88
1948-03-26		1.70
1948-01-29		1.22
1947-11-26		1.60
1947-10-07		0.73
1947-07-31		2.56
1947-06-26		1.77
1947-05-06		2.43
1947-03-04		1.53
1946-12-31		1.88
1946-10-31		2.14
1946-08-30		1.85
1946-07-08		1.97
1946-04-26		3.71
1946-03-01		3.55
1946-01-09		3.45
1945-11-05		3.21
1945-09-04		2.24
1945-06-30		2.88
1945-04-27		3.64
1945-03-03		1.63
1944-12-30		1.81
1944-10-28		2.11
1944-08-31		1.39
1944-06-29		2.61
1944-05-05		3.03
1944-02-26		2.18
1944-01-01		2.06
1943-10-30		2.88
1943-08-28		2.04
1943-06-26		2.43
1943-05-01		2.45
1943-02-27		2.61
1943-01-02		2.68
1942-12-19		2.19
1942-12-05		2.09
1942-11-21		2.22
1942-11-07		2.12
1942-10-24		2.10
1942-10-10		1.60
1942-09-26		1.75
1942-09-12		1.82
1942-08-29		1.81

Ground-water levels, continued.

Date	Feet below Surface	Feet to Sealevel
1942-08-22		1.81
1942-08-08		1.69
1942-07-25		1.90
1942-07-11		2.00
1942-06-27		2.01
1942-06-13		2.10
1942-05-30		1.80
1942-05-16		0.24
1942-05-02		-6.76
1942-04-18		-8.65
1942-04-04		-8.83
1942-03-21		-9.15
1942-03-07		-8.96
1942-02-21		-9.12
1942-02-07		-7.12
1942-01-03		2.58
1941-12-20		2.45
1941-12-06		2.48
1941-11-22		2.16
1941-11-08		2.60
1941-10-25		1.99
1941-10-11		2.02
1941-09-27		2.04
1941-09-13		2.09
1941-08-30		2.19
1941-08-16		2.26
1941-08-02		2.64
1941-07-19		2.53
1941-07-05		2.51
1941-06-21		2.76
1941-06-07		3.00
1941-05-24		2.87
1941-05-10		3.34
1941-04-26		3.11
1941-04-12		2.94
1941-03-29		2.82
1941-03-15		2.95
1941-03-01		3.05
1941-02-15		3.14
1941-02-01		3.12
1941-01-18		3.23
1941-01-04		3.13
1940-12-21		2.68
1940-12-07		2.64
1940-11-23		2.55
1940-11-09		2.66
1940-10-26		2.52
1940-10-12		2.67
1940-09-28		2.09
1942-08-15		1.95
1942-08-01		1.92
1942-07-18		1.91
1942-07-04		2.08
1942-06-20		2.21
1942-06-06		2.08
1942-05-23		1.52
1942-05-09		-2.54
1942-04-25		-8.60
1942-04-11		-8.25
1942-03-28		-9.19
1942-03-14		-9.17
1942-02-28		-9.11
1942-02-16		-9.05
1942-02-04		-7.82
1941-12-27		2.58
1941-12-13		2.16
1941-11-29		2.15
1941-11-15		2.21
1941-11-01		2.26
1941-10-18		1.86
1941-10-04		1.89
1941-09-20		1.98
1941-09-06		2.23
1941-08-23		2.21
1941-08-09		2.48
1941-07-26		2.39
1941-07-12		2.44
1941-06-28		2.60
1941-06-14		2.80
1941-05-31		2.66
1941-05-17		3.18
1941-05-03		3.28
1941-04-19		2.88
1941-04-05		2.89
1941-03-22		2.46
1941-03-08		2.91
1941-02-22		2.68
1941-02-08		3.52
1941-01-25		3.06
1941-01-11		2.88
1940-12-28		3.14
1940-12-14		2.53
1940-11-30		2.59
1940-11-16		2.99
1940-11-02		2.81
1940-10-19		2.76
1940-10-05		2.64

A2
East
1/4 - 1/2 Mile
Lower

FED USGS **USGS40000832916**

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Org. Identifier:	USGS-NY		
Formal name:	USGS New York Water Science Center		
Monloc Identifier:	USGS-404732073482901		
Monloc name:	Q 3604. 1		
Monloc type:	Well		
Monloc desc:	LAT/LONG UPDATES FROM SIM 3066		
Huc code:	02030201	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	40.7923889
Longitude:	-73.8075556	Sourcemap scale:	24000
Horiz Acc measure:	.1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from Digital Map		
Horiz coord refsys:	NAD83	Vert measure val:	20.7
Vert measure units:	feet	Vertacc measure val:	0.1
Vert accmeasure units:	feet		
Vertcollection method:	Level or other surveying method		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	Northern Atlantic Coastal Plain aquifer system		
Formation type:	Glacial Aquifer, Upper		
Aquifer type:	Not Reported		
Construction date:	19941222	Welldepth:	58
Welldepth units:	ft	Wellholedepth:	58
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 19

Date	Feet below Surface	Feet to Sealevel
2004-10-29		24.64
Note: Water level was affected by tide stage.		
2004-09-29		24.49
Note: Water level was affected by tide stage.		
2004-09-01		24.14
Note: Water level was affected by tide stage.		
2004-08-03		24.24
Note: Water level was affected by tide stage.		
2004-06-03		24.13
Note: Water level was affected by tide stage.		
2004-05-04		24.02
Note: Water level was affected by tide stage.		
2004-01-23		23.15
Note: Water level was affected by tide stage.		
2003-12-24		23.85
Note: Water level was affected by tide stage.		
2003-11-25		23.30
Note: Water level was affected by tide stage.		
2003-09-29		23.78
Note: Water level was affected by tide stage.		
1998-04-29		22.72
Note: The site was flowing, but the head could not be measured without additional equipment.		
1998-03-27		22.31
Note: The site was flowing, but the head could not be measured without additional equipment.		
1998-02-25		23.45
Note: The site was flowing, but the head could not be measured without additional equipment.		
1998-01-27		23.25
1997-12-29		22.95
Note: The site was flowing, but the head could not be measured without additional equipment.		
1997-11-25		23.10
Note: The site was flowing, but the head could not be measured without additional equipment.		

Ground-water levels, continued.

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1997-10-29		22.91			
Note: The site was flowing, but the head could not be measured without additional equipment.					
1997-10-03		23.05			
Note: The site was flowing, but the head could not be measured without additional equipment.					
1997-03-24		23.54			

A3
East
1/4 - 1/2 Mile
Lower

FED USGS **USGS40000832934**

Org. Identifier:	USGS-NY		
Formal name:	USGS New York Water Science Center		
Monloc Identifier:	USGS-404733073482901		
Monloc name:	Q 3593. 1		
Monloc type:	Well		
Monloc desc:	LAT/LONG UPDATES FROM SIM 3066		
Huc code:	02030201	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	40.7923889
Longitude:	-73.8075278	Sourcemap scale:	24000
Horiz Acc measure:	.1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from Digital Map		
Horiz coord refsys:	NAD83	Vert measure val:	20.8
Vert measure units:	feet	Vertacc measure val:	0.1
Vert accmeasure units:	feet		
Vertcollection method:	Level or other surveying method		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	Northern Atlantic Coastal Plain aquifer system		
Formation type:	Lloyd Aquifer		
Aquifer type:	Not Reported		
Construction date:	19951222	Welldepth:	215
Welldepth units:	ft	Wellholedepth:	215
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 60

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
2005-02-23		6.76			
Note: Water level was affected by tide stage.					
2004-11-30		5.98			
Note: Water level was affected by tide stage.					
2004-10-29		5.43			
Note: Water level was affected by tide stage.					
2004-09-29		5.17			
Note: Water level was affected by tide stage.					
2004-09-01		4.16			
Note: Water level was affected by tide stage.					
2004-08-03		3.19			
Note: Water level was affected by tide stage.					
2004-06-03		4.26			
Note: Water level was affected by tide stage.					
2004-05-04		4.80			
Note: Water level was affected by tide stage.					

Ground-water levels, continued.

Date	Feet below Surface	Feet to Sealevel
2004-01-22		5.44
Note: Water level was affected by tide stage.		
2003-12-24		5.25
Note: Water level was affected by tide stage.		
2003-11-25		4.76
Note: Water level was affected by tide stage.		
2003-09-29		4.24
Note: Water level was affected by tide stage.		
2003-08-28		2.63
Note: Water level was affected by tide stage.		
2003-07-17		3.39
Note: Water level was affected by tide stage.		
2003-06-30		4.68
Note: Water level was affected by tide stage.		
2003-06-02		4.72
Note: Water level was affected by tide stage.		
2003-04-18		5.02
Note: Water level was affected by tide stage.		
2003-03-20		5.98
Note: Water level was affected by tide stage.		
2002-10-23		4.94
Note: Water level was affected by tide stage.		
2002-08-26		3.38
Note: Water level was affected by tide stage.		
2002-07-23		3.13
Note: Water level was affected by tide stage.		
2002-06-24		3.62
Note: Water level was affected by tide stage.		
2002-06-24		3.62
Note: Water level was affected by tide stage.		
2002-05-28		4.72
Note: Water level was affected by tide stage.		
2001-10-31		4.16
2001-07-27		4.55
Note: Water level was affected by tide stage.		
2001-04-24		5.43
Note: Water level was affected by tide stage.		
2001-03-21		5.39
Note: Water level was affected by tide stage.		
2001-02-26		5.95
Note: Water level was affected by tide stage.		
2000-12-28		4.39
2000-11-29		5.75
Note: Water level was affected by tide stage.		
2000-10-25		4.28
Note: Water level was affected by tide stage.		
2000-09-28		4.23
Note: Water level was affected by tide stage.		
2000-08-28		4.16
Note: Water level was affected by tide stage.		
2000-07-27		4.06
Note: Water level was affected by tide stage.		
2000-06-30		3.90
Note: Water level was affected by tide stage.		
2000-02-22		4.77
Note: Water level was affected by tide stage.		

Date	Feet below Surface	Feet to Sealevel
2001-08-22		3.00

Ground-water levels, continued.

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1999-12-21		5.26			
Note: Water level was affected by tide stage.					
1999-10-28		3.46			
Note: Water level was affected by tide stage.					
1999-10-01		3.30	1999-07-29		3.46
1999-03-30		5.39			
Note: Water level was affected by tide stage.					
1999-01-26		4.56	1998-10-29		4.21
1998-09-30		3.56	1998-08-31		3.91
1998-07-30		4.20	1998-04-29		5.23
1998-03-27		4.91	1998-02-25		6.04
1998-01-27		5.81	1997-12-29		5.42
1997-11-25		4.47	1997-10-29		4.46
1997-09-29		5.20	1997-03-24		4.53
1997-03-18		4.21			
1996-07-05		5.11			
Note: Water level was affected by tide stage.					
1996-03-12		4.17			

4
NE
1/4 - 1/2 Mile
Lower

FED USGS **USGS40000833023**

Org. Identifier:	USGS-NY		
Formal name:	USGS New York Water Science Center		
Monloc Identifier:	USGS-404740073483201		
Monloc name:	Q 2274. 1		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	02030201	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	40.7945458
Longitude:	-73.8084671	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	20.0
Vert measure units:	feet	Vertacc measure val:	0.1
Vert accmeasure units:	feet		
Vertcollection method:	Level or other surveying method		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	Not Reported
Welldepth units:	Not Reported	Wellholedepth:	168
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

5
SSW
1/2 - 1 Mile
Higher

FED USGS **USGS40000832633**

Org. Identifier:	USGS-NY		
Formal name:	USGS New York Water Science Center		
Monloc Identifier:	USGS-404703073490501		
Monloc name:	Q 2331. 1		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	02030201	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	40.7842681
Longitude:	-73.817634	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	65.0
Vert measure units:	feet	Vertacc measure val:	0.1
Vert accmeasure units:	feet		
Vertcollection method:	Level or other surveying method		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	Not Reported
Welldepth units:	Not Reported	Wellholedepth:	105
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

6
SSE **FED USGS** **USGS40000832632**
1/2 - 1 Mile
Higher

Org. Identifier:	USGS-NY		
Formal name:	USGS New York Water Science Center		
Monloc Identifier:	USGS-404703073483501		
Monloc name:	Q 2978. 1		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	02030201	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	40.7842682
Longitude:	-73.8093005	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	60.0
Vert measure units:	feet	Vertacc measure val:	0.1
Vert accmeasure units:	feet		
Vertcollection method:	Level or other surveying method		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	Northern Atlantic Coastal Plain aquifer system		
Formation type:	Glacial Aquifer, Upper		
Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	73
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

7
South
1/2 - 1 Mile
Higher | **FED USGS** | **USGS40000832560**

Org. Identifier:	USGS-NY		
Formal name:	USGS New York Water Science Center		
Monloc Identifier:	USGS-404653073485301		
Monloc name:	Q 3816. 1		
Monloc type:	Well		
Monloc desc:	LAT/LONG UPDATES FROM SIM 3066		
Huc code:	02030201	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	40.7826667
Longitude:	-73.8141944	Sourcemap scale:	24000
Horiz Acc measure:	.1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from Digital Map		
Horiz coord refsys:	NAD83	Vert measure val:	51.6
Vert measure units:	feet	Vertacc measure val:	1
Vert accmeasure units:	feet		
Vertcollection method:	Level or other surveying method		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	Northern Atlantic Coastal Plain aquifer system		
Formation type:	Glacial Aquifer, Upper		
Aquifer type:	Unconfined single aquifer		
Construction date:	19990728	Welldepth:	60
Welldepth units:	ft	Wellholedepth:	60
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 66

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
2005-02-23		27.83	2005-01-31		27.79
2004-12-17		28.01	2004-11-17		28.19
2004-10-25		28.17	2004-09-22		27.85
2004-08-24		27.66	2004-07-22		27.50
2004-06-23		27.44	2004-05-25		27.25
2004-04-29		26.84	2004-03-17		27.02
2004-02-25		27.12	2004-01-22		27.34
2003-12-29		27.09	2003-12-01		27.11
2003-10-30		27.25	2003-09-26		27.55
2003-08-28		27.53	2003-07-30		27.44
2003-06-26		26.84	2003-05-29		26.44
2003-04-24		25.97	2003-03-19		25.47
2003-02-26		25.44	2003-01-30		25.16
2002-12-23		24.67	2002-11-22		24.40
2002-10-23		23.89	2002-09-24		23.65
2002-08-28		23.52	2002-07-18		23.68
2002-06-26		23.74	2002-05-28		23.87
2002-04-26		24.07	2002-03-19		24.48
2002-02-26		24.86	2002-01-29		25.09
2001-12-27		25.52	2001-11-20		25.87
2001-10-23		26.05	2001-09-25		26.20
2001-08-22		26.33	2001-07-25		26.46
2001-06-27		26.50	2001-05-23		26.39
2001-04-24		26.04	2001-03-19		25.23

Ground-water levels, continued.

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
2001-02-26		25.21	2001-01-31		25.35
2000-12-20		25.54	2000-11-29		25.77
2000-10-24		25.85	2000-09-27		25.74
2000-08-28		25.42	2000-07-24		25.08
2000-06-22		24.79	2000-05-23		24.50
2000-04-18		24.28	2000-03-23		24.41
2000-02-24		24.49	1999-12-20		24.89
1999-11-29		24.91	1999-10-20		25.06
1999-09-29		25.00	1999-08-25		25.06

B8
SW
1/2 - 1 Mile
Lower

FED USGS **USGS40000832644**

Org. Identifier:	USGS-NY		
Formal name:	USGS New York Water Science Center		
Monloc Identifier:	USGS-404704073493905		
Monloc name:	Q 495. 1		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	02030201	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	40.7845459
Longitude:	-73.8270788	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	4.0
Vert measure units:	feet	Vertacc measure val:	0.1
Vert accmeasure units:	feet		
Vertcollection method:	Level or other surveying method		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	Not Reported
Welldepth units:	Not Reported	Wellholedepth:	193
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

B9
SW
1/2 - 1 Mile
Lower

FED USGS **USGS40000832640**

Org. Identifier:	USGS-NY		
Formal name:	USGS New York Water Science Center		
Monloc Identifier:	USGS-404704073493901		
Monloc name:	Q 490. 1		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	02030201	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	40.7845459
Longitude:	-73.8270788	Sourcemap scale:	24000

Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	5.0
Vert measure units:	feet	Vertacc measure val:	0.1
Vert accmeasure units:	feet		
Vertcollection method:	Level or other surveying method		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	Not Reported
Welldepth units:	Not Reported	Wellholedepth:	224
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

B10
SW
1/2 - 1 Mile
Lower

FED USGS **USGS40000832569**

Org. Identifier:	USGS-NY		
Formal name:	USGS New York Water Science Center		
Monloc Identifier:	USGS-404654073492001		
Monloc name:	Q 494. 1		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	02030201	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	40.7845459
Longitude:	-73.8270788	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	5.0
Vert measure units:	feet	Vertacc measure val:	0.1
Vert accmeasure units:	feet		
Vertcollection method:	Level or other surveying method		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	Not Reported
Welldepth units:	Not Reported	Wellholedepth:	218
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 23

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1935-09-26		-5.64	1935-07-31		-7.87
1935-06-13		-7.80	1934-07-30		2.04
1934-06-15		1.78	1934-01-12		3.55
1933-12-19		3.56	1933-09-29		2.66
1933-07-27		1.85	1933-06-30		2.36
1933-05-17		3.03	1933-04-22		3.46
1933-03-01		3.27	1933-01-17		2.88
1932-11-23		3.03	1932-10-22		2.19
1932-09-08		1.84	1932-04-21		3.04
1932-03-14		3.18	1932-01-04		2.70

Ground-water levels, continued.

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1931-07-10		2.22	1931-06-05		2.49
1931-04-23		-1.07			

B11
SW
1/2 - 1 Mile
Lower

FED USGS **USGS40000832641**

Org. Identifier:	USGS-NY		
Formal name:	USGS New York Water Science Center		
Monloc Identifier:	USGS-404704073493902		
Monloc name:	Q 491. 1		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	02030201	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	40.7845459
Longitude:	-73.8270788	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	9.0
Vert measure units:	feet	Vertacc measure val:	0.1
Vert accmeasure units:	feet		
Vertcollection method:	Level or other surveying method		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	Not Reported
Welldepth units:	Not Reported	Wellholedepth:	214
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

B12
SW
1/2 - 1 Mile
Lower

FED USGS **USGS40000832643**

Org. Identifier:	USGS-NY		
Formal name:	USGS New York Water Science Center		
Monloc Identifier:	USGS-404704073493904		
Monloc name:	Q 493. 1		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	02030201	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	40.7845459
Longitude:	-73.8270788	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	7.0
Vert measure units:	feet	Vertacc measure val:	0.1
Vert accmeasure units:	feet		
Vertcollection method:	Level or other surveying method		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		

Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	Not Reported
Welldepth units:	Not Reported	Wellholedepth:	219
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

B13
SW
1/2 - 1 Mile
Lower

FED USGS **USGS40000832642**

Org. Identifier:	USGS-NY		
Formal name:	USGS New York Water Science Center		
Monloc Identifier:	USGS-404704073493903		
Monloc name:	Q 492. 1		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	02030201	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	40.7845459
Longitude:	-73.8270788	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	6.0
Vert measure units:	feet	Vertacc measure val:	0.1
Vert accmeasure units:	feet		
Vertcollection method:	Level or other surveying method		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	Not Reported
Welldepth units:	Not Reported	Wellholedepth:	228
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

14
NW
1/2 - 1 Mile
Lower

FED USGS **USGS40000833164**

Org. Identifier:	USGS-NY		
Formal name:	USGS New York Water Science Center		
Monloc Identifier:	USGS-404756073494201		
Monloc name:	Q 1353. 1		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	02030201	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	40.7989901
Longitude:	-73.8279121	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	Not Reported
Vert measure units:	Not Reported	Vertacc measure val:	Not Reported
Vert accmeasure units:	Not Reported		
Vertcollection method:	Not Reported		
Vert coord refsys:	Not Reported	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		

Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	Not Reported
Welldepth units:	Not Reported	Wellholedepth:	162
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

15
East
1/2 - 1 Mile
Lower

FED USGS **USGS40000832933**

Org. Identifier:	USGS-NY		
Formal name:	USGS New York Water Science Center		
Monloc Identifier:	USGS-404733073474701		
Monloc name:	Q 2282. 1		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	02030201	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	40.7926014
Longitude:	-73.7959667	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	9.0
Vert measure units:	feet	Vertacc measure val:	0.1
Vert accmeasure units:	feet		
Vertcollection method:	Level or other surveying method		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	Not Reported
Welldepth units:	Not Reported	Wellholedepth:	197
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

Federal EPA Radon Zone for QUEENS County: 3

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for QUEENS COUNTY, NY

Number of sites tested: 81

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area	0.620 pCi/L	97%	0%	3%
Basement	0.970 pCi/L	93%	6%	1%

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

HYDROLOGIC INFORMATION

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Freshwater Wetlands
Source: Department of Environmental Conservation
Telephone: 518-402-8961

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Services, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

New York Public Water Wells
Source: New York Department of Health
Telephone: 518-458-6731

OTHER STATE DATABASE INFORMATION

Oil and Gas Well Database
Department of Environmental Conservation
Telephone: 518-402-8072
These files contain records, in the database, of wells that have been drilled.

RADON

State Database: NY Radon
Source: Department of Health
Telephone: 518-402-7556
Radon Test Results

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

PHYSICAL SETTING SOURCE RECORDS SEARCHED

STREET AND ADDRESS INFORMATION

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NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Division of Fish, Wildlife & Marine Resources
New York Natural Heritage Program
625 Broadway, 5th Floor, Albany, New York 12233-4757
Phone: (518) 402-8935 • **Fax:** (518) 402-8925
Website: www.dec.ny.gov

Joe Martens
Commissioner

July 8, 2013

Denise Breen
Weston Solutions
205 Campus Drive
Edison, NJ 08837

Dear Ms. Breen:

In response to your recent request, we have reviewed the New York Natural Heritage Program database with respect to the 4-mile pathway around the former smelter facility at **150-40 11th Avenue**, Whitestone, Queens County, New York.

Enclosed is a report of rare or state-listed animals and plants, and significant natural communities, which our databases indicate occur, or may occur, within 4 miles of your site.

For most sites, comprehensive field surveys have not been conducted; the enclosed report only includes records from our databases. We cannot provide a definitive statement as to the presence or absence of all rare or state-listed species or significant natural communities. This information should not be substituted for on-site surveys that may be required for environmental impact assessment.

Our databases are continually growing as records are added and updated. If this proposed project is still under development one year from now, we recommend that you contact us again so that we may update this response with the most current information.

The presence of the plants and animals identified in the enclosed report may result in this project requiring additional review or permit conditions. For further guidance, and for information regarding other permits that may be required under state law for regulated areas or activities (e.g., regulated wetlands), please contact the appropriate NYS DEC Regional Office, Division of Environmental Permits, as listed at www.dec.ny.gov/about/39381.html.

Sincerely,

Nick Conrad

Nicholas Conrad
Information Resource Coordinator
New York Natural Heritage Program

Enc.

New York Natural Heritage Program

Report on State-Listed Animals

The following state-listed animals have been documented within 4 miles of your project site.

150-40 11th Ave
Whitestone

The following list includes animals that are listed by NYS as Endangered, Threatened, or Special Concern; and/or that are federally listed or are candidates for federal listing. The list may also include significant natural communities that can serve as habitat for Endangered or Threatened animals, and/or other rare animals and rare plants found at these habitats.

For information about potential impacts of your project on these populations, how to avoid, minimize, or mitigate any impacts, and any permit considerations, contact the Wildlife Manager or the Fisheries Manager at the NYSDEC Regional Office for the region where the project is located. A listing of Regional Offices is at http://www.dec.ny.gov/about/558.html.

The following species and habitats have been documented at or near the project site, generally within 0.5 mile. Potential onsite and offsite impacts from the project may need to be addressed.

COMMON NAME	*SCIENTIFIC NAME*	*NY STATE LISTING*	*FEDERAL LISTING*	
Birds				
Peregrine Falcon *Breeding*	*Falco peregrinus*	Endangered		362

This report only includes records from the NY Natural Heritage databases. For most sites, comprehensive field surveys have not been conducted, and we cannot provide a definitive statement as to the presence or absence of all rare or state-listed species. This information should not be substituted for on-site surveys that may be required for environmental impact assessment.

If any rare plants or animals are documented during site visits, we request that information on the observations be provided to the New York Natural Heritage Program so that we may update our database.

Information about many of the listed animals in New York, including habitat, biology, identification, conservation, and management, are available online in Natural Heritage's Conservation Guides at www.guides.nynhp.org, and from NYSDEC at http://www.dec.ny.gov/animals/7494.html.

Information about many of the rare plants and animals, and natural community types, in New York are available online in Natural Heritage's Conservation Guides at www.guides.nynhp.org, and from NatureServe Explorer at http://www.natureserve.org/explorer.

New York Natural Heritage Program

Report on Rare Animals, Rare Plants, and Significant Natural Communities

The following rare plants, rare animals, and significant natural communities have been documented within 4 miles of your project site.

We recommend that potential onsite and offsite impacts of the proposed project on these species or communities be addressed as part of any environmental assessment or review conducted as part of the planning, permitting and approval process, such as reviews conducted under SEQR. Field surveys of the project site may be necessary to determine the status of a species at the site, particularly for sites that are currently undeveloped and may still contain suitable habitat. Final requirements of the project to avoid, minimize, or mitigate potential impacts are determined by the lead permitting agency or the government body approving the project.

The following plants are listed as Endangered or Threatened by New York State, and/or are considered rare by the New York Natural Heritage Program, and so are a vulnerable natural resource of conservation concern.

COMMON NAME	*SCIENTIFIC NAME*	*NY STATE LISTING*	*HERITAGE CONSERVATION STATUS*
Vascular Plants			
Pale Duckweed	*Lemna valdiviana*	Endangered	Critically Imperiled in NYS
Alley Pond Park, 2004-09-14: This was a small pond along the boardwalk. The pond sometimes dries up.			11409
Yellow Giant-hyssop	*Agastache nepetoides*	Threatened	Imperiled in NYS
Alley Pond Park, 1984: The plants are along the trail on the east-facing slope. Specimen label: Edge of woods.			9111
Northern Gama Grass	*Tripsacum dactyloides*	Threatened	Imperiled in NYS
Pelham Bay, 1997-07-03: Wet meadow, many exotics.			2287
Slender Blue Flag	*Iris prismatica*	Threatened	Imperiled in NYS
Pelham Bay, 1997-07-03: Wet old field of clay loam. Fire here in 1993, earth moving many years ago.			6841
Slender Spikerush	*Eleocharis tenuis var. pseudoptera*	Endangered	Critically Imperiled in NYS
Pelham Bay, 1997-07-03: A wet old field of clay loam. Apparently there was a fire in 1993. Earth moving was done many years ago. Now there is a slight flat depression.			8757

This report only includes records from the NY Natural Heritage databases. For most sites, comprehensive field surveys have not been conducted, and we cannot provide a definitive statement as to the presence or absence of all rare or state-listed species. This information should not be substituted for on-site surveys that may be required for environmental impact assessment.

If any rare plants or animals are documented during site visits, we request that information on the observations be provided to the New York Natural Heritage Program so that we may update our database.

New York Natural Heritage Program

Report on Historical Records of Rare Animals, Rare Plants, and Natural Communities

The following rare plants and rare animals have historical records within 4 miles of your project site.

The following rare plants and animals were documented in the vicinity of the project site at one time, but have not been documented there since 1979 or earlier, and/or there is uncertainty regarding their continued presence. There is no recent information on these plants and animals in the vicinity of the project site and their current status there is unknown. In most cases the precise location of the plant or animal in this vicinity at the time it was last documented is also unknown.

If suitable habitat for these plants or animals is present in the vicinity of the project site, it is possible that they may still occur there, We recommend that any field surveys to the site should include a search for these species, particularly for sites that are currently undeveloped and may still contain suitable habitat.

COMMON NAME	*SCIENTIFIC NAME*	*NYS LISTING*	*HERITAGE CONSERVATION STATUS*	
Vascular Plants				
Marsh Arrow-grass	*Triglochin palustre*	Threatened	Imperiled in NYS	
1899-06-15: Pelham Bay. Shore.				5081
Mexican Seaside Goldenrod	*Solidago sempervirens var. mexicana*	Endangered	Critically Imperiled in NYS	
1946-09-04: Pelham Bay. Specimen label: Sandy shore.				3287
Southern Yellow Flax	*Linum medium var. texanum*	Threatened	Imperiled in NYS	
1947-08-12: Pelham Bay. Specimen label: meadow.				4817
Virginia Three-seeded Mercury	*Acalypha virginica*	Endangered	Critically Imperiled in NYS	
1954-10-10: Pelham Bay. Specimen label: Pelham Bay Park.				9842
Brown Bog Sedge	*Carex buxbaumii*	Threatened	Imperiled in NYS	
1929-06-05: Queens. Damp border of pond, hilly woods.				9356
Pale Duckweed	*Lemna valdiviana*	Endangered	Critically Imperiled in NYS	
1929-07-11: Queens. Pond in woods. Hilly rich woods.				5387

This report only includes records from the NY Natural Heritage databases. For most sites, comprehensive field surveys have not been conducted, and we cannot provide a definitive statement as to the presence or

COMMON NAME	*SCIENTIFIC NAME*	*NYS LISTING*	*HERITAGE CONSERVATION STATUS*

absence of all rare or state-listed species. This information should not be substituted for on-site surveys that may be required for environmental impact assessment.

If any rare plants or animals are documented during site visits, we request that information on the observations be provided to the New York Natural Heritage Program so that we may update our database.

Information about many of the rare animals and plants in New York, including habitat, biology, identification, conservation, and management, are available online in Natural Heritage's Conservation Guides at www.guides.nynhp.org, from NatureServe Explorer at http://www.natureserve.org/explorer, and from USDA's Plants Database at http://plants.usda.gov/index.html (for plants).

PRE-CERCLIS SCREENING/NEW SITE ASSIGNMENT FORM

EPA ID NUMBER: None

SITE NAME: Neo Smelting & Refining

PREVIOUS NAMES (AKAs): None

SITE LOCATION:

Street address: 150-40 11th Ave.
City: Whitestone
State: NY
Zip code: 11357
County: Queens

BLOCK: 4516
LOT: 16

LATITUDE (decimal degrees): + 40.791706
LONGITUDE (decimal degrees): - 73.81365

a. Accuracy meters: +/- one meter
b. Collection method: Global Positioning System
c. Reference datum: WGS84
d. Reference point: Facility/station building entrance
e. Source map scale: None
f. Point/line/area: Point
g. Collection date: 11/13/2012

(See attachment 1 for available values)

AVAILABLE SITE TYPE MAIN CATEGORIES: Recycling
AVAILABLE SITE TYPE MAIN SUBCATEGORIES: Batteries/scrap metals/secondary smelting/precious metals recovery
(See attachment 2 for available values)

COMPLETE THE FOLLOWING CHECKLIST.

	YES	NO
1. Does the site already appear in CERCLIS?		X
2. Is there a known, suspected, or potential release of CERCLA hazardous substances?	X	
3. Is the release from products that are part of the structure of, and result in exposure within, residential buildings or businesses or community structures?		X
4. Does the site consist of a release of a naturally occurring substance in its unaltered form, or altered solely through naturally occurring processes or phenomena, from a location where it is naturally found?		X
5. Is the release into a public or private drinking water supply due to deterioration of the water supply system through ordinary use?		X
6. Is some other program actively involved with the site (i.e, another Federal, State or Tribal program)?		X
7. Are the hazardous substances potentially released at the site regulated under a statutory exclusion (i.e., petroleum, natural gas, natural gas liquids, synthetic gas usable for fuel, normal		X

application of fertilizer, release located in a workplace, naturally occurring, or regulated by the NRC, UMTRCA or OSHA?		
8. Are the hazardous substances potentially released at the site excluded by policy considerations (e.g., deferral to RCRA Corrective Action)?		X
9. Is there sufficient documentation that clearly demonstrates that there is no potential for a release that could cause adverse environmental or human health impacts (e.g., comprehensive remedial investigation equivalent data showing no release above ARARs, completed removal action, previous HRS score determined, ASTM Phase I, II, etc. completed, EPA approved risk assessment completed)?		X

EXPLAIN ALL YES ANSWERS:

Question 2: There is potential release because there is historical evidence of possible smelter operations, others of which have historically shown releases of lead to on-site soils and surrounding properties.

SITE DETERMINATION:

__X__ FURTHER ASSESSMENT IS RECOMMENDED. ENTER SITE INTO CERCLIS.

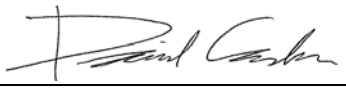
_____ THE SITE IS NOT RECOMMENDED FOR PLACEMENT INTO CERCLIS.

DISCUSS DECISION AND RATIONALE:

Pre-CERCLIS screening activities at this property are being conducted by EPA. The property was included in a list of hundreds of locations nationwide where secondary lead smelting or alloying might have been conducted between 1931 and 1964. The list was originally compiled by William P. Eckel in a doctoral dissertation for George Mason University and was based on entries in historical trade publications. The research was summarized in the article "Discovering Unrecognized Lead-Smelting Sites by Historical Methods" (Eckel et al, 2001) published in the American Journal of Public Health. Based on review of additional historical documents including city directories and Sanborn™ fire insurance maps, as well as an evaluation of current circumstances, EPA is attempting to identify if further investigation is warranted to evaluate possible public health threats associated with Neo Smelting & Refining at 150-40 11th Ave in Whitestone, NY.

On November 13, 2012, EPA visited 150-40 11th Ave., the address of the former Neo Smelting & Refining facility as indicated in Eckel's report, and found it occupied by Whitestone Manor Condominiums (established in 2008). As shown in the photo log provided in Appendix A, this address lies in the middle of a densely-packed residential neighborhood consisting of private homes with grassy yards. Available Sanborn maps indicate that a metal refining operation was located at that address during 1941, 1942, and 1950, while a metal scrap operation was located there from 1981 through 2006. Additionally, Sanborn maps show the footprint of the buildings having remained unchanged from 1941 to the present, suggesting that the previous metal refining/scrap building was refurbished into the northwestern portion of the Whitestone Manor Condominiums. Sanborn maps from 1950 through 2008 confirm the historical presence of residential dwellings with yards surrounding the site, as well as a courtyard area on the subject property that remains in the condominium complex.

Based on the confirmed historical presence of a metal refining operation at this address, the recent conversion of the site itself to condominiums, the presence of residential land on-site and nearby that contains exposed soil, and with the lack of knowledge of historical housekeeping practices and scale of operations, the Neo Smelting & Refining site is recommended for further assessment under CERCLA.

Checklist preparer: Daniel J. Carlson/  11/21/2012
Print name/signature Date

Title: Associate Project Scientist, Weston Solutions, Inc.
Date: November 21, 2012
Address: 205 Campus Drive, Edison, NJ 08837
Phone Number: (732) 417-5863
E-mail address: daniel.carlson@westonsolutions.com

Regional EPA Reviewer: _____ **_____**
Print name/signature Date

ATTATCHMENT 1

REQUIRED INFORMATION FOR SITE COORDINATES

Please provide Latitude and Longitude in decimal degrees.

a. Accuracy meters: Describe the accuracy value as a range (+/-) of the latitude and longitude in meters: **+/- one meter**

b. Collection method: Describe the method used to determine the site coordinates.

- ☐ Address matching
  - ☐ Block Face
  - ☐ Digitized
  - ☐ House Number
  - ☐ Nearest Intersection
  - ☐ Primary Name
  - ☐ Street Centerline
  - ☐ Other (specify) _____
- ☐ Interpolation
  - ☐ Map
  - ☐ Digital map source (TIGER)
  - ☐ Photo
  - ☐ Satellite
  - ☐ MSS
  - ☐ SPOT
  - ☐ TM
  - ☐ Other (specify) _____
- X Global Positioning System
  - ☐ Carrier phase kinematic relative positioning technique
  - ☐ Carrier phase static relative positioning technique
  - ☐ Code measurements (pseudo range) differential (DGPS)
  - ☐ Code measurements (pseudo range) precise positioning service
  - ☐ Code measurements (pseudo range) standard positioning service SA off
  - ☐ Code measurements (pseudo range) standard positioning service SA on
  - X GPS unspecified
- ☐ Public land Survey
  - ☐ Footing
  - ☐ Quarter section
  - ☐ Eighth section
  - ☐ Sixteenth section
  - ☐ Section
- ☐ Census
  - ☐ Block - 1990 - centroid
  - ☐ Block/group - 1990 - centroid
  - ☐ Block tract - 1990 - centroid
  - ☐ Other (specify) _____
- ☐ Loran C
- ☐ Classical Surveying Techniques
- ☐ Zip Code Centroid
- ☐ Zip+2 Centroid
- ☐ Zip+4 Centroid
- ☐ Unknown
- ☐ Other (specify) _____

c. Reference Datum: Please describe the reference datum of the latitude and longitude

- ☐ NAD27
- ☐ NAD83
- X WGS84
- ☐ Other (specify) _____
- ☐ Unknown

d. Reference Point: Describe the category of feature referenced by the site coordinates

- ☐ Administrative building
- ☐ Air monitoring station
- ☐ Air release
  - ☐ Stack
  - ☐ Vent
- ☐ Atmosphere emissions treatment unit
- ☐ Boundary point
- ☐ Center of facility/centroid
- X Facility/station building entrance
- ☐ Intake point
- ☐ Lagoon or settling pond
- ☐ Liquid waste treatment unit
- ☐ Loading area centroid
- ☐ Loading facility
- ☐ Monitoring point
- ☐ Northeast corner of land parcel
- ☐ Northwest corner of land parcel
- ☐ Plant Entrance
  - ☐ Freight
  - ☐ General
  - ☐ Personnel
- ☐ Process Unit
- ☐ Process Unit area centroid
- ☐ Southeast corner of land parcel
- ☐ Southwest corner of land parcel
- ☐ Solid waste treatment/disposal unit
- ☐ Solid waste storage area
- ☐ Water monitoring station
- ☐ Water release pipe
- ☐ Well
- ☐ Well protection area
- ☐ Within limits of groundwater plume
- ☐ Other (specify) _____
- ☐ Unknown

e. Source Map Scale: Describe the scale of the source used to determine the site coordinates

- ☐ 1:10,000
- ☐ 1:12,000
- ☐ 1:15,840
- ☐ 1:20,000
- ☐ 1:24,000
- ☐ 1:25,000
- ☐ 1:50,000
- ☐ 1:62,500

- ☐ 1:63,360
- ☐ 1:100,000
- ☐ 1:125,000
- ☐ 1:250,000
- ☐ 1:500,000
- X None
- ☐ Other (specify) _____
- ☐ Unknown

f. Point/line/area: Describe the area defined by the coordinates

- ☐ Area
- ☐ Line
- X Point
- ☐ Region
- ☐ Route
- ☐ Unknown

g. Collection Date: Please provide the date the site coordinates were obtained: **11/13/2012**

ATTATCHMENT 2

SITE TYPE MAIN CATEGORIES AND SUB CATEGORIES

Manufacturing/processing/maintenance

Chemicals and allied products
Radioactive products
Primary metals/mineral processing
Oil and gas refining
Metal fabrication/finishing/coating and allied industries
Lumber and wood products/pulp and paper
Lumber and wood products/wood preserving/treatment
Plastics and rubber products
Electronic/electrical equipment
Coal gasification
Ordnance production
Coke production
Trucks/ships/trains/aircraft and related components
Tanneries
Fabrics/textiles
Other (please specify)

Recycling

Batteries/scrap metals/secondary smelting/precious metal recovery
Waste/used oil
Automobiles/tires
Drums/tanks
Chemicals/chemical waste (e.g., solvent recovery)
Other (please specify)

Waste Management

Municipal solid waste landfill
Industrial waste landfill
Co-disposal landfill (municipal and industrial)
Industrial waste facility (non-generator)
Radioactive waste treatment, storage, disposal (non-generator)
Mine tailings disposal
Illegal disposal/open dump
Other (please specify)

Mining

Coal
Oil and gas
Metals
Non-Metal minerals
Other (please specify)

Other

Treatment works/septic tanks/other sewage treatment
Transportation (e.g., railroad yards, airport, barge docking site)
Product storage/distribution
Groundwater plume site with no identifiable source
Contaminated sediment site with no identifiable source
Retail/commercial (e.g., dry cleaners)
Agricultural (e.g., grain elevators)
Spill or other one time event
Military
Research, development, and testing facility
Dust control
Other (please specify)

APPENDIX A
PHOTOGRAPHIC DOCUMENTATION LOG

Photographs

Contract No./TDD Number	Site Name/Location	Date	Page
EP-S5-06-04	**Neo Smelting & Refining**	**11/13/12**	Page 1 of 3
S05-0013-1210-021	**Whitestone, New York**		

Photograph 1 – Front entrance of Whitestone Manor Condominiums at 150-40 11th Avenue, Whitestone, NY. Photo taken from 11th Avenue, facing SSE.

Photograph 2 – Close-up view of front entrance of Whitestone Manor Condominiums.

Photographs

Contract No./TDD Number	Site Name/Location	Date	Page
EP-S5-06-04	**Neo Smelting & Refining**	**11/13/12**	Page 2 of 3
S05-0013-1210-021	**Whitestone, New York**		

Photograph 3 – Photo taken on 11th Avenue, in front of Whitestone Manor Condominiums, facing NEE.

Photograph 4 – Photo taken on 11th Avenue, in front of Whitestone Manor Condominiums, facing N at private residences across street.

Photographs

Contract No./TDD Number	Site Name/Location	Date	Page
EP-S5-06-04	**Neo Smelting & Refining**	**11/13/12**	Page 3 of 3
S05-0013-1210-021	**Whitestone, New York**		

Photograph 5 – Private residences adjacent to west side of Whitestone Manor Condominiums. Photo taken on 11th Avenue, facing SW.

WESTON SOLUTIONS, INC.
205 CAMPUS DRIVE
EDISON, NEW JERSEY 08837
732-417-5800 • FAX: 732-417-5801

The Trusted Integrator for Sustainable Solutions

May 6, 2013

Mr. Andrew Fessler, Work Assignment Manager
U.S. Environmental Protection Agency
290 Broadway - 18th Floor
New York, NY 10007-1866

Document Control No.: 2101-2A-BDNY

Subject: **Sampling Trip Report**
Work Assignment No. 2101, NEO SMELTING AND REFINING
Preliminary Assessment/Site Inspection (PA/SI)
Contract No.: EP-S5-06-04, TDD No.: S05-0013-1302-006

Dear Mr. Fessler:

Weston Solutions, Inc. (WESTON®) is pleased to submit the Sampling Trip Report for the soil sampling associated with the Neo Smelting and Refining (Neo) PA/SI assignment. WESTON personnel collected soil samples from the grassy areas within the right-of-way (ROW) downwind of the former Neo smelter building footprint, within the courtyard of the former Neo smelter building footprint, and from the ROWs located in surrounding neighborhoods on April 25 and 26, 2013. If you have any questions, please contact me at (732) 417-5814.

Very truly yours,

WESTON SOLUTIONS, INC.

Denise Breen

Denise Breen
Assistant Project Scientist

enclosure
cc:
C. Romano, EPA (w/o enclosure)
G. Gilliland, WESTON (w/o enclosure)
Site file

I:\WO\START3\2101\45859

SAMPLING TRIP REPORT

SITE NAME: NEO SMELTING AND REFINING (Neo)
DCN: 2101-2A-BDNY
W.O.: 20405.012.013.2101.00
CLP Case No.: No case number assigned

EPA I.D. NO.: NYN000206646

SAMPLING DATES: April 25-26, 2013

1. Site Location: Refer to Figure 1

2. Site Map: Refer to Figure 2

2. Sample Locations: Refer to Figure 3

4. Laboratories Receiving Samples:

Analyses	Name and Address of Laboratory
Target Analyte List (TAL) Inorganics plus tin (Sn)	EPA Region 2 Division of Environmental Science and Assessment (DESA) 2890 Woodbridge Avenue Building 209 Edison, NJ 08837

5. Sample Dispatch Data:

- Forty-four soil samples and one rinsate blank were collected on 4/25/13 and delivered to the DESA lab at 1100 on 4/27/13. All samples were submitted for TAL Inorganics (plus Sn) analysis.

- Thirty-one soil samples were collected on 4/26/13 and delivered to the DESA lab at 1100 on 4/27/13. All samples were submitted for TAL Inorganics (plus Sn) analysis.

6. Sampling Personnel:

Name	**Organization**	**Site Duties**
Denise Breen	WESTON	Field Team Leader**,** Global Positioning System (GPS) Data Collection, Sampler

Daniel Carlson	WESTON	Site Health and Safety Coordinator (SHSC), GPS Data Collection
Sean Gavlas	WESTON	Sample Management Officer (SMO), Sampler, GPS Data Collection
Andrew Fessler	EPA	Work Assignment Manager (WAM)
Natalie Loney	EPA	Community Involvement Coordinator (CIC) (4/25/13)
Margaret Gregor	EPA	On-Scene Coordinator (OSC) (4/25/13)

7. Additional Comments:

From April 25-26, 2013, WESTON personnel collected a total of 75 surface and subsurface soil samples (including 4 environmental duplicate samples) from the ROW locations downwind of the former Neo building footprint, the courtyard of the former Neo building footprint, and from ROW locations in surrounding neighborhoods within a ½-mile radius.

The surface and subsurface soil samples were collected from a total of 15 locations surrounding the former Neo building footprint located in Whitestone, NY. Potential source samples were collected from two locations within the courtyard of the Whitestone Condominiums, where the former Neo building footprint is located. Potential release samples were collected from nine sample locations based on historic wind direction: southeast, south, southwest and west of the former Neo building footprint. The four sample locations northeast and northwest of the former Neo smelter building footprint are considered to be background sample locations upwind of the influence of site activities, based on the historic wind directions.

At each sample location, soil samples were collected at depth intervals of 0-1 inch, 1-6 inches, 6-12 inches, 12-18 inches, and 18-24 inches using a decontaminated stainless-steel hand auger. Refusal was reached within the courtyard of the Whitestone Condominiums (S14 and S15) at the depth of 12 inches. There were no photoionization detector (PID) readings above background from any of the soil samples collected. Each sample was homogenized in a dedicated, disposable aluminum tray with a dedicated, disposable plastic scoop prior to insertion into the sample container. All remaining soil not used for laboratory analysis was discarded at the sampling location.

All soil samples were submitted for analysis of TAL Inorganics (plus Sn). Soil samples collected from the 0-1 inch interval were designated for sieving by EPA DESA with a 250-micron, stainless-steel sieve and pan. Four soil samples were designated as Matrix Spike/Matrix Spike Duplicate (MS/MSD) for Quality Assurance/Quality Control (QA/QC) purposes. One

rinsate blank was collected to demonstrate adequate decontamination of non-dedicated sampling equipment (hand auger).

WESTON logged sample locations electronically using a handheld Trimble GPS unit and performed post-processing differential correction of the GPS data in accordance with EPA Region 2 GPS Standard Operating Procedures. The processed GPS data for all samples has been transferred to the Sample Location Map (Figure 3) using Geographic Information Systems.

All samples were collected from locations associated with the former Neo Smelting and Refining under the Region V Superfund Technical Assessment and Response Team III (START III) contract. All samples were hand-delivered to the EPA DESA lab for analysis. The Chain-of-Custody Records are presented in Attachment 1.

8. Report Prepared by: Denise Breen Date: 5/6/13
Denise Breen

9. Report Approved by: Gerald V. Gilliland Date: 5/6/13
Gerald V. Gilliland, P.G.

TABLE 1
SAMPLE DESCRIPTIONS
NEO SMELTING AND REFINING
WHITESTONE, NEW YORK

Sample No.	Date	Time	Comments
2101-S01-0-1	4/25/13	1440	Soil sample collected from the right-of-way (ROW) on 11th Avenue adjacent to the northwest side of the former smelter footprint. Depth: 0-1 inch. Description: Medium brown silty SAND, mostly fine with trace medium + coarse, little organic matter; moist.
2101-S01-1-6	4/25/13	1450	Soil sample collected from the ROW on 11th Avenue adjacent to the northwest side of the former smelter footprint. Depth: 1-6 inches. Description: Medium to dark brown silty SAND, mostly fine with trace medium + coarse, trace organic matter; moist.
2101-S01-6-12	4/25/13	1455	Soil sample collected from the ROW on 11th Avenue adjacent to the northwest side of the former smelter footprint. Depth: 6-12 inches. Description: Tannish medium brown silty SAND, fine with trace coarse, trace organic matter; moist.
2101-S01-12-18	4/25/13	1500	Soil sample collected from the ROW on 11th Avenue adjacent to the northwest side of the former smelter footprint. Depth: 12-18 inches. Description: Orangish tan silty SAND, fine with little coarse; moist.
2101-S01-18-24	4/25/13	1505	Soil sample collected from the ROW on 11th Avenue adjacent to the northwest side of the former smelter footprint. Depth: 18-24 inches. Description: Orangish tan silty SAND, fine with little coarse; moist.
2101-S02-0-1	4/25/13	1401	Soil sample collected from the ROW on 11th Avenue west of the northwest side of the former smelter footprint. Depth: 0-1 inch. Description: Medium brown silty SAND, fine to medium, some organic matter; dry.
2101-S02-1-6	4/25/13	1406	Soil sample collected from the ROW on 11th Avenue west of the northwest side of the former smelter footprint. Depth: 1-6 inches. Description: Medium brown silty SAND, mostly fine with trace medium + coarse, trace organic matter; moist.
2101-S02-6-12	4/25/13	1415	Soil sample collected from the ROW on 11th Avenue west of the northwest side of the former smelter footprint. Depth: 6-12 inches. Description: Orangish medium brown silty SAND, mostly fine with trace medium + coarse, trace organic matter; moist.
2101-S02-12-18	4/25/13	1421	Soil sample collected from the ROW on 11th Avenue west of the northwest side of the former smelter footprint. Depth: 12-18 inches. Description: Orangish medium brown silty SAND, mostly fine with trace medium + coarse, trace organic matter; moist.

TABLE 1 (continued)
SAMPLE DESCRIPTIONS
NEO SMELTING AND REFINING
WHITESTONE, NEW YORK

Sample No.	Date	Time	Comments
2101-S02-18-24	4/25/13	1430	Soil sample collected from the ROW on 11th Avenue west of the northwest side of the former smelter footprint. Depth: 18-24 inches. Description: Orangish medium brown silty SAND, mostly fine with little medium + coarse; moist.
2101-S03-0-1	4/25/13	1610	Soil sample collected from the ROW on 12th Avenue south of the former smelter footprint. Depth: 0-1 inch. Description: Tannish medium brown silty SAND, fine, trace organic matter; moist.
2101-S03-1-6	4/25/13	1630	Soil sample collected from the ROW on 12th Avenue south of the former smelter footprint. Depth: 1-6 inches. Description: Tannish brown silty SAND, fine with trace coarse, trace organic matter; moist.
2101-S03-6-12	4/25/13	1636	Soil sample collected from the ROW on 12th Avenue south of the former smelter footprint. Depth: 6-12 inches. Description: Tannish brown silty SAND, fine with trace coarse, trace organic matter; moist.
2101-S03-12-18	4/25/13	1643	Soil sample collected from the ROW on 12th Avenue south of the former smelter footprint. Depth: 12-18 inches. Description: Tannish light brown silty SAND, fine with trace coarse, little fine gravel, trace organic matter; moist.
2101-S03-18-24	4/25/13	1647	Soil sample collected from the ROW on 12th Avenue south of the former smelter footprint. Depth: 18-24 inches. Description: Tannish light brown silty SAND, fine with trace coarse, little fine gravel, trace organic matter; moist.
2101-S04-0-1	4/26/13	0840	Soil sample collected from the ROW area located on 150th Street near 11th Avenue. Depth: 0-1 inch. Description: Tannish brown silty SAND, fine, little organic matter, trace fine gravel; moist.
2101-S04-1-6	4/26/13	0847	Soil sample collected from the ROW area located on 150th Street near 11th Avenue. Depth: 1-6 inches. Description: Tannish brown silty SAND, fine, trace organic matter + fine gravel; moist.
2101-S04-6-12 **(MS/MSD)**	4/26/13	0853	Soil sample collected from the ROW area located on 150th Street near 11th Avenue. Depth: 6-12 inches. Description: Tannish brown silty SAND, fine, trace organic matter + fine gravel; moist. Matrix Spike/Matric Spike Duplicate (MS/MSD) for Quality Assurance/Quality Control (QA/QC) purposes.
2101-S04-12-18	4/26/13	0856	Soil sample collected from the ROW area located on 150th Street near 11th Avenue. Depth: 12-18 inches. Description: Tannish brown silty SAND, fine, trace organic matter + fine gravel; moist.

TABLE 1 (continued)
SAMPLE DESCRIPTIONS
NEO SMELTING AND REFINING
WHITESTONE, NEW YORK

Sample No.	Date	Time	Comments
2101-S04-18-24	4/26/13	0900	Soil sample collected from the ROW area located on 150th Street near 11th Avenue. Depth: 18-24 inches. Description: Tannish brown silty SAND, fine, trace organic matter + fine gravel; moist.
2101-S05-0-1	4/25/13	1535	Soil sample collected from the ROW on 12th Avenue south of the former smelter footprint. Depth: 0-1 inch. Description: Medium brown silty SAND, fine with trace medium to coarse, some organic matter; moist.
2101-S05-1-6	4/25/13	1547	Soil sample collected from the ROW on 12th Avenue south of the former smelter footprint. Depth: 1-6 inches. Description: Medium brown silty SAND, fine with trace medium, some organic matter; moist.
2101-S05-6-12	4/25/13	1552	Soil sample collected from the ROW on 12th Avenue south of the former smelter footprint. Depth: 6-12 inches. Description: Tan silty SAND, fine with trace medium and coarse; moist.
2101-S05-12-18 **(MS/MSD)**	4/25/13	1601	Soil sample collected from the ROW on 12th Avenue south of the former smelter footprint. Depth: 12-18 inches. Description: Tan silty SAND, fine with trace medium and coarse; moist. MS/MSD for QA/QC purposes.
2101-S05-18-24	4/25/13	1620	Soil sample collected from the ROW on 12th Avenue south of the former smelter footprint. Depth: 18-24 inches. Description: Tan silty SAND, fine with trace medium and coarse, trace fine gravel; moist.
2101-S06-0-1	4/25/13	1653	Soil sample collected from the ROW on 12th Avenue southeast of the former smelter footprint. Depth: 0-1 inch. Description: Medium to dark brown sandy SILT and ORGANIC MATTER; moist.
2101-S06-1-6	4/25/13	1700	Soil sample collected from the ROW on 12th Avenue southeast of the former smelter footprint. Depth: 1-6 inches. Description: Medium brown silty SAND, fine with trace coarse, little organic matter; moist.
2101-S06-6-12	4/25/13	1708	Soil sample collected from the ROW on 12th Avenue southeast of the former smelter footprint. Depth: 6-12 inches. Description: Dark brown silty SAND, fine to medium with trace coarse, little fine gravel, trace organic matter, trace glass; moist.
2101-S06-12-18	4/25/13	1715	Soil sample collected from the ROW on 12th Avenue southeast of the former smelter footprint. Depth: 12-18 inches. Description: Tannish brown silty SAND, fine to medium with trace coarse, trace fine gravel + organic matter; moist.

TABLE 1 (continued)
SAMPLE DESCRIPTIONS
NEO SMELTING AND REFINING
WHITESTONE, NEW YORK

Sample No.	Date	Time	Comments
2101-S06-18-24	4/25/13	1720	Soil sample collected from the ROW on 12th Avenue southeast of the former smelter footprint. Depth: 18-24 inches. Description: Tannish brown silty SAND, fine to medium with trace coarse, trace fine gravel; moist.
2101-S07-0-1	4/26/13	0933	Soil sample collected from the ROW area on 12th Avenue near 151st Place. Depth: 0-1 inch. Description: Medium brown silty SAND, fine to medium, little organic matter; moist.
2101-S07-1-6	4/26/13	0938	Soil sample collected from the ROW area on 12th Avenue near 151st Place. Depth: 1-6 inches. Description: Tannish medium brown silty SAND, fine, trace fine gravel + organic matter; moist.
2101-S07-6-12	4/26/13	0945	Soil sample collected from the ROW area on 12th Avenue near 151st Place. Depth: 6-12 inches. Description: Tannish medium brown silty SAND, fine, trace fine gravel + organic matter + black fill.
2101-S07-12-18	4/26/13	0954	Soil sample collected from the ROW area on 12th Avenue near 151st Place. Depth: 12-18 inches. Description: Tannish medium brown silty SAND, some black and white fill, trace organic matter; moist.
2101-S07-18-24	4/26/13	1003	Soil sample collected from the ROW area on 12th Avenue near 151st Place. Depth: 18-24 inches. Description: Medium tan clayey LOAM and black/white FILL, some fine gravel, trace organic matter; moist.
2101-S08-0-1	4/26/13	1425	Soil sample collected from the ROW area located on 12th Road near Clintonville Street. Depth: 0-1 inch. Description: Dark brown silty SAND, fine, little organic matter; moist.
2101-S08-1-6	4/26/13	1435	Soil sample collected from the ROW area located on 12th Road near Clintonville Street. Depth: 1-6 inches. Description: Medium brown silty SAND, fine, little organic matter, trace fine gravel; moist.
2101-S08-6-12	4/26/13	1445	Soil sample collected from the ROW area located on 12th Road near Clintonville Street. Depth: 6-12 inches. Description: Medium to dark brown silty SAND, fine with some medium, trace organic matter + fine gravel; moist.
2101-S08-12-18	4/26/13	1450	Soil sample collected from the ROW area located on 12th Road near Clintonville Street. Depth: 12-18 inches. Description: Medium to dark brown silty SAND, fine with some medium, trace organic matter + fine gravel; moist.
2101-S08-18-24	4/26/13	1455	Soil sample collected from the ROW area located on 12th Road near Clintonville Street. Depth: 18-24 inches. Description: Brownish orange sandy LOAM, trace fine gravel; moist.

TABLE 1 (continued)
SAMPLE DESCRIPTIONS
NEO SMELTING AND REFINING
WHITESTONE, NEW YORK

Sample No.	Date	Time	Comments
2101-S09-0-1	4/26/13	0725	Soil sample collected from the ROW area on 12th Road near 150th Street. Depth: 0-1 inch. Description: Medium brown silty SAND, fine, trace fine gravel + organic matter.
2101-S09-1-6	4/26/13	0735	Soil sample collected from the ROW area on 12th Road near 150th Street. Depth: 1-6 inches. Description: Medium brown silty SAND, fine, trace fine gravel + organic matter.
2101-S09-6-12	4/26/13	0740	Soil sample collected from the ROW area on 12th Road near 150th Street. Depth: 6-12 inches. Description: Medium brown silty SAND, fine, trace fine gravel + organic matter.
2101-S09-12-18	4/26/13	0747	Soil sample collected from the ROW area on 12th Road near 150th Street. Depth: 12-18 inches. Description: Medium brown silty SAND, fine, trace fine gravel.
2101-S09-18-24	4/26/13	0751	Soil sample collected from the ROW area on 12th Road near 150th Street. Depth: 18-24 inches. Description: Light tan silty SAND, fine, trace fine gravel; moist.
2101-S10-0-1	4/25/13	0817	Soil sample collected from the ROW area located on 10th Avenue near 150th Street. Depth: 0-1 inch. Description: Medium brown, silty SAND, fine, little organic matter; dry.
2101-S10-1-6	4/25/13	0837	Soil sample collected from the ROW area located on 10th Avenue near 150th Street. Depth: 1-6 inches. Description: Light brown, sandy SILT, trace organic matter; moist.
2101-S10-6-12	4/25/13	0847	Soil sample collected from the ROW area located on 10th Avenue near 150th Street. Depth: 6-12 inches. Description: Orangish medium brown silty SAND, fine, trace organic matter; moist.
2101-S10-12-18	4/25/13	0854	Soil sample collected from the ROW area located on 10th Avenue near 150th Street. Depth: 12-18 inches. Description: Orangish medium brown sandy SILT, trace organic matter + gravel; moist.
2101-S10-18-24	4/25/13	0904	Soil sample collected from the ROW area located on 10th Avenue near 150th Street. Depth: 18-24 inches. Description: Tannish light brown silty SAND, fine, little fine to coarse gravel; moist.
2101-S11-0-1	4/25/13	0830	Soil sample collected from the ROW area located on 10th Avenue northwest of the former smelter footprint and east of 150th Street. Depth: 0-1 inch. Description: Medium brown, silty SAND, fine, little organic matter; moist.

TABLE 1 (continued)
SAMPLE DESCRIPTIONS
NEO SMELTING AND REFINING
WHITESTONE, NEW YORK

Sample No.	Date	Time	Comments
2101-S11-1-6 **(MS/MSD)**	4/25/13	0913	Soil sample collected from the ROW area located on 10th Avenue northwest of the former smelter footprint and east of 150th Street. Depth: 1-6 inches. Description: Medium to dark brown silty SAND, fine, trace organic matter + fine gravel; moist. MS/MSD for QA/QC purposes.
2101-S11-6-12	4/25/13	0923	Soil sample collected from the ROW area located on 10th Avenue northwest of the former smelter footprint and east of 150th Street. Depth: 6-12 inches. Description: Tannish light brown silty SAND, fine, trace organic matter + fine gravel; moist.
2101-S11-12-18	4/25/13	0931	Soil sample collected from the ROW area located on 10th Avenue northwest of the former smelter footprint and east of 150th Street. Depth: 12-18 inches. Description: Tannish medium brown silty SAND, fine, trace fine gravel; moist.
2101-S11-18-24	4/25/13	0935	Soil sample collected from the ROW area located on 10th Avenue northwest of the former smelter footprint and east of 150th Street. Depth: 18-24 inches. Description: Tannish medium brown silty SAND, fine trace fine gravel; moist.
2101-S12-0-1	4/26/13	1130	Soil sample collected from the ROW area located on 10th Avenue northeast of the former smelter footprint and east of Clintonville Street. Depth: 0-1 inch. Description: Medium brown silty SAND, fine, trace organic matter; moist.
2101-S12-1-6	4/26/13	1143	Soil sample collected from the ROW area located on 10th Avenue northeast of the former smelter footprint and east of Clintonville Street. Depth: 1-6 inches. Description: Tannish brown silty SAND, fine, trace fine gravel + organic matter; moist.
2101-S12-6-12	4/26/13	1149	Soil sample collected from the ROW area located on 10th Avenue northeast of the former smelter footprint and east of Clintonville Street. Depth: 6-12 inches. Description: Tannish brown silty SAND, fine, trace fine gravel + organic matter; moist.
2101-S12-12-18	4/26/13	1155	Soil sample collected from the ROW area located on 10th Avenue northeast of the former smelter footprint and east of Clintonville Street. Depth: 12-18 inches. Description: Tannish brown silty SAND, fine, little fine gravel, trace organic matter; moist.
2101-S12-18-24	4/26/13	1215	Soil sample collected from the ROW area located on 10th Avenue northeast of the former smelter footprint and east of Clintonville Street. Depth: 18-24 inches. Description: Tannish brown silty SAND, fine, little fine gravel, trace small black fill (shiny); moist.

TABLE 1 (continued)
SAMPLE DESCRIPTIONS
NEO SMELTING AND REFINING
WHITESTONE, NEW YORK

Sample No.	Date	Time	Comments
2101-S13-0-1	4/26/13	1137	Soil sample collected from the ROW area located on 10th Avenue northeast of the former smelter footprint and east of Clintonville Street. Depth: 0-1 inch. Description: Medium brown silty SAND, fine, trace organic matter; moist.
2101-S13-1-6	4/26/13	1207	Soil sample collected from the ROW area located on 10th Avenue northeast of the former smelter footprint and east of Clintonville Street. Depth: 1-6 inches. Description: Tannish brown silty SAND, fine, trace fine gravel + organic matter; moist.
2101-S13-6-12 **(MS/MSD)**	4/26/13	1223	Soil sample collected from the ROW area located on 10th Avenue northeast of the former smelter footprint and east of Clintonville Street. Depth: 6-12 inches. Description: Tannish brown silty SAND, fine, some fine gravel, trace organic matter; moist. MS/MSD for QA/QC purposes.
2101-S13-12-18	4/26/13	1232	Soil sample collected from the ROW area located on 10th Avenue northeast of the former smelter footprint and east of Clintonville Street. Depth: 12-18 inches. Description: Tannish brown silty SAND, fine, some fine gravel, trace organic matter; moist.
2101-S13-18-24	4/26/13	1242	Soil sample collected from the ROW area located on 10th Avenue northeast of the former smelter footprint and east of Clintonville Street. Depth: 18-24 inches. Description: Tannish brown silty SAND, fine, little fine gravel, trace organic matter + small white fill and glass bits; moist.
2101-S14-0-1	4/25/13	1045	Soil sample collected from the courtyard of Whitestone Condominiums. Depth: 0-1 inch. Description: Medium to dark brown sandy SILT, little organic matter; wet.
2101-S14-1-6	4/25/13	1115	Soil sample collected from the courtyard of Whitestone Condominiums. Depth: 1-6 inches. Description: Medium brown silty SAND, fine to medium, some fine gravel, trace organic matter; wet.
2101-S14-6-12	4/25/13	1130	Soil sample collected from the courtyard of Whitestone Condominiums. Depth: 6-12 inches. Description: Medium brown silty SAND, fine to coarse, little fine gravel; moist.
2101-S15-0-1	4/25/13	1148	Soil sample collected from the courtyard of Whitestone Condominiums. Depth: 0-1 inch. Description: Orangish medium brown silty SAND and ORGANIC MATTER, fine to coarse; moist.
2101-S15-1-6	4/25/13	1151	Soil sample collected from the courtyard of Whitestone Condominiums. Depth: 1-6 inches. Description: Medium brown silty SAND, fine to coarse, little fine gravel, trace organic matter; moist.

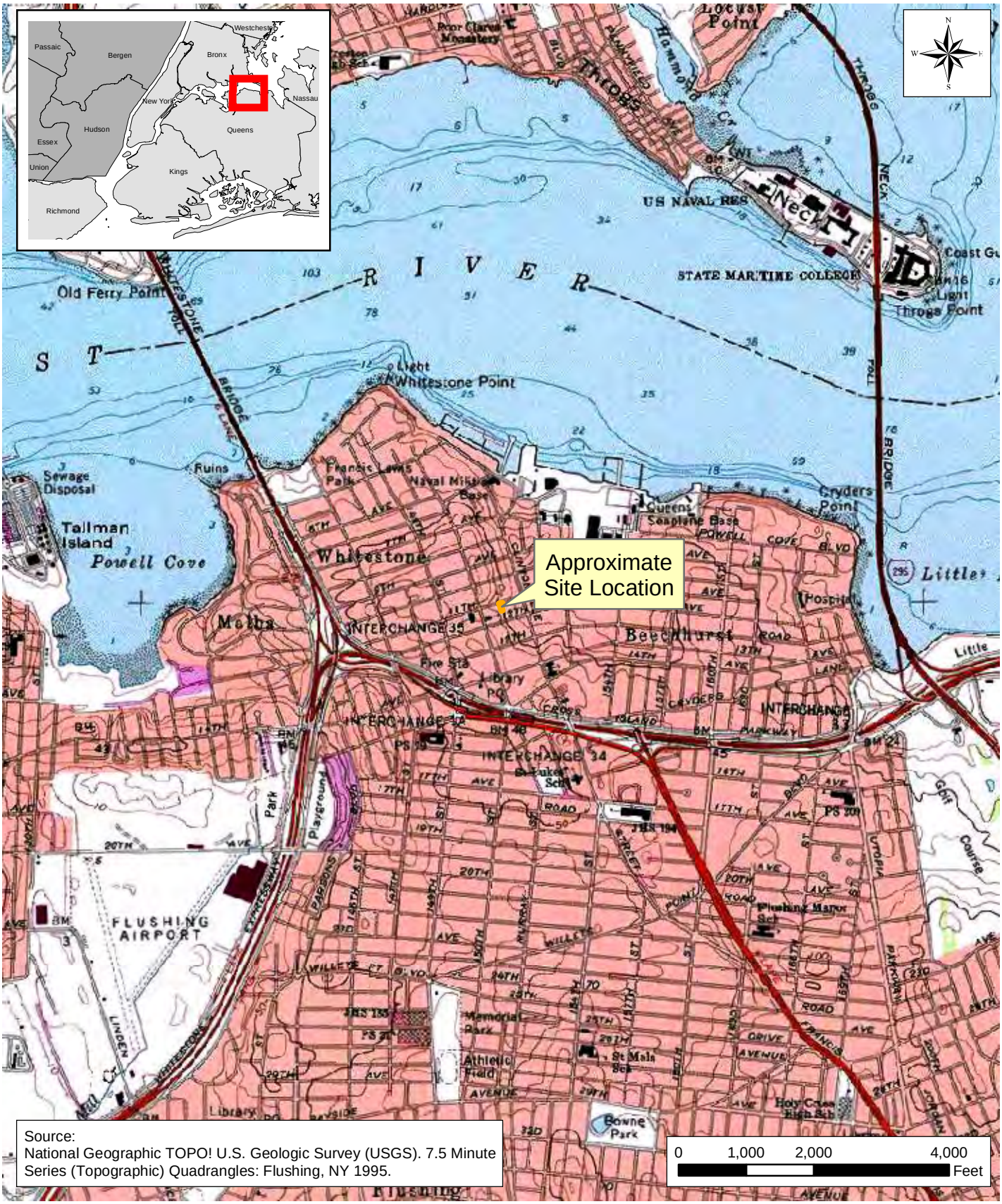
TABLE 1 (continued)
SAMPLE DESCRIPTIONS
NEO SMELTING AND REFINING
WHITESTONE, NEW YORK

Sample No.	Date	Time	Comments
2101-S15-6-12	4/25/13	1202	Soil sample collected from the courtyard of Whitestone Condominiums. Depth: 6-12 inches. Description: Medium brown silty SAND, fine to coarse, little fine gravel; moist.
2101-S16-0-1	4/26/13	0730	Duplicate of 2101-S09-0-1
2101-S16-6-12	4/25/13	0926	Duplicate of 2101-S11-6-12
2101-S16-12-18	4/25/13	1425	Duplicate of 2101-S02-12-18
2101-S16-18-24	4/25/13	1624	Duplicate of 2101-S05-18-24
2101-RIN01	4/25/13	1441	Rinsate blank sample collected from the decontaminated auger head.

FIGURE 1 – SITE LOCATION MAP

FIGURE 2 – SITE MAP

FIGURE 3 – SAMPLE LOCATION MAP



LEGEND:

Approximate Site Location

TITLE:

Site Location Map
Neo Smelting and Refining
150-40 11th Avenue
Whitestone, NY 11357

PROJECT:

Neo Smelting and Refining

CLIENT NAME:

EPA

WESTON SOLUTIONS

DATE:

3/15/2013

FIGURE #:

1

P:\SAT2\2013_Smelting_Sites\Neo_Smelting\MXD\12714_Neo_Site_Location.mxd.mxd

Sources:
1. U.S. Geological Survey (USGS), High Resolution Orthoimagery Published May 2009, http://earthexplorer.usgs.gov.

2. Environmental Data Resources (EDR), Sanborn Library Inc. 1942 Certified Sanborn Map.

LEGEND:

Approximate Site Location(2)

PROJECT:

Neo Smelting and Refining

TITLE:

Site Map
Neo Smelting and Refining
150-40 11th Avenue
Whitestone, NY 11357

CLIENT NAME:

EPA

WESTON SOLUTIONS

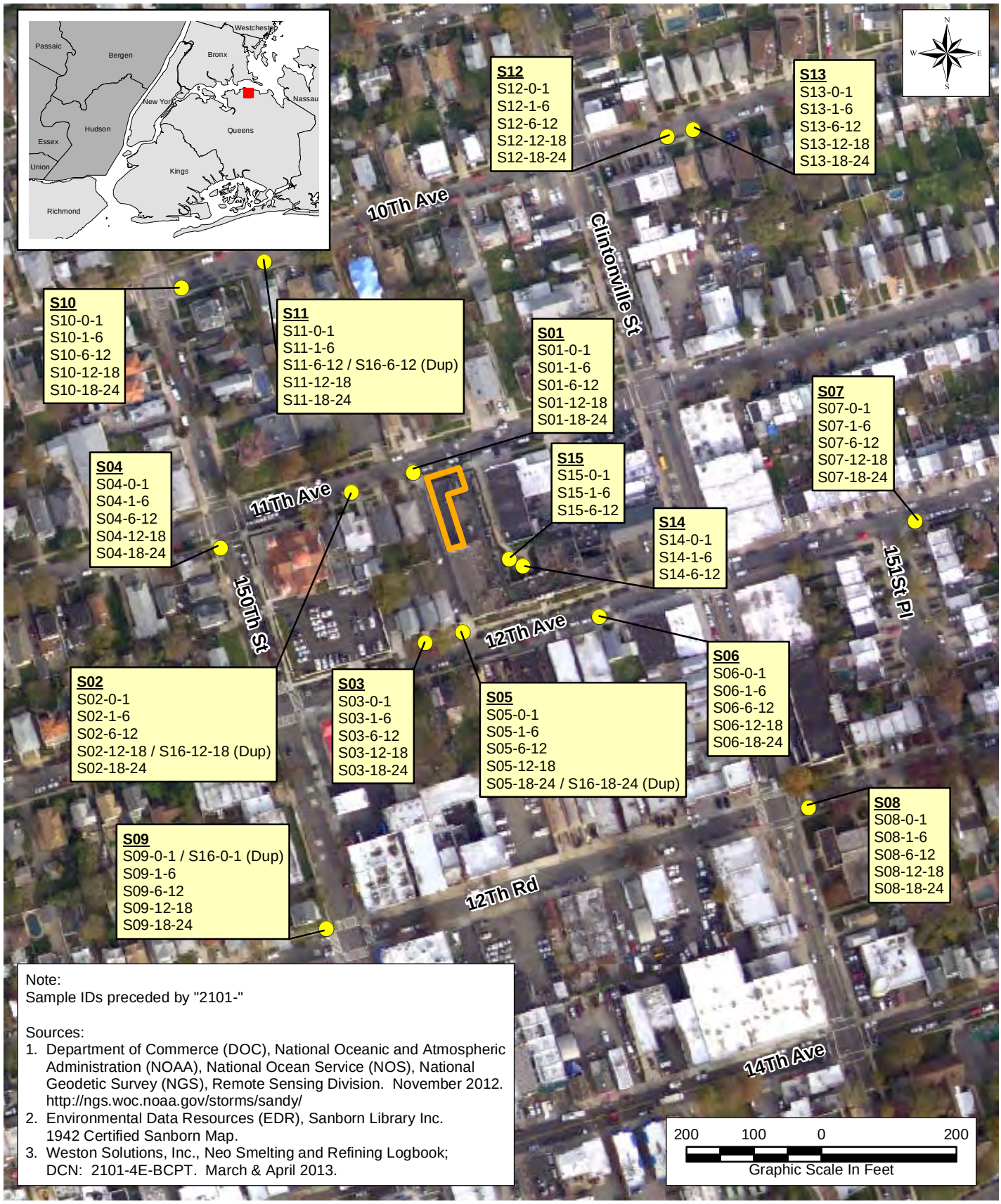
DATE:

3/15/2013

FIGURE #:

2

P:\SAT2\2013_Smelting_Sites\Neo_Smelting\MXD\12599_Site_Map.mxd



Note:
Sample IDs preceded by "2101-"

Sources:
1. Department of Commerce (DOC), National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), National Geodetic Survey (NGS), Remote Sensing Division. November 2012. http://ngs.woc.noaa.gov/storms/sandy/
2. Environmental Data Resources (EDR), Sanborn Library Inc. 1942 Certified Sanborn Map.
3. Weston Solutions, Inc., Neo Smelting and Refining Logbook; DCN: 2101-4E-BCPT. March & April 2013.

LEGEND:
- Soil Sample Location
- Approximate Site Location(2)

TITLE:
Soil Sample Location Map
Neo Smelting and Refining
150-40 11th Avenue
Whitestone, NY 11357

PROJECT: Neo Smelting and Refining

CLIENT NAME: EPA

WESTON SOLUTIONS

DATE: May 2013

FIGURE #: 3

P:\SAT2\2013 Smelting Sites\Neo Smelting\MXD\12978 NEO Sample Loc.mxd.mxd

ATTACHMENT 1

CHAIN OF CUSTODY RECORDS

USEPA
DateShipped: 4/27/2013

CHAIN OF CUSTODY RECORD

Contact Name: Sean Gavlas
Contact Phone: 609-433-8434

No: 2-042713-082430-0001
Cooler #2
Lab: DESA
Lab Phone: 732-906-6886

Lab #	Sample #	Location	Analyses	Matrix	Collected	Sample Time	Numb Cont	Container	Preservative	MS/MSD
	2101-RIN01	2101-S01	TAL Metals+Sn	Aqueous	4/25/2013	14:41	1	1 L poly	HNO3 pH<2	
	2101-S01-0-1	2101-S01	TAL Metals+Sn	Soil	4/25/2013	14:40	1	4 oz. Glass Jar	4 C	
	2101-S01-12-18	2101-S01	TAL Metals+Sn	Soil	4/25/2013	15:00	1	4 oz. Glass Jar	4 C	
	2101-S01-1-6	2101-S01	TAL Metals+Sn	Soil	4/25/2013	14:50	1	4 oz. Glass Jar	4 C	
	2101-S01-18-24	2101-S01	TAL Metals+Sn	Soil	4/25/2013	15:05	1	4 oz. Glass Jar	4 C	
	2101-S01-6-12	2101-S01	TAL Metals+Sn	Soil	4/25/2013	14:55	1	4 oz. Glass Jar	4 C	
	2101-S02-0-1	2101-S02	TAL Metals+Sn	Soil	4/25/2013	14:01	1	4 oz. Glass Jar	4 C	
	2101-S02-12-18	2101-S02	TAL Metals+Sn	Soil	4/25/2013	14:21	1	4 oz. Glass Jar	4 C	
	2101-S02-1-6	2101-S02	TAL Metals+Sn	Soil	4/25/2013	14:06	1	4 oz. Glass Jar	4 C	
	2101-S02-18-24	2101-S02	TAL Metals+Sn	Soil	4/25/2013	14:30	1	4 oz. Glass Jar	4 C	
	2101-S02-6-12	2101-S02	TAL Metals+Sn	Soil	4/25/2013	14:15	1	4 oz. Glass Jar	4 C	
	2101-S03-0-1	2101-S03	TAL Metals+Sn	Soil	4/25/2013	16:10	1	4 oz. Glass Jar	4 C	
	2101-S03-12-18	2101-S03	TAL Metals+Sn	Soil	4/25/2013	16:43	1	4 oz. Glass Jar	4 C	
	2101-S03-1-6	2101-S03	TAL Metals+Sn	Soil	4/25/2013	16:30	1	4 oz. Glass Jar	4 C	
	2101-S03-18-24	2101-S03	TAL Metals+Sn	Soil	4/25/2013	16:47	1	4 oz. Glass Jar	4 C	
	2101-S03-6-12	2101-S03	TAL Metals+Sn	Soil	4/25/2013	16:36	1	4 oz. Glass Jar	4 C	
	2101-S05-0-1	2101-S05	TAL Metals+Sn	Soil	4/25/2013	15:35	1	4 oz. Glass Jar	4 C	
	2101-S05-12-18	2101-S05	TAL Metals+Sn	Soil	4/25/2013	16:01	1	4 oz. Glass Jar	4 C	Y
	2101-S05-1-6	2101-S05	TAL Metals+Sn	Soil	4/25/2013	15:47	1	4 oz. Glass Jar	4 C	

Special Instructions: Please send all results to Sean Gavlas at sean.gavlas@westonsolutions.com

SAMPLES TRANSFERRED FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished By	Date	Received by	Date	Time
All Samples/ All Analyses	[signature]	4/27/2013	DESA	4/27/2013	11 cooler						

USEPA
DateShipped: 4/27/2013

CHAIN OF CUSTODY RECORD

Contact Name: Sean Gavlas
Contact Phone: 609-433-8434

No: 2-042713-082430-0001
Cooler #2
Lab: DESA
Lab Phone: 732-906-6886

Lab #	Sample #	Location	Analyses	Matrix	Collected	Sample Time	Numb Cont	Container	Preservative	MS/MSD
	2101-S05-18-24	2101-S05	TAL Metals+Sn	Soil	4/25/2013	16:20	1	4 oz. Glass Jar	4 C	
	2101-S05-6-12	2101-S05	TAL Metals+Sn	Soil	4/25/2013	15:52	1	4 oz. Glass Jar	4 C	
	2101-S06-0-1	2101-S06	TAL Metals+Sn	Soil	4/25/2013	16:53	1	4 oz. Glass Jar	4 C	
	2101-S06-12-18	2101-S06	TAL Metals+Sn	Soil	4/25/2013	17:15	1	4 oz. Glass Jar	4 C	
	2101-S06-1-6	2101-S06	TAL Metals+Sn	Soil	4/25/2013	17:00	1	4 oz. Glass Jar	4 C	
	2101-S06-18-24	2101-S06	TAL Metals+Sn	Soil	4/25/2013	17:20	1	4 oz. Glass Jar	4 C	
	2101-S06-6-12	2101-S06	TAL Metals+Sn	Soil	4/25/2013	17:08	1	4 oz. Glass Jar	4 C	
	2101-S10-0-1	2101-S10	TAL Metals+Sn	Soil	4/25/2013	08:17	1	4 oz. Glass Jar	4 C	
	2101-S10-12-18	2101-S10	TAL Metals+Sn	Soil	4/25/2013	08:54	1	4 oz. Glass Jar	4 C	
	2101-S10-1-6	2101-S10	TAL Metals+Sn	Soil	4/25/2013	08:37	1	4 oz. Glass Jar	4 C	
	2101-S10-18-24	2101-S10	TAL Metals+Sn	Soil	4/25/2013	09:04	1	4 oz. Glass Jar	4 C	
	2101-S10-6-12	2101-S10	TAL Metals+Sn	Soil	4/25/2013	08:47	1	4 oz. Glass Jar	4 C	
	2101-S11-0-1	2101-S11	TAL Metals+Sn	Soil	4/25/2013	08:30	1	4 oz. Glass Jar	4 C	
	2101-S11-12-18	2101-S11	TAL Metals+Sn	Soil	4/25/2013	09:31	1	4 oz. Glass Jar	4 C	
	2101-S11-1-6	2101-S11	TAL Metals+Sn	Soil	4/25/2013	09:13	1	4 oz. Glass Jar	4 C	Y
	2101-S11-18-24	2101-S11	TAL Metals+Sn	Soil	4/25/2013	09:35	1	4 oz. Glass Jar	4 C	
	2101-S11-6-12	2101-S11	TAL Metals+Sn	Soil	4/25/2013	09:23	1	4 oz. Glass Jar	4 C	
	2101-S14-0-1	2101-S14	TAL Metals+Sn	Soil	4/25/2013	10:45	1	4 oz. Glass Jar	4 C	
	2101-S14-1-6	2101-S14	TAL Metals+Sn	Soil	4/25/2013	11:15	1	4 oz. Glass Jar	4 C	

Special Instructions: Please send all results to Sean Gavlas at sean.gavlas@westonsolutions.com

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished By	Date	Received by	Date	Time
All Samples/ All Analyses		4/27/2013	DESA	4/27/2013	1100hrs						

USEPA

DateShipped: 4/27/2013

CHAIN OF CUSTODY RECORD

Contact Name: Sean Gavlas

Contact Phone: 609-433-8434

No: 2-042713-082430-0001

Cooler #2

Lab: DESA

Lab Phone: 732-906-6886

Lab #	Sample #	Location	Analyses	Matrix	Collected	Sample Time	Numb Cont	Container	Preservative	MS/MSD
	2101-S14-6-12	2101-S14	TAL Metals+Sn	Soil	4/25/2013	11:30	1	4 oz. Glass Jar	4 C	
	2101-S15-0-1	2101-S15	TAL Metals+Sn	Soil	4/25/2013	11:48	1	4 oz. Glass Jar	4 C	
	2101-S15-1-6	2101-S15	TAL Metals+Sn	Soil	4/25/2013	11:51	1	4 oz. Glass Jar	4 C	
	2101-S15-6-12	2101-S15	TAL Metals+Sn	Soil	4/25/2013	12:02	1	4 oz. Glass Jar	4 C	
	2101-S16-12-18	2101-S16	TAL Metals+Sn	Soil	4/25/2013	14:25	1	4 oz. Glass Jar	4 C	
	2101-S16-18-24	2101-S16	TAL Metals+Sn	Soil	4/25/2013	16:24	1	4 oz. Glass Jar	4 C	
	2101-S16-6-12	2101-S16	TAL Metals+Sn	Soil	4/25/2013	09:26	1	4 oz. Glass Jar	4 C	

Special Instructions: Please send all results to Sean Gavlas at sean.gavlas@westonsolutions.com

SAMPLES TRANSFERRED FROM

CHAIN OF CUSTODY #

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished By	Date	Received by	Date	Time
All Samples All Analyses		04/27/2013	DESA	4/27/2013	1600hrs						

USEPA
DateShipped: 4/27/2013

CHAIN OF CUSTODY RECORD

Contact Name: Sean Gavlas
Contact Phone: 609-433-8434

No: 2-042713-083324-0002
Cooler #2
Lab: DESA
Lab Phone: 732-906-6886

Lab #	Sample #	Location	Analyses	Matrix	Collected	Sample Time	Numb Cont	Container	Preservative	MS/MSD
	2101-S04-0-1	2101-S04	TAL Metals+Sn	Soil	4/26/2013	08:40	1	4 oz. Glass Jar	4 C	
	2101-S04-12-18	2101-S04	TAL Metals+Sn	Soil	4/26/2013	08:56	1	4 oz. Glass Jar	4 C	
	2101-S04-1-6	2101-S04	TAL Metals+Sn	Soil	4/26/2013	08:47	1	4 oz. Glass Jar	4 C	
	2101-S04-18-24	2101-S04	TAL Metals+Sn	Soil	4/26/2013	09:00	1	4 oz. Glass Jar	4 C	
	2101-S04-6-12	2101-S04	TAL Metals+Sn	Soil	4/26/2013	08:53	1	4 oz. Glass Jar	4 C	Y
	2101-S07-0-1	2101-S07	TAL Metals+Sn	Soil	4/26/2013	09:33	1	4 oz. Glass Jar	4 C	
	2101-S07-12-18	2101-S07	TAL Metals+Sn	Soil	4/26/2013	09:54	1	4 oz. Glass Jar	4 C	
	2101-S07-1-6	2101-S07	TAL Metals+Sn	Soil	4/26/2013	09:38	1	4 oz. Glass Jar	4 C	
	2101-S07-18-24	2101-S07	TAL Metals+Sn	Soil	4/26/2013	10:03	1	4 oz. Glass Jar	4 C	
	2101-S07-6-12	2101-S07	TAL Metals+Sn	Soil	4/26/2013	09:45	1	4 oz. Glass Jar	4 C	
	2101-S08-0-1	2101-S08	TAL Metals+Sn	Soil	4/26/2013	14:25	1	4 oz. Glass Jar	4 C	
	2101-S08-12-18	2101-S08	TAL Metals+Sn	Soil	4/26/2013	14:50	1	4 oz. Glass Jar	4 C	
	2101-S08-1-6	2101-S08	TAL Metals+Sn	Soil	4/26/2013	14:35	1	4 oz. Glass Jar	4 C	
	2101-S08-18-24	2101-S08	TAL Metals+Sn	Soil	4/26/2013	14:55	1	4 oz. Glass Jar	4 C	
	2101-S08-6-12	2101-S08	TAL Metals+Sn	Soil	4/26/2013	14:45	1	4 oz. Glass Jar	4 C	
	2101-S09-0-1	2101-S09	TAL Metals+Sn	Soil	4/26/2013	07:25	1	4 oz. Glass Jar	4 C	
	2101-S09-12-18	2101-S09	TAL Metals+Sn	Soil	4/26/2013	07:47	1	4 oz. Glass Jar	4 C	
	2101-S09-1-6	2101-S09	TAL Metals+Sn	Soil	4/26/2013	07:35	1	4 oz. Glass Jar	4 C	
	2101-S09-18-24	2101-S09	TAL Metals+Sn	Soil	4/26/2013	07:51	1	4 oz. Glass Jar	4 C	

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SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished By	Date	Received by	Date	Time
All Samples / All Analyses		4/27/2013	DESA	4/27/2013	11:00 hrs						

USEPA
DateShipped: 4/27/2013

CHAIN OF CUSTODY RECORD

Contact Name: Sean Gavlas
Contact Phone: 609-433-8434

No: 2-042713-083324-0002
Cooler #2
Lab: DESA
Lab Phone: 732-906-6886

Lab #	Sample #	Location	Analyses	Matrix	Collected	Sample Time	Numb Cont	Container	Preservative	MS/MSD
	2101-S09-6-12	2101-S09	TAL Metals+Sn	Soil	4/26/2013	07:40	1	4 oz. Glass Jar	4 C	
	2101-S12-0-1	2101-S12	TAL Metals+Sn	Soil	4/26/2013	11:30	1	4 oz. Glass Jar	4 C	
	2101-S12-12-18	2101-S12	TAL Metals+Sn	Soil	4/26/2013	11:55	1	4 oz. Glass Jar	4 C	
	2101-S12-1-6	2101-S12	TAL Metals+Sn	Soil	4/26/2013	11:43	1	4 oz. Glass Jar	4 C	
	2101-S12-18-24	2101-S12	TAL Metals+Sn	Soil	4/26/2013	12:15	1	4 oz. Glass Jar	4 C	
	2101-S12-6-12	2101-S12	TAL Metals+Sn	Soil	4/26/2013	11:49	1	4 oz. Glass Jar	4 C	
	2101-S13-0-1	2101-S13	TAL Metals+Sn	Soil	4/26/2013	11:37	1	4 oz. Glass Jar	4 C	
	2101-S13-12-18	2101-S13	TAL Metals+Sn	Soil	4/26/2013	12:32	1	4 oz. Glass Jar	4 C	
	2101-S13-1-6	2101-S13	TAL Metals+Sn	Soil	4/26/2013	12:07	1	4 oz. Glass Jar	4 C	
	2101-S13-18-24	2101-S13	TAL Metals+Sn	Soil	4/26/2013	12:42	1	4 oz. Glass Jar	4 C	
	2101-S13-6-12	2101-S13	TAL Metals+Sn	Soil	4/26/2013	12:23	1	4 oz. Glass Jar	4 C	Y
	2101-S16-0-1	2101-S16	TAL Metals+Sn	Soil	4/26/2013	07:30	1	4 oz. Glass Jar	4 C	

Special Instructions: Please send results to Sean Gavlas at sean.gavlas@westonsolutions.com

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished By	Date	Received by	Date	Time
All Samples / All Analyses		04/27/2013	DESA	04/27/2013	1100hrs						

Table 1. Neo Smelting and Refining PA/SI Soil Sample Results - April 25-26, 2013
Significant detections of lead in soil samples as compared to background

	Background Samples			Source Samples		Release Samples			
	Residential Soil Exceedence (mg/kg)	Maximum Background (mg/kg)	Exceedance of 3 times background (mg/kg)						
Depth				2101-S15	2101-S14	2101-S06	2101-S07	2101-S08	2101-S09
0-1inch	400	500	1500					710	430 (440)
1-6 inches	400	750	2250			530		990	
6-12 inches	400	230	690	960	690	620		800	
12-18 inches	400	810	2430			460	480	550	
18-24 inches	400	260	780						
Reference	Ref. 22 - pp. 7	Ref. 23 - pp. 73, 76, 79-80, 82		Ref. 23 - p. 49.	Ref. 23 - p. 46.	Ref. 23 - pp. 30, 31, 33.	Ref. 23 - p. 59.	Ref. 23 - pp. 63-65, 67.	Ref. 23 - p. 68.

Duplicates are noted in parenthesis.
All sample results in milligram per kilogram (mg/kg).
Significant detections are defined as detections in excess of three times background.
Maximun background samples as follows:
2101-S12-0-1: Collected in right-of-way (ROW) on 10th Ave
2101-S13-1-6: Collected in right-of-way (ROW) on 10th Ave
2101-S13-6-12: Collected in right-of-way (ROW) on 10th Ave
2101-S13-12-18: Collected in right-of-way (ROW) on 10th Ave
2101-S12-18-24: Collected in right-of-way (ROW) on 10th Ave

The Secondary Lead Smelting Industry

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy at George Mason University

By

William P. Eckel
Master of Science
The American University, 1988
Bachelor of Science
The George Washington University, 1981

Director: Gregory D. Foster, Associate Professor
Department of Chemistry

Summer Semester 2001
George Mason University
Fairfax, VA

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ABSTRACT

THE SECONDARY LEAD SMELTING INDUSTRY

William P. Eckel, Ph.D.

George Mason University, 2001

Thesis Director: Dr. Gregory D. Foster

The secondary lead smelting industry was built on the plentiful source of scrap provided by used lead-acid automobile batteries. Because batteries are heavy and therefore expensive to transport, hundreds of small secondary smelters came to be located close to the source of scrap: in large cities. There were over 275 plants in operation in the early 1940s. By 1970, the industry had begun to consolidate into fewer firms operating larger smelters. An historical survey of smelters operating between 1931 and 1964 revealed that as many as 430 of 640 were previously unrecognized by the federal EPA or state agencies. Eight sites in Baltimore and Philadelphia were sampled, and seven were found to have lead levels above residential standards. Most of these sites were close to residences. The ratio of antimony to lead in soil was found to be characteristic of secondary lead smelting sites.

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1. Introduction

Purpose of this Research

This work was inspired by my discovery, in 1994, that several sites formerly connected to secondary lead smelting were still severely contaminated with lead 20 to 40 years since they were last used. One site was Vickers Warehouse in Anderson, Indiana, a former battery-breaking operation (1966-1974) for the Southern Lead Company of Indiana (1). This site was located in a mixed commercial and residential area, and had soil lead contamination ranging from 56,500 to 136,000 ppm (13.6%) lead. Another site was International Lead at 2182 East 11th Street in Los Angeles, California, formerly operated (late 1950s) by Western Lead Products Company (later Quemetco, Inc.) The soil at this site was also contaminated with lead in the percentage range. Both of these companies were later purchased by RSR Corporation of Dallas, Texas, itself a major secondary lead smelting company. I discovered two other sites at this time, including Western Lead Product's factory in Commerce, California and Eastern Smelting and Refining, at 2200 East 11th Street, Los Angeles. All of these sites were reported to the authorities, and are now in various stages of investigation or clean-up.

These discoveries raised a number of questions that I attempt to answer in this dissertation: 1) How many other old, unrecognized secondary lead smelting sites and lead alloy manufacturing sites are there in the U.S.? 2) Were any such sites as highly contaminated with lead as the four sites already discovered? 3) Were any such sites

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located close to residential areas, and therefore a possible threat to public health due to exposure to lead-contaminated soil? 4) Could the presence of metals associated with lead (As, Cd, Sb) in the major raw material used in secondary lead smelting, old automobile batteries, be used to distinguish smelter-related soil lead contamination from other lead sources?

Environmental Geochemistry of Lead

Lead (Pb, atomic number 82, atomic weight 207.2 amu) is one of the elements that were known in ancient times. Its symbol (Pb) derives from the Latin name for it, *plumbum*. It is mentioned in the Book of Exodus. The alchemists believed it to the oldest metal, and associated it with the planet Saturn. Lead is very resistant to corrosion; lead pipes bearing the insignia of Roman emperors, used as drains from the baths, are still in service (2).

Schmidt et al. (3) have studied a Roman lead mine in the Extremadura region of Spain. The mine was worked for about 100 years beginning in 20-30 BC, and again in the late 19th century. Despite the passage of nearly 2000 years, contamination from the mine is measurable in vegetation, in downslope sediments leading to the Rio Tamuja, in the alluvium of that river for 18 km downstream, and possibly in aqueous mine drainage. A ridge crest north of the smelters, in a partly delineated area at least 200 meters long, contains as much as 1200 ppm lead and elevated Zn and As. Soil samples from waste rock dumps contain as much as 20,000 ppm (2.0%) Pb, 7000 ppm (0.7%) Zn, and 5000 ppm (0.5%) As. Outside the mining area, soils rarely exceed 40 ppm Pb, 115 ppm Zn, and 100 ppm As.

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Whitehead et al. (4) have studied medieval (1330 to 1550 AD) lead smelting sites in Derbyshire, United Kingdom. Soil contamination on the site of this smelter ranged from 63 to 16,500 ppm Pb, with an average of 3000 ppm Pb. Slag pieces collected at the site contained as much as 162,000 ppm (16%) Pb. Using Pb isotope analysis in 6 meter soil cores, these workers determined that Pb derived from the smelting operation had migrated to a depth of 4.5 meters. They estimated that the Pb had migrated at an average rate of only 8±2 mm over 555 years. These two studies demonstrate that soil lead contamination is a long-term problem. Once lead is deposited on soil, it persists indefinitely.

Lead emitted from a modern primary smelter was mostly in the form of lead sulfate ($PbSO_4$), with some lead sulfide (PbS), and possibly lead (II) oxide (PbO) (5). Lead is emitted from automobiles as halides (PbBrCl) and double salts with ammonium halides ($2PbBrCl.NH_4Cl$) (1) because of the use of ethylene dichloride and ethylene dibromide as lead scavenging agents. In the atmosphere, lead exists primarily in the form of $PbSO_4$ and $PbCO_3$ (1). In water, lead has a tendency to form compounds of low solubility with the major anions found in natural water. Hydroxide, carbonate, sulfide, and, more rarely, sulfate may act as solubility controls in precipitating lead from water, which can then be transported as colloidal particles. (1)

There is evidence that atmospheric lead is deposited on soil as the sulfate, or is rapidly converted to the sulfate at the soil surface. Lead sulfate is relatively soluble, compared to some other lead compounds, and would rapidly leach downward if it were not transformed to even less soluble species. In soils of pH 5 or above and organic matter

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content of 5% or more, atmospheric lead is retained in the upper 2-5 cm of undisturbed soil (1). Where adequate phosphate is present, the extremely low-solubility pyromorphites ($Pb_5(PO_4)_3X$), where X=halide or hydroxide, may ultimately control the solubility of lead (7,8). Treatment of lead-contaminated soil with phosphate has been suggested as a way to limit the bioavailability of lead (9).

In summary, it can be said that lead deposited on soil is quite immobile, remains in the upper few centimeters on a short time scale, and can persist in soil for periods of hundreds to thousands of years. Lead solubility, and therefore mobility, is controlled by the abundance of anions that form low-solubility compounds.

Sources and Uses of Lead.

Lead is obtained chiefly from the mineral galena, or lead (II) sulfide (PbS) by a roasting process. Other common lead ores are anglesite (lead (II) sulfate, or $PbSO_4$); cerrusite (lead (II) carbonate, $PbCO_3$); and minim (a mixed-valence lead oxide, Pb_3O_4). Great quantities of lead, both as the metal and the dioxide, are used in storage batteries. Its alloys include solder (with tin), type metal, and various antifriction alloys such as Babbitt metal. Much lead goes into the manufacture of cable covering, plumbing, ammunition, and in the manufacture of tetraethyl lead, $Pb(C_2H_5)_4$, an antiknock compound used in gasoline outside the U.S. White lead, the basic carbonate, sublimed white lead ($PbSO_4$), chrome yellow ($PbCrO_4$), red lead (Pb_3O_4) and other lead compounds were formerly used as pigments in paint. The use of lead in paint and gasoline were severely curtailed in the United States in the last quarter of the 20th century

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because of health concerns (2). The total amount of lead used in the U.S. has declined greatly as many of these uses have been eliminated, including uses in paint and gasoline.

Health Effects of Lead

Studies on the effects of lead in children have shown a relationship between exposure to lead and a number of adverse health effects. These include impaired mental and physical development, decreased heme biosynthesis (leading to anemia), elevated hearing threshold, and decreased serum levels of vitamin D. The neurotoxicity of lead is of particular concern, because prospective longitudinal (epidemiological) studies have shown that neurobehavioral effects, such as impaired academic performance and motor-skill deficits, may persist even after blood-lead levels return to "normal" (10). Recently, Lanphear et al. (11) have concluded that deficits in cognitive and academic skills associated with lead exposure occur at blood lead concentrations lower than 5 μg/dL. Presently, the Centers for Disease Control (1) do not consider a child with a blood-lead (PbB) level of 9 μg/dL or below (Class I) to be lead-poisoned. Children with PbB in the range of 10-14 μg/dL (Class IIA) "should trigger community-wide childhood lead poisoning prevention activities," and may need to be screened more frequently. In Class IIB (15-19 μg/dL PbB), a child "should receive nutritional and educational interventions and more frequent screening. If the blood levels persist in this range, environmental investigation and intervention should be done." In Class III (20-44 μg/dL PbB), a child should receive environmental evaluation and remediation and a medical evaluation. Such a child may need pharmacologic treatment of lead poisoning." In Class IV (45-69 μg/dL PbB), a child "will need both medical and environmental interventions, including

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chelation therapy." Class V (> 70 μg/dL PbB) is considered a medical emergency, in which "medical and environmental management must begin immediately."

There is a strong positive correlation between exposure to lead-contaminated soils and PbB levels. Generally, PbB levels rise 3-7 μg/dL for every 1000-ppm increase in soil or dust lead concentration (1). Reagan and Silbergeld (12) summarized the findings of 22 studies of the relationship between soil and dust lead and PbB, and found that the increase in PbB was from 0.6 to 15.5 μg/dL per 1000 ppm increase in soil/dust lead.

As the use of leaded gasoline was phased out in the U.S., there was a correlated decline in blood-lead (PbB) levels in children. The major sources of lead exposure in children today are considered to be consumption of lead paint chips in older housing (especially in children with pica, or the habit of eating non-food objects), and exposure to lead-contaminated dust and soil, both inside and outside of the home. Soil lead contamination near old lead smelters becomes more important to reducing children's total lead exposure as the more obvious sources (paint) begin to be controlled. Exposure to sites with percentage levels of lead in soil could be a major source of lead intake for children living near old lead smelting sites, and, according to the sources cited above, this level of soil lead could result in PbB levels of concern.

Secondary Lead Smelting in the Twentieth Century

Automobiles became the dominant form of personal transportation in the United States during the twentieth century. As the manufacturing and use of automobiles expanded, so did the use and environmental emissions of lead. The two major uses of lead in

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automobiles were the former use in leaded gasoline to increase octane rating, and the continuing use in lead-acid batteries to provide power for the electric self-starter. "The invention of the automobile starter motor in 1910 using the lead acid battery as the power source assured the future for lead as a major industrial commodity in the modern world" (13). Ten million automobile batteries were produced in the U.S. in 1932, and nineteen million in 1940 (14).

The lead-acid storage battery was invented by Plante in 1859 (14). After 1881, practical versions of the lead-acid battery were used in passenger car lighting for railways, in power stations for standby and peak loads, and in telephone stations. Lead-acid batteries powered the first electric automobile in 1894, and were used after 1911 in gasoline automobiles to power the electric self-starter, eliminating the need to start the engine with a hand crank. It was the latter usage that caused the lead-acid manufacturing industry to experience "extremely rapid growth" (14).

The secondary lead smelting industry reclaims lead metal and alloys from scrap. The chief alloy recovered for many years was antimonial lead (14). Besides scrapped batteries, sources of scrap include drosses (by-products of lead refining), battery plant scrap, old pipes or roof flashing, cable sheathing, solder and Babbitt metal (15). (Babbitt metal refers to a group of lead-tin-antimony alloys used as antifriction metals in wheel bearings.) This industry greatly expanded in the early twentieth century to take advantage of the plentiful new scrap source provided by used lead-acid batteries. "In the United States alone, records show that from 1907 to 1940 inclusive approximately 6,000,000 tons of lead have been reclaimed from various sources for re-use" (14).

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Between 1928 and 1939, total secondary lead recovered in the U.S. was between 198,300 and 308,600 tons per year (14). Secondary smelters produced 946,000 tons in 1990 (15). Early in the century, new secondary lead smelters were established in large cities such as Philadelphia, Brooklyn, Chicago, San Francisco, Los Angeles, Buffalo, Detroit, Newark, Dallas, and others. In 1946, it was stated that "the recovery of lead from old battery plates has become a very important industry in the last twenty-five years" (14). "The secondary lead industry is the most widely dispersed of any in the non-ferrous field. During 1942, at least 275 plants handled enough scrap to be classified as remelters (reclaimers), smelters or refiners" (14).

Large cities were preferred as the location for secondary smelters for economic reasons (13): "Generally, secondary smelters are located near large population centres, where there is a large volume of scrap batteries. The smelters must collect and process the batteries and deliver the metal to their customers, usually the battery manufacturers, who use the metal for the production of new batteries. The transportation costs of collection and subsequent delivery of metal is a significant portion of a smelter's total cost. The farther away the smelter is from the source of its feed and from its customers, the less it can pay [for scrap]. The sale price of the lead produced is determined by the international market price. Deducting the cost of operating the smelter and an acceptable profit leaves the residual which can be paid for scrap."

Smelters had to compete for their raw material by bidding for truckloads or trainloads of scrapped batteries from scrap yards, garages or other sources. The highest bidder had to add the cost of transporting the scrap to the smelter to the cost of the scrap itself.

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Those who had lower transportation costs (i.e., were closer to the source of the scrap) were therefore potentially more profitable. "The old storage batteries are collected by service stations, junk dealers, and automobile wreckers....[t]he batteries are then sold to dealers in secondary metals, who in turn sell them in carload lots to secondary smelters at the highest price obtainable (14).

Another factor that led to the establishment of large numbers of secondary lead smelters was the fact that the industry had low "barriers to entry" (16). In other words, the factors of production (lead scrap, smelting furnaces, refining equipment, battery breaking equipment, etc.) were well-known and readily available. It was not difficult to assemble the equipment needed to start a new smelter. By 1969, the industry was described as a "loose oligopoly" (16) in which "effecting collusive behavior" would be difficult. A further present-day barrier to entry that was not as important in the early twentieth century was pollution-control equipment, which was not as sophisticated then as it is now. Enforcement of pollution controls, especially air pollution controls, drove many smelters out of business in the 1960s and 1970s. "The increased costs of construction and the additional investment required for more sophisticated pollution free processes will likely result in an increasing concentration of the industry" (13). A 1987 U.S. Bureau of Mines study (17) estimated that anticipated regulatory compliance costs could cause the loss of up to 40 percent of domestic secondary lead production capacity.

The number of secondary lead smelters in the Unites States reached 275 or more by the early 1940s (14). Through mergers, acquisitions, and closures, this number dropped to about 150 by 1969 (16), 50 to 66 in 1980 (15), 43 in 1985 (15) and about 30 by 1994

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(18). Between 1983 and 1994, 24 of the 43 existing smelters closed permanently (15). Many of these smelters were defunct by the time of the establishment of modern pollution control agencies, such as the Environmental Protection Agency in 1970. The lack of government records of older smelters (those that were out of business by the early 1960s) may be the reason that they have not come to light until now.

Summary of Chapters 2, 3, and 4. In chapter 2, I describe a systematic search for former secondary lead smelters in the U.S. using industrial directories such as the Standard Metal Directory (19), the Yearbook of the American Bureau of Metal Statistics (20,21), and Metal Statistics (22). This was followed by a systematic review of the regulatory status of each site in US EPA databases to determine if the sites were "known" or "unknown" to US EPA. Freedom of Information Act requests were sent to EPA regional offices, to determine if they had any files on sites I believed were "unknown." Finally, I contacted the eight states with the highest number of "unknown" sites to determine if they had records independent of EPA's. Based on the estimate of 275 plants operating in 1942 (14), I expected to find dozens of sites. The final number of potential "unknown" sites (about 400) confirms the fact that there were many small firms in the industry. Many smelters appeared to have been established during or just after World War II, so the 1942 estimate of 275 (14) may not account for post-war growth.

Advertisements (19,22) are included in the Appendix to document the name, address, and historical period of many smelters. Sanborn Fire Insurance maps (appendix) were used to confirm the existence of actual smelting operations in Philadelphia, Baltimore, and greater Boston.

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Soil samples were taken from eight sites in Baltimore and Philadelphia to confirm that soil lead contamination above residential or industrial standards still existed at seven sites. A shorter version of chapter 2 was published in the *American Journal of Public Health* in April, 2001 (23).

In chapter 3, I attempted to attribute soil lead contamination at the Philadelphia and Baltimore smelters to the former smelting operations. Based on earlier work (24,25,26), I expected that the ratios of Pb to As, Sb, or Cd in the soil would be characteristic of secondary lead smelting sites and would distinguish them from other environmental sources of lead. Based on data from the Baltimore and Philadelphia sites, the literature (24,25,26), and a number of lead smelting sites investigated by US EPA, I conclude that the lead/antimony ratio in soil is most characteristic of these sites.

The lead-antimony "fingerprint" for secondary lead smelters is logical because the chief alloy recovered at many smelters was antimonial lead (so-called "hard" lead). Battery grids made of "hard" lead contained 5 to 12 percent antimony (14). Chapter 3 has been accepted for publication in the journal *Environmental Pollution*.

Chapter 4 is earlier work on ratios between lead and other metals in soil and air samples at a defunct smelter in Dallas, Texas. We confirmed earlier work (24) showing that correlations and standardized lead/metal ratios could be used to attribute soil contamination to smelter emissions. This paper also, in a limited way, suggested that the lead-antimony ratio was the most characteristic fingerprint for secondary lead smelter emissions. Chapter 4 was published in *Environmental Science and Technology* in 1996 (25).

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2. Discovering Unrecognized Lead-Smelting Sites by Historical Methods

Abstract

The purpose of this study was to determine how many unrecognized former lead smelting sites exist in the United States. These sites, which typically have high lead, arsenic, and antimony contamination in soil, may pose a threat to public health. Former lead smelters, solder and Babbitt metal factories were identified by research in industry trade publications dating from 1931 to 1964. The compiled list of sites was compared to federal lists of known hazardous waste sites to determine if they were already "known" to the authorities. We identified approximately 660 sites involved in the smelting or alloying of lead from 1931 to 1964. Fully 432 of the 660 sites (66%) were unknown to the authorities, including 165 "battery lead smelters." We reported two sites to the authorities, who found them to be highly contaminated. There are, apparently unknown to environmental regulators, approximately 432 sites formerly used by the lead smelting and allied industry in the United States. Those sites where lead-contaminated soil remains may pose a threat to public health.

Introduction

This chapter uses historical sources to compile a list of several hundred sites in the U.S. where secondary lead smelting or alloying was done from 1931 to 1964. These sites may still pose a threat to public health through ingestion or inhalation of metal-contaminated

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soil. The Agency for Toxic Substances and Disease Registry (ATSDR) and the Environmental Protection Agency (EPA) have ranked lead as the number one priority hazardous substance at Superfund sites, and as a serious public health problem, especially for children (6,27).

Secondary lead smelting is the recovery of lead metal and alloys from scrap including lead-acid batteries, lead cable coverings, plumbing, type metal, and wheel weights. This industry became important during the early twentieth century because automobile batteries could be recycled. Because lead-acid batteries are heavy, and therefore expensive to transport, secondary lead smelters came to be located near population centers, the sources of raw material (13). Secondary lead smelting produces a number of wastes that may become environmental contaminants (15,28,29). These include spent battery acid, furnace slag and matte, air emissions, and broken battery casings. Near many stationary sources, such as smelters, lead concentrations in soil may reach very high (percentage) levels and may persist in the upper 2 to 5 cm indefinitely (30). Lead in soil and dust remains the primary source of environmental lead exposure. Residential paint also contributes to lead in soil and dust.

Methods

Data Sources. Historical locations of secondary lead industry firms was gathered from two trade publications: the *Standard Metal Directory* (19, herein, "SMD") and *Year Book of the American Bureau of Metal Statistics* (20, later, *Non-Ferrous Metals Data*, 21 herein "ABMS"). Information on the structure of the industry, and changes in the numbers of

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active firms was obtained from academic theses, and government and industry publications (14,18,31).

The regulatory status of sites was determined from US EPA such as CERCLIS (list of potential Superfund sites), RCRIS (list of regulated hazardous waste sites) and FINDS (Facility Index System) and was confirmed through Freedom of Information Act requests to the ten U.S. EPA Regions, and contacts with selected state agencies. The CERCLIS, RCRIS, and FINDS databases were searched on-line through a service known as The Right-To-Know Network, or RTKNet. The databases were searched both by site name, and by listing all sites for a particular locality, to check for sites having the same address as the suspected former smelter. The FINDS database proved to be most useful, since it returned "hits" based on the alias names it listed for sites, as well as the primary name. State agencies were contacted by telephone. Lists of state-listed hazardous waste sites were obtained in print form, or in computer-readable form, by download or in compact disk read-only memory (CD-ROM) format.

The existence of actual smelting operations for selected sites was verified by checking Sanborn fire insurance maps, or by noting which locations were specified as "plant" or "works" or listed as having specific metal-smelting equipment in the trade publications.

Results

Structure of the Secondary Lead Smelting Industry. Information on the number of firms in the industry from 1941 to 1994 was gathered (14,18,31). Table 2-1 summarizes this historical information on the number of U.S. lead smelters. Clearly, there were many more firms in the secondary lead industry in the past than there are now. Many apparently

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went out of business long before the creation of the US EPA (1970) and of the Superfund program (1980).

Comparison of Smelter List to EPA Databases. The list of 660 smelting industry locations was checked against the US EPA databases as mentioned above. A site in the smelter database and FINDS were considered to "match" if the street address, city, and state were the same. If a site "match" was made, the US EPA site identification number was entered into the smelter database to indicate that US EPA was aware of that site. Identification numbers were found for 170 of 660 sites (26%). To double-check the site matching process, lists of all unmatched sites (195 "Battery Lead Smelters" sites, and 296 "Babbitt and Solder Manufacturers" sites) were sent to the ten US EPA Regional Offices with a Freedom of Information Act (FOIA) request for any files on the sites. US EPA reported that it had files on only 12 of these 491 sites (2%). After elimination of these 12 sites, "office-only" locations and duplicates, fully 432 of the sites identified in the literature search (66 % of the 660) were apparently unknown to US EPA.

Of the 170 sites with US EPA identification numbers, 14 are Superfund National Priority List sites, and 32 had had some action taken under the Resource Conservation and Recovery Act (RCRA). Thus, 46 of the 170 sites (27%) that US EPA already knew about were deemed contaminated enough to require clean-up.

Tables 2-2 and 2-4 list the sites that are apparently unknown to US EPA, based on database searches and FOIA data requests. There are 165 sites in the Battery Lead Smelter category (Table 2-2) consisting of sites listed in ABMS or the SMD Battery Lead

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Smelter lists. Another 267 sites that were listed only in the SMD Babbitt or Solder Manufacturers list are also apparently unknown to US EPA (Table 2-4).

Clearly, then, about two-thirds of the locations identified here (432 of 660), where lead smelting or lead fabricating has occurred in the U.S. since 1931 are unknown to US EPA.

Four populous states (Massachusetts, Illinois, California, New York) were also contacted to see if they were aware of potential sites within their borders. Two sites (National Lead of Massachusetts, in Boston, and Marquis Smelting in Los Angeles) were already known to the state authorities, but not to EPA. This represents less than 1% of the 491 "unknown" sites. It is possible that other sites are known to state authorities but not to US EPA.

Smelter Verification. The ABMS list is specifically given as "plant" locations. A few addresses given in SMD were obviously office locations only, such as those on Broadway in New York City, or in named office buildings. In some instances, firms placed advertisements that identified a particular address as the "works" or that depicted an aerial drawing of a factory with smokestacks. The SMD also published a separate list of "Metal Smelters and Refiners," which in many instances specified that an entry was a "plant" location. Some entries even listed the specific equipment at the plant (furnaces, refining kettles, sweating furnaces, cupolas, etc.) that confirmed their status as smelters. In Tables 2-2 and 2-4, the "Comments" column lists "equip" if specific metal smelting or fabricating equipment was listed, and "plant" if the location was indicated to be a plant.

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Despite these efforts, a few of the sites listed in Tables 2-2 and 2-4 may still have been only office locations.

Sanborn fire insurance maps (31) were checked for potential smelters in Massachusetts, and metropolitan Baltimore. Eight possible smelter locations were confirmed (5 in Massachusetts, and 3 in Baltimore.) Table 2-3 lists the sites shown to be smelters or metal works in these two areas.

Geographical Distribution. The 660 sites in the lead smelter database were located in 40 different states. However, the sites were concentrated in a smaller number of states. The largest numbers of sites are in the Northeast (NY-99, PA-74, NJ-49, MA-34), the Midwest (IL-86, MI-27, OH-25, IN-23, MN-13, WI-10, MO-17), California (57), and the South (GA-10, TX-33). Thus 14 states contained 557 of the 660 sites (84%).

Case Histories

Two case histories will illustrate that decades can pass before severe lead contamination comes to light. Both of these sites were discovered and reported to state authorities by the first author (WPE) in 1994.

Case History 1: International Lead, 2182 East 11th Street, Los Angeles, California. This site was established as an open-air lead smelter in 1946, was enclosed in 1954, and operated until 1959. In September 1965, the site was sold and used to die-cast aluminum. The building, long unused, was torn down in December, 1991 (33). The use of the site for lead smelting was confirmed by the Sanborn Fire Insurance map (Los Angeles, vol. 2, map 218). The site was reported to the state of California and US EPA as a potential hazardous waste site.

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When the site was investigated by the state (34), soil lead concentrations in the range of 360 mg/kg to 6.7% (average of 12 samples, 2.6%) were found. Arsenic, cadmium, and antimony were also all highly elevated. In 1996, the state issued clean-up orders (35,36) to the site owner, to the lead smelting company that operated the site in the 1950s, and to a railroad onto whose property the contamination had migrated.

Case Study 2: Vickers Warehouse, 1625 Ohio Avenue, Anderson, Indiana. This site was the location of a battery breaker from about 1967 to 1970 (37). (A battery breaker wrecks used lead-acid batteries to use as raw material in a smelter). The site was located in a mixed residential and commercial area, and was accessible to neighborhood children (38).

When the site was investigated by the Indiana environmental authorities, the soil was found to be contaminated with 1,500 mg/kg to 8.2% lead (39). The US EPA issued clean-up orders to the site owner, to the former site operator, and to a local battery manufacturer. Publicity in the local newspaper lead to the discovery of a second site where broken battery casings had been dumped into a river (40). Most recently, a Public Health Assessment for this site (1) has determined that after clean-up, it no longer poses a threat to public health.

Conclusions

This chapter shows that a systematic historical search for formerly used sites within a specific industrial category revealed the existence of sites previously unknown to the environmental authorities. Primarily through searches of old industrial directories, 660 were identified, but only about 184 were already listed in US EPA or state databases.

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Thus, about 400 potentially hazardous waste sites in the secondary lead smelting category have now been brought to light.

The case studies cited show that contamination from old lead smelters can persist for decades, and can become a problem many years after the end of production activities. This should create some sense of urgency for the investigation of the new sites identified here, because they may represent a significant source of exposure to lead and other toxic metals in their local environments. Based on our experience, a significant fraction of the sites listed in Tables 2-2 and 2-4 will require remediation.

Table 2-1- Summary of Number of Firms and Plants in U.S. Secondary Lead Industry, 1941 – 1994

Year	Firms	Plants	Reference
1941	over 35	"hundreds"	14
1942	--	over 275	31
1969	150	--	16,17
1980	26	50 to 66	29
1983	27	43	29
1994	16	23	29
1994	19	29	18

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Table 2-2- "Battery Lead Smelter" Sites Apparently Unknown to U.S. EPA

Region, State	Site	Address	City	Comments
I, MA	Harcon Corp.	41 Hilton St.	Boston	SMD1940
	Harcon Corp.	41 Bradston St.	Boston	SMD1950
	Vulcan Smelting Works	289 Third	Chelsea	SMD1963
	Richards Corp.	356 Commercial	Malden	SMD1950, 1963 state ID# 3-0018464
	David Feinburg Co.	Fifth St.	Medford	SMD1950, 1963 plant
	Arcade Smelting & Refining Corp. Victory Plant	--	Squantum	SMD1931
	U.S. Smelting Refining & Mining Co.	75 Federal St.	Boston	SMD1940, 1950,1963 office"
	National Lead (of Mass.)	800 Albany St.	Boston	SMD1940, 1950,1963 ABMS1956
II, NJ	Magnolia Metal Co.	120 Bayway	Elizabeth	SMD1931, 1940 equip
	Balbach Smelting & Refining Co.	Wilson & Doremus	Newark	SMD1940 plant
	Barth Smelting Corp.	9 Fredon St.	Newark	SMD1940, 1950
	Eagle-Picher Lead Co.	--	Newark	SMD1931
	United States Smelting Refining & Mining Co.	364-372 Elizabeth Ave.	Newark	MS1937, 1969
	Hudson Smelting & Refining Co.	85-87 Hyatt Ave.	Newark	SMD1931, 1940,1950 ABMS1945 MS1940 plant
	Hudson Smelting & Refining Co.	576 Wilson Ave.	Newark	SMD1950 equip
	Metal Reduction Corp.	4001 Dell Ave.	North Bergen	SMD1946
	Metals Disintegrating Co.	--	Verona	MS1947 plant
	Metals Disintegrating Co.	Morris Ave.	Townley	MS1947 plant
II, NY	City Metal Smelting & Refining Co.	61 N. 13th St.	Brooklyn	SMD1940
	Columbia Smelting & Refining Works	98 Lorraine	Brooklyn	SMD1931
	Consolidated Smelting	25 Provost Ave.	Brooklyn	SMD1940

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	Fox & London Inc.	21 Provost St.	Brooklyn	SMD1940. 1954
	Glaser Lead Co.	21-31 Wyckoff Ave.	Brooklyn	SMD1950, 1963 MS1949 ABMS1952
	Kahn Bros. Smelting	785 Humboldt St	Brooklyn	SMD1931, 1940,1950, 1963 equip
	Lee-Zurich Alloys Corp. a/k/a Kelly Metal corp.	335 Calyer	Brooklyn	SMD1931. 1950.1963
	United American Metals	970 Meeker St.	Brooklyn	SMD1950. 1963 ABMS1947
	United American Metals	200 Diamond	Brooklyn	SMD1931 plant
	Lake Erie Smelting Corp.	29 Superior	Buffalo	SMD1950
	Michael Hayman	856 E. Ferry	Buffalo	SMD1931,19 40,1950,1963 ABMS1946 equip
	National Lead	116 Oak	Buffalo	SMD1950 MS1937 ABMS1956
	Reliance Lead, Solder & Babbitt Co. Inc.	399 Gennessee St.	Buffalo	SMD1950. 1963 MS1944
	Samuel Greenfield Co.	31 Stone	Buffalo	SMD1940, 1950,1963 plant
	Magnus Metals Div.	779 Walden Ave.	Depew	SMD1963 ABMS1960
	Columbia Smelting & Refining Works Inc.	38-06 Review Ave	Long Island City	SMD1940
	Goldsmith Bros. Smelting & Refining	43-20 12th St.	Long Island City	SMD1950
	Balbach Smelting & Refining Co.	63 Park Row	New York	SMD1940
	Duquesne Smelting Co.	18 E. 48th St.	New York	SMD1940
	Magnolia Metal Co.	75 West	New York	SMD1931
	Tottenville Copper Co.	Foot of W. 29th	New York	SMD1931
	A.M.A. Div. of The Ore and Chemical Corp.	P.O. Box 63	Oceanside	SMD1963
	A.M.A. Corp.	--	Rockville Centre	ABMS1954
	Nassau Smelting & Refining Co.	603 W. 29th	Tottenville	SMD1931 plant
III, MD	Industrial Metal Melting	108 E. Barney	Baltimore	SMD1950. 1963 ABMS1963

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	Southern Smelting & Refining Works	200 Key Highway	Baltimore	SMD1931 plant
III, PA	Hammond Lead Products	40 E. Main	Carnegie	SMD1963
	Schuylkill Valley Metals	--	Conshohocken	SMD1931
	Price Battery Corp.	--	Hamburg	SMD1963 ABMS1952
	Penn Reduction & Refining Co.	--	New Castle	SMD1931
	American Alloys Co.	1939 E. Sargeant	Philadelphia	SMD1931, 1940
	Bers & Co. Div. of Gould Inc.	Ashland & Lewis	Philadelphia	SMD1940, 1950,1963 MS1943.1956 .1969 ABMS1945. 1971 equip
	Electric Storage Battery	42 S. 15th St.	Philadelphia	SMD1963 ABMS1945. 1968
	Electric Storage Battery	19th & Allegheny	Philadelphia	SMD1931
	Federated Metals Corp.	1700 Walnut	Philadelphia	SMD1931, 1940,1950 office?
	Federated Metals Corp.	Richmond & Hedley Streets	Philadelphia	SMD1950
	Girard Smelting & Refining Co. a/k/a Halpern, I., Bros. & Co.	Milnor & Bleigh, Tacony Station	Philadelphia	SMD1931 plant
	Halpern Metals Co.	5010 Lancaster Ave.	Philadelphia	SMD1963
	John T. Lewis & Bros. a/k/a National Lead a/k/a United Metals	2607 E. Cumberland	Philadelphia	SMD1950. 1963 MS1937,1956 ABMS1956 PAD981035660
	Jos. Rosenthal's Sons	1837 N. 2nd	Philadelphia	SMD1940. 1950.1963
	Jos. Rosenthal's Sons	190-2 W. Berks St.	Philadelphia	SMD1940. 1950.1963 MS1951
	Ladenson Metals Co. a/k/a Franklin Smelting & Refining	Castor Ave. E. of Richmond	Philadelphia	SMD1940. 1950,1963 PAD002280725
	L. Goldstein's Sons Inc.	Wissinoming Ave. & Knorr	Philadelphia	SMD1963 equip
	Metro Smelting Co.	Ontario & Bath Sts	Philadelphia	SMD1940, 1950 MS1945 ABMS1947

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	Morgan Smelters Inc.	Hedley St. E. of Richmond	Philadelphia	SMD1931
	North American Smelting	Tioga & Edgemont	Philadelphia	SMD1940 MS1938 ABMS1945
	Pennsylvania Smelting & Refining Co.	Ontario & Caspar	Philadelphia	SMD1940, 1950 MS1941 ABMS1945
	Sall, George, Metals Co.	2255 Butler	Philadelphia	SMD1963 equip
	Thos. F. Lukens Metal Co.	2917 E. Hedley	Philadelphia	SMD1950, 1963 PAD987308707
	U.S.Smelting Works	N.W.American & Bristol	Philadelphia	SMD1950, 1963
	Duquesne Smelting Corp.	50 33rd St	Pittsburgh	SMD1946 equip
	Federated Metals Div. ASARCO	615 Gross	Pittsburgh	SMD1931, 1950 ABMS1947 plant
	Pitt Metals Co. Inc. a/k/a Murdoch, M. & Co.	4314 Main	Pittsburgh	SMD1950, 1963
	Pittsburgh Smelting & Refining Co.	100 W. Elizabeth	Pittsburgh	SMD1940, 1950,1963 equip
	Bowers Battery & Spark Plug Co.	--	Reading	ABMS.1954
	Euston Lead Co. Affil. Metals Refining Co. Hammond IN	500 Pennsylvania Ave.	Scranton	SMD1940, 1950
	Laramie Metal Co.	2711 E. Market	York	SMD1963
	Laramie Metal Co.	44 W. Market St.	York	SMD1954
IV, FL	Florida Smelting Co.	5800 Buffalo Ave	Jacksonville	SMD1950, 1963 equip
	Florida Smelting Co.	17th & Evergreen	Jacksonville	SMD1940
	Florida Smelting Corp.	2726 Evergreen Ave	Jacksonville	SMD1946
	Russell, Roberts Metals Inc.	5761 NW 37th Ave	Miami	SMD1963
	Pure Lead Products Co.	3450 NW North River Drive	Miami	SMD1950, 1963
	Gulf Coast Lead Co.	110th Ave. & N. 56th St.	Tampa	SMD1963 ABMS1964 FLD984229773
IV, GA	Evans Metals Co.	740 Lambert Dr NE	Atlanta	SMD1963 MS1978

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	Evans Metals Co.	Piedmont Road NE & Seaboard Airline	Atlanta	SMD1950
	Miller Metal Co.	141 Fort St.	Atlanta	SMD1940
	Miller Metal Co.	73 Mills, NW	Atlanta	SMD1950
IV, KY	National Lead	--	Louisville	ABMS1950
IV, NC	Moore Smelting Co.	--	Charlotte	SMD1940
	Willard Smelting Co.	Griffith St.	Charlotte	SMD1950
	Winston Lead Smelting	--	Winston-Salem	SMD1940, 1950,1963 ABMS1952
IV, TN	General Smelting & Refining Co.	--	Nashville	ABMS. 1985
V, IL	Ablin Bros.	3108 S. Robinson	Chicago	SMD1963
	Bruco Co.	1416 W. 12th	Chicago	SMD1963
	Cohn, L.A. & Bro. Inc.	5429 W. Roosevelt	Chicago	SMD1931, 1950
	Eagle-Picher Lead Co.	134 N. LaSalle	Chicago	SMD1931 office?
	Federated Metals Corp.	41st & Wallace	Chicago	SMD1931
	Goldsmith Bros. Smelting & Refining Co.	111 N. Wabash Ave	Chicago	MS1956 office?
	Illinois Smelting & Refining Co.	3710 S. California Ave.	Chicago	SMD1950 office?
	Imperial Type Metal Co.	1800 S. 54th Ave	Chicago	ABMS,1960
	Loewenthal Metals Corp.	947 West Cullerton	Chicago	SMD1940, 1950 MS1937 equip
	Michigan Smelting & Refining Co.	410 N. Michigan Ave	Chicago	SMD1940 office?
	National Lead Co.	1607 Howard St.	Chicago	SMD1940
	Non-Ferrous Metals Inc.	141 W. Jackson Blvd	Chicago	SMD1963 office?
	Eagle-Picher Co.	--	East St. Louis	SMD1950 ABMS1945
	Lewin Metals Div. Cerro de Pasco Corp.	Monsanto P.O.	East St. Louis	SMD1950, 1963
	ASARCO	--	Federal	SMD1954
	Continental Smelting & Refining Co.	7753 47th	Lyons	SMD1954
V, IN	Magnus Metals Div. National Lead	--	Beech Grove	ABMS,1969
	Eagle-Picher Co.	--	East Chicago	SMD1950 ABMS1946
	International Lead Refining Co. (Anaconda Copper)	--	East Chicago	SMD1931
	International Smelting & Refining Co.	--	East Chicago	SMD1940
	PB Co.	--	Fort Wayne	ABMS1982

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	Hammond Lead Products	5231 Hohman	Hammond	SMD1950, 1963 equip
	Metals Refining Co. Inc. (Glidden)	1723 Summer St.	Hammond	SMD1931, 1940,1950 MS1937,1952 ABMS1945 equip
V, MI	Detroit Lead Co.	13535 Helen Ave.	Detroit	SMD1963 ABMS1959
	Detroit Lead Pipe Works	7001 Lyndon Ave.	Detroit	SMD1950, 1963
	Federated Metals Div. ASARCO	11030 Russell St.	Detroit	SMD1931, 1940,1950 plant, found by FOIA
	Michigan Smelting & Refining Co. Div. of Bohn Aluminum & Brass Corp.	7885 Jo. Campau Av	Detroit	SMD1931, 1940 plant
V, MN	Federated Metals Corp.	--	Minneapolis	SMD1931
	Northwestern Smelting & Refining Co.	1328 N. 2nd	Minneapolis	SMD1940
	General Smelting & Refining Co.	--	St. Paul	ABMS.1985
	National Lead	--	St. Paul	SMD1940 ABMS1956
	St. Paul Lead Co.	109 E. Chicago Av	St. Paul	SMD1963
	St. Paul Smelting & Refining Co.	243 Starkey	St. Paul	SMD1950
V, OH	American Compressed Steel	900 E. Front	Cincinnati	SMD1950, 1963 equip
	H & L Metal Co.	3360 E. 79th	Cleveland	SMD1963
	Koblitz-Kohn Co.	2380 Canal Rd.	Cleveland	SMD1940
	Lockport Lead Co.	7700 Bessemer Ave	Cleveland	SMD1931
	Metals Refining Co.	11001 Madison Ave.	Cleveland	SMD1931
	The Atlas Metal Co.	2651 E. 75th St.	Cleveland	SMD1940
	Tyroler Metals Inc.	5305 Sweeney Ave.	Cleveland	SMD1940, 1950,1963 MS1956
	Edlow Lead Co.	729 Bank	Columbus	SMD1963
V, WI	Allied Smelting Corp. a/k/a Wisconsin Lead Co.	5116 W. Lincoln Ave	Milwaukee	SMD1950, 1963 ABMS.1953
	National Lead	808 N. 3rd	Milwaukee	SMD1963 ABMS1956
VI, LA	Dixie Lead Co.	P.O. Box 1775	Baton Rouge	SMD1954
	National Lead	--	New Orleans	ABMS1956

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VI, TX	Cedergren Metals	P.O. Box 5562	Dallas	SMD1954
	Commercial Metals Co.	512 S. Akard	Dallas	SMD1950, 1963
	Commercial Metals Co.	Latimer at Corinth	Dallas	SMD1950
	National Lead	959 Terminal	Dallas	SMD1950 has ID#
	Gachman Metals Co.	2600 Shamrock Ave	Fort Worth	SMD1963 active
	East Texas Lead Co.	P.O. Box 1032	Henderson	SMD1950
	Gulf Coast Lead	--	Houston	ABMS1982 known site
	Wilkinson Bros. Smelting	1120 Ursula	Laredo	SMD1950, 1963
	Brunner Co.	1913 S. Flores	San Antonio	SMD1931
	Trottner Iron & Metal	1105 S. Medina	San Antonio	SMD1950 ABMS1945
	Lipshitz Smelting & Refining Works	101 Franklin	Waco	SMD1950
VII, MO	St. Louis Smelting & Refining Div. (National Lead)	P.O. Box 351	Fredericktown	SMD1950, 1963 plant
	Evans Wallower Lead Co.	--	Joplin	
	Kansas City Smelting & Refining Co. (Eagle-Picher)	2223 Guinotte Ave.	Kansas City	ABMS1945, 1947 equip
	Price Metal Refining Co.	Guinotte & Flora	Kansas City	SMD1940, 1950, 1963 equip
	Eagle-Picher Lead Co.	305 St. Clair	St. Louis	SMD1940
	Federated Metals Div. ASARCO	4041 Park Ave.	St. Louis	SMD1931, 1940, 1950 ABMS1947 equip
	Lewin-Mathes Corp. Div. of Cerro de Pasco Corp.	1111 Chouteau Ave	St. Louis	SMD1950, 1963 ABMS1945 office
	Magnus-Farley Industries (National Lead)	722 Chestnut St.	St. Louis	SMD1931, 1940, 1950, 1963 MS1956 ABMS1956, 1983
	Theo. Hiertz Metal Co.	8011 Alaska Ave.	St. Louis	SMD1950, 1963 ABMS1947 equip

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VII, NE	The Northwestern Metal Co	900 T St.	Lincoln	SMD1931. 1950,1963 equip
	Western Smelting & Refining Co.	--	Omaha	SMD1931
IX, AZ	Morris P. Kirk & Son (National Lead)	--	Phoenix	ABMS,1956
IX, CA	Morris P. Kirk & Son (National Lead)	4050 Horton	Emeryville	SMD1963 ABMS1956
	Morris P. Kirk & Son (National Lead)	--	Fresno	ABMS1956
	Atlas Lead Co.	--	Inglewood	ABMS1947
	Aaron Ferer & Sons	2300 E. 11th	Los Angeles	SMD1950
	Berg Metals Corp.	2640-80 Long Beach Ave.	Los Angeles	SMD1940, 1950 MS1942 ABMS1952 equip
	Electric Babbitt Metals.a/k/a Los Angeles Smelting Co.	10047 S. Alameda	Los Angeles	SMD1950, 1963
	Federated Metals Div. (ASARCO)	4010 E. 26th St.	Los Angeles	SMD1940. 1950 found by FOIA
	Federated Metals Div. (ASARCO)	1217 E. 26th	Los Angeles	SMD1931 plant
	International Lead Co.	415 Molino St.	Los Angeles	SMD1963
	Bunker Hill Co.	660 Market	San Francisco	SMD1963
	Electric Smelting Co.	91 Federal St.	San Francisco	SMD1940 equip
	Federated Metals Div. (ASARCO)	75 Folsom	San Francisco	SMD1931 equip
	Secondary Metal Dept. (ASARCO)	405 Montgomery	San Francisco	SMD1963
	Smelter Supply Co.	860 Riske Lane	West Sacramento	SMD1963
IX, HI	National Metals Ltd.	P.O. Box 2157	Honolulu	SMD1963
X, WA	Morris P. Kirk & Son (National Lead)	5014 Airport Way	Seattle	SMD1963 ABMS1956
	Federated Metals Corp.	101 Dakota	Seattle	SMD1931, 1950
	Rex Metal Works	117 Spokane	Seattle	SMD1950

Note: Comments: "plant" or "equip" = indication of smelting equipment or plant location from Metal Smelters and Refiners section of Standard Metal Directory. "Office" indicates that location may have been office only. "FOIA" indicates site was found in federal EPA files by freedom of information act request. "SMD", "MS", or "ABMS" indicates year found in that reference. Other codes indicate official site identifier (beginning with two-letter state code).

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Table 2-3- Sites Found on Sanborn Fire Insurance Maps in Selected Areas

Site Name	City, State	Map Reference
Harry Butter & Co.	Dorchester, MA	Boston, vol. 4, map 496
Nick Herman & Co	Dorchester, MA	Boston (1931) Vol. 9, map 980
Dixie Metal	Baltimore, MD	Baltimore, vol. 9, map 59
Industrial Metal Melting	Baltimore, MD	Baltimore, vol. 4, map 398
National Lead	Baltimore, MD	Baltimore, vol. 1, map 37
Cambridge Smelting	Cambridge, MA	Cambridge, vol. 1, map 66
Richards Co.	Malden, MA	Malden (1929) map 63
David Feinburg	Medford, MA	Medford, map 68

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Table 2-4: Sites on *Standard Metal Directory* "Babbitt and Solder Manufacturers" or "Smelters of Secondary Lead, Tin, Solder and Babbitt" Lists only

Region, State	Site Name	Address	City	Comments
I, CT	David C. Sanford Co.	39 Drouve	Bridgeport	SMD1950, 1963
	Hamden Smelting Co. Inc	30 Edmund St	Hamden	SMD1950 plant
	Lapides Metal Corp.	322 Legion Ave	New Haven	SMD1950, 1963 equip
	Surf Metal Co.	240 Great Meadow Rd	Stratford	SMD1963
I, MA	Eastern Smelting & Refining Corp.	109 W. Brookline St	Boston	SMD1946 state ID # 3-0004665
	General Metals & Smelting Co.	47 Topeka	Boston	SMD1963 state ID# 3-0019130
	General Metals & Smelting Co.	47 Burnham	Boston	SMD1950
	Harcon Corp. a/k/a H. Cohen & Co., Inc.	523 Dorchester Ave	Boston	SMD1963
	Shawmut Smelting Co.	455 Columbia	Cambridge	SMD1963
	Charlestown Smelting Co.	235 Medford	Charlestown	SMD1954
	Harcon Corp.	105 5th St.	Chelsea	SMD1954
	Oscar Cutler Co.	44 Arlington St.	Chelsea	SMD1963 has state ID
	Vulcan Smelting Works	115 Fifth	Chelsea	SMD1950
	Butter, Harry, & Co.	151 Mt. Vernon St.	Dorchester	SMD1950, 1963 has state ID
	Nick, Herman, & Co. Inc.	140 Granite Ave.	Dorchester	SMD1963
	Massachusetts Smelting & Refining Co.	257 3rd	E. Cambridge	SMD1946
	Acme Smelting Co. of Mass. a/k/a Acme Type Metal Co.	413 2nd	Everett	SMD1950, 1963
	Brackett, Chas. W. Co.	Mayflower Rd.	Plymouth	SMD1963 state ID# 4-0000615
	Acorn Type Foundry	273 Lee Burbank Hwy	Revere	SMD1954 equip
	Nick, Herman, Co., Inc.	135 Linwood St.	Somerville	SMD1950

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	Brackett, Henry F. & Co.	587 E. 1st	South Boston	SMD1954
	Coran Bros.Corp.	509 E. 2nd	South Boston	SMD1963
	Bloomfield, B. & Co.	2-3 Kansas St.	Worcester	SMD1950, 1963 has state ID
I, RI	Union Smelting & Refining Works	358 Public St.	Providence	SMD1963
	Union Smelting & Refining Works	604 S. Main St.	Providence	SMD1954
II, NJ	U.S. Metals Refining Co.	--	Carteret	SMD1940. 1950 NJD000526 525
	Wolf, Jacques & Co.	350 Lexington Ave.	Clifton	SMD1946
	Magnolia Metal Co.	18 W. Jersey St.	Elizabeth	SMD1950
	New Jersey Metals Co.	712 Rockefeller	Elizabeth	SMD1950
	Jackson Metal Co.	508 5th St.	Hoboken	SMD1950
	Jackson Metal Co.	501 Jackson	Hoboken	SMD1946 equip
	Lehman, Ira & Co. Inc.	401 Jefferson	Hoboken	SMD1950 equip
	Caswell, Strauss & Co.	Oak Tree Rd.	Iselin	SMD1950 plant
	Aetna Smelting & Refining Works, Inc.	13 Center	Jersey City	SMD1950
	Richard Metal Refining	675 Garfield Ave.	Jersey City	SMD1950 plant
	B & S Metal Co.	193 Pacific St.	Newark	SMD1950
	Canfield, M.C., Sons Co.	93 Wilsey	Newark	SMD1950. 1963
	Coleman, Thomas	13 Reardon (Ferdon?) St.	Newark	SMD1950. 1963
	Frema Smelting & Refining Co.	192 Murray	Newark	SMD1946
	Orchard Refining & Smelting Works Inc.	9-37 Victoria St.	Newark	SMD1950
	Orchard Refining & Smelting Works Inc.	319 Chestnut	Newark	SMD1946
	Schroth, Emil A., Inc.	39 Hyatt Ave.	Newark	SMD1963
	Sepenuk, J. & Sons	21 Hyatt Ave.	Newark	SMD1950
	The Riverside Metal Co.	1 Pavilion Ave.	Riverside	SMD1946 found by FOIA
	Mitchell, L.H. Co.	216 Klagg Ave.	Trenton	SMD1954
	Bohas Metals	Mutton Hollow Rd.	Woodbridge	SMD1963

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II, NY	Ney Smelting & Refining	37-06 23rd Ave.	Astoria	SMD1950
	Alloys & Products Inc.	Barry & Oak Point Ave.	Bronx	SMD1950 equip
	Merit Metal Smelting Co.	1361 Seneca Ave.	Bronx	SMD1946
	AAA Alloys of America	12 Wyckoff Ave.	Brooklyn	SMD1963
	Alpha Metals & Rolling Mills	363-5 Hudson Ave.	Brooklyn	SMD1950 MS1937. 1943
	Anchor Metal Co.	966 Meeker Ave.	Brooklyn	SMD1963
	Anchor Metal Co.	244 Boerum	Brooklyn	SMD1954
	Atlas White Metal Co.	77 Delevan	Brooklyn	SMD1950, 1963
	Battaglia Bros., Inc.	31 Washington	Brooklyn	SMD1954
	Brookhattan Smelting & Refining Co.	162 Richards St.	Brooklyn	SMD1950, 1963
	Brooklyn Scrap Metal Co.	171 Cook	Brooklyn	SMD1954
	Columbia Smelting & Refining Works a/k/a Roosevelt Metal Co.	958 Meeker Ave.	Brooklyn	SMD1950. 1963
	Crescent Smelting Works	232 Seigel	Brooklyn	SMD1950. 1963
	Flynn, Michael Inc.	16 Court	Brooklyn	SMD1950
	Friedman Metal Co.	310 Oakland	Brooklyn	SMD1950
	Henning Bros & Smith Inc	91 Scott Ave.	Brooklyn	SMD1950, 1963 equip
	Interstate Metals Co.	44 Court St.	Brooklyn	SMD1946
	Jackson-Wheeler Metal Service Inc.	270 Georgia Ave	Brooklyn	SMD1950
	Jackson-Wheeler Metals Service, Inc. a/k/a Belmont Metals	320 Belmont Ave.	Brooklyn	SMD1940. 1946.1950. 1963 NYD001306 877
	Kornblum, Sidney	394 Johnson Ave.	Brooklyn	SMD1950
	Monroe Smelting Corp.	511 Kent Ave.	Brooklyn	SMD1963
	Pittsburgh White Metal	284 Hamilton Ave.	Brooklyn	SMD1950, 1963
	Prospect Smelting & Refining Works	149 2nd Ave.	Brooklyn	SMD1950. 1963
	Rutgers Metal Co.	145 Gardner Ave.	Brooklyn	SMD1963
	Standard Type Metals a/k/a Universal Metal & Smelting Corp.	261 N. 9th St.	Brooklyn	SMD1950. 1963
	Valenti Metal Corp.	973-978 Grand	Brooklyn	SMD1950. 1963
	American Nickel Alloy Mfg. Co.	318 Third Ave.	Brooklyn	SMD1950

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	Wallabout Smelting & Refining Co.	31 Wilson	Brooklyn	SMD1963
	Buffalo White Metal Co. a/k/a Harry Fox Metal Co.	328 Howard	Buffalo	SMD1950, 1963
	Luman Bearing Co.	197 Lathrop St.	Buffalo	SMD1946
	Merit Metals	925 Bailey Ave.	Buffalo	SMD1954
	Niagara Falls Smelting & Refining Div. of Continental Copper & Steel Industries	2200-8 Elmwood Ave	Buffalo	SMD1950, 1963 equip
	Niagara Metal Co.	1378 Niagara St.	Buffalo	SMD1950, 1963
	Glaser Lead Co. Inc.	142 Fulton Ave.	Garden City Park	SMD1963
	Electro Refractories Alloys Corp.	--	Kellogg	SMD1946
	The Andrews Lead Company Inc.	--	L.I. City	MS1937
	Central Smelting Co.	2521-2531 51st Ave.	L.I. City	SMD1950, 1963 MS1948 equip
	Flemm Lead Company Inc.	Bradley Ave & School St.	L.I. City	MS1937
	Flemm Lead Co.	52-01 (-05) 31 st Place	L.I. City	SMD1950, 1963 MS1937 found by FOIA
	Lissberger, Marks & Son	23-15 Borden Ave.	L.I. City	SMD1946 equip
	Ney Smelting & Refining	44-09 10th	L.I. City	SMD1963
	Ney Smelting & Refining	37-06 23rd Ave.	L.I. City	SMD1954
	Stoll Metal Co. a/k/a Paragon Smelting Corp.	36-08 Review Ave.	L.I. City	SMD1950, 1963 equip
	Jack Rosen	203 S. 11th Ave.	Mt. Vernon	SMD1946
	Abbey Metal Corp.	868 E. 147th	New York	SMD1950
	American Nickel Alloy Mfg. Co.	30 Vesey Street	New York	SMD1954 office
	Barth Smelting Co.	15 Park Row	New York	SMD1940
	Caswell, Strauss & Co.	17 State	New York	SMD1950, 1954 ABMS1952
	Dorfman Metal Co.	96 Warren St.	New York	SMD1954
	Merit Metal Smelting Co.	1413 E. Bay Ave.	New York	SMD1950, 1963
	Metal Reclaiming Co.	285 Water St.	New York	SMD1946
	Monroe Smelting & Refining Works Inc.	90 Monroe St.	New York	SMD1946
	Nassau Smelting & Refining Co. (AT&T)	170 Fulton St.	New York	SMD1946 office?

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	National Lead Goldsmith Bros. Div.	74 W. 46th St.	New York	SMD1931, 1963 ABMS1956 office?
	New York Solder Co.	684 E. 133rd	New York	SMD1950, 1963
	New York Solder Co. Inc.	15 Crosby	New York	SMD1946
	Paymer Metal Co.	632 Truxton	New York	SMD1963
	Standard Type Metals	263 W. 9th St.	New York	SMD1954
	U.S. Smelting Refining & Mining Co.	57-62 William	New York	SMD1931, 1940,1963 office
	Rochester Lead Works	380 Exchange St.	Rochester	SMD1950, 1963
	Empire Metal Co.	820 E. Water	Syracuse	SMD1950
	Roth Bros. Metal Co.	1107 S. State	Syracuse	SMD1946 equip
	Katzman,N. & Co.	115 Broadway	Utica	SMD1946
	Neo Smelting & Refining	150-40 11th Ave.	Whitestone	SMD1950. 1963
	Yonkers Metal Corp.	957 Saw Mill River Rd	Yonkers	SMD1950. 1963
III, MD	Arundel Chemical Corp.	P.O. Box 216	Baltimore	SMD1954
	Dixie Metal Co. a/k/a K. Hettleman & Sons	9th St. & Patapsco	Baltimore	SMD1950, . 1963 equip
	Dixie Metals Co. a/k/a K. Hettleman & Sons	1400 Bush	Baltimore	SMD1950, 1963 equip
	Hanover Metal Co.	20 W. Cross	Baltimore	SMD1963 MD0007522 20 active
	National Lead	214 Henrietta	Baltimore	SMD1963 ABMS1956 MDD98053 7435
	Standard Metal Refining	4200 Boston Rd.	Baltimore	SMD1946
	United American Metals	1800 Cherry Hill Rd	Baltimore	SMD1950
	United American Metals	4101 Curtis Ave.	Baltimore	SMD1946
	Wolfe, Herbert A. Metal Co.	--	Fairfield	SMD1954
III, PA	Standard Metal Alloys	--	Conshohocken	SMD1950 equip
	United States Metal Products Co.	Fillmore Ave.	Erie	SMD1950 equip

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	Coslov Company	130 Monongahela Ave	Glassport	SMD1954 equip
	Penn-Harris Metals Corp.	1650 N. Cameron St.	Harrisburg	SMD1963
	Lewistown Smelting & Refining Co. Inc.	P.O. Box 708	Lewistown	SMD1950, 1963 equip
	A. Perez & Son Div. of Abrams Metal Co.	1429 N. 22nd	Philadelphia	SMD1963
	A. Perez & Son	5010 Lancaster	Philadelphia	SMD1950
	Atlantic Metals Corp.	2117 E. York	Philadelphia	SMD1950
	Cadman, A.W. Mfg. Co.	18 W. Chelton Ave.	Philadelphia	SMD1954
	Car-Mor Metal Co.	Gaul & Gordon Sts.	Philadelphia	SMD1950 equip
	General Smelting Co.	2901 E. Westmoreland	Philadelphia	SMD1950 equip
	Joseph Berliner Co.	Lewis below Ashland	Philadelphia	SMD1950 MS1956
	Liberty Smelting Co.	614 Brown	Philadelphia	SMD1946
	Merchants & Evans Co.	2035 Washington Ave	Philadelphia	SMD1950
	Metallurgical Products	35th & Moore	Philadelphia	SMD1950, 1963 equip
	Mink Smelting & Refining Works	18th & Washington	Philadelphia	SMD1950
	Philadelphia Smelting & Refining Co.	341 New Market	Philadelphia	SMD1950
	Reid Metal Refining Co.	Castor Ave. & Tulip	Philadelphia	SMD1950
	Reliable Metals Refining	3318 Memphis	Philadelphia	SMD1950
	Sall, George, Metals Co.	Westmoreland & Tulip	Philadelphia	SMD1950
	Standard Metal Alloy Co.	813 Parrish	Philadelphia	SMD1946
	United Smelting & Refining Co.	1700 Washington	Philadelphia	SMD1954
	White Bros. Smelting	Bridgesburg-on-the-Delaware	Philadelphia	SMD1946 plant
	Cadman, A.W. Mfg. Co.	2815 Smallman St.	Pittsburgh	SMD1946 equip
	Imperial Type Metal Co.	1247 Reedsdale	Pittsburgh	SMD1946
	Magnolia Metal Co.	3000 Liberty Ave.	Pittsburgh	SMD1950
	Pittsburgh White Metal	3116 Penn Ave.	Pittsburgh	SMD1946
III, VA	Glazier Metal Co.	21st & Hull Sts.	Richmond	SMD1950
IV, AL	Birmingham Lead & Smelting Co.	Pinson Rd.	Birmingham	SMD1963
IV, FL	Tampa Lead Industries	5217 E. Broadway Ave	Tampa	SMD1950
IV, KY	Precision Metals Co.	131 N. 10th	Louisville	SMD1950, 1963
	Certified Metals Mfg Co.	534 W. 12th	Newport	SMD1950 equip

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	Certified Metals Mfg Co.	12th & Licking Pike	Newport	SMD1946
IV, NC	Southern Metals Co. Inc.	1035 W. Morehead	Charlotte	SMD1963
	Southern Metals Co. Inc.	1023 W. Palmer	Charlotte	SMD1954
	Industrial Metals Alloy Co.	20 E. Arcadia Ave.	Winston-Salem	SMD1963 MS1938 NCD986178 382 plant
IV, TN	Cline & Bernheim	810 N. 17th Ave.	Nashville	SMD1963
V, IL	Eagle-Picher	--	Argo	SMD1950
	Aurora Refining Co.	--	Aurora	SMD1946 equip
	Federated Metals Div. ASARCO a/k/a Circle Smelting	--	Beckemeyer	SMD1946 equip NPL site
	A.W. Cadman Mfg. Co.	431 S. Dearborn	Chicago	SMD1963 office?
	Ablin Bros. Scrap Metals	3450 S. LaSalle	Chicago	SMD1950
	Ace Metal Co.	4500 W. Fillmore	Chicago	SMD1946
	Allied Metal Co.	1111 W. Liberty St.	Chicago	SMD1954
	Alpha-Loy Corp. Midwest Div., Alpha Metals Inc.	2250 S. Lumber St.	Chicago	MS1956
	American Metal Co. of Illinois, Ltd.	1 N. LaSalle	Chicago	SMD1946 office?
	Ames Metal Products Co.	1840 W. 33rd	Chicago	SMD1954
	Braman, Chas. & Sons	2046 W. Carroll Av	Chicago	SMD1946
	Century Smelting & Refining Corp.	2135 S. Loomis	Chicago	SMD1946
	Chicago Smelting & Refining Corp.	3701 S. Kedzie Ave.	Chicago	SMD1950, 1963 equip
	Cohn, H. & Sons	4528 W. Division St	Chicago	SMD1950
	Cooke, Miller, Yoelin	2635 W. Taylor St.	Chicago	SMD1954
	Delta Metals Inc.	1440 S. Talman	Chicago	SMD1963
	Division Lead Co. (DIVCO)	836 W. Kinzie St.	Chicago	SMD1950 MS1947 equip
	Elesco Smelting Corp. a/k/a Suppo Smelting & Refining	1240 W. Carroll Av	Chicago	SMD1950
	Elesco Smelting Corp.	3401 S. Lawndale Ave	Chicago	SMD1950, 1963 equip
	Elesco Smelting Corp.	1144 W. 14th Place	Chicago	SMD1950, 1963
	Ellis Metal Co.	2031 W.Churchill St	Chicago	SMD1946
	I.A. Berkson Metal Co.	1130 W.Wisconsin St	Chicago	SMD1963
	I.A. Berkson Metal Co.	1500 Wabansia	Chicago	SMD1950
	Imperial Smelting Corp.	4442 W. Fillmore St	Chicago	SMD1950
	International Smelting & Refining Co.	20 N. Wacker Dr.	Chicago	SMD1946 office?

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	Interstate Smelting & Refining Co.	332 S. Michigan	Chicago	SMD1963 office?
	J.Berkson & Sons Metal Co.	2239 S. Union Ave.	Chicago	SMD1963
	Kester Solder Co.	4201 Wrightwood Av	Chicago	SMD1950
	L.D. Allen Metal Works	6932 S. Clyde	Chicago	SMD1963
	Lake Calumet Smelting	11901 S. Champlain	Chicago	SMD1950
	Lincoln Smelting & Refining Co.	5811 W. 66th St.	Chicago	SMD1950, 1963
	Metals Recovery Co.	2026 W. Carroll Av	Chicago	SMD1946
	Miller Yoelin Co. a/k/a North Branch Metal Products Inc.	1925 N. Mendell	Chicago	SMD1963
	National Metal Co.	1724 W. Lake	Chicago	SMD1950, 1963
	North Branch Metal Products Inc.	3388 N.Avondale	Chicago	SMD1963
	Seaway Metals Refining Corp.	3307 S. Lawndale Av	Chicago	SMD1963
	Seligman, M., Co.	1951 Clybourn Ave.	Chicago	SMD1950
	Silverstein & Pinsof	1720 Elston Ave.	Chicago	SMD1950 equip active, 1996
	Smith & Robinson	1764 W. Highland	Chicago	SMD1950
	Smith & Robinson	420 Orleans	Chicago	SMD1946
	United Refining & Smelting	2920 W. Carroll Ave	Chicago	SMD1963
	United Refining & Smelting Co.	3350 Franklin Blvd.	Chicago	SMD1954
	Western Metal Co.	3201 S. Kedzie Ave.	Chicago	SMD1950 equip
	Hi Grade Alloys Corp.	3034 E. 59th	Chicago	SMD1963
	Shanfeld, E. Metal Products	1530 Converse Ave.	East St. Louis	SMD1954
	Saxon Metal Co.	17730 Chicago Ave.	Lansing	SMD1963
	Superior Metal Reclaiming	--	Lansing	SMD1950, 1963
	Dalkoff Metals	9th & 1st Ave.	Rock Island	SMD1963
V, IN	Inland Metals Refining	3601 Canal St.	East Chicago	SMD1950 equip
	U.S. Reduction Co.	Melville & Chicago Ave.	East Chicago	SMD1946 equip
	Wabash Smelting Co.	1509 McKinley Ave.	Fort Wayne	SMD1954
	Maynard Metals Co. Inc.	P.O.Box 1101	Hammond	SMD1963
	Metals Supply Service	6020 Hump Rd.	Hammond	SMD1963

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	Braman, Chas. & Sons	P.O. Box 547	Plymouth	SMD1954
	Max Schneider Co.	2606 W. Sample	South Bend	SMD1963
V, MI	Mindel, M. & Sons	319 8th St.	Benton Harbor	SMD1950
	Acme Metal Co.	1436 Holbrook St.	Detroit	SMD1963
	Aetna Smelting & Refining Co.	1826 Illinois	Detroit	SMD1950, 1963
	City Metals Refining Co.	2945 Hubbard	Detroit	SMD1950, 1963 equip
	Continental Metal Co.	11500 Russell	Detroit	SMD1954
	Federal Alloys Corp.	924 Leland	Detroit	SMD1946
	Federal-Mogul Corp.	11031 Shoemaker St.	Detroit	SMD1946
	Great Lakes Smelting Co.	1640 E. Euclid Ave.	Detroit	SMD1950, 1963
	Industrial Smelting Co.	19430 Mt. Elliott	Detroit	SMD1963
	Industrial Smelting Co.	648 E. Columbia Ave.	Detroit	SMD1950
	Motex Metal Process Corp.	4473 W. Jefferson	Detroit	SMD1946
	Standard Metals Co	1560 Franklin St.	Detroit	SMD1950
	Wolverine White Metal Co.	3421 Gibson	Detroit	SMD1963
V, MN	Metals Refining Co.	218 3rd Ave. N	Minneapolis	SMD1946
	Northwestern Smelting & Refining Co.	2523 Hiawatha Ave.	Minneapolis	SMD1950, 1963
V, OH	Certified Metals Mfg. Co.	1940 River Rd.	Cincinnati	SMD1963 MS1969
	G.A.Avril Co.	Este Ave. & B&O RR	Cincinnati	SMD1950, 1963 equip
	Moskowitz Bros.	Budd & Hariet Sts.	Cincinnati	SMD1963
	Gibson & Price Co. (National Lead)	1213 W. 3rd	Cleveland	SMD1946
	Mowery Metal Co.	6950 Kinsman Rd.	Cleveland	SMD1950
	North American Smelting	572 Juneway Dr.	Cleveland	SMD1963
	Columbus Metal Co.	459 Parsons Ave.	Columbus	SMD1950
	Columbus Metal Co.	2505 Groveport Pike	Columbus	SMD1963
	Linver-Kripke Div. Wabash Scrap Material Co.	628 S. 15th	Toledo	SMD1954
V, WI	Cassel, A.A., Metal Co.	518 N. 20th	Milwaukee	SMD1950
	Cream City Smelting Works	2726 W. Evergreen Lane	Milwaukee	SMD1950, 1963
	Crown Metal Co.	117-121 E. Washington	Milwaukee	SMD1950, 1963
	Jacob Bros. White Metal	538 S.2nd	Milwaukee	SMD1950

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	Locher, R.E. & Shefrin	1120 S. Barclay	Milwaukee	SMD1946
	Schiffman, Hy, Co.	1428 W. Pierce	Milwaukee	SMD1950
VI, TX	Western Lead Inc.	290 N. Osage	Amarillo	SMD1963
	American Smelting & Refining Works	4801 S. Lamar	Dallas	SMD1963
	Lead Products Co.	709 N. Velasco	Dallas	SMD1950, 1963 ABMS1950 TXD008080 715
	Grant & Tunnell Co.	Sargeant Rd.	Dallas	SMD1950
	Atlas Smelting & Refining Co.	6800 Brewster	Houston	SMD1954
	Eagle-Picher Co.	1121 Rothwell	Houston	SMD1954
	Murdock Lead Products	1209 Hutchins	Houston	SMD1963
	Wilkinson Bros. Smelting	2320 St. Rita	Laredo	SMD1954
VII, MO	Shostak Metal Corp.	303 Broadway	Kansas City	SMD1963
	American Lead Products	2939 Chouteau Ave.	St. Louis	SMD1950
	Frictionless Metal Co.	1458 Collins	St. Louis	SMD1950 equip
	Holtzman, M., Metal Co.	5223 McKissock Ave.	St. Louis	SMD1950, 1963 equip
	Shanfeld Bros. Metal Co.	56-70 Dock St.	St. Louis	SMD1950, 1963
VIII, CO	National Smelting & Refining Co.	1351 13th	Denver	SMD1950, 1963
VIII, UT	Lake Metals Co.	1520 Pioneer Rd.	Salt Lake City	SMD1963
	Utah Metal Works	1155 Hays Ave.	Salt Lake City	SMD1950
IX, CA	Cook Metal Co.	5752 Joanne Pl.	Culver City	SMD1954
	Kramer, H. & Co.	631 S.Aviation Blvd	El Segundo	SMD1954
	Goldberg Metal Refining	14700 S. Avalon	Gardena	SMD1963
	Sonken-Galamba Corp.	1439 W. 178th	Gardena	SMD1963
	J. Chersky & Sons a/k/a Universal Smelting & RefiningCo.	441 W. Florence Ave	Inglewood	SMD1963
	Ben Chersky & Sons	3500 Emery	Los Angeles	SMD1963
	California By-Products	5717 S. District Blvd	Los Angeles	SMD1954
	Liberty Metal Co.	2005 Bay	Los Angeles	SMD1954
	Mobile Smelting Co.	11813 S. Alameda	Los Angeles	SMD1950
	California Smelting & Refining Co.	1549 N. Fishburn Ave	Los Angeles	SMD1963

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	Electric Babbitt Metals a/k/a Los Angeles Smelting Co.	739 N. Main	Los Angeles	SMD1946
	Bercovich, A., Co.	127 2nd	Oakland	SMD1946
	Bercovich, A., Co. a/k/a Sunset Smelting & Refining Co.	1639 18th	Oakland	SMD1950
	Bunker Hill Co.	1336 16th	Oakland	SMD1963
	Berg Metals Corp.	1200 Minnesota St.	San Francisco	SMD1946 found by FOIA
	Bondrat Metals Corp.	23rd & Minnesota	San Francisco	SMD1946
	Asher Metal Co.	584 4th	San Francisco	SMD1950, 1963 equip
	Finn, John, Metal Works	384 2nd	San Francisco	SMD1950
	Gollan Type Metal Co.	1220 Penn. Ave	San Francisco	SMD1954
	Magnolia Metal Co.	660 3rd	San Francisco	SMD1950
	Mars Metal Corp.	Foot of Tunnell Av	San Francisco	SMD1950, 1963 equip
	Northwest Lead Co.	444 Market	San Francisco	SMD1954
	Roto Metals Inc.	980 Harrison	San Francisco	SMD1950, 1963 found by FOIA
	United American Metals Corp. of California	785 Bryant St.	San Francisco	SMD1950
IX, HI	Hawaii Lead Co.	965 Nimitz Highway	Honolulu	SMD1963
X, OR	The Bunker Hill Co.	1233 NW Kearny	Portland	SMD1963
	Multnomah Metal Co.	1434 SW Front Ave.	Portland	SMD1950, 1963
	Pacific Metal Co.	303 NW Park	Portland	SMD1950
X, WA	Non-Ferrous Metals Inc.	2906 16th Ave SW	Seattle	SMD1963 found by FOIA

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3. Investigation of Unrecognized Former Secondary Lead Smelting Sites: Confirmation by Historical Sources and Elemental Ratios in Soil

Abstract

Twelve suspected former secondary lead smelting sites were investigated. Ten of the sites were confirmed to be former secondary lead smelters or lead works by historical fire insurance maps and contemporaneous metal industry trade directories. At the eight sites sampled, the ratio Sb:Pb was more similar to results from ten known lead smelting sites than were the As:Pb and Cd:Pb ratios. Data from the ten known lead smelting sites showed that the Sb:Pb ratio is most characteristic of secondary lead smelting sites. This is because the primary alloy smelted at such sites is antimonial lead. Lead contamination at the eight sites investigated here can be attributed at least in part to the former smelters because of the association between Sb and Pb.

Introduction

We have demonstrated (23) that over four hundred sites formerly used in secondary lead smelting operations have not been recognized as potential hazardous waste sites by the U.S. government nor by state governments. Soil at such sites is often contaminated with lead into the percentage range (24,41,42,43), and so may pose a threat to public health via inhalation or ingestion of lead-contaminated dust. The purpose of this chapter is: to examine the ratio of Pb to As, Sb, and Cd in soil at several such "unrecognized" sites; to compare these ratios to those at known secondary lead smelting sites; and to

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determine if the Sb:Pb, As:Pb, or Cd:Pb ratio in soil can be used to identify old battery smelting works.

Many workers have reported elevated metal concentrations near primary and secondary lead smelters and lead-acid battery factories. Kimbrough and Suffet (24) found characteristic ratios of Pb, Sb, As, and Cd (approx. 1000:50:10:1) in soils near two operating secondary smelters in Los Angeles. Concentrations of the metals were correlated, with R-squared values of 0.41 to 0.90. Amter and Eckel (25) reported similar ratios among Pb, As, and Sb in historical data from a defunct secondary smelter in Dallas, TX. Kimbrough and Cardner (26) found significant correlations between Pb, As, Sb, and Cd in sediments downstream of one of the Los Angeles smelters. Chatterjee and Banerjee (41) found significant correlation between Pb and As, Sn, Mo, Hg, Cd, and Zn in the soil near a secondary smelter in Calcutta. Machemer et al. (44) reported a correlation between Pb and Sb in soil in the investigation of a lead smelter in the southeastern U.S.

Lent, Herczeg, Welch and Lyons (45) have reported on Pb, Cu, Zn, Fe, Cd, and Ag concentrations in sediments near the primary smelter in Port Pirie, South Australia. Kalac, Burda, and Staskova (46) reported on the concentrations of Pb, Cd, Hg and Cu in mushrooms near a Czech smelter established in 1786, and operated as a secondary smelter since 1972. Rieuwarts and Farago (43) found that this smelter was the cause of elevated Pb, Zn, Cd, Cu, As, and Sb in soils at least 6 km from the stack. Gzyl (47,48) has examined Pb, Zn, and Cd in soil and vegetables near a smelter in the Katowice district of Poland. Eklund (49) has reported on Pb and Cd in oak tree rings near a

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Swedish battery factory. Taken together, these articles demonstrate that soils near old lead works are contaminated not only with lead, but also other toxic metals.

Kimbrough and Suffet (24), Amter and Eckel (25), and Kimbrough and Cardner (26) have all demonstrated that soils contaminated by secondary lead smelting operations have characteristic ratios of lead to arsenic, antimony, and cadmium. The three latter elements are present in automobile batteries to prevent self-discharge (As), as an alloying agent (Sb in "hard" lead for terminal posts and battery plates) and due to its presence in certain lead ores (Cd). For this reason, we believe that correlation of Sb, As, or Cd with Pb in soil has merit in the attribution of Pb to nearby secondary smelters.

Materials and Methods

We previously identified (23) over four hundred sites that, according to industrial directories of 1931 to 1964, were used in the recycling of lead-acid batteries or production of lead alloys. The existence of actual industrial operations at twelve sites in Baltimore, Maryland, and Philadelphia, Pennsylvania was verified by referring to contemporaneous Sanborn Company Fire Insurance maps (31). Some verification was also obtained by cross-referencing site locations in one of the industrial directories (19) with another section of the directory that listed industrial equipment (cupolas, furnaces, etc.) used at that location. Current conditions at the twelve sites are summarized in Table 3-1. Table 3-2 presents the evidence for actual industrial operations at the twelve sites in Baltimore and Philadelphia.

Using the Sanborn Fire Insurance maps (31) as a guide, the locations of 12 suspected former lead smelting sites were visited, and photographed. Site conditions, such as

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current land use, the presence of buildings, the presence of exposed soil, and the proximity to residences, were noted. "Distance to residences" is meant as a qualitative indicator that the sites are currently easily accessible to nearby residents, especially children. Soil samples were taken by grab sampling with a trowel (0-1" depth) at the eight sites with exposed soil. Samples were placed in zip-loc plastic bags and labeled with the site name, address, and sampling date. The soil samples were analyzed by a commercial laboratory (Quanterra Inc., Pittsburgh, PA) for Pb, Sb, As, and Cd by Inductively Coupled Plasma (ICP) spectrometry using EPA methods 3050B and 6010B. These are standard methods for analysis of metals in soil, published by the US EPA Office of Solid Waste for use in investigations related to the Resource Conservation and Recovery Act (RCRA). Method 3050B is a sample preparation method, and involves the digestion of aliquots of the soil samples by nitric acid, hydrogen peroxide, and hydrochloric acid to bring the metals into solution. It is a very strong acid digestion meant to determine environmentally available metals, not including those bound in silicate minerals. Method 6010B is the ICP analysis method.

Soil sample analysis reports were also taken from US government investigation reports (50-58) of ten known lead smelting sites (nine secondary and one primary), under the Superfund and RCRA programs. The sites were located in Alabama, California (two), Delaware, Louisiana, Missouri (two), Oregon, and Pennsylvania (two).

Results and Discussion

Table 3-1 gives the name and address of the twelve sites visited, the current land use. and the approximate distance to the nearest residence. Sites 1, 3, 6, and 9 had no

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accessible soil, and therefore were not sampled. Nine of the sites were within a short distance of residential or commercial districts.

Table 3-2 summarizes information about the twelve sites from historical sources. Ten of 12 sites (excluding 2 and 5) were located on Sanborn fire insurance maps, and of these, seven were clearly labeled with the company name (or a previous name) directly on the map. Two more sites (3 and 11) were labeled on the maps with "metal melting" and "scrap batteries." Several sites worked with metals or alloys in addition to lead (sites 4, 7, 9, 11). The Standard Metal Directory (19) and Metals Statistics (22) advertisements for eight sites also indicated that they were smelters of antimonial lead or battery plates, other lead alloys (e.g., solder, or Babbitt metal, a lead alloy used in wheel bearings), and other metals. Except for sites 2 and 3, there is documentary evidence that antimony-containing lead alloys, either antimonial lead or Babbitt metal, was used or produced at all ten sites.

Table 3-3 presents soil sample analysis results for ten lead smelting sites investigated by US EPA from 1985 to 1999. Nine of these sites were known secondary smelters. The tenth, Eagle-Picher in Joplin, MO, is a known primary smelter. However, it was listed in the 1931 Standard Metal Directory under "antimonial lead smelters, consumers of battery plates," and in 1963-4 as a "smelter of battery lead," so it is included here. The information in Table 3-3 was summarized from the narrative portion and data tables in the references cited at the end of the Materials and Methods section. Because many of the site investigations focused on Pb as the primary human health hazard, to the exclusion of other metals (59) data for the other metals was not presented for all sites, and so cannot

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be included here. Emissions from a scrapyard (unsmelted battery fragments) will differ from stack emissions (23). More modern emissions may reflect the use of calcium lead in low-maintenance batteries. The observed metal ratios also depend on the particular analytical methods used (digestion methods and instruments), variability between laboratories, and other sources of Pb (gasoline, paint) and metals in urban environments. We know that some of the sites were used for smelting of other metals and alloys.

The mean and standard deviation of the concentration ratio of Sb, As, and Cd, normalized to Pb = 1000, are given for each of the sites, if it was included in the particular report. The number of data pairs (N) and the adjusted, squared Pearson correlation coefficient (except for $N < 5$) and the p value are given for each site and metal ratio. The p values in Table 3-3 indicate significant relationships ($p<0.05$) between Sb and Pb at 5 of 5 sites; between As and Pb at 8 of 9 sites; and between Cd and Pb at 6 of 9 sites.

The Sb:Pb ratios in Table 3-3 vary from 9:1000 to 34:1000, a four-fold range. R-squared values are all high, at least 0.89, and the standard deviations are all less than the mean value (coefficients of variation are < 100%). These results indicate that [Sb] is highly correlated with [Pb], and that the ratio at any one site (as well as over several sites) varies only over a small range.

By contrast, As:Pb ratios at the ten sites in Table 3-3 range from 9:1000 to 1200:1000, a 133-fold range. R-squared values are as high as 0.92 at site "I," but are much lower (-0.05 to 0.62) at other sites, indicating that [As] is not always correlated with [Pb]. All but one standard deviation is larger than the mean (CV > 100%), indicating considerable

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within-site variation in addition to the between-site variation indicated by the 133-fold range of mean ratios.

The Cd:Pb ratios in Table 3-3 vary from 0.7:1000 to 26:1000, a 35-fold range, indicating greater between-site variation than for Sb:Pb, but less than for As:Pb. R-squared values are generally low, indicating low correlation between [Cd] and [Pb]. Standard deviations are generally greater than the mean ratios (CV > 100%), indicating that there is also considerable within-site variation.

Table 3-4 presents soil sample analysis results for Pb, Sb, As, and Cd and the ratios normalized to Pb = 1000, for the eight sites in Baltimore and Philadelphia, numbered as in Tables 3-1 and 3-2. The Sb:Pb ratios range from 5:1000 to 16:1000, which is within the range of Sb:Pb ratios for the ten sites in Table 3-3. As:Pb ratios in Table 3-4 range from 6:1000 to 17:1000, with an additional value of 48:1000. These As:Pb ratios are generally lower than for the sites in Table 3-3. Cd:Pb ratios range from 2:1000 to 9:1000, which is within the range of Cd:Pb ratios seen for the ten sites in Table 3-3.

The metal ratios in Table 3-4 are also in good agreement with those published in the three references at the bottom of the table. The median Sb:Pb ratio for the eight sites was about 7:1000, which agrees well with Amter and Eckel (25) (7:1000). The maximum Sb:Pb ratio among the eight sites was 16:1000, which is similar to Kimbrough and Cardner (26) (20:1000). The higher results for Sb in the two papers by Kimbrough and co-workers has been explained by them as due to a more thorough sample digestion procedure.

The median As:Pb ratio for the eight sites (10:1000) agrees well with the other

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references also (10:1000 and 8:1000). The As:Pb ratios in Amter and Eckel (25) are in the same range as the higher values from the eight sites in Table 3-4.

There is less basis for comparison for Cd:Pb ratios. The Cd:Pb ratios for the eight sites in Table 3-4 vary in the narrow range of 2:1000:1.7 to 9:1000, with a median of 5:1000. The Cd:Pb ratio in Kimbrough and Cardner (26) is only slightly below the lowest value in Table 3-4.

Lead concentrations were above the U.S. EPA standard (400 mg/kg) for residential soil in 7 of 8 sites, and the industrial soil standard (1000 mg/kg) was exceeded in 3 sites. As previously reported (23) most of these sites are within a few blocks of residential or commercial districts.

Lead-contaminated soil can be the result of a variety of past sources of lead pollution. The six major causes are automobile exhaust from leaded fuels, chalking and deteriorating lead-based paints, application of lead arsenate pesticide, primary smelting of lead ores, secondary smelting of recovered lead scrap, and small arms firing ranges (60). The roadside accumulation of lead from automobiles is accompanied by cadmium and zinc from tire wear, but not arsenic or antimony (61,62). Soils near old houses, bridges and other structures can contain remnants of paint based on either white lead used on wood or red lead used on iron (63,64). Usually little excess cadmium, arsenic or antimony is seen, as these elements are typically not used in paint (65). Smelting of lead ores can cause intensive contamination with other toxic elements depending on the ores (66). More mineralogically complex Western ores, such as from Utah, Colorado, or Montana, contain appreciable antimony, arsenic, copper, zinc and cadmium, while

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simpler Mississippi Valley-type lead ores may have some cadmium and zinc (67). These primary smelters were large and few in number, and they are well-identified. The secondary smelters that processed mostly scrap batteries and cable covers which are made of antimonial lead emitted antimony as well, but relatively little cadmium and arsenic. Soils at firing ranges are also contaminated with lead and antimony, since antimonial lead is used in some ammunition, as well as copper from brass casings (68,69). Soil lead pollution was also caused by manufacturing of lead pigments, usually by corrosion of refined lead metal, but here too essentially no arsenic, copper, zinc, antimony or cadmium was released, since pure grade lead metal was used. Thus, the co-release of these other elements along with the lead depended on the nature of the activity and the form of lead used.

Conclusions

Twelve sites in Baltimore, Maryland, and Philadelphia, Pennsylvania, suspected of being former secondary lead smelting sites, or producers of lead-antimony alloys, were investigated. Ten of these sites were definitively confirmed to be former lead works by a combination of historical fire insurance maps and advertisements in contemporaneous metal industry trade directories.

Soil samples taken from eight of the sites were analyzed for Pb, Sb, As and Cd content by a contract laboratory using U.S. EPA methods. Seven of the 8 sites had Pb levels exceeding U.S. EPA guidelines for residential areas (400 mg/kg), and three exceeded the U.S. EPA guidelines for industrial properties (1,000 mg/kg). Ratios of Pb to Sb, As, and Cd in soil at the eight sites were quite similar across the eight sites, and were similar to

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ratios reported in the literature for Sb and Cd, but not As, for known lead smelting sites.

At known former lead smelting sites, ratios of Sb:Pb were less variable within and between sites, and the concentrations were more consistently and highly correlated, than were the ratios of As:Pb and Cd:Pb.

Based on examination of mean Sb:Pb, As:Pb and Cd:Pb ratios, and the variability of these ratios both within and between sites, we conclude that the presence of Sb and its correlation to the soil Pb concentration in the range of approximately 5 to 50:1000, is most characteristic of former secondary lead-smelting sites, including Babbitt metal producers. This is because the primary alloy smelted at these sites (and found in lead-acid battery plates) is known as "hard" or "antimonial" lead due to its high Sb content. Emissions at secondary lead smelters depend on the particular unit processes employed, the composition of the scrap, and the time during which the smelting was done. Emissions from a scrap yard (unsmelted battery fragments) will differ from stack emissions (23). Also, more modern emissions may reflect the use of calcium in low-maintenance batteries. The association between Sb and Pb agress with previous workers' conclusions (23,24,25). We also conclude that the lead contamination at the eight sites in Baltimore and Philadelphia is due, at least in part, to the former lead smelting operations.

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Table 3-1: Site Locations, Current Land Use, and Distance to Residences

Site Number / Name	Current Land Use	Distance to Residences
Baltimore sites		
1. Southern Smelting & Refining 200 Key Highway	Maryland Science Museum (across street)	unknown
2. Hanover Metals 20 West Cross St.	Metal Recycling	1 block
3. Industrial Metal Melting 108 East Barney	Abandoned building	adjacent
4. Dixie Metals 1400 Bush St.	Industrial	1 block
5. Dixie Metals 9th & East Patapsco	Industrial	2 blocks
6. National Lead West Henrietta	Paved Parking Lot under highway (I-395) near baseball stadium	1 block
Philadelphia sites		
7. North American Smelting Tioga & Edgemont Sts	Vacant Lot	adjacent
8. Metro Smelting Ontario & Bath Sts	Industrial	2 blocks
9. Franklin Smelting & Refining , Castor Ave. E. of Richmond,Ave.	Metal Smelting	> 5 blocks
10. Morgan Smelters Hedley & Bath Sts	Commercial	adjacent
11. Joseph Rosenthal's Sons 1827 N. 2nd and 190-2 West Berks	Auto Body Shop	2 blocks
12. Electric Storage Battery 19th & Allegheny	Vacant, being redeveloped	unknown

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Table 3-2: Verification of Smelting Operations.

Site	Sanborn Fire Insurance Map	Scrap Used/ Products
1	Baltimore vol. 9, no. 370	SMD 1931: antimonial & soft lead
2	--	--
3	Baltimore, vol. 9, no. 51, 52 "metal melting" marked on map	--
4	Baltimore, vol. 9. no. 59 "K.H. Hettleman & Sons" "metal melting"	SMD 1950: Cu, Al, Ni, Zn, Sn, Pb, bronze, brass
5	--	--
6	Baltimore, Vol. 9, no. 37, 38 "National Lead"	SMD 1946: Pb, babbitt metal, solder
7	Philadelphia, vol. 10, no. 956 "North American Smelting"	MS 1938: Al, Pb, Sn, Zn solder babbitt, brass, bronze
8	Philadelphia, vol. 10, no. 972 "Metro Smelting"	SMD 1950: Battery lead, batteries in cases. MS 1945: Babbitt, solder, antimonial lead, tin & solder drosses
9	Philadelphia, vol. 10, no. 985 "Franklin Smelting & Refining" "Ladenson Metals Co."	SMD 1950: soft & antimonial Pb SMD 1946:Cu bearing material
10	Philadelphia, vol. 10, no. 988 "Thos. F. Lukens Metal Co." "Mfrs of solder"	SMD 1954: Pb pipe, solder, Babbitt
11	Phildelphia, vol. 8, no. 753"scrap batteries" "Brass & Lead Store Ho."	SMD 1950: battery plates, Cu, brass MS 1951:: battery lead scrap, brass mill scrap, Cu-bearing materials
12	Philadelphia, vol. 13, no. 1243, 1244 "Electric Storage Battery"	--

Site numbers are as in Table 3-1.
SMD: *Standard Metal Directory*
MS: *Metal Statistics*

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Table 3-3: Recognized Lead Smelting Sites with Elemental Ratios Normalized to Pb=1000 (mean, SD)

Site	Sb/Pb	N, R^2,p	As/Pb	N, R^2, p	Cd/Pb	N, R^2, p
A: Alco Pacific, Carson, CA	9 ± 5	9, 0.94 p=9.3E-6	61 ± 95	11, 0.62 p=0.0024	22 ± 58	11. -0.09 p=0.679
B. Tonolli Corp., Nesquehoning, PA	--	--	160 ± 390	58, 0.19 p=0.00035	7 ± 16	31, 0.42 p=4.5E-5
C. Schuylkill Metals, Forest City, MO	--	--	1200 ± 3300	20, -0.05 p=0.694	--	--
D. Eagle-Picher, Joplin, MO	--	--	54 ± 130	17, 0.21 p=0.036	26 ± 31	29, 0.31 p=0.014
E. Dixie Metals, Heflin, LA	--	--	--	--	13 ± 15	26, 0.003 p=0.311
F. East Penn Mfg., PA	14.± 7	7, 0.93 p=0.0003	63 ± 79	11, 0.83 p=6E-5	15 ± 17	11, 0.58 p=0.004
G. Bergsoe Metals, St. Helen, OR	--	--	43 ± 43	24, 0.83 p=5.1E-10	1.2 ± 1.3	7, 0.79 p=0.004
H. Interstate Lead, Leeds, AL	1.6 ± 1.5	4, -- p=0.02	22 ± 45	5, -- p=0.003	1.4 ± 1.9	5, -- p=0.005
I. North American Smelting, Wilmington, DE	12 ± 9	7, 0.96 p=6.8E-5	39 ± 39	11, 0.92 p=2.2E-6	16 ± 8	12, -0.04 p=0.484
J. International Lead, Los Angeles, CA	34 ± 9	6, 0.89 p=0.003	8.5 ± 2.3	4, -- p=0.04	0.7 ± 0.2	6, 0.92 p=0.0005
RANGE MEDIAN	1.6-34 12		8.5-1200 54		0.7-26 13	

Key: N=number of data pairs
R^2 = adjusted Pearson correlation coefficient
$p < 0.05$ indicates significant relationship

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Table 3-4:
Elemental Concentrations (mg/kg) and Ratios for Baltimore and Philadelphia Sites, Normalized to Pb=1000.

Site No.	Pb	Sb	As	Cd	Sb/Pb	As/Pb	Cd/Pb
2	730	4.9	10.4	3.0	7	14	4
4	306	1.8	5.3	2.7	6	17	9
5	520	2.6	5.4	4.6	5	10	9
7	548	8.9	26.6	1.8	16	48	3
8	2550	34.9	23.5	4.3	14	9	2
10	657	4.2	6.0	5.9	6.	9	9
11	1490	9.3	9.6	8.6	6	6	6
12	1670	16	11	4.1	10	7	3
Range Median	--	--	--	--	5-16 6	6-48 10	2-9 5
Range, Median, Table 3-3					1.6-34 12	8.5-1200 54	0.7-26 13
Ref 24	--	--	--	--	50	10	--
Ref 25	--	--	--	--	7	20-36	--
Ref 26	--	--	--	--	20.4	8.1	1.4

Site numbers as in Table 3-1.

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4. Use of Multimedia Elemental Ratios to Identify Lead Smelter Emissions

Kimbrough and Suffet present multimedia data collected around two secondary lead smelters in California and argue that airborne emissions from smelters yield concentrations of lead, arsenic, antimony, and cadmium that are highly correlated and form characteristic ratios (24). Multimedia analysis refers to the analysis of samples of different media (in this case, soil and dust in air) and comparing elemental ratios in those samples to demonstrate that the pollutants found in them came from the same source. In 1994, we performed a similar analysis (70,71) on data from a secondary lead smelter in Texas and found a similar pattern of concentrations. As part of a study for the United Steelworkers of America, we examined lead, arsenic, and antimony concentrations in soil samples collected near a smelter in West Dallas, TX, to determine if the arsenic and antimony originated from the smelter or were derived from some other source. The smelter has been inoperative since 1984 and is now the RSR Corporation Superfund Site.

Soil Data. The first soil data set represented soil samples collected by the U.S. EPA from a large tract of public housing located across the street, north of the smelter. The U.S. EPA divided the tract into 90 equal-area squares and collected soil samples from each. With approximately 150 data points, we calculated that the mean lead and arsenic concentrations were 468 and 17 mg/kg, respectively. This yields a ratio of 28:1 or,

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following Kimbrough and Suffet's convention in which the lead concentration is normalized to 1000, approximately 1000:36. Maximum lead and arsenic concentrations were 2500 and 62 mg/kg, respectively. R^2 for 137 soil samples in which both lead and arsenic concentrations were above the detection limit is 0.68. Antimony concentrations were not determined in these samples.

According to the U.S. EPA's risk assessment for the site (72), lead and arsenic were the two primary contaminants of concern. The U.S. EPA's residential remediation target of approximately 500 mg/kg for lead was exceeded on 27 of the 90 squares; the residential target of 20 mg/kg for arsenic was exceeded on 25 squares.

The second soil data set was derived from 64 soil samples that were collected from the public housing area by the U.S. EPA in 1991-1992 but were archived and subsequently reanalyzed in 1994 as part of the remedial investigation (73). The mean concentrations of lead, antimony, and arsenic (300, 2, and 6 mg/kg, respectively) form ratios of approximately 1000:7:20. The following correlations were calculated: R^2 for lead versus arsenic = 0.585; R^2 for lead vs. antimony = 0.912; and R^2 for arsenic vs. antimony = 0.724. These results are consistent with Kimbrough and Suffet's finding that the best correlation is between lead and antimony.

Air Data. After reading the paper by Kimbrough and Suffet (24) we sought air concentration measurements to which the soil data could be compared. Ambient air samples were collected weekly at three locations from April 1, 1982, to September 30, 1983, as part of a special monitoring program by the Texas Air Control Board. We found the lead and arsenic measurements in two different documents (74,75).

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We examined monthly averages of the two downwind locations for July-December 1982. Location 1, the Boys' Club at 3004 N. Westmoreland Road, was 0.1 mi north of the smelter stack and adjacent to the public housing area where the soil samples were collected. Location 2, at 3417 Toronto Street, was about 0.1 mi NNW of the smelter property boundary and one block west of location 1. At location 1, the 6-month average ratio of lead to arsenic concentration was 1000:43, and the concentrations of the two metals are highly correlated ($R^2 = 0.87$). At location 2, the 6-month average ratio was 1000:59, and the correlation is weaker ($R^2 = 0.41$).

Discussion. Table 4-1 summarizes the concentration ratios and R^2 for the soil and air data collected at the RSR West Dallas site. Clearly, there is a high degree of correlation among lead, arsenic, and antimony in these samples. These correlations, the agreement in lead-arsenic ratios between soil and air, and other evidence such as the trend of decreasing concentration with distance from the smelter and the known association of these elements with battery smelting emissions show that the RSR smelter was the source of these elements.

The biggest difference between the data sets examined by Kimbrough and Suffet (24) and ourselves is that whereas antimony concentrations were higher than arsenic concentrations at the California smelters, the reverse is true at the Texas smelter. This probably reflects operational differences between the Texas and California smelters which, for example, had different kinds of furnaces, but the specific cause is unclear. Although concentration ratios associated with the RSR smelter are roughly comparable to what was measured around the California smelters, the differences are too large to

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identify a single industry-wide characteristic ratio. Kimbrough and Suffet rightfully point out that "elemental composition of materials can change through the industrial process. Thus, depending at which point in the process emissions are occurring, [their] elemental composition can change". We would further add that emissions from most secondary lead smelters, particularly the older ones, may have evolved over time in response to both short- and long-term changes in their operations. Thus, when looking at the concentrations of metals in surface soils, which represent a cumulative average of past emissions, the "fingerprint" for each smelter may depend on its operational history. Operational factors controlling the relative concentrations of metals in emissions include the type of furnace (reverberatory, blast, or electric arc), the types of lead and lead alloys produced, air pollution control measures, and slag and dust management practices.

Our results support Kimbrough and Suffet's conclusions that examination of both concentration ratios and correlations among lead, arsenic, and antimony in different media is a dependable means for confirming the presence of airborne emissions from a specific secondary lead smelter. Archived monitoring data can be helpful in reconstructing emission histories, especially after smelters have closed. Our data show that the correspondence in lead to arsenic ratios between air samples and soil samples holds true even though air samples were collected while the smelter was operating and the soil samples were collected many years later after it had closed.

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Table 4-1

Concentration Ratios and R^2 at the RSR West Dallas Smelter

Data Set	approx Pb/Sb/As ratio[a]	R^2: Pb vs Sb	R^2: Pb vs As
soil data set 1	1000:UK:36[b]	NA[c]	0.68
soil data set 2	1000:7:20	0.91	0.59
air monitor 1	1000:UK:43[b]	NA	0.87
air monitor 2	1000:UK:59[b]	NA	0.41

Notes: a) normalized to Pb = 1000. b) UK = unknown because no Sb data. c) not applicable.

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5. Conclusions

In this work, I have demonstrated that there were hundreds of small, secondary lead smelters (and manufacturers of lead alloys) active during the early and middle 20th Century in the United States. Most of the industrial sites where the smelters operated have escaped notice because the government agencies that are responsible for clean-up of such sites have no "institutional memory" of them. That is to say, the agencies were created after the smelters went out of business, so there was never any regulatory record of them. Lists of sites to be addressed (such as the Superfund National Priority List) were originally constructed from lists of sites known to the US EPA at the time (early 1980s). Because the hundreds to thousands of sites listed for clean-up since then have proved to be such a formidable task, there has been little or no incentive to reach back into the past to discover yet more sites. Federal and state agencies that deal with contaminated industrial sites already have their hands full.

In Chapter 1, I posed four questions to be answered in this work. These were: 1) How many other old, unrecognized secondary lead smelting sites and lead alloy manufacturing sites are there in the U.S.? 2) Were any such sites as highly contaminated with lead as the four sites already discovered? 3) Were any such sites located close to residential areas, and therefore a possible threat to public health due to exposure to lead-contaminated soil? 4) Could the presence of metals associated with lead (As, Cd, Sb) in

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the major raw material used in secondary lead smelting, old automobile batteries, be used to distinguish smelter-related soil lead contamination from other lead sources? I conclude: 1) that there were indeed hundreds of unrecognized sites; 2) that several sites located in Baltimore and Philadelphia were quite close to residential neighborhoods; 3) that there is evidence of elevated lead in soils at the Baltimore and Philadelphia sites; and 4) that the presence of antimony (Sb) is a reliable indicator of smelter-related soil lead contamination.

Future Work Lead is ubiquitous in urban soil due to many years of emissions from leaded gasoline, from deterioration of lead-based paint, and from other sources such as former secondary smelters. In the 1970s, the two "dispersive" uses of lead (gasoline and paint) were phased out in the United States. Children's blood lead levels have declined substantially since that time, probably as a direct result of the phase-out. To be sure, there is still exposure from lead paint in older housing, but this may decline as such housing is replaced or properly renovated.

Since the more-obvious sources of environmental lead exposure are already being addressed, the less-obvious sources become more important in explaining the persistent problem of childhood lead exposure. Children in neighborhoods that formerly hosted secondary lead smelters may get a sizeable portion of their lead dose by inhaling or ingesting contaminated soil from those sites. Health professionals investigating childhood lead exposure would do well to consider the impact of past industrial activity, such as secondary smelting, as a component of exposure in these neighborhoods.

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As urban areas are redeveloped, it will be important to carefully research past land uses to determine whether or not the proposed new land uses are appropriate, given the contamination that is found. Lead is perhaps the most important pollutant to consider in these land-use decisions, given its widespread distribution and its greater toxicity to children. Land-use planners and environmental authorities will need to investigate the approximately 400 sites listed in this dissertation, to determine if they pose an immediate public health hazard, and to determine what new land uses, if any, are appropriate for those sites. Many of the sites listed in this work will need to be cleaned up to below health-based standards before the land is re-used for industrial or residential purposes.

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Appendix

Documentary Evidence of Former Lead Smelters

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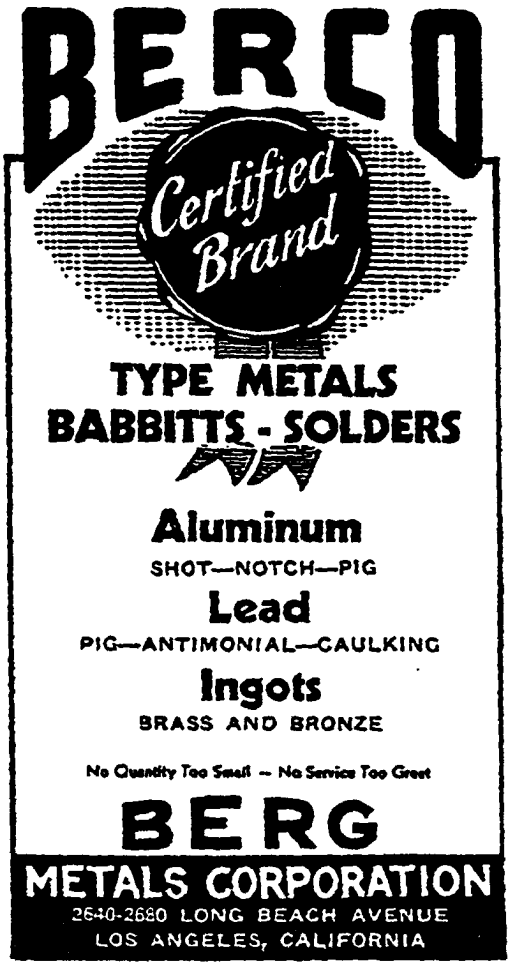

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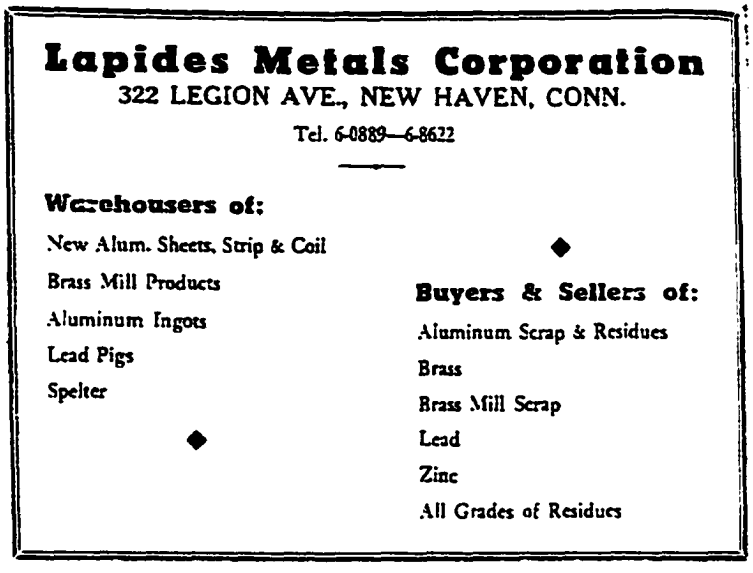

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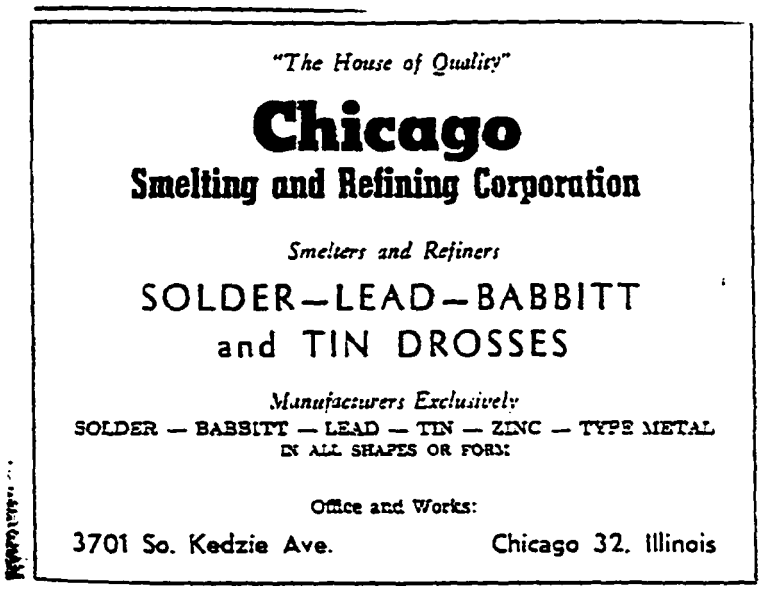

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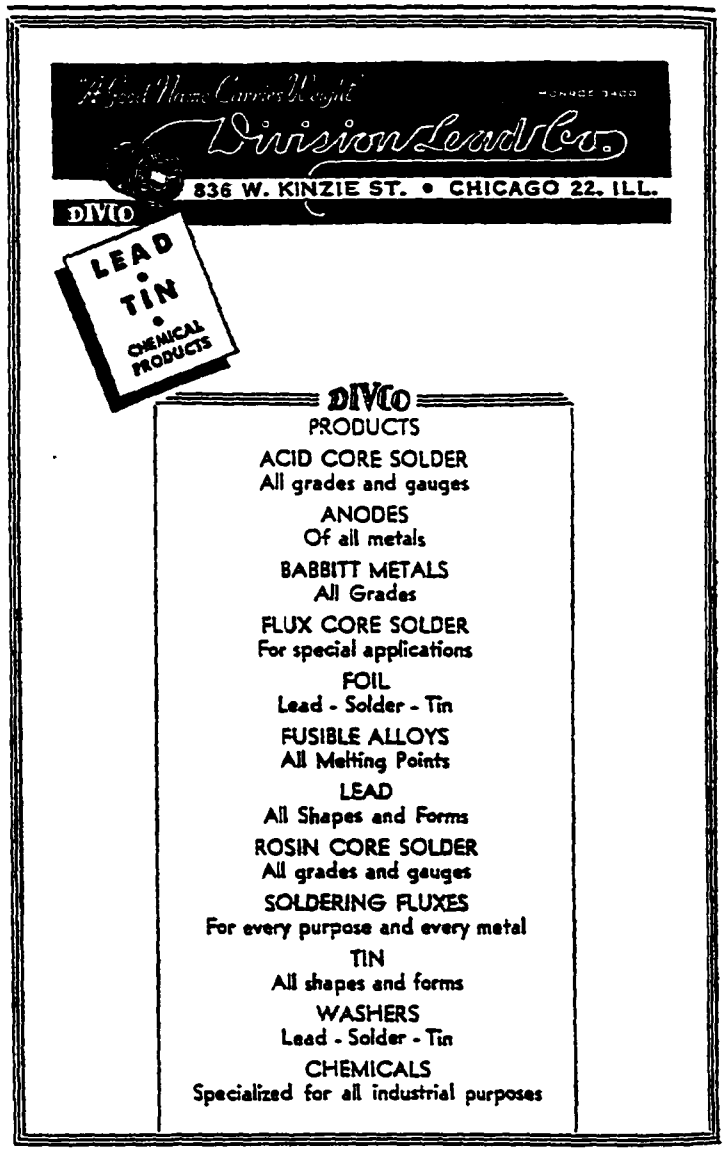

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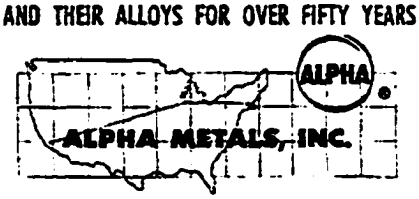

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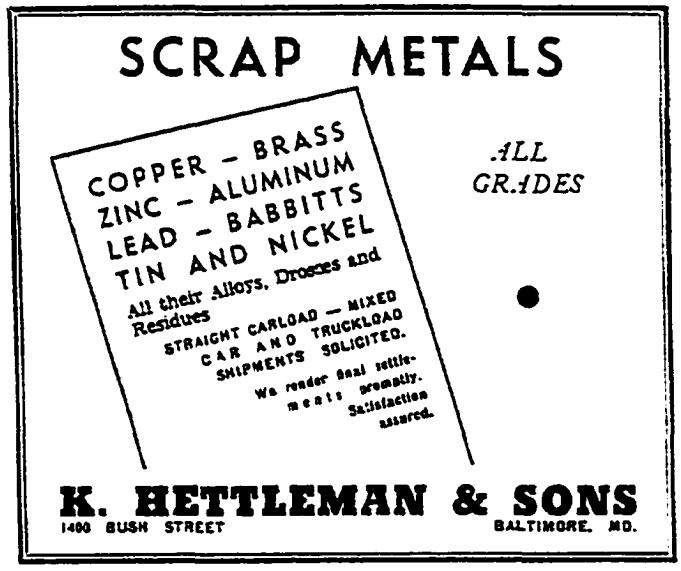

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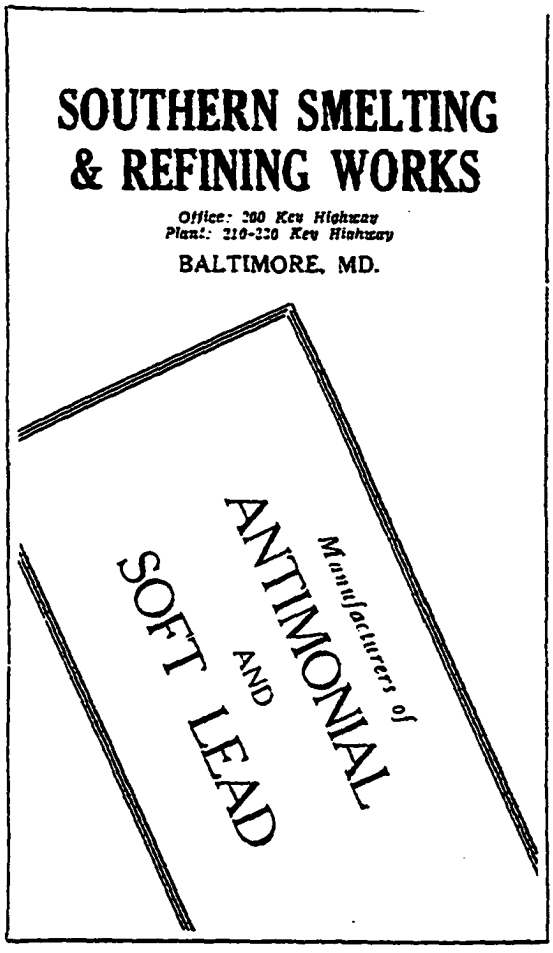

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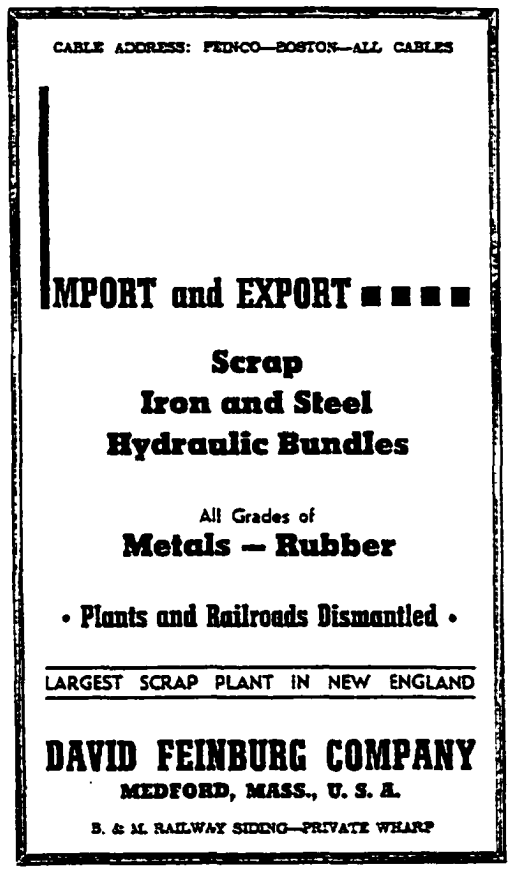

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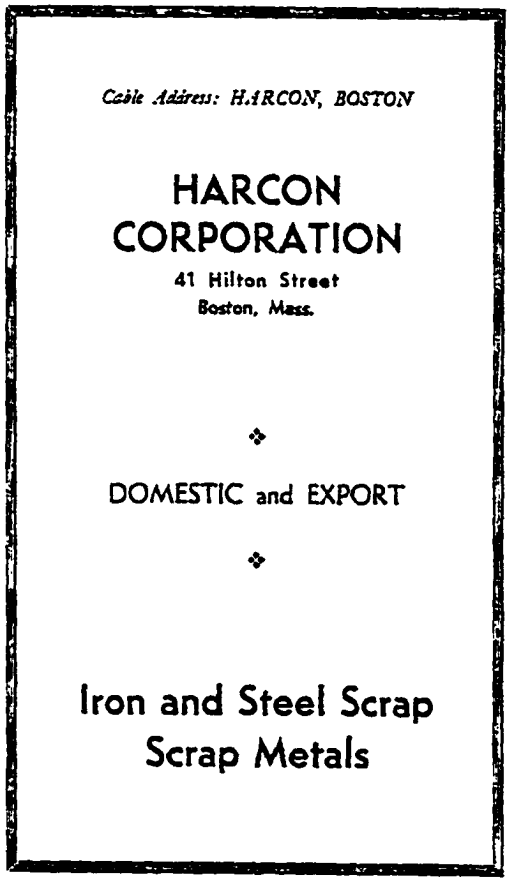

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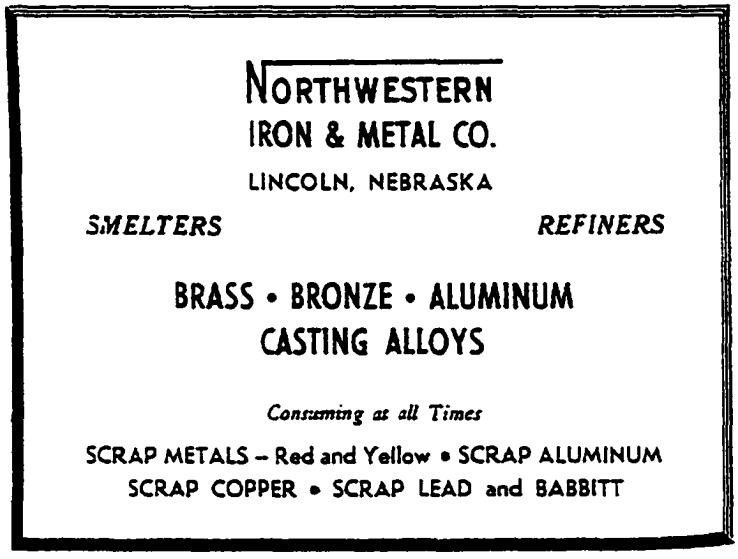

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BABBITT METAL

CHARLES P. HULL CO.
INCORPORATED

50 CHURCH STREET NEW YORK 7, N. Y.
PLANT — NO. ARLINGTON, N. J.
Telephone COrtlandt 7-5649

Representing
CAPPER PASS AND SON Ltd.
No. Ferriby, England

470

Charles P. Hull Co., North Arlington, NJ:
Metal Statistics, 1958, p. 470

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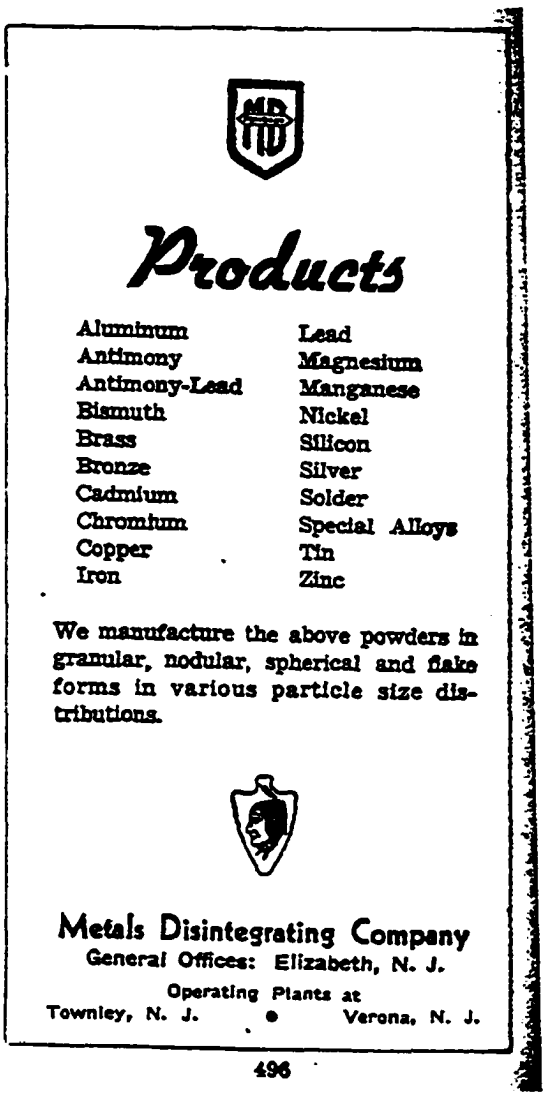

Products

Aluminum	Lead
Antimony	Magnesium
Antimony-Lead	Manganese
Bismuth	Nickel
Brass	Silicon
Bronze	Silver
Cadmium	Solder
Chromium	Special Alloys
Copper	Tin
Iron	Zinc

We manufacture the above powders in granular, nodular, spherical and flake forms in various particle size distributions.

Metals Disintegrating Company
General Offices: Elizabeth, N. J.
Operating Plants at
Townley, N. J. • Verona, N. J.

496

Metals Disintegrating Company, Townley and Verona, NJ:
Metal Statistics, 1947, p. 496

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622

Telephone:
Cumberland 6-4623

Established 1888

Cable Address
Commetal, New York

Columbia Smelting & Refining Works

INCORPORATED

98-106 Lorraine St. Brooklyn, N. Y.

METALS

WHITE METALS AND ALLOYS
BRASS AND BRONZE INGOTS

Manufacturers of

Soft Lead, Antimonial Lead, Babbitts, Solder, Type Metals, Terne Metal, Britannia Metal, Die-Cast Metal, Unbreakable Metal, Rerun Zinc.

Consumers of

Pig Percentage Metal, Cable Lead, Battery Plates, Soft Lead, Type Metals, Scrap Babbitt, Joints, Pewter, Dresses.

Dealers in

Pig Tin, Pig Lead, Copper, Antimony, Aluminum, Spelter, Scrap Metals, Residues

Columbia Smelting & Refining Works Incorporated, Brooklyn, NY: Standard Metal Directoru, 1931, p. 622

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THE ANDREWS LEAD COMPANY, INC.

LONG ISLAND CITY, NEW YORK

Lead Manufacturers

Sheet Lead	Lead Wool
Lead Pipe	Litharge
Lead Wire	Lead and Lined Valves
Rod and Bar	Lead Lined Pipe
Industrial Fittings	Lead Covered Copper
Lead Flanges	Lead Castings

All Other Lead and Combination Lead Products

Lead Construction Engineers

Acid Chambers	Homogeneous Bonding
Evaporators	Electrolytic Tanks
Concentrators	Heating Coils
Sulphonators	Cooling Coils
Digestors	Filter Systems
Agitators	Transport Lines

Lead Burning Of Every Description

BRANCHES

BUFFALO	254 COURT ST.
BOSTON	4 UPLAND ROAD
PITTSBURGH	KEYSTONE BLDG.

400

The Andrews Lead Company, Inc., Long Island City, NY: Metal Statistics, 1937, p. 400

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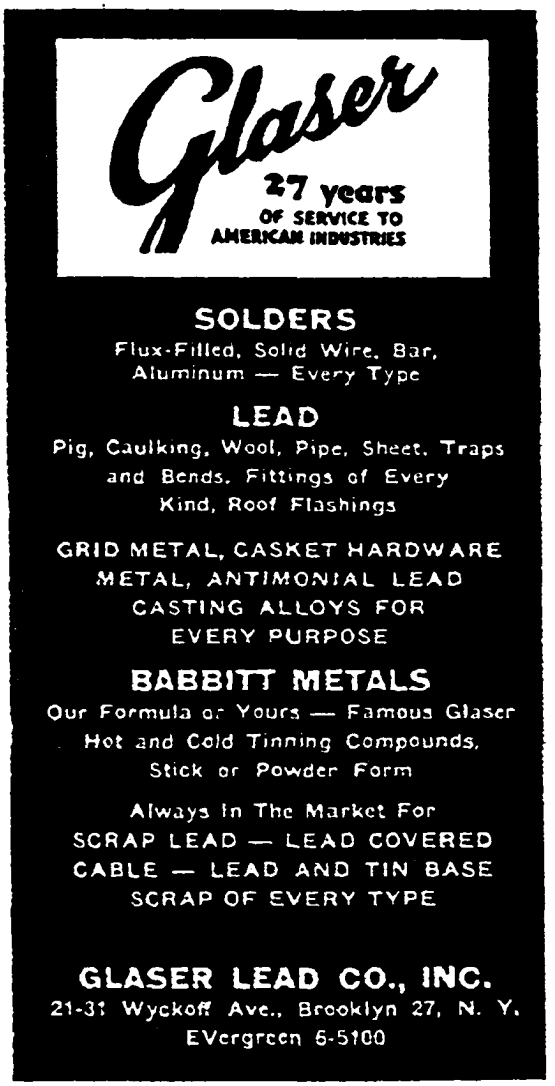

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Glaser Lead Co., Inc., Brooklyn, NY:
Metal Statistics, 1949, p. 494

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Established 1899

CENTRAL SMELTING CO., Inc.

2521 - 2531 51st AVENUE
LONG ISLAND CITY, N. Y.

Telephone STillwell 4-5441-2

CENTRAL TRADE MARK

SOLDER - LEAD

Type and Babbitt Metals
Remelted Zinc

Consumers of

DROSSES

and Scrap
of

Lead - Tin - Solder - Type
Antimonial Lead - Babbitts
Cable Lead - Mixed Lead Foil

510

Central Smelting Co., Inc., Long Island City, NY:
Metal Statistics, 1948, p. 510

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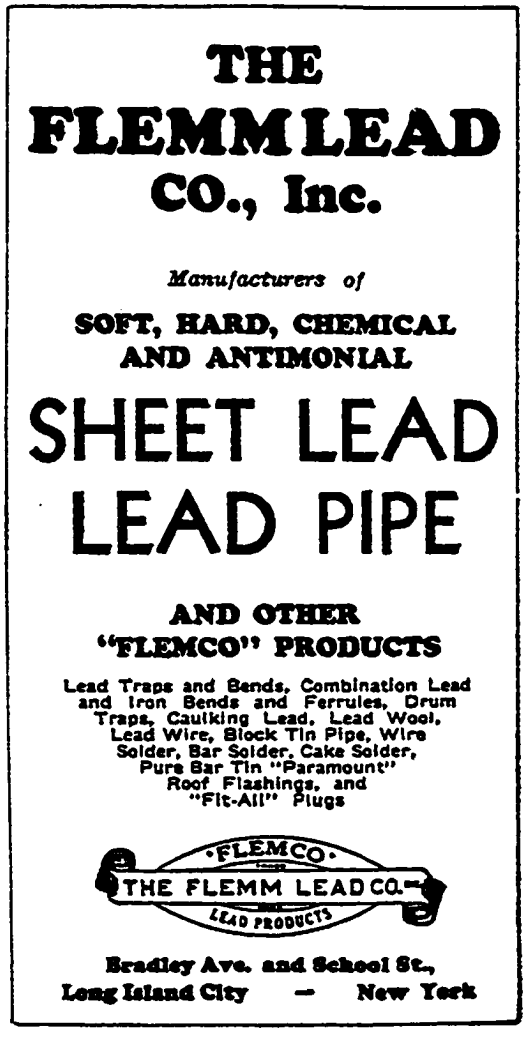

380

The Flemm Lead Co. Inc., Long Island City, NY:
Metal Statistics, 1937, p. 380

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Samuel Greenfield Company, Inc., Buffalo, NY:
Standard Metal Directory, 1931, p. 706

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Samuel Greenfield Company, Inc., Buffalo, NY:
Standard Metal Directory, 1950, p. 38

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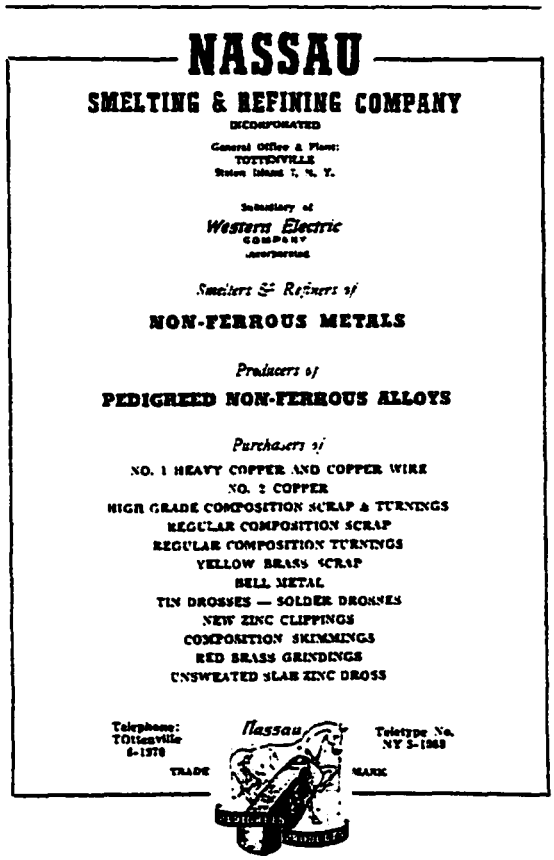

Nassau Smelting & Refining Company, Staten Island, NY:
Standard Metal Directory, 1950, p. 40

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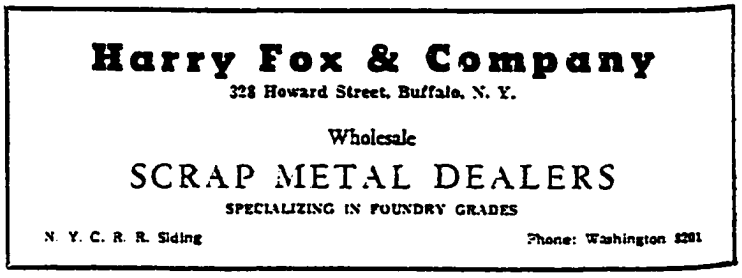

Harry Fox & Company, Buffalo, NY:
Standard Metal Directory, 1950, p. 678

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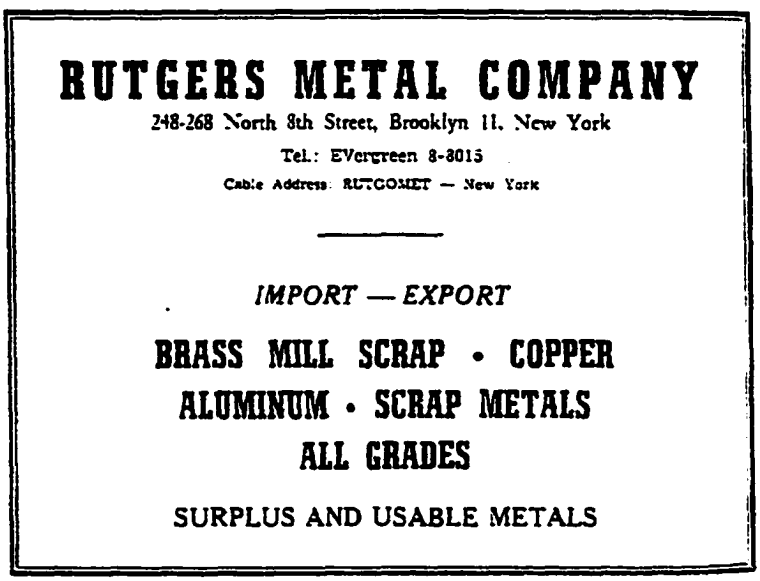

Rutgers Metal Company, Brooklyn, NY:
Standard Metal Directory, 1950, p. 680

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436

Alpha Metal & Rolling Mills, Brooklyn, NY:
Metal Statistics, 1943, p. 436

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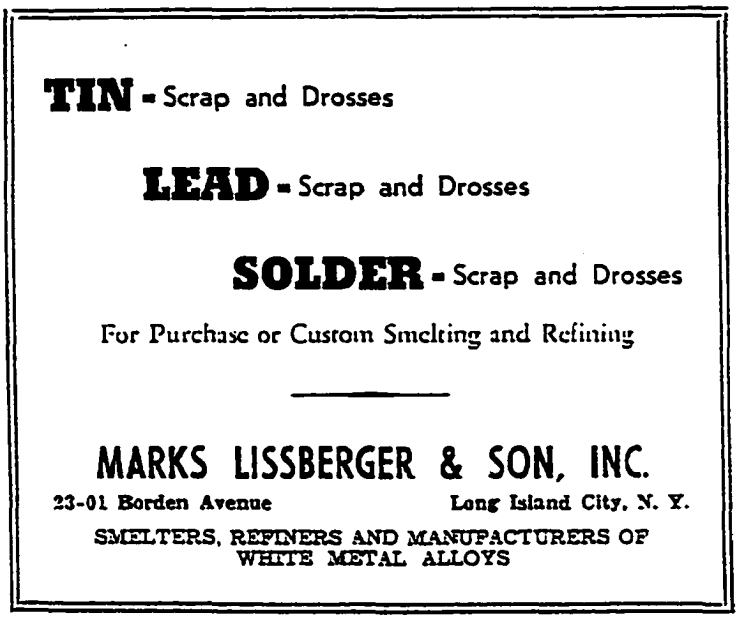

Marks Lissberger & Son, Inc., Long Island City, NY:
Standard Metal Directory, 1940, p. 427

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Hudson Smelting & Refining Co., Newark, NJ:
Standard Metal Directory, 1940, p. 426

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G.A. Avril Smelting Corp., Cincinnati, OH:
Standard Metal Directory, 1950

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Tyroler Metals Inc., Cleveland, OH:
Standard Metals Directory, 1950, p. 705

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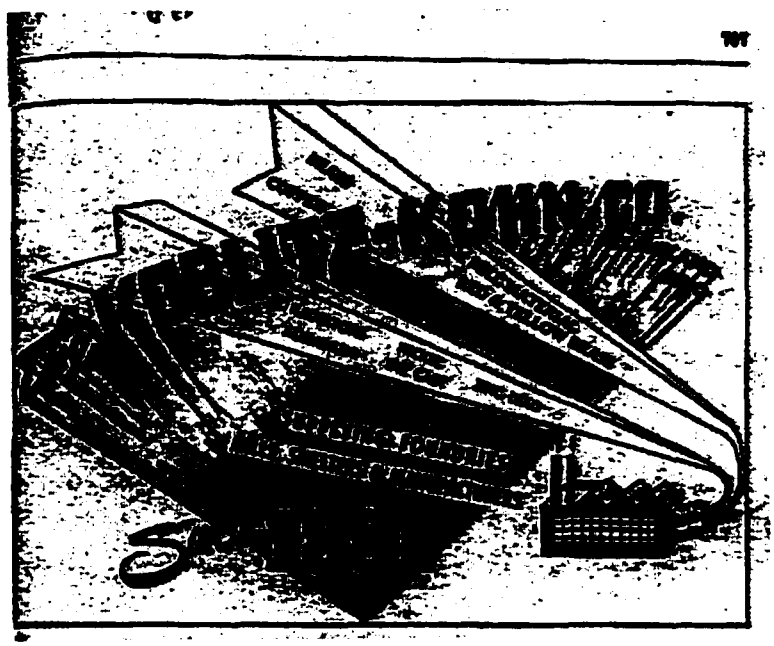

Koblitz-Kohn Co., Cleveland, OH:
Standard Metal Directory, 1950, p. 707

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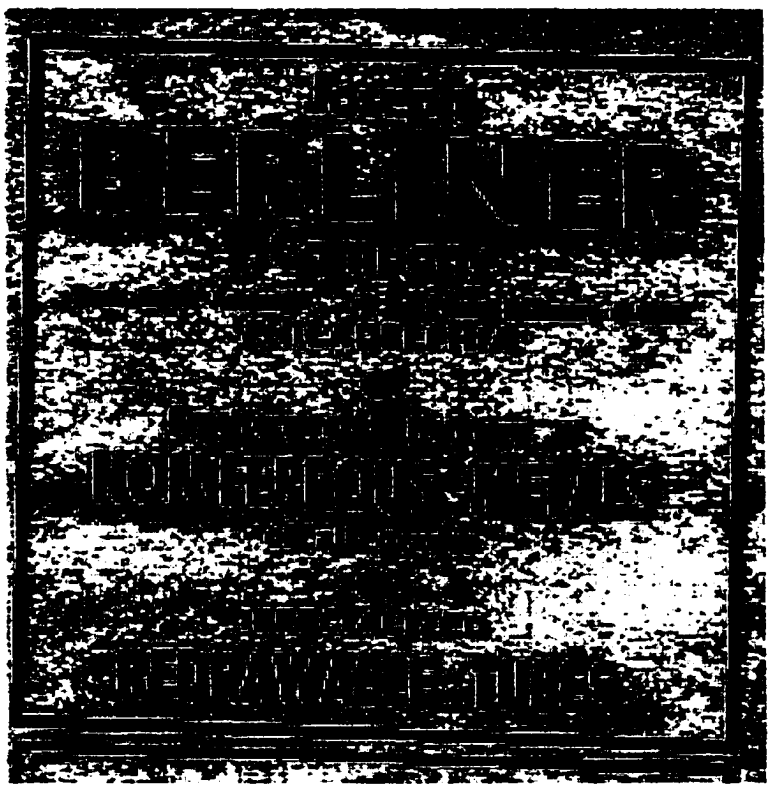

Joseph Berliner Company, Philadelphia, PA:
Metal Statistics, 1956, p. 503

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Bers & Company, Inc., Philadelphia, PA:
Metal Statistics, 1956: p. 477

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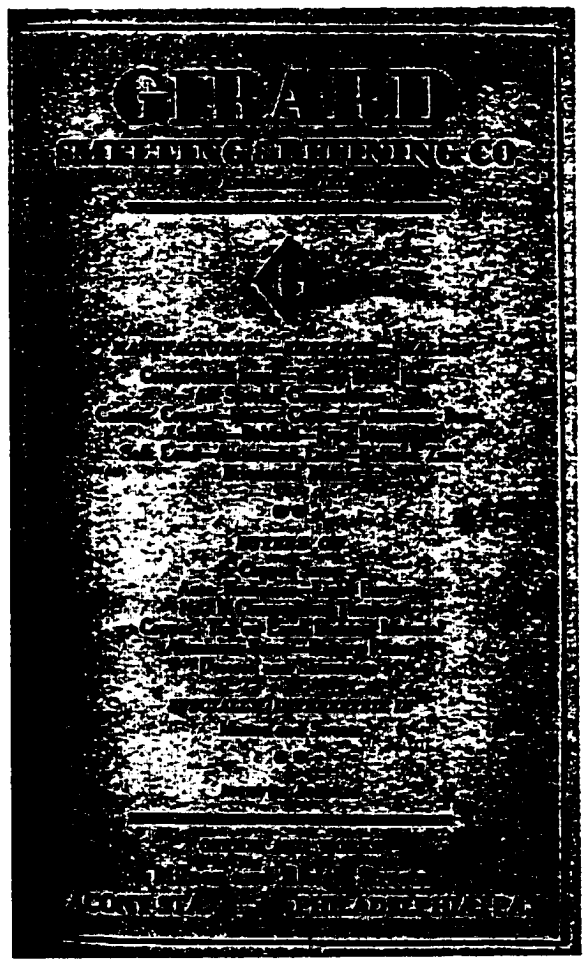

Girard Smelting & Refining Co., Philadelphia, PA:
Standard Metals Directory, 1931, p. 531

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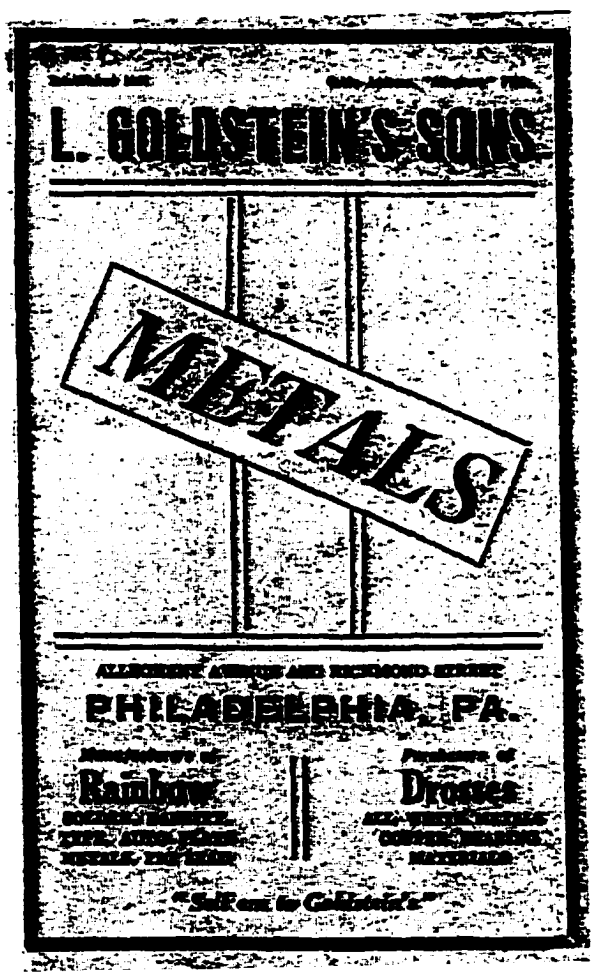

L. Goldstein's Sons, Philadelphia, PA:
Standard Metals Directory, 1931, p. 618

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Ladenson Metals Company and Lukens Metal Co., Philadelphia, PA: Standard Metals Directory, 1950, p. 730

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Metro Smelting Co., Philadelphia, PA:
Metal Statistics, 1949, p. 452

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North American Smelting Co., Philadelphia, PA:
Metal Statistics, 1938, p. 396

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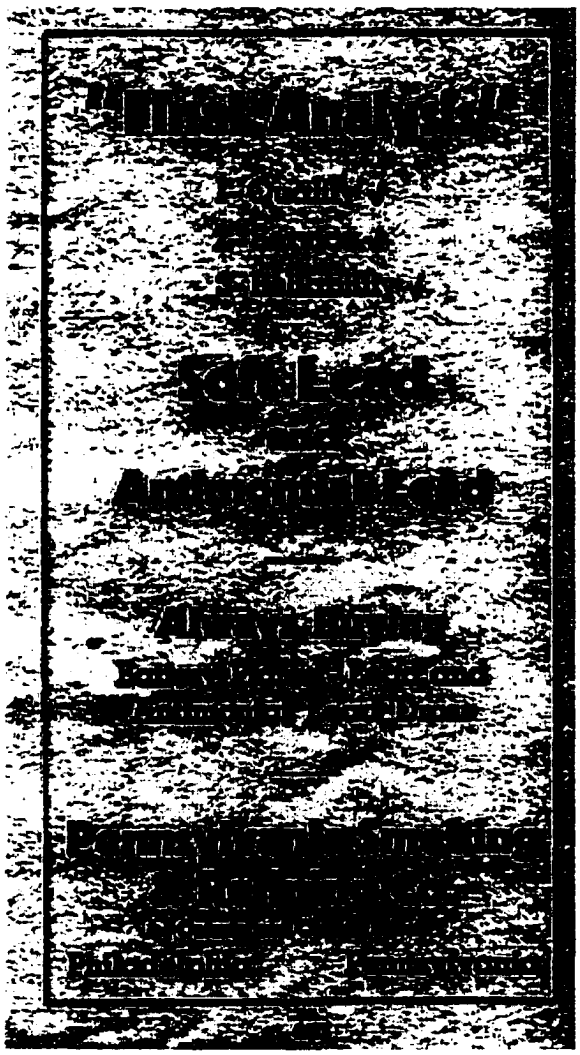

Pennsylvania Smelting & Refining Co., Philadelphia, PA:
Metal Statistics, 1941, p. 460

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Joseph Rosenthal's Sons, Inc., Philadelphia, PA:
Metal Statistics, 1951, p. 494

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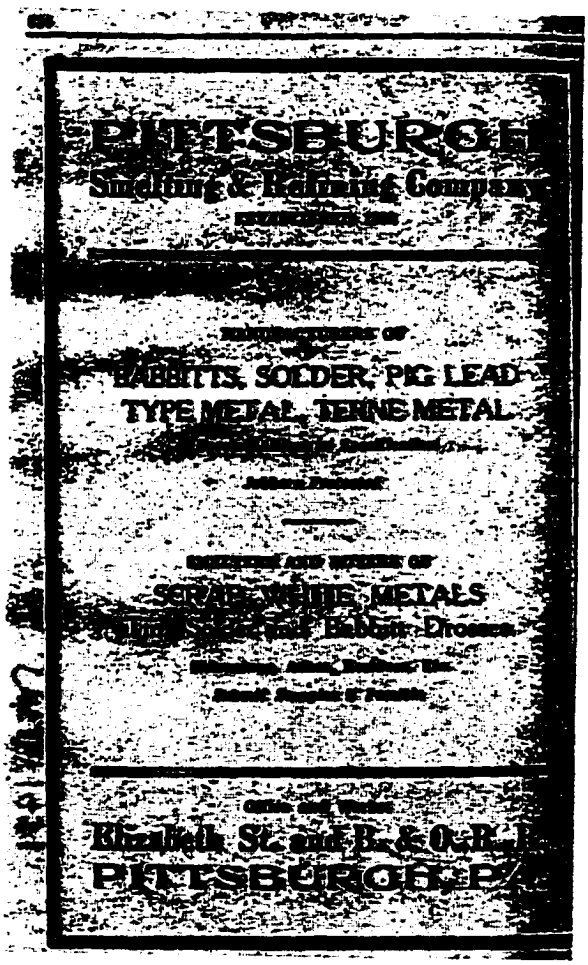

Pittsburgh Smelting & Refining Company, Pittsburgh, PA:
Standard Metal Directory, 1931, p. 624

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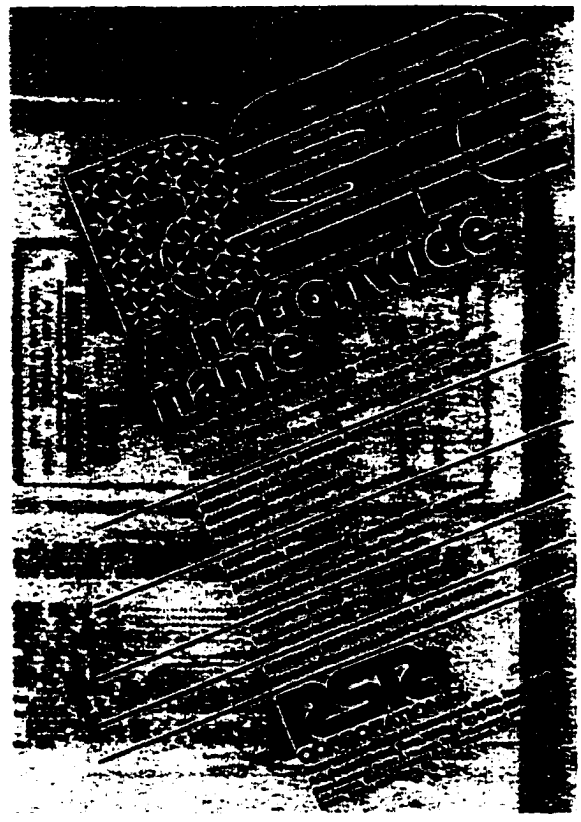

RSR Corporation, various locations:
Metal Statistics, 1974

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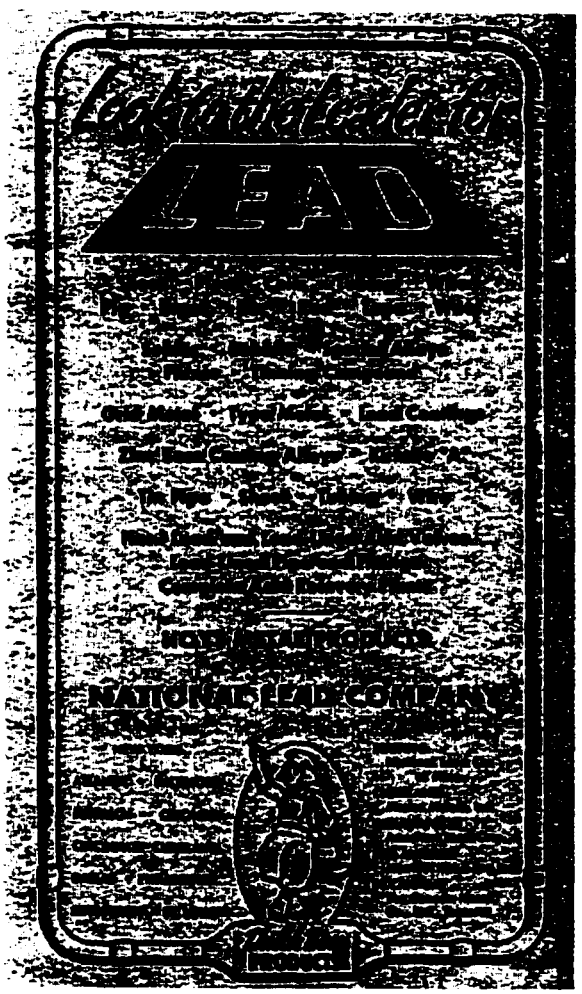

National Lead Company, various locations,
Standard Metal Directory, 1950, p. 44

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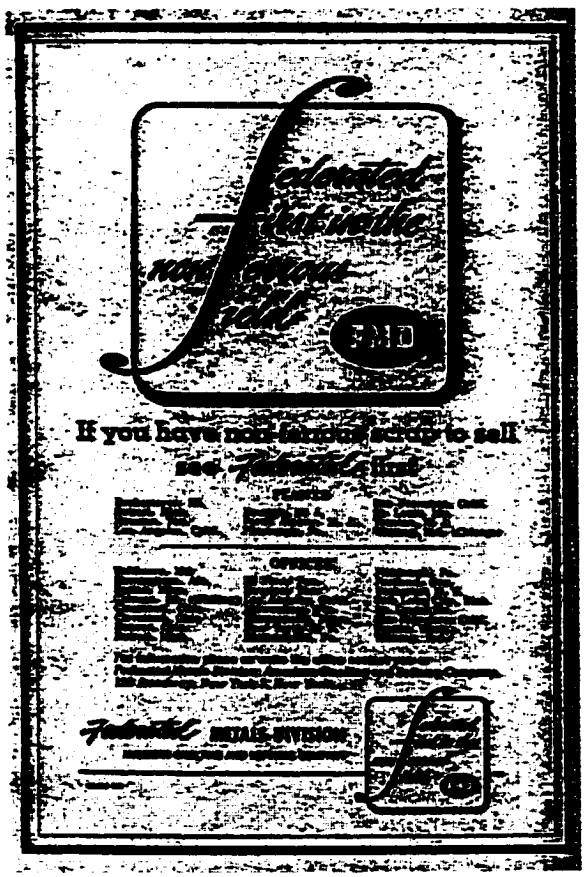

Federated Metals Division, ASARCO, various locations:
Standard Metal Directory, 1950, p. 36

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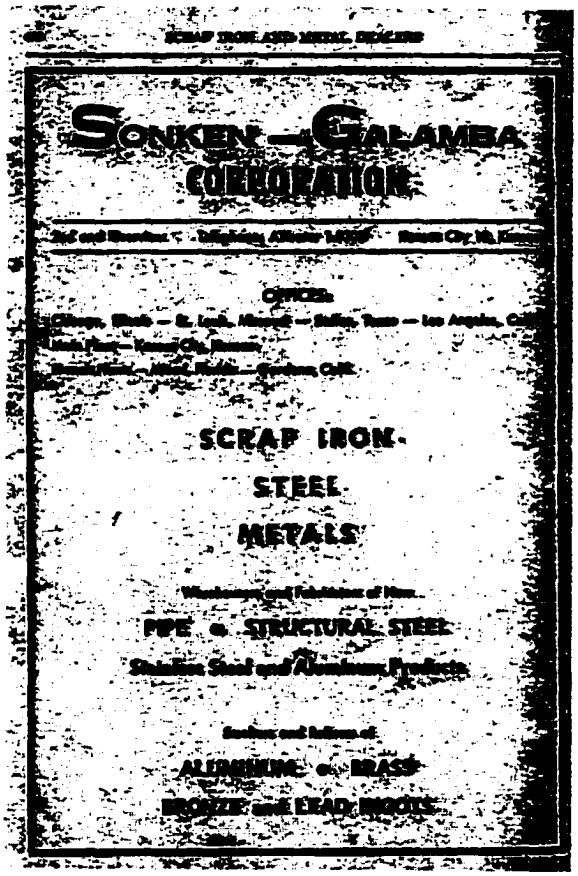

Sonken-Galamba Corporation, various locations:
p. 478

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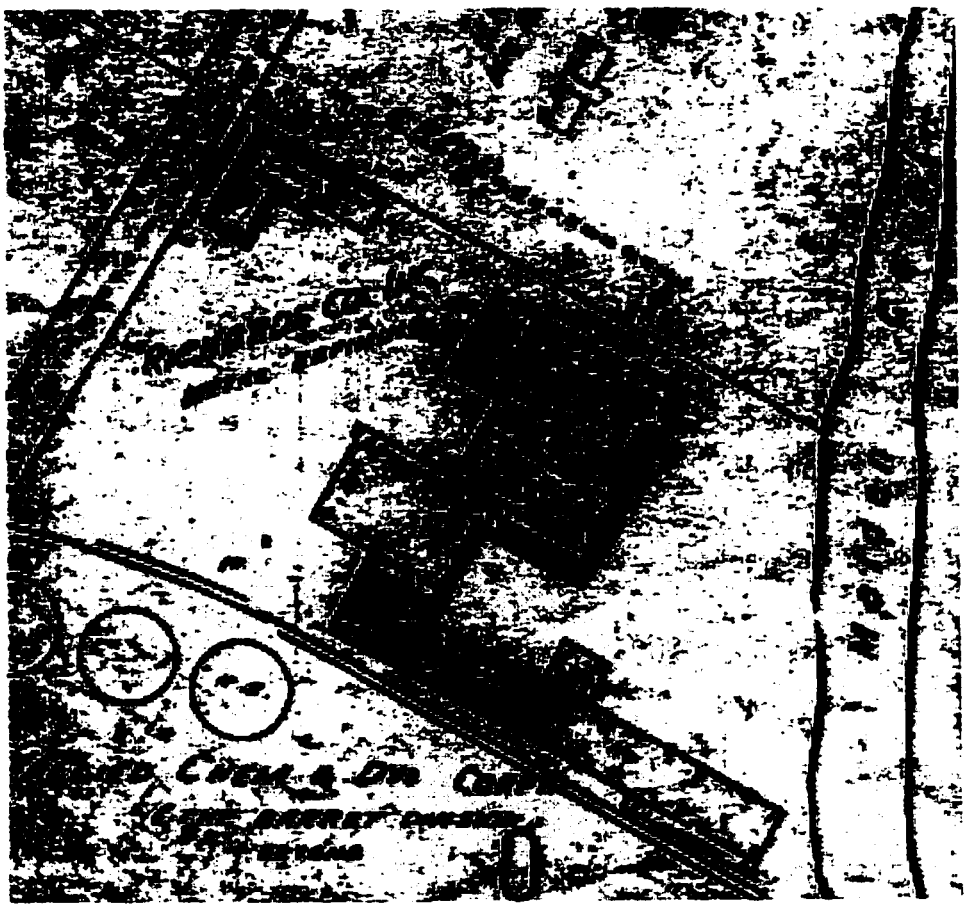

Richards Co., Malden, MA:
Sanborn Malden map 63 (1929)

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Harry Butter & Co., Inc., Boston (Dorchester), MA:
Sanborn Boston map 496

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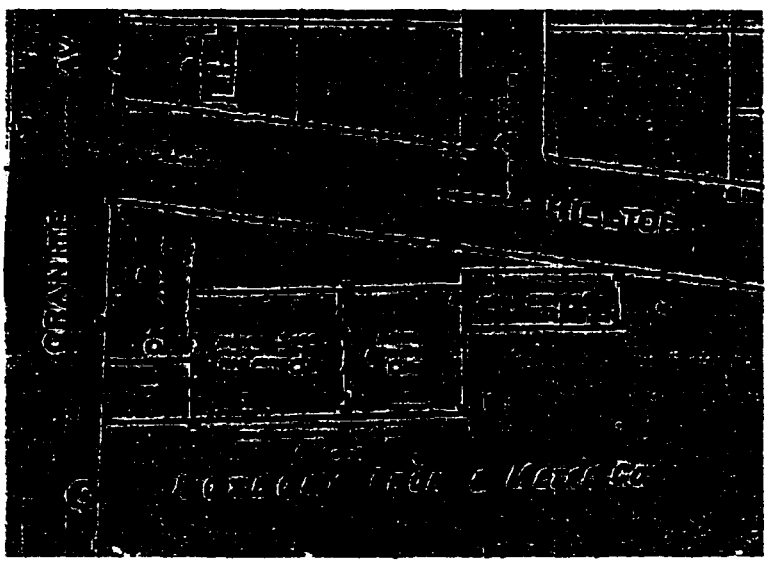

Roxbury Iron & Metal Co., Dorchester, MA:
Sanborn Boston map 980

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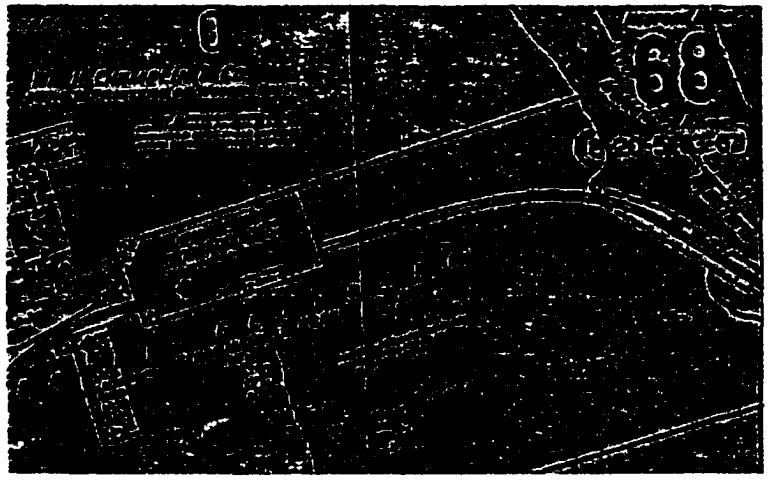

David Feinburg, Medford, MA
Sanborn Medford map 68

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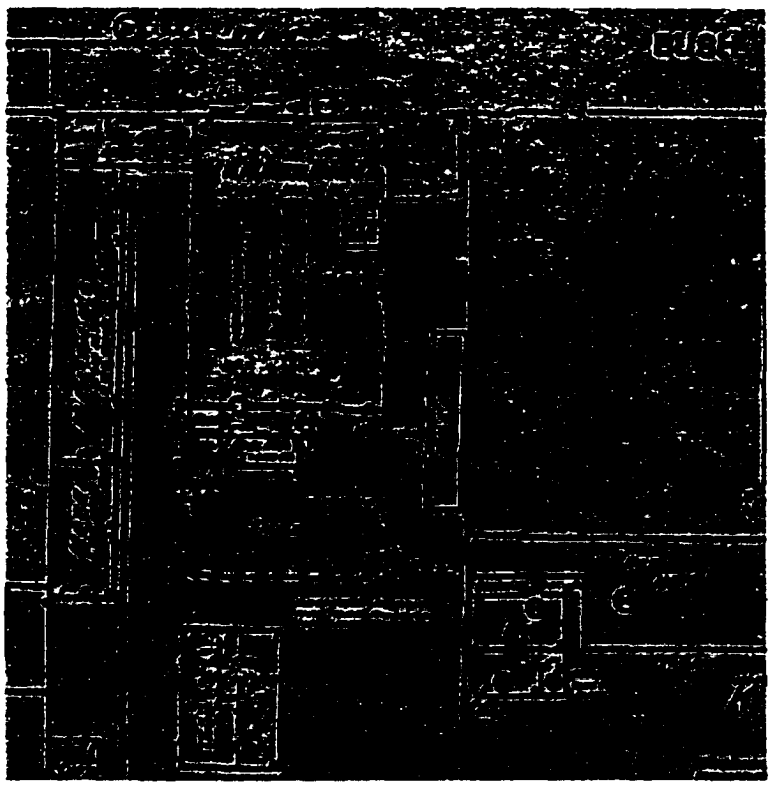

K. Hettleman (Dixie Metals), Baltimore, MD:
Sanborn Baltimore vol. 9, map 59

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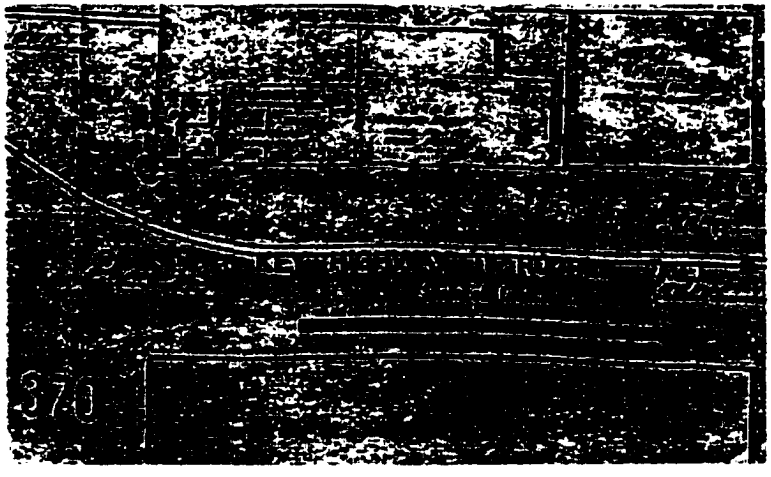

Southern Smelting & Refining, Baltimore, MD:
Sanborn Baltimore vol. 9, map 370

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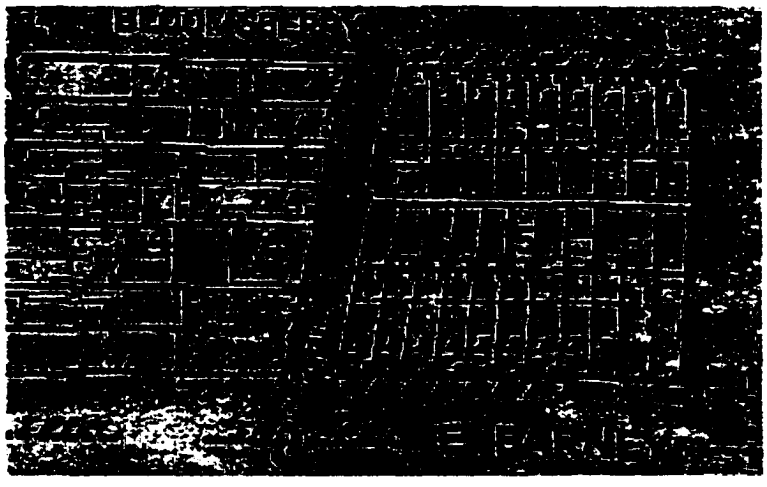

Industrial Metal Melting, Baltimore, MD:
Sanborn Baltimore vol. 9, map 51

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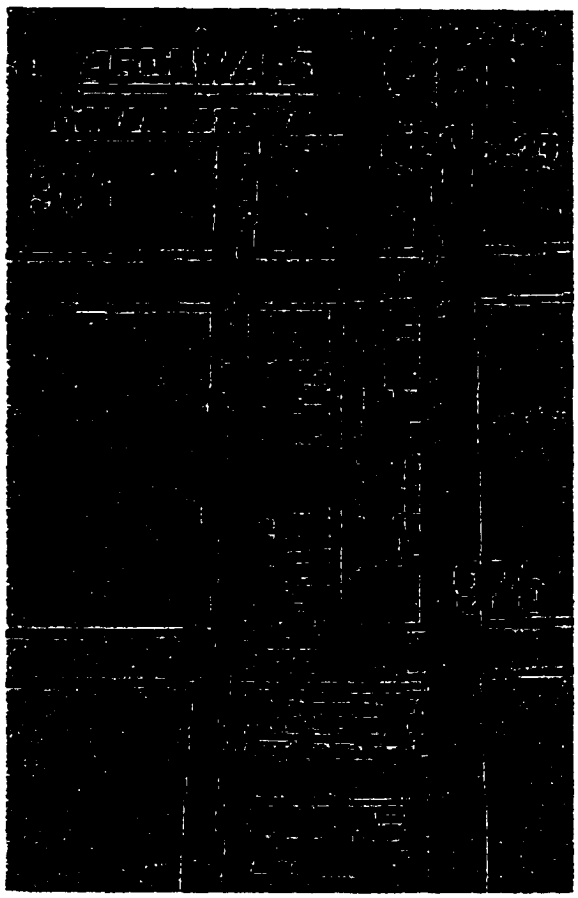

Lukens Metal Co., Philadelphia, PA:
Sanborn Philadelphia vol. 10, map 988

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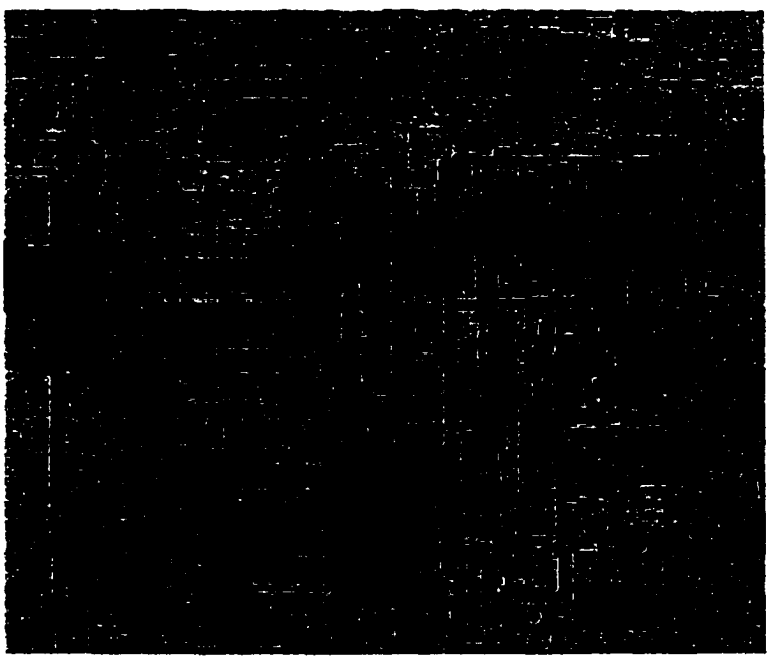

Joseph Rosenthal's Sons, Philadelphia, PA:
Sanborn Philadelphia vol. 8, map 753

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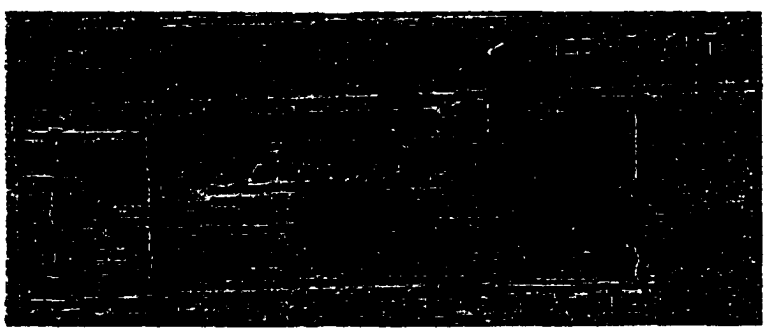

North American Smelting Co., Philadelphia, PA:
Sanborn Philadelphia vol. 10, map 956

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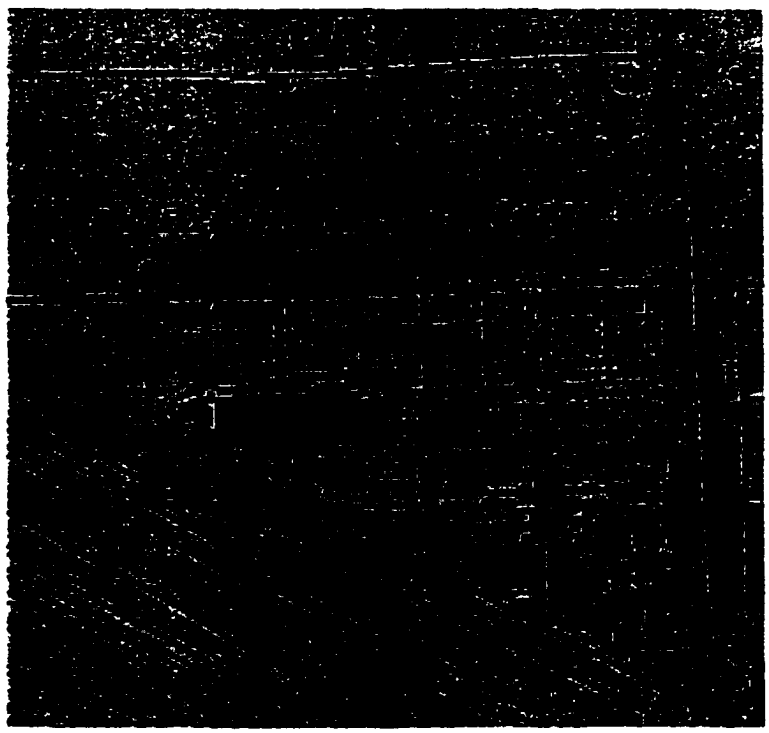

The Electric Storage Battery Co., Philadelphia, PA:
Sanborn Philadelphia vol. 13, map 1243

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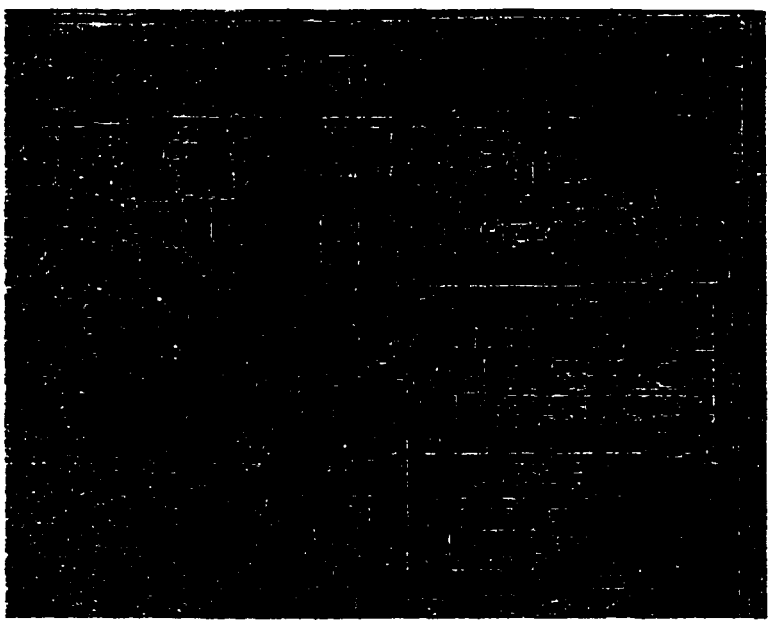

Metro Smelting Co., Philadelphia, PA:
Sanborn Philadelphia vol. 10, map 972

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Pennsylvania Smelting & Refining Co., Philadelphia, PA:
Sanborn Philadelphia vol. 10, map 984

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CURRICULUM VITAE

William P. Eckel was born on January 22, 1959, in Camden, New Jersey, and is an American citizen. He graduated from Wayland High School, Wayland, Massachusetts, in 1977. He received his Bachelor of Science degree from The George Washington University in 1981, and his Master of Science degree from The American University in 1988. He has been employed in the field of environmental science since 1981, and currently works for the U.S. Environmental Protection Agency.

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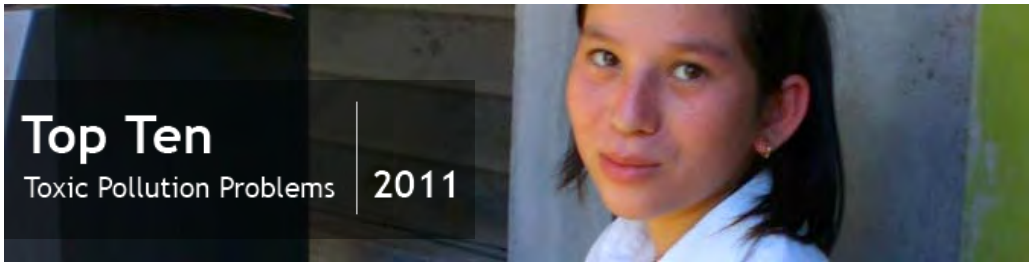

Lead Smelting

Lead Smelting

Lead Pollution

Estimated Population at Risk:

1.9 Million

Description

Lead processing and smelting plants work with both primary and secondary lead. Primary lead is mined, separated from ore, and refined into various products, whereas secondary lead is recovered from used objects – such as used lead-acid batteries – for reuse in other products. Smelting is a key process in lead product production, and involves heating lead ore or recovered lead with chemical reducing agents. Both secondary and primary smelting processes can be responsible for releasing large amounts of lead contamination into the surrounding environment.

Populations estimates are preliminary and based on an ongoing global assessment of known polluted sites.

Industrial Process

Lead processing either requires the mining of new, primary lead, or the recycling of used products and scrap metals. Both forms of lead must be melted using a smelting process in order to obtain pure and usable forms of the metal.

Top Ten Toxic Pollution Problems

Artisanal Gold Mining
Mercury Pollution

Industrial Estates
Lead Pollution

Agricultural Production
Pesticide Pollution

Lead Smelting
Lead Pollution

Tannery Operations
Chromium Pollution

Mining and Ore Processing
Mercury Pollution

Mining and Ore Processing
Lead Pollution

Lead-Acid Battery Recycling
Lead Pollution

Arsenic in Groundwater
Arsenic Pollution

Pesticide Manufacturing and Storage
Pesticide Pollution

The Rest of the Toxic Twenty

Sponsors

BLACKSMITH INSTITUTE

GREEN CROSS

Green Cross phone:
+41 79 620 18 14, +41 43 499 13 10

A large-scale lead smelter in southwestern Russia

The primary smelting process involves separating lead from ore using heat and reducing or purifying agents such as coke and charcoal. Once the lead ore is mined, it must undergo several different processes in order to be turned into usable or metallurgical lead material: sintering, smelting, and refining. The sintering phase involves removing sulfur from the lead ore using a hot air combustion process. Once the sulfur is removed, the lead is sent into a smelter where it is heated at extremely high temperatures in order to isolate the pure lead from other metals and materials in the ore. Any remaining metals or other materials left after the smelting are removed during the refining process.[29] Lead dust and smoke can be released during all of the above processes, and slag contaminated with lead particles may be left over after the smelting process.

Secondary smelting of lead is similar to primary smelting, but does not require the initial sintering process. Once lead is recovered from used materials – with the majority coming form used lead-acid batteries – it is placed into a furnace where it is heated with coke or charcoal in order to isolate the lead from other compounds. Like primary lead smelting, the processing of secondary lead can also produce lead dust and toxic slag. If smelting plants and equipment are not properly constructed to minimize the release of pollutants, lead toxins can often enter the surrounding environment and contaminate soil, water, and food.

Lead slag from a smelter

In addition, the mining process for extracting primary lead ore – if not performed with the necessary safety and environmental precautions – can create large piles of waste that contains lead toxins. If these piles are left out in the open, lead dust can be blown into surrounding areas, and lead can also leach into the ground and contaminate water systems.

Global Context

Lead is a very useful material found in many different products, with approximately six million tons used annually across the world.[30] Though much of this lead is recycled and reused, the US Geological Survey estimated that the world production of primary lead in 2009 was over 3.8 million metric tons.[31] The extraction and smelting of lead can cause a large amount of toxic pollution, and emissions from lead smelting are a big contributor to global lead contamination.[32] Lead smelting can also pollute the environment with large amounts of particulate matter, toxic effluents, and other various solid wastes.

Regions Most Impacted by Lead Pollution from Lead Smelting

Country	Number of Sites in Blacksmith Database	Estimated Impacted Population
1. Eastern Europe, Northern Eurasia & Central Asia	9	1,237,200
2. Africa	3	250,000
3. Central America	5	197,000
4. China	7	158,100

Populations estimates are preliminary and based on an ongoing global assessment of known polluted sites.

Though lead smelting facilities exist all over the world, countries and cities where pollution may not be properly monitored by environmental and health regulations are more negatively

impacted by health problems related to lead contamination. According to the Blacksmith inventory, countries in Eastern Europe, Northern Eurasia, and Central Asia are particularly at risk from lead smelting activities, with an estimated two million people impacted worldwide.

Exposure Pathways

The most common route of lead exposure caused by lead smelting is through inhalation or ingestion of lead dust, particles, or exhaust from the burning process. Workers in the smelting factories are particularly at risk, as they can be exposed to prolonged and direct inhalation of gaseous emissions and dust. Particles and ash containing lead can also be blown into nearby towns or onto agricultural fields, which can contaminate livestock and crops. Studies in China have found that certain crops, such as corn, are particularly susceptible to lead accumulation when grown in close proximity to smelters.[34] Dermal contact with soil contaminated with lead can also expose people to toxins.

In addition to toxic emissions, lead smelting produces wastewater, solid waste, and slag heaps that may be contaminated with heavy metal. Lead from these sources, as well as waste rock from lead ore mining, can often make its way into ground and surface water systems that are used for drinking, bathing, and cooking.

Health Effects

The health effects of exposure to lead can be both acute and chronic, and the problems caused by lead poisoning are particularly dangerous and severe for children. Acute lead poisoning can happen immediately and is often caused by inhaling large quantities of lead dust or fumes in the air. Chronic lead poisoning, however, occurs over longer periods of time and can result from very low-level, but constant, exposure to lead. Chronic poisoning is far more common than acute exposure and can be caused by persistent inhaling or ingestion of lead, or, over much longer periods, can result in lead accumulation in the bones.

Health problems associated with lead poisoning can include reduced IQ, anemia, neurological damage, physical growth impairments, nerve disorders, pain and aching in muscles and bones, memory loss, kidney disorders, retardation, tiredness and headaches, and lead colic, which impacts the abdomen.[19] Severe exposure to high concentrations of lead can lead to dire health risks, including seizures, delirium, coma, and in some cases, death.

Neurological damage is especially pronounced in children suffering from lead exposure, with even small amounts of lead poisoning capable of causing lifelong developmental and cognitive problems. Exposure to lead in utero can also cause birth defects.

What is Being Done

Children play near a lead smelter in an area contimated with

Many modern and well-maintained lead smelting facilities have infrastructure in place that allow pollution levels to be controlled and monitored according to environmental and health standards. However, these kinds of operations can be quite expensive, which leads many smelting plants to forego important safety measures. This is particularly common in countries or areas where there is little to no government regulation of the industry. Thus, one of the most effective ways to reduce lead pollution from smelters is to work with governments, NGOs, and communities to update equipment and operations at the plants.

Several of the older lead smelters, some of which have been in operation for many decades, have created large areas of legacy pollution. Remediation efforts in these areas have to consist of both the removal and disposal of contaminated soil or material and to ensure that contaminated water and food are able to return to safe consumption levels.

Example – DALY Calculations

A city in northwestern India is home to a large smelter that is releasing lead toxins into the nearby environment. There are many lakes in this region, and lead has contaminated the drinking and bathing water for the nearby residents. Samples of water near the smelter found 430 parts per billion of lead, which is over 8 times the health standard. Blacksmith estimates that 3,000 people at this site are at risk of diseases caused by lead exposure.

DALYs associated with adverse health impacts from lead exposure at this site are estimated to be 47,917 for the estimated exposed population of 3,000. This means that the 3,000 affected people will have a collective 47,917 years lost to death, or impacted by disease or disability. This comes out to 16 years lost or lived with a disability per person.

Footnotes

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Available at:

Informal lead smelting in Indonesia

http://www.ifc.org/ifcext/enviro.nsf/AttachmentsByTitle/gui_EHSGuidelines2007_SmeltingandRefining/$FILE/Final+-+Smelting+and+Refining.pdf.

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PROJECT NOTE WESTON SOLUTIONS, INC.

To: Neo Smelting and Refining Site File

Date: May 17, 2013

Page: 1 of 2

W.O. No.: 20405.012.013.2101.00

From: Denise Breen, Weston Solutions, Inc.

Subject: Determination of population within the 4-mile target distance limit of the Site.

References

1. U.S. Department of Commerce, U.S. Census Bureau, Geography Division. TIGER/Line Shapefile, 2010, 2010 state, New York, 2010 Census Block State-based. Accessible at http://www.census.gov/geo/www/tiger. Downloaded March 2013.

This project note serves to assign the populations located within 4 miles of the Neo Smelting and Refining Site as specified by the Hazard Ranking System (HRS). WESTON obtained and interpreted 2010 U.S. Census Bureau residential population data as follows:

1. Mapped the site reference location which is sample location S01 from the April 2013 sampling event.
2. Created and mapped ¼, ½, 1, 2, 3, and 4 mile buffers from the site reference point using the ESRI ArcGIS 10.1 Multiple Ring Buffer tool.
3. Downloaded 2010 Census block population data and GIS coverage from the U.S. Census Bureau website.
4. Used XTools Pro 7.1 for ArcGIS desktop to calculate the total area for each Census block, some of which straddle distance category boundaries.
5. Used the ESRI ArcGIS 10.1 Clip function to divide blocks and assign partial blocks to appropriate distance categories.
6. Used XTools Pro 7.1 to calculate the new areas of each partial block after being clipped.
7. Assigned populations for each block proportionally to appropriate distance categories according to area using the formula {(Partial Area/Total Area)*Block Population}.
8. Calculated population for each distance category by totaling block and partial-block populations as assigned
9. Evaluated the populations for level of contamination according to the HRS and as presented below.

PROJECT NOTE WESTON SOLUTIONS, INC.

The population by distance ring can be summarized as follows:

Distance Ring	Population
0-0.25 mile	2,388
0.25-0.5 mile	6,118
0.5–1 mile	21,877
1-2 mile	103,585
2-3 mile	182,784
3-4 mile	303,394

Total Population: 620,146

Denise Breen
Assistant Project Scientist

Federal Register

Friday,

January 5, 2001

Part III

Environmental Protection Agency

40 CFR Part 745

Lead; Identification of Dangerous Levels of Lead; Final Rule

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 745

[OPPTS–62156H; FRL–6763–5]

RIN 2070–AC63

Lead; Identification of Dangerous Levels of Lead

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: EPA is issuing a final regulation under section 403 of the Toxic Substances Control Act (TSCA), as amended by the Residential Lead-Based Paint Hazard Reduction Act of 1992, also known as ''Title X (ten),'' to establish standards for lead-based paint hazards in most pre-1978 housing and child-occupied facilities. This regulation supports the implementation of regulations already promulgated, and others under development, which deal with worker training and certification, lead hazard disclosure in real estate transactions, requirements for lead cleanup under State authorities, lead hazard evaluation and control in Federally-owned housing prior to sale and housing receiving Federal assistance, and U.S. Department of Housing and Urban Development (HUD) grants to local jurisdictions to perform lead hazard control. In addition, today's action also establishes, under authority of TSCA section 402, residential lead dust cleanup levels and amendments to dust and soil sampling requirements and, under authority of TSCA section 404, amendments to State program authorization requirements. By supporting implementation of the major provisions of Title X and by providing guidance to all owners and occupants of pre-1978 housing and child-occupied facilities, this regulation will help to prevent lead poisoning in children under the age of 6.

DATES: This final rule is effective on March 6, 2001. This rule shall be promulgated for purposes of judicial review at 1 p.m. eastern daylight time on February 5, 2001.

FOR FURTHER INFORMATION CONTACT: *For general information contact*: Barbara Cunningham, Director, Office of Program Management and Evaluation, Office of Pollution Prevention and Toxics (7401), Environmental Protection Agency, 1200 Pennsylvania Ave., NW, Washington, DC 20460; telephone number: 202–554–1404; e-mail address: TSCA-Hotline@epa.gov.

For technical information contact: Dave Topping, National Program Chemicals Division (7404), Office of Pollution Prevention and Toxics, Environmental Protection Agency, 1200 Pennsylvania Ave., NW., Washington, DC 20460; telephone number: (202) 260–7737; e-mail address: topping.dave@epa.gov.

SUPPLEMENTARY INFORMATION:

I. General Information

A. Does this Action Apply to Me?

You may be affected by this action if you must comply with other Title X regulations that are affected by today's action. The following table identifies potentially affected categories and entities:

Category	Examples of Entities	NAICS or SIC codes	Effect of Regulation
Lead abatement professionals	Workers, supervisors, inspectors, risk assessors, and project designers engaged in lead-based paint activities.	562910	Provides standards that risk assessors would use to identify hazards and evaluate clearance tests; helps determine when certified professionals would need to be employed to perform lead cleanup
Training providers	Firms providing training services in lead-based paint activities	611519	Provides standards that training providers would have to teach in their courses
Federal agencies that own residential property		92511, 92811	Standards identify hazards that Federal agencies or purchasers of Federal property would have to abate in pre 1960 housing prior to sale, under Title X, section 1013.
Property owners that receive assistance through Federal housing programs	State and city public housing authorities, owners of multifamily rental properties that receive project-based assistance, owners of rental properties that lease units under HUD's tenant-based assistance program	53110, 531311	Standards identify hazards that property owners would have to abate or reduce as specified by regulations issued by HUD under authority of Title X, section 1012
Property owners	Owner occupants, rental property owners, public housing authorities, Federal agencies	531110, 531311	Standards identify hazards that, when known, would have to be disclosed under EPA/HUD joint regulations promulgated under Title X, section 1018

This listing is not intended to be exhaustive, but rather provides a guide for entities likely to be affected by this action. Other types of entities not listed in the table in this unit could also be affected. To determine whether you or your business is affected by this action, you should carefully examine the applicability provisions in relevant regulations. If you have any questions regarding the applicability of this action to a particular entity, consult the technical person listed in the **FOR FURTHER INFORMATION CONTACT** section.

B. How Can I Get Additional Information, Including Copies of this Document or Other Related Documents?

1. *Electronically*. You may obtain electronic copies of this document, and certain other related documents that might be available electronically, by

going directly to the Internet Home Page for this regulation at http://www.epa.gov/lead/leadhaz.htm and selecting the desired document. You can also go directly to the **Federal Register** listings at http://www.epa.gov/fedrgstr/ to obtain a copy of this final rule.

2. *In person.* The Agency has established an official record for this action under docket control number OPPTS–62156. The official record consists of the documents specifically referenced in this action, any public comments received during the comment period, and other information related to this action. This official record includes the documents that are physically located in the docket, as well as the documents that are referenced in those documents. The public version of the official docket, which includes printed, paper versions of any electronic comments submitted during the comment period, is available for inspection in the TSCA Nonconfidential Information Center, North East Rm. B–607, Waterside Mall, 401 M St., SW., Washington, DC. The Center is open from noon to 4 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Center is (202) 260–7099.

II. Overview

A. Introduction

The Title X term ''lead-based paint hazard'' is intended to identify lead-based paint and all residential lead-containing dusts and soils regardless of the source of the lead, which, due to their condition and location, would result in adverse human health effects. One of the underlying principles of Title X is to move the focus of public and private sector decision makers away from the mere presence of lead-based paint, to the presence of lead-based paint hazards, for which more substantive action should be undertaken to control exposures, especially to young children. This regulation establishes hazard standards for residential lead-based paint, and residential dust and soil lead. The hazard standards for these three media, collectively, are statutorily defined as lead-based paint hazards.

B. Summary of Statutory Authority

The Residential Lead-Based Paint Hazard Reduction Act of 1992 was enacted as Title X of the Housing and Community Development Act of 1992. Title X establishes a comprehensive Federal program for reducing the risks from lead-based paint and certain lead hazards. The Title X program primarily gives authority to HUD and EPA, but affects a number of other Federal agencies. Among other things, Title X amended TSCA by adding TSCA Title IV, which specifically gives regulatory authority to EPA to cover, among other things, training of workers who deal with lead-based paint hazard abatement, the appropriate form of State and Tribal lead programs, and the identification of dangerous levels of lead. Title IV includes section 403. EPA is promulgating the standards for lead-based paint hazards under the authority of TSCA section 403, 15 U.S.C. 2683.

Section 403 requires EPA to promulgate regulations that ''identify . . . lead-based paint hazards, lead-contaminated dust, and lead-contaminated soil'' for purposes of the entire Title X. Lead-based paint hazards, under TSCA section 401 (15 U.S.C. 2681), are defined as conditions of lead-based paint and lead-contaminated dust and soil that ''would result'' in adverse human health effects (15 U.S.C. 2681(10)). Lead-based paint is defined by statute as paint with lead levels equal to or exceeding 1.0 milligrams per square centimeter (mg/cm^2) or 0.5% by weight (see section 302(c) of the Lead-Poisoning Prevention Act (42 U.S.C. 4822(c)) and TSCA section 401(9) (15 U.S.C. 2681(9)). TSCA section 401 defines lead-contaminated dust as ''surface dust in residential dwellings'' that contains lead in excess of levels determined ''to pose a threat of adverse health effects'' (15 U.S. C. 2681(11)). TSCA section 401 defines lead-contaminated soil as ''bare soil on residential real property that contains lead at or in excess of levels determined to be hazardous to human health'' (15 U.S.C. 2681(12)).

EPA is also promulgating amendments to the regulations for lead-based paint activities under the authority of TSCA section 402 (15 U.S.C. 2682) and to the State and Tribal program authorization requirements under authority of TSCA section 404 (15 U.S.C. 2684). These changes are needed to ensure consistency among the various regulations covering lead risks under TSCA. Section 402 requires EPA to promulgate regulations establishing training and certification requirements for individuals and firms engaged in lead-based paint activities. Lead-based paint activities, in the case of target housing and child-occupied facilities, include risk assessment, inspection and abatement. See TSCA section 402(b)(1); 15 USC 2682(b)(1). To clarify this definition, EPA notes that lead-based paint activities do not include interim controls. These regulations ''shall contain standards for performing lead-based paint activities, taking into account reliability, effectiveness, and safety'' (15 U.S.C. 2682(a)(1)). Section 404 requires States and Tribes seeking to administer and enforce standards, regulations, or other requirements under section 402, 406, or both to seek authorization from EPA.

C. Guiding Principles

Reducing exposure to lead has been an important issue for EPA for more than 2 decades. Young children are especially vulnerable to the toxic effects of lead because their nervous systems are still developing and they absorb more of the lead to which they are exposed. Many of the health effects associated with lead are thought to be irreversible. Moreover, the effects at lower levels of exposure are often asymptomatic. In light of the impacts on children and the nature of the health effects, EPA's goal is to eliminate exposure to harmful levels of lead. This goal has informed Agency actions such as the decision to remove lead as an additive from gasoline as discussed in the preamble to the proposed rule (63 FR at 30305).

First and foremost, the Agency faces the difficulty of determining the level at which to set the standards given the uncertainties in information on cause and effect--what environmental levels in which specific medium may actually cause particular blood lead levels that are associated with adverse health effects. The Agency has tools, which are only generally consistent, that show that certain increases in environmental lead levels are associated with certain increases in blood lead levels. Given the range of uncertainty shown in its analysis supporting the establishment of a hazard level under this rule, EPA has developed a technical analysis that considers hazard standards for dust and soil at the lowest levels at which the analysis shows that across-the-board abatement on a national level could be justified. EPA recognizes, however that for any levels of lead in dust or soil judgment must be exercised as to how to treat the medium, and interim controls as well as abatement could be effective. In addition, EPA recommends that organizations and individuals consider some form of interim control in certain residential areas even where soil lead levels are below the hazard standard if there is a concern that children under 6 might spend substantial time in such areas, or there is potential for that soil to contribute to hazardous lead levels in play areas or dwellings. While the risks from lead at these lower levels are less than the hazard level, EPA believes that public health will be further protected if

owners and occupants of residential properties are encouraged to take actions to reduce the potential for lead exposure.

In performing its analyses for this rule, the Agency could not quantitatively compare interim control strategies with abatement strategies because there are only limited data available on the effectiveness of interim controls over extended periods of time, and those data which are available are not suitable for quantitative comparisons with abatements. In comparing interim control strategies with abatement strategies, one must make a number of assumptions concerning the costs of administrative management, and frequency of monitoring and renewal over the planning horizon. For the 50–year planning horizon which the Agency used in its dust and soil analyses, one would have to compare the time stream of interim control expenses, for as long as such expenses are necessary, and weigh the possible differences in potential blood-lead reductions, to make a fair comparison of abatement and interim control strategies.

Nevertheless, experience with interim control programs is increasing and certain organizations, particularly public health and housing agencies, believe they have been able to develop effective programs for interim controls which achieve virtually the same degree of risk reduction as do abatement programs, but at much reduced cost. EPA received comments on this issue during the public comment process. EPA wishes to encourage the continuing evaluation of such efforts because resources to deal with hazardous lead levels are often limited, and strategies which achieve comparable risk reduction, but at much reduced cost, have the potential to protect more children by allocating the limited resources more effectively. EPA believes that public and private organizations should evaluate both interim control and abatement strategies in determining the most effective course of action when dealing with dust and soil hazards.

In addition, EPA recommends that organizations and individuals consider some form of interim control response action in certain areas even where soil lead levels are below the hazard standard. This would apply if there is a concern that children under the age of 6 spend substantial time in such areas, or there is potential for that soil to contribute to hazardous lead levels in play areas or dwellings. While the risks from lead at these lower levels are less than at the hazard level, EPA believes that public health will be further protected if owners and occupants of residential properties are aware of such contamination and are encouraged to take actions to reduce the potential for lead exposures.

For determining a paint lead hazard EPA faced a data problem different from that faced with respect to dust and soil hazards. For dust and soil, EPA had substantial raw data on environmental levels and blood lead levels, even though it faced substantial uncertainty in correlating the levels. For lead-based paint, as discussed later in this preamble, the Agency had no data by which it could select a threshold below which the paint would not be a hazard. EPA, therefore, could not apply the same analysis for the paint hazard determination as it did for the dust and soil hazard determinations. Comments indicated that even very tiny amounts of deteriorated lead-based paint are sufficient in certain circumstances to result in adverse health effects. Accordingly, EPA has generally designated any amount of deteriorated paint as a lead-based paint lead hazard. Nevertheless, as with dust and soil hazards, EPA would not recommend full scale abatement be undertaken for all paint lead hazards. Instead, the Agency wishes the public to be aware that any deteriorated lead-based paint presents enough of a risk that it should be stabilized and carefully monitored if it is not abated.

Controlling exposure to lead in the residential environment presents EPA with challenges that, in important respects, are different from and often more complex than those the Agency deals with in other regulatory contexts. Among the challenges of this regulation is that it requires the Agency to address exposure from the past use of products that contained lead rather than current products and/or processes that introduce lead into the environment. Assuming that there are safe and available substitutes, the government can eliminate lead from an existing product if the risk warrants such removal (e.g., gasoline, solder for water pipes and food cans). Removing lead that is already in the environment is far more difficult. It would have been better that lead never found its way into paint that exists today in approximately 64 million homes. However, since it is so pervasive, EPA is faced with a number of dilemmas. First, the number of properties that have some form of lead is enormous. However, the number of buildings with lead paint an dust that present a hazard is, relatively, much lower. The Agency must therefore distinguish which of these lead conditions need to be controlled. Because there is a great deal of variability among properties containing lead paint, our ability to identify which properties present risks is limited. Moreover, the exposure risk to individuals, even if there were not such a large number of affected properties, can be compounded by child-specific factors (e.g., hand-to-mouth behavior, pica, nutrition, hygiene).

In addition, the success of the program will largely rely upon the voluntary participation of States and Tribes, as well as counties and cities, to implement the program and upon property owners to follow the standards and EPA's recommendations. If EPA were to set unreasonable standards (e.g., standards that would recommend removal of all lead from paint, dust, and soil), States and Tribes may choose to opt out of the Title X lead program and property owners may choose to ignore EPA's advice, believing it lacks credibility and practical value. Consequently, EPA needed to develop standards that would protect children without wasting resources by chasing risks of negligible importance and that would be accepted as reasonable by States, Tribes, local governments, and property owners.

Three other considerations also merit the public's attention. First, as noted, the standards are designed to focus resources on the worst problems. If property owners are able to address less pressing problems (e.g., deteriorated paint below the minimum area threshold), EPA encourages them to take action. EPA also encourages States, Tribes, and local governments to adopt more stringent standards if local circumstances warrant such action.

Second, the standards alone cannot solve the lead problem. They are part of a broader program designed to educate the public and raise public awareness, empower and protect consumers, and provide helpful technical information that professionals can use to identify and control lead hazards. EPA has developed and implemented an active public education and outreach program consisting of a toll-free hotline (1–800–424–LEAD) co-sponsored with HUD and U.S. Centers for Disease Control and Prevention (CDCP), public service announcements, poster campaigns, distribution of a parent's guide through grocery stores, slides in movie theaters, and an outreach campaign with the National Parent Teachers Association, the National Association of Child Care Providers, and public libraries.

Consumer empowerment and protection efforts include the hazard disclosure regulations jointly issued with HUD training and certification

standards for individuals and firms engaged in lead-based paint activities, and the pre-renovation education rule that requires renovation and remodeling contractors to provide the EPA pamphlet ''Protect Your Family from Lead in Your Home'' to occupants prior to the start of renovation and remodeling projects. In addition, under section 402 of TSCA, EPA is currently developing training and certification requirements for renovation and remodeling contractors whose activities may create lead hazards.

EPA and other Federal agencies continue to conduct field studies to identify and evaluate lower cost products and technologies for evaluating and controlling lead-based paint hazards. The findings of these studies are distributed to professionals through our lead hotline, EPA's website (www.epa.gov/lead) and at other agencies' websites, and through on-going contact with trade and professional associations. The standards, combined with these other efforts, provide a comprehensive program designed to reduce and eventually help eliminate lead in residential paint, dust, and soil as a cause of childhood lead poisoning.

Third, these standards are based on the best science available to the Agency. EPA recognizes, however, that the science is constantly developing and with it our understanding of the relationship between lead in the environment and human exposure and the relationship between exposure and health impacts. If new data become available (e.g., empirical data showing that very small amounts of deteriorated paint pose a serious health risk or data showing that hazard control activities are more effective at reducing long-term dust-lead levels than assumed by EPA), the Agency will consider changing the standards to reflect these data. If the data indicate that the standards should be changed and they meet EPA's quality criteria, the Agency will consider publishing the data for public review and comment and amending today's regulation.

D. Regulatory Approach

1. *Uniform national standards.* EPA is issuing uniform national standards in this rule. The rationale for adopting uniform national standards is found on pages 63 FR 30307 to 30308 of the preamble to the proposed rule. EPA summarizes this reasoning in the following paragraphs.

EPA stated that the relationship between environmental lead levels (from paint, dust, and soil) and their effects on the health of exposed children, which forms the basis for this rule, is complex, and is dependent upon numerous site-specific and child-specific factors. Where more site-specific factors can be considered on a smaller (residence or community) scale, estimates of the effects of environmental levels on blood lead can be more accurate. The data needed, however, are not available for communities nationwide. In contrast, national data on lead in paint, dust, and soil are currently available. Even if data were available, the residence or community scale standards would still not account for variability in exposure influenced by child-specific factors (e.g., hand-to-mouth behavior, hygiene, and nutrition). Detailed evaluations that considered the specifics of individual communities would generally require information for each residence to evaluate the impact of environmental lead on children.

In addition, uniform national standards provide a fixed basis of comparison for all homes. National standards can be used to compare properties and establish priorities. This would be extremely difficult to accomplish if there were the numerous standards specific to individual communities.

EPA also took into account that certain segments of the population have a higher incidence of elevated blood-lead levels (e.g., minority and low-income children). Because estimates of the relationship between environmental lead levels and children's health effects are not sufficiently refined to distinguish relationships for particular subsets of the general population of children, EPA is choosing to emphasize program implementation (e.g., training, education, and environmental justice grants), which the Agency considers a more effective and simpler approach to address vulnerable communities rather than setting community-specific standards. EPA preferred to establish a simple, set of standards that could easily be adopted by States, allowing them to tailor the standards, should they so choose. This allows States greater flexibility to establish and implement their programs while a national, baseline level of protection to children is maintained.

2. *Media-specific standards.* A second basic issue that shaped EPA's standard-setting approach involves the fact that a child's total lead exposure is the sum of contributions from numerous sources, including paint, dust, soil, and others. Specifically, EPA had to decide whether to set separate, independent standards for paint, dust, and soil or to integrate the standards.

Under the first option, EPA would establish a fixed standard for each medium without considering the varying conditions in the other media. For example, the soil standard would remain constant, regardless of whether dust lead levels were high or low. The chief advantage of this option is that the standards are simple to understand and use.

A potential disadvantage of this approach is that a standard could be established for a particular medium that does not consider the total exposure of a child (i.e., exposures from all other media). To address this potential shortcoming, the Agency considered candidate sets of standards for dust, lead, and paint together so that its comparisons of candidate standards reflected exposures to all media. Consequently, the standards, although they are medium-specific numbers will effectively identify hazards as long as all media are evaluated and compared to the standards.

Under the second option, EPA would set standards to account for total lead exposure from all media. Under a joint standard, the standard for each medium would vary, depending on the conditions in the other media. For a graphical [illustration of this option, see page 30308 of the preamble to the proposed rule. The major advantage of the joint standards is that they avoid anomalous situations. For example, it stands to reason that if both dust and soil measurements are just below the hazard levels--35 $\mu g/ft^2$ on the floor and 1,175 parts per million (ppm) in the non-play area--the situation is more dangerous than if one measurement is above the hazard level--e.g. 1,225 ppm for soil--and floor dust is at zero. Yet the first set of measurements would not constitute a hazard and the second set would. In these circumstances, joint standards may better reflect the total exposure and risk. Furthermore, for this option to be truly effective, EPA would need to know the levels from all sources of lead exposure and how they relate to blood lead levels individually and in various combinations. EPA, currently, lacks the analytical tools to support selection of joint standards. In addition, EPA is endeavoring to set the media specific hazard standards low enough that hazardous situations will not occur if both soil and dust are just below the standards. In such a case, the media specific standards could be overinclusive. The Agency, however, believes that this approach is appropriate to protect public health. Accordingly, in this rule EPA is establishing media-specific standards. Additional explanation for this decision

can be found on pages 30308 and 30309 of the preamble to the proposed rule.

E. Applicability and Uses of the Standards

The standards established in this rule apply to target housing (i.e., most pre-1978 housing) and child-occupied facilities (pre-1978 non-residential properties where children under the age of 6 spend a significant amount of time such as daycare centers and kindergartens). The standards are intended to be used prospectively. That is, they should be used to identify properties that present risks to children before children are harmed. This, of course, would not prevent them from being used retrospectively in the case of environmental intervention blood lead investigations and clearance of resulting lead hazard control activities.

These standards are not appropriate as the sole source of information to use when identifying the source of exposure for a lead-poisoned child. When a property is being evaluated in response to an identification of a lead-poisoned child, the risk assessor in cooperation with local public health officials should identify and consider all sources of lead exposure. For example, a risk assessor should consider lead in drinking water as well as the presence of any amount of deteriorated lead-based paint.

Within the scope of Title X, these regulatory standards will help support and implement major provisions of the statute. They will be incorporated into the risk assessment work practice standards, providing the basis for risk assessors to determine whether lead-based paint hazards are present. By helping to determine when a hazard is present, the standards will help determine when a hazard control activity must be performed by certified personnel. EPA further notes that only abatement of lead-based paint hazards specifically hazardous lead-based paint, dust-lead hazards or soil-lead hazards identified in 40 CFR 745.65 requires certified personnel. This is because ''abatement'' is defined in 40 CFR 745.223 as ''measures designed to permanently eliminate lead-based paint hazards.'' Thus, permanent elimination of lead-based paint, and dust or soil lead would not require the use of certified personnel unless lead-based paint hazards are present in those media.

States and Tribes wishing to obtain or retain authorization to administer and enforce training and certification programs must incorporate hazard standards as protective as the standards in this rule. Provisions for State and Tribal authorization are described at 40 CFR part 745, subpart Q. These standards will also help property owners comply with section 1018 by establishing what conditions must be disclosed to prospective purchasers and renters as *lead-based paint hazards* prior to the sale or rental of target housing. HUD, the Department of Defense (DoD), and other Federal agencies will use these standards in implementing or overseeing the evaluation and control of hazards in Federally-assisted housing and Federally-owned housing prior to disposition. (24 CFR part 35)

Under section 1018 of Title X (42 U.S.C. 4852d), EPA and HUD have jointly developed regulations requiring a seller or lessor of most pre-1978 housing to disclose the presence of any known lead-based paint and lead-based paint hazards to the purchaser or lessee (24 CFR part 35, subpart A; 40 CFR part 745, subpart F). When these section 403 rules become effective, lead-based paint hazards in lead paint, dust or soil will need to be disclosed. EPA further notes, however, that under the section 1018 rules, the seller or lessor also must provide the purchaser or lessee any available records or reports ''pertaining to'' lead-based paint, lead-based paint hazards and/or any lead hazard evaluative reports available to the sellor or lessor (section 1018(a)(1)(B). See 40 CFR 745.107(a)(4). Accordingly, if a seller or lessor has a report showing lead is present in levels that would not constitute a hazard, that report must also be disclosed. Thus, disclosure is required under section 1018 even if dust and soil levels are less than the hazards. EPA notes, however, that with respect only to leases of target housing, disclosure is not required in the limited circumstance where the housing has been found to be lead-based paint free by a certified inspector (24 CFR 35.82; 40 CFR 745.101), although voluntary disclosure of such certifications is encouraged.

Beyond the scope of Title X, these standards will guide the control of lead-based paint hazards in the nation's housing stock.

Although other regulations (e.g., hazard evaluation and control in housing receiving Federal assistance and Federally-owned housing prior to sale) may require property owners to evaluate properties for the presence and/or control of lead hazards, today's action does not contain such requirements. Specific requirements are determined by the particular State, Federal, and local government regulations which mandate actions when health hazards are found in target housing or child-occupied facilities. EPA, however, strongly recommends that property owners or other decision makers take appropriate actions to reduce or eliminate hazards. Finally, the standards provide property owners and other decision makers with the Federal government's best judgement concerning lead dangers in residential paint, dust, and soil.

The standards were established assuming that property owners and other decision makers would identify and control hazards in all three media (i.e., paint, dust, and soil). Failure to take a multimedia approach may not provide adequate protection to children. First, the protectiveness of the standards assumes that all media will be appropriately addressed. Second, failure to address one or more medium leaves children at risk from exposure to lead in media that are not addressed. Third, failure to address one or more media reduces the effectiveness of hazard control actions that are taken due to recontamination of one media from lead in another. Fourth, the Agency believes that soil can be a source of exposure whenever it is accessible for either incidental ingestion or tracking into a home, and that while grass and other coverings may be effective in significantly reducing potential exposures, such coverings must be maintained in order to provide continuing protection.

F. Summary of the Final Rule

1. *Hazardous lead-based paint (§ 745.65(a)).* The hazard standard for lead-based paint, called the ''paint lead hazard,'' is any of the following:

a. Any lead-based paint on a friction surface that is subject to abrasion and where the lead dust levels on the nearest horizontal surface underneath the friction surface are equal to or greater than the dust hazard levels.

b. Any damaged or otherwise deteriorated lead-based paint on an impact surface that is caused by impact from a related building component.

c. Any chewable lead-based paint surface on which there is evidence of teeth marks.

d. Any other deteriorated lead-based paint in residential buildings or child-occupied facility or on the exterior of any residential building or child-occupied facility.

The purpose of identifying almost all deteriorated lead-based paint as a paint lead hazard is to alert the public to the fact that all deteriorated lead-based paint should be addressed--through use of paint stabilization or interim controls. Something less than abatement and certified personnel, however, would be needed to undertake interim controls or to abate lower levels of deterioration.

Two existing HUD and EPA rules provide the applicable standards: HUD rules under sections 1012 and 1013 of Title X published on September 15, 1999 (61 FR 50140), and EPA work practice rules under section 402 of TSCA published on August 29, 1996 (61 FR 45778) (FRL–5389–9). In general, these rules provide that occupant protection procedures, clearance testing, use of certified personnel or other similar specialized lead hazard control practices and procedures are not required if one or more of the following conditions exist:

a. Two square feet or less of deteriorated lead-based paint in a room.

b. Twenty square feet or less of deteriorated exterior lead-based paint;

c. Ten percent of the total surface area on an interior or exterior type of component with a small surface area consist of deteriorated lead-based paint.

2. *Dust standards*. Today's regulation includes two standardsfor dust: hazard levels for floors (including carpeted floors) and interior window sills (§ 745.65(b)) and clearance standards for floors (including carpeted floors), interior window sills, and window troughs (§ 745.227(e)(8)(viii)). The dust-lead hazard standards are 40 µg/ft^2 for floors based on a weighted average of all wipe samples and 250 µg/ft^2 for interior window sills based on a weighted average of all wipe samples. The weighted average, or weighted arithmetic mean, means the arithmetic mean of sample results weighted by the number of subsamples in each sample. Its purpose is to give influence to a sample relative to the surface area it represents.

The clearance standards for dust following an abatement are 40 µg/ft^2 for floors, 250 µg/ft^2 for interior window sills, and 400 µg/ft^2 for window troughs. The dust-lead level must be less than the applicable standard for the surface to pass clearance. Clearance standards are used to evaluate the effectiveness of cleaning following an abatement, and EPA may also use these standards in future rulemakings to evaluate the effectiveness of cleaning following a renovation and remodeling project. Properties that undergo abatement must pass clearance according to the work practice standards for abatement found at 40 CFR 745.227. If a property fails clearance, it must be recleaned until it passes, although it is not automatically necessary to reclean the entire property when clearance fails, such as when some of the visual and dust-testing clearance results have indicated that portions of the property are already cleared.

3. *Soil standards*. Today's regulation establishes the following standards for bare residential soil: a hazard standard of 400 ppm by weight in play areas based on the play area bare soil sample and an average of 1,200 ppm in bare soil in the remainder of the yard.based on an average of all other samples collected. See § 745.65(c). The final rule also identifies lead-contaminated soil as soil with levels equal to or greater than these soil-lead hazard standards.

Property owners and other decision makers should implement effective measures to reduce or prevent childrens' exposure to lead in soil that exceeds these levels. These measures may incorporate, but are not limited to, interim controls that include covering bare soil and placement of washable doormats in entryways. The need for more permanent controls should be determined with consideration of local conditions and usage patterns, the relative risks from different lead sources, and the potential for exposures to change over time.

4. *Summary of other actions*. Today's rule also amends existing regulations for lead-based paint activities including:

a. Requirements for interpreting the results of a lead-based paint risk assessment sampling for purposes of determining if lead-based paint hazards are present.

b. Changes to the risk assessment work practice standards at 40 CFR 745.227 to require testing of all deteriorated paint on surfaces with a distinct painting history to determine if the paint is lead-based.

c. Changes to the dust and soil sampling locations in the risk assessment work practice standards at 40 CFR 745.227.

d. Work practice standards for the management of soil removed during an abatement.

e. Amendments to the State and Tribal program authorization requirements under 40 CFR part 745, subpart Q; and

f. Amendment to the definition of ''abatement'' at 40 CFR 745.223 to make it clear that abatement does not include removal of paint, dust, and soil unless lead-based paint hazards are present in those media.

G. Limitations of the Hazard Standards

As stated in the proposed rule (63 FR at 30304), there is significant confusion about the requirements and purpose of the TSCA section 403 regulations. Consequently, EPA felt it necessary in the preamble to the proposed rule to highlight major limitations and other issues related to the scope and use of the regulation. These statements continue to apply. To summarize, the regulation does not establish a new definition for lead-based paint. The hazard standards apply to conditions observed when the risk assessment was performed. The standards do not address the potential for a hazard to develop. The standards apply to target housing, but may be used as guidance for other residential property. Finally, the standards are intended to identify dangerous levels of lead, not housing that is free from risks associated with exposure to lead.

As stated in Unit II.F.3., today's rule establishes two hazard standards for bare residential soil; 400 ppm for play areas and an average of 1,200 ppm for the rest of the yard. EPA recommends that organizations and individuals consider some action in certain areas even where levels in bare soils are below the hazard standard, particularly, if there is a concern that children 6 years and under might spend substantial time in such areas, or if there is concern that the bare soil in such areas may contribute to lead levels in the dwelling, or in the play areas. However, this rule does not mandate that any action be implemented when levels are found to be below the lead hazard standard. Moreover, the kind of response that organizations and individuals might consider could include modest actions such as planting grass (or other ground cover) to more extensive actions such as covering the bare soil with several inches of clean fill.

As indicated in Unit II.E., it is also important to emphasize that this rule only applies to pre-1978 target housing and certain child-occupied facilities, and that these standards were not intended to identify potential hazards in other settings. If one chooses to apply the hazard level to situations beyond the scope of Title X, care must be taken to ensure that the action taken in such settings is appropriate to the circumstances presented in that situation, and that the action is adequate to provide any necessary protection for children exposed. See also Unit IV.D. for a discussion regarding the relationship of the soil hazard standard to Superfund soil cleanup standards.

H. Preamble Overview

The remainder of this preamble consists of four units. Unit III. presents an explanation of the Agency's decisions. It includes a summary of the proposal, identifies the major changes between the proposed and final rules, and explains the changes. Unit IV. presents a discussion of some of the more significant issues raised by the public comments. Unit V. contains the

references for sources used in this preamble. Unit VI. is the regulatory assessment unit, which deals with the Federal requirements for agency rulemaking that are imposed by various statutes and executive orders. Unit VII. discusses the Congressional Review Act requirements.

III. Explanation of the Agency's Decisions

A. Summary of the Proposed Regulation

EPA published the proposed regulations on June 3, 1998 (63 FR 30302) (FRL–5791–9). The proposed standard for hazardous lead-based paint was lead-based paint in poor condition, defined as more than 10 ft^2 of deteriorated lead-based paint on exterior components with large surface areas, more than 2 ft^2 of deteriorated lead-based paint on interior components with large surface areas, or deteriorated lead based paint on more than 10% of the total surface area of interior or exterior components with small surface areas. Lesser amounts of deteriorated paint were considered *de minimis* levels and were not considered hazards. The proposed standard for a dust lead hazard was the average level of lead in dust that equals or exceeds 50 $\mu g/ft^2$ on uncarpeted floors and 250 $\mu g/ft^2$ on interior windows sills. The proposed standard for soil-lead hazard was lead that equals or exceeds 2,000 ppm based on a yard-wide average soil-lead concentration. A soil-lead level of concern, proposed to be 400 ppm, was included in draft guidance but not in the proposed regulation. The statutory basis for the level of concern was the section 403 requirement that EPA identify ''lead-contaminated soil,'' which the Agency interpreted to be a level less than the soil-lead hazard. EPA used the term ''level of concern'' instead of ''lead-contaminated soil. EPA proposed that lead-based paint hazards be identified by certified risk assessors performing risk assessments according to the work practice standards at 40 CFR 745.227.

The June 3, 1998 document also proposed amendments to existing regulations for lead-based paint activities including:

1. Clearance standards for dust following an abatement of 50 $\mu g/ft^2$ for uncarpeted floors, 250 $\mu g/ft^2$ for interior window sills, and 800 $\mu g/ft^2$ for window troughs.

2. Requirements for interpreting the results of a lead-based paint risk assessment sampling for purposes of determining if lead-based paint hazards are present.

3. Changes to the dust and soil sampling locations in the risk assessment work practice standards at 40 CFR 745.227.

4. Work practice standards for the management of soil removed during an abatement; and

5. Amendments to the State and Tribal program authorization requirements under 40 CFR part 745, subpart Q.

B. Summary of Significant Changes from the Proposed Regulation and Other Major Decisions

This section of the preamble briefly presents the major changes between the proposal and final rule. EPA also identifies major provisions of the proposed regulation that remain unchanged in the final rule. Unit II.D. of the preamble presents the Agency's explanation for these decisions.

1. *Dust standards*. The final rule changes the lead-based paint hazard standard for dust, known as the dust-lead hazard, and the standard for dust clearance for floors to 40 $\mu g/ft^2$. In addition, the dust-lead hazard will apply to all floors, including carpeted floors. It will not be limited to bare floors. The final rule does not change the dust-lead hazard for interior window sills. Today's action lowers the clearance level for window troughs from the proposed 800 $\mu g/ft^2$ to 400 $\mu g/ft^2$. In addition, the final rule modifies the method for interpreting composite dust clearance samples. Under the proposed rule, the result of the composite sample would have been compared to the clearance level divided by the number of subsamples in the composite. The final rule requires the result of the composite sample to be compared to the clearance level divided by half the number of subsamples in the composite.

2. *Soil standards*. With respect to the soil standards, there are several changes from the proposed rule. First, EPA is not establishing any distinction between lead-contaminated soil (soil lead ''level of concern'') and soil-lead hazards. Instead, EPA is, in the preamble, simply identifying lead-contaminated soil as soil with levels equal to or greater than the soil-lead hazard standards. For purposes of this rule ''lead-contaminated soil'' is the same as a ''lead-based paint hazard'' based on soil lead.''

Second, in the final rule EPA is establishing the lead-based paint hazard standard for bare soil, known as the soil-lead hazard standard, to have one hazard level for play areas and another for the remainder of the yard. The proposed rule did not give special attention to play areas and made the hazard determination based on the whole yard only. From the proposed 2,000 ppm for bare soil in the entire yard, EPA is setting a final soil-lead hazard of 400 ppm for bare soil in play areas and an average of 1,200 ppm for bare soil in the non-play area portion of the yard.

3. *Paint standards*. The paint component of the lead-based paint hazard standards is known as the paint-lead hazard. The paint-lead hazard consists of three standards: Deteriorated lead-based paint; lead-based paint on friction and impact surfaces; and lead-based paint on accessible (chewable) surfaces.

a. *Deteriorated paint*. EPA considers that, in general, any deteriorated lead-based paint needs to be addressed and should be considered a paint-lead hazard. Accordingly, in the final rule the Agency does not have a *de minimis* level of deteriorated paint for the paint-lead hazard. Instead, the final rule simply refers to work practice and certification regulations issued by HUD and EPA that apply to dealing with paint-lead hazards. These regulations provide that occupant protection procedures, clearance testing, use of certified personnel or other similar specialized lead hazard control practices and procedures are not required at lesser levels of paint deterioration. These specific levels of deterioration are (i) Two square feet or less of deteriorated lead-based paint per room; (ii) twenty square feet or less of deteriorated exterior lead-based paint; (iii) ten percent of the total surface area on an interior or exterior type of component with a small surface area.

b. *Friction and impact surfaces*. The standard in the final rule for the paint-lead hazard on friction surfaces is lead-based paint that is subject to abrasion where the lead dust levels on the nearest horizontal surface underneath the friction surface are equal to or greater than the lead-dust hazard levels. The paint-lead hazard for impact surfaces is any damaged or otherwise deteriorated paint on an impact surface that is cause by impact from a related building component. No minimum area threshold of paint deterioration applies to friction or impact surfaces. In the proposed rule, EPA did not include a preferred option for these surfaces. The Agency, instead, solicited public comment on a range of options including: Lead-based paint regardless of condition on a friction/impact surface; abraded lead-based paint on a friction/impact surface; and no separate standard.

c. *Surfaces accessible for chewing or mouthing*. The standard for the paint-

lead hazard on accessible surfaces, referred to as ''chewable'' surfaces in the final rule, is any chewable lead-based paint surface on which there is evidence of teeth marks. No minimum area threshold applies to deteriorated lead-based paint on accessible surfaces. In the proposed rule, EPA did not include a preferred option for these surfaces. The Agency, instead, solicited public comment on a range of options including: Lead-based paint regardless of condition on interior window sills up to 5 feet off the floor; and no separate standard for accessible surfaces. EPA has eliminated the 5–foot requirement.

4. *Requiring certified risk assessors to determine the existence of lead-based paint hazards.* The final rule does not include a requirement that the presence of lead-based paint hazards must be determined by certified risk assessors following the risk assessment work practice standards at 40 CFR 745.227.

C. Explanation of the Agency's Decisions

In this section of the preamble, EPA provides its reasons for choosing the final TSCA section 403 standards for lead-based paint hazards (which includes paint-lead, dust-lead, and soil-lead hazards) and its final determination for what constitutes lead-contaminated dust and residential soil. In addition, EPA provides its reasons for establishing the clearance levels for household dust--measures of dust in lead that will show that hazards have been appropriately cleaned.

The choice of the particular methodologies used to develop each of these standards constitutes another important set of decisions. Hazard levels for dust and soil were developed using an analysis of risk, the potential for risk reduction (considering uncertainties in the data and scientific evidence describing the risks), and the cost of reducing risk. In determining the paint-lead hazard, EPA has decided that any deteriorated lead-based paint would result in adverse health effects, based on information submitted in public comments and other information in the rulemaking record. The Agency has been unable to determine any level of deteriorated lead-based paint that should not be considered a paint-lead hazard.

The general outline of these methodologies is referred to in later sections of this Unit and, where applicable, incorporates into the final rule those decisions made in the preamble to the proposed rule.

1. *Basis for dust and soil standards.* As a preliminary matter, EPA has found, after considering all significant public comments and all other information in the rulemaking record, that the legal interpretations and policy decisions in the preamble to the proposed rule form the basis for the final decisions discussed in this preamble, except as indicated below. EPA hereby incorporates, for purposes of this final rule, the relevant reasoning and analyses from the proposed preamble, as indicated below. Any modifications to the analyses or reasoning from the preamble to the proposed rule will be specifically explained in this preamble, the Reponse to Comment (RTC) document, or other documents in the record, and are supported by the record for the final rule.

a. *Legal basis.* Details of the basic legal structure of Title X and the legal effect of the issuance of regulations under TSCA section 403, including the responsibilities of EPA and HUD, are set forth in the preamble to the proposed rule (63 FR 30306) and need not be repeated here. There EPA provided a detailed discussion of its views at the time of the statutory mandate and the statutory criteria, including the Agency's interpretation of relevant terms and the statutory basis for the Agency's decision to use particular criteria to develop the determination for what constitutes lead-contaminated dust and lead-contaminated soil and the hazard standards for dust, soil and paint at (63 FR at 30311–30315). EPA has modified some of these interpretations and retains others, as discussed below.

EPA needs to define three terms under TSCA section 403, ''lead-based paint hazards,'' ''lead-contaminated dust'' and ''lead-contaminated soil.'' Lead-based paint hazards consist of lead-contaminated paint, lead-contaminated dust and lead-contaminated soil that ''would result'' in adverse health effects.

Section 401(9) of TSCA provides a definition of lead-based paint, which EPA interprets to be lead-contaminated paint for purposes of this rule. EPA noted that lead-based paint is not, under the statute, a risk-based term, but only a benchmark that identifies material subject to jurisdiction of the authorities of TSCA and Title X. Not all lead-based paint is a hazard, only that paint which EPA determines ''would result'' in adverse health effects. EPA has determined, as discussed below, that the dust and soil levels designated as lead-based paint hazards are also identified as ''lead-contaminated dust'' and ''lead-contaminated soil.'' This equating of dust and soil contamination with ''lead-based paint hazards'' caused by dust and soil lead represents a change from the reasoning in the preamble to the proposed rule. EPA's reasons for this change are discussed below.

EPA generally refers to the hazards in each of the media as ''paint-lead hazards,'' ''dust-lead hazards'' and ''soil-lead hazards.''

i. *Decision on contaminated dust and soil.* While section 403 obligates the Agency to identify lead-based paint hazards, lead contaminated dust, and lead-contaminated soil, the legislative history and statutory text are themselves silent on how Congress intended the Agency to differentiate between the standard for soil contamination (the level of lead in soil determined to be hazardous to human health), dust contamination (the level of lead in dust that poses a threat of adverse health effects in pregnant women or young children), and the levels of contaminated dust or soil that constitute a lead-based paint hazard (a condition that would result in adverse human health effects). Further, the terms ''lead-contaminated dust'' and ''lead-contaminated soil'' have no significance under either TSCA or Title X except insofar as the level of contaminated dust or soil constitutes a ''lead-based paint hazard''.

In the proposed rule EPA considered that, because the statute required the identification of ''lead contaminated'' dust and soil, the Agency needed to establish separate levels for these terms than for ''lead-based paint hazards'' resulting from contaminated dust or soil. Furthermore, EPA proposed, based on the statutory language and the structure of the statute, that the determination of whether dust or soil were contaminated required less certainty than whether such dust or soil constituted a hazard. See 63 FR 30311-12. In the preamble to the proposed rule EPA set the ''contamination'' levels, then called ''levels of concern,'' at those levels the Agency determined could result in a 1 to 5% probability of an individual child's exceeding a blood lead level of 10 µg/dL. See 63 FR 30316-30317.

EPA noted, however, that the terms, ''lead-contaminated'' dust and soil have no direct effect on any activities subject to regulation under Title X. For example, no certification requirements are imposed for persons who remove lead-contaminated soil, only for those who remove soil associated with soil-lead hazards. Because the contamination levels do not affect other activities under Title X or TSCA Title IV, EPA proposed not to include them in the regulatory language. EPA only proposed to adopt in guidance to accompany the final rule a separate level for lead-contaminated soil of 400

ppm for the entire yard. EPA did not propose to adopt a separate standard for contaminated dust, since it found substantial overlap in its analysis and could not distinguish between dust-lead contamination and dust-lead hazards.

EPA received a significant number of comments criticizing the establishment of these ''contamination'' levels, particularly for soil, primarily because setting two levels for ''contamination'' and ''hazard'' would confuse the public. Other comments claimed EPA had no authority to establish separate contamination levels, as opposed to hazard levels.

While the Agency clearly has authority to establish separate levels for contaminated dust and soil, given the comments, the lack of clear statutory direction, and the lack of significance of the terms in the statutory structure, the Agency has determined not to establish any separate levels for contaminated dust or soil beyond those levels that constitute a lead-based paint hazard. The Agency believes it sufficient for purposes of TSCA and Title X to conclude that, at a minimum, the quantity of lead in dust or soil found to result in conditions that cause exposure to lead that would result in adverse human health effects (i.e., constitutes a lead-based paint hazard) is ''lead-contaminated dust'' and ''lead-contaminated soil,'' respectively. Accordingly, for purposes of this regulation, the dust and soil levels designated as lead-based paint hazards are also identified as ''lead-contaminated dust'' and ''lead-contaminated soil''.

ii. *Weight of evidence for dust and soil hazard standards.* EPA's dilemma in determining what constitutes dust-lead and soil-lead hazards is based on the Agency's recognition that any determination of hazard requires a great deal of judgment in the case of lead health risks where, ''as a practical matter, all the scientific evidence is uncertain to some degree . . .'' (See preamble to the proposed rule at 63 FR 30313.) Making judgments on the science varies to a large extent with respect to three issues: How to determine which blood lead levels are truly hazardous; how to interpret the statutory language ''result in adverse human health effects,'' when uncertainties exist; and how best to account for uncertainties in the risk analyses that relate environmental lead levels to blood lead levels and the prevalence data that is used in this analysis.

The resolution of these issues, at best, produces a continuum where, at one end, blood and environmental levels exist that everyone would agree constitute a hazard. At the other end, approaching blood lead levels in the general population (averaging lower than 5 μg/dL) or typical environmental levels (generally, less than the hazard levels found in this regulation), greater uncertainty exists on how to model the likelihood of health effects. This is compounded by having to factor in uncertainties of the effects of both blood lead levels and the associated environmental levels. This is because, even if EPA has confidence in the blood lead levels of concern, the Agency still faces the uncertainty of associating blood lead with environmental levels in each medium, as well as possible effects from other sources--for example, water and air emissions.

In addressing the first issue, the Agency has chosen 10 μg/dL as the blood-lead level of concern. This value is equal to the level of concern recommended by the CDCP and the Agency's reasons for choosing this value are explained in the next section of this preamble.

As to the second issue, the challenge to the Agency is how to deal with the statutory criterion, ''would result in adverse human health effects.'' This is especially problematic because the statutory mandated activity that requires EPA to choose a cutoff for when this risk exists does not lend itself to a straightforward empirical analysis that provides bright lines for decision makers. Even if the science and environmental-lead prevalence data were perfect, there would likely be no agreement on the level, or certainty, of risk that is envisioned in the phrase ''would result in adverse human health effects.'' Thus, it would not be appropriate to base a lead-based paint hazard standard on any specific probability of exceeding any specific blood-lead level.

The Agency therefore elected to take a pragmatic approach to setting the hazard standards namely, evaluating the amount of risk reduction that the hazard standards could provide. That is, rather than trying to select standards based solely on model-based probability distributions (which is even further complicated by the fact that different models produce different results), the Agency looked at the consequences of the standards based on the assumption that, if EPA calls something a ''lead-based paint hazard,'' all persons would act rationally in their own best interests and would permanently eliminate (abate) these hazards before a child is about to become exposed to them. This is the so-called ''normative'' analysis referred to in the preambles to the proposed and final rule and discussed in detail in the economic analyses and preambles for the proposed and final rules. (EPA's analysis for using this method for determining what constitutes dust and soil hazards is discussed in detail in the preamble to the proposed rule at 30312-15. That analysis is incorporated as the final interpretation of the Agency on this matter and will not be repeated in great detail here. Later in this preamble, EPA responds to the various public comments on its analysis of the appropriate method for determining dust and soil lead-hazards under TSCA section 403.)

Also, identification of lead-based paint hazards under this regulation is sure to have impacts that could be expensive even though the range of expenses is, itself, difficult to resolve because of the uncertainty of individual behavior and the willingness of individuals to accept risks that EPA may identify. Thus, if EPA were to choose standards that are too low, the public could be unable to distinguish between trivial risks at the low levels of lead from the more serious risks at higher levels. This could result in clean up for little to no health benefit, or conversely, it could result in almost no clean up because persons would question the credibility of the ''hazard'' determination. Thus, they may ignore even those high risk situations that need to be controlled. On the other hand, if the Agency chooses standards that are too high, actual adverse effects could occur at levels below that. EPA's dilemma is to draw this line.

Based on the language of section 403, the purposes of Title X and its legislative history, and basic policy decisions, EPA determined that it was a reasonable exercise of its discretion to draw this line based on consideration of the potential for risk reduction of any action taken (considering uncertainties in the data and the scientific evidence describing the risks) and whether such risk reductions are commensurate with the costs of those actions. This is commonly referred to as cost-benefit balancing. In this rule, EPA used cost-benefit balancing to assist in identifying the hazard standards. This method was useful because available data run through various models showed a range of environmental levels that could be associated with a particular blood-lead level (the surrogate used to approximate risk) and the potential reduction in blood-lead concentration/risk that could result from eliminating or controlling the environmental level. Given this range, EPA used cost-benefit balancing to assist in selecting the specific

standards for this rule from within the range bounded by the results of the models.

Using this approach, the Agency is better able to deal with the third issue identified above how to best consider and account for the strengths and weaknesses of its risk assessment tools and data. For example, in estimating the number of homes that would be identified as hazards at various environmental lead levels, the Agency relied upon data from the HUD National Survey. Obviously, when assessing the impacts of standards at lower environmental lead levels, estimates are more likely to be inaccurate due to the presence of outliers in the data than would be the case in the middle range of the data. Additionally, the Agency must consider the range of exposures over which its models relating environmental lead to blood lead can be expected to perform well and the sensitivity of those models to the data inputs. By considering at which points in its analyses the data and models are strongest and weakest, the Agency can identify where in its analyses the greatest levels of certainty exist. Consideration of these factors is described in section 3.b., which discusses the selection of the dust and soil hazard levels.

b. *Choosing the lowest candidate hazard standards.* While EPA is no longer considering the determination of what constitutes lead-contaminated dust or soil to be governed by different standards from those used in the determination of what constitutes dust or soil-lead hazards, the analysis used in the proposal to determine the contamination standards is still relevant to the consideration of options for the hazard standards. This is because the effect of choosing the proposed dust and soil lead contamination standards based on a 1 to 5% probability of an individual child's having blood lead levels exceeding 10 µg/dL was to establish the lowest candidate hazard standards. In the proposal, this was for dust 50 µg/ft^2 on uncarpeted floors and 250 µg/ft^2 for sills and for soil 400 ppm in the entire residential yard. Additional analysis, as noted below in discussion of the dust and soil hazard level determination, was applied to actually develop the hazard standards.

Furthermore, as noted above, the determination of which blood lead levels are truly hazardous (the blood lead level of concern) was the first scientific issue EPA had to decide in selecting dust and soil lead hazards.

Accordingly, EPA adopts as the basis determining the lowest candidate standards for the final dust and soil lead hazards the same policy basis used in the proposal for choosing dust and soil lead contamination levels--a 1 to 5% probability of a child's developing a blood lead level of 10 µg/dL.

The choice of 10 µg/dL is based on a significant body of scientific evidence, extensively cited in the preamble to the proposed rule, that shows that a number of significant health effects manifest themselves in the 10-15 µg/dL range. EPA hereby incorporates as the basis for its final decision on the blood lead concentration of concern all relevant discussions in the preamble to the proposed rule, particularly the discussion at 63 FR 30316-17. The Agency's decision is supported by past statements made by the Clean Air Science Advisory Committee and is consistent with Federal policy established by the CDCP and the recommendations of the National Academy of Sciences (NAS). The Agency wishes to emphasize, as it stated in the proposed rule, that this choice does not imply that 10 µg/dL is a threshold level. On the contrary, EPA maintains its position that there is no known threshold for lead. EPA decided not to use a level lower than 10 µg/dL because the evidence indicates that health effects at lower levels of exposure are less well substantiated, based on a limited number of children, and observation of subtle molecular changes that are not currently thought to be sufficiently significant to warrant national concern.

The choice of probability is based on the Agency's interpretation of the statute and the limits of EPA's analytical tools. The Agency rejected the lowest possible probability, which is zero. Even without lead-based paint and lead-contaminated soil and dust, there could be some small mathematical probability that a child could still have a blood-lead level equaling or exceeding 10 µg/dL. This is because other sources of exposure (e.g., air, water, diet, and background levels of lead) remain. Because under the statute EPA may only account for risks associated with paint, dust and soil, a zero exceedence probability would not make sense for this rule.

In addition, EPA's assessment for this rule indicates that, as a practical matter, in the context of establishing on a national level the initial candidate for the hazard level, the probabilities that given environmental levels of lead ''would result'' in blood lead levels of concern, 1% is not distinguishable from 5% in estimating risks from soil lead. This is because, within the context of the analyses for this rule, there was substantial overlap in estimates of risk from soil lead within the 1 to 5% risk range. This overlap is due to the uncertainty and variability related to EPA's analyses to associate low levels of lead in a specific environmental medium to blood-lead concentrations and limited data. For example, results from models used to relate environmental levels to blood lead levels vary depending upon what is assumed about the interrelationship between dust and soil. Also, in the performance characteristics analysis (explained below), the number of children was small, yielding similar results for a 1% exceedence as for a 5% exceedence. In effect, EPA is setting the exceedence probability as close to zero as it is able (within analytical limits of its analyses) for the effects of lead paint and lead in dust and soil.

In addition, given the data and analytical tools available to support this rulemaking, the Agency determined that, as a practical matter, 1% is not distinguishable from 5%. This overlap is due to the uncertainty and variability related to any effort to associate low levels of lead in a specific environmental medium to blood-lead concentrations and limited data. For example, in the performance characteristics analysis, the number of children was small, yielding similar results for a 1% exceedence as for a 5% exceedence. In effect, EPA is setting the exceedence probability as close to zero as it is able (within analytical limits of its analyses) for the effects of lead paint and lead in dust and soil.

At the other end of the range considered by EPA was an exceedence probability of 10%. With this distribution of risk, a child would have approximately a 2% chance of having a blood-lead concentration exceeding 15 µg/dL and a less than 1% chance of having a blood-lead concentration exceeding 20 µg/dL, the level at which CDC recommends medical intervention. In the proposal's discussion of the contamination standard, the Agency rejected this probability as presenting exceedingly high risks. For determination of a hazard level, they would also be excessively high. EPA believes it is inconsistent with the statute to establish a hazard standard at which significant numbers of children would need medical treatment.

c. *Basis for the dust and soil hazard standards.* As explained in the preamble to the proposal, EPA used cost-benefit balancing to establish a range of options for hazard standards. EPA then selected its preferred options based on consideration of relevant factors, including the assumptions and tools underlying EPA's analysis, health

protectiveness, cost, and the effect on the overall lead risk reduction program (63 FR at 30314–30315). The Agency refers the public to the proposal for the detailed discussion of its reasoning for choosing the approach to develop the hazard standards. EPA's approach for using cost benefit analysis is described in the proposed rule and is used for the final rule.

In this document, EPA wishes to highlight several points that merit special attention. First, the various modeling techniques used by EPA only established a range of possible answers upon which the Agency exercised its administrative judgement. EPA used its quantitative modeling as a tool to establish the boundaries of the Agency's inquiry, not as the sole basis for decisions. Because precise values cannot be assigned to risks (or costs), any cost-benefit balancing is appropriately used to help select an option within a range for the hazard standards. The Agency then selected its preferred options, from within the range bounded by the modeling results, based on consideration of relevant factors, including the weight of the evidence of harm, assumptions and tools that underlie EPA's analysis, as well as other factors, including health protectiveness and total costs.

To support the establishment of a range of options, EPA used a normative analysis which assumes that all hazards to young children will be identified and controlled. EPA adopted this approach not only in view of the obvious imprecision in its ability to estimate how the public will actually respond in terms of the number and scope of hazard control interventions that will be implemented in response to the standards, but also with the objective of allowing Agency decision-makers to compare costs and benefits. Thus, while the Agency can only estimate the theoretically possible costs and benefits associated with each option, not the actual costs and benefits, EPA is confident that the relative balance of costs and benefits estimated is unlikely to be very different from the relative balance of actual costs and benefits.

Finally, EPA wishes to emphasize that there is no set way to apply the balancing of costs and risk reduction. Where standards would require the high expenditure of resources, the level of risk reduction (considering both the toxicity of lead and the probabilities of exposure) and the strength of evidence should be correspondingly high. On the other hand, if the costs of standards are relatively low, the level of risk reduction and the strength of the evidence could be less compelling. As stated in the preamble to the proposed rule and as adopted in today's final rule, the determination on soil standards considers the fact that relatively high costs may be incurred to abate residential soils. Consequently, under a cost-benefit balancing concept, before selecting an option associated with high costs, EPA would want a greater measure of confidence that the standard would result in a higher level of risk reduction.

EPA recognizes that resources for abatement to address lead risks to children are often limited and that societies often have to set priorities. Therefore, establishing numerically low national standards could serve to dilute resources across more properties and communities instead of steering resources to address situations that present clearer, more certain risk. Along the same line of reasoning, the Agency believes that it is sound public policy for the hazard standard to embody a ''worst first'' approach that will aid in setting priorities to address the greatest lead risks promptly.

With respect to the paint component, data limitations prevented EPA from quantifying the costs and benefits of the options considered in the proposal (as well as for the final rule). Consequently, EPA's decisions with respect to the options for the paint component involved a more qualitative judgment on the part of the Agency in the proposal, as well as in the final rule. Later in this unit, EPA explains its decision for identifying what constitutes hazardous lead based paint.

2. *Technical analyses*. To support the development of the dust and soil hazard standards in this rule, EPA required tools to relate lead in the environment to blood-lead concentration. As described in the proposal to the proposed rule, EPA used several methods for this purpose: a mechanistic model that has been calibrated and validated with various empirical dataset and which simulates the body's response to lead exposure, and both modeling and non-modeling analyses of empirical data from the Rochester Lead in Dust Study. The mechanistic model is the Agency's Integrated Environmental Uptake and Biokinetic (IEUBK) model. The empirical data used in the modeling and non-modeling analysis to support this rule was obtained from a study of lead in Rochester, New York entitled ''Rochester Lead-in-Dust Study.'' The preamble to the proposed rule (63 FR 30315) contains a general overview of these tools. Given the uncertainties and limitations associated with any single approach, EPA decided that it would be helpful to obtain several perspectives (with different associated strengths and weaknesses) on the relationship between environmental lead and blood lead levels.

EPA thoroughly evaluated its choice of methods in response to public comments and all other information available to the Agency. EPA has concluded that it is appropriate to use the same methodology for its final decision. Based upon public comments and all other information in the rulemaking record, the Agency also recalculated the numerical results obtained for the proposed rule. These recalculations did result in some changes to the standards from those proposed, as is explained below.

a. *Initial candidate hazard levels*—i. *Dust*. For development of the proposed dust-lead contamination level (referred to as the level of concern) EPA used: A multimedia model based on the data from the Rochester Lead-in-Dust study and a performance characteristics analysis of the Rochester data. The reasons for using these models and their implementation is explained in the preamble to the proposed rule (63 FR at 30317–30319) in the Units titled ''c. Characterizing individual risk.'' and ''d. Dust analysis.'' For purposes of this analysis for determining the initial candidate levels for the final hazard standards, however, EPA judges it is appropriate to continue to use the same model, based on the same reasoning.

The multimedia model yielded the following results. The levels of lead in dust on floors associated with an individual child having from a 1 to 5% chance of having a blood-lead concentration equal to or exceeding 10 μg/dL range from near zero to 6.7 μg/ft^2. The range for dust loadings on window sills is from near zero to 74 μg/ft^2.

The performance characteristics analysis yielded the following results. For floors, dust-lead loadings ranged from 50 μg/ft^2 to 400 μg/ft^2. For interior window sills, dust-lead loadings ranged from 100 μg/ft^2 to 800 μg/ft^2. These ranges were significantly higher than the ranges yielded by the multimedia approach.

The performance characteristics analysis to support the determination that 1 to 5% of children would develop blood lead levels above 10 μg/dL remains unchanged for the analysis in this final rule. The results yielded by the multimedia model would put the environmental dust-lead levels at which 1-5% of children would develop blood lead levels above 10 μg/dL at near or below background levels and well below the residual levels that remain after homes have been well cleaned (i.e.,

the clearance levels). These results do not seem to make sense to the Agency since they imply that background levels in well cleaned homes would still be of concern from a risk perspective. Therefore, based upon public comments, the Agency reevaluated its analyses.

Based upon this reassessment, EPA decided to make some revisions to the way it applied the multimedia model so that its results would be more comparable to the performance characteristics analysis. This was accomplished by using the same set of parameters (average soil concentration, dust on floors and sills, and paint conditions) and the same subset of data from the Rochester Lead-in-Dust Study. Following these changes, the order of magnitude difference in results between the original multimedia model and the performance characteristics model virtually disappears. At 50 μg/ft^2, the performance characteristics shows a 7.5% risk of equaling or exceeding 10 μg/dL and the multimedia model shows a 5.34% risk. At 40 μg/ft^2, the performance characteristics shows a 5.1% risk of equaling or exceeding 10 μg/dL and the multimedia model shows a 5.30% risk. That is, under these analyses, floor dust levels at 40 μg/ft^2 correspond to 5% and less probability of blood lead levels exceeding 10 μg/dL. Thus, using the revised model, 40 μg/ft^2 is the standard that better meets the criteria spelled out in the Agency's proposal (less than 5% probability of exceeding 10 μg/dL). EPA provides a detailed description of this revised analysis in the ''Risk Analysis to Support Standards for Lead in Paint, Dust, and Soil: Supplemental Report.'' EPA accordingly has chosen 40 μg/ft^2 as the initial candidate level for the dust-lead hazard level in today's final rule.

ii. *Soil*. In the proposed rule, EPA set a ''level of concern'' based on the Agency's IEUBK model and a performance characteristics analysis of the Rochester data. The reasons for using these models and their implementation is explained in the preamble to the proposed rule (63 FR 30317, 30319) in the Units titled ''c. Characterizing individual risk'' and ''e. Soil Analysis.'' Under the IEUBK analysis soil-lead concentrations generally at or below 500 parts per million (ppm) would result in a 1 to 5% probability that a child will have a blood-lead concentration that equals or exceeds 10 μg/dL. The performance characteristics analysis for soil ranged from 200 ppm to 1,500 ppm correlated with 1 to 5% of children with elevated blood lead levels exceeding 10--μg/dL. EPA chose 400 ppm as the proposed soil lead contamination level. EPA adopts that same level as the initial candidate soil hazard standard for the same reasons as provided in the preamble to the proposed rule for choosing 400 ppm as the soil contamination level.

3. *Dust and soil hazard levels*. The analyses to support selection of the dust and soil hazard levels included evaluation of the nation-wide reduction in risk that could potentially result from a set of hazard standards. EPA measured the change in risk reduction in terms of an estimated change in the national blood-lead distribution, equated this change to reductions in several adverse public health outcomes (e.g., IQ point loss), assigned a value to these reductions, and compared these public health benefits to the costs of hazard intervention.

a. *Methodology*. EPA finds no reason to change its methodology of using a normative cost-benefit analysis for developing dust-lead and soil-lead hazards. The Agency, accordingly, adopts the reasoning set forth in the preamble to the proposed rule for conducting this analysis. The general overview of the cost-benefit analysis and its use in decisionmaking is provided in the preamble to the proposal (63 FR at 30319–30320) in the introductory paragraphs to the section entitled ''2. Dust-lead and soil-lead hazard standards''.

The methodology for estimating risk reduction is found in the section entitled, ''a. Estimating risk reduction.'' (63 FR 30320) and, partially, in the section entitled ''b. Estimating costs and benefits.'' (63 FR 30321). Methodology for estimating the monetary value to be assigned to the value of risk reduction that may be achieved by actions taken in response to the hazard standards is found in the section entitled ''b. Estimating costs and benefits.'' (63 FR at 30320–30321). Determination of the costs of actions that may be taken to reduce risk is in the same section at 30321-22 and in two paragraphs at 63 FR 30325 in the section entitled ''c. Results.'' The limitations, qualifications and uncertainties that affect both the estimates of benefits and costs are found at 63 FR 30322–30323 in the section entitled ''b. Estimating costs and benefits.''

The Risk Assessment was designed to estimate the declines in children's blood lead levels that would result if abatement and other response actions were taken in housing units that exceeded candidate standards for paint, dust, and soil. While certain details of the analysis are complex, the basic approach is straightforward. First, a baseline of environmental lead and blood lead levels was established. These represent the ''pre-403'' conditions.

For the pre-403 environmental lead levels, the Agency used the Department of Housing and Urban Development's National Survey of Lead-Based Paint in Housing (the HUD Survey). Conducted in 1989-1990, the HUD Survey measured the extent and condition of lead-based paint in housing, the amount of lead in dust within the housing, and the amount of lead in soil surrounding the housing. For the pre-403 blood lead levels, the Agency used Phase 2 of the third National Health and Nutrition Examination Survey (NHANES III). Conducted by the Centers for Disease Control and Prevention in 1991-1994, NHANES III included measurements of children's blood-lead levels.

Next, the Agency estimated the reduction in environmental lead levels that would result if abatements or other responses were performed in housing units that failed candidate standards for paint, dust, and soil. These levels represent the ''post-403'' environmental lead levels and rely upon estimates of the effectiveness and duration of the response actions.

The Agency then modeled the blood lead levels that would correspond to the pre- and post-403 environmental lead levels. This allowed an estimation the blood-lead reduction that would result from the standards (i.e., the difference in the blood lead levels from the pre-403 environmental levels to the post-403 environmental levels). Here, the Agency used two different models the Integrated Exposure Uptake Biokinetic (IEUBK) Model and an empirical model that was based upon the results of the Rochester Lead in Dust Study. Consequently, there are two different estimates of the blood-lead changes that would result from the 403 standards, one based upon each model. Finally, the two estimates of blood-lead changes were re-scaled by applying the pre-403 blood-lead levels in NHANES III. EPA repeated this process for each set of standards under consideration.

The two models of risk assessment were incorporated into the economic benefit-cost framework to generate net benefit estimates for the various candidate hazard standards. EPA wishes to emphasize that it is more important to consider the net benefit estimates relative to each other rather than their actual numerical value for the various candidate hazard standards. In order to apply these models in this national analysis, the models relating environmental lead to blood lead could not reflect the consideration of site-specific data to the extent that would be sought when they are applied locally.

Also, the Agency recognizes that the costs and benefits associated with the normative analysis are likely to overstate the actual costs and benefits associated with the standards since it is likely that not everyone will follow the rule recommendations and, to the extent they do not, benefits and costs would both be lower. This is not of great concern because the objective of this analysis is to provide EPA with a tool to compare options in terms of relative costs and benefits of each option, not to develop precise absolute estimates of costs and benefits.

Despite the limitations and uncertainties of the analysis, the results for options within each model can be compared. The limitations may affect the estimates of absolute costs and benefits, but these limitations should have similar effects on the estimates for each option. Additional discussion of how to interpret the results of the normative cost-benefit analysis is provided in the preamble to the proposed rule (63 FR 30323) at the beginning of the Unit entitled ''c. Results.''

b. *Results.* The results of the analysis, under each model, to determine dust-lead and soil-lead hazards for the proposed rule are found in the preamble to the proposed rule (63 FR at 30323–30325). The results of the analysis after the reevaluation for the final rule are presented in this section. The analysis' computation of net benefits is the difference between the total benefits estimate and the total costs estimate. Net benefits are an indicator of the societal gains from hazard controls. While the rule, in and of itself, does not impose a requirement to abate the hazards, for purposes of its risk analysis for this rule, EPA has assumed that abatement will be undertaken in all homes that exceed the levels when a child is born. This analysis does not account for the costs and benefits associated with child-occupied facilities because of the lack of available data and resources.

While the Agency has assumed that the remediation response to the presence of a paint, dust or soil lead hazard is abatement (e.g., removal or permanent covering for soil) for purposes of its analyses, it should not be concluded that the Agency has identified abatement as the only viable response to paint, soil or dust hazards. The Agency believes that well-designed and well-managed programs of interim controls can achieve significant reductions in hazards and, particularly for soil hazards, could be less expensive than removal.

As noted previously in this preamble, in performing its analyses for this rule, the Agency could not quantitatively compare interim control strategies with abatement strategies because there are only limited data available on the effectiveness of interim controls over extended periods of time, and those data which are available are not suitable for quantitative comparisons with abatements. Nevertheless, experience with interim control programs is increasing and certain organizations, particularly public health and housing agencies, believe they have been able to develop effective programs for interim controls which achieve virtually the same degree of risk reduction as do abatement programs, but at much reduced cost. EPA believes that public and private organizations should evaluate both interim control and abatement strategies in determining the most effective course of action.

Therefore, while EPA does not have the authority under this statute to mandate any particular remediation action for lead-based paint hazards, it recommends strongly that some action be initiated--interim controls or abatement--if lead levels exceed the hazard standards. Morever, if bare soil-lead levels are below the hazard standard in non-play areas, the Agency recommends that organizations and individuals at least consider some action in bare soil in those areas if there is a concern that children under the age of 6 might spend substantial time in such areas, or there is concern that the bare soils in such areas may contribute to hazardous lead levels in the dwelling, or in the play area.

The IEUBK-based analysis and the Empirical-model-based analysis are only used to calculate the benefits of the various options. Costs are calculated in the same manner for both models. Total costs increase as options become increasingly stringent and are mainly a function of unit costs (costs for a single abatement) and the number of homes affected. Unit costs for dust are the same whenever a dust lead hazard is present. For soil, unit costs vary depending on the part of the yard being addressed by the abatement (e.g., dripline, mid-yard, play-area) and on whether the removed soil has to be managed as hazardous waste under regulations under the Resource Conservation and Recovery Act (RCRA). The unit cost is lower for lower soil-lead levels (below 2,000 ppm) because it is expected that the removed soil would not have to be managed as hazardous waste.

In the analysis for the proposed rule, unit costs for dust abatement were $ 391 for single-family homes and $ 262 for multi-family units (63 FR 30324). The preamble to the proposed rule (63 FR 30322) included the following complete range of unit costs for soil removal and other control actions as follows:

TABLE 1.—HAZARD EVALUATION AND CONTROL COSTS (PER ACTIVITY IN 1995 DOLLARS)

Activity	Single Family	Multi-family (per unit)
Risk assessment	456	235
Interior paint repair	437	437
Interior paint abatement	6,587	4,687
Exterior paint repair	807	182
Exterior paint abatement	5,706	2,275
Dust cleaning	391	262
Soil removal (dripline; nonhazardous waste)	2,046	399
Soil removal (mid-yard; nonhazardous waste)	7,878	777
Soil removal (both areas; nonhazardous waste)	9,008	901

TABLE 1.—HAZARD EVALUATION AND CONTROL COSTS (PER ACTIVITY IN 1995 DOLLARS)—Continued

Activity	Single Family	Multi-family (per unit)
Soil removal (dripline; hazardous waste)	3,443	541
Soil removal (mid-yard; hazardous waste)	16,486	1,351
Soil removal (both areas; hazardous waste)	19,013	1,617
Soil removal (play area, non-hazardous waste)	1,460	314
Soil removal (play area, hazardous waste)	2,129	359

It is important to note that, as printed in the proposal, this table contained a typographical error with respect to the cost of exterior paint abatement in single-family housing. This error was identified and corrected in a **Federal Register** document published on December 18, 1998 (63 FR 70087) (FRL–6048–3).

Total costs for the various options considered are found in Tables 4, 5, 6, and 7 of the proposal (63 FR at 30324–30325). Similar tables, although slightly revised as is described later in this section, are presented as Tables 7–A1 through 7–A4 in Appendix 7 of the Economic Analysis of the TSCA section 403 Lead-based Paint Hazard Standards Final Rule (December 2000) (Economic Analysis) (Ref. 14). As in the proposal, however, these tables do not include estimated costs or benefits of paint interventions, or any testing or risk assessment costs. Since only a single standard was considered for paint interventions, associated costs and benefits are omitted from the tables to permit a clearer presentation of the incremental changes in costs and benefits that are associated with changes in standards for the option considered. The Agency also omits testing and risk assessment costs in the tables below for a similar reason. Finally, in order to observe the effects of intervention in each medium separately, EPA held lead levels in all other media constant at baseline levels, which are based on the HUD National Survey data. In tables 7A-3 and 7A-4 for the estimated costs and benefits for soil-lead hazard standard, independent dust and paint interventions are assumed not to occur. Some dust interventions that are triggered by soil abatements are incorporated in these two tables.

The units of benefit and the value being assigned to them are presented in Table 2 below.

TABLE 2.—SUMMARY OF BENEFITS ANALYSIS ESTIMATE

Type of Effect	Description	Estimate	Source
Effect of a Single Point Reduction in IQ	Sum of the direct and indirect effects on the percent of earnings lost (2.379%) and express the effect in terms of the present value of average lifetime earnings	$9,360 in 1995 dollars	Product of the estimate of the present value of average lifetime earnings based on U.S. Department of Commerce ($366,021 (1992 $)) and the assumed percentage loss of earnings from a single point reduction in IQ of 2.379% (Salkever 1995)
Cost of Additional Education	Sum of the direct costs ($316) and opportunity costs ($627) of additional education	$1,014 in 1995 dollars	Sum of the estimate of the direct and opportunity costs of additional education based on U.S. Department of Education (1993) data
Total Effect of a Single Point Reduction in IQ	Subtract the costs of additional education from the effects on earnings lost	$8,346 in 1995 dollars	Accounting for the cost of additional education was based on Salkever (1995)
Special Education (IQ less than 70 points)	Cost of special education beginning at age 7 and ending at age 18	$53,836 in 1995 dollars	Kakalik et al. (1981) estimate annual incremental regular classroom costs of $6,458 in 1995 dollars for special education. This estimate is the discounted value of such costs for age 7 through 18.
Compensatory Education (Blood lead greater than 20)	Cost of compensatory education beginning at age 7 and ending at age 9	$15,298 in 1995 dollars	Kakalik et al. (1981) estimate annual incremental regular classroom costs of $6,458 in 1995 dollars for compensatory education. This estimate is the discounted value of such costs for age 7 through 9.
Medical Intervention (for several blood lead ranges)	Cost of blood lead screening and medical intervention for children less than six years old (by blood lead Risk Group)	Risk Group[1] I:$58; R.G. IIA: $70; R.G. IIA: $227; R.G. IIA: $417; R.G. IIA: $678; R.G. IIA: $9843; R.G. IIA: $9843	Recommendations and actual practice based on information from CDC (1991), AAP (1995), and medical practitioners. These estimates are the discounted costs per newborn associated with each blood lead Risk Group.

[1](All in $1995)

Calculations for the IEUBK-based analysis for a range of dust hazard options for floor dust and the soil hazard standard options are presented in the economic analysis (Ref 14). Discussion of the calculations is found at 63 FR 30323-25. The dust values for 40 μg/ft² will be discussed later in this preamble. Finally, the units of benefit and the value being assigned to them in these analyses are presented in Table 2.

In summary, total benefits increase as options become increasingly stringent, ranging from $ 50 billion to $ 88 billion for dust and from $ 16 billion to $ 145 billion for soil. As discussed in the Economic Analysis, the results presented for soil account for the fact that soil interventions (excluding those in play areas only) include dust interventions following the removal and replacement of soil, and thus incorporate the costs and benefits associated with dust interventions in addition to the costs and benefits associated with the soil abatement itself. Benefits increase at an increasing rate because, as dust and soil-lead levels decline, the number of homes at given environmental lead levels increases more quickly. For example, moving from a soil standard of 5,000 ppm to 4,500 ppm increases the number of homes exceeding the standard from about 600,000 to about 700,000 (an increase of about 100,000 housing units), while moving from 1,000 ppm to 500 ppm increases the number of homes exceeding the standard from about 6 million to 12 million (an increase of about 6 million housing units).

Because total benefits increase at a faster rate than total costs, net benefits also increase as options become increasingly stringent, ranging from $ 42 billion to $ 69 billion for dust and $ 13 billion to $ 103 billion for soil. The increase in net benefits is relatively constant as the dust standards become more stringent. For soil, net benefits increase slowly from 5,000 ppm to 3,000 ppm and increase more quickly from 3,000 ppm to 2,000 ppm and from 1,200 to 500 ppm. Net benefits increase because total benefits are increasing at a faster rate than total costs.

It is important to note that the above analyses do not take into account lead levels in other media. Controlling for other contributors to blood lead presents a different picture of the net benefits that result from moving to a more stringent standard.

Under the Empirical-model for floor dust, total benefits increase as options become increasingly stringent, ranging from $ 27 billion to $ 36 billion. For sill dust over the range of candidate standards that were considered, net benefits are in the maximum range at 250 μg/ft² and are slightly higher with floor dust standards of 50 μg/ft² as compared to 100 μg/ft². As is the case in the IEUBK model-based analysis, the rate at which benefits increase rises as the stringency of the options increase, because more homes are affected (and more children are protected). The rate at which benefits increase, however, is tempered somewhat because the relationship between dust and soil-lead and blood lead remains relatively constant across the range of options considered. The increasing number of children protected by more stringent standards is counter balanced by decreasing risk reduction predicted for children living in homes with low dust and soil-lead levels. That is, there are smaller changes in blood lead because there are smaller changes in environmental-lead between baseline dust-lead levels and post-intervention levels.

Of the combinations of dust standard options evaluated in the proposal, net benefits were relatively constant for all the combinations except the most and least stringent (floor = 50 μg/ft² with sill = 100 μg/ft² and floor = 100 μg/ft² with sill = 1,000 μg/ft², respectively). For the other options considered, benefits and costs increase at approximately the same rate, resulting in little change in net benefits. Specifically, the combinations resulted in net benefits of around $ 20 billion, which is also the case when a floor standard of 40 μg/ft² is considered.

Net benefits for soil range from $ -7 billion to $ 2 billion, approaching maximum levels near 5,000 ppm and 2,000 ppm. Below 2,000 ppm, net benefits decrease because total benefits increase at a slower rate than total costs. The increased number of children protected at more stringent standards is offset by a smaller predicted reduction in risk at lower environmental levels.

4. *Selection of the standards and other Agency decisions.* This section of the preamble presents the explanation of EPA's decisions regarding the standards for dust and soil lead hazard and paint-lead hazard standards.As part of the discussion of the Agency's decisions for each media, EPA is also presenting its decisions on related issues including sampling location and interpretation. The dust section will also include a discussion of the dust clearance standards, and the soil section will include EPA's decision regarding management of soils removed during abatement.

The clearance standards for dust, interpretation of composite clearance samples, soil management practices, and sampling location requirements are not being issued under authority of section 403 of TSCA, but under the work practice standards of section 402. Therefore, the legal reasoning, policy decisions, and technical analyses explained above do not have direct applicability to their promulgation. EPA is presenting these issues in this unit for public convenience, in order to keep all its decisions regarding each medium in one place in this preamble.

a. *Dust*—i. *Dust-lead hazard standards.* EPA has decided to adopt a dust-lead hazard standard 40 μg/ft² for floors and 250 μg/ft² for interior window sills) in the final rule. The floor standard is changed somewhat from the proposal but the window sill standard remains the same as for the proposal.

According to the Empirical model-based analysis for the proposal, the results of which are summarized in Table 6 of the proposed rule, four of six combinations of options for floor and window sill standards have net benefits in the maximum range (i.e., $ 21 to $ 22 billion). One combination (100 μg/ft² for floors, 1,000 μg/ft² for sills) provides significantly less risk reduction relative to cost; and one combination (50 μg/ft² for floors, 100 μg/ft² for sills) provides little additional benefit but costs increase significantly. Incremental benefits are less than one third the incremental costs and an additional 11 million homes would fall under the standard. EPA, therefore, considers that this lower standard for sills is associated with increased costs without commensurate attendant benefits.

Of the four combinations considered in the proposed rule, the 50/250 μg/ft² standard was found to be the most protective in terms of the amount of risk reduction yielded. The other three options, though less costly, also provided less risk reduction. The decrease in both costs and benefits as the combination of floor and sill options become less stringent were roughly the same (between $5 billion and $6 billion), resulting in little change in net benefits.

EPA's decision on the proposed floor standard was further supported by the results of the IEUBK model-based normative analysis, summarized in Table 4 of the preamble to the proposed rule, which showed that the net benefits for the proposed floor standard were greater than those for a less stringent standard; net benefits estimated by this analysis increased from $ 48 billion for 100 μg/ft² to $ 61 billion for the proposed 50 μg/ft² standard.

EPA reiterates that this normative cost-benefit analysis has been undertaken for comparative purposes

only to evaluate the hazard standards on a relative basis. However it does not mean to imply that billions of dollars will be spent on lead dust cleanup because the responses projected in the cost estimates may not necessarily reflect the behavior of residents and building owners over 50 years. These costs also reflect some extremely conservative assumptions, such assuming that all yards are potentially affected even if they actually contain no bare soil. These costs are put into better perspective when it is understood that the cost per residence of dust cleaning is less than $600 per affected residence over a 50–year period in 1995 dollars. In making this decision, EPA recognizes that the proposed standard could result in dust hazard interventions in perhaps as many as 20 million homes. Although this is a very large number of homes, the cost of intensive dust cleaning is relatively low for individual residences.

EPA decided to propose the 50 μg/ft² and 250 μg/ft² standards respectively for floors and sills because the Agency preferred to select the most protective of the four combinations.

In the proposal, the Agency did not consider a floor standard option less than 50 μg/ft² because, in its risk analysis, EPA's best estimate was that the post-intervention dust-lead loading would be the lower of the pre-intervention dust-loading or 40 μg/ft². This was the Agency's best estimate of dust levels that would remain after controlling sources of lead and thoroughly cleaning the residence. It was based on an analysis of data from several abatement studies which is more fully discussed in Chapter 6 of the Agency's risk analysis (Risk Analysis to Support Standards for Lead in Paint, Dust, and Soil, EPA 747–R–97–3006, June 1998) (Ref. 12). in the record for the proposed rule. In light of this estimate, EPA found it would be impractical to set the standard for floors lower than 40 μg/ft² because little or no risk reduction would likely to be achieved for homes that had dust-lead loadings at or below 40 μg/ft².

In the preamble to the proposed rule, EPA stated that, if new data were to become available before promulgation of the final rule that show that even lower post-intervention dust-lead loadings could be achieved, EPA would consider establishing a more stringent dust-lead hazard standard. A number of comments were submitted claiming that cleanup could be achieved below 40 μg/ft². Of particular relevance were comments from HUD stating that, in its experience, cleaning to levels below 40 μg/ft² was typically achieved as evidenced by its Grantees program. In fact, since the proposal of this rule, HUD has promulgated a 40 μg/ft² standard for floors in its 1012/1013 regulations. Since EPA's basis for not considering a standard less than 50 μg/ft² was based upon its understanding of the effectiveness of cleaning and, based upon the data provided by HUD in its comments, it is now clear that a 40 μg/ft² standard is achievable, the Agency is establishing 40 μg/ft² as the dust-lead hazard standard for floors. The Agency believes that this is consistent with the approach taken in its proposal namely, that the floor-dust hazard standard should be at the lower end of the range where risk reduction is possible. Further, when considered in terms of its cost-benefit analysis, EPA found that indeed positive net benefits resulted for the 40 μg/ft² hazard standard. In fact, as compared to the proposed standard of 50 μg/ft² with a sill dust standard of 250 μg/ft² (see Tables 2 and 4), net benefits are somewhat higher under the IEUBK model-based analysis and approximately the same under the Empirical model-based analysis.

EPA does not believe it is appropriate to set a dust-lead hazard below this level for the additional reason that such a level would significantly increase the number of homes identified as lead hazards and would not likely identify more truly hazardous environments. This is based on the fact that these lower levels would identify significantly more than the approximately 22 million homes that are identified as having dust-lead hazards under the 40 μg/ft² standard. In view of the fact that there are far less children in the population with elevated blood lead levels, EPA has to question modeling results that would suggest such lower levels.

ii. *Carpeted floors.* In contrast to the proposed standards that only applied to uncarpeted floors, EPA has decided to include carpeted floors in the dust-lead hazard standard, and the clearance standards. EPA's reasoning is explained herein.

The Agency received substantial comment on the issue of the floor dust standard, and its proposed limitation to uncarpeted floors. As discussed in the preamble for the proposed rule (63 FR 30336), EPA did not include dust standards for carpeted floors because the Agency was unaware of adequate data that could be used to establish a statistical relationship between dust lead on carpeted floors and children's blood-lead concentrations. In the absence of such relationship, EPA felt it could not estimate the level of risk and risk reduction that would be associated with various levels of dust-lead in carpeted floors. Furthermore, EPA did not believe it had adequate data on the effectiveness of carpet cleaning that would be needed to establish a dust clearance level for carpeted floors. EPA did state that it planned to analyze expeditiously any newly available data to establish dust standards on carpeted floors and to amend the regulations to add standards for carpeted floors.

EPA, however, acknowledged that the lack of standards for carpeted floors was a significant limitation of the proposal. Accordingly, the Agency requested comment on the impact of not including standards for carpeted floors and indicated it would be interested in any information or data that would help it establish such standards.

Almost all comments on this issue disagreed with EPA's decision not to set carpet standards, even though many recognized that the lack of data on hazardous levels of lead in carpets makes it difficult for EPA to establish a dust-lead standard for carpeted floors. However, by excluding carpet dust from the dust hazard standard EPA will cause excessive amounts of lead to be ignored during dust-lead control activities. Many children who live in homes with wall-to-wall carpeting will remain unprotected from floor dust-lead hazards. Using data from the 1997 American Housing Survey, EPA estimates that approximately 54 million housing units built prior to 1978 contain some wall-to-wall carpeting. Of these units, wall-to-wall carpeting is found in a living room in approximately 47 million units and in a bedroom in approximately 46 million units (i.e., rooms in which children reside and play most frequently.

A number of comments pointed out the unintended consequences of not having a dust-lead standard for carpets. Contractors complained that, because abatement requires quality control standards in order to be properly executed, many contractors will refuse to work in rooms where there is no standard on which they can fall back to show they have done their work correctly. This could raise liability issues because there would be no standard to determine whether it is safe for a family to return to a home after a lead cleanup. Not having a carpet standard could create the notion that, if carpet remains, there is no hazard on the floors and the carpeted floor can be ignored. Further, a property owner could avoid having to meet clearance levels for lead dust on floors simply by laying carpet.

In view of the substantial loophole that could be created in the absence of a standard for carpeted floors, many comments recommended that EPA

should maintain one standard for all floors until research can be done that supports a different standard for carpeted floors. The Agency is persuaded by the comments that the absence of any standard at this time would potentially lead to significant exposures for children, and that some standard is necessary at this time.

In response to these concerns, the Agency has reviewed the information submitted by commenters and other information in its rulemaking record, including the data base supporting the floor dust-lead standard. EPA agrees with the comments that the huge potential loophole created by not having a carpet standard could affect large numbers of children and would be inappropriate. It is known that carpeting can be a dust reservoir with significant amounts of lead. In addition, the Agency believes that its rulemaking record supports setting a carpet standard that is the same as the standard for bare floors.

Specifically, EPA finds that the following information supports setting a carpet standard that is the same as the bare floor standard. First, EPA agrees with the comments, particularly with respect to the fact that substantial amounts of children would remain unprotected by not having a carpet standard and that the consequences are harmful to public health.

With respect to data, EPA has examined its analysis that supported the dust-lead hazard standard. That analysis not only supports the standard for bare floors, but also the same one for carpeted floors. This is because the data that was used as input to its models did not distinguish between bare floors and carpeted floors. That is, the Agency's risk analysis, its analysis of risk reduction that could be achieved through cleanup, and the cost-benefit analysis for floors evaluated both carpeted and uncarpeted floors. EPA cannot definitively state that, in fact, all factors will be the same for both carpeted and uncarpeted floors, but sufficient evidence exists to establish a carpet standard. This is based upon considering the potential loophole that could exist in the absence of a carpet standard and the fact that some correlation exists between carpeted and non-carpeted floors.

The correlation between carpeted and non-carpeted floors is supported by data in the rulemaking record, as well as data submitted by HUD in comment. These data include the Rochester (NY) Lead-in-Dust study and the pre-intervention, evaluation phase of the HUD Lead-Based Paint Hazard Control Grant (''HUD Grantees'') Program (data collected through September 1997), both of which appear in the record for this rulemaking and are described in the Risk Analysis for the proposed rule. The Rochester Study shows a significant correlation between dust lead in carpets and children's blood lead. Further, the study showed that the percentage of children with blood-lead levels above 10 μg/dL were nearly the same with carpeted and uncarpeted floors (19.8 and 18%, respectively). This correlation supports setting at least the same standard for carpeted and non-carpeted floors. In addition, data from the HUD Grantees indicate that grantees were able to reduce dust-lead loadings in carpets, although the data are limited by the fact that grantees were working with higher clearance standards (80 - 200 μg/ft^2 instead of 40 μg/ft^2). Nevertheless, the fact is that the identical cleaning techniques were used, regardless of the clearance standard. Finally, there are no scientific data available demonstrating that carpeted floors pose different risks to children than any other type of flooring.

Accordingly, EPA's dust-lead, hazard and clearance standards apply to all floors. This will ensure that children are protected from dust hazards on all types of floors until future rulemakings can more definitively evaluate the need for different carpet standards.

iii. *Sampling requirements related to assessing dust-lead hazards.* EPA is adopting the sampling location (63 FR 30342) and interpretation (63 FR 30339—30340) requirements based on the rationale in the proposed rule. This regulation amends the work practice standards for risk assessments at 40 CFR 745.227 to require risk assessors, for purposes of hazard assessment, to take samples from floors and interior window sills. This regulation also amends the work practice standards to require risk assessors to make the dust-lead hazard determination by comparing the average of wipe sample results, weighted by the number of subsamples in each sample to the hazard standard for the appropriate surface (i.e., floors, sills) For multifamily properties, the risk assessor will determine that unsampled units of particular type of surface (i.e., floors, sills) constitute a hazard if at least one sampled unit is determined to be a hazard. Unsampled common areas are presumed to contain a lead-based hazard if at least one sampled common area of a similar type contains a lead-based hazard.

iv. *Dust clearance standards.* EPA is explaining in this section its reasoning for establishing clearance standards for cleanup of lead dust hazards and work practice standards for interpreting composite samples for clearance purposes.

Clearance standards are used by certified individuals to evaluate the adequacy of the cleanup performed in residences at the completion of abatement. According to the practices prescribed at 40 CFR 745.227, a certified risk assessor or inspector must collect dust samples and have them analyzed by an EPA-recognized laboratory following the cleanup to assure that the cleanup reduces dust-lead levels to prescribed ''clearance'' levels. If the clearance levels are not met, the cleanup and testing process must be repeated until the clearance standards are met. Although clearance testing is not required following implementation of interim controls (e.g., paint repair), the Agency strongly recommends such testing to ensure that the residence has been adequately cleaned.

With respect to composite sampling, the work practice standards at 40 CFR 745.227 do not differentiate between single surface samples and composite samples for determining compliance with clearance standards. EPA recognizes that because composite samples provide an average level of lead, low values on some surfaces may mask the presence of lead levels that exceed clearance standards on other surfaces. EPA continues to believe, however, that composite sampling is a useful tool for risk assessment and clearance and wishes to preserve its use under the regulations, the Agency proposed a method to remedy this problem and discussed various related issues in the preamble to the proposal (63 FR 30342).

A. Clearance standards for floors and sills. The final regulation contains clearance standards for floors and interior window sills of 40 μg/ft^2 and 250 μg/ft^2 respectively. This change from 50 μg/ft^2 to 40 μg/ft^2 accounts for the Agency's decisions to include standards for carpets as well as bare floors and to lower the dust lead hazard standard, as discussed earlier in this preamble.

The preamble to the proposed rule (63 FR 30341) discusses the statutory requirements applicable to clearance standards in TSCA section 402. On the same page, EPA provides the reasoning supporting the Agency's decision to use the same level to define clearance standards for dust as is used to define dust hazard standards for floors and interior window sills. This section of the proposal also explains how the Agency considered available field data documenting experience with the HUD cleaning protocol and decided to propose clearance standards that are the

same as the dust-lead hazard standard. These portions of the preamble to the proposed rule are adopted as support for the final clearance standards in this rule.

B. Clearance standard for window troughs. For window troughs, where EPA is not issuing a hazard standard, the Agency has decided to issue a clearance standard of 400 μg/ft². This is a change from the proposal, where EPA proposed to adopt the then-existing clearance standard of 800 μg/ft² from HUD's guidance.

The decision is based on EPA's consideration of public comments, and other information available to the Agency, which suggested that 400 μg/ft² is an appropriate clearance standard for window troughs. In the proposal, EPA used the current HUD clearance level for troughs (800 μg/ft²). As a result of the public comments, EPA revisited the data from the Agency's clearance evaluation, which clearly demonstrates that the 400 μg/ft² level is achievable without a major increase in burden. In six of the eight studies the pass rate for 400 μg/ft² after one trough clearance test ranged from 80.3% to 93.6%. The corresponding range for 800 μg/ft² is 88.4% to 96.6%. Two of the studies had significantly lower pass rates at 400 μg/ft² (30.6% and 53%). These studies, however, also had lower significantly lower pass rates at 800 μg/ft² (43.5% and 62.9%).

C. Sampling location and interpretation of composite dust samples. EPA is adopting the amendments to the sampling location requirements in the abatement work practice standards at 40 CFR 745.227 discussed in the proposed rule. This amendment changes sampling locations from uncarpeted floors and windows to all floors, interior window sills, and window troughs. This change is needed because the EPA is establishing clearance standards for all floors, including carpeted floors, and specific window surfaces.

To remedy the problem that composite samples may mask the presence of lead levels that exceed clearance standards, EPA proposed to require a risk assessor to divide the clearance standard by the number of subsamples in the composite. For example, if a composite floor sample of 50 μg/ft² contained four subsamples, the risk assessor would compare the loading from the composite sample to 12.5 μg/ft² (i.e., the proposed floor clearance standard divided by four). Using this approach, it was mathematically impossible for the composite to pass when any single subsample exceeds the 50 μg/ft² proposed clearance standard for floors. It would have, however, introduced the possibility of a composite sample failing clearance even if all the subsamples would have passed clearance individually (i.e., false failure), leading to additional clean up activities that would not have been necessary. At the time of the proposal EPA decided that this method would provide the best balance of safety, effectiveness, and reliability (63 FR 30342). EPA specifically asked for comment on this approach.

Commenters objected to this approach for several reasons. The most persuasive is that this approach would create a significant disincentive for risk assessors to use composite testing. HUD specifically referred to a study by Scott Clark and Paul Succop which showed that a better approach would be to compare the composite sample to the clearance levels divided by half the number of subsamples. Clark's and Succop's data shows that this approach produces an equivalent rate of passing clearance as single surface sampling.

Upon review of this study, EPA has decided to adopt this approach and is amending the work practice standards at 40 CFR 745.227 accordingly. Although the Agency prefers single surface sampling, it does not want to create a disincentive to conduct composite testing since in some circumstances it can save time and money. By selecting an approach that judges composite samples and single surface samples in an equivalent manner, EPA is removing the disincentive that the proposed approach would have created.

b. *Soil.* This section of the preamble presents EPA's decisions regarding the soil lead hazard standards. It addresses the soil-lead hazard standards for children's play areas and the remainder of the yard, and management controls for soil removed during an abatement:

i. *Soil hazard standard.* For the final regulation, EPA has selected 400 ppm in bare soil as the hazard standard for children's play areas and is an average of 1,200 ppm as the soil-lead hazard standard for the remainder of the yard. EPA's decision is a change from the proposed standard of 2,000 ppm as a yard-wide standard.

EPA's reasoning in support of the 2,000 ppm yard-wide standard is explained in the preamble to the proposed rule (63 FR at 30328–30330). To determine the final soil hazard, EPA uses the same underlying legal and policy rationale in the proposal. The Agency, however, now believes it is more protective of children and still consistent with the legal and policy bases to establish a lower level that focuses on children's play areas, as well as a lower level for the remainder of the yard.

EPA did not identify new information that has a significant bearing on the decisions needed for this rule and indeed is using the same references cited in support of the proposed soil hazard standard, to support this final decision. Comments on the proposal that questioned whether the proposed standard would be adequately protective of children, however, did cause the Agency to rethink its approach in reviewing the results of the analysis and the assessment of the available options. During this reevaluation of the options, EPA considered all options from 400 ppm to 5,000 ppm and selected the most protective option that could be supported by the analysis. This section presents EPA's rationale for selecting 400 ppm for children's play areas and 1,200 ppm for the remainder of the yard as the hazard standards and for not choosing the other options. Detailed responses to comments on all the options are found in the RTC document.

In order for the public to understand EPA's reasoning for the final soil hazard levels, the Agency believes it is necessary to review its reasons for not selecting the lowest and highest levels under consideration (400 and 5,000 ppm yard-wide averages, respectively), the reasons for proposing 2, 000 ppm instead of 1,200 ppm as yard-wide standards, and the reasons for choosing 1,200 ppm in the nonplay areas as the final soil hazard standard. This discussion will also show where the final analysis is consistent with the proposal and where divergence from the proposed reasoning is appropriate.

The proposal explained that, to arrive at a soil-lead hazard level, EPA sought to determine, with consideration of the uncertainty of the scientific evidence regarding environmental lead levels at which health effects would result, those conditions for which the Agency had sufficient confidence in the likelihood of harm that abatement seemed warranted to achieve the associated level of risk reduction. This is the method EPA has used to arrive at standards for both dust and soil. The Agency has determined that this is an appropriate way under the statute to determine whether a dust or soil lead ''would result'' in adverse human health effects. EPA has followed a similar approach in examining the final decision, although it has reached a different conclusion with respect to choosing the levels.

In the proposal, EPA rejected options for both higher and lower soil lead levels for a number of reasons. While, at

the time the Agency was only considering a yard-wide standard, those reasons are still relevant to today's final decision. However, the Agency's reasons for not selecting the extremes of either 400 ppm and 5,000 ppm, as a yard-wide standard, were of a more serious nature than its reasons for not choosing of 1,200 ppm. For this final rule, EPA reaffirms the reasoning in the proposal for not selecting the 400 ppm and 5,000 ppm standards, as yard-wide standards, with additional explanations noted below.

With respect to not choosing the 400 ppm level as a yard-wide standard, EPA acknowledged in the preamble to the proposed rule that the results of the IEUBK model-based analysis at relatively low soil-lead concentrations are dependent upon modeling assumptions that are sensitive to local conditions, for example the transport of outdoor soil into a residence. Although the IEUBK model predicts substantial benefits resulting from abatement at higher soil-lead levels, the absence of site-specific information at lower soil-lead levels increases the uncertainty in the public health protection that should be expected. Consequently, EPA does not believe that, as a uniform national soil-lead standard, a value as low as 400 ppm yard-wide represents a reasonable public policy choice. Also, much of the benefit that the IEUBK model-based cost-benefit analysis predicts is very sensitive to certain of the data and assumptions used therein. For example, a significant proportion of these benefits are associated with changes in dust concentration, which are affected by both the HUD National Survey data and EPA's assumptions about post-intervention dust concentrations.

Second, EPA's Empirical-based model cost-benefit analysis has an even greater difference with the IEUBK cost-benefit results with respect to the risk reduction achievable at soil-lead concentrations as low as 400 ppm yard wide. Had the Empirical-based analysis yielded results more similar to the results of the IEUBK model-based approach, EPA would have greater confidence that significant risk reduction is achievable at soil-lead concentrations between 400 ppm and 1,200 ppm as yard-wide standards for most properties.

In addition, EPA considered that, at lower levels, interim controls would be of greater help in reducing risks than at higher levels. While EPA lacks published studies to estimate the effectiveness of these controls, it seems reasonable that interim controls can interfere with exposure pathways and reduce risk. Flexibility to use these measures may aid in taking cost-effective measures where appropriate. EPA, however, was not able at the time of the proposal, and still is not able, to quantify the benefits of interim controls.

The Agency notes that HUD, provided data on interior dust lead measurements at homes where soil interim controls had been instituted. These data included average costs of some interim control strategies and dust measurements approximately 2 years after the controls were implemented. While these data were not used in the risk analyses that support this rule, they were examined in sensitivity analyses that are contained in the Economic Analysis for today's rule (Ref. 14).

An additional reason that supports not using 400 ppm as the yard-wide soil-lead hazard standard is provided by a number of commenters arguing that 400 ppm should be the hazard standard, but that abatement should not occur until 5,000 and interim controls are more appropriate at 400 ppm. These comments come from a number of advocacy groups and State and local governments who are experienced in dealing with abatement issues. EPA disagrees with these comments, for reasons discussed in more detail later in this preamble, because the Agency has decided to base the hazard standards on the lowest levels at which its technical analysis shows that across-the-board abatement on a national level could be justified. Nevertheless, these comments by persons experienced in dealing with control of lead problems, in effect, provide additional support for the Agency's determination that 400 ppm should not be a yard-wide hazard under EPA's methodology for choosing the hazard standards (i.e., that 400 ppm should not be an across-the-board abatement level).

EPA also fears that by calling 400 ppm yard-wide a hazard, property owners and other decision makers would undertake abatements as the automatic response. A value of 400 ppm is below the level at which EPA believes that across-the-board yard-wide abatement and its associated expenditure of resources are justified and at that level could divert resources from potentially riskier sources of lead exposure--namely deteriorated lead-based paint and dust-lead hazards.

EPA also was concerned that more stringent standards would not meet the priority-setting goals the Agency believes are appropriate for the Title X program. Of particular concern was the fact that the Agency estimates that over 12 million homes would exceed a 400 ppm yard-wide standard. Scarce resources potentially would have to be allocated across more communities and would be diverted away from interventions needed to respond to both deteriorated interior and exterior lead-based paint.

With respect to the not choosing a level of 5,000 ppm as the hazard standard, EPA found that while costs may be lower at that level, the IEUBK model-based approach shows that net benefits also decrease by $ 32 billion when increasing the standard from 2,000 ppm to 5,000 ppm. While the empirical model-based approach shows that net benefits are about the same for both options, the benefits decline by $9 billion when the standard increases from 2,000 ppm to 5,000 ppm. Thus, the absolute benefits at 2,000 ppm are substantially higher.

As discussed in the preamble to the proposed rule, however, the difference between 1,200 ppm and 2,000 ppm as the yard-wide standard was a closer call. While 2,000 ppm was justified by both the IEUBK and the Empirical model based analysis, there still was concern for substantial risk at 1,200 ppm. At 1,200 ppm in soil, the IEUBK model estimates a mean blood lead level in the range of 8 to 11 μg/dL. This range of mean blood-lead concentrations corresponds to a range of approximately 30 to 60% exceeding 10 μg/dL and 2 to 10% exceeding 20 μg/dL. In addition, there is a much smaller difference in homes affected when comparing the 2,000 ppm and 1,200 ppm standards as opposed to comparing 2,000 ppm with 400 ppm. At 1,200 ppm, 4.7 million homes would exceed the standard.

EPA decided to propose 2,000 ppm for several reasons. Readers are referred to the preamble to the proposed rule for details. First, the results of the empirical model-based normative analysis showed that net benefits are positive and near the maximum level at 2,000 ppm. The IEUBK normative model-based analysis showed positive and significantly higher net benefits at concentrations up to 2,000 ppm than for soil-lead concentrations above 2,000 ppm. Because both analyses showed positive net benefits at 2,000 ppm, EPA was confident that this level represented a reasonable public health policy choice.

The second reason EPA gave in the proposal for choosing 2,000 ppm was that, outside of its use in the economics model, the IEUBK model predicts significant risk to children at that soil-lead concentration under virtually all exposure scenarios. At 2,000 ppm in soil, the model estimates a mean blood lead level in the range of 11–16 μg/dL, depending upon the assumed concentration of lead in house dust (100–1,400 ppm in this case). This range corresponds to approximately 55 to 80%

equal to or exceeding 10 μg/dL and 9 to 30% exceeding 20 μg/dL. Although this is greater than empirical data, the Agency believes that this application of the IEUBK model supports the conclusion that a level of 2,000 ppm would result in adverse effects.

The third reason given in the proposed preamble to support the 2,000 ppm soil hazard level was that data from a number of epidemiological studies show that between 40 and 50% of the children living in certain communities with soil-lead concentrations at the 2,000 ppm level have blood-lead concentrations equal to or exceeding 10 μg/dL and that 10% of children have blood-lead concentrations equal to or exceeding 20 μg/dL.

However, there are several limitations associated with the above analysis. First, the results are based on a single media analysis, i.e., the estimated percent of children with elevated blood-lead concentration considered only the level of lead in soil and did not control for the contribution of lead from other media to blood lead level. Second, studies were conducted over a period of time between 1979 and 1996 and the study duration varied from a couple of months to several years. Third, the studies were conducted in different geographical regions. Some of the studies were performed in the vicinity of smelters (active or inactive) or in ore processing communities. Fourth, the target populations were different among the studies (i.e., targeting children with 5-20 μg/dL blood-lead concentration, high-risks neighborhoods, homes with a lead-poisoned child, children in a certain age group).

In the proposal, EPA decided not to use as its preferred option the more stringent soil-lead hazard standard. While EPA interpreted the balancing of costs and benefits under IEUBK model-based analysis as showing costs would be at least commensurate with risks at 1,200 ppm, the results of the empirical model-based approach suggested they might not be. In addition, some epidemiological data indicated substantial risks even at 1,200 ppm. Because the Agency's analysis, thus, showed that at the national level costs may not be commensurate with risk reduction at the lower level. EPA decided to propose the higher level because it ''was mindful of the impacts that the costs of soil abatement could have on individual properties and communities.'' (63 FR 30330) This was notwithstanding the fact that some epidemiological data indicated substantial risks even at 1,200 ppm. Ultimately, therefore, the consideration of costs and their impacts was the primary reason why EPA proposed 2,000 ppm as opposed to 1,200 ppm.

At the time of the proposal, the Agency also expected that measures undertaken in response to the proposed soil-lead level of concern in guidance and dust hazard standards would help protect children exposed to soil-lead concentrations at all levels below 2,000 ppm.

EPA received numerous comments on the proposed standard which provided a broad range of perspectives but no clear consensus. Comments that questioned whether the proposed standard would be adequately protective of children did cause the Agency to rethink its approach in reviewing the results of the analysis and the assessment of the available options. While EPA did not choose the options at the extremes, the Agency's principal dilemma as it considered comments on the proposed rule was to consider whether it should retain 2,000 ppm as the soil hazard standard or move to 1,200 ppm. EPA also received many comments that it should establish a separate play area standard. The Agency has resolved these problems, for the final rule, by establishing a 400 ppm standard for children's play areas and an average of 1,200 ppm standard in the remainder of the yard. The following discussion presents EPA's rationale for selecting 400 ppm as a children's play area standard and for selecting 1,200 ppm as the hazard standard for the remainder of the yard and for not choosing 2,000 ppm.

A. Play area hazard standard. As explained above, EPA's proposal was to establish a single hazard standard that would be used for the entire yard. Many comments were received on this approach that were highly critical of the Agency for not treating the play area separately from the rest of the yard. These commenters reasoned that the play area is where children receive a significant proportion of their exposure to soil and that, therefore, the Agency should establish a more stringent standard for play areas. The Agency is persuaded by these comments and has reconsidered its treatment of play areas.

The Agency's initial reluctance to considering a separate standard for play areas was the concern that play areas could not be readily distinguished from the remainder of the yard. Among the comments that urged the Agency to consider a separate standard were comments from local public health agencies stating that risk assessors can readily identify play areas, thus making EPA's primary objection to this approach (feasibility), moot. Given that, in responding to these comments, the Agency, consistent with the interpretation that was stated in its proposal, focused upon the condition and location of lead in soil that would result in adverse health effects. As opposed to assuming equivalent exposure from all areas of the yard, the Agency agrees that it is also appropriate to consider that the extent of exposure and the potential for risk reduction is much greater in play areas. Consequently, because of the high levels of exposure that almost by definition correspond to a ''play area,'' the Agency believes it appropriate to consider 400 ppm to be a soil-lead hazard when that soil is situated in a child's play area.

The Agency's next step was to attempt to estimate how a separate play area standard would affect the risk reduction that would result from various other standards (e.g., 1,200 ppm and 2,000 ppm) in the rest of the yard. The Agency tried various options to partition children's expected exposures from soil in play areas and soil in the rest of the yard. This posed numerous problems, which will be described later in this section, but it did indicate that an approach which focuses primarily upon a child's play area would likely be preferable in terms of protectiveness, risk reduction, and cost-effectiveness.

In its analysis, the Agency considered two options for the degree of exposure: (1) That 50% of exposure is from play area soil and 50% is from soil in the rest of the yard; and (2) that 2/3 of the exposure is from play area soil and 1/3 is from soil in the rest of the yard. The Agency coupled these exposure assumptions with two assumptions regarding the relative size of the play area: (1) That 10% of the yard is the play area (''small yard''); and (2) that 50% of the yard is the play area. These analyses indicated that, in situations where the play area is small, an approach which establishes a more stringent standard for the play area can be more optimal in terms of cost effectiveness (and obviously more protective) than a less stringent standard applied to the yard as a whole.

For example, in the ''small yard'' case where exposure is assumed to be 50% from the play area and 50% from the rest of the yard, the consequences of moving from a yard-wide average standard of 1,200 ppm to standards of 400 ppm for the play area and 1,200 ppm for the rest of the yard are as follows: total costs are increased slightly from $68.9 to $70.4 million while total benefits increase from $159.3 to $174.2 million, using the IEUBK model. This results in an increase in net benefits from $90.4 to $103.8 million. Using the Empirical model, this analysis produces

the same trend, although the results are less dramatic, indicating an increase in net benefits of $1.4 million. The results of these analyses confirm that the establishment of a separate, more stringent standard for play areas can constitute a more targeted, more protective, and more cost-effective approach, especially where play areas are not large.

As noted above, while the Agency believes that these analyses are indicative of the benefits of separate standards for the play area and the rest of the yard, there are a number of technical problems associated with such analyses. First, the amount of direct exposure to soil that children experience in their play areas versus the rest of their yard has not been studied to any significant degree. A further complication is the fact that there is little or no data on the actual, or even relative, sizes of play areas. Additionally, the soil in the rest of the yard can re-contaminate play areas where interventions have previously occurred. For these reasons, the Agency was unable to develop definitive estimates of risk and available risk reduction for separate standards for the play area and the rest of a yard.

The Agency believes that these analyses serve to demonstrate that, to the extent to which children's exposure to soil is greater in a play area and the size of the play area is smaller compared to the rest of a yard, greater risk reduction (and at a lower cost) would be achieved with a separate standard for a play area and a different standard for the rest of the yard (as opposed to applying a single standard to the entire yard). Consequently, the Agency believes that establishment of a more stringent standard for the play area will be more cost-effective as well as more protective of children.

B. Remainder of yard hazard standard. EPA believes that, based on the technical analysis, either an average of 1,200 ppm or 2,000 ppm level could be chosen under the applicable statutory criteria that the conditions of lead-contaminated soil would result in adverse health effects. EPA chose 1,200 ppm for the final rule because it is the most protective level at which EPA has confidence that the risks warrant abatement.

EPA's most basic reason for choosing 1,200 ppm over 2,000 ppm is that the IEUBK model estimates that an individual child would have a 30 to 60% risk of having a blood lead level equaling or exceeding 10 µg/dL, and that some epidemiological data indicated substantial risk at 1,200 ppm. EPA recognizes that this is an overestimate because it was derived without consideration of a play area. EPA recognizes that with separate consideration of a play area, the overall individual risks will likely be lower. It is also important to note that the epidemiological data referred to as indicating substantial risk at 1,200 ppm is the same data, and subject to these same caveats as are discussed in the soil hazard standard section. Also, the Agency notes that abatement at levels above 1,200 ppm have been shown to result in declines in childrens' blood-lead levels. For example, in evaluating the Boston portion of the Urban Soil Lead Abatement Demonstration Project (Ref. 17), the Agency found that:

> ... the abatement of soil in the Boston study resulted in a measurable, statistically significant decline in blood lead concentrations in children, and this decline continued for at least two years. It appears that the following conditions were present, and perhaps necessary for this effect: (a) a notably elevated starting soil lead concentration (e.g., in excess of 1,000 to 2,000 ug/g (ppm)); (a marked reduction of more than 1,100 ug/g in soil lead consequent to soil abatement accompanied by (c) a parallel marked and persisting decrease in house dust lead.

None of these factors, alone, would lead to choosing 1,200 ppm. When combined with the range of uncertainty in either of the cost-benefit analyses, however, the support of the IEUBK cost-benefit analysis, and the nearness to the empirical-based model analysis that would support the 2,000 ppm standard, these factors tip the balance towards the lower of the two levels.

EPA finds national data are not inconsistent with the IEUBK individual risk analysis. EPA estimates, based on the HUD National Survey Data that 4.7 million homes have soil-lead levels that exceed 1,200 ppm. Of these 4.7 million homes, an estimated 830,000 would be occupied by children under the age of 6 (based on the estimate from the 1993 American Housing Survey that 17.6% of homes are occupied by children under the age of 6). According to the IEUBK prediction, elevated blood lead levels due to lead in soil exceeding 1,200 ppm could be found in 30% of these children (based on the lower end of the IEUBK predicted individual range, without consideration of the play area standard), about 250,000 children. Since over 900,000 children, nationwide, have elevated blood-lead levels EPA finds it credible that soil-lead could be a factor in these childrens's blood levels.

EPA decided not to select its proposed choice for the soil-lead hazard standard, 2,000 ppm, for several reasons. First, the Agency's analysis shows that there is substantial and credible risk at soil-lead concentrations below this level. Second, significant risk reduction is possible below this level.

In making its decision, EPA was mindful of the concerns associated with lowering the soil standard from 2,000 ppm to 1,200 ppm. By picking a more stringent hazard standard, EPA increases the estimated number of homes that are potentially affected by 2.2 million. Abatement costs may also divert resources from efforts to control exposure from deteriorated paint and dust which are possibly more significant sources of exposure.

Nevertheless, experience with interim control programs is increasing and certain organizations, particularly public health and housing agencies, believe they have been able to develop effective programs for interim controls which achieve virtually the same degree of risk reduction as do abatement programs, but at much reduced cost. EPA received comments on this issue during the public comment process. EPA wishes to encourage the continuing evaluation of such efforts because resources to deal with hazardous lead levels may be very limited, and strategies which achieve comparable risk reduction, but at much reduced cost, have the potential to protect more children by allocating the limited resources more effectively. Recognizing that a site-specific evaluation may identify unacceptable risks to children, it may be necessary to take a more rigorous approach to mitigate those risks as the lead-levels increase. EPA believes that public and private organizations should evaluate both interim control and abatement strategies in determining the most effective course of action when dealing with dust and soil hazards.

C. De minimis area of bare soil. In the proposal, EPA considered whether the rule should include a minimum (i.e., *de minimis*) area of bare soil as part of the lead hazard criteria. 63 FR 30337-8. The Agency rejected inclusion of a *de minimis* area of bare soil for the hazard standard, but did request comment on two other options. Under one of the other options, EPA would adopt the *de minimis* area from the HUD Guidelines, which instruct risk assessors to sample yards that have at least 9 square feet of bare soil, with no *de minimis* in the play area. HUD's final rule under section 1012/1013 of Title X incorporates this into its interim soil lead hazard standard. That is, a hazard does not exist where there are less than 9 square feet of bare soil outside the play area.

EPA still rejects including a *de minimis* area of bare soil for the hazard standard for the same reasons stated in

the proposal. EPA's reasoning is that the disadvantages of establishing a *de minimis* outweighed the advantages. EPA has no analysis or data that relate the amount of bare soil to risk. EPA also believes that a *de minimis* area of bare soil provides little benefit. First, information provided by an experienced risk assessor suggests that very few properties would be excluded using the *de minimis* in the HUD Guidelines. Second, the incremental cost of including soil testing in a risk assessment is small. Moreover, the *de minimis* used in the HUD Guidelines does not account for differences in yard size. Outside of the play area, 9 square feet may be insignificant in a suburban yard but large for the back yard of an urban row house.

However, EPA highly recommends using the HUD Guidelines for risk assessment (Ref. 5). This would avoid declaring very small amounts of soil to be a hazard in the non-play areas of the yard. This would also help target resources by eliminating the need to evaluate soil or respond to contamination or hazards for properties where there is only a small amount of bare soil.

D. Management of removed soil. EPA is adopting the proposed requirement for management of soil removed during an abatement (63 FR 30343). This requirement prohibits the use of soil removed during abatement as topsoil in another residential property or child-occupied facility. In response to comment, EPA would like to clarify that applicable Federal and State requirements apply to removed soil including testing pursuant to RCRA under the Toxicity Characteristic Leaching Procedure and disposal of soil identified as hazardous waste (Ref. ?). The Agency also advises that care should always be taken to ensure that removed soil does not pose immediate or future risks to human health. For example, it should not be disposed of at an undeveloped site that may later be developed as residential or converted into a playground.

c. *Paint.* This section of the preamble presents EPA's decisions regarding the standards for hazardous lead-based paint. It addresses the deteriorated paint, paint on friction and impact surfaces, and surfaces accessible for chewing or mouthing by young children. This section also discusses relevant amendments to sampling requirements.

i. *Deteriorated paint.* The final regulation adopts the Agency's underlying rationale in the preamble to the proposed rule for setting the hazard standard for deteriorated paint. Specifically, EPA reaffirms its argument in the preamble to the proposed rule (63 FR at 30330–30331) that the available evidence demonstrates a relationship between deteriorated lead-based paint and blood-lead. Due to the continuing lack of data, however, EPA is still unable to definitively select an area threshold below which the lead-based paint would not be a hazard. Further, EPA has received substantial public comments that even very tiny amounts of deteriorated paint can cause harm and should be addressed. As a result, the Agency has reevaluated its rulemaking record and no longer believes it is appropriate to have a threshold level of deteriorated lead-based paint below which a paint-lead hazard does not exist.

Accordingly, EPA has decided to identify as the paint-lead hazard any deteriorated lead-based paint, except in the case of friction surfaces. For friction surfaces, as noted below, a paint-lead hazard may exist if the surface is subject to abrasion and dust lead levels on the nearest horizontal surface underneath the friction surface are equal to or greater than the dust hazard levels.

Furthermore, EPA has decided that it was not appropriate to refer to any area threshold for deteriorated lead-based paint as a *de minimis* threshold. Using this terminology gives the public the perception that the Agency believes risks at lower levels of deterioration are inconsequential and that no action should be taken.

While establishing this paint-lead hazard standard would alert the public to the fact that all deteriorated paint needs to be addressed, EPA acknowledges that paint stabilization or interim controls (activities less than abatement) would often be appropriate to address paint, particularly at lower levels of deterioration or where the deterioration is minor, such as less than: Two square feet of deteriorated lead-based paint per room; 20 square feet of deteriorated exterior lead-based paint; or 10% or less of deteriorated paint on the total surface area of an interior or exterior type of component with small surface area. EPA, further, emphasizes that applicable HUD and EPA regulations do have area threshold exemptions for various work practice standards, clearance, and certification requirements.

A. Comparison of proposed and final rules. EPA proposed to adopt as the paint hazard threshold levels those levels identified in the 1995 HUD Guidelines that defined paint in poor condition. These levels were ''component based.'' That is, there were more than 2 square feet of deteriorated lead-based paint on any large interior architectural component (e.g., floors, walls, ceilings, doors, etc.), more than ten square feet of deteriorated lead-based paint on any large exterior architectural component (e.g., siding), or deteriorated lead-based paint on more than 10% of the surface area of any small architectural component (such as window sills and baseboards). Under HUD's Guidelines no action was required for paint with lesser amounts of deterioration.

The Agency proposed using the criteria in the HUD Guidelines because they were becoming the de facto industry standard that was being considered for incorporation into model housing and building codes and by State officials for adoption as State standards. In addition, EPA decided that relatively small thresholds are needed to be protective, because the area of deterioration has the potential to increase over time and because the presence of even small amounts of deterioration can present a significant risk to children who exhibit pica for paint. EPA also noted that with an area threshold level in place, millions of homes would not be identified as having hazardous paint and that this would reduce the number of paint abatements while still providing protection to the populations of concern. Nevertheless, the preamble to the proposal emphasized that while areas of deteriorated paint that fall below the threshold would not be considered a hazard, property owners should try to keep paint intact, especially paint known to be lead-based, because of the risk to some children.

EPA received numerous comments on the issue of the area threshold. Comments varied from those that argued that all lead-based paint, regardless of condition, should be a hazard to those that argued the Agency should have no separate paint standard but should rely on the dust and soil standards. Comments in between recommended such standards as all deteriorated paint should be a hazard, or that the area thresholds should be lower or more clearly explained. As a result of considering the comments and all other information available in the rulemaking record, EPA is issuing a final rule that generally provides that any deteriorated lead-based paint would be identified as a hazard. Below, EPA explains its final decision. Detailed responses to all significant comments are found in the RTC document.

While there were no comments that could directly quantify the relationship between deteriorated paint and blood lead levels, two comments attempted a

very rough quantification that EPA can use for limited support for its determination that any deteriorated lead-based paint is a paint-lead hazard. One comment cited an analysis by the Consumer Product Safety Commission (CPSC) suggesting that very small areas of deteriorated lead-based paint could present hazard to young children. According to this analysis, chronic ingestion of lead from paint and other consumer products should not exceed 15 ug/day to prevent a young child from having a blood lead levels that exceeds 10 µg/dL. Assuming a 30% absorption rate and and paint with 0.5% lead by weight, this analysis estimates that a child would have to ingest as little as 6 square inches of paint over a month to have an elevated blood lead level. Another comment submitted a theoretical calculation that the proposed standard for the dust lead hazard of 50 µg/ft^2 would be exceeded if only one square centimeter of lead-based paint with a concentration of 4 mg/cm^2 were ground into dust and evenly distributed in an eight by ten foot room. Other commenters presented anecdotal evidence that children have been lead-poisoned as a result of exposure to very small quantities of lead-based paint.

In addition, EPA has also considered the fact that HUD's standards, upon which EPA relied as a consensus standard, have changed with the issuance of HUD's final regulations under sections 1012/1013 of Title X. EPA believes it is appropriate to conform its final paint-lead hazard definition to HUD's regulations. It is EPA's determination that HUD is the government agency with the most experience in dealing with residential paint and the Agency has chosen to rely on HUD's judgment in these matters as to amounts of deteriorated paint that would result in adverse health effects. Industry standards tend to follow the leadership of HUD guidelines and regulations. EPA's consideration of the issues involving the uncertainty of choosing a paint hazard area threshold under the statutory standard for determining what constitutes a hazard, as well as a discussion of the history of the HUD standard for hazardous paint and EPA's evaluation of HUD's regulations follow.

B. Uncertainty analysis. Any deteriorated paint could conceivably cause adverse health effects, as noted by several comments. Furthermore, EPA would want people to know that any deteriorated paint needs to be dealt with. Very small amounts of lead-contaminated paint could be a cause for concern. Even a few paint chips could provide a very concentrated dose to a child that may ingest them. They may prove to be an attractive nuisance (particularly if they are brightly colored) that might encourage a child to ingest them. Any deteriorated surface could rapidly expand, particularly if a child should decide to pick at it. Because of this concern any deteriorated paint should be carefully monitored and stabilized.

The Agency cautions, however, that it does not believe full scale abatement, with all attendant regulations, would be appropriate for all deteriorated lead-based paint, particularly at the lesser areas of deterioration (i.e., less than: 2 square feet of deteriorated lead-based paint per room; 20 square feet of deteriorated exterior lead-based paint; or 10% or less of deteriorated paint on the total surface area of an interior or exterior type of component with small surface area).

Abatement in cases where there are very small amounts of deteriorated paint would make no sense in view of the fact that approximately 60 million residences have some lead-based paint and approximately 13.5 million have some deterioration. The National Survey of Lead and Allergens results will be released in the near future with a different estimate from that on which these numbers were based (Ref. ?). Recommending abatement for all hazards when relatively few children seem to be affected when compared to the total amount of homes with deteriorated paint could result in the cleanup of millions of homes that would result in little to no reduction in risk. Therefore, EPA believes that minimal degradation does not warrant abatement.

Nevertheless, the Agency leans towards being more protective in the face of uncertainties and has decided to have a standard at which any amounts of deteriorated paint would be considered a lead-based paint hazard. The more cracked or deteriorated paint that exists in a residence, the more likely it would be that amount of degraded paint would increase. The greater the deterioration, the more likely the increase in lead in dust. The paint-lead hazard levels would enable people to take protective action before excessive exposure to dust would occur. Since people are not likely to constantly monitor for dust levels, providing a standard that would focus on paint deterioration is an added level of protection. In addition, the more cracking and deteriorated paint that exists, the more likely the lead would be available for potential exposures through ingestion via dust or direct ingestion of paint chips.

In addition, EPA has decided to use the HUD interim standard for the paint-lead hazard (Ref. 5). This is because, in addition to the reasons stated above for having no threshold area, , the HUD standard is a level that people responsible for addressing the paint-lead hazards are either familiar with now or will have to become familiar with and, in the absence of any other definitive level, to choose, it makes sense to use the same standard as a sister agency for ease of identification and compliance. Of course, EPA will reconsider its decision should any information become available to allow choosing a more definitive level.

C. HUD's standard. EPA concurs with HUD's reasoning for setting its interim paint-lead hazards, as discussed in this section. HUD's reasoning for eliminating a level below which no action is required is explained in the preamble to HUD's final 1012/1013 rule. HUD stated that it was convinced by various comments from the public that there should not be an area threshold of deteriorated paint below which no action is required. These comments were: (1) That the *de minimis* exception (as it was referred to at the time) is arbitrary and not supported by science; (2) that the levels are too large, potentially allowing a total of over ten square feet of defective paint per room (counting four walls plus a ceiling plus small components); (3) that some owners or inspectors may use the area threshold as an excuse for overlooking hazardous conditions; and (4) that it is likely to shift the attention of workers from the importance of practicing lead hazard control and maintaining painted surfaces in a lead-safe manner to measuring the size of defective paint surfaces in order to document that surfaces fall above or below the *de minimis* level. (See 64 FR 50156.) In addition, HUD received comments that persons dealing with the threshold levels found it difficult to understand and put in practice. These comments indicated that people would spend too much time measuring the exact areas of deteriorated paint instead of focusing on making housing lead safe. (See 64 FR 50198.)

Based on these comments, HUD's final rule eliminates any provision that provides no action is needed with regard to deteriorated paint. HUD concluded this based on experience in its tenant-based assistance programs (where the area threshold provision was made effective in 1995) that indicated that the area threshold was a cause of confusion. (See 64 FR 50198.) As a result, HUD's final rule provides that all deteriorated lead-based paint (either

known or presumed to be lead-based paint) must be addressed. According to HUD, this would simplify the rule's implementation considerably.

Even though, under HUD's regulation all deteriorated paint must be addressed--through use of paint stabilization or interim controls, HUD nevertheless acknowledges that something less than abatement and, consequently, fully certified personnel, would be needed to address paint at lower levels of deterioration. HUD, thus, retained an area threshold exemption for required work practice and clearance standards. The levels of deterioration in this standard are the same as provided in EPA's TSCA section 402 work practice regulations--2 square feet of deteriorated lead-based paint per room, 20 square feet of paint on the exterior building, or 10% of the total surface area on an interior or exterior type of component with a small surface area. EPA's work practice standards were promulgated on August 26, 1996, 61 FR 45778. These standards have become the industry standard, having been in place since then and having been acknowledged as enforceable standards followed by the public. Thus, under HUD's regulations, activities that disturb painted surfaces of lesser deterioration do not have to use certified workers, work practices required under regulation, or work site clearance. (See 64 FR at 50149, 50156, 50166, 50184, 50185, and 50198.)

HUD had also submitted comments on this proposed 403 rule approximately 1 year before its 1012/1013 rule was issued. These comments were consistent with HUD's eventual final 1012/1013 rule in the sense that they explained that HUD has found it is more practical to require deteriorated lead-based paint of any size surface area to be addressed. HUD commented that use of an area threshold criterion for determining whether any control is necessary has the effect of having inspectors or risk assessors making efforts to measure surface areas instead of focusing on control of deteriorated paint. Further, it had been HUD's experience that some lead-based paint hazards have not been repaired because of confusion on whether or not enough of the paint had deteriorated to warrant attention.

HUD recommended that EPA should eliminate the area threshold for eliminating any need to control deteriorated paint. However, HUD then stated, ''All deteriorated paint of any size should be considered a hazard and should be repaired; however, containment, clearance, and safe work practices need not be required for hazards'' below the area threshold.

D. EPA's decision. For the reasons discussed above, EPA identifies as a paint-lead hazard any deteriorated lead-based paint, for surfaces other than friction surfaces, as noted below. However, EPA notes a caution that there is a level above which serious restrictions should be placed on worker certification and work practice standards and below which such restrictions are not needed. HUD and EPA also agree that any deteriorated paint needs to be dealt with.

Additionally, to attain consistency with the requirements of the 1012/1013 rule in the sense that action less than abatement should be taken with respect to levels below the hazard threshold, EPA is modifying the work practice standards found at 40 CFR 745.227 to require risk assessors to test all deteriorated paint on surfaces with a distinct painting history. This requirement would provide owners and other decision makers with information that would help these individuals take appropriate action (e.g., stabilize small amounts of deteriorated paint, increase monitoring of the property and resident children). Currently, the work practice standards require risk assessors to test paint only where deterioration exceeds the area thresholds. This sampling requirement, as amended, also applies to accessible surfaces. The existing sampling requirements do not separately address paint testing on these surfaces. The sampling requirements for friction and impact surfaces are discussed below.

ii. *Friction and impact surfaces.* In the final rule, a paint-lead hazard exists on a friction surface that is subject to abrasion and where the lead dust levels on the nearest horizontal surface underneath the friction surface are equal to or greater than the dust hazard standard for that surface. A paint-lead hazard exists on an impact surface when there is any damaged or otherwise deteriorated paint that is cause by impact from a related building component such as a door knob that knocks into a wall or a door than knocks against its door frame.

EPA did not include a preferred option for friction/impact surfaces in the proposed regulation, but instead asked for comment on several options (63 FR at 30332–30333). These options included: Any lead-based paint on a friction/impact surface, abraded paint on a friction/impact surface, or no separate standard. In the latter case, the deterioration of paint on friction/impact surfaces would be counted along with the deterioration of all paint to determine hazardous paint, or the dust-lead hazard standard could be relied upon.

The final paint-lead hazards for friction and impact surfaces are within the range of options discussed for the proposal. EPA decided to include a reference to abrasion as a condition of hazard on the friction surfaces because abrasion indicates that the rubbing or impact of the surfaces is likely to generate lead-containing dust. To this condition the Agency added the presence of dust at the dust-lead hazard level because the combination of deterioration with rubbing or impact is likely to generate lead-contaminated dust. In light of the limited data available to EPA, the Agency issued a standard based on a reasoned and common sense approach that identifies conditions likely to contribute lead to dust and the existence of dust at the hazard level. Even with the condition of deterioration added, this option falls within the bounds of the alternatives presented in the proposal. It is more stringent than the alternative based on abrasion alone but less stringent than the option that would identify any lead-based paint on a friction and impact surface as a hazard.

In promulgating the friction surface paint-lead hazard standard, EPA has considered those comments that urged the Agency not to establish a separate standard for friction and impact surfaces, but instead to focus on dust. On friction surfaces, the absence of either a component that is not subject to abrasion or dust-lead at the hazard level would eliminate the component as a paint-lead hazard. This is because a positive dust test (i.e., presence of a hazard) suggests that a friction surface is a source of lead contamination.

EPA also determined that identifying as a hazard lead-based paint on friction and impact surfaces regardless of the paint's condition is inappropriate. The Agency does not believe that intact paint can generate significant amounts of lead-containing dust. Commenters who favored Option 1 failed to provide evidence supporting the contention that these surfaces contribute to lead-containing dust regardless of the paint's condition. The strongest argument presented by a proponent of Option 1 stated that the hazard designation would lead to the testing of these surfaces for the presence of lead-based paint. Property owners and occupants would then, at a minimum, be encouraged to monitor the condition of the paint and keep it intact. Monitoring of paint condition, however, does not require knowledge that the paint is lead-based. EPA believes that owners/

managers/occupants of target housing should monitor the condition of any paint on friction and impact surfaces. If the paint deteriorates or becomes abraded at any point and young children occupy the residence, the paint should be tested to determine if the paint is lead-based and if a hazard exists. Furthermore, if the component has any abraded or deteriorated paint, it would have to be tested as part of a risk assessment.

The final regulatory decision has also led EPA to amend the sampling requirements for lead-based paint under the work practice standards for risk assessments at 40 CFR 745.227. This amendment will require risk assessors to sample any visibly abraded or deteriorated paint on friction and impact surfaces as part of a risk assessment.

iii. *Accessible (chewable) surfaces.* The final rule at § 745.65(a) uses the term ''chewable'' surface to refer to the statutory term ''accessible'' surface. A paint-lead hazard exists on any chewable lead-based paint surface on which there is evidence of teeth marks. EPA did not include a preferred option for accessible/chewable surfaces in the proposed regulation, but instead asked for comment on several options (63 FR 30333). These options included: Any lead-based paint on a interior window sill up to 5 feet off the floor; and no separate standard.

EPA decided to include a standard for chewable surfaces in the final rule, which is more stringent than no separate option and less stringent than any lead-based paint on interior window sills, for the following reasons. EPA has added evidence of chewing as a factor for determining whether a paint-lead hazard exists and has eliminated any requirement that the chewable surface must be up to 5 feet from the floor. The data available to the Agency indicate that chewing on protruding components is extremely rare, it nevertheless presents a cause for concern. Accordingly, evidence that chewing occurs would enable the public to focus attention on those areas where the risk is real. Further, by adding this evidence of chewing requirement, there would be no reason to retain any height requirement for the chewable surface. If there is evidence of chewing on a lead-based paint surface, there need be no other factor to consider.

The option that would identify lead-based paint on interior window sills regardless of paint condition as a hazard is not likely to protect any significantly larger amount of children than would be protected by the requirement to have evidence of chewing. On the other hand, such a stringent requirement could lead to action in millions of other properties where children do not exhibit this behavior, diverting resources from more significant sources of exposure such as deteriorated paint and lead-containing dust.

Most proponents of this option or options to include a broader range of surfaces failed to provide a compelling basis to EPA for selecting this or broader options because they did not provide supporting data (and most did not provide analysis). One State health department suggested that this option would lead to paint testing of these surfaces. Property owners and occupants would then, at a minimum, be encouraged to monitor conditions. EPA recognizes that it would be useful to know if chewable surfaces are covered with lead-based paint so that these surfaces and the chewing behavior of resident children can be monitored by owners and occupants. Chewing behavior by young children, however, can and should be monitored in the absence of this knowledge. This approach would avoid widespread testing of intact paint, which is costly and may require damaging the paint in situations where an x-ray flourescence (XRF) instrument cannot be used.

Several other commenters noted the data that EPA presented relates to chewing, not mouthing of surfaces. Although mouthing may be more frequent than chewing, exposure is less likely to result from mouthing of intact surfaces. If the paint on interior window sills is intact, it would likely have been repainted since lead-based paint was banned for residential use over 20 years ago. Consequently, a child who mouths intact paint would likely come in direct contact only with paint that is not lead-based and meets the Consumer Product Safety Commission standard for new residential paint (i.e., 0.06% by weight). It is important to emphasize that EPA does not intend to imply that mouthing of intact painted surfaces is risk-free behavior. Mouthing of intact paint may result in exposure to low levels of lead and other chemicals and, therefore, should be avoided.

The Agency wishes to note that it is very concerned about the potential exposure for the relatively few children who do chew on intact lead-based paint on such surfaces. The Agency has concluded that the best way to protect these children who do chew on such surfaces is through guidance that strongly recommends immediate action when such behavior is observed. A range of responses is available to property owners and other decision makers, such as plastic or metal coverings.

iv. *Requirements for interpreting paint sampling.* EPA is adopting the proposed requirements for interpreting paint sampling results (63 FR 30339) except for one clarification that is being made in response to a comment from HUD. The Department stated that language regarding the assumption risk assessors should make about paint on surfaces that have not been tested was unclear. The proposed requirement stated that the risk assessor is to ''assume all like surfaces that have a similar painting history contain lead-based paint if the tested component has lead-based paint.'' HUD asserts that the term ''like surface'' is ambiguous as to whether it refers to building components in the same room equivalent or anywhere in the building. Chapter 7 of the HUD Guidelines indicates that this extrapolation can be made only to components in the same room equivalent, with extrapolation to untested room equivalents appropriate only in restricted circumstances. HUD, therefore, recommends that the method be amended to read ''assume all like surfaces in the same room equivalent that have a similar painting history . . .'' EPA agrees with HUD that the term ''like surfaces'' is ambiguous and has changed the language to read ''like surfaces in the same room equivalent.''

The requirements for interpreting the results of paint testing apply to friction and impact surfaces, chewable surfaces, and other surfaces with deteriorated paint. EPA is also adopting the provision that allows risk assessors to use composite paint sampling. The Agency wishes to restate the point made in the proposal (63 FR 30339), however, that composite sampling for paint can be used to rule out the presence of lead based paint but cannot be used to identify the specific sample (and therefore component) that is lead-based. Therefore, a risk assessor should only use composite testing if he or she is reasonably confident that lead-based paint is not present on the surfaces sampled.

4. *Certified risk assessor requirement.* In the proposed rule, EPA included a requirement that lead-based paint hazards be identified by certified risk assessors following the risk assessment work practice standards and that ex situ sample analysis be performed by recognized laboratories. The Agency argued that this approach would ensure the reliability of sampling results and provide flexibility for future changes in hazard evaluation technology.

This issue received substantial public comment and raised concerns which

have led the Agency to reconsider promulgation of this requirement. Many commenters believed that such a requirement would inhibit the ability of communities and individuals to identify lead-based hazards, and to deliver services or pursue response actions to protect children when an obvious hazard is present, due to the cost of full risk assessments and the lack of availability of risk assessors. Other commenters questioned the Agency's authority to mandate such a restriction. Some commenters believed that certification was appropriate and necessary to ensure the quality and reliability of hazard determinations, but questioned the need for full risk assessments or for such lead-based paint activities to be restricted to risk assessors. Some commenters also suggested that a screening procedure be allowed in lieu of a full risk assessment.

In reconsidering its proposed requirement, the agency agrees with the comments that current shortages and surpluses both in availability of risk assessors, and potentially high costs for full risk assessments could, in certain localities, impede response actions for at-risk children. It also recognizes that for certain hazard determinations, such as the visual determination of deteriorated paint, or analysis of dust levels, a full risk assessment may not be appropriate and may waste scarce resources available for hazard control or abatement.

The Agency also recognizes that a certified risk assessor may not be necessary for the simple visual determination of deteriorated paint, and that such more elementary evaluations of hazards at a property could potentially be performed by individuals with less training and experience than a certified risk assessor, and that such limited activities may not in themselves require certification, but may be performed effectively and reliably when the person performing those activities does so under the supervision of a certified risk assessor or other certified lead professional. In addition, the Agency did not intend to require that certified risk assessors be required to perform clearance sampling following abatements. For these reasons, the Agency believes it prudent to deal with these general issues in subsequent rulemakings and regulatory interpretations which will further address work practices and /certification requirements for both.

While the Agency believes that these issues are best addressed in the overall framework of the section 402 work practices and certification standards, it is nevertheless concerned that those uncertified individuals who may seek to determine hazards may not always produce results of the same quality and reliability as those obtained by a certified risk assessor, and that the use of uncertified personnel to determine the presence or absence of lead-based paint hazards should be considered with caution.

Sampling of dust and soil to determine lead-based paint hazards is not a trivial procedure. The procedures which must be followed by risk assessors in determining the nature and extent of lead-based paint hazards at a property are stated at 40 CFR 745.227. If uncertified individuals are used to determine hazards, it is critical that they have the appropriate training, and follow appropriate procedures for sampling, custody of samples, and analysis of samples to obtain defensible results. If uncertified persons lack the training and experience to determine lead-based paint hazards properly, their findings may result in detrimental consequences to the health of children and create false liabilities for property owners. A false negative result--the failure to determine the presence of a hazard when one actually exists, will fail to protect children from real hazards. A false positive result--the determination of a hazard when none is present--may cause an owner to spend additional resources to hire a certified risk assessor.

IV. Overview of Significant Public Comments and EPA's Responses

In response to the proposed rule, EPA received over 500 comments representing the general public, national and local environmental groups, national and local lead-poisoning prevention advocacy groups, the lead mining and manufacturing industry, State and local governments, other Federal Agencies, community-based organizations, and Federal Advisory Committees, among others. These comments address numerous issues, including EPA's interpretation of the statutory requirements, the policy basis for the standards, the Agency's technical analysis, and the Agency's decisions regarding the standards and other regulatory requirements. As noted previously, the RTC document contains EPA's detailed characterizations and responses to all significant public comments.

This section of the preamble presents in summary form, the characterizations and responses to the comments on the issues that EPA believes are of greatest interest to the public. These comments, specifically, are as follows: (1) It is not appropriate under the statutory requirements of Title X, or from a policy perspective, to consider costs in the development of the hazard standards; (2) standards would fail to protect children in inner-city neighborhoods who are at greatest risk; (3) the dust hazard standard should be significantly lower; and (4) EPA should provide a better explanation of the differences between the TSCA section 403 hazard standards for soil and the Superfund approach for addressing lead in soil.

A. Consideration of Costs in Developing Dust and Soil Hazard Standards

As discussed extensively in the preamble to the proposed rule, this preamble and the RTC document, EPA chose to base its dust and soil hazard standards on consideration of the potential for risk reduction of actions that may be taken (considering uncertainties in the data and scientific evidence describing the risks) and whether such risk reductions are commensurate with the costs of those actions. This is commonly referred to as cost-benefit balancing. Further, the Agency has decided to base the hazard standards on the levels at which, on a national level, risks justify abatement in order to comply with the statutory standard that the hazard levels are those that ''would result'' in adverse health effects. EPA has noted, however, in various places throughout this preamble, that temporary measures and interim controls can be appropriate in many situations. The analysis of abatement, as noted further below, is EPA's analytical model. The Agency may not require any particular action to be taken.

A number of comments from some advocacy groups and some government organizations expressed general disagreement with this approach from both a legal and policy standpoint. Other comments provided detailed arguments both for and against this approach. EPA responds in the RTC document to the more detailed arguments raised by these comments. However, the Agency believes it is appropriate to discuss the issue more generally in this preamble to clear up important issues and to allay apparent fears of some members of the public.

Comments criticizing EPA's use of cost-benefit balancing generally argued that it is inappropriate to make decisions regarding the selection of hazard standards based on cost or other risk management considerations. Serious concern was expressed that EPA modified health-based protective standards by cost, or feasibility, considerations and that scientific decisions about a health based standard

cannot be modified by such considerations. These comments argued that EPA should have made decisions by tying hazard standards to a target blood lead level. Costs and other risk management factors should only be considered by persons implementing the standards.

EPA believes it is necessary to explain how cost-benefit balancing was used in this rulemaking. First, the decision to use a cost-benefit balancing approach is within the Agency's statutory authority. Title X and TSCA Title IV neither require nor preclude the consideration of costs in setting the standards. EPA's interpretation of the statute, however, shows that an approach that uses cost-benefit balancing is consistent with the statutory language and legislative history, as described more fully in the proposal (63 FR at 30312-30314), earlier in this preamble and the RTC document.

A cost-benefit balancing framework provides EPA with an approach to factor uncertainty in scientific data into the decisionmaking and to set standards where there are no distinct boundaries. For this action, EPA's dilemma is to choose as a hazard that level of lead above which the Agency is reasonably confident that adverse effects would result. Below that level there may still be adverse effects, but the weight of scientific evidence indicating adverse effects is not as great. This formulation, of course, is an over simplification by necessity. The Agency is tasked with line drawing by Congress in a circumstance where there are no clear lines. At the simplest level, no one can say that 1,201 ppm of lead in soil is worthy of abatement and 1,199 ppm is not. As a result, consistent with the applicable statute, EPA used a balancing approach to pick the cutoff level above which a regulatory hazard exists.

EPA's approach first, and foremost, considers the weight of evidence as to whether dust or soil lead will actually result in adverse effects. The surrogate for adverse effects is a consideration of blood lead levels and the potential effects elevated blood-lead levels can have on intelligence and lifetime earnings. Reduction in blood lead levels and, presumably, increased lifetime earnings are then related to reduction in environmental levels. No one would dispute that the higher the environmental lead levels are in any particular medium (e.g., soil or dust), the greater the likelihood of increased blood-lead due to exposure from that medium. At low environmental lead levels, there is less confidence that any specific medium is responsible for blood-lead level increases. EPA's problem is drawing the line at which concern for exposure to lead from paint, dust, and soil diminishes that is, those levels below which EPA will decide a regulatory hazard does not exist.

EPA, using the best scientific evidence it had, did the line drawing by assigning a monetary value to the health effects that will be prevented (''benefits'') and evaluating whether elimination (abatement) of the lead hazard that causes these effects is commensurate with the societal resources (determined by the costs of abatement) that would be expended by doing the abatement. This gives EPA a way to evaluate the certainty of the scientific evidence and develop the confidence it needs to determine that the levels it has chosen would result in adverse effects. Essentially, in this area of scientific uncertainty about risk, EPA is more willing to say that a regulatory hazard exists if it can find that costs of abatement are expected to be reasonable. Costs, of course, are given far less weight (or maybe no weight at all) in circumstances in which adverse effects are a certainty. Certainty simply does not exist at the lower lead levels with which the Agency is dealing in this rule.

Two salient points need to be reiterated here on how a cost-balancing analysis was used in this rulemaking. In the first place, for this rule, cost-benefit balancing is a useful method for decision making within the range of uncertainty in the Agency's analyses. In any event, use of the analysis only helps define the boundaries of the inquiry and is not a sole basis for any decision. Once EPA decided the range of options, the Agency chose the levels within those ranges. Second, EPA used the normative cost-benefit analysis only to compare options with the understanding that the relative balance of costs and benefits estimated should be reflective of the relative balance of actual costs and benefits. Thus, decision makers still needed to exercise judgement. There is no ''black box'' into which numbers are entered and a decision comes out.

The comments that object to EPA's approach for hazard determination for dust and soil offer as an alternative determination of hazards by reference only to environmental levels that are associated, through modeling, with a percentage of children exceeding various blood lead levels. For example, a hazard standard could be that level at which models show no more than 5% of children would exceed 10 μg/dL of blood lead. This type of standard would be based solely on the toxicity of lead (at a particular blood level) and the potential exposure. While EPA did use this method for picking the initial candidate hazard levels, the Agency declined to use this method for choosing hazards.

The reasonableness of EPA's approach is supported to a large extent by the fact that the Agency received several comments recommending particular blood levels and percentages but no comment provided EPA with any kind of rational basis for choosing the standard based on those levels and percentages. Most of these comments argued for having no more than 5% of children above 10 μg/dL. However, they provided no rationale for saying why this would meet the ''would result'' standard for determining lead-based paint hazards (i.e., why shouldn't we have zero children above 10 μg/dL, or why 10 μg/dL is the proper number for the hazard determination and not a higher or lower number).

EPA's view of the cost-benefit approach points out another misconception in the comments about cost-benefit analysis. This misconception is that EPA's approach is not health-based, but instead modifies a protective standard based on cost considerations. Commenters also seem to believe that the Agency is using cost considerations to leave children unprotected. This is not the case. Instead, as discussed above, EPA evaluated different options within the range of scientific uncertainty provided by the two models used in the Agency's analyses. While it is true that as levels get higher, the certainty regarding the probability of harm increases, this does not mean that lower levels should be discounted or never addressed. It may mean, however, that as you go lower, the levels are less likely to meet the goal of this rule to set levels at which all abatements are specified to be conducted in a specific way. For purposes of setting such a national standard, EPA believes that it is reasonable to choose a level within the range at which there is greater certainty regarding the probability of harm, being always mindful of the need to advise the public that lower levels are not risk-free and may in individual cases present significant risks.

Given the range of uncertainty shown in its analyses for this rule, EPA is choosing an option that the Agency believes provides protection, and at which there is a higher level of certainty that in all cases abatement is likely to reduce risks significantly. EPA has set its dust and soil hazard standards at the lowest levels at which it believes across-the-board abatement and its associated expenditure of resources is justified. Evaluation of resource allocation, of which costs are a measure, is a method

that was used in this rule as a tool to make decisions within a set range of uncertainty.

Finally, EPA's hazard standards should not be considered in isolation, but must be considered along with the Agency's tiered approach for paint and soil. Under this approach, the Agency recognizes that risks could exist below the hazard standard and recommends that organizations and individuals may want to consider taking some action, informed by knowledge of local circumstances, at levels below the hazard levels.

B. Standards Do Not Protect Children at Greatest Risk

Groups representing environmental justice and children's health protection interests argued that the standards do not protect children at greatest risk. Some argued that the 1 to 5% probability level for exceeding 10 μg/dL (EPA's basis for choosing the initial candidate hazard levels in the final rule and the Agency's basis for evaluating lead-contaminated dust and soil in the proposed rule) would result in no improvement because the percentage of children with elevated blood lead levels is already below 5%. Therefore, the populations with the highest blood lead levels would not benefit from the standards.

EPA strongly disagrees with this assertion and, in fact, has concluded that the exact opposite is true. The argument that the 1 to 5% probability criteria would result in no improvement for children at risk reflects confusion with respect to the national blood-lead data and risk to individual children. The national blood-lead data is composed of millions of children exposed to a broad variety of environmental-lead conditions. As such, it actually consists of a broad range of individual risks ranging from near zero to levels above 50% for children exposed to the very worst conditions. The average population risk is just below 5%. Children in at-risk communities tend to have the higher individual risk, as borne out by the higher prevalence of elevated blood lead levels in these communities (e.g., > 20% for African American children living in pre-1950 housing).

In fact, the hazard standards identify a higher percentage of African-American children than any other group. Moreover, instead of offering more protection to children in at-risk communities, more stringent standards may actually afford less protection to these children by diluting the resources available to address hazards in these communities.

C. Dust-Lead Hazard Standard Should be Significantly Lower

Several comments argued that the dust-lead hazard should be significantly lower, in the 5 to 10 μg/ft^2 range. They claimed that a hazard should be found because more than 5% of children would have blood lead levels above 10 μg/dL. This recommendation is based on several analyses including an independent analysis of the Rochester Lead-in-Dust Study and the so-called HUD pooled analysis. According to these commenters, these analyses show that significant risk exists where floor dust-lead levels are below 10 μg/ft^2.

EPA agrees that significant risks should be addressed but disagrees with the approach of these commenters. First, as noted above, these comments provided no rational basis for deciding that a regulatory hazard exists based solely on environmental levels associated with particular blood lead levels. Nevertheless, EPA concludes after review of these comments and analyses that the results showing more than 5% of children exceed 10 μg/dL at the low environmental levels were achieved by focusing almost exclusively on the contribution of dust-lead to exposure and not adequately accounting for the contribution of soil and deteriorated lead-based paint to exposure. When exposure to these other sources is adequately accounted for, as EPA believes was done in its analysis, significant risk attributable to dust-lead is not found until dust-lead levels on floors reach 40 μg/ft^2.

The data also indicate that to make predictions of risk based exclusively on dust-lead measurements would be an inefficient and imprudent approach. An examination of the Rochester data reveals that in practically every case where there was a child with an elevated blood lead level and floor dust lower than 40 μg/ft^2, soil-lead levels were elevated and/or deteriorated lead-based paint was present. Moreover, in most houses with dust-lead levels below 40 μg/ft^2, children did not have elevated blood lead levels because other significant sources of exposure were not present.

EPA believes that the above-mentioned empirical data supports its view that it is more technically correct to assess and control exposure in all three media, as opposed to taking an approach that focuses exclusively on dust. Given the uncertainty that exists with respect to the contribution to exposure presented by each medium individually, the Agency believes that it is prudent to control exposure from the combination of paint, dust, and soil together rather than individually. Also, control of all three media also prevents recontamination of one medium by another, making control efforts more effective.

D. Relationship of Soil Hazard Standard to Superfund Soil Cleanup Standards

Several commenters expressed concern about the difference between the TSCA approach for addressing lead in soil in pre-1978 residential property and the approach under programs administered by the Office of Solid Waste and Emergency Response (OSWER) specifically, Superfund sites and RCRA Corrective Action Facilities. Responses to comments on the details of the differences in the programs are addressed in the RTC document. In this section, however, EPA responds generally to issues raised on the relationship between the programs administered by OSWER and TSCA. In general, comments identified concerns that differences in the two programs could cause confusion and that persons responsible for cleanup under the OSWER programs could use the TSCA standard to avoid taking response actions to achieve protection.

As a preliminary matter, EPA emphasizes that at lead-contaminated residential sites both TSCA and the OSWER programs seek to protect the health of the most susceptible population (children under 6 years of age) and to promote a program that assesses and addresses risk. The approaches taken by the various programs share many important aspects, but also differ in some respects because of their purposes. The TSCA program is guided by this section 403 rule, which identifies lead-base paint hazards, which consist of lead paint and lead-containing residential dusts and soils that the Agency considers to be hazards under applicable statutory criteria. Guidance for the OSWER programs is provided by the 1994 Revised Interim Soil Lead (Pb) Guidance for CERCLA Sites and RCRA Corrective Action Facilities (OSWER Directive # 9355.4-12, 1994) and Clarification to the 1994 Revised Interim Soil Lead (Pb) Guidance for CERCLA Sites and RCRA Corrective Action Facilities (OSWER Directive # 9200.4-27P, August 27, 1998) (Refs. 15 and 16).

The EPA programs that implement the RCRA and CERCLA statutes rely on the IEUBK model for relating environmental levels to blood lead levels in children. The OSWER soil lead guidance recommends that the IEUBK Model be applied to utilize site-specific information that can be very important in evaluating the risks at hazardous

waste sites with residential exposure scenarios. This section 403 rule also employs analyses that have relied on the IEUBK Model and the empirical model which employs analyses based on empirical data.

In the absence of site-specific information at hazardous waste sites, EPA believes that soil lead levels above 400 ppm may pose a health risk to children through elevated blood lead levels. The 400 ppm screening level identified in the OSWER soil lead guidance is consistent with both the children's play area hazard determination identified in this rule and the initial candidate hazard level discussed in this preamble. Site-specific information at hazardous waste sites would provide a basis to identify a different soil lead level that would be protective of health. The TSCA soil hazard levels of 400 ppm (play areas) and an average 1,200 ppm (rest of yard) should not be understood as a minimum cleanup level for lead in soils at hazardous waste sites and levels greater than these could be consistent with CERCLA requirements, depending on site-specific factors. Soil lead levels less than these still may pose serious health risks and may warrant timely response actions including abatement. The hazard standard in this TSCA rule was intended as a ''worst first'' level that will aid in setting priorities to address the greatest lead risks promptly at residential and child-occupied facilities affected by lead-based paint.

In contrast with the section 403 rule, which establishes minimum national standards that are designed to be used at millions of residential properties and child-occupied facilities across the nation, the studies that take place at CERCLA or RCRA involve multiple hazardous substances with potentially numerous sources of contamination and multiple pathways of exposure that require that response levels be developed with site-specific information. Other statutory and regulatory criteria that would typically be considered in determining a final clean-up number include: long-term effectiveness and permanence; and reduction of toxicity, mobility, or volume through treatment; short-term effectiveness; implementability; cost; State acceptance; and community acceptance.

V. References

The official record for this rulemaking has been established under docket control number OPPTS–62156, and the public version of the official record is available for inspection as specified in Unit I.B.2. The following is a listing of some of the documents that have been placed in the official record for this rulemaking, including those specifically referenced in this rulemaking.

1. Brody, D.J., J.L. Pirkle, R.A. Kramer, K.M. Flegal, T.D. Matte, E.W. Gutiter, and D.C. Paschal. 1994. ''Blood Lead Levels in the U.S. Population: Phase I of the Third National Health and Nutrition Examination Survey (NHANES III, 1988 to 1991).'' Journal of the American Medical Association. 272(4):277-283.

2. Pirkle, J.L., D.J. Brody, E.W. Gunter, R.A. Kramer, D.C. Paschal, K.M. Flegal, and T.D. Matte. (1994) ''The Decline in Blood Lead Levels in the United States: The National Health and Nutrition Examination Surveys (NHANES).'' Journal of the American Medical Association. 272(4):284-291.

3. CDCP. (1991, October) Preventing Lead Poisoning in Young Children: A Statement by the Centers for Disease Control.

4. CDCP. (1997, February 21) ''Update: Blood Lead Levels-U.S., 1991-1994.'' Morbidity and Mortality Weekly Report. 46(7):141-145.

5. HUD. (1995, June) HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing.

6. HUD. (1995) The Relation of Lead-Contaminated House Dust and Blood Lead Levels Among Urban Children. Volumes I and II. Final report to U.S. HUD from the University of Rochester School of Medicine, Rochester, NY and The National Center for Lead Safe Housing, Columbia, MD.

7. USEPA. (1990, January) ''Report of the Clean Air Scientific Advisory Committee on its Review of the OAQPS Lead Staff Paper and the ECAO Air Quality Criteria Document Supplement.'' EPA-SAB-CASAC-90-002. January.

8. USEPA. (1994) Reducing Lead Hazards When Remodeling Your Home. EPA 747-R-94-002.

9. USEPA, OPPT. (1995, April) Report on the National Survey of Lead Based Paint in Housing - Base Report. EPA 747-R-95-003.

10. USEPA, OPPT. (1995, April). Report on the National Survey of Lead Based Paint in Housing - Appendix II: Analysis. EPA 747-R-95-005.

11. USEPA. (1995, April) Report on the National Survey of Lead-Based Paint in Housing. Appendix I: Design and Methodology. EPA 747-R95-004.

12. USEPA. (1997, December) Risk Analysis to Support Standards for Lead in Paint, Dust, and Soil. Volumes I and II. EPA 747-R-97-006.

13. USEPA. (1998) Economic Analysis of TSCA Section 403: Lead-Based Paint Hazard Standards.

14. USEPA. (2000) Economic Analysis of TSCA Section 403: Lead-Based Paint Hazard Standards.

15. USEPA. (1994) 1994 Revised Interim Soil Lead (Pb) Guidance for CERCLA Sites and RCRA Corrective Action Facilities, OSWER Directive #9355.4-12, 1994.

16. USEPA. (1998, August 27) Clarification to the 1994 Revised Interim Soil Lead (Pb) Guidance for CERCLA Sites and RCRA Corrective Action Facilities, OSWER Directive #9200.4-27P.

17. USEPA. (1996) Urban Soil Lead Abatement Demonstration Project, Volume I: EPA Integrated Report #600/P93/001aF.

VI. Regulatory Assessment Requirements

A. Executive Order 12866

Under Executive Order 12866, entitled *Regulatory Planning and Review* (58 FR 51735, October 4, 1993), the Office of Management and Budget (OMB) has designated this an ''economically significant regulatory action,'' because this action may result in behavioral changes that involve increased expenditures by owners of target housing and child-occupied facilities, with a potential annual effect on the economy of $100 million or more. Although the establishment of the standards contained in this rule do not, in and of themselves, mandate any action, the Agency recognizes that the existence of the hazard standards may influence the decisions or actions of owners of target housing. This rulemaking was therefore submitted to OMB for review under this Executive Order, and any changes made during that review have been documented in the public version of the official record.

In addition, while EPA does not believe that this action, in and of itself, imposes any requirements, EPA has prepared an economic analysis of the potential impacts of this action, which is contained in a document entitled *Economic Analysis of Toxic Substances Control Act Section 403: Lead-Based Paint Hazard Standards* (Ref.). The Agency believes that, in establishing the standards, it is reasonable to consider the potential costs and benefits associated with the possible actions that an owner could or might take based on the hazard standard. The analysis, in conjunction with other considerations, helped the decision-makers to select the final hazard standards presented in this document. The analysis is available as a part of the public version of the official record for this action and is briefly summarized here.

Building on the economic analysis for the proposed rule (Ref. ?), which is summarized in Unit XII of the proposed rule (63 FR at 30349-30351), the final economic analysis contains one major change. For the final rule, EPA separtely assessed the costs and benefits associated with a separate soil standard for play areas and presented the results in Appendix 7 of the Economic Analysis. The following summary of the economic analysis focuses on this change. A summary of the rest of the analysis was presented in the proposed rule (63 FR at 30349–30351).

In this additional analysis, the revised model goes through a three-step process to estimate which homes might incur a soil abatement and what parts of the yard might be addressed. The first two steps are the same as the original model, a third step was added to address the play area issue. In the original model, if the home's average of near and remote soil concentrations did not exceed the standard, then the model assumed that no soil abatements would occur. In the revised model, if the average soil concentrations were below the soil standard, then the play area (represented by the remote area) soil concentration was compared to the standard. If this alone exceeded the standard, then the model assumed that the play area soil would be removed and replaced.

The Agency notes that the costs presented here for soil response actions are based upon the assumption that those responses would be soil abatement. As noted previously in this preamble, in performing its analyses for this rule, the Agency could not quantitatively compare interim control strategies with abatement strategies because there are only limited data available on the effectiveness of interim controls over extended periods of time, and those data which are available are not suitable for quantitative comparisons with abatements. Nevertheless, experience with interim control programs is increasing and certain organizations, particularly public health and housing agencies, believe they have been able to develop effective programs for interim controls which achieve virtually the same degree of risk reduction as do abatement programs, but at much reduced cost. Thus, to the extent that interim control strategies are used rather than abatement, the actual costs may be different from those presented below.

The play area is assumed to be much smaller than the entire remote area of the yard, and separate soil intervention unit costs were estimated for the play area. The costs assume that the average play area for a single-family home is 200 square feet, and the average play area for a multi-family building is 400 square feet. The play area soil intervention costs are estimated to be: $1,070 for a single-family house ($1,738 if the soil is hazardous), and $1,566 for multi-family buildings ($2,903 if the waste is hazardous). In addition to these soil intervention costs, each home incurs a dust clean-up. Because dust clean-ups are required for certain other interventions, a particular home may already be incurring dust clean-up costs and would not incur a second set of dust clean-up costs.

The total costs (estimated over a 50–year span, and discounted at 3%) for the final dust and soil standards of 40 μg/ft^2 for floor dust, 250 μg/ft^2 for window sill dust and 1,200 ppm for soil, are estimated to be $69 billion, while the total estimated benefits are $192 billion using the IEUBK model and $49 billion using the empirical model, resulting in estimated net benefits of $123 billion using the IEUBK model and $20 billion using the empirical model. About 26.7 million homes are projected to exceed one or more of the standards, and the Agency projected approximately 46.0 million children would experience reduced exposure to household lead in soil, dust, and paint.

B. Regulatory Flexibility Act

Pursuant to section 605(b) of the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*), the Agency hereby certifies that this final rule will not have a significant economic impact on a substantial number of small entities. The factual basis for the Agency's determination is presented in the small entity impact analysis prepared as part of the economic analysis for this rule (Ref. 14), and is briefly summarized here.

It is important to first note that this rule does not, in and of itself, mandate any action, or directly impose any costs. Nevertheless, since the Agency recognizes that the existence of the hazard standards may influence the decisions or actions of owners of target housing, the Agency has considered the potential costs and benefits associated with the possible actions that a small entity could or might take based on the hazard standard. In addition, EPA has already promulgated several regulations implementing other sections of Title X that use or reference the hazard standards contained in this rule, and also has a few other related regulations under development. In promulgating these regulations, the Agency has and will continue to consider the potential adverse impacts on small entities in the context of those regulations, and in compliance with the RFA. In general, EPA strives to minimize potential adverse impacts on small entities when developing regulations to achieve the environmental and human health protection goals of the statute, and the Agency.

For the purpose of analyzing the potential impacts of this rule on small entities, EPA used the definition for small entities that is found in section 601 of the RFA. Under section 601, ''small entity'' is defined as: (1) A small business that meets Small Business Administration (SBA) size standards codified at 13 CFR 121.201 which uses the NAICS codes to categorize businesses; (2) a small governmental jurisdiction that is a government of a city, county, town, school district or special district with a population of less than 50,000; and (3) a small organization that is any not-for-profit enterprise which is independently owned and operated and is not dominant in its field. The SBA size standard for the types of small businesses potentially impacted by this rule is $5 million in annual revenues for operators of multi-family housing or apartment buildings (NAICS code 531110 and 531311).

It its analysis, the Agency has assumed that this rule would impact small businesses that engage in lead-based paint activities (i.e., abatement, risk assessment, etc.), small businesses that offer LBP activity related training, small businesses that own or manage rental properties involving target housing, small not-for-profit organizations that are engaged in LBP activities and are not dominant in their field, and small governmental jurisdictions that receive assistance through Federal housing programs (i.e., city and county public housing authorities). By definition, States and Federal agencies are not small.

Based on the analysis, the Agency estimates that approximately 99% of the firms would have less than a 1% impact on revenues due to this rule, and approximately 1% of firms could experience impacts between 1% and 3% of rental revenue. A comparison of annual compliance costs to annual rental income is equivalent to the commonly used ratio of compliance costs to sales. Although the rule could impact a substantial number of small entities, this analysis indicates that the potential impact should not be significant.

Information relating to this determination has been provided to the Chief Counsel for Advocacy of the Small Business Administration upon request,

and is included in the public version of the official record for this rulemaking.

C. Paperwork Reduction Act

An Agency may not conduct or sponsor, and a person is not required to respond to a collection of information subject to OMB approval under the Paperwork Reduction Act (PRA) (44 U.S.C. 3501 *et seq.*) unless it displays a currently valid OMB control number. The OMB control numbers for EPA's regulations, after initial publication in the **Federal Register**, are maintained in a list at 40 CFR part 9.

This final regulatory action does not contain any information collection requirements that require additional OMB approval under the Paperwork Reduction Act (PRA), 44 U.S.C. 3501 *et seq.* Specifically, States and Tribes with authorized programs under 40 CFR part 745, subpart L will still need to demonstrate their standards for identifying lead-based paint hazards and clearance standards for dust, in the reports that they submit to EPA under 40 CFR 745.324(h). This reporting requirement is contained in the regulations implementing TSCA sections 402(a) and 404, for which the Information Collection Request (ICR) has already been approved by OMB under control number 2070–0155 (EPA ICR No. 1715). As a part of the economic analysis, EPA also re-examined this ICR and determined that the burden estimates provided in the ICR would not change as a result of the promulgation of the standards proposed. Because there are no new information collection requirements to consider, or any changes to the existing requirements that might impact the existing burden estimates, additional OMB review and approval under the PRA is not necessary.

D. Unfunded Mandates Reform Act

Pursuant to Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), Public Law 104–4, EPA has determined that this rule does not contain a Federal mandate that may result in expenditures of $100 million or more for State, local, and tribal governments, in the aggregate, or the private sector in any 1 year. As indicated previously, this rule does not, in and of itself, mandate any action, or directly impose any costs. Nevertheless, the Agency recognizes that the existence of the hazard standards may influence the decisions or actions of State, local or tribal governmental officials as they relate to lead-based paint activities, i.e., hazard interventions and risk assessments. In addition, EPA has already promulgated several regulations implementing other sections of Title X that use or reference the hazard standards contained in this rule, and has a few other related regulations under development. In promulgating these regulations, the Agency has and will continue to consider the potential impacts on State, local or tribal governments.

The UMRA requirements in sections 202, 204, and 205 do not apply to this rule, because this action does not contain any ''Federal mandates'' or impose any ''enforceable duty'' on State/Tribal, or local governments or on the private sector. The requirements in section 203 do not apply because this rule does not contain any regulatory requirements that might significantly or uniquely affect small governments.

E. Executive Order 13132

Executive Order 13132, entitled *Federalism* (64 FR 43255, August 10, 1999), requires EPA to develop an accountable process to ensure ''meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications.'' ''Policies that have federalism implications'' are defined in the Executive Order to include regulations that have ''substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.''

This final rule does not have federalism implications, because it will not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132. Although the standards established by this regulation may be adopted by any State, this regulation does not contain any mandates, and will not, therefore, impose any substantial direct costs on States. Nor would the rule substantially affect the relationship between the national government and the States, or the distribution of power and responsibilities among the various levels of government. Thus, Executive Order 13132 does not apply to this rule.

Although section 6 of Executive Order 13132 does not apply to this rule, EPA involved State and local governmental agencies in an extensive ''dialogue'' process, which is discussed in more detail in Unit II of the preamble to the proposal (63 FR at 30307). During development of the proposed rule, EPA also consulted with the States at meetings of the Forum on State and Tribal Toxics Action and the annual EPA meeting with State program representatives.

F. Executive Order 13084

Under Executive Order 13084, entitled *Consultation and Coordination with Indian Tribal Governments* (63 FR 27655, May 19, 1998), EPA may not issue a regulation that is not required by statute, that significantly or uniquely affects the communities of Indian tribal governments, and that imposes substantial direct compliance costs on those communities, unless the Federal government provides the funds necessary to pay the direct compliance costs incurred by the tribal governments, or EPA consults with those governments.

This rule does not significantly or uniquely affect the communities of Indian tribal governments, nor does it impose substantial direct compliance costs on such communities. Accordingly, the requirements of section 3(b) of Executive Order 13084 do not apply to this rule.

Nevertheless, although tribal governments are not required to administer any of the Lead Programs, the Agency consulted with interested Tribal government representatives as part of the Forum on State and Tribal Toxics Action and EPA's annual national lead meeting with States and tribes. The Agency has also provided extensive technical and financial assistance.

G. Executive Order 12898

Pursuant to Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (59 FR 7629, February 16, 1994), the Agency has considered environmental justice-related issues with regard to the potential impacts of this action on the environmental and health conditions in minority and low-income populations. The Agency's standards will protect children in minority and low-income communities from disproportionate burdens. This is based on the findings of the Agency's economic analysis which shows that non-white populations receive more of the public health benefit associated with the standards.

In addition, EPA consulted with representatives of a variety of interests, including members of environmental justice advocacy groups. The Dialogue Process, which EPA specifically established to provide input into the decision making process, included a low-income parent, two members of the National Environmental Justice Advisory Council, and representatives

of two other groups who spoke on behalf of disadvantaged populations. These individuals comprised 20% of the membership of the process. Moreover, during the public comment period, EPA held two public meetings where residents of low-income communities and representatives of environmental justice groups offered public comment to EPA. The Agency also received written comments from 50 groups and several hundred individuals raising environmental justice concerns. Consequently, EPA believes that it has complied with the provision of the executive order to provide representatives of environmental justice interests to participate fully in the process and to provide input and comment to the Agency.

Furthermore, recognizing that these standards would be used by and affect millions of people that do not have a comprehensive understanding of the science of lead hazards, EPA made a conscious decision to make the standards simple. For example, instead of joint standards that might have better reflected overall risk under some circumstances, EPA chose to establish media-specific standards because they are easier to understand and use. Outreach documents (e.g, fact sheets) are written and designed with the specific objective of making the regulation easy for the public to understand. In addition, EPA's broader lead outreach program includes extensive elements that specifically target non-white and low income communities.

H. Executive Order 13045

Executive Order 13045, entitled *Protection of Children from Environmental Health Risks and Safety Risks* (62 FR 19885, April 23, 1997), applies to this rule because OMB has determined that this rule is ''economically significant'' as defined under Executive Order 12866 (see Unit VI.A.). In addition, the environmental health or safety risk addressed by this rule may have a disproportionate affect on children.

In accordance with section 5(501) of Executive Order 13045, EPA has evaluated the environmental health or safety effects of lead-based paint on children in the selection of the hazard standards contained in this rule. The results of this evaluation are contained in the ''Risk Analysis to Support Standards for Lead in Paint, Dust, and Soil'' and the supplement to this analysis. Copies of these documents have been placed in the public version of the official record for this rule. This analysis focused almost exclusively on assessing exposure and risk to young children.

Moreover, the standards selected by EPA are designed first and foremost to protect children from lead in residential paint, dust, and soil. In this regard, EPA believes that it has selected the most protective standards possible. Although the Agency could have selected numerically more stringent standards, EPA concluded that more stringent standards would afford less protection to children because EPA believes that limited resources would be diluted and possibly diverted from children who are at greatest risk. The standards will also protect children by supporting implementation of other provisions of the national lead program, such as hazard disclosure prior to the sale or rental of most pre-1978 housing and evaluation and control of lead-based paint hazards and Federally-assisted and Federally owned housing prior to disposition.

I. National Technology Transfer and Amendment Act

Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (NTTAA), Public Law No. 104-113, section 12(d) (15 U.S.C. 272 note) directs EPA to use voluntary consensus standards in its regulatory activities unless to do so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (e.g., materials specifications, test methods, sampling procedures, and business practices) that are developed or adopted by voluntary consensus standards bodies. The NTTAA directs EPA to provide Congress, through OMB, explanations when the Agency decides not to use available and applicable voluntary consensus standards.

The Agency has determined that there are no voluntary consensus standards for lead-based paint hazards. However, the Agency has, where appropriate, referred to voluntary consensus standards developed by such organizations as the American Society for Testing and Materials (ASTM) with respect to sampling and analytical methods.

J. Executive Order 12630

EPA has complied with Executive Order 12630, entitled *Governmental Actions and Interference with Constitutionally Protected Property Rights* (53 FR 8859, March 15, 1988), by examining the takings implications of this rule in accordance with the ''Attorney General's Supplemental Guidelines for the Evaluation of Risk and Avoidance of Unanticipated Takings'' issued under the Executive Order.

K. Executive Order 12988

In issuing this rule, EPA has taken the necessary steps to eliminate drafting errors and ambiguity, minimize potential litigation, and provide a clear legal standard for affected conduct, as required by section 3 of Executive Order 12988, entitled *Civil Justice Reform* (61 FR 4729, February 7, 1996).

VII. Submission to Congress and the Comptroller General

The Congressional Review Act, 5 U.S.C. 801 *et seq.*, as added by the Small Business Regulatory Enforcement Fairness Act of 1996, generally provides that before a major rule may take effect, the Agency promulgating the rule must submit a rule report, which includes a copy of the rule, to each House of the Congress and the Comptroller General of the United States. EPA has submitted a report containing this rule and other required information to the U.S. Senate, the U.S. House of Representatives and the Comptroller General of the United States. This rule is a ''major rule'' as defined by 5 U.S.C. 804(2). A major rule cannot take effect until 60 days after date it is published in the **Federal Register** or is submitted to Congress whichever is later. This rule will take effect on March 6, 2001.

List of Subjects in 40 CFR Part 745

Environmental protection, Hazardous substances, Lead poisoning, Reporting and recordkeeping requirements.

Dated: December 22, 2000.

Carol M. Browner,

Administrator.

Therefore, 40 CFR part 745 is amended as follows:

PART 745—AMENDED

1. The authority citation for part 745 continues to read as follows:

Authority: 15 U.S.C. 2605, 2607, 2681–2692 and 42 U.S.C. 4852d.

2. By adding new subpart D to read as follows:

Subpart D—Lead-Based Paint Hazards

Sec.

745.61 Scope and applicability.
745.63 Definitions.
745.65 Lead-based paint hazards.

Subpart D—Lead-Based Paint Hazards

§ 745.61 Scope and applicability.

(a) This subpart identifies lead-based paint hazards.

(b) The standards for lead-based paint hazards apply to target housing and child-occupied facilities.

(c) Nothing in this subpart requires the owner of property(ies) subject to these standards to evaluate the property(ies) for the presence of lead-based paint hazards or take any action to control these conditions if one or more of them is identified.

§ 745.63 Definitions.

The following definitions apply to part 745.

Arithmetic mean means the algebraic sum of data values divided by the number of data values (e.g., the sum of the concentration of lead in several soil samples divided by the number of samples).

Chewable surface means an interior or exterior surface painted with lead-based paint that a young child can mouth or chew. A chewable surface is the same as an ''accessible surface'' as defined in 42 U.S.C. 4851b(2)). Hard metal substrates and other materials that cannot be dented by the bite of a young child are not considered chewable.

Common area group means a group of common areas that are similar in design, construction, and function. Common area groups include, but are not limited to hallways, stairwells, and laundry rooms.

Concentration means the relative content of a specific substance contained within a larger mass, such as the amount of lead (in micrograms per gram or parts per million by weight) in a sample of dust or soil.

Deteriorated paint means any interior or exterior paint or other coating that is peeling, chipping, chalking or cracking, or any paint or coating located on an interior or exterior surface or fixture that is otherwise damaged or separated from the substrate.

Dripline means the area within 3 feet surrounding the perimeter of a building.

Friction surface means an interior or exterior surface that is subject to abrasion or friction, including, but not limited to, certain window, floor, and stair surfaces.

Impact surface means an interior or exterior surface that is subject to damage by repeated sudden force such as certain parts of door frames.

Interior window sill means the portion of the horizontal window ledge that protrudes into the interior of the room.

Lead-based paint hazard means hazardous lead-based paint, dust-lead hazard or soil-lead hazard as identified in § 745.65.

Loading means the quantity of a specific substance present per unit of surface area, such as the amount of lead in micrograms contained in the dust collected from a certain surface area divided by the surface area in square feet or square meters.

Mid-yard means an area of a residential yard approximately midway between the dripline of a residential building and the nearest property boundary or between the driplines of a residential building and another building on the same property.

Play area means an area of frequent soil contact by children of less than 6 years of age as indicated by, but not limited to, such factors including the following: the presence of play equipment (e.g., sandboxes, swing sets, and sliding boards), toys, or other children's possessions, observations of play patterns, or information provided by parents, residents, care givers, or property owners.

Residential building means a building containing one or more residential dwellings.

Room means a separate part of the inside of a building, such as a bedroom, living room, dining room, kitchen, bathroom, laundry room, or utility room. To be considered a separate room, the room must be separated from adjoining rooms by built-in walls or archways that extend at least 6 inches from an intersecting wall. Half walls or bookcases count as room separators if built-in. Movable or collapsible partitions or partitions consisting solely of shelves or cabinets are not considered built-in walls. A screened in porch that is used as a living area is a room.

Soil sample means a sample collected in a representative location using ASTM E1727, ''Standard Practice for Field Collection of Soil Samples for Lead Determination by Atomic Spectrometry Techniques,'' or equivalent method.

Weighted arithmetic mean means the arithmetic mean of sample results weighted by the number of subsamples in each sample. Its purpose is to give influence to a sample relative to the surface area it represents. A single surface sample is comprised of a single subsample. A composite sample may contain from two to four subsamples of the same area as each other and of each single surface sample in the composite. The weighted arithmetic mean is obtained by summing, for all samples, the product of the sample's result multiplied by the number of subsamples in the sample, and dividing the sum by the total number of subsamples contained in all samples. For example, the weighted arithmetic mean of a single surface sample containing 60 μg/ft^2, a composite sample (three subsamples) containing 100 μg/ft^2, and a composite sample (4 subsamples) containing 110 μg/ft^2 is 100 μg/ft^2. This result is based on the equation [60+(3*100)+(4*110)]/(1+3+4).

Window trough means, for a typical double-hung window, the portion of the exterior window sill between the interior window sill (or stool) and the frame of the storm window. If there is no storm window, the window trough is the area that receives both the upper and lower window sashes when they are both lowered. The window trough is sometimes referred to as the window ''well.''

Wipe sample means a sample collected by wiping a representative surface of known area, as determined by ASTM E1728, ''Standard Practice for Field Collection of Settled Dust Samples Using Wipe Sampling Methods for Lead Determination by Atomic Spectrometry Techniques, or equivalent method, with an acceptable wipe material as defined in ASTM E 1792, ''Standard Specification for Wipe Sampling Materials for Lead in Surface Dust.''

§ 745.65 Lead-based paint hazards.

(a) *Paint-lead hazard.* A paint-lead hazard is any of the following:

(1) Any lead-based paint on a friction surface that is subject to abrasion and where the lead dust levels on the nearest horizontal surface underneath the friction surface (e.g., the window sill, or floor) are equal to or greater than the dust-lead hazard levels identified in paragraph (b) of this section.

(2) Any damaged or otherwise deteriorated lead-based paint on an impact surface that is caused by impact from a related building component (such as a door knob that knocks into a wall or a door that knocks against its door frame.

(3) Any chewable lead-based painted surface on which there is evidence of teeth marks.

(4) Any other deteriorated lead-based paint in any residential building or child-occupied facility or on the exterior of any residential building or child-occupied facility.

(b) *Dust-lead hazard.* A dust-lead hazard is surface dust in a residential dwelling or child-occupied facility that contains a mass-per-area concentration of lead equal to or exceeding 40 μg/ft^2 on floors or 250 μg/ft^2 on interior window sills based on wipe samples.

(c) *Soil-lead hazard.* A soil-lead hazard is bare soil on residential real property or on the property of a child-occupied facility that contains total lead equal to or exceeding 400 parts per million (μg/g) in a play area or average of 1,200 parts per million of bare soil in the rest of the yard based on soil samples.

(d) *Work practice requirements.* Applicable certification, occupant protection, and clearance requirements and work practice standards are found in regulations issued by EPA at 40 CFR part 745, subpart L and in regulations issued by the Department of Housing and Urban Development (HUD) at 24 CFR part 35, subpart R. The work practice standards in those regulations do not apply when treating paint-lead hazards of less than:

(1) Two square feet of deteriorated lead-based paint per room or equivalent,

(2) Twenty square feet of deteriorated paint on the exterior building, or

(3) Ten percent of the total surface area of deteriorated paint on an interior or exterior type of component with a small surface area.

3. In § 745.223, by removing the definitions for ''Lead-contaminated dust'' and ''Lead-contaminated soil,'' and by revising paragraph (1) of the definition of ''Abatement,'' to read as follows:

§ 745.223 Definitions.

* * * * *

Abatement * * *

(1) The removal of paint and dust, the permanent enclosure or encapsulation of lead-based paint, the replacement of painted surfaces or fixtures, or the removal or permanent covering of soil, when lead-based paint hazards are present in such paint, dust or soil; and

* * * * *

4. In § 745.227, by revising paragraphs (d)(4), (d)(5), (d)(6) introductory text, (d)(7), (e)(7)(i), (e)(7)(ii), (e)(8)(ii), (e)(8)(v)(A), (e)(8)(v)(B), (e)(8)(vii), by redesignating paragraph (d)(8)(ii) as paragraph (d)(8)(iii) and paragraph (h) as paragraph (i), and by adding paragraphs (d)(8)(ii), (e)(8)(viii), and (h) to read as follows:

§ 745.227 Work practice standards for conducting lead-based paint activities: target housing and child-occupied facilities.

* * * * *

(d) * * *

(4) The following surfaces which are determined, using documented methodologies, to have a distinct painting history, shall be tested for the presence of lead:

(i) Each friction surface or impact surface with visibly deteriorated paint; and

(ii) All other surfaces with visibly deteriorated paint.

(5) In residential dwellings, dust samples (either composite or single-surface samples) from the interior window sill(s) and floor shall be collected and analyzed for lead concentration in all living areas where one or more children, age 6 and under, are most likely to come into contact with dust.

(6) For multi-family dwellings and child-occupied facilities, the samples required in paragraph (d)(4) of this section shall be taken. In addition, interior window sill and floor dust samples (either composite or single-surface samples) shall be collected and analyzed for lead concentration in the following locations:

* * * * *

(7) For child-occupied facilities, interior window sill and floor dust samples (either composite or single-surface samples) shall be collected and analyzed for lead concentration in each room, hallway or stairwell utilized by one or more children, age 6 and under, and in other common areas in the child-occupied facility where one or more children, age 6 and under, are likely to come into contact with dust.

(8) * * *

(ii) The rest of the yard (i.e., non-play areas) where bare soil is present.

* * * * *

(e) * * *

(7) * * *

(i) If the soil is removed:

(A) The soil shall be replaced by soil with a lead concentration as close to local background as practicable, but no greater than 400 ppm.

(B) The soil that is removed shall not be used as top soil at another residential property or child-occupied facility.

(ii) If soil is not removed, the soil shall be permanently covered, as defined in § 745.223.

(8) * * *

(ii) Following the visual inspection and any post-abatement cleanup required by paragraph (e)(8)(i) of this section, clearance sampling for lead in dust shall be conducted. Clearance sampling may be conducted by employing single-surface sampling or composite sampling techniques.

* * * * *

(v) * * *

(A) After conducting an abatement with containment between abated and unabated areas, one dust sample shall be taken from one interior window sill and from one window trough (if present) and one dust sample shall be taken from the floors of each of no less than four rooms, hallways or stairwells within the containment area. In addition, one dust sample shall be taken from the floor outside the containment area. If there are less than four rooms, hallways or stairwells within the containment area, then all rooms, hallways or stairwells shall be sampled.

(B) After conducting an abatement with no containment, two dust samples shall be taken from each of no less than four rooms, hallways or stairwells in the residential dwelling or child-occupied facility. One dust sample shall be taken from one interior window sill and window trough (if present) and one dust sample shall be taken from the floor of each room, hallway or stairwell selected. If there are less than four rooms, hallways or stairwells within the residential dwelling or child-occupied facility then all rooms, hallways or stairwells shall be sampled.

* * * * *

(vii) The certified inspector or risk assessor shall compare the residual lead level (as determined by the laboratory analysis) from each single surface dust sample with clearance levels in paragraph (e)(8)(viii) of this section for lead in dust on floors, interior window sills, and window troughs or from each composite dust sample with the applicable clearance levels for lead in dust on floors, interior window sills, and window troughs divided by half the number of subsamples in the composite sample. If the residual lead level in a single surface dust sample equals or exceeds the applicable clearance level or if the residual lead level in a composite dust sample equals or exceeds the applicable clearance level divided by half the number of subsamples in the composite sample, the components represented by the failed sample shall be recleaned and retested.

(viii) The clearance levels for lead in dust are 40 $\mu g/ft^2$ for floors, 250 $\mu g/ft^2$ for interior window sills, and 400 $\mu g/ft^2$ for window troughs.

* * * * *

(h) *Determinations.* (1) Lead-based paint is present:

(i) On any surface that is tested and found to contain lead equal to or in excess of 1.0 milligrams per square centimeter or equal to or in excess of 0.5% by weight; and

(ii) On any surface like a surface tested in the same room equivalent that has a similar painting history and that is found to be lead-based paint.

(2) A paint-lead hazard is present:

(i) On any friction surface that is subject to abrasion and where the lead dust levels on the nearest horizontal surface underneath the friction surface (e.g., the window sill or floor) are equal to or greater than the dust hazard levels identified in § 745.227(b);

(ii) On any chewable lead-based paint surface on which there is evidence of teeth marks;

(iii) Where there is any damaged or otherwise deteriorated lead-based paint on an impact surface that is cause by

impact from a related building component (such as a door knob that knocks into a wall or a door that knocks against its door frame; and

(iv) If there is any other deteriorated lead-based paint in any residential building or child-occupied facility or on the exterior of any residential building or child-occupied facility.

(3) A dust-lead hazard is present in a residential dwelling or child occupied facility:

(i) In a residential dwelling on floors and interior window sills when the weighted arithmetic mean lead loading for all single surface or composite samples of floors and interior window sills are equal to or greater than 40 μg/ft^2 for floors and 250 μg/ft^2 for interior window sills, respectively;

(ii) On floors or interior window sills in an unsampled residential dwelling in a multi-family dwelling, if a dust-lead hazard is present on floors or interior window sills, respectively, in at least one sampled residential unit on the property; and

(iii) On floors or interior window sills in an unsampled common area in a multi-family dwelling, if a dust-lead hazard is present on floors or interior window sills, respectively, in at least one sampled common area in the same common area group on the property.

(4) A soil-lead hazard is present:

(i) In a play area when the soil-lead concentration from a composite play area sample of bare soil is equal to or greater than 400 parts per million; or

(ii) In the rest of the yard when the arithmetic mean lead concentration from a composite sample (or arithmetic mean of composite samples) of bare soil from the rest of the yard (i.e., non-play areas) for each residential building on a property is equal to or greater than 1,200 parts per million.

5. In § 745.325, by revising paragraphs (d)(2)(iii)(A) and (d)(2)(iii)(B), by redesignating (d)(2)(iv) and (d)(2)(v) as (d)(2)(v) and (d)(2)(vi), respectively, and by adding paragraphs (d)(2)(iii)(C), (d)(2)(iii)(D), (d)(2)(iv), and (e), to read as follows:

§ 745.325 Lead-based paint activities: State and Tribal program requirements.

* * * * *

(d) * * *

(2) * * *

(iii) * * *

(A) An assessment, including a visual inspection, of the physical characteristics of the residential dwelling or child-occupied facility;

(B) Environmental sampling for lead in paint, dust, and soil;

(C) Environmental sampling requirements for lead in paint, dust, and soil that allow for comparison to the standards for lead-based paint hazards established or revised by the State or Indian Tribe pursuant to paragraph (e) of this section; and

(D) A determination of the presence of lead-based paint hazards made by comparing the results of visual inspection and environmental sampling to the standards for lead-based paint hazards established or revised by the State or Indian Tribe pursuant to paragraph (e) of this section.

(iv) The program elements required in paragraph (d)(2)(iii)(C) and (d)(2)(iii)(D) of this section shall be adopted in accordance with the schedule for the demonstration required in paragraph (e) of this section.

* * * * *

(e) The State or Indian Tribe must demonstrate that it has standards for identifying lead-based paint hazards and clearance standards for dust, that are at least as protective as the standards in § 745.227 as amended on February 5, 2001. A State or Indian Tribe with such a section 402 program approved before February 5, 2003 shall make this demonstration no later than the first report submitted pursuant to § 745.324(h) on or after February 5, 2003. A State or Indian Tribe with such a program submitted but not approved before February 5, 2003 may make this demonstration by amending its application or in its first report submitted pursuant to § 745.324(h). A State or Indian Tribe submitting its program on or after February 5, 2003 shall make this demonstration in its application.

[FR Doc. 01–84 Filed 1–4–01; 8:45 am]

BILLING CODE 6560–50–S

Breen, Denise

From: Tirol, Ness <Tirol.Ness@epa.gov>
Sent: Wednesday, May 29, 2013 6:04 PM
To: Fessler, Andrew; Breen, Denise
Cc: Jackson, Amelia; Gilliland, Gerald; Birri, John; Bourbon, John; Cherukara, Sumy; Ferretti, Jim; Khusid, Yelena; Santacroce, Gregory; Tirol, Ness
Subject: EPA Region 2 DESA Laboratory Final Report: Neo Smelting and Refining
Attachments: 1304050 P-1304050 FINAL 05 29 2013 1715.pdf; R2EDD_V3 1304050 P-1304050 FINAL 29 May 13 1715.xls

I have attached the DESA Final Laboratory Report (in .pdf format with the case narrative, as well as the R2EDD V3 in .xls format) for Neo Smelting and Refining project accepted by the EPA Region 2 DESA Laboratory on 4/29/13. The report is identified as Project #1304050. The data has been validated by the Laboratory.

Finally, in order to serve you better in the future, please complete the customer survey which can be accessed using the link below. Your cooperation is highly appreciated..

*EPA REGION 2 LAB PROJECT SURVEY - ****Please Click Here to Take Survey****

If you have any questions concerning this report, please contact John Birri at 732-906-6886 or via Email at birri.john@epa.gov

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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May 29, 2013

Denise Breen
Weston Solutions Inc.
1090 King Georges Post Road, Suite 201
Edison, NJ 08837

RE: Neo Smelting and Refining - 1304050

Enclosed are the results of analyses for samples received by the laboratory on 04/29/2013. The signature below reflects the laboratory's approval of the reported results. If you have any questions concerning this report, please refer to Project Number 1304050 and contact John Birri by phone at 732-906-6886, or via Email at birri.john@epa.gov.

Sincerely,

John R. Bourbon
Chief, DESA/LB

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 2 Laboratory

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Project Narrative:

The National Environmental Laboratory Accreditation Conference Institute (TNI) is a voluntary environmental laboratory accreditation association of State and Federal agencies. TNI established and promoted a National Environmental Laboratory Accreditation Program (NELAP) that provides a uniform set of standards for the generation of environmental data that are of known and defensible quality. The EPA Region 2 Laboratory is NELAP accredited. The Laboratory tests that are accredited have met all the requirements established under the TNI Standards.

Condition Comments

None

Comment(s):

None

Data Qualifier(s):

U- The analyte was not detected at or above the Reporting Limit.
J- The identification of the analyte is acceptable; the reported value is an estimate.
K- The identification of the analyte is acceptable; the reported value may be biased high.
L- The identification of the analyte is acceptable; the reported value may be biased low.
NJ- There is presumptive evidence that the analyte is present; the analyte is reported as a tentative identification. The reported value is an estimate.

Reporting Limit(s):

The Laboratory was able to achieve the appropriate limits for each analyte requested.

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

SUMMARY REPORT FOR SAMPLES

Field ID	Laboratory ID	Matrix	Date Sampled	Date Received
2101-RIN01	1304050-01	Aqueous	04/25/2013 14:41	04/29/2013 10:15
2101-S01-0-1	1304050-02	Solid	04/25/2013 14:40	04/29/2013 10:15
2101-S01-12-18	1304050-03	Solid	04/25/2013 15:00	04/29/2013 10:15
2101-S01-1-6	1304050-04	Solid	04/25/2013 14:50	04/29/2013 10:15
2101-S01-18-24	1304050-05	Solid	04/25/2013 15:05	04/29/2013 10:15
2101-S01-6-12	1304050-06	Solid	04/25/2013 14:55	04/29/2013 10:15
2101-S02-0-1	1304050-07	Solid	04/25/2013 14:01	04/29/2013 10:15
2101-S02-12-18	1304050-08	Solid	04/25/2013 14:21	04/29/2013 10:15
2101-S02-1-6	1304050-09	Solid	04/25/2013 14:06	04/29/2013 10:15
2101-S02-18-24	1304050-10	Solid	04/25/2013 14:30	04/29/2013 10:15
2101-S02-6-12	1304050-11	Solid	04/25/2013 14:15	04/29/2013 10:15
2101-S03-0-1	1304050-12	Solid	04/25/2013 16:10	04/29/2013 10:15
2101-S03-12-18	1304050-13	Solid	04/25/2013 16:43	04/29/2013 10:15
2101-S03-1-6	1304050-14	Solid	04/25/2013 16:30	04/29/2013 10:15
2101-S03-18-24	1304050-15	Solid	04/25/2013 16:47	04/29/2013 10:15
2101-S03-6-12	1304050-16	Solid	04/25/2013 16:36	04/29/2013 10:15
2101-S05-0-1	1304050-17	Solid	04/25/2013 15:35	04/29/2013 10:15
2101-S05-12-18	1304050-18	Solid	04/25/2013 16:01	04/29/2013 10:15
2101-S05-1-6	1304050-19	Solid	04/25/2013 15:47	04/29/2013 10:15
2101-S05-18-24	1304050-20	Solid	04/25/2013 16:20	04/29/2013 10:15
2101-S05-6-12	1304050-21	Solid	04/25/2013 15:52	04/29/2013 10:15
2101-S06-0-1	1304050-22	Solid	04/25/2013 16:53	04/29/2013 10:15
2101-S06-12-18	1304050-23	Solid	04/25/2013 17:15	04/29/2013 10:15
2101-S06-1-6	1304050-24	Solid	04/25/2013 17:00	04/29/2013 10:15
2101-S06-18-24	1304050-25	Solid	04/25/2013 17:20	04/29/2013 10:15
2101-S06-6-12	1304050-26	Solid	04/25/2013 17:08	04/29/2013 10:15
2101-S10-0-1	1304050-27	Solid	04/25/2013 08:17	04/29/2013 10:15
2101-S10-12-18	1304050-28	Solid	04/25/2013 08:54	04/29/2013 10:15
2101-S10-1-6	1304050-29	Solid	04/25/2013 08:37	04/29/2013 10:15

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

SUMMARY REPORT FOR SAMPLES

Field ID	Laboratory ID	Matrix	Date Sampled	Date Received
2101-S10-18-24	1304050-30	Solid	04/25/2013 09:04	04/29/2013 10:15
2101-S10-6-12	1304050-31	Solid	04/25/2013 08:47	04/29/2013 10:15
2101-S11-0-1	1304050-32	Solid	04/25/2013 08:30	04/29/2013 10:15
2101-S11-12-18	1304050-33	Solid	04/25/2013 09:31	04/29/2013 10:15
2101-S11-1-6	1304050-34	Solid	04/25/2013 09:13	04/29/2013 10:15
2101-S11-18-24	1304050-35	Solid	04/25/2013 09:35	04/29/2013 10:15
2101-S11-6-12	1304050-36	Solid	04/25/2013 09:23	04/29/2013 10:15
2101-S14-0-1	1304050-37	Solid	04/25/2013 10:45	04/29/2013 10:15
2101-S14-1-6	1304050-38	Solid	04/25/2013 11:15	04/29/2013 10:15
2101-S14-6-12	1304050-39	Solid	04/25/2013 11:30	04/29/2013 10:15
2101-S15-0-1	1304050-40	Solid	04/25/2013 11:48	04/29/2013 10:15
2101-S15-1-6	1304050-41	Solid	04/25/2013 11:51	04/29/2013 10:15
2101-S15-6-12	1304050-42	Solid	04/25/2013 12:02	04/29/2013 10:15
2101-S16-12-18	1304050-43	Solid	04/25/2013 14:25	04/29/2013 10:15
2101-S16-18-24	1304050-44	Solid	04/25/2013 16:24	04/29/2013 10:15
2101-S16-6-12	1304050-45	Solid	04/25/2013 09:26	04/29/2013 10:15
2101-S04-0-1	1304050-46	Solid	04/26/2013 08:40	04/29/2013 10:15
2101-S04-12-18	1304050-47	Solid	04/26/2013 08:56	04/29/2013 10:15
2101-S04-1-6	1304050-48	Solid	04/26/2013 08:47	04/29/2013 10:15
2101-S04-18-24	1304050-49	Solid	04/26/2013 09:00	04/29/2013 10:15
2101-S04-6-12	1304050-50	Solid	04/26/2013 08:53	04/29/2013 10:15
2101-S07-0-1	1304050-51	Solid	04/26/2013 09:33	04/29/2013 10:15
2101-S07-12-18	1304050-52	Solid	04/26/2013 09:54	04/29/2013 10:15
2101-S07-1-6	1304050-53	Solid	04/26/2013 09:38	04/29/2013 10:15
2101-S07-18-24	1304050-54	Solid	04/26/2013 10:03	04/29/2013 10:15
2101-S07-6-12	1304050-55	Solid	04/26/2013 09:45	04/29/2013 10:15
2101-S08-0-1	1304050-56	Solid	04/26/2013 14:25	04/29/2013 10:15
2101-S08-12-18	1304050-57	Solid	04/26/2013 14:50	04/29/2013 10:15
2101-S08-1-6	1304050-58	Solid	04/26/2013 14:35	04/29/2013 10:15

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

SUMMARY REPORT FOR SAMPLES

Field ID	Laboratory ID	Matrix	Date Sampled	Date Received
2101-S08-18-24	1304050-59	Solid	04/26/2013 14:55	04/29/2013 10:15
2101-S08-6-12	1304050-60	Solid	04/26/2013 14:45	04/29/2013 10:15
2101-S09-0-1	1304050-61	Solid	04/26/2013 07:25	04/29/2013 10:15
2101-S09-12-18	1304050-62	Solid	04/26/2013 07:47	04/29/2013 10:15
2101-S09-1-6	1304050-63	Solid	04/26/2013 07:35	04/29/2013 10:15
2101-S09-18-24	1304050-64	Solid	04/26/2013 07:51	04/29/2013 10:15
2101-S09-6-12	1304050-65	Solid	04/26/2013 07:40	04/29/2013 10:15
2101-S12-0-1	1304050-66	Solid	04/26/2013 11:30	04/29/2013 10:15
2101-S12-12-18	1304050-67	Solid	04/26/2013 11:55	04/29/2013 10:15
2101-S12-1-6	1304050-68	Solid	04/26/2013 11:43	04/29/2013 10:15
2101-S12-18-24	1304050-69	Solid	04/26/2013 12:15	04/29/2013 10:15
2101-S12-6-12	1304050-70	Solid	04/26/2013 11:49	04/29/2013 10:15
2101-S13-0-1	1304050-71	Solid	04/26/2013 11:37	04/29/2013 10:15
2101-S13-12-18	1304050-72	Solid	04/26/2013 12:32	04/29/2013 10:15
2101-S13-1-6	1304050-73	Solid	04/26/2013 12:07	04/29/2013 10:15
2101-S13-18-24	1304050-74	Solid	04/26/2013 12:42	04/29/2013 10:15
2101-S13-6-12	1304050-75	Solid	04/26/2013 12:23	04/29/2013 10:15
2101-S16-0-1	1304050-76	Solid	04/26/2013 07:30	04/29/2013 10:15

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

SUMMARY REPORT FOR METHODS

Analysis	Method	Certification	Matrix
Metals ICP TAL	EPA 200.7 / SOP C-109 Rev3.2	NELAP	Aqueous
Metals ICP TAL	EPA 200.7 / SOP C-109 Rev3.2	NELAP	Solid

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-RIN01				Sample ID: 1304050-01
Metals ICP				
Aluminum	---	U	100	ug/L
Antimony	---	U	20	ug/L
Arsenic	---	U	8.0	ug/L
Barium	---	U	100	ug/L
Beryllium	---	U	3.0	ug/L
Cadmium	---	U	3.0	ug/L
Calcium	---	U	500	ug/L
Chromium	---	U	5.0	ug/L
Cobalt	---	U	20	ug/L
Copper	---	U	10	ug/L
Iron	---	U	50	ug/L
Lead	---	U	8.0	ug/L
Magnesium	---	U	500	ug/L
Manganese	---	U	5.0	ug/L
Nickel	---	U	20	ug/L
Potassium	---	U	500	ug/L
Selenium	---	U	20	ug/L
Silver	---	U	5.0	ug/L
Sodium	---	U	1000	ug/L
Thallium	---	U	20	ug/L
Tin	---	U	10	ug/L
Vanadium	---	U	20	ug/L

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-RIN01				Sample ID: 1304050-01
Metals ICP				
Zinc	---	U	20	ug/L
Field ID: 2101-S01-0-1				Sample ID: 1304050-02
Metals ICP				
Aluminum	14000		11	mg/kg dry
Antimony	3.4		2.2	mg/kg dry
Arsenic	26		0.86	mg/kg dry
Barium	79		11	mg/kg dry
Beryllium	0.48		0.32	mg/kg dry
Cadmium	7.4		0.32	mg/kg dry
Calcium	3200		54	mg/kg dry
Chromium	32		0.54	mg/kg dry
Cobalt	5.5		2.2	mg/kg dry
Copper	50		1.1	mg/kg dry
Iron	18000		5.4	mg/kg dry
Lead	150		0.86	mg/kg dry
Magnesium	2100		54	mg/kg dry
Manganese	210		0.54	mg/kg dry
Molybdenum	1.2		1.1	mg/kg dry
Nickel	15		2.2	mg/kg dry
Potassium	580		54	mg/kg dry
Selenium	---	U	2.2	mg/kg dry
Silver	13		0.54	mg/kg dry
Sodium	1000		110	mg/kg dry
Thallium	---	U	2.2	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S01-0-1			Sample ID: 1304050-02	
Metals ICP				
Tin	21		1.1	mg/kg dry
Vanadium	30		2.2	mg/kg dry
Zinc	170		2.2	mg/kg dry
Field ID: 2101-S01-12-18			Sample ID: 1304050-03	
Metals ICP				
Aluminum	8000		8.2	mg/kg dry
Antimony	---	U	1.6	mg/kg dry
Arsenic	3.0		0.65	mg/kg dry
Barium	42		8.2	mg/kg dry
Beryllium	0.29		0.24	mg/kg dry
Cadmium	20		0.24	mg/kg dry
Calcium	810		41	mg/kg dry
Chromium	18		0.41	mg/kg dry
Cobalt	6.5		1.6	mg/kg dry
Copper	16		0.82	mg/kg dry
Iron	13000		4.1	mg/kg dry
Lead	16		0.65	mg/kg dry
Magnesium	1800		41	mg/kg dry
Manganese	250		0.41	mg/kg dry
Molybdenum	---	U	0.82	mg/kg dry
Nickel	16		1.6	mg/kg dry
Potassium	420		41	mg/kg dry
Selenium	---	U	1.6	mg/kg dry
Silver	7.5		0.41	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S01-12-18				Sample ID: 1304050-03
Metals ICP				
Sodium	190		82	mg/kg dry
Thallium	---	U	1.6	mg/kg dry
Tin	---	U	0.82	mg/kg dry
Vanadium	24		1.6	mg/kg dry
Zinc	26		1.6	mg/kg dry
Field ID: 2101-S01-1-6				Sample ID: 1304050-04
Metals ICP				
Aluminum	5600		9.2	mg/kg dry
Antimony	2.8		1.8	mg/kg dry
Arsenic	8.2		0.74	mg/kg dry
Barium	91		9.2	mg/kg dry
Beryllium	0.50		0.28	mg/kg dry
Cadmium	4.4		0.28	mg/kg dry
Calcium	6700		46	mg/kg dry
Chromium	20		0.46	mg/kg dry
Cobalt	7.3		1.8	mg/kg dry
Copper	90		0.92	mg/kg dry
Iron	11000		4.6	mg/kg dry
Lead	160		0.74	mg/kg dry
Magnesium	3100		46	mg/kg dry
Manganese	220		0.46	mg/kg dry
Molybdenum	2.7		0.92	mg/kg dry
Nickel	12		1.8	mg/kg dry
Potassium	450		46	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S01-1-6				Sample ID: 1304050-04
Metals ICP				
Selenium	---	U	1.8	mg/kg dry
Silver	7.5		0.46	mg/kg dry
Sodium	540		92	mg/kg dry
Thallium	---	U	1.8	mg/kg dry
Tin	18		0.92	mg/kg dry
Vanadium	17		1.8	mg/kg dry
Zinc	210		1.8	mg/kg dry
Field ID: 2101-S01-18-24				Sample ID: 1304050-05
Metals ICP				
Aluminum	7900		8.4	mg/kg dry
Antimony	---	U	1.7	mg/kg dry
Arsenic	2.0		0.67	mg/kg dry
Barium	38		8.4	mg/kg dry
Beryllium	0.28		0.25	mg/kg dry
Cadmium	13		0.25	mg/kg dry
Calcium	1100		42	mg/kg dry
Chromium	17		0.42	mg/kg dry
Cobalt	6.2		1.7	mg/kg dry
Copper	16		0.84	mg/kg dry
Iron	11000		4.2	mg/kg dry
Lead	12		0.67	mg/kg dry
Magnesium	2000		42	mg/kg dry
Manganese	260		0.42	mg/kg dry
Molybdenum	---	U	0.84	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S01-18-24				Sample ID: 1304050-05
Metals ICP				
Nickel	19		1.7	mg/kg dry
Potassium	490		42	mg/kg dry
Selenium	---	U	1.7	mg/kg dry
Silver	6.4		0.42	mg/kg dry
Sodium	180		84	mg/kg dry
Thallium	---	U	1.7	mg/kg dry
Tin	---	U	0.84	mg/kg dry
Vanadium	18		1.7	mg/kg dry
Zinc	22		1.7	mg/kg dry
Field ID: 2101-S01-6-12				Sample ID: 1304050-06
Metals ICP				
Aluminum	7200		8.8	mg/kg dry
Antimony	4.8		1.8	mg/kg dry
Arsenic	5.6		0.70	mg/kg dry
Barium	88		8.8	mg/kg dry
Beryllium	0.28		0.26	mg/kg dry
Cadmium	61		0.26	mg/kg dry
Calcium	1500		44	mg/kg dry
Chromium	18		0.44	mg/kg dry
Cobalt	6.8		1.8	mg/kg dry
Copper	150		0.88	mg/kg dry
Iron	16000		4.4	mg/kg dry
Lead	73		0.70	mg/kg dry
Magnesium	2100		44	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S01-6-12			Sample ID: 1304050-06	
Metals ICP				
Manganese	280		0.44	mg/kg dry
Molybdenum	---	U	0.88	mg/kg dry
Nickel	32		1.8	mg/kg dry
Potassium	780		44	mg/kg dry
Selenium	---	U	1.8	mg/kg dry
Silver	10		0.44	mg/kg dry
Sodium	270		88	mg/kg dry
Thallium	---	U	1.8	mg/kg dry
Tin	34		0.88	mg/kg dry
Vanadium	20		1.8	mg/kg dry
Zinc	260		1.8	mg/kg dry
Field ID: 2101-S02-0-1			Sample ID: 1304050-07	
Metals ICP				
Aluminum	8500		11	mg/kg dry
Antimony	---	U	2.1	mg/kg dry
Arsenic	10		0.85	mg/kg dry
Barium	66		11	mg/kg dry
Beryllium	---	U	0.32	mg/kg dry
Cadmium	16		0.32	mg/kg dry
Calcium	14000		53	mg/kg dry
Chromium	24		0.53	mg/kg dry
Cobalt	6.4		2.1	mg/kg dry
Copper	53		1.1	mg/kg dry
Iron	13000		5.3	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S02-0-1			Sample ID: 1304050-07	
Metals ICP				
Lead	300		0.85	mg/kg dry
Magnesium	8200		53	mg/kg dry
Manganese	240		0.53	mg/kg dry
Molybdenum	---	U	1.1	mg/kg dry
Nickel	19		2.1	mg/kg dry
Potassium	750		53	mg/kg dry
Selenium	---	U	2.1	mg/kg dry
Silver	12		0.53	mg/kg dry
Sodium	430		110	mg/kg dry
Thallium	---	U	2.1	mg/kg dry
Tin	6.8		1.1	mg/kg dry
Vanadium	32		2.1	mg/kg dry
Zinc	160		2.1	mg/kg dry
Field ID: 2101-S02-12-18			Sample ID: 1304050-08	
Metals ICP				
Aluminum	6700		7.8	mg/kg dry
Antimony	---	U	1.6	mg/kg dry
Arsenic	2.3		0.62	mg/kg dry
Barium	43		7.8	mg/kg dry
Beryllium	---	U	0.23	mg/kg dry
Cadmium	7.5		0.23	mg/kg dry
Calcium	1100		39	mg/kg dry
Chromium	19		0.39	mg/kg dry
Cobalt	6.2		1.6	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S02-12-18			Sample ID: 1304050-08	
Metals ICP				
Copper	26		0.78	mg/kg dry
Iron	11000		3.9	mg/kg dry
Lead	63		0.62	mg/kg dry
Magnesium	2000		39	mg/kg dry
Manganese	220		0.39	mg/kg dry
Molybdenum	---	U	0.78	mg/kg dry
Nickel	24		1.6	mg/kg dry
Potassium	830		39	mg/kg dry
Selenium	---	U	1.6	mg/kg dry
Silver	9.8		0.39	mg/kg dry
Sodium	210		78	mg/kg dry
Thallium	---	U	1.6	mg/kg dry
Tin	1.1		0.78	mg/kg dry
Vanadium	21		1.6	mg/kg dry
Zinc	52		1.6	mg/kg dry
Field ID: 2101-S02-1-6			Sample ID: 1304050-09	
Metals ICP				
Aluminum	6400		7.9	mg/kg dry
Antimony	---	U	1.6	mg/kg dry
Arsenic	4.5		0.64	mg/kg dry
Barium	55		7.9	mg/kg dry
Beryllium	---	U	0.24	mg/kg dry
Cadmium	16		0.24	mg/kg dry
Calcium	1900		40	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S02-1-6				Sample ID: 1304050-09
Metals ICP				
Chromium	18		0.40	mg/kg dry
Cobalt	5.8		1.6	mg/kg dry
Copper	49		0.79	mg/kg dry
Iron	11000		4.0	mg/kg dry
Lead	300		0.64	mg/kg dry
Magnesium	2200		40	mg/kg dry
Manganese	220		0.40	mg/kg dry
Molybdenum	---	U	0.79	mg/kg dry
Nickel	20		1.6	mg/kg dry
Potassium	710		40	mg/kg dry
Selenium	---	U	1.6	mg/kg dry
Silver	9.6		0.40	mg/kg dry
Sodium	360		79	mg/kg dry
Thallium	---	U	1.6	mg/kg dry
Tin	4.0		0.79	mg/kg dry
Vanadium	31		1.6	mg/kg dry
Zinc	97		1.6	mg/kg dry
Field ID: 2101-S02-18-24				Sample ID: 1304050-10
Metals ICP				
Aluminum	6700		8.0	mg/kg dry
Antimony	---	U	1.6	mg/kg dry
Arsenic	3.2		0.64	mg/kg dry
Barium	50		8.0	mg/kg dry
Beryllium	0.24		0.24	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S02-18-24				Sample ID: 1304050-10
Metals ICP				
Cadmium	9.9		0.24	mg/kg dry
Calcium	810		40	mg/kg dry
Chromium	20		0.40	mg/kg dry
Cobalt	7.6		1.6	mg/kg dry
Copper	30		0.80	mg/kg dry
Iron	11000		4.0	mg/kg dry
Lead	110		0.64	mg/kg dry
Magnesium	1700		40	mg/kg dry
Manganese	270		0.40	mg/kg dry
Molybdenum	---	U	0.80	mg/kg dry
Nickel	22		1.6	mg/kg dry
Potassium	800		40	mg/kg dry
Selenium	---	U	1.6	mg/kg dry
Silver	9.7		0.40	mg/kg dry
Sodium	180		80	mg/kg dry
Thallium	---	U	1.6	mg/kg dry
Tin	2.8		0.80	mg/kg dry
Vanadium	23		1.6	mg/kg dry
Zinc	58		1.6	mg/kg dry
Field ID: 2101-S02-6-12				Sample ID: 1304050-11
Metals ICP				
Aluminum	6400		8.1	mg/kg dry
Antimony	---	U	1.6	mg/kg dry
Arsenic	2.8		0.65	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S02-6-12			Sample ID: 1304050-11	
Metals ICP				
Barium	49		8.1	mg/kg dry
Beryllium	---	U	0.24	mg/kg dry
Cadmium	9.2		0.24	mg/kg dry
Calcium	870		40	mg/kg dry
Chromium	18		0.40	mg/kg dry
Cobalt	5.9		1.6	mg/kg dry
Copper	36		0.81	mg/kg dry
Iron	11000		4.0	mg/kg dry
Lead	73		0.65	mg/kg dry
Magnesium	1800		40	mg/kg dry
Manganese	230		0.40	mg/kg dry
Molybdenum	---	U	0.81	mg/kg dry
Nickel	22		1.6	mg/kg dry
Potassium	760		40	mg/kg dry
Selenium	---	U	1.6	mg/kg dry
Silver	9.4		0.40	mg/kg dry
Sodium	230		81	mg/kg dry
Thallium	---	U	1.6	mg/kg dry
Tin	1.5		0.81	mg/kg dry
Vanadium	25		1.6	mg/kg dry
Zinc	57		1.6	mg/kg dry
Field ID: 2101-S03-0-1			Sample ID: 1304050-12	
Metals ICP				
Aluminum	8800		11	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S03-0-1				Sample ID: 1304050-12
Metals ICP				
Antimony	3.1		2.2	mg/kg dry
Arsenic	8.8		0.86	mg/kg dry
Barium	79		11	mg/kg dry
Beryllium	---	U	0.32	mg/kg dry
Cadmium	10		0.32	mg/kg dry
Calcium	5000		54	mg/kg dry
Chromium	31		0.54	mg/kg dry
Cobalt	7.5		2.2	mg/kg dry
Copper	53		1.1	mg/kg dry
Iron	15000		5.4	mg/kg dry
Lead	380		0.86	mg/kg dry
Magnesium	2800		54	mg/kg dry
Manganese	270		0.54	mg/kg dry
Molybdenum	---	U	1.1	mg/kg dry
Nickel	26		2.2	mg/kg dry
Potassium	690		54	mg/kg dry
Selenium	---	U	2.2	mg/kg dry
Silver	11		0.54	mg/kg dry
Sodium	---	U	110	mg/kg dry
Thallium	---	U	2.2	mg/kg dry
Tin	52		1.1	mg/kg dry
Vanadium	40		2.2	mg/kg dry
Zinc	170		2.2	mg/kg dry
Field ID: 2101-S03-12-18				Sample ID: 1304050-13

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S03-12-18			Sample ID: 1304050-13	
Metals ICP				
Aluminum	7100		8.5	mg/kg dry
Antimony	---	U	1.7	mg/kg dry
Arsenic	1.6		0.68	mg/kg dry
Barium	34		8.5	mg/kg dry
Beryllium	---	U	0.26	mg/kg dry
Cadmium	1.7		0.26	mg/kg dry
Calcium	630		43	mg/kg dry
Chromium	24		0.43	mg/kg dry
Cobalt	7.3		1.7	mg/kg dry
Copper	23		0.85	mg/kg dry
Iron	13000		4.3	mg/kg dry
Lead	45		0.68	mg/kg dry
Magnesium	1900		43	mg/kg dry
Manganese	200		0.43	mg/kg dry
Molybdenum	---	U	0.85	mg/kg dry
Nickel	64		1.7	mg/kg dry
Potassium	510		43	mg/kg dry
Selenium	---	U	1.7	mg/kg dry
Silver	9.4		0.43	mg/kg dry
Sodium	---	U	85	mg/kg dry
Thallium	---	U	1.7	mg/kg dry
Tin	18		0.85	mg/kg dry
Vanadium	24		1.7	mg/kg dry
Zinc	36		1.7	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S03-1-6			Sample ID: 1304050-14	
Metals ICP				
Aluminum	7600		9.0	mg/kg dry
Antimony	2.2		1.8	mg/kg dry
Arsenic	6.1		0.72	mg/kg dry
Barium	68		9.0	mg/kg dry
Beryllium	---	U	0.27	mg/kg dry
Cadmium	5.6		0.27	mg/kg dry
Calcium	1400		45	mg/kg dry
Chromium	23		0.45	mg/kg dry
Cobalt	5.9		1.8	mg/kg dry
Copper	44		0.90	mg/kg dry
Iron	13000		4.5	mg/kg dry
Lead	240		0.72	mg/kg dry
Magnesium	1800		45	mg/kg dry
Manganese	180		0.45	mg/kg dry
Molybdenum	---	U	0.90	mg/kg dry
Nickel	24		1.8	mg/kg dry
Potassium	410		45	mg/kg dry
Selenium	---	U	1.8	mg/kg dry
Silver	8.9		0.45	mg/kg dry
Sodium	---	U	90	mg/kg dry
Thallium	---	U	1.8	mg/kg dry
Tin	55		0.90	mg/kg dry
Vanadium	28		1.8	mg/kg dry
Zinc	78		1.8	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S03-18-24				Sample ID: 1304050-15
Metals ICP				
Aluminum	9600		8.2	mg/kg dry
Antimony	---	U	1.6	mg/kg dry
Arsenic	1.0		0.66	mg/kg dry
Barium	44		8.2	mg/kg dry
Beryllium	---	U	0.25	mg/kg dry
Cadmium	1.4		0.25	mg/kg dry
Calcium	760		41	mg/kg dry
Chromium	21		0.41	mg/kg dry
Cobalt	15		1.6	mg/kg dry
Copper	30		0.82	mg/kg dry
Iron	17000		4.1	mg/kg dry
Lead	19		0.66	mg/kg dry
Magnesium	8900		41	mg/kg dry
Manganese	280		0.41	mg/kg dry
Molybdenum	---	U	0.82	mg/kg dry
Nickel	86		1.6	mg/kg dry
Potassium	720		41	mg/kg dry
Selenium	---	U	1.6	mg/kg dry
Silver	13		0.41	mg/kg dry
Sodium	120		82	mg/kg dry
Thallium	---	U	1.6	mg/kg dry
Tin	1.5		0.82	mg/kg dry
Vanadium	24		1.6	mg/kg dry
Zinc	40		1.6	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S03-6-12			Sample ID: 1304050-16	
Metals ICP				
Aluminum	8300		8.6	mg/kg dry
Antimony	1.7		1.7	mg/kg dry
Arsenic	2.5		0.69	mg/kg dry
Barium	56		8.6	mg/kg dry
Beryllium	---	U	0.26	mg/kg dry
Cadmium	2.8		0.26	mg/kg dry
Calcium	780		43	mg/kg dry
Chromium	27		0.43	mg/kg dry
Cobalt	10		1.7	mg/kg dry
Copper	30		0.86	mg/kg dry
Iron	13000		4.3	mg/kg dry
Lead	81		0.69	mg/kg dry
Magnesium	2300		43	mg/kg dry
Manganese	240		0.43	mg/kg dry
Molybdenum	---	U	0.86	mg/kg dry
Nickel	77		1.7	mg/kg dry
Potassium	570		43	mg/kg dry
Selenium	---	U	1.7	mg/kg dry
Silver	11		0.43	mg/kg dry
Sodium	---	U	86	mg/kg dry
Thallium	---	U	1.7	mg/kg dry
Tin	14		0.86	mg/kg dry
Vanadium	23		1.7	mg/kg dry
Zinc	45		1.7	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S05-0-1			Sample ID: 1304050-17	
Metals ICP				
Aluminum	10000		11	mg/kg dry
Antimony	---	U	2.1	mg/kg dry
Arsenic	17		0.86	mg/kg dry
Barium	69		11	mg/kg dry
Beryllium	0.34		0.32	mg/kg dry
Cadmium	5.3		0.32	mg/kg dry
Calcium	12000		54	mg/kg dry
Chromium	22		0.54	mg/kg dry
Cobalt	4.5		2.1	mg/kg dry
Copper	42		1.1	mg/kg dry
Iron	15000		5.4	mg/kg dry
Lead	92		0.86	mg/kg dry
Magnesium	5100		54	mg/kg dry
Manganese	210		0.54	mg/kg dry
Molybdenum	---	U	1.1	mg/kg dry
Nickel	12		2.1	mg/kg dry
Potassium	930		54	mg/kg dry
Selenium	---	U	2.1	mg/kg dry
Silver	11		0.54	mg/kg dry
Sodium	---	U	110	mg/kg dry
Thallium	---	U	2.1	mg/kg dry
Tin	7.6		1.1	mg/kg dry
Vanadium	25		2.1	mg/kg dry
Zinc	140		2.1	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S05-12-18			Sample ID: 1304050-18	
Metals ICP				
Aluminum	8500		8.6	mg/kg dry
Antimony	---	U	1.7	mg/kg dry
Arsenic	1.3		0.69	mg/kg dry
Barium	59		8.6	mg/kg dry
Beryllium	0.26		0.26	mg/kg dry
Cadmium	1.0		0.26	mg/kg dry
Calcium	900		43	mg/kg dry
Chromium	29		0.43	mg/kg dry
Cobalt	7.4		1.7	mg/kg dry
Copper	20		0.86	mg/kg dry
Iron	14000		4.3	mg/kg dry
Lead	8.5		0.69	mg/kg dry
Magnesium	2400		43	mg/kg dry
Manganese	260		0.43	mg/kg dry
Molybdenum	---	U	0.86	mg/kg dry
Nickel	27		1.7	mg/kg dry
Potassium	1300		43	mg/kg dry
Selenium	---	U	1.7	mg/kg dry
Silver	16		0.43	mg/kg dry
Sodium	---	U	86	mg/kg dry
Thallium	---	U	1.7	mg/kg dry
Tin	---	U	0.86	mg/kg dry
Vanadium	29		1.7	mg/kg dry
Zinc	30		1.7	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S05-1-6			Sample ID: 1304050-19	
Metals ICP				
Aluminum	6900		8.5	mg/kg dry
Antimony	---	U	1.7	mg/kg dry
Arsenic	5.6		0.68	mg/kg dry
Barium	98		8.5	mg/kg dry
Beryllium	---	U	0.25	mg/kg dry
Cadmium	2.6		0.25	mg/kg dry
Calcium	6100		42	mg/kg dry
Chromium	16		0.42	mg/kg dry
Cobalt	5.1		1.7	mg/kg dry
Copper	30		0.85	mg/kg dry
Iron	12000		4.2	mg/kg dry
Lead	110		0.68	mg/kg dry
Magnesium	2700		42	mg/kg dry
Manganese	270		0.42	mg/kg dry
Molybdenum	---	U	0.85	mg/kg dry
Nickel	13		1.7	mg/kg dry
Potassium	780		42	mg/kg dry
Selenium	---	U	1.7	mg/kg dry
Silver	9.4		0.42	mg/kg dry
Sodium	---	U	85	mg/kg dry
Thallium	---	U	1.7	mg/kg dry
Tin	3.7		0.85	mg/kg dry
Vanadium	21		1.7	mg/kg dry
Zinc	110		1.7	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S05-18-24				Sample ID: 1304050-20
Metals ICP				
Aluminum	8600		8.3	mg/kg dry
Antimony	---	U	1.7	mg/kg dry
Arsenic	1.5		0.66	mg/kg dry
Barium	63		8.3	mg/kg dry
Beryllium	---	U	0.25	mg/kg dry
Cadmium	3.9		0.25	mg/kg dry
Calcium	1200		41	mg/kg dry
Chromium	29		0.41	mg/kg dry
Cobalt	9.2		1.7	mg/kg dry
Copper	28		0.83	mg/kg dry
Iron	15000		4.1	mg/kg dry
Lead	13		0.66	mg/kg dry
Magnesium	2700		41	mg/kg dry
Manganese	280		0.41	mg/kg dry
Molybdenum	---	U	0.83	mg/kg dry
Nickel	32		1.7	mg/kg dry
Potassium	1600		41	mg/kg dry
Selenium	---	U	1.7	mg/kg dry
Silver	17		0.41	mg/kg dry
Sodium	---	U	83	mg/kg dry
Thallium	---	U	1.7	mg/kg dry
Tin	2.6		0.83	mg/kg dry
Vanadium	27		1.7	mg/kg dry
Zinc	40		1.7	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S05-6-12			Sample ID: 1304050-21	
Metals ICP				
Aluminum	9700		8.4	mg/kg dry
Antimony	---	U	1.7	mg/kg dry
Arsenic	1.6		0.67	mg/kg dry
Barium	70		8.4	mg/kg dry
Beryllium	---	U	0.25	mg/kg dry
Cadmium	2.2		0.25	mg/kg dry
Calcium	1200		42	mg/kg dry
Chromium	30		0.42	mg/kg dry
Cobalt	8.1		1.7	mg/kg dry
Copper	25		0.84	mg/kg dry
Iron	16000		4.2	mg/kg dry
Lead	18		0.67	mg/kg dry
Magnesium	2800		42	mg/kg dry
Manganese	300		0.42	mg/kg dry
Molybdenum	---	U	0.84	mg/kg dry
Nickel	30		1.7	mg/kg dry
Potassium	1600		42	mg/kg dry
Selenium	---	U	1.7	mg/kg dry
Silver	18		0.42	mg/kg dry
Sodium	---	U	84	mg/kg dry
Thallium	---	U	1.7	mg/kg dry
Tin	---	U	0.84	mg/kg dry
Vanadium	27		1.7	mg/kg dry
Zinc	40		1.7	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S06-0-1			Sample ID: 1304050-22	
Metals ICP				
Aluminum	6000		10	mg/kg dry
Antimony	3.2		2.1	mg/kg dry
Arsenic	5.3		0.83	mg/kg dry
Barium	81		10	mg/kg dry
Beryllium	---	U	0.31	mg/kg dry
Cadmium	7.6		0.31	mg/kg dry
Calcium	27000		52	mg/kg dry
Chromium	33		0.52	mg/kg dry
Cobalt	7.6		2.1	mg/kg dry
Copper	95		1.0	mg/kg dry
Iron	12000		5.2	mg/kg dry
Lead	310		0.83	mg/kg dry
Magnesium	14000		52	mg/kg dry
Manganese	210		0.52	mg/kg dry
Molybdenum	1.6		1.0	mg/kg dry
Nickel	27		2.1	mg/kg dry
Potassium	620		52	mg/kg dry
Selenium	---	U	2.1	mg/kg dry
Silver	8.7		0.52	mg/kg dry
Sodium	280		100	mg/kg dry
Thallium	---	U	2.1	mg/kg dry
Tin	25		1.0	mg/kg dry
Vanadium	25		2.1	mg/kg dry
Zinc	400		2.1	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S06-12-18			Sample ID: 1304050-23	
Metals ICP				
Aluminum	6400		9.2	mg/kg dry
Antimony	2.5		1.8	mg/kg dry
Arsenic	8.1		0.74	mg/kg dry
Barium	230		9.2	mg/kg dry
Beryllium	0.31		0.28	mg/kg dry
Cadmium	7.4		0.28	mg/kg dry
Calcium	7300		46	mg/kg dry
Chromium	30		0.46	mg/kg dry
Cobalt	6.1		1.8	mg/kg dry
Copper	110		0.92	mg/kg dry
Iron	14000		4.6	mg/kg dry
Lead	460		0.74	mg/kg dry
Magnesium	3800		46	mg/kg dry
Manganese	170		0.46	mg/kg dry
Molybdenum	---	U	0.92	mg/kg dry
Nickel	26		1.8	mg/kg dry
Potassium	490		46	mg/kg dry
Selenium	---	U	1.8	mg/kg dry
Silver	8.5		0.46	mg/kg dry
Sodium	160		92	mg/kg dry
Thallium	---	U	1.8	mg/kg dry
Tin	48		0.92	mg/kg dry
Vanadium	26		1.8	mg/kg dry
Zinc	440		1.8	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S06-1-6			Sample ID: 1304050-24	
Metals ICP				
Aluminum	7300		9.8	mg/kg dry
Antimony	2.6		2.0	mg/kg dry
Arsenic	8.0		0.79	mg/kg dry
Barium	120		9.8	mg/kg dry
Beryllium	0.34		0.29	mg/kg dry
Cadmium	9.8		0.29	mg/kg dry
Calcium	15000		49	mg/kg dry
Chromium	30		0.49	mg/kg dry
Cobalt	6.0		2.0	mg/kg dry
Copper	110		0.98	mg/kg dry
Iron	13000		4.9	mg/kg dry
Lead	530		0.79	mg/kg dry
Magnesium	7200		49	mg/kg dry
Manganese	230		0.49	mg/kg dry
Molybdenum	1.0		0.98	mg/kg dry
Nickel	30		2.0	mg/kg dry
Potassium	340		49	mg/kg dry
Selenium	---	U	2.0	mg/kg dry
Silver	7.7		0.49	mg/kg dry
Sodium	180		98	mg/kg dry
Thallium	---	U	2.0	mg/kg dry
Tin	14		0.98	mg/kg dry
Vanadium	27		2.0	mg/kg dry
Zinc	490		2.0	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S06-18-24			Sample ID: 1304050-25	
Metals ICP				
Aluminum	6800		8.8	mg/kg dry
Antimony	---	U	1.8	mg/kg dry
Arsenic	2.9		0.70	mg/kg dry
Barium	53		8.8	mg/kg dry
Beryllium	---	U	0.26	mg/kg dry
Cadmium	1.8		0.26	mg/kg dry
Calcium	1700		44	mg/kg dry
Chromium	20		0.44	mg/kg dry
Cobalt	5.9		1.8	mg/kg dry
Copper	99		0.88	mg/kg dry
Iron	12000		4.4	mg/kg dry
Lead	270		0.70	mg/kg dry
Magnesium	1900		44	mg/kg dry
Manganese	130		0.44	mg/kg dry
Molybdenum	---	U	0.88	mg/kg dry
Nickel	20		1.8	mg/kg dry
Potassium	800		44	mg/kg dry
Selenium	---	U	1.8	mg/kg dry
Silver	10		0.44	mg/kg dry
Sodium	130		88	mg/kg dry
Thallium	---	U	1.8	mg/kg dry
Tin	110		0.88	mg/kg dry
Vanadium	22		1.8	mg/kg dry
Zinc	110		1.8	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S06-6-12			Sample ID: 1304050-26	
Metals ICP				
Aluminum	5400		8.6	mg/kg dry
Antimony	3.8		1.7	mg/kg dry
Arsenic	8.0		0.69	mg/kg dry
Barium	160		8.6	mg/kg dry
Beryllium	0.33		0.26	mg/kg dry
Cadmium	12		0.26	mg/kg dry
Calcium	9800		43	mg/kg dry
Chromium	26		0.43	mg/kg dry
Cobalt	5.2		1.7	mg/kg dry
Copper	170		0.86	mg/kg dry
Iron	18000		4.3	mg/kg dry
Lead	620		0.69	mg/kg dry
Magnesium	4000		43	mg/kg dry
Manganese	190		0.43	mg/kg dry
Molybdenum	1.4		0.86	mg/kg dry
Nickel	25		1.7	mg/kg dry
Potassium	250		43	mg/kg dry
Selenium	---	U	1.7	mg/kg dry
Silver	7.2		0.43	mg/kg dry
Sodium	140		86	mg/kg dry
Thallium	---	U	1.7	mg/kg dry
Tin	32		0.86	mg/kg dry
Vanadium	24		1.7	mg/kg dry
Zinc	790		1.7	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S10-0-1			Sample ID: 1304050-27	
Metals ICP				
Aluminum	7700		10	mg/kg dry
Antimony	2.0		2.0	mg/kg dry
Arsenic	5.1		0.82	mg/kg dry
Barium	57		10	mg/kg dry
Beryllium	---	U	0.31	mg/kg dry
Cadmium	0.87		0.31	mg/kg dry
Calcium	7200		51	mg/kg dry
Chromium	23		0.51	mg/kg dry
Cobalt	6.2		2.0	mg/kg dry
Copper	34		1.0	mg/kg dry
Iron	13000		5.1	mg/kg dry
Lead	190		0.82	mg/kg dry
Magnesium	4500		51	mg/kg dry
Manganese	240		0.51	mg/kg dry
Molybdenum	---	U	1.0	mg/kg dry
Nickel	18		2.0	mg/kg dry
Potassium	570		51	mg/kg dry
Selenium	---	U	2.0	mg/kg dry
Silver	11		0.51	mg/kg dry
Sodium	160		100	mg/kg dry
Thallium	---	U	2.0	mg/kg dry
Tin	7.3		1.0	mg/kg dry
Vanadium	29		2.0	mg/kg dry
Zinc	110		2.0	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S10-12-18			Sample ID: 1304050-28	
Metals ICP				
Aluminum	8700		8.3	mg/kg dry
Antimony	---	U	1.7	mg/kg dry
Arsenic	3.1		0.67	mg/kg dry
Barium	46		8.3	mg/kg dry
Beryllium	0.33		0.25	mg/kg dry
Cadmium	0.25		0.25	mg/kg dry
Calcium	1200		42	mg/kg dry
Chromium	19		0.42	mg/kg dry
Cobalt	6.0		1.7	mg/kg dry
Copper	16		0.83	mg/kg dry
Iron	14000		4.2	mg/kg dry
Lead	52		0.67	mg/kg dry
Magnesium	2300		42	mg/kg dry
Manganese	210		0.42	mg/kg dry
Molybdenum	---	U	0.83	mg/kg dry
Nickel	18		1.7	mg/kg dry
Potassium	420		42	mg/kg dry
Selenium	---	U	1.7	mg/kg dry
Silver	8.1		0.42	mg/kg dry
Sodium	---	U	83	mg/kg dry
Thallium	---	U	1.7	mg/kg dry
Tin	0.97		0.83	mg/kg dry
Vanadium	23		1.7	mg/kg dry
Zinc	36		1.7	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S10-1-6			Sample ID: 1304050-29	
Metals ICP				
Aluminum	7600		8.3	mg/kg dry
Antimony	---	U	1.7	mg/kg dry
Arsenic	4.9		0.66	mg/kg dry
Barium	50		8.3	mg/kg dry
Beryllium	0.31		0.25	mg/kg dry
Cadmium	0.83		0.25	mg/kg dry
Calcium	2900		41	mg/kg dry
Chromium	19		0.41	mg/kg dry
Cobalt	5.8		1.7	mg/kg dry
Copper	28		0.83	mg/kg dry
Iron	13000		4.1	mg/kg dry
Lead	170		0.66	mg/kg dry
Magnesium	2700		41	mg/kg dry
Manganese	200		0.41	mg/kg dry
Molybdenum	---	U	0.83	mg/kg dry
Nickel	17		1.7	mg/kg dry
Potassium	510		41	mg/kg dry
Selenium	---	U	1.7	mg/kg dry
Silver	9.5		0.41	mg/kg dry
Sodium	120		83	mg/kg dry
Thallium	---	U	1.7	mg/kg dry
Tin	2.3		0.83	mg/kg dry
Vanadium	25		1.7	mg/kg dry
Zinc	82		1.7	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S10-18-24			Sample ID: 1304050-30	
Metals ICP				
Aluminum	6900		8.2	mg/kg dry
Antimony	---	U	1.6	mg/kg dry
Arsenic	1.4		0.65	mg/kg dry
Barium	34		8.2	mg/kg dry
Beryllium	---	U	0.25	mg/kg dry
Cadmium	---	U	0.25	mg/kg dry
Calcium	900		41	mg/kg dry
Chromium	16		0.41	mg/kg dry
Cobalt	5.8		1.6	mg/kg dry
Copper	14		0.82	mg/kg dry
Iron	9800		4.1	mg/kg dry
Lead	25		0.65	mg/kg dry
Magnesium	2800		41	mg/kg dry
Manganese	130		0.41	mg/kg dry
Molybdenum	---	U	0.82	mg/kg dry
Nickel	24		1.6	mg/kg dry
Potassium	690		41	mg/kg dry
Selenium	---	U	1.6	mg/kg dry
Silver	9.3		0.41	mg/kg dry
Sodium	---	U	82	mg/kg dry
Thallium	---	U	1.6	mg/kg dry
Tin	---	U	0.82	mg/kg dry
Vanadium	18		1.6	mg/kg dry
Zinc	27		1.6	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S10-6-12			Sample ID: 1304050-31	
Metals ICP				
Aluminum	8400		8.2	mg/kg dry
Antimony	4.1		1.6	mg/kg dry
Arsenic	6.3		0.66	mg/kg dry
Barium	46		8.2	mg/kg dry
Beryllium	1.0		0.25	mg/kg dry
Cadmium	1.2		0.25	mg/kg dry
Calcium	1200		41	mg/kg dry
Chromium	140		0.41	mg/kg dry
Cobalt	7.9		1.6	mg/kg dry
Copper	26		0.82	mg/kg dry
Iron	31000		4.1	mg/kg dry
Lead	120		0.66	mg/kg dry
Magnesium	1700		41	mg/kg dry
Manganese	240		0.41	mg/kg dry
Molybdenum	---	U	0.82	mg/kg dry
Nickel	280		1.6	mg/kg dry
Potassium	280		41	mg/kg dry
Selenium	---	U	1.6	mg/kg dry
Silver	6.4		0.41	mg/kg dry
Sodium	---	U	82	mg/kg dry
Thallium	---	U	1.6	mg/kg dry
Tin	17		0.82	mg/kg dry
Vanadium	28		1.6	mg/kg dry
Zinc	70		1.6	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S11-0-1				Sample ID: 1304050-32
Metals ICP				
Aluminum	7500		9.9	mg/kg dry
Antimony	2.2		2.0	mg/kg dry
Arsenic	5.0		0.79	mg/kg dry
Barium	75		9.9	mg/kg dry
Beryllium	---	U	0.30	mg/kg dry
Cadmium	7.3		0.30	mg/kg dry
Calcium	2400		50	mg/kg dry
Chromium	30		0.50	mg/kg dry
Cobalt	7.2		2.0	mg/kg dry
Copper	54		0.99	mg/kg dry
Iron	13000		5.0	mg/kg dry
Lead	260		0.79	mg/kg dry
Magnesium	2300		50	mg/kg dry
Manganese	240		0.50	mg/kg dry
Molybdenum	---	U	0.99	mg/kg dry
Nickel	25		2.0	mg/kg dry
Potassium	760		50	mg/kg dry
Selenium	---	U	2.0	mg/kg dry
Silver	12		0.50	mg/kg dry
Sodium	350		99	mg/kg dry
Thallium	---	U	2.0	mg/kg dry
Tin	6.7		0.99	mg/kg dry
Vanadium	44		2.0	mg/kg dry
Zinc	190		2.0	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S11-12-18			Sample ID: 1304050-33	
Metals ICP				
Aluminum	6200		8.1	mg/kg dry
Antimony	---	U	1.6	mg/kg dry
Arsenic	1.0		0.65	mg/kg dry
Barium	34		8.1	mg/kg dry
Beryllium	---	U	0.24	mg/kg dry
Cadmium	1.3		0.24	mg/kg dry
Calcium	1100		41	mg/kg dry
Chromium	17		0.41	mg/kg dry
Cobalt	6.0		1.6	mg/kg dry
Copper	17		0.81	mg/kg dry
Iron	9400		4.1	mg/kg dry
Lead	24		0.65	mg/kg dry
Magnesium	2800		41	mg/kg dry
Manganese	190		0.41	mg/kg dry
Molybdenum	---	U	0.81	mg/kg dry
Nickel	26		1.6	mg/kg dry
Potassium	740		41	mg/kg dry
Selenium	---	U	1.6	mg/kg dry
Silver	9.9		0.41	mg/kg dry
Sodium	100		81	mg/kg dry
Thallium	---	U	1.6	mg/kg dry
Tin	---	U	0.81	mg/kg dry
Vanadium	18		1.6	mg/kg dry
Zinc	32		1.6	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S11-1-6			Sample ID: 1304050-34	
Metals ICP				
Aluminum	6400		8.4	mg/kg dry
Antimony	---	U	1.7	mg/kg dry
Arsenic	3.8		0.67	mg/kg dry
Barium	55		8.4	mg/kg dry
Beryllium	---	U	0.25	mg/kg dry
Cadmium	6.6		0.25	mg/kg dry
Calcium	1600		42	mg/kg dry
Chromium	23		0.42	mg/kg dry
Cobalt	8.1		1.7	mg/kg dry
Copper	38		0.84	mg/kg dry
Iron	11000		4.2	mg/kg dry
Lead	170		0.67	mg/kg dry
Magnesium	2100		42	mg/kg dry
Manganese	180		0.42	mg/kg dry
Molybdenum	---	U	0.84	mg/kg dry
Nickel	21		1.7	mg/kg dry
Potassium	560		42	mg/kg dry
Selenium	---	U	1.7	mg/kg dry
Silver	11		0.42	mg/kg dry
Sodium	140		84	mg/kg dry
Thallium	---	U	1.7	mg/kg dry
Tin	4.3		0.84	mg/kg dry
Vanadium	30		1.7	mg/kg dry
Zinc	130		1.7	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S11-18-24				Sample ID: 1304050-35
Metals ICP				
Aluminum	5600		8.2	mg/kg dry
Antimony	---	U	1.6	mg/kg dry
Arsenic	0.66		0.66	mg/kg dry
Barium	28		8.2	mg/kg dry
Beryllium	---	U	0.25	mg/kg dry
Cadmium	0.78		0.25	mg/kg dry
Calcium	1000		41	mg/kg dry
Chromium	18		0.41	mg/kg dry
Cobalt	5.4		1.6	mg/kg dry
Copper	13		0.82	mg/kg dry
Iron	10000		4.1	mg/kg dry
Lead	14		0.66	mg/kg dry
Magnesium	2300		41	mg/kg dry
Manganese	170		0.41	mg/kg dry
Molybdenum	---	U	0.82	mg/kg dry
Nickel	21		1.6	mg/kg dry
Potassium	760		41	mg/kg dry
Selenium	---	U	1.6	mg/kg dry
Silver	9.9		0.41	mg/kg dry
Sodium	110		82	mg/kg dry
Thallium	---	U	1.6	mg/kg dry
Tin	---	U	0.82	mg/kg dry
Vanadium	18		1.6	mg/kg dry
Zinc	24		1.6	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S11-6-12			Sample ID: 1304050-36	
Metals ICP				
Aluminum	6300		8.6	mg/kg dry
Antimony	---	U	1.7	mg/kg dry
Arsenic	0.90		0.69	mg/kg dry
Barium	35		8.6	mg/kg dry
Beryllium	---	U	0.26	mg/kg dry
Cadmium	1.8		0.26	mg/kg dry
Calcium	800		43	mg/kg dry
Chromium	17		0.43	mg/kg dry
Cobalt	5.6		1.7	mg/kg dry
Copper	18		0.86	mg/kg dry
Iron	9600		4.3	mg/kg dry
Lead	21		0.69	mg/kg dry
Magnesium	2300		43	mg/kg dry
Manganese	170		0.43	mg/kg dry
Molybdenum	---	U	0.86	mg/kg dry
Nickel	19		1.7	mg/kg dry
Potassium	680		43	mg/kg dry
Selenium	---	U	1.7	mg/kg dry
Silver	10		0.43	mg/kg dry
Sodium	---	U	86	mg/kg dry
Thallium	---	U	1.7	mg/kg dry
Tin	---	U	0.86	mg/kg dry
Vanadium	19		1.7	mg/kg dry
Zinc	29		1.7	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S14-0-1			Sample ID: 1304050-37	
Metals ICP				
Aluminum	10000		10	mg/kg dry
Antimony	---	U	2.1	mg/kg dry
Arsenic	11		0.84	mg/kg dry
Barium	97		10	mg/kg dry
Beryllium	---	U	0.31	mg/kg dry
Cadmium	0.65		0.31	mg/kg dry
Calcium	4200		52	mg/kg dry
Chromium	26		0.52	mg/kg dry
Cobalt	7.3		2.1	mg/kg dry
Copper	45		1.0	mg/kg dry
Iron	16000		5.2	mg/kg dry
Lead	140		0.84	mg/kg dry
Magnesium	2900		52	mg/kg dry
Manganese	300		0.52	mg/kg dry
Molybdenum	---	U	1.0	mg/kg dry
Nickel	17		2.1	mg/kg dry
Potassium	1000		52	mg/kg dry
Selenium	---	U	2.1	mg/kg dry
Silver	15		0.52	mg/kg dry
Sodium	---	U	100	mg/kg dry
Thallium	---	U	2.1	mg/kg dry
Tin	4.0		1.0	mg/kg dry
Vanadium	29		2.1	mg/kg dry
Zinc	130		2.1	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S14-1-6				Sample ID: 1304050-38
Metals ICP				
Aluminum	7100		9.3	mg/kg dry
Antimony	2.1		1.9	mg/kg dry
Arsenic	4.6		0.75	mg/kg dry
Barium	97		9.3	mg/kg dry
Beryllium	0.32		0.28	mg/kg dry
Cadmium	0.68		0.28	mg/kg dry
Calcium	6400		47	mg/kg dry
Chromium	21		0.47	mg/kg dry
Cobalt	8.8		1.9	mg/kg dry
Copper	95		0.93	mg/kg dry
Iron	14000		4.7	mg/kg dry
Lead	140		0.75	mg/kg dry
Magnesium	3500		47	mg/kg dry
Manganese	290		0.47	mg/kg dry
Molybdenum	4.6		0.93	mg/kg dry
Nickel	13		1.9	mg/kg dry
Potassium	830		47	mg/kg dry
Selenium	---	U	1.9	mg/kg dry
Silver	11		0.47	mg/kg dry
Sodium	---	U	93	mg/kg dry
Thallium	---	U	1.9	mg/kg dry
Tin	54		0.93	mg/kg dry
Vanadium	19		1.9	mg/kg dry
Zinc	460		1.9	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S14-6-12			Sample ID: 1304050-39	
Metals ICP				
Aluminum	7000		9.3	mg/kg dry
Antimony	7.5		1.9	mg/kg dry
Arsenic	9.8		0.74	mg/kg dry
Barium	160		9.3	mg/kg dry
Beryllium	0.31		0.28	mg/kg dry
Cadmium	180		0.28	mg/kg dry
Calcium	20000		46	mg/kg dry
Chromium	54		0.46	mg/kg dry
Cobalt	11		1.9	mg/kg dry
Copper	150		0.93	mg/kg dry
Iron	16000		4.6	mg/kg dry
Lead	690		0.74	mg/kg dry
Magnesium	6100		46	mg/kg dry
Manganese	210		0.46	mg/kg dry
Molybdenum	1.8		0.93	mg/kg dry
Nickel	50		1.9	mg/kg dry
Potassium	620		46	mg/kg dry
Selenium	---	U	1.9	mg/kg dry
Silver	8.4		0.46	mg/kg dry
Sodium	---	U	93	mg/kg dry
Thallium	---	U	1.9	mg/kg dry
Tin	76		0.93	mg/kg dry
Vanadium	25		1.9	mg/kg dry
Zinc	550		1.9	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S15-0-1			Sample ID: 1304050-40	
Metals ICP				
Aluminum	11000		10	mg/kg dry
Antimony	---	U	2.0	mg/kg dry
Arsenic	13		0.80	mg/kg dry
Barium	91		10	mg/kg dry
Beryllium	0.40		0.30	mg/kg dry
Cadmium	4.1		0.30	mg/kg dry
Calcium	3400		50	mg/kg dry
Chromium	22		0.50	mg/kg dry
Cobalt	6.7		2.0	mg/kg dry
Copper	35		1.0	mg/kg dry
Iron	16000		5.0	mg/kg dry
Lead	110		0.80	mg/kg dry
Magnesium	2900		50	mg/kg dry
Manganese	260		0.50	mg/kg dry
Molybdenum	---	U	1.0	mg/kg dry
Nickel	16		2.0	mg/kg dry
Potassium	850		50	mg/kg dry
Selenium	---	U	2.0	mg/kg dry
Silver	14		0.50	mg/kg dry
Sodium	---	U	100	mg/kg dry
Thallium	---	U	2.0	mg/kg dry
Tin	4.2		1.0	mg/kg dry
Vanadium	28		2.0	mg/kg dry
Zinc	150		2.0	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S15-1-6				Sample ID: 1304050-41
Metals ICP				
Aluminum	6800		9.5	mg/kg dry
Antimony	---	U	1.9	mg/kg dry
Arsenic	4.5		0.76	mg/kg dry
Barium	71		9.5	mg/kg dry
Beryllium	0.31		0.29	mg/kg dry
Cadmium	1.7		0.29	mg/kg dry
Calcium	4700		48	mg/kg dry
Chromium	15		0.48	mg/kg dry
Cobalt	5.4		1.9	mg/kg dry
Copper	30		0.95	mg/kg dry
Iron	13000		4.8	mg/kg dry
Lead	98		0.76	mg/kg dry
Magnesium	2500		48	mg/kg dry
Manganese	210		0.48	mg/kg dry
Molybdenum	---	U	0.95	mg/kg dry
Nickel	13		1.9	mg/kg dry
Potassium	850		48	mg/kg dry
Selenium	---	U	1.9	mg/kg dry
Silver	10		0.48	mg/kg dry
Sodium	---	U	95	mg/kg dry
Thallium	---	U	1.9	mg/kg dry
Tin	3.0		0.95	mg/kg dry
Vanadium	22		1.9	mg/kg dry
Zinc	120		1.9	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S15-6-12			Sample ID: 1304050-42	
Metals ICP				
Aluminum	7000		8.2	mg/kg dry
Antimony	8.1		1.6	mg/kg dry
Arsenic	11		0.66	mg/kg dry
Barium	110		8.2	mg/kg dry
Beryllium	0.29		0.25	mg/kg dry
Cadmium	590		0.25	mg/kg dry
Calcium	12000		41	mg/kg dry
Chromium	20		0.41	mg/kg dry
Cobalt	7.1		1.6	mg/kg dry
Copper	230		0.82	mg/kg dry
Iron	14000		4.1	mg/kg dry
Lead	960		0.66	mg/kg dry
Magnesium	3100		41	mg/kg dry
Manganese	210		0.41	mg/kg dry
Molybdenum	1.1		0.82	mg/kg dry
Nickel	81		1.6	mg/kg dry
Potassium	790		41	mg/kg dry
Selenium	1.7		1.6	mg/kg dry
Silver	11		0.41	mg/kg dry
Sodium	---	U	82	mg/kg dry
Thallium	---	U	1.6	mg/kg dry
Tin	82		0.82	mg/kg dry
Vanadium	29		1.6	mg/kg dry
Zinc	1100		1.6	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S16-12-18			Sample ID: 1304050-43	
Metals ICP				
Aluminum	6300		8.4	mg/kg dry
Antimony	---	U	1.7	mg/kg dry
Arsenic	2.0		0.67	mg/kg dry
Barium	51		8.4	mg/kg dry
Beryllium	---	U	0.25	mg/kg dry
Cadmium	7.6		0.25	mg/kg dry
Calcium	900		42	mg/kg dry
Chromium	18		0.42	mg/kg dry
Cobalt	6.0		1.7	mg/kg dry
Copper	25		0.84	mg/kg dry
Iron	11000		4.2	mg/kg dry
Lead	55		0.67	mg/kg dry
Magnesium	1800		42	mg/kg dry
Manganese	320		0.42	mg/kg dry
Molybdenum	---	U	0.84	mg/kg dry
Nickel	22		1.7	mg/kg dry
Potassium	780		42	mg/kg dry
Selenium	---	U	1.7	mg/kg dry
Silver	8.9		0.42	mg/kg dry
Sodium	190		84	mg/kg dry
Thallium	---	U	1.7	mg/kg dry
Tin	1.8		0.84	mg/kg dry
Vanadium	21		1.7	mg/kg dry
Zinc	49		1.7	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S16-18-24			Sample ID: 1304050-44	
Metals ICP				
Aluminum	8400		8.2	mg/kg dry
Antimony	---	U	1.6	mg/kg dry
Arsenic	1.6		0.66	mg/kg dry
Barium	61		8.2	mg/kg dry
Beryllium	0.26		0.25	mg/kg dry
Cadmium	4.0		0.25	mg/kg dry
Calcium	1300		41	mg/kg dry
Chromium	30		0.41	mg/kg dry
Cobalt	7.6		1.6	mg/kg dry
Copper	28		0.82	mg/kg dry
Iron	16000		4.1	mg/kg dry
Lead	14		0.66	mg/kg dry
Magnesium	2700		41	mg/kg dry
Manganese	260		0.41	mg/kg dry
Molybdenum	---	U	0.82	mg/kg dry
Nickel	32		1.6	mg/kg dry
Potassium	1500		41	mg/kg dry
Selenium	---	U	1.6	mg/kg dry
Silver	14		0.41	mg/kg dry
Sodium	---	U	82	mg/kg dry
Thallium	---	U	1.6	mg/kg dry
Tin	1.3		0.82	mg/kg dry
Vanadium	25		1.6	mg/kg dry
Zinc	40		1.6	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S16-6-12			Sample ID: 1304050-45	
Metals ICP				
Aluminum	7000		8.5	mg/kg dry
Antimony	---	U	1.7	mg/kg dry
Arsenic	1.1		0.68	mg/kg dry
Barium	38		8.5	mg/kg dry
Beryllium	---	U	0.26	mg/kg dry
Cadmium	2.0		0.26	mg/kg dry
Calcium	980		43	mg/kg dry
Chromium	20		0.43	mg/kg dry
Cobalt	6.2		1.7	mg/kg dry
Copper	19		0.85	mg/kg dry
Iron	10000		4.3	mg/kg dry
Lead	21		0.68	mg/kg dry
Magnesium	2400		43	mg/kg dry
Manganese	190		0.43	mg/kg dry
Molybdenum	---	U	0.85	mg/kg dry
Nickel	21		1.7	mg/kg dry
Potassium	780		43	mg/kg dry
Selenium	---	U	1.7	mg/kg dry
Silver	11		0.43	mg/kg dry
Sodium	110		85	mg/kg dry
Thallium	---	U	1.7	mg/kg dry
Tin	---	U	0.85	mg/kg dry
Vanadium	21		1.7	mg/kg dry
Zinc	29		1.7	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S04-0-1			Sample ID: 1304050-46	
Metals ICP				
Aluminum	9500		12	mg/kg dry
Antimony	---	U	2.4	mg/kg dry
Arsenic	8.5		0.95	mg/kg dry
Barium	94		12	mg/kg dry
Beryllium	---	U	0.35	mg/kg dry
Cadmium	2.5		0.35	mg/kg dry
Calcium	11000		59	mg/kg dry
Chromium	28		0.59	mg/kg dry
Cobalt	6.7		2.4	mg/kg dry
Copper	51		1.2	mg/kg dry
Iron	15000		5.9	mg/kg dry
Lead	190		0.95	mg/kg dry
Magnesium	5500		59	mg/kg dry
Manganese	340		0.59	mg/kg dry
Molybdenum	---	U	1.2	mg/kg dry
Nickel	20		2.4	mg/kg dry
Potassium	600		59	mg/kg dry
Selenium	---	U	2.4	mg/kg dry
Silver	9.9		0.59	mg/kg dry
Sodium	620		120	mg/kg dry
Thallium	---	U	2.4	mg/kg dry
Tin	6.0		1.2	mg/kg dry
Vanadium	33		2.4	mg/kg dry
Zinc	200		2.4	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S04-12-18				Sample ID: 1304050-47
Metals ICP				
Aluminum	8800		8.1	mg/kg dry
Antimony	---	U	1.6	mg/kg dry
Arsenic	3.0		0.65	mg/kg dry
Barium	54		8.1	mg/kg dry
Beryllium	0.30		0.24	mg/kg dry
Cadmium	2.3		0.24	mg/kg dry
Calcium	1000		41	mg/kg dry
Chromium	19		0.41	mg/kg dry
Cobalt	6.6		1.6	mg/kg dry
Copper	19		0.81	mg/kg dry
Iron	13000		4.1	mg/kg dry
Lead	34		0.65	mg/kg dry
Magnesium	2100		41	mg/kg dry
Manganese	200		0.41	mg/kg dry
Molybdenum	---	U	0.81	mg/kg dry
Nickel	19		1.6	mg/kg dry
Potassium	740		41	mg/kg dry
Selenium	---	U	1.6	mg/kg dry
Silver	9.3		0.41	mg/kg dry
Sodium	130		81	mg/kg dry
Thallium	---	U	1.6	mg/kg dry
Tin	---	U	0.81	mg/kg dry
Vanadium	21		1.6	mg/kg dry
Zinc	57		1.6	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S04-1-6			Sample ID: 1304050-48	
Metals ICP				
Aluminum	9300		9.4	mg/kg dry
Antimony	---	U	1.9	mg/kg dry
Arsenic	9.9		0.75	mg/kg dry
Barium	110		9.4	mg/kg dry
Beryllium	0.39		0.28	mg/kg dry
Cadmium	3.4		0.28	mg/kg dry
Calcium	2400		47	mg/kg dry
Chromium	24		0.47	mg/kg dry
Cobalt	6.3		1.9	mg/kg dry
Copper	49		0.94	mg/kg dry
Iron	16000		4.7	mg/kg dry
Lead	180		0.75	mg/kg dry
Magnesium	2300		47	mg/kg dry
Manganese	360		0.47	mg/kg dry
Molybdenum	---	U	0.94	mg/kg dry
Nickel	17		1.9	mg/kg dry
Potassium	580		47	mg/kg dry
Selenium	---	U	1.9	mg/kg dry
Silver	8.6		0.47	mg/kg dry
Sodium	290		94	mg/kg dry
Thallium	---	U	1.9	mg/kg dry
Tin	6.3		0.94	mg/kg dry
Vanadium	31		1.9	mg/kg dry
Zinc	150		1.9	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S04-18-24			Sample ID: 1304050-49	
Metals ICP				
Aluminum	8800		9.5	mg/kg dry
Antimony	---	U	1.9	mg/kg dry
Arsenic	2.6		0.76	mg/kg dry
Barium	40		9.5	mg/kg dry
Beryllium	0.37		0.28	mg/kg dry
Cadmium	4.8		0.28	mg/kg dry
Calcium	710		47	mg/kg dry
Chromium	16		0.47	mg/kg dry
Cobalt	6.2		1.9	mg/kg dry
Copper	20		0.95	mg/kg dry
Iron	13000		4.7	mg/kg dry
Lead	140		0.76	mg/kg dry
Magnesium	1900		47	mg/kg dry
Manganese	140		0.47	mg/kg dry
Molybdenum	---	U	0.95	mg/kg dry
Nickel	16		1.9	mg/kg dry
Potassium	520		47	mg/kg dry
Selenium	---	U	1.9	mg/kg dry
Silver	6.8		0.47	mg/kg dry
Sodium	110		95	mg/kg dry
Thallium	---	U	1.9	mg/kg dry
Tin	500		0.95	mg/kg dry
Vanadium	18		1.9	mg/kg dry
Zinc	49		1.9	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S04-6-12			Sample ID: 1304050-50	
Metals ICP				
Aluminum	9300		9.2	mg/kg dry
Antimony	---	U	1.8	mg/kg dry
Arsenic	7.0		0.73	mg/kg dry
Barium	76		9.2	mg/kg dry
Beryllium	0.35		0.27	mg/kg dry
Cadmium	3.8		0.27	mg/kg dry
Calcium	1600		46	mg/kg dry
Chromium	21		0.46	mg/kg dry
Cobalt	6.4		1.8	mg/kg dry
Copper	27		0.92	mg/kg dry
Iron	14000		4.6	mg/kg dry
Lead	92		0.73	mg/kg dry
Magnesium	2100		46	mg/kg dry
Manganese	280		0.46	mg/kg dry
Molybdenum	---	U	0.92	mg/kg dry
Nickel	17		1.8	mg/kg dry
Potassium	570		46	mg/kg dry
Selenium	---	U	1.8	mg/kg dry
Silver	8.7		0.46	mg/kg dry
Sodium	190		92	mg/kg dry
Thallium	---	U	1.8	mg/kg dry
Tin	1.8		0.92	mg/kg dry
Vanadium	27		1.8	mg/kg dry
Zinc	89		1.8	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S07-0-1			Sample ID: 1304050-51	
Metals ICP				
Aluminum	7200		10	mg/kg dry
Antimony	---	U	2.1	mg/kg dry
Arsenic	8.3		0.84	mg/kg dry
Barium	55		10	mg/kg dry
Beryllium	---	U	0.31	mg/kg dry
Cadmium	1.5		0.31	mg/kg dry
Calcium	5400		52	mg/kg dry
Chromium	26		0.52	mg/kg dry
Cobalt	6.2		2.1	mg/kg dry
Copper	38		1.0	mg/kg dry
Iron	14000		5.2	mg/kg dry
Lead	150		0.84	mg/kg dry
Magnesium	2900		52	mg/kg dry
Manganese	190		0.52	mg/kg dry
Molybdenum	---	U	1.0	mg/kg dry
Nickel	20		2.1	mg/kg dry
Potassium	1000		52	mg/kg dry
Selenium	---	U	2.1	mg/kg dry
Silver	12		0.52	mg/kg dry
Sodium	120		100	mg/kg dry
Thallium	---	U	2.1	mg/kg dry
Tin	13		1.0	mg/kg dry
Vanadium	29		2.1	mg/kg dry
Zinc	170		2.1	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S07-12-18			Sample ID: 1304050-52	
Metals ICP				
Aluminum	7900		9.8	mg/kg dry
Antimony	---	U	2.0	mg/kg dry
Arsenic	12		0.78	mg/kg dry
Barium	110		9.8	mg/kg dry
Beryllium	0.36		0.29	mg/kg dry
Cadmium	2.0		0.29	mg/kg dry
Calcium	6600		49	mg/kg dry
Chromium	23		0.49	mg/kg dry
Cobalt	7.8		2.0	mg/kg dry
Copper	85		0.98	mg/kg dry
Iron	20000		4.9	mg/kg dry
Lead	480		0.78	mg/kg dry
Magnesium	4200		49	mg/kg dry
Manganese	260		0.49	mg/kg dry
Molybdenum	1.2		0.98	mg/kg dry
Nickel	20		2.0	mg/kg dry
Potassium	400		49	mg/kg dry
Selenium	---	U	2.0	mg/kg dry
Silver	10		0.49	mg/kg dry
Sodium	360		98	mg/kg dry
Thallium	---	U	2.0	mg/kg dry
Tin	87		0.98	mg/kg dry
Vanadium	29		2.0	mg/kg dry
Zinc	140		2.0	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S07-1-6				Sample ID: 1304050-53
Metals ICP				
Aluminum	7500		8.6	mg/kg dry
Antimony	---	U	1.7	mg/kg dry
Arsenic	12		0.69	mg/kg dry
Barium	61		8.6	mg/kg dry
Beryllium	0.38		0.26	mg/kg dry
Cadmium	2.4		0.26	mg/kg dry
Calcium	1900		43	mg/kg dry
Chromium	20		0.43	mg/kg dry
Cobalt	6.9		1.7	mg/kg dry
Copper	45		0.86	mg/kg dry
Iron	16000		4.3	mg/kg dry
Lead	190		0.69	mg/kg dry
Magnesium	1900		43	mg/kg dry
Manganese	230		0.43	mg/kg dry
Molybdenum	---	U	0.86	mg/kg dry
Nickel	21		1.7	mg/kg dry
Potassium	630		43	mg/kg dry
Selenium	---	U	1.7	mg/kg dry
Silver	12		0.43	mg/kg dry
Sodium	120		86	mg/kg dry
Thallium	---	U	1.7	mg/kg dry
Tin	11		0.86	mg/kg dry
Vanadium	30		1.7	mg/kg dry
Zinc	130		1.7	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S07-18-24				Sample ID: 1304050-54
Metals ICP				
Aluminum	6600		9.5	mg/kg dry
Antimony	---	U	1.9	mg/kg dry
Arsenic	6.7		0.76	mg/kg dry
Barium	80		9.5	mg/kg dry
Beryllium	---	U	0.28	mg/kg dry
Cadmium	0.59		0.28	mg/kg dry
Calcium	1900		47	mg/kg dry
Chromium	18		0.47	mg/kg dry
Cobalt	4.8		1.9	mg/kg dry
Copper	55		0.95	mg/kg dry
Iron	11000		4.7	mg/kg dry
Lead	210		0.76	mg/kg dry
Magnesium	1300		47	mg/kg dry
Manganese	120		0.47	mg/kg dry
Molybdenum	---	U	0.95	mg/kg dry
Nickel	14		1.9	mg/kg dry
Potassium	240		47	mg/kg dry
Selenium	---	U	1.9	mg/kg dry
Silver	4.0		0.47	mg/kg dry
Sodium	440		95	mg/kg dry
Thallium	---	U	1.9	mg/kg dry
Tin	8.9		0.95	mg/kg dry
Vanadium	23		1.9	mg/kg dry
Zinc	200		1.9	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S07-6-12			Sample ID: 1304050-55	
Metals ICP				
Aluminum	8300		8.5	mg/kg dry
Antimony	---	U	1.7	mg/kg dry
Arsenic	13		0.68	mg/kg dry
Barium	71		8.5	mg/kg dry
Beryllium	0.37		0.26	mg/kg dry
Cadmium	3.7		0.26	mg/kg dry
Calcium	1500		43	mg/kg dry
Chromium	22		0.43	mg/kg dry
Cobalt	8.2		1.7	mg/kg dry
Copper	52		0.85	mg/kg dry
Iron	15000		4.3	mg/kg dry
Lead	270		0.68	mg/kg dry
Magnesium	2000		43	mg/kg dry
Manganese	230		0.43	mg/kg dry
Molybdenum	---	U	0.85	mg/kg dry
Nickel	23		1.7	mg/kg dry
Potassium	540		43	mg/kg dry
Selenium	---	U	1.7	mg/kg dry
Silver	15		0.43	mg/kg dry
Sodium	210		85	mg/kg dry
Thallium	---	U	1.7	mg/kg dry
Tin	27		0.85	mg/kg dry
Vanadium	32		1.7	mg/kg dry
Zinc	140		1.7	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S08-0-1			Sample ID: 1304050-56	
Metals ICP				
Aluminum	7300		11	mg/kg dry
Antimony	3.1		2.3	mg/kg dry
Arsenic	6.5		0.90	mg/kg dry
Barium	130		11	mg/kg dry
Beryllium	---	U	0.34	mg/kg dry
Cadmium	2.6		0.34	mg/kg dry
Calcium	7100		57	mg/kg dry
Chromium	35		0.57	mg/kg dry
Cobalt	7.4		2.3	mg/kg dry
Copper	77		1.1	mg/kg dry
Iron	16000		5.7	mg/kg dry
Lead	710		0.90	mg/kg dry
Magnesium	3400		57	mg/kg dry
Manganese	270		0.57	mg/kg dry
Molybdenum	1.3		1.1	mg/kg dry
Nickel	31		2.3	mg/kg dry
Potassium	530		57	mg/kg dry
Selenium	---	U	2.3	mg/kg dry
Silver	9.1		0.57	mg/kg dry
Sodium	500		110	mg/kg dry
Thallium	---	U	2.3	mg/kg dry
Tin	15		1.1	mg/kg dry
Vanadium	42		2.3	mg/kg dry
Zinc	410		2.3	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S08-12-18				Sample ID: 1304050-57
Metals ICP				
Aluminum	6900		9.0	mg/kg dry
Antimony	2.4		1.8	mg/kg dry
Arsenic	11		0.72	mg/kg dry
Barium	69		9.0	mg/kg dry
Beryllium	0.30		0.27	mg/kg dry
Cadmium	1.1		0.27	mg/kg dry
Calcium	3100		45	mg/kg dry
Chromium	23		0.45	mg/kg dry
Cobalt	6.3		1.8	mg/kg dry
Copper	57		0.90	mg/kg dry
Iron	14000		4.5	mg/kg dry
Lead	550		0.72	mg/kg dry
Magnesium	2300		45	mg/kg dry
Manganese	220		0.45	mg/kg dry
Molybdenum	---	U	0.90	mg/kg dry
Nickel	24		1.8	mg/kg dry
Potassium	370		45	mg/kg dry
Selenium	---	U	1.8	mg/kg dry
Silver	8.5		0.45	mg/kg dry
Sodium	160		90	mg/kg dry
Thallium	---	U	1.8	mg/kg dry
Tin	12		0.90	mg/kg dry
Vanadium	29		1.8	mg/kg dry
Zinc	240		1.8	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S08-1-6				Sample ID: 1304050-58
Metals ICP				
Aluminum	5200		8.4	mg/kg dry
Antimony	1.9		1.7	mg/kg dry
Arsenic	4.6		0.67	mg/kg dry
Barium	700		8.4	mg/kg dry
Beryllium	---	U	0.25	mg/kg dry
Cadmium	1.6		0.25	mg/kg dry
Calcium	4900		42	mg/kg dry
Chromium	21		0.42	mg/kg dry
Cobalt	5.4		1.7	mg/kg dry
Copper	56		0.84	mg/kg dry
Iron	12000		4.2	mg/kg dry
Lead	990		0.67	mg/kg dry
Magnesium	3000		42	mg/kg dry
Manganese	170		0.42	mg/kg dry
Molybdenum	1.4		0.84	mg/kg dry
Nickel	18		1.7	mg/kg dry
Potassium	370		42	mg/kg dry
Selenium	---	U	1.7	mg/kg dry
Silver	7.1		0.42	mg/kg dry
Sodium	320		84	mg/kg dry
Thallium	---	U	1.7	mg/kg dry
Tin	9.6		0.84	mg/kg dry
Vanadium	33		1.7	mg/kg dry
Zinc	280		1.7	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S08-18-24				Sample ID: 1304050-59
Metals ICP				
Aluminum	9600		9.4	mg/kg dry
Antimony	---	U	1.9	mg/kg dry
Arsenic	3.6		0.76	mg/kg dry
Barium	41		9.4	mg/kg dry
Beryllium	0.33		0.28	mg/kg dry
Cadmium	---	U	0.28	mg/kg dry
Calcium	1200		47	mg/kg dry
Chromium	26		0.47	mg/kg dry
Cobalt	6.4		1.9	mg/kg dry
Copper	11		0.94	mg/kg dry
Iron	17000		4.7	mg/kg dry
Lead	40		0.76	mg/kg dry
Magnesium	1800		47	mg/kg dry
Manganese	220		0.47	mg/kg dry
Molybdenum	---	U	0.94	mg/kg dry
Nickel	17		1.9	mg/kg dry
Potassium	220		47	mg/kg dry
Selenium	---	U	1.9	mg/kg dry
Silver	5.7		0.47	mg/kg dry
Sodium	---	U	94	mg/kg dry
Thallium	---	U	1.9	mg/kg dry
Tin	1.2		0.94	mg/kg dry
Vanadium	27		1.9	mg/kg dry
Zinc	33		1.9	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S08-6-12			Sample ID: 1304050-60	
Metals ICP				
Aluminum	5600		9.2	mg/kg dry
Antimony	2.3		1.8	mg/kg dry
Arsenic	7.1		0.73	mg/kg dry
Barium	100		9.2	mg/kg dry
Beryllium	---	U	0.28	mg/kg dry
Cadmium	1.7		0.28	mg/kg dry
Calcium	4100		46	mg/kg dry
Chromium	23		0.46	mg/kg dry
Cobalt	5.5		1.8	mg/kg dry
Copper	53		0.92	mg/kg dry
Iron	12000		4.6	mg/kg dry
Lead	800		0.73	mg/kg dry
Magnesium	2400		46	mg/kg dry
Manganese	170		0.46	mg/kg dry
Molybdenum	---	U	0.92	mg/kg dry
Nickel	21		1.8	mg/kg dry
Potassium	310		46	mg/kg dry
Selenium	---	U	1.8	mg/kg dry
Silver	7.3		0.46	mg/kg dry
Sodium	160		92	mg/kg dry
Thallium	---	U	1.8	mg/kg dry
Tin	22		0.92	mg/kg dry
Vanadium	27		1.8	mg/kg dry
Zinc	250		1.8	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S09-0-1			Sample ID: 1304050-61	
Metals ICP				
Aluminum	8900		10	mg/kg dry
Antimony	---	U	2.1	mg/kg dry
Arsenic	3.2		0.83	mg/kg dry
Barium	89		10	mg/kg dry
Beryllium	---	U	0.31	mg/kg dry
Cadmium	3.1		0.31	mg/kg dry
Calcium	4000		52	mg/kg dry
Chromium	30		0.52	mg/kg dry
Cobalt	7.5		2.1	mg/kg dry
Copper	63		1.0	mg/kg dry
Iron	14000		5.2	mg/kg dry
Lead	430		0.83	mg/kg dry
Magnesium	2900		52	mg/kg dry
Manganese	250		0.52	mg/kg dry
Molybdenum	---	U	1.0	mg/kg dry
Nickel	26		2.1	mg/kg dry
Potassium	830		52	mg/kg dry
Selenium	---	U	2.1	mg/kg dry
Silver	12		0.52	mg/kg dry
Sodium	160		100	mg/kg dry
Thallium	---	U	2.1	mg/kg dry
Tin	5.1		1.0	mg/kg dry
Vanadium	33		2.1	mg/kg dry
Zinc	180		2.1	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S09-12-18				Sample ID: 1304050-62
Metals ICP				
Aluminum	9300		8.6	mg/kg dry
Antimony	---	U	1.7	mg/kg dry
Arsenic	2.1		0.69	mg/kg dry
Barium	73		8.6	mg/kg dry
Beryllium	0.32		0.26	mg/kg dry
Cadmium	1.7		0.26	mg/kg dry
Calcium	1200		43	mg/kg dry
Chromium	23		0.43	mg/kg dry
Cobalt	7.8		1.7	mg/kg dry
Copper	26		0.86	mg/kg dry
Iron	15000		4.3	mg/kg dry
Lead	140		0.69	mg/kg dry
Magnesium	2500		43	mg/kg dry
Manganese	250		0.43	mg/kg dry
Molybdenum	---	U	0.86	mg/kg dry
Nickel	27		1.7	mg/kg dry
Potassium	670		43	mg/kg dry
Selenium	---	U	1.7	mg/kg dry
Silver	11		0.43	mg/kg dry
Sodium	92		86	mg/kg dry
Thallium	---	U	1.7	mg/kg dry
Tin	3.9		0.86	mg/kg dry
Vanadium	25		1.7	mg/kg dry
Zinc	65		1.7	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S09-1-6				Sample ID: 1304050-63
Metals ICP				
Aluminum	7200		8.9	mg/kg dry
Antimony	---	U	1.8	mg/kg dry
Arsenic	2.4		0.71	mg/kg dry
Barium	49		8.9	mg/kg dry
Beryllium	0.29		0.27	mg/kg dry
Cadmium	1.4		0.27	mg/kg dry
Calcium	1700		45	mg/kg dry
Chromium	24		0.45	mg/kg dry
Cobalt	6.0		1.8	mg/kg dry
Copper	32		0.89	mg/kg dry
Iron	12000		4.5	mg/kg dry
Lead	160		0.71	mg/kg dry
Magnesium	2200		45	mg/kg dry
Manganese	170		0.45	mg/kg dry
Molybdenum	---	U	0.89	mg/kg dry
Nickel	22		1.8	mg/kg dry
Potassium	480		45	mg/kg dry
Selenium	---	U	1.8	mg/kg dry
Silver	9.6		0.45	mg/kg dry
Sodium	---	U	89	mg/kg dry
Thallium	---	U	1.8	mg/kg dry
Tin	2.5		0.89	mg/kg dry
Vanadium	30		1.8	mg/kg dry
Zinc	97		1.8	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S09-18-24				Sample ID: 1304050-64
Metals ICP				
Aluminum	6500		8.5	mg/kg dry
Antimony	---	U	1.7	mg/kg dry
Arsenic	1.7		0.68	mg/kg dry
Barium	39		8.5	mg/kg dry
Beryllium	---	U	0.26	mg/kg dry
Cadmium	---	U	0.26	mg/kg dry
Calcium	680		43	mg/kg dry
Chromium	15		0.43	mg/kg dry
Cobalt	6.4		1.7	mg/kg dry
Copper	20		0.85	mg/kg dry
Iron	12000		4.3	mg/kg dry
Lead	26		0.68	mg/kg dry
Magnesium	2800		43	mg/kg dry
Manganese	130		0.43	mg/kg dry
Molybdenum	---	U	0.85	mg/kg dry
Nickel	28		1.7	mg/kg dry
Potassium	910		43	mg/kg dry
Selenium	---	U	1.7	mg/kg dry
Silver	11		0.43	mg/kg dry
Sodium	---	U	85	mg/kg dry
Thallium	---	U	1.7	mg/kg dry
Tin	---	U	0.85	mg/kg dry
Vanadium	19		1.7	mg/kg dry
Zinc	40		1.7	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S09-6-12			Sample ID: 1304050-65	
Metals ICP				
Aluminum	8400		8.8	mg/kg dry
Antimony	---	U	1.8	mg/kg dry
Arsenic	2.4		0.71	mg/kg dry
Barium	55		8.8	mg/kg dry
Beryllium	0.29		0.27	mg/kg dry
Cadmium	1.5		0.27	mg/kg dry
Calcium	1400		44	mg/kg dry
Chromium	24		0.44	mg/kg dry
Cobalt	7.6		1.8	mg/kg dry
Copper	29		0.88	mg/kg dry
Iron	13000		4.4	mg/kg dry
Lead	130		0.71	mg/kg dry
Magnesium	3100		44	mg/kg dry
Manganese	190		0.44	mg/kg dry
Molybdenum	---	U	0.88	mg/kg dry
Nickel	31		1.8	mg/kg dry
Potassium	550		44	mg/kg dry
Selenium	---	U	1.8	mg/kg dry
Silver	11		0.44	mg/kg dry
Sodium	91		88	mg/kg dry
Thallium	---	U	1.8	mg/kg dry
Tin	2.1		0.88	mg/kg dry
Vanadium	26		1.8	mg/kg dry
Zinc	81		1.8	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S12-0-1			Sample ID: 1304050-66	
Metals ICP				
Aluminum	6800		11	mg/kg dry
Antimony	2.6		2.1	mg/kg dry
Arsenic	4.7		0.85	mg/kg dry
Barium	74		11	mg/kg dry
Beryllium	---	U	0.32	mg/kg dry
Cadmium	2.8		0.32	mg/kg dry
Calcium	6500		53	mg/kg dry
Chromium	53		0.53	mg/kg dry
Cobalt	5.8		2.1	mg/kg dry
Copper	72		1.1	mg/kg dry
Iron	15000		5.3	mg/kg dry
Lead	500		0.85	mg/kg dry
Magnesium	3700		53	mg/kg dry
Manganese	260		0.53	mg/kg dry
Molybdenum	1.1		1.1	mg/kg dry
Nickel	20		2.1	mg/kg dry
Potassium	360		53	mg/kg dry
Selenium	---	U	2.1	mg/kg dry
Silver	6.3		0.53	mg/kg dry
Sodium	---	U	110	mg/kg dry
Thallium	---	U	2.1	mg/kg dry
Tin	12		1.1	mg/kg dry
Vanadium	36		2.1	mg/kg dry
Zinc	470		2.1	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S12-12-18				Sample ID: 1304050-67
Metals ICP				
Aluminum	5400		8.0	mg/kg dry
Antimony	---	U	1.6	mg/kg dry
Arsenic	4.4		0.64	mg/kg dry
Barium	52		8.0	mg/kg dry
Beryllium	0.26		0.24	mg/kg dry
Cadmium	8.0		0.24	mg/kg dry
Calcium	9400		40	mg/kg dry
Chromium	16		0.40	mg/kg dry
Cobalt	4.7		1.6	mg/kg dry
Copper	33		0.80	mg/kg dry
Iron	12000		4.0	mg/kg dry
Lead	190		0.64	mg/kg dry
Magnesium	6200		40	mg/kg dry
Manganese	220		0.40	mg/kg dry
Molybdenum	---	U	0.80	mg/kg dry
Nickel	14		1.6	mg/kg dry
Potassium	350		40	mg/kg dry
Selenium	---	U	1.6	mg/kg dry
Silver	5.9		0.40	mg/kg dry
Sodium	---	U	80	mg/kg dry
Thallium	---	U	1.6	mg/kg dry
Tin	5.6		0.80	mg/kg dry
Vanadium	19		1.6	mg/kg dry
Zinc	110		1.6	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S12-1-6				Sample ID: 1304050-68
Metals ICP				
Aluminum	7000		8.0	mg/kg dry
Antimony	1.6		1.6	mg/kg dry
Arsenic	5.3		0.64	mg/kg dry
Barium	61		8.0	mg/kg dry
Beryllium	0.29		0.24	mg/kg dry
Cadmium	2.3		0.24	mg/kg dry
Calcium	2300		40	mg/kg dry
Chromium	25		0.40	mg/kg dry
Cobalt	5.7		1.6	mg/kg dry
Copper	60		0.80	mg/kg dry
Iron	14000		4.0	mg/kg dry
Lead	270		0.64	mg/kg dry
Magnesium	2900		40	mg/kg dry
Manganese	250		0.40	mg/kg dry
Molybdenum	---	U	0.80	mg/kg dry
Nickel	22		1.6	mg/kg dry
Potassium	330		40	mg/kg dry
Selenium	---	U	1.6	mg/kg dry
Silver	5.3		0.40	mg/kg dry
Sodium	---	U	80	mg/kg dry
Thallium	---	U	1.6	mg/kg dry
Tin	9.1		0.80	mg/kg dry
Vanadium	31		1.6	mg/kg dry
Zinc	160		1.6	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S12-18-24			Sample ID: 1304050-69	
Metals ICP				
Aluminum	6400		8.4	mg/kg dry
Antimony	---	U	1.7	mg/kg dry
Arsenic	6.3		0.67	mg/kg dry
Barium	88		8.4	mg/kg dry
Beryllium	0.27		0.25	mg/kg dry
Cadmium	6.1		0.25	mg/kg dry
Calcium	18000		42	mg/kg dry
Chromium	17		0.42	mg/kg dry
Cobalt	6.3		1.7	mg/kg dry
Copper	43		0.84	mg/kg dry
Iron	17000		4.2	mg/kg dry
Lead	260		0.67	mg/kg dry
Magnesium	12000		42	mg/kg dry
Manganese	330		0.42	mg/kg dry
Molybdenum	---	U	0.84	mg/kg dry
Nickel	22		1.7	mg/kg dry
Potassium	790		42	mg/kg dry
Selenium	---	U	1.7	mg/kg dry
Silver	8.2		0.42	mg/kg dry
Sodium	140		84	mg/kg dry
Thallium	---	U	1.7	mg/kg dry
Tin	8.7		0.84	mg/kg dry
Vanadium	23		1.7	mg/kg dry
Zinc	140		1.7	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S12-6-12			Sample ID: 1304050-70	
Metals ICP				
Aluminum	7100		9.1	mg/kg dry
Antimony	---	U	1.8	mg/kg dry
Arsenic	4.8		0.73	mg/kg dry
Barium	55		9.1	mg/kg dry
Beryllium	---	U	0.27	mg/kg dry
Cadmium	2.7		0.27	mg/kg dry
Calcium	8600		46	mg/kg dry
Chromium	17		0.46	mg/kg dry
Cobalt	5.4		1.8	mg/kg dry
Copper	32		0.91	mg/kg dry
Iron	13000		4.6	mg/kg dry
Lead	130		0.73	mg/kg dry
Magnesium	6300		46	mg/kg dry
Manganese	230		0.46	mg/kg dry
Molybdenum	---	U	0.91	mg/kg dry
Nickel	15		1.8	mg/kg dry
Potassium	380		46	mg/kg dry
Selenium	---	U	1.8	mg/kg dry
Silver	6.1		0.46	mg/kg dry
Sodium	---	U	91	mg/kg dry
Thallium	---	U	1.8	mg/kg dry
Tin	4.2		0.91	mg/kg dry
Vanadium	22		1.8	mg/kg dry
Zinc	74		1.8	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S13-0-1			Sample ID: 1304050-71	
Metals ICP				
Aluminum	6500		11	mg/kg dry
Antimony	3.1		2.2	mg/kg dry
Arsenic	4.9		0.89	mg/kg dry
Barium	82		11	mg/kg dry
Beryllium	---	U	0.33	mg/kg dry
Cadmium	6.4		0.33	mg/kg dry
Calcium	13000		56	mg/kg dry
Chromium	37		0.56	mg/kg dry
Cobalt	6.1		2.2	mg/kg dry
Copper	95		1.1	mg/kg dry
Iron	15000		5.6	mg/kg dry
Lead	390		0.89	mg/kg dry
Magnesium	7100		56	mg/kg dry
Manganese	260		0.56	mg/kg dry
Molybdenum	1.6		1.1	mg/kg dry
Nickel	27		2.2	mg/kg dry
Potassium	500		56	mg/kg dry
Selenium	---	U	2.2	mg/kg dry
Silver	6.5		0.56	mg/kg dry
Sodium	220		110	mg/kg dry
Thallium	---	U	2.2	mg/kg dry
Tin	13		1.1	mg/kg dry
Vanadium	37		2.2	mg/kg dry
Zinc	700		2.2	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S13-12-18				Sample ID: 1304050-72
Metals ICP				
Aluminum	7700		8.9	mg/kg dry
Antimony	---	U	1.8	mg/kg dry
Arsenic	7.7		0.71	mg/kg dry
Barium	70		8.9	mg/kg dry
Beryllium	0.30		0.27	mg/kg dry
Cadmium	23		0.27	mg/kg dry
Calcium	4400		45	mg/kg dry
Chromium	22		0.45	mg/kg dry
Cobalt	6.5		1.8	mg/kg dry
Copper	55		0.89	mg/kg dry
Iron	20000		4.5	mg/kg dry
Lead	810		0.71	mg/kg dry
Magnesium	3400		45	mg/kg dry
Manganese	260		0.45	mg/kg dry
Molybdenum	---	U	0.89	mg/kg dry
Nickel	19		1.8	mg/kg dry
Potassium	410		45	mg/kg dry
Selenium	---	U	1.8	mg/kg dry
Silver	7.1		0.45	mg/kg dry
Sodium	160		89	mg/kg dry
Thallium	---	U	1.8	mg/kg dry
Tin	430		0.89	mg/kg dry
Vanadium	29		1.8	mg/kg dry
Zinc	370		1.8	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S13-1-6			Sample ID: 1304050-73	
Metals ICP				
Aluminum	6600		9.4	mg/kg dry
Antimony	---	U	1.9	mg/kg dry
Arsenic	5.4		0.75	mg/kg dry
Barium	68		9.4	mg/kg dry
Beryllium	0.34		0.28	mg/kg dry
Cadmium	8.7		0.28	mg/kg dry
Calcium	4600		47	mg/kg dry
Chromium	21		0.47	mg/kg dry
Cobalt	7.2		1.9	mg/kg dry
Copper	110		0.94	mg/kg dry
Iron	15000		4.7	mg/kg dry
Lead	750		0.75	mg/kg dry
Magnesium	3400		47	mg/kg dry
Manganese	240		0.47	mg/kg dry
Molybdenum	---	U	0.94	mg/kg dry
Nickel	24		1.9	mg/kg dry
Potassium	430		47	mg/kg dry
Selenium	---	U	1.9	mg/kg dry
Silver	7.2		0.47	mg/kg dry
Sodium	150		94	mg/kg dry
Thallium	---	U	1.9	mg/kg dry
Tin	210		0.94	mg/kg dry
Vanadium	40		1.9	mg/kg dry
Zinc	310		1.9	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S13-18-24			Sample ID: 1304050-74	
Metals ICP				
Aluminum	8400		9.1	mg/kg dry
Antimony	---	U	1.8	mg/kg dry
Arsenic	5.0		0.73	mg/kg dry
Barium	56		9.1	mg/kg dry
Beryllium	0.31		0.27	mg/kg dry
Cadmium	7.0		0.27	mg/kg dry
Calcium	3100		45	mg/kg dry
Chromium	20		0.45	mg/kg dry
Cobalt	6.3		1.8	mg/kg dry
Copper	30		0.91	mg/kg dry
Iron	16000		4.5	mg/kg dry
Lead	97		0.73	mg/kg dry
Magnesium	3000		45	mg/kg dry
Manganese	220		0.45	mg/kg dry
Molybdenum	---	U	0.91	mg/kg dry
Nickel	18		1.8	mg/kg dry
Potassium	450		45	mg/kg dry
Selenium	---	U	1.8	mg/kg dry
Silver	6.9		0.45	mg/kg dry
Sodium	160		91	mg/kg dry
Thallium	---	U	1.8	mg/kg dry
Tin	6.8		0.91	mg/kg dry
Vanadium	26		1.8	mg/kg dry
Zinc	140		1.8	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S13-6-12				Sample ID: 1304050-75
Metals ICP				
Aluminum	7200		9.3	mg/kg dry
Antimony	2.0		1.9	mg/kg dry
Arsenic	6.3		0.75	mg/kg dry
Barium	81		9.3	mg/kg dry
Beryllium	0.35		0.28	mg/kg dry
Cadmium	20		0.28	mg/kg dry
Calcium	5900		47	mg/kg dry
Chromium	23		0.47	mg/kg dry
Cobalt	6.4		1.9	mg/kg dry
Copper	76		0.93	mg/kg dry
Iron	17000		4.7	mg/kg dry
Lead	230		0.75	mg/kg dry
Magnesium	4300		47	mg/kg dry
Manganese	240		0.47	mg/kg dry
Molybdenum	---	U	0.93	mg/kg dry
Nickel	25		1.9	mg/kg dry
Potassium	370	K	47	mg/kg dry
Selenium	---	U	1.9	mg/kg dry
Silver	7.1		0.47	mg/kg dry
Sodium	160		93	mg/kg dry
Thallium	---	U	1.9	mg/kg dry
Tin	15	K	0.93	mg/kg dry
Vanadium	32		1.9	mg/kg dry
Zinc	320		1.9	mg/kg dry

Project:Neo Smelting and Refining - 1304050

Project Number: 1304050

Analyte	Result	Qualifier	Reporting Limit	Units
Field ID: 2101-S16-0-1				Sample ID: 1304050-76
Metals ICP				
Aluminum	8900		11	mg/kg dry
Antimony	2.4		2.1	mg/kg dry
Arsenic	3.4		0.86	mg/kg dry
Barium	84		11	mg/kg dry
Beryllium	---	U	0.32	mg/kg dry
Cadmium	2.9		0.32	mg/kg dry
Calcium	3900		54	mg/kg dry
Chromium	31		0.54	mg/kg dry
Cobalt	7.6		2.1	mg/kg dry
Copper	62		1.1	mg/kg dry
Iron	14000		5.4	mg/kg dry
Lead	440		0.86	mg/kg dry
Magnesium	2900		54	mg/kg dry
Manganese	240		0.54	mg/kg dry
Molybdenum	---	U	1.1	mg/kg dry
Nickel	26		2.1	mg/kg dry
Potassium	820		54	mg/kg dry
Selenium	---	U	2.1	mg/kg dry
Silver	12		0.54	mg/kg dry
Sodium	160		110	mg/kg dry
Thallium	---	U	2.1	mg/kg dry
Tin	14		1.1	mg/kg dry
Vanadium	34		2.1	mg/kg dry
Zinc	180		2.1	mg/kg dry

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-RIN01	04/25/2013	1	Aluminum	100	Yes	U	100	ug/L
2101-RIN01	04/25/2013	1	Antimony	20	Yes	U	20	ug/L
2101-RIN01	04/25/2013	1	Arsenic	8.0	Yes	U	8.0	ug/L
2101-RIN01	04/25/2013	1	Barium	100	Yes	U	100	ug/L
2101-RIN01	04/25/2013	1	Beryllium	3.0	Yes	U	3.0	ug/L
2101-RIN01	04/25/2013	1	Cadmium	3.0	Yes	U	3.0	ug/L
2101-RIN01	04/25/2013	1	Calcium	500	Yes	U	500	ug/L
2101-RIN01	04/25/2013	1	Chromium	5.0	Yes	U	5.0	ug/L
2101-RIN01	04/25/2013	1	Cobalt	20	Yes	U	20	ug/L
2101-RIN01	04/25/2013	1	Copper	10	Yes	U	10	ug/L
2101-RIN01	04/25/2013	1	Iron	50	Yes	U	50	ug/L
2101-RIN01	04/25/2013	1	Lead	8.0	Yes	U	8.0	ug/L
2101-RIN01	04/25/2013	1	Magnesium	500	Yes	U	500	ug/L
2101-RIN01	04/25/2013	1	Manganese	5.0	Yes	U	5.0	ug/L
2101-RIN01	04/25/2013	1	Nickel	20	Yes	U	20	ug/L
2101-RIN01	04/25/2013	1	Potassium	500	Yes	U	500	ug/L
2101-RIN01	04/25/2013	1	Selenium	20	Yes	U	20	ug/L
2101-RIN01	04/25/2013	1	Silver	5.0	Yes	U	5.0	ug/L
2101-RIN01	04/25/2013	1	Sodium	1000	Yes	U	1000	ug/L
2101-RIN01	04/25/2013	1	Thallium	20	Yes	U	20	ug/L
2101-RIN01	04/25/2013	1	Tin	10	Yes	U	10	ug/L
2101-RIN01	04/25/2013	1	Vanadium	20	Yes	U	20	ug/L
2101-RIN01	04/25/2013	1	Zinc	20	Yes	U	20	ug/L
2101-S01-0-1	04/25/2013	1	Aluminum	14000	Yes		11	mg/kg
2101-S01-0-1	04/25/2013	1	Antimony	3.4	Yes		2.2	mg/kg
2101-S01-0-1	04/25/2013	1	Arsenic	26	Yes		0.86	mg/kg
2101-S01-0-1	04/25/2013	1	Barium	79	Yes		11	mg/kg
2101-S01-0-1	04/25/2013	1	Beryllium	0.48	Yes		0.32	mg/kg
2101-S01-0-1	04/25/2013	1	Cadmium	7.4	Yes		0.32	mg/kg
2101-S01-0-1	04/25/2013	1	Calcium	3200	Yes		54	mg/kg
2101-S01-0-1	04/25/2013	1	Chromium	32	Yes		0.54	mg/kg
2101-S01-0-1	04/25/2013	1	Cobalt	5.5	Yes		2.2	mg/kg
2101-S01-0-1	04/25/2013	1	Copper	50	Yes		1.1	mg/kg
2101-S01-0-1	04/25/2013	1	Iron	18000	Yes		5.4	mg/kg

Note: This printed Excel file is excerpted from the original data spreadsheet.

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S01-0-1	04/25/2013	1	Lead	150	Yes		0.86	mg/kg
2101-S01-0-1	04/25/2013	1	Magnesium	2100	Yes		54	mg/kg
2101-S01-0-1	04/25/2013	1	Manganese	210	Yes		0.54	mg/kg
2101-S01-0-1	04/25/2013	1	Molybdenum	1.2	Yes		1.1	mg/kg
2101-S01-0-1	04/25/2013	1	Nickel	15	Yes		2.2	mg/kg
2101-S01-0-1	04/25/2013	1	Potassium	580	Yes		54	mg/kg
2101-S01-0-1	04/25/2013	1	Selenium	2.2	Yes	U	2.2	mg/kg
2101-S01-0-1	04/25/2013	1	Silver	13	Yes		0.54	mg/kg
2101-S01-0-1	04/25/2013	1	Sodium	1000	Yes		110	mg/kg
2101-S01-0-1	04/25/2013	1	Thallium	2.2	Yes	U	2.2	mg/kg
2101-S01-0-1	04/25/2013	1	Tin	21	Yes		1.1	mg/kg
2101-S01-0-1	04/25/2013	1	Vanadium	30	Yes		2.2	mg/kg
2101-S01-0-1	04/25/2013	1	Zinc	170	Yes		2.2	mg/kg
2101-S01-12-18	04/25/2013	1	Aluminum	8000	Yes		8.2	mg/kg
2101-S01-12-18	04/25/2013	1	Antimony	1.6	Yes	U	1.6	mg/kg
2101-S01-12-18	04/25/2013	1	Arsenic	3.0	Yes		0.65	mg/kg
2101-S01-12-18	04/25/2013	1	Barium	42	Yes		8.2	mg/kg
2101-S01-12-18	04/25/2013	1	Beryllium	0.29	Yes		0.24	mg/kg
2101-S01-12-18	04/25/2013	1	Cadmium	20	Yes		0.24	mg/kg
2101-S01-12-18	04/25/2013	1	Calcium	810	Yes		41	mg/kg
2101-S01-12-18	04/25/2013	1	Chromium	18	Yes		0.41	mg/kg
2101-S01-12-18	04/25/2013	1	Cobalt	6.5	Yes		1.6	mg/kg
2101-S01-12-18	04/25/2013	1	Copper	16	Yes		0.82	mg/kg
2101-S01-12-18	04/25/2013	1	Iron	13000	Yes		4.1	mg/kg
2101-S01-12-18	04/25/2013	1	Lead	16	Yes		0.65	mg/kg
2101-S01-12-18	04/25/2013	1	Magnesium	1800	Yes		41	mg/kg
2101-S01-12-18	04/25/2013	1	Manganese	250	Yes		0.41	mg/kg
2101-S01-12-18	04/25/2013	1	Molybdenum	0.82	Yes	U	0.82	mg/kg
2101-S01-12-18	04/25/2013	1	Nickel	16	Yes		1.6	mg/kg
2101-S01-12-18	04/25/2013	1	Potassium	420	Yes		41	mg/kg
2101-S01-12-18	04/25/2013	1	Selenium	1.6	Yes	U	1.6	mg/kg
2101-S01-12-18	04/25/2013	1	Silver	7.5	Yes		0.41	mg/kg
2101-S01-12-18	04/25/2013	1	Sodium	190	Yes		82	mg/kg
2101-S01-12-18	04/25/2013	1	Thallium	1.6	Yes	U	1.6	mg/kg

Note: This printed Excel file is excerpted from the original data spreadsheet.

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S01-12-18	04/25/2013	1	Tin	0.82	Yes	U	0.82	mg/kg
2101-S01-12-18	04/25/2013	1	Vanadium	24	Yes		1.6	mg/kg
2101-S01-12-18	04/25/2013	1	Zinc	26	Yes		1.6	mg/kg
2101-S01-1-6	04/25/2013	1	Aluminum	5600	Yes		9.2	mg/kg
2101-S01-1-6	04/25/2013	1	Antimony	2.8	Yes		1.8	mg/kg
2101-S01-1-6	04/25/2013	1	Arsenic	8.2	Yes		0.74	mg/kg
2101-S01-1-6	04/25/2013	1	Barium	91	Yes		9.2	mg/kg
2101-S01-1-6	04/25/2013	1	Beryllium	0.50	Yes		0.28	mg/kg
2101-S01-1-6	04/25/2013	1	Cadmium	4.4	Yes		0.28	mg/kg
2101-S01-1-6	04/25/2013	1	Calcium	6700	Yes		46	mg/kg
2101-S01-1-6	04/25/2013	1	Chromium	20	Yes		0.46	mg/kg
2101-S01-1-6	04/25/2013	1	Cobalt	7.3	Yes		1.8	mg/kg
2101-S01-1-6	04/25/2013	1	Copper	90	Yes		0.92	mg/kg
2101-S01-1-6	04/25/2013	1	Iron	11000	Yes		4.6	mg/kg
2101-S01-1-6	04/25/2013	1	Lead	160	Yes		0.74	mg/kg
2101-S01-1-6	04/25/2013	1	Magnesium	3100	Yes		46	mg/kg
2101-S01-1-6	04/25/2013	1	Manganese	220	Yes		0.46	mg/kg
2101-S01-1-6	04/25/2013	1	Molybdenum	2.7	Yes		0.92	mg/kg
2101-S01-1-6	04/25/2013	1	Nickel	12	Yes		1.8	mg/kg
2101-S01-1-6	04/25/2013	1	Potassium	450	Yes		46	mg/kg
2101-S01-1-6	04/25/2013	1	Selenium	1.8	Yes	U	1.8	mg/kg
2101-S01-1-6	04/25/2013	1	Silver	7.5	Yes		0.46	mg/kg
2101-S01-1-6	04/25/2013	1	Sodium	540	Yes		92	mg/kg
2101-S01-1-6	04/25/2013	1	Thallium	1.8	Yes	U	1.8	mg/kg
2101-S01-1-6	04/25/2013	1	Tin	18	Yes		0.92	mg/kg
2101-S01-1-6	04/25/2013	1	Vanadium	17	Yes		1.8	mg/kg
2101-S01-1-6	04/25/2013	1	Zinc	210	Yes		1.8	mg/kg
2101-S01-18-24	04/25/2013	1	Aluminum	7900	Yes		8.4	mg/kg
2101-S01-18-24	04/25/2013	1	Antimony	1.7	Yes	U	1.7	mg/kg
2101-S01-18-24	04/25/2013	1	Arsenic	2.0	Yes		0.67	mg/kg
2101-S01-18-24	04/25/2013	1	Barium	38	Yes		8.4	mg/kg
2101-S01-18-24	04/25/2013	1	Beryllium	0.28	Yes		0.25	mg/kg
2101-S01-18-24	04/25/2013	1	Cadmium	13	Yes		0.25	mg/kg
2101-S01-18-24	04/25/2013	1	Calcium	1100	Yes		42	mg/kg

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sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S01-18-24	04/25/2013	1	Chromium	17	Yes		0.42	mg/kg
2101-S01-18-24	04/25/2013	1	Cobalt	6.2	Yes		1.7	mg/kg
2101-S01-18-24	04/25/2013	1	Copper	16	Yes		0.84	mg/kg
2101-S01-18-24	04/25/2013	1	Iron	11000	Yes		4.2	mg/kg
2101-S01-18-24	04/25/2013	1	Lead	12	Yes		0.67	mg/kg
2101-S01-18-24	04/25/2013	1	Magnesium	2000	Yes		42	mg/kg
2101-S01-18-24	04/25/2013	1	Manganese	260	Yes		0.42	mg/kg
2101-S01-18-24	04/25/2013	1	Molybdenum	0.84	Yes	U	0.84	mg/kg
2101-S01-18-24	04/25/2013	1	Nickel	19	Yes		1.7	mg/kg
2101-S01-18-24	04/25/2013	1	Potassium	490	Yes		42	mg/kg
2101-S01-18-24	04/25/2013	1	Selenium	1.7	Yes	U	1.7	mg/kg
2101-S01-18-24	04/25/2013	1	Silver	6.4	Yes		0.42	mg/kg
2101-S01-18-24	04/25/2013	1	Sodium	180	Yes		84	mg/kg
2101-S01-18-24	04/25/2013	1	Thallium	1.7	Yes	U	1.7	mg/kg
2101-S01-18-24	04/25/2013	1	Tin	0.84	Yes	U	0.84	mg/kg
2101-S01-18-24	04/25/2013	1	Vanadium	18	Yes		1.7	mg/kg
2101-S01-18-24	04/25/2013	1	Zinc	22	Yes		1.7	mg/kg
2101-S01-6-12	04/25/2013	1	Aluminum	7200	Yes		8.8	mg/kg
2101-S01-6-12	04/25/2013	1	Antimony	4.8	Yes		1.8	mg/kg
2101-S01-6-12	04/25/2013	1	Arsenic	5.6	Yes		0.70	mg/kg
2101-S01-6-12	04/25/2013	1	Barium	88	Yes		8.8	mg/kg
2101-S01-6-12	04/25/2013	1	Beryllium	0.28	Yes		0.26	mg/kg
2101-S01-6-12	04/25/2013	1	Cadmium	61	Yes		0.26	mg/kg
2101-S01-6-12	04/25/2013	1	Calcium	1500	Yes		44	mg/kg
2101-S01-6-12	04/25/2013	1	Chromium	18	Yes		0.44	mg/kg
2101-S01-6-12	04/25/2013	1	Cobalt	6.8	Yes		1.8	mg/kg
2101-S01-6-12	04/25/2013	1	Copper	150	Yes		0.88	mg/kg
2101-S01-6-12	04/25/2013	1	Iron	16000	Yes		4.4	mg/kg
2101-S01-6-12	04/25/2013	1	Lead	73	Yes		0.70	mg/kg
2101-S01-6-12	04/25/2013	1	Magnesium	2100	Yes		44	mg/kg
2101-S01-6-12	04/25/2013	1	Manganese	280	Yes		0.44	mg/kg
2101-S01-6-12	04/25/2013	1	Molybdenum	0.88	Yes	U	0.88	mg/kg
2101-S01-6-12	04/25/2013	1	Nickel	32	Yes		1.8	mg/kg
2101-S01-6-12	04/25/2013	1	Potassium	780	Yes		44	mg/kg

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sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S01-6-12	04/25/2013	1	Selenium	1.8	Yes	U	1.8	mg/kg
2101-S01-6-12	04/25/2013	1	Silver	10	Yes		0.44	mg/kg
2101-S01-6-12	04/25/2013	1	Sodium	270	Yes		88	mg/kg
2101-S01-6-12	04/25/2013	1	Thallium	1.8	Yes	U	1.8	mg/kg
2101-S01-6-12	04/25/2013	1	Tin	34	Yes		0.88	mg/kg
2101-S01-6-12	04/25/2013	1	Vanadium	20	Yes		1.8	mg/kg
2101-S01-6-12	04/25/2013	1	Zinc	260	Yes		1.8	mg/kg
2101-S02-0-1	04/25/2013	1	Aluminum	8500	Yes		11	mg/kg
2101-S02-0-1	04/25/2013	1	Antimony	2.1	Yes	U	2.1	mg/kg
2101-S02-0-1	04/25/2013	1	Arsenic	10	Yes		0.85	mg/kg
2101-S02-0-1	04/25/2013	1	Barium	66	Yes		11	mg/kg
2101-S02-0-1	04/25/2013	1	Beryllium	0.32	Yes	U	0.32	mg/kg
2101-S02-0-1	04/25/2013	1	Cadmium	16	Yes		0.32	mg/kg
2101-S02-0-1	04/25/2013	1	Calcium	14000	Yes		53	mg/kg
2101-S02-0-1	04/25/2013	1	Chromium	24	Yes		0.53	mg/kg
2101-S02-0-1	04/25/2013	1	Cobalt	6.4	Yes		2.1	mg/kg
2101-S02-0-1	04/25/2013	1	Copper	53	Yes		1.1	mg/kg
2101-S02-0-1	04/25/2013	1	Iron	13000	Yes		5.3	mg/kg
2101-S02-0-1	04/25/2013	1	Lead	300	Yes		0.85	mg/kg
2101-S02-0-1	04/25/2013	1	Magnesium	8200	Yes		53	mg/kg
2101-S02-0-1	04/25/2013	1	Manganese	240	Yes		0.53	mg/kg
2101-S02-0-1	04/25/2013	1	Molybdenum	1.1	Yes	U	1.1	mg/kg
2101-S02-0-1	04/25/2013	1	Nickel	19	Yes		2.1	mg/kg
2101-S02-0-1	04/25/2013	1	Potassium	750	Yes		53	mg/kg
2101-S02-0-1	04/25/2013	1	Selenium	2.1	Yes	U	2.1	mg/kg
2101-S02-0-1	04/25/2013	1	Silver	12	Yes		0.53	mg/kg
2101-S02-0-1	04/25/2013	1	Sodium	430	Yes		110	mg/kg
2101-S02-0-1	04/25/2013	1	Thallium	2.1	Yes	U	2.1	mg/kg
2101-S02-0-1	04/25/2013	1	Tin	6.8	Yes		1.1	mg/kg
2101-S02-0-1	04/25/2013	1	Vanadium	32	Yes		2.1	mg/kg
2101-S02-0-1	04/25/2013	1	Zinc	160	Yes		2.1	mg/kg
2101-S02-12-18	04/25/2013	1	Aluminum	6700	Yes		7.8	mg/kg
2101-S02-12-18	04/25/2013	1	Antimony	1.6	Yes	U	1.6	mg/kg
2101-S02-12-18	04/25/2013	1	Arsenic	2.3	Yes		0.62	mg/kg

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sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S02-12-18	04/25/2013	1	Barium	43	Yes		7.8	mg/kg
2101-S02-12-18	04/25/2013	1	Beryllium	0.23	Yes	U	0.23	mg/kg
2101-S02-12-18	04/25/2013	1	Cadmium	7.5	Yes		0.23	mg/kg
2101-S02-12-18	04/25/2013	1	Calcium	1100	Yes		39	mg/kg
2101-S02-12-18	04/25/2013	1	Chromium	19	Yes		0.39	mg/kg
2101-S02-12-18	04/25/2013	1	Cobalt	6.2	Yes		1.6	mg/kg
2101-S02-12-18	04/25/2013	1	Copper	26	Yes		0.78	mg/kg
2101-S02-12-18	04/25/2013	1	Iron	11000	Yes		3.9	mg/kg
2101-S02-12-18	04/25/2013	1	Lead	63	Yes		0.62	mg/kg
2101-S02-12-18	04/25/2013	1	Magnesium	2000	Yes		39	mg/kg
2101-S02-12-18	04/25/2013	1	Manganese	220	Yes		0.39	mg/kg
2101-S02-12-18	04/25/2013	1	Molybdenum	0.78	Yes	U	0.78	mg/kg
2101-S02-12-18	04/25/2013	1	Nickel	24	Yes		1.6	mg/kg
2101-S02-12-18	04/25/2013	1	Potassium	830	Yes		39	mg/kg
2101-S02-12-18	04/25/2013	1	Selenium	1.6	Yes	U	1.6	mg/kg
2101-S02-12-18	04/25/2013	1	Silver	9.8	Yes		0.39	mg/kg
2101-S02-12-18	04/25/2013	1	Sodium	210	Yes		78	mg/kg
2101-S02-12-18	04/25/2013	1	Thallium	1.6	Yes	U	1.6	mg/kg
2101-S02-12-18	04/25/2013	1	Tin	1.1	Yes		0.78	mg/kg
2101-S02-12-18	04/25/2013	1	Vanadium	21	Yes		1.6	mg/kg
2101-S02-12-18	04/25/2013	1	Zinc	52	Yes		1.6	mg/kg
2101-S02-1-6	04/25/2013	1	Aluminum	6400	Yes		7.9	mg/kg
2101-S02-1-6	04/25/2013	1	Antimony	1.6	Yes	U	1.6	mg/kg
2101-S02-1-6	04/25/2013	1	Arsenic	4.5	Yes		0.64	mg/kg
2101-S02-1-6	04/25/2013	1	Barium	55	Yes		7.9	mg/kg
2101-S02-1-6	04/25/2013	1	Beryllium	0.24	Yes	U	0.24	mg/kg
2101-S02-1-6	04/25/2013	1	Cadmium	16	Yes		0.24	mg/kg
2101-S02-1-6	04/25/2013	1	Calcium	1900	Yes		40	mg/kg
2101-S02-1-6	04/25/2013	1	Chromium	18	Yes		0.40	mg/kg
2101-S02-1-6	04/25/2013	1	Cobalt	5.8	Yes		1.6	mg/kg
2101-S02-1-6	04/25/2013	1	Copper	49	Yes		0.79	mg/kg
2101-S02-1-6	04/25/2013	1	Iron	11000	Yes		4.0	mg/kg
2101-S02-1-6	04/25/2013	1	Lead	300	Yes		0.64	mg/kg
2101-S02-1-6	04/25/2013	1	Magnesium	2200	Yes		40	mg/kg

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sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S02-1-6	04/25/2013	1	Manganese	220	Yes		0.40	mg/kg
2101-S02-1-6	04/25/2013	1	Molybdenum	0.79	Yes	U	0.79	mg/kg
2101-S02-1-6	04/25/2013	1	Nickel	20	Yes		1.6	mg/kg
2101-S02-1-6	04/25/2013	1	Potassium	710	Yes		40	mg/kg
2101-S02-1-6	04/25/2013	1	Selenium	1.6	Yes	U	1.6	mg/kg
2101-S02-1-6	04/25/2013	1	Silver	9.6	Yes		0.40	mg/kg
2101-S02-1-6	04/25/2013	1	Sodium	360	Yes		79	mg/kg
2101-S02-1-6	04/25/2013	1	Thallium	1.6	Yes	U	1.6	mg/kg
2101-S02-1-6	04/25/2013	1	Tin	4.0	Yes		0.79	mg/kg
2101-S02-1-6	04/25/2013	1	Vanadium	31	Yes		1.6	mg/kg
2101-S02-1-6	04/25/2013	1	Zinc	97	Yes		1.6	mg/kg
2101-S02-18-24	04/25/2013	1	Aluminum	6700	Yes		8.0	mg/kg
2101-S02-18-24	04/25/2013	1	Antimony	1.6	Yes	U	1.6	mg/kg
2101-S02-18-24	04/25/2013	1	Arsenic	3.2	Yes		0.64	mg/kg
2101-S02-18-24	04/25/2013	1	Barium	50	Yes		8.0	mg/kg
2101-S02-18-24	04/25/2013	1	Beryllium	0.24	Yes		0.24	mg/kg
2101-S02-18-24	04/25/2013	1	Cadmium	9.9	Yes		0.24	mg/kg
2101-S02-18-24	04/25/2013	1	Calcium	810	Yes		40	mg/kg
2101-S02-18-24	04/25/2013	1	Chromium	20	Yes		0.40	mg/kg
2101-S02-18-24	04/25/2013	1	Cobalt	7.6	Yes		1.6	mg/kg
2101-S02-18-24	04/25/2013	1	Copper	30	Yes		0.80	mg/kg
2101-S02-18-24	04/25/2013	1	Iron	11000	Yes		4.0	mg/kg
2101-S02-18-24	04/25/2013	1	Lead	110	Yes		0.64	mg/kg
2101-S02-18-24	04/25/2013	1	Magnesium	1700	Yes		40	mg/kg
2101-S02-18-24	04/25/2013	1	Manganese	270	Yes		0.40	mg/kg
2101-S02-18-24	04/25/2013	1	Molybdenum	0.80	Yes	U	0.80	mg/kg
2101-S02-18-24	04/25/2013	1	Nickel	22	Yes		1.6	mg/kg
2101-S02-18-24	04/25/2013	1	Potassium	800	Yes		40	mg/kg
2101-S02-18-24	04/25/2013	1	Selenium	1.6	Yes	U	1.6	mg/kg
2101-S02-18-24	04/25/2013	1	Silver	9.7	Yes		0.40	mg/kg
2101-S02-18-24	04/25/2013	1	Sodium	180	Yes		80	mg/kg
2101-S02-18-24	04/25/2013	1	Thallium	1.6	Yes	U	1.6	mg/kg
2101-S02-18-24	04/25/2013	1	Tin	2.8	Yes		0.80	mg/kg
2101-S02-18-24	04/25/2013	1	Vanadium	23	Yes		1.6	mg/kg

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2101-S02-18-24	04/25/2013	1	Zinc	58	Yes		1.6	mg/kg
2101-S02-6-12	04/25/2013	1	Aluminum	6400	Yes		8.1	mg/kg
2101-S02-6-12	04/25/2013	1	Antimony	1.6	Yes	U	1.6	mg/kg
2101-S02-6-12	04/25/2013	1	Arsenic	2.8	Yes		0.65	mg/kg
2101-S02-6-12	04/25/2013	1	Barium	49	Yes		8.1	mg/kg
2101-S02-6-12	04/25/2013	1	Beryllium	0.24	Yes	U	0.24	mg/kg
2101-S02-6-12	04/25/2013	1	Cadmium	9.2	Yes		0.24	mg/kg
2101-S02-6-12	04/25/2013	1	Calcium	870	Yes		40	mg/kg
2101-S02-6-12	04/25/2013	1	Chromium	18	Yes		0.40	mg/kg
2101-S02-6-12	04/25/2013	1	Cobalt	5.9	Yes		1.6	mg/kg
2101-S02-6-12	04/25/2013	1	Copper	36	Yes		0.81	mg/kg
2101-S02-6-12	04/25/2013	1	Iron	11000	Yes		4.0	mg/kg
2101-S02-6-12	04/25/2013	1	Lead	73	Yes		0.65	mg/kg
2101-S02-6-12	04/25/2013	1	Magnesium	1800	Yes		40	mg/kg
2101-S02-6-12	04/25/2013	1	Manganese	230	Yes		0.40	mg/kg
2101-S02-6-12	04/25/2013	1	Molybdenum	0.81	Yes	U	0.81	mg/kg
2101-S02-6-12	04/25/2013	1	Nickel	22	Yes		1.6	mg/kg
2101-S02-6-12	04/25/2013	1	Potassium	760	Yes		40	mg/kg
2101-S02-6-12	04/25/2013	1	Selenium	1.6	Yes	U	1.6	mg/kg
2101-S02-6-12	04/25/2013	1	Silver	9.4	Yes		0.40	mg/kg
2101-S02-6-12	04/25/2013	1	Sodium	230	Yes		81	mg/kg
2101-S02-6-12	04/25/2013	1	Thallium	1.6	Yes	U	1.6	mg/kg
2101-S02-6-12	04/25/2013	1	Tin	1.5	Yes		0.81	mg/kg
2101-S02-6-12	04/25/2013	1	Vanadium	25	Yes		1.6	mg/kg
2101-S02-6-12	04/25/2013	1	Zinc	57	Yes		1.6	mg/kg
2101-S03-0-1	04/25/2013	1	Aluminum	8800	Yes		11	mg/kg
2101-S03-0-1	04/25/2013	1	Antimony	3.1	Yes		2.2	mg/kg
2101-S03-0-1	04/25/2013	1	Arsenic	8.8	Yes		0.86	mg/kg
2101-S03-0-1	04/25/2013	1	Barium	79	Yes		11	mg/kg
2101-S03-0-1	04/25/2013	1	Beryllium	0.32	Yes	U	0.32	mg/kg
2101-S03-0-1	04/25/2013	1	Cadmium	10	Yes		0.32	mg/kg
2101-S03-0-1	04/25/2013	1	Calcium	5000	Yes		54	mg/kg
2101-S03-0-1	04/25/2013	1	Chromium	31	Yes		0.54	mg/kg
2101-S03-0-1	04/25/2013	1	Cobalt	7.5	Yes		2.2	mg/kg

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sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S03-0-1	04/25/2013	1	Copper	53	Yes		1.1	mg/kg
2101-S03-0-1	04/25/2013	1	Iron	15000	Yes		5.4	mg/kg
2101-S03-0-1	04/25/2013	1	Lead	380	Yes		0.86	mg/kg
2101-S03-0-1	04/25/2013	1	Magnesium	2800	Yes		54	mg/kg
2101-S03-0-1	04/25/2013	1	Manganese	270	Yes		0.54	mg/kg
2101-S03-0-1	04/25/2013	1	Molybdenum	1.1	Yes	U	1.1	mg/kg
2101-S03-0-1	04/25/2013	1	Nickel	26	Yes		2.2	mg/kg
2101-S03-0-1	04/25/2013	1	Potassium	690	Yes		54	mg/kg
2101-S03-0-1	04/25/2013	1	Selenium	2.2	Yes	U	2.2	mg/kg
2101-S03-0-1	04/25/2013	1	Silver	11	Yes		0.54	mg/kg
2101-S03-0-1	04/25/2013	1	Sodium	110	Yes	U	110	mg/kg
2101-S03-0-1	04/25/2013	1	Thallium	2.2	Yes	U	2.2	mg/kg
2101-S03-0-1	04/25/2013	1	Tin	52	Yes		1.1	mg/kg
2101-S03-0-1	04/25/2013	1	Vanadium	40	Yes		2.2	mg/kg
2101-S03-0-1	04/25/2013	1	Zinc	170	Yes		2.2	mg/kg
2101-S03-12-18	04/25/2013	1	Aluminum	7100	Yes		8.5	mg/kg
2101-S03-12-18	04/25/2013	1	Antimony	1.7	Yes	U	1.7	mg/kg
2101-S03-12-18	04/25/2013	1	Arsenic	1.6	Yes		0.68	mg/kg
2101-S03-12-18	04/25/2013	1	Barium	34	Yes		8.5	mg/kg
2101-S03-12-18	04/25/2013	1	Beryllium	0.26	Yes	U	0.26	mg/kg
2101-S03-12-18	04/25/2013	1	Cadmium	1.7	Yes		0.26	mg/kg
2101-S03-12-18	04/25/2013	1	Calcium	630	Yes		43	mg/kg
2101-S03-12-18	04/25/2013	1	Chromium	24	Yes		0.43	mg/kg
2101-S03-12-18	04/25/2013	1	Cobalt	7.3	Yes		1.7	mg/kg
2101-S03-12-18	04/25/2013	1	Copper	23	Yes		0.85	mg/kg
2101-S03-12-18	04/25/2013	1	Iron	13000	Yes		4.3	mg/kg
2101-S03-12-18	04/25/2013	1	Lead	45	Yes		0.68	mg/kg
2101-S03-12-18	04/25/2013	1	Magnesium	1900	Yes		43	mg/kg
2101-S03-12-18	04/25/2013	1	Manganese	200	Yes		0.43	mg/kg
2101-S03-12-18	04/25/2013	1	Molybdenum	0.85	Yes	U	0.85	mg/kg
2101-S03-12-18	04/25/2013	1	Nickel	64	Yes		1.7	mg/kg
2101-S03-12-18	04/25/2013	1	Potassium	510	Yes		43	mg/kg
2101-S03-12-18	04/25/2013	1	Selenium	1.7	Yes	U	1.7	mg/kg
2101-S03-12-18	04/25/2013	1	Silver	9.4	Yes		0.43	mg/kg

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sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S03-12-18	04/25/2013	1	Sodium	85	Yes	U	85	mg/kg
2101-S03-12-18	04/25/2013	1	Thallium	1.7	Yes	U	1.7	mg/kg
2101-S03-12-18	04/25/2013	1	Tin	18	Yes		0.85	mg/kg
2101-S03-12-18	04/25/2013	1	Vanadium	24	Yes		1.7	mg/kg
2101-S03-12-18	04/25/2013	1	Zinc	36	Yes		1.7	mg/kg
2101-S03-1-6	04/25/2013	1	Aluminum	7600	Yes		9.0	mg/kg
2101-S03-1-6	04/25/2013	1	Antimony	2.2	Yes		1.8	mg/kg
2101-S03-1-6	04/25/2013	1	Arsenic	6.1	Yes		0.72	mg/kg
2101-S03-1-6	04/25/2013	1	Barium	68	Yes		9.0	mg/kg
2101-S03-1-6	04/25/2013	1	Beryllium	0.27	Yes	U	0.27	mg/kg
2101-S03-1-6	04/25/2013	1	Cadmium	5.6	Yes		0.27	mg/kg
2101-S03-1-6	04/25/2013	1	Calcium	1400	Yes		45	mg/kg
2101-S03-1-6	04/25/2013	1	Chromium	23	Yes		0.45	mg/kg
2101-S03-1-6	04/25/2013	1	Cobalt	5.9	Yes		1.8	mg/kg
2101-S03-1-6	04/25/2013	1	Copper	44	Yes		0.90	mg/kg
2101-S03-1-6	04/25/2013	1	Iron	13000	Yes		4.5	mg/kg
2101-S03-1-6	04/25/2013	1	Lead	240	Yes		0.72	mg/kg
2101-S03-1-6	04/25/2013	1	Magnesium	1800	Yes		45	mg/kg
2101-S03-1-6	04/25/2013	1	Manganese	180	Yes		0.45	mg/kg
2101-S03-1-6	04/25/2013	1	Molybdenum	0.90	Yes	U	0.90	mg/kg
2101-S03-1-6	04/25/2013	1	Nickel	24	Yes		1.8	mg/kg
2101-S03-1-6	04/25/2013	1	Potassium	410	Yes		45	mg/kg
2101-S03-1-6	04/25/2013	1	Selenium	1.8	Yes	U	1.8	mg/kg
2101-S03-1-6	04/25/2013	1	Silver	8.9	Yes		0.45	mg/kg
2101-S03-1-6	04/25/2013	1	Sodium	90	Yes	U	90	mg/kg
2101-S03-1-6	04/25/2013	1	Thallium	1.8	Yes	U	1.8	mg/kg
2101-S03-1-6	04/25/2013	1	Tin	55	Yes		0.90	mg/kg
2101-S03-1-6	04/25/2013	1	Vanadium	28	Yes		1.8	mg/kg
2101-S03-1-6	04/25/2013	1	Zinc	78	Yes		1.8	mg/kg
2101-S03-18-24	04/25/2013	1	Aluminum	9600	Yes		8.2	mg/kg
2101-S03-18-24	04/25/2013	1	Antimony	1.6	Yes	U	1.6	mg/kg
2101-S03-18-24	04/25/2013	1	Arsenic	1.0	Yes		0.66	mg/kg
2101-S03-18-24	04/25/2013	1	Barium	44	Yes		8.2	mg/kg
2101-S03-18-24	04/25/2013	1	Beryllium	0.25	Yes	U	0.25	mg/kg

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sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S03-18-24	04/25/2013	1	Cadmium	1.4	Yes		0.25	mg/kg
2101-S03-18-24	04/25/2013	1	Calcium	760	Yes		41	mg/kg
2101-S03-18-24	04/25/2013	1	Chromium	21	Yes		0.41	mg/kg
2101-S03-18-24	04/25/2013	1	Cobalt	15	Yes		1.6	mg/kg
2101-S03-18-24	04/25/2013	1	Copper	30	Yes		0.82	mg/kg
2101-S03-18-24	04/25/2013	1	Iron	17000	Yes		4.1	mg/kg
2101-S03-18-24	04/25/2013	1	Lead	19	Yes		0.66	mg/kg
2101-S03-18-24	04/25/2013	1	Magnesium	8900	Yes		41	mg/kg
2101-S03-18-24	04/25/2013	1	Manganese	280	Yes		0.41	mg/kg
2101-S03-18-24	04/25/2013	1	Molybdenum	0.82	Yes	U	0.82	mg/kg
2101-S03-18-24	04/25/2013	1	Nickel	86	Yes		1.6	mg/kg
2101-S03-18-24	04/25/2013	1	Potassium	720	Yes		41	mg/kg
2101-S03-18-24	04/25/2013	1	Selenium	1.6	Yes	U	1.6	mg/kg
2101-S03-18-24	04/25/2013	1	Silver	13	Yes		0.41	mg/kg
2101-S03-18-24	04/25/2013	1	Sodium	120	Yes		82	mg/kg
2101-S03-18-24	04/25/2013	1	Thallium	1.6	Yes	U	1.6	mg/kg
2101-S03-18-24	04/25/2013	1	Tin	1.5	Yes		0.82	mg/kg
2101-S03-18-24	04/25/2013	1	Vanadium	24	Yes		1.6	mg/kg
2101-S03-18-24	04/25/2013	1	Zinc	40	Yes		1.6	mg/kg
2101-S03-6-12	04/25/2013	1	Aluminum	8300	Yes		8.6	mg/kg
2101-S03-6-12	04/25/2013	1	Antimony	1.7	Yes		1.7	mg/kg
2101-S03-6-12	04/25/2013	1	Arsenic	2.5	Yes		0.69	mg/kg
2101-S03-6-12	04/25/2013	1	Barium	56	Yes		8.6	mg/kg
2101-S03-6-12	04/25/2013	1	Beryllium	0.26	Yes	U	0.26	mg/kg
2101-S03-6-12	04/25/2013	1	Cadmium	2.8	Yes		0.26	mg/kg
2101-S03-6-12	04/25/2013	1	Calcium	780	Yes		43	mg/kg
2101-S03-6-12	04/25/2013	1	Chromium	27	Yes		0.43	mg/kg
2101-S03-6-12	04/25/2013	1	Cobalt	10	Yes		1.7	mg/kg
2101-S03-6-12	04/25/2013	1	Copper	30	Yes		0.86	mg/kg
2101-S03-6-12	04/25/2013	1	Iron	13000	Yes		4.3	mg/kg
2101-S03-6-12	04/25/2013	1	Lead	81	Yes		0.69	mg/kg
2101-S03-6-12	04/25/2013	1	Magnesium	2300	Yes		43	mg/kg
2101-S03-6-12	04/25/2013	1	Manganese	240	Yes		0.43	mg/kg
2101-S03-6-12	04/25/2013	1	Molybdenum	0.86	Yes	U	0.86	mg/kg

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sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S03-6-12	04/25/2013	1	Nickel	77	Yes		1.7	mg/kg
2101-S03-6-12	04/25/2013	1	Potassium	570	Yes		43	mg/kg
2101-S03-6-12	04/25/2013	1	Selenium	1.7	Yes	U	1.7	mg/kg
2101-S03-6-12	04/25/2013	1	Silver	11	Yes		0.43	mg/kg
2101-S03-6-12	04/25/2013	1	Sodium	86	Yes	U	86	mg/kg
2101-S03-6-12	04/25/2013	1	Thallium	1.7	Yes	U	1.7	mg/kg
2101-S03-6-12	04/25/2013	1	Tin	14	Yes		0.86	mg/kg
2101-S03-6-12	04/25/2013	1	Vanadium	23	Yes		1.7	mg/kg
2101-S03-6-12	04/25/2013	1	Zinc	45	Yes		1.7	mg/kg
2101-S05-0-1	04/25/2013	1	Aluminum	10000	Yes		11	mg/kg
2101-S05-0-1	04/25/2013	1	Antimony	2.1	Yes	U	2.1	mg/kg
2101-S05-0-1	04/25/2013	1	Arsenic	17	Yes		0.86	mg/kg
2101-S05-0-1	04/25/2013	1	Barium	69	Yes		11	mg/kg
2101-S05-0-1	04/25/2013	1	Beryllium	0.34	Yes		0.32	mg/kg
2101-S05-0-1	04/25/2013	1	Cadmium	5.3	Yes		0.32	mg/kg
2101-S05-0-1	04/25/2013	1	Calcium	12000	Yes		54	mg/kg
2101-S05-0-1	04/25/2013	1	Chromium	22	Yes		0.54	mg/kg
2101-S05-0-1	04/25/2013	1	Cobalt	4.5	Yes		2.1	mg/kg
2101-S05-0-1	04/25/2013	1	Copper	42	Yes		1.1	mg/kg
2101-S05-0-1	04/25/2013	1	Iron	15000	Yes		5.4	mg/kg
2101-S05-0-1	04/25/2013	1	Lead	92	Yes		0.86	mg/kg
2101-S05-0-1	04/25/2013	1	Magnesium	5100	Yes		54	mg/kg
2101-S05-0-1	04/25/2013	1	Manganese	210	Yes		0.54	mg/kg
2101-S05-0-1	04/25/2013	1	Molybdenum	1.1	Yes	U	1.1	mg/kg
2101-S05-0-1	04/25/2013	1	Nickel	12	Yes		2.1	mg/kg
2101-S05-0-1	04/25/2013	1	Potassium	930	Yes		54	mg/kg
2101-S05-0-1	04/25/2013	1	Selenium	2.1	Yes	U	2.1	mg/kg
2101-S05-0-1	04/25/2013	1	Silver	11	Yes		0.54	mg/kg
2101-S05-0-1	04/25/2013	1	Sodium	110	Yes	U	110	mg/kg
2101-S05-0-1	04/25/2013	1	Thallium	2.1	Yes	U	2.1	mg/kg
2101-S05-0-1	04/25/2013	1	Tin	7.6	Yes		1.1	mg/kg
2101-S05-0-1	04/25/2013	1	Vanadium	25	Yes		2.1	mg/kg
2101-S05-0-1	04/25/2013	1	Zinc	140	Yes		2.1	mg/kg
2101-S05-12-18	04/25/2013	1	Aluminum	8500	Yes		8.6	mg/kg

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sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S05-12-18	04/25/2013	1	Antimony	1.7	Yes	U	1.7	mg/kg
2101-S05-12-18	04/25/2013	1	Arsenic	1.3	Yes		0.69	mg/kg
2101-S05-12-18	04/25/2013	1	Barium	59	Yes		8.6	mg/kg
2101-S05-12-18	04/25/2013	1	Beryllium	0.26	Yes		0.26	mg/kg
2101-S05-12-18	04/25/2013	1	Cadmium	1.0	Yes		0.26	mg/kg
2101-S05-12-18	04/25/2013	1	Calcium	900	Yes		43	mg/kg
2101-S05-12-18	04/25/2013	1	Chromium	29	Yes		0.43	mg/kg
2101-S05-12-18	04/25/2013	1	Cobalt	7.4	Yes		1.7	mg/kg
2101-S05-12-18	04/25/2013	1	Copper	20	Yes		0.86	mg/kg
2101-S05-12-18	04/25/2013	1	Iron	14000	Yes		4.3	mg/kg
2101-S05-12-18	04/25/2013	1	Lead	8.5	Yes		0.69	mg/kg
2101-S05-12-18	04/25/2013	1	Magnesium	2400	Yes		43	mg/kg
2101-S05-12-18	04/25/2013	1	Manganese	260	Yes		0.43	mg/kg
2101-S05-12-18	04/25/2013	1	Molybdenum	0.86	Yes	U	0.86	mg/kg
2101-S05-12-18	04/25/2013	1	Nickel	27	Yes		1.7	mg/kg
2101-S05-12-18	04/25/2013	1	Potassium	1300	Yes		43	mg/kg
2101-S05-12-18	04/25/2013	1	Selenium	1.7	Yes	U	1.7	mg/kg
2101-S05-12-18	04/25/2013	1	Silver	16	Yes		0.43	mg/kg
2101-S05-12-18	04/25/2013	1	Sodium	86	Yes	U	86	mg/kg
2101-S05-12-18	04/25/2013	1	Thallium	1.7	Yes	U	1.7	mg/kg
2101-S05-12-18	04/25/2013	1	Tin	0.86	Yes	U	0.86	mg/kg
2101-S05-12-18	04/25/2013	1	Vanadium	29	Yes		1.7	mg/kg
2101-S05-12-18	04/25/2013	1	Zinc	30	Yes		1.7	mg/kg
2101-S05-1-6	04/25/2013	1	Aluminum	6900	Yes		8.5	mg/kg
2101-S05-1-6	04/25/2013	1	Antimony	1.7	Yes	U	1.7	mg/kg
2101-S05-1-6	04/25/2013	1	Arsenic	5.6	Yes		0.68	mg/kg
2101-S05-1-6	04/25/2013	1	Barium	98	Yes		8.5	mg/kg
2101-S05-1-6	04/25/2013	1	Beryllium	0.25	Yes	U	0.25	mg/kg
2101-S05-1-6	04/25/2013	1	Cadmium	2.6	Yes		0.25	mg/kg
2101-S05-1-6	04/25/2013	1	Calcium	6100	Yes		42	mg/kg
2101-S05-1-6	04/25/2013	1	Chromium	16	Yes		0.42	mg/kg
2101-S05-1-6	04/25/2013	1	Cobalt	5.1	Yes		1.7	mg/kg
2101-S05-1-6	04/25/2013	1	Copper	30	Yes		0.85	mg/kg
2101-S05-1-6	04/25/2013	1	Iron	12000	Yes		4.2	mg/kg

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sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S05-1-6	04/25/2013	1	Lead	110	Yes		0.68	mg/kg
2101-S05-1-6	04/25/2013	1	Magnesium	2700	Yes		42	mg/kg
2101-S05-1-6	04/25/2013	1	Manganese	270	Yes		0.42	mg/kg
2101-S05-1-6	04/25/2013	1	Molybdenum	0.85	Yes	U	0.85	mg/kg
2101-S05-1-6	04/25/2013	1	Nickel	13	Yes		1.7	mg/kg
2101-S05-1-6	04/25/2013	1	Potassium	780	Yes		42	mg/kg
2101-S05-1-6	04/25/2013	1	Selenium	1.7	Yes	U	1.7	mg/kg
2101-S05-1-6	04/25/2013	1	Silver	9.4	Yes		0.42	mg/kg
2101-S05-1-6	04/25/2013	1	Sodium	85	Yes	U	85	mg/kg
2101-S05-1-6	04/25/2013	1	Thallium	1.7	Yes	U	1.7	mg/kg
2101-S05-1-6	04/25/2013	1	Tin	3.7	Yes		0.85	mg/kg
2101-S05-1-6	04/25/2013	1	Vanadium	21	Yes		1.7	mg/kg
2101-S05-1-6	04/25/2013	1	Zinc	110	Yes		1.7	mg/kg
2101-S05-18-24	04/25/2013	1	Aluminum	8600	Yes		8.3	mg/kg
2101-S05-18-24	04/25/2013	1	Antimony	1.7	Yes	U	1.7	mg/kg
2101-S05-18-24	04/25/2013	1	Arsenic	1.5	Yes		0.66	mg/kg
2101-S05-18-24	04/25/2013	1	Barium	63	Yes		8.3	mg/kg
2101-S05-18-24	04/25/2013	1	Beryllium	0.25	Yes	U	0.25	mg/kg
2101-S05-18-24	04/25/2013	1	Cadmium	3.9	Yes		0.25	mg/kg
2101-S05-18-24	04/25/2013	1	Calcium	1200	Yes		41	mg/kg
2101-S05-18-24	04/25/2013	1	Chromium	29	Yes		0.41	mg/kg
2101-S05-18-24	04/25/2013	1	Cobalt	9.2	Yes		1.7	mg/kg
2101-S05-18-24	04/25/2013	1	Copper	28	Yes		0.83	mg/kg
2101-S05-18-24	04/25/2013	1	Iron	15000	Yes		4.1	mg/kg
2101-S05-18-24	04/25/2013	1	Lead	13	Yes		0.66	mg/kg
2101-S05-18-24	04/25/2013	1	Magnesium	2700	Yes		41	mg/kg
2101-S05-18-24	04/25/2013	1	Manganese	280	Yes		0.41	mg/kg
2101-S05-18-24	04/25/2013	1	Molybdenum	0.83	Yes	U	0.83	mg/kg
2101-S05-18-24	04/25/2013	1	Nickel	32	Yes		1.7	mg/kg
2101-S05-18-24	04/25/2013	1	Potassium	1600	Yes		41	mg/kg
2101-S05-18-24	04/25/2013	1	Selenium	1.7	Yes	U	1.7	mg/kg
2101-S05-18-24	04/25/2013	1	Silver	17	Yes		0.41	mg/kg
2101-S05-18-24	04/25/2013	1	Sodium	83	Yes	U	83	mg/kg
2101-S05-18-24	04/25/2013	1	Thallium	1.7	Yes	U	1.7	mg/kg

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sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S05-18-24	04/25/2013	1	Tin	2.6	Yes		0.83	mg/kg
2101-S05-18-24	04/25/2013	1	Vanadium	27	Yes		1.7	mg/kg
2101-S05-18-24	04/25/2013	1	Zinc	40	Yes		1.7	mg/kg
2101-S05-6-12	04/25/2013	1	Aluminum	9700	Yes		8.4	mg/kg
2101-S05-6-12	04/25/2013	1	Antimony	1.7	Yes	U	1.7	mg/kg
2101-S05-6-12	04/25/2013	1	Arsenic	1.6	Yes		0.67	mg/kg
2101-S05-6-12	04/25/2013	1	Barium	70	Yes		8.4	mg/kg
2101-S05-6-12	04/25/2013	1	Beryllium	0.25	Yes	U	0.25	mg/kg
2101-S05-6-12	04/25/2013	1	Cadmium	2.2	Yes		0.25	mg/kg
2101-S05-6-12	04/25/2013	1	Calcium	1200	Yes		42	mg/kg
2101-S05-6-12	04/25/2013	1	Chromium	30	Yes		0.42	mg/kg
2101-S05-6-12	04/25/2013	1	Cobalt	8.1	Yes		1.7	mg/kg
2101-S05-6-12	04/25/2013	1	Copper	25	Yes		0.84	mg/kg
2101-S05-6-12	04/25/2013	1	Iron	16000	Yes		4.2	mg/kg
2101-S05-6-12	04/25/2013	1	Lead	18	Yes		0.67	mg/kg
2101-S05-6-12	04/25/2013	1	Magnesium	2800	Yes		42	mg/kg
2101-S05-6-12	04/25/2013	1	Manganese	300	Yes		0.42	mg/kg
2101-S05-6-12	04/25/2013	1	Molybdenum	0.84	Yes	U	0.84	mg/kg
2101-S05-6-12	04/25/2013	1	Nickel	30	Yes		1.7	mg/kg
2101-S05-6-12	04/25/2013	1	Potassium	1600	Yes		42	mg/kg
2101-S05-6-12	04/25/2013	1	Selenium	1.7	Yes	U	1.7	mg/kg
2101-S05-6-12	04/25/2013	1	Silver	18	Yes		0.42	mg/kg
2101-S05-6-12	04/25/2013	1	Sodium	84	Yes	U	84	mg/kg
2101-S05-6-12	04/25/2013	1	Thallium	1.7	Yes	U	1.7	mg/kg
2101-S05-6-12	04/25/2013	1	Tin	0.84	Yes	U	0.84	mg/kg
2101-S05-6-12	04/25/2013	1	Vanadium	27	Yes		1.7	mg/kg
2101-S05-6-12	04/25/2013	1	Zinc	40	Yes		1.7	mg/kg
2101-S06-0-1	04/25/2013	1	Aluminum	6000	Yes		10	mg/kg
2101-S06-0-1	04/25/2013	1	Antimony	3.2	Yes		2.1	mg/kg
2101-S06-0-1	04/25/2013	1	Arsenic	5.3	Yes		0.83	mg/kg
2101-S06-0-1	04/25/2013	1	Barium	81	Yes		10	mg/kg
2101-S06-0-1	04/25/2013	1	Beryllium	0.31	Yes	U	0.31	mg/kg
2101-S06-0-1	04/25/2013	1	Cadmium	7.6	Yes		0.31	mg/kg
2101-S06-0-1	04/25/2013	1	Calcium	27000	Yes		52	mg/kg

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sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S06-0-1	04/25/2013	1	Chromium	33	Yes		0.52	mg/kg
2101-S06-0-1	04/25/2013	1	Cobalt	7.6	Yes		2.1	mg/kg
2101-S06-0-1	04/25/2013	1	Copper	95	Yes		1.0	mg/kg
2101-S06-0-1	04/25/2013	1	Iron	12000	Yes		5.2	mg/kg
2101-S06-0-1	04/25/2013	1	Lead	310	Yes		0.83	mg/kg
2101-S06-0-1	04/25/2013	1	Magnesium	14000	Yes		52	mg/kg
2101-S06-0-1	04/25/2013	1	Manganese	210	Yes		0.52	mg/kg
2101-S06-0-1	04/25/2013	1	Molybdenum	1.6	Yes		1.0	mg/kg
2101-S06-0-1	04/25/2013	1	Nickel	27	Yes		2.1	mg/kg
2101-S06-0-1	04/25/2013	1	Potassium	620	Yes		52	mg/kg
2101-S06-0-1	04/25/2013	1	Selenium	2.1	Yes	U	2.1	mg/kg
2101-S06-0-1	04/25/2013	1	Silver	8.7	Yes		0.52	mg/kg
2101-S06-0-1	04/25/2013	1	Sodium	280	Yes		100	mg/kg
2101-S06-0-1	04/25/2013	1	Thallium	2.1	Yes	U	2.1	mg/kg
2101-S06-0-1	04/25/2013	1	Tin	25	Yes		1.0	mg/kg
2101-S06-0-1	04/25/2013	1	Vanadium	25	Yes		2.1	mg/kg
2101-S06-0-1	04/25/2013	1	Zinc	400	Yes		2.1	mg/kg
2101-S06-12-18	04/25/2013	1	Aluminum	6400	Yes		9.2	mg/kg
2101-S06-12-18	04/25/2013	1	Antimony	2.5	Yes		1.8	mg/kg
2101-S06-12-18	04/25/2013	1	Arsenic	8.1	Yes		0.74	mg/kg
2101-S06-12-18	04/25/2013	1	Barium	230	Yes		9.2	mg/kg
2101-S06-12-18	04/25/2013	1	Beryllium	0.31	Yes		0.28	mg/kg
2101-S06-12-18	04/25/2013	1	Cadmium	7.4	Yes		0.28	mg/kg
2101-S06-12-18	04/25/2013	1	Calcium	7300	Yes		46	mg/kg
2101-S06-12-18	04/25/2013	1	Chromium	30	Yes		0.46	mg/kg
2101-S06-12-18	04/25/2013	1	Cobalt	6.1	Yes		1.8	mg/kg
2101-S06-12-18	04/25/2013	1	Copper	110	Yes		0.92	mg/kg
2101-S06-12-18	04/25/2013	1	Iron	14000	Yes		4.6	mg/kg
2101-S06-12-18	04/25/2013	1	Lead	460	Yes		0.74	mg/kg
2101-S06-12-18	04/25/2013	1	Magnesium	3800	Yes		46	mg/kg
2101-S06-12-18	04/25/2013	1	Manganese	170	Yes		0.46	mg/kg
2101-S06-12-18	04/25/2013	1	Molybdenum	0.92	Yes	U	0.92	mg/kg
2101-S06-12-18	04/25/2013	1	Nickel	26	Yes		1.8	mg/kg
2101-S06-12-18	04/25/2013	1	Potassium	490	Yes		46	mg/kg

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sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S06-12-18	04/25/2013	1	Selenium	1.8	Yes	U	1.8	mg/kg
2101-S06-12-18	04/25/2013	1	Silver	8.5	Yes		0.46	mg/kg
2101-S06-12-18	04/25/2013	1	Sodium	160	Yes		92	mg/kg
2101-S06-12-18	04/25/2013	1	Thallium	1.8	Yes	U	1.8	mg/kg
2101-S06-12-18	04/25/2013	1	Tin	48	Yes		0.92	mg/kg
2101-S06-12-18	04/25/2013	1	Vanadium	26	Yes		1.8	mg/kg
2101-S06-12-18	04/25/2013	1	Zinc	440	Yes		1.8	mg/kg
2101-S06-1-6	04/25/2013	1	Aluminum	7300	Yes		9.8	mg/kg
2101-S06-1-6	04/25/2013	1	Antimony	2.6	Yes		2.0	mg/kg
2101-S06-1-6	04/25/2013	1	Arsenic	8.0	Yes		0.79	mg/kg
2101-S06-1-6	04/25/2013	1	Barium	120	Yes		9.8	mg/kg
2101-S06-1-6	04/25/2013	1	Beryllium	0.34	Yes		0.29	mg/kg
2101-S06-1-6	04/25/2013	1	Cadmium	9.8	Yes		0.29	mg/kg
2101-S06-1-6	04/25/2013	1	Calcium	15000	Yes		49	mg/kg
2101-S06-1-6	04/25/2013	1	Chromium	30	Yes		0.49	mg/kg
2101-S06-1-6	04/25/2013	1	Cobalt	6.0	Yes		2.0	mg/kg
2101-S06-1-6	04/25/2013	1	Copper	110	Yes		0.98	mg/kg
2101-S06-1-6	04/25/2013	1	Iron	13000	Yes		4.9	mg/kg
2101-S06-1-6	04/25/2013	1	Lead	530	Yes		0.79	mg/kg
2101-S06-1-6	04/25/2013	1	Magnesium	7200	Yes		49	mg/kg
2101-S06-1-6	04/25/2013	1	Manganese	230	Yes		0.49	mg/kg
2101-S06-1-6	04/25/2013	1	Molybdenum	1.0	Yes		0.98	mg/kg
2101-S06-1-6	04/25/2013	1	Nickel	30	Yes		2.0	mg/kg
2101-S06-1-6	04/25/2013	1	Potassium	340	Yes		49	mg/kg
2101-S06-1-6	04/25/2013	1	Selenium	2.0	Yes	U	2.0	mg/kg
2101-S06-1-6	04/25/2013	1	Silver	7.7	Yes		0.49	mg/kg
2101-S06-1-6	04/25/2013	1	Sodium	180	Yes		98	mg/kg
2101-S06-1-6	04/25/2013	1	Thallium	2.0	Yes	U	2.0	mg/kg
2101-S06-1-6	04/25/2013	1	Tin	14	Yes		0.98	mg/kg
2101-S06-1-6	04/25/2013	1	Vanadium	27	Yes		2.0	mg/kg
2101-S06-1-6	04/25/2013	1	Zinc	490	Yes		2.0	mg/kg
2101-S06-18-24	04/25/2013	1	Aluminum	6800	Yes		8.8	mg/kg
2101-S06-18-24	04/25/2013	1	Antimony	1.8	Yes	U	1.8	mg/kg
2101-S06-18-24	04/25/2013	1	Arsenic	2.9	Yes		0.70	mg/kg

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sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S06-18-24	04/25/2013	1	Barium	53	Yes		8.8	mg/kg
2101-S06-18-24	04/25/2013	1	Beryllium	0.26	Yes	U	0.26	mg/kg
2101-S06-18-24	04/25/2013	1	Cadmium	1.8	Yes		0.26	mg/kg
2101-S06-18-24	04/25/2013	1	Calcium	1700	Yes		44	mg/kg
2101-S06-18-24	04/25/2013	1	Chromium	20	Yes		0.44	mg/kg
2101-S06-18-24	04/25/2013	1	Cobalt	5.9	Yes		1.8	mg/kg
2101-S06-18-24	04/25/2013	1	Copper	99	Yes		0.88	mg/kg
2101-S06-18-24	04/25/2013	1	Iron	12000	Yes		4.4	mg/kg
2101-S06-18-24	04/25/2013	1	Lead	270	Yes		0.70	mg/kg
2101-S06-18-24	04/25/2013	1	Magnesium	1900	Yes		44	mg/kg
2101-S06-18-24	04/25/2013	1	Manganese	130	Yes		0.44	mg/kg
2101-S06-18-24	04/25/2013	1	Molybdenum	0.88	Yes	U	0.88	mg/kg
2101-S06-18-24	04/25/2013	1	Nickel	20	Yes		1.8	mg/kg
2101-S06-18-24	04/25/2013	1	Potassium	800	Yes		44	mg/kg
2101-S06-18-24	04/25/2013	1	Selenium	1.8	Yes	U	1.8	mg/kg
2101-S06-18-24	04/25/2013	1	Silver	10	Yes		0.44	mg/kg
2101-S06-18-24	04/25/2013	1	Sodium	130	Yes		88	mg/kg
2101-S06-18-24	04/25/2013	1	Thallium	1.8	Yes	U	1.8	mg/kg
2101-S06-18-24	04/25/2013	1	Tin	110	Yes		0.88	mg/kg
2101-S06-18-24	04/25/2013	1	Vanadium	22	Yes		1.8	mg/kg
2101-S06-18-24	04/25/2013	1	Zinc	110	Yes		1.8	mg/kg
2101-S06-6-12	04/25/2013	1	Aluminum	5400	Yes		8.6	mg/kg
2101-S06-6-12	04/25/2013	1	Antimony	3.8	Yes		1.7	mg/kg
2101-S06-6-12	04/25/2013	1	Arsenic	8.0	Yes		0.69	mg/kg
2101-S06-6-12	04/25/2013	1	Barium	160	Yes		8.6	mg/kg
2101-S06-6-12	04/25/2013	1	Beryllium	0.33	Yes		0.26	mg/kg
2101-S06-6-12	04/25/2013	1	Cadmium	12	Yes		0.26	mg/kg
2101-S06-6-12	04/25/2013	1	Calcium	9800	Yes		43	mg/kg
2101-S06-6-12	04/25/2013	1	Chromium	26	Yes		0.43	mg/kg
2101-S06-6-12	04/25/2013	1	Cobalt	5.2	Yes		1.7	mg/kg
2101-S06-6-12	04/25/2013	1	Copper	170	Yes		0.86	mg/kg
2101-S06-6-12	04/25/2013	1	Iron	18000	Yes		4.3	mg/kg
2101-S06-6-12	04/25/2013	1	Lead	620	Yes		0.69	mg/kg
2101-S06-6-12	04/25/2013	1	Magnesium	4000	Yes		43	mg/kg

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sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S06-6-12	04/25/2013	1	Manganese	190	Yes		0.43	mg/kg
2101-S06-6-12	04/25/2013	1	Molybdenum	1.4	Yes		0.86	mg/kg
2101-S06-6-12	04/25/2013	1	Nickel	25	Yes		1.7	mg/kg
2101-S06-6-12	04/25/2013	1	Potassium	250	Yes		43	mg/kg
2101-S06-6-12	04/25/2013	1	Selenium	1.7	Yes	U	1.7	mg/kg
2101-S06-6-12	04/25/2013	1	Silver	7.2	Yes		0.43	mg/kg
2101-S06-6-12	04/25/2013	1	Sodium	140	Yes		86	mg/kg
2101-S06-6-12	04/25/2013	1	Thallium	1.7	Yes	U	1.7	mg/kg
2101-S06-6-12	04/25/2013	1	Tin	32	Yes		0.86	mg/kg
2101-S06-6-12	04/25/2013	1	Vanadium	24	Yes		1.7	mg/kg
2101-S06-6-12	04/25/2013	1	Zinc	790	Yes		1.7	mg/kg
2101-S10-0-1	04/25/2013	1	Aluminum	7700	Yes		10	mg/kg
2101-S10-0-1	04/25/2013	1	Antimony	2.0	Yes		2.0	mg/kg
2101-S10-0-1	04/25/2013	1	Arsenic	5.1	Yes		0.82	mg/kg
2101-S10-0-1	04/25/2013	1	Barium	57	Yes		10	mg/kg
2101-S10-0-1	04/25/2013	1	Beryllium	0.31	Yes	U	0.31	mg/kg
2101-S10-0-1	04/25/2013	1	Cadmium	0.87	Yes		0.31	mg/kg
2101-S10-0-1	04/25/2013	1	Calcium	7200	Yes		51	mg/kg
2101-S10-0-1	04/25/2013	1	Chromium	23	Yes		0.51	mg/kg
2101-S10-0-1	04/25/2013	1	Cobalt	6.2	Yes		2.0	mg/kg
2101-S10-0-1	04/25/2013	1	Copper	34	Yes		1.0	mg/kg
2101-S10-0-1	04/25/2013	1	Iron	13000	Yes		5.1	mg/kg
2101-S10-0-1	04/25/2013	1	Lead	190	Yes		0.82	mg/kg
2101-S10-0-1	04/25/2013	1	Magnesium	4500	Yes		51	mg/kg
2101-S10-0-1	04/25/2013	1	Manganese	240	Yes		0.51	mg/kg
2101-S10-0-1	04/25/2013	1	Molybdenum	1.0	Yes	U	1.0	mg/kg
2101-S10-0-1	04/25/2013	1	Nickel	18	Yes		2.0	mg/kg
2101-S10-0-1	04/25/2013	1	Potassium	570	Yes		51	mg/kg
2101-S10-0-1	04/25/2013	1	Selenium	2.0	Yes	U	2.0	mg/kg
2101-S10-0-1	04/25/2013	1	Silver	11	Yes		0.51	mg/kg
2101-S10-0-1	04/25/2013	1	Sodium	160	Yes		100	mg/kg
2101-S10-0-1	04/25/2013	1	Thallium	2.0	Yes	U	2.0	mg/kg
2101-S10-0-1	04/25/2013	1	Tin	7.3	Yes		1.0	mg/kg
2101-S10-0-1	04/25/2013	1	Vanadium	29	Yes		2.0	mg/kg

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2101-S10-0-1	04/25/2013	1	Zinc	110	Yes		2.0	mg/kg
2101-S10-12-18	04/25/2013	1	Aluminum	8700	Yes		8.3	mg/kg
2101-S10-12-18	04/25/2013	1	Antimony	1.7	Yes	U	1.7	mg/kg
2101-S10-12-18	04/25/2013	1	Arsenic	3.1	Yes		0.67	mg/kg
2101-S10-12-18	04/25/2013	1	Barium	46	Yes		8.3	mg/kg
2101-S10-12-18	04/25/2013	1	Beryllium	0.33	Yes		0.25	mg/kg
2101-S10-12-18	04/25/2013	1	Cadmium	0.25	Yes		0.25	mg/kg
2101-S10-12-18	04/25/2013	1	Calcium	1200	Yes		42	mg/kg
2101-S10-12-18	04/25/2013	1	Chromium	19	Yes		0.42	mg/kg
2101-S10-12-18	04/25/2013	1	Cobalt	6.0	Yes		1.7	mg/kg
2101-S10-12-18	04/25/2013	1	Copper	16	Yes		0.83	mg/kg
2101-S10-12-18	04/25/2013	1	Iron	14000	Yes		4.2	mg/kg
2101-S10-12-18	04/25/2013	1	Lead	52	Yes		0.67	mg/kg
2101-S10-12-18	04/25/2013	1	Magnesium	2300	Yes		42	mg/kg
2101-S10-12-18	04/25/2013	1	Manganese	210	Yes		0.42	mg/kg
2101-S10-12-18	04/25/2013	1	Molybdenum	0.83	Yes	U	0.83	mg/kg
2101-S10-12-18	04/25/2013	1	Nickel	18	Yes		1.7	mg/kg
2101-S10-12-18	04/25/2013	1	Potassium	420	Yes		42	mg/kg
2101-S10-12-18	04/25/2013	1	Selenium	1.7	Yes	U	1.7	mg/kg
2101-S10-12-18	04/25/2013	1	Silver	8.1	Yes		0.42	mg/kg
2101-S10-12-18	04/25/2013	1	Sodium	83	Yes	U	83	mg/kg
2101-S10-12-18	04/25/2013	1	Thallium	1.7	Yes	U	1.7	mg/kg
2101-S10-12-18	04/25/2013	1	Tin	0.97	Yes		0.83	mg/kg
2101-S10-12-18	04/25/2013	1	Vanadium	23	Yes		1.7	mg/kg
2101-S10-12-18	04/25/2013	1	Zinc	36	Yes		1.7	mg/kg
2101-S10-1-6	04/25/2013	1	Aluminum	7600	Yes		8.3	mg/kg
2101-S10-1-6	04/25/2013	1	Antimony	1.7	Yes	U	1.7	mg/kg
2101-S10-1-6	04/25/2013	1	Arsenic	4.9	Yes		0.66	mg/kg
2101-S10-1-6	04/25/2013	1	Barium	50	Yes		8.3	mg/kg
2101-S10-1-6	04/25/2013	1	Beryllium	0.31	Yes		0.25	mg/kg
2101-S10-1-6	04/25/2013	1	Cadmium	0.83	Yes		0.25	mg/kg
2101-S10-1-6	04/25/2013	1	Calcium	2900	Yes		41	mg/kg
2101-S10-1-6	04/25/2013	1	Chromium	19	Yes		0.41	mg/kg
2101-S10-1-6	04/25/2013	1	Cobalt	5.8	Yes		1.7	mg/kg

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sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S10-1-6	04/25/2013	1	Copper	28	Yes		0.83	mg/kg
2101-S10-1-6	04/25/2013	1	Iron	13000	Yes		4.1	mg/kg
2101-S10-1-6	04/25/2013	1	Lead	170	Yes		0.66	mg/kg
2101-S10-1-6	04/25/2013	1	Magnesium	2700	Yes		41	mg/kg
2101-S10-1-6	04/25/2013	1	Manganese	200	Yes		0.41	mg/kg
2101-S10-1-6	04/25/2013	1	Molybdenum	0.83	Yes	U	0.83	mg/kg
2101-S10-1-6	04/25/2013	1	Nickel	17	Yes		1.7	mg/kg
2101-S10-1-6	04/25/2013	1	Potassium	510	Yes		41	mg/kg
2101-S10-1-6	04/25/2013	1	Selenium	1.7	Yes	U	1.7	mg/kg
2101-S10-1-6	04/25/2013	1	Silver	9.5	Yes		0.41	mg/kg
2101-S10-1-6	04/25/2013	1	Sodium	120	Yes		83	mg/kg
2101-S10-1-6	04/25/2013	1	Thallium	1.7	Yes	U	1.7	mg/kg
2101-S10-1-6	04/25/2013	1	Tin	2.3	Yes		0.83	mg/kg
2101-S10-1-6	04/25/2013	1	Vanadium	25	Yes		1.7	mg/kg
2101-S10-1-6	04/25/2013	1	Zinc	82	Yes		1.7	mg/kg
2101-S10-18-24	04/25/2013	1	Aluminum	6900	Yes		8.2	mg/kg
2101-S10-18-24	04/25/2013	1	Antimony	1.6	Yes	U	1.6	mg/kg
2101-S10-18-24	04/25/2013	1	Arsenic	1.4	Yes		0.65	mg/kg
2101-S10-18-24	04/25/2013	1	Barium	34	Yes		8.2	mg/kg
2101-S10-18-24	04/25/2013	1	Beryllium	0.25	Yes	U	0.25	mg/kg
2101-S10-18-24	04/25/2013	1	Cadmium	0.25	Yes	U	0.25	mg/kg
2101-S10-18-24	04/25/2013	1	Calcium	900	Yes		41	mg/kg
2101-S10-18-24	04/25/2013	1	Chromium	16	Yes		0.41	mg/kg
2101-S10-18-24	04/25/2013	1	Cobalt	5.8	Yes		1.6	mg/kg
2101-S10-18-24	04/25/2013	1	Copper	14	Yes		0.82	mg/kg
2101-S10-18-24	04/25/2013	1	Iron	9800	Yes		4.1	mg/kg
2101-S10-18-24	04/25/2013	1	Lead	25	Yes		0.65	mg/kg
2101-S10-18-24	04/25/2013	1	Magnesium	2800	Yes		41	mg/kg
2101-S10-18-24	04/25/2013	1	Manganese	130	Yes		0.41	mg/kg
2101-S10-18-24	04/25/2013	1	Molybdenum	0.82	Yes	U	0.82	mg/kg
2101-S10-18-24	04/25/2013	1	Nickel	24	Yes		1.6	mg/kg
2101-S10-18-24	04/25/2013	1	Potassium	690	Yes		41	mg/kg
2101-S10-18-24	04/25/2013	1	Selenium	1.6	Yes	U	1.6	mg/kg
2101-S10-18-24	04/25/2013	1	Silver	9.3	Yes		0.41	mg/kg

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sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S10-18-24	04/25/2013	1	Sodium	82	Yes	U	82	mg/kg
2101-S10-18-24	04/25/2013	1	Thallium	1.6	Yes	U	1.6	mg/kg
2101-S10-18-24	04/25/2013	1	Tin	0.82	Yes	U	0.82	mg/kg
2101-S10-18-24	04/25/2013	1	Vanadium	18	Yes		1.6	mg/kg
2101-S10-18-24	04/25/2013	1	Zinc	27	Yes		1.6	mg/kg
2101-S10-6-12	04/25/2013	1	Aluminum	8400	Yes		8.2	mg/kg
2101-S10-6-12	04/25/2013	1	Antimony	4.1	Yes		1.6	mg/kg
2101-S10-6-12	04/25/2013	1	Arsenic	6.3	Yes		0.66	mg/kg
2101-S10-6-12	04/25/2013	1	Barium	46	Yes		8.2	mg/kg
2101-S10-6-12	04/25/2013	1	Beryllium	1.0	Yes		0.25	mg/kg
2101-S10-6-12	04/25/2013	1	Cadmium	1.2	Yes		0.25	mg/kg
2101-S10-6-12	04/25/2013	1	Calcium	1200	Yes		41	mg/kg
2101-S10-6-12	04/25/2013	1	Chromium	140	Yes		0.41	mg/kg
2101-S10-6-12	04/25/2013	1	Cobalt	7.9	Yes		1.6	mg/kg
2101-S10-6-12	04/25/2013	1	Copper	26	Yes		0.82	mg/kg
2101-S10-6-12	04/25/2013	1	Iron	31000	Yes		4.1	mg/kg
2101-S10-6-12	04/25/2013	1	Lead	120	Yes		0.66	mg/kg
2101-S10-6-12	04/25/2013	1	Magnesium	1700	Yes		41	mg/kg
2101-S10-6-12	04/25/2013	1	Manganese	240	Yes		0.41	mg/kg
2101-S10-6-12	04/25/2013	1	Molybdenum	0.82	Yes	U	0.82	mg/kg
2101-S10-6-12	04/25/2013	1	Nickel	280	Yes		1.6	mg/kg
2101-S10-6-12	04/25/2013	1	Potassium	280	Yes		41	mg/kg
2101-S10-6-12	04/25/2013	1	Selenium	1.6	Yes	U	1.6	mg/kg
2101-S10-6-12	04/25/2013	1	Silver	6.4	Yes		0.41	mg/kg
2101-S10-6-12	04/25/2013	1	Sodium	82	Yes	U	82	mg/kg
2101-S10-6-12	04/25/2013	1	Thallium	1.6	Yes	U	1.6	mg/kg
2101-S10-6-12	04/25/2013	1	Tin	17	Yes		0.82	mg/kg
2101-S10-6-12	04/25/2013	1	Vanadium	28	Yes		1.6	mg/kg
2101-S10-6-12	04/25/2013	1	Zinc	70	Yes		1.6	mg/kg
2101-S11-0-1	04/25/2013	1	Aluminum	7500	Yes		9.9	mg/kg
2101-S11-0-1	04/25/2013	1	Antimony	2.2	Yes		2.0	mg/kg
2101-S11-0-1	04/25/2013	1	Arsenic	5.0	Yes		0.79	mg/kg
2101-S11-0-1	04/25/2013	1	Barium	75	Yes		9.9	mg/kg
2101-S11-0-1	04/25/2013	1	Beryllium	0.30	Yes	U	0.30	mg/kg

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S11-0-1	04/25/2013	1	Cadmium	7.3	Yes		0.30	mg/kg
2101-S11-0-1	04/25/2013	1	Calcium	2400	Yes		50	mg/kg
2101-S11-0-1	04/25/2013	1	Chromium	30	Yes		0.50	mg/kg
2101-S11-0-1	04/25/2013	1	Cobalt	7.2	Yes		2.0	mg/kg
2101-S11-0-1	04/25/2013	1	Copper	54	Yes		0.99	mg/kg
2101-S11-0-1	04/25/2013	1	Iron	13000	Yes		5.0	mg/kg
2101-S11-0-1	04/25/2013	1	Lead	260	Yes		0.79	mg/kg
2101-S11-0-1	04/25/2013	1	Magnesium	2300	Yes		50	mg/kg
2101-S11-0-1	04/25/2013	1	Manganese	240	Yes		0.50	mg/kg
2101-S11-0-1	04/25/2013	1	Molybdenum	0.99	Yes	U	0.99	mg/kg
2101-S11-0-1	04/25/2013	1	Nickel	25	Yes		2.0	mg/kg
2101-S11-0-1	04/25/2013	1	Potassium	760	Yes		50	mg/kg
2101-S11-0-1	04/25/2013	1	Selenium	2.0	Yes	U	2.0	mg/kg
2101-S11-0-1	04/25/2013	1	Silver	12	Yes		0.50	mg/kg
2101-S11-0-1	04/25/2013	1	Sodium	350	Yes		99	mg/kg
2101-S11-0-1	04/25/2013	1	Thallium	2.0	Yes	U	2.0	mg/kg
2101-S11-0-1	04/25/2013	1	Tin	6.7	Yes		0.99	mg/kg
2101-S11-0-1	04/25/2013	1	Vanadium	44	Yes		2.0	mg/kg
2101-S11-0-1	04/25/2013	1	Zinc	190	Yes		2.0	mg/kg
2101-S11-12-18	04/25/2013	1	Aluminum	6200	Yes		8.1	mg/kg
2101-S11-12-18	04/25/2013	1	Antimony	1.6	Yes	U	1.6	mg/kg
2101-S11-12-18	04/25/2013	1	Arsenic	1.0	Yes		0.65	mg/kg
2101-S11-12-18	04/25/2013	1	Barium	34	Yes		8.1	mg/kg
2101-S11-12-18	04/25/2013	1	Beryllium	0.24	Yes	U	0.24	mg/kg
2101-S11-12-18	04/25/2013	1	Cadmium	1.3	Yes		0.24	mg/kg
2101-S11-12-18	04/25/2013	1	Calcium	1100	Yes		41	mg/kg
2101-S11-12-18	04/25/2013	1	Chromium	17	Yes		0.41	mg/kg
2101-S11-12-18	04/25/2013	1	Cobalt	6.0	Yes		1.6	mg/kg
2101-S11-12-18	04/25/2013	1	Copper	17	Yes		0.81	mg/kg
2101-S11-12-18	04/25/2013	1	Iron	9400	Yes		4.1	mg/kg
2101-S11-12-18	04/25/2013	1	Lead	24	Yes		0.65	mg/kg
2101-S11-12-18	04/25/2013	1	Magnesium	2800	Yes		41	mg/kg
2101-S11-12-18	04/25/2013	1	Manganese	190	Yes		0.41	mg/kg
2101-S11-12-18	04/25/2013	1	Molybdenum	0.81	Yes	U	0.81	mg/kg

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2101-S11-12-18	04/25/2013	1	Nickel	26	Yes		1.6	mg/kg
2101-S11-12-18	04/25/2013	1	Potassium	740	Yes		41	mg/kg
2101-S11-12-18	04/25/2013	1	Selenium	1.6	Yes	U	1.6	mg/kg
2101-S11-12-18	04/25/2013	1	Silver	9.9	Yes		0.41	mg/kg
2101-S11-12-18	04/25/2013	1	Sodium	100	Yes		81	mg/kg
2101-S11-12-18	04/25/2013	1	Thallium	1.6	Yes	U	1.6	mg/kg
2101-S11-12-18	04/25/2013	1	Tin	0.81	Yes	U	0.81	mg/kg
2101-S11-12-18	04/25/2013	1	Vanadium	18	Yes		1.6	mg/kg
2101-S11-12-18	04/25/2013	1	Zinc	32	Yes		1.6	mg/kg
2101-S11-1-6	04/25/2013	1	Aluminum	6400	Yes		8.4	mg/kg
2101-S11-1-6	04/25/2013	1	Antimony	1.7	Yes	U	1.7	mg/kg
2101-S11-1-6	04/25/2013	1	Arsenic	3.8	Yes		0.67	mg/kg
2101-S11-1-6	04/25/2013	1	Barium	55	Yes		8.4	mg/kg
2101-S11-1-6	04/25/2013	1	Beryllium	0.25	Yes	U	0.25	mg/kg
2101-S11-1-6	04/25/2013	1	Cadmium	6.6	Yes		0.25	mg/kg
2101-S11-1-6	04/25/2013	1	Calcium	1600	Yes		42	mg/kg
2101-S11-1-6	04/25/2013	1	Chromium	23	Yes		0.42	mg/kg
2101-S11-1-6	04/25/2013	1	Cobalt	8.1	Yes		1.7	mg/kg
2101-S11-1-6	04/25/2013	1	Copper	38	Yes		0.84	mg/kg
2101-S11-1-6	04/25/2013	1	Iron	11000	Yes		4.2	mg/kg
2101-S11-1-6	04/25/2013	1	Lead	170	Yes		0.67	mg/kg
2101-S11-1-6	04/25/2013	1	Magnesium	2100	Yes		42	mg/kg
2101-S11-1-6	04/25/2013	1	Manganese	180	Yes		0.42	mg/kg
2101-S11-1-6	04/25/2013	1	Molybdenum	0.84	Yes	U	0.84	mg/kg
2101-S11-1-6	04/25/2013	1	Nickel	21	Yes		1.7	mg/kg
2101-S11-1-6	04/25/2013	1	Potassium	560	Yes		42	mg/kg
2101-S11-1-6	04/25/2013	1	Selenium	1.7	Yes	U	1.7	mg/kg
2101-S11-1-6	04/25/2013	1	Silver	11	Yes		0.42	mg/kg
2101-S11-1-6	04/25/2013	1	Sodium	140	Yes		84	mg/kg
2101-S11-1-6	04/25/2013	1	Thallium	1.7	Yes	U	1.7	mg/kg
2101-S11-1-6	04/25/2013	1	Tin	4.3	Yes		0.84	mg/kg
2101-S11-1-6	04/25/2013	1	Vanadium	30	Yes		1.7	mg/kg
2101-S11-1-6	04/25/2013	1	Zinc	130	Yes		1.7	mg/kg
2101-S11-18-24	04/25/2013	1	Aluminum	5600	Yes		8.2	mg/kg

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sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S11-18-24	04/25/2013	1	Antimony	1.6	Yes	U	1.6	mg/kg
2101-S11-18-24	04/25/2013	1	Arsenic	0.66	Yes		0.66	mg/kg
2101-S11-18-24	04/25/2013	1	Barium	28	Yes		8.2	mg/kg
2101-S11-18-24	04/25/2013	1	Beryllium	0.25	Yes	U	0.25	mg/kg
2101-S11-18-24	04/25/2013	1	Cadmium	0.78	Yes		0.25	mg/kg
2101-S11-18-24	04/25/2013	1	Calcium	1000	Yes		41	mg/kg
2101-S11-18-24	04/25/2013	1	Chromium	18	Yes		0.41	mg/kg
2101-S11-18-24	04/25/2013	1	Cobalt	5.4	Yes		1.6	mg/kg
2101-S11-18-24	04/25/2013	1	Copper	13	Yes		0.82	mg/kg
2101-S11-18-24	04/25/2013	1	Iron	10000	Yes		4.1	mg/kg
2101-S11-18-24	04/25/2013	1	Lead	14	Yes		0.66	mg/kg
2101-S11-18-24	04/25/2013	1	Magnesium	2300	Yes		41	mg/kg
2101-S11-18-24	04/25/2013	1	Manganese	170	Yes		0.41	mg/kg
2101-S11-18-24	04/25/2013	1	Molybdenum	0.82	Yes	U	0.82	mg/kg
2101-S11-18-24	04/25/2013	1	Nickel	21	Yes		1.6	mg/kg
2101-S11-18-24	04/25/2013	1	Potassium	760	Yes		41	mg/kg
2101-S11-18-24	04/25/2013	1	Selenium	1.6	Yes	U	1.6	mg/kg
2101-S11-18-24	04/25/2013	1	Silver	9.9	Yes		0.41	mg/kg
2101-S11-18-24	04/25/2013	1	Sodium	110	Yes		82	mg/kg
2101-S11-18-24	04/25/2013	1	Thallium	1.6	Yes	U	1.6	mg/kg
2101-S11-18-24	04/25/2013	1	Tin	0.82	Yes	U	0.82	mg/kg
2101-S11-18-24	04/25/2013	1	Vanadium	18	Yes		1.6	mg/kg
2101-S11-18-24	04/25/2013	1	Zinc	24	Yes		1.6	mg/kg
2101-S11-6-12	04/25/2013	1	Aluminum	6300	Yes		8.6	mg/kg
2101-S11-6-12	04/25/2013	1	Antimony	1.7	Yes	U	1.7	mg/kg
2101-S11-6-12	04/25/2013	1	Arsenic	0.90	Yes		0.69	mg/kg
2101-S11-6-12	04/25/2013	1	Barium	35	Yes		8.6	mg/kg
2101-S11-6-12	04/25/2013	1	Beryllium	0.26	Yes	U	0.26	mg/kg
2101-S11-6-12	04/25/2013	1	Cadmium	1.8	Yes		0.26	mg/kg
2101-S11-6-12	04/25/2013	1	Calcium	800	Yes		43	mg/kg
2101-S11-6-12	04/25/2013	1	Chromium	17	Yes		0.43	mg/kg
2101-S11-6-12	04/25/2013	1	Cobalt	5.6	Yes		1.7	mg/kg
2101-S11-6-12	04/25/2013	1	Copper	18	Yes		0.86	mg/kg
2101-S11-6-12	04/25/2013	1	Iron	9600	Yes		4.3	mg/kg

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sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S11-6-12	04/25/2013	1	Lead	21	Yes		0.69	mg/kg
2101-S11-6-12	04/25/2013	1	Magnesium	2300	Yes		43	mg/kg
2101-S11-6-12	04/25/2013	1	Manganese	170	Yes		0.43	mg/kg
2101-S11-6-12	04/25/2013	1	Molybdenum	0.86	Yes	U	0.86	mg/kg
2101-S11-6-12	04/25/2013	1	Nickel	19	Yes		1.7	mg/kg
2101-S11-6-12	04/25/2013	1	Potassium	680	Yes		43	mg/kg
2101-S11-6-12	04/25/2013	1	Selenium	1.7	Yes	U	1.7	mg/kg
2101-S11-6-12	04/25/2013	1	Silver	10	Yes		0.43	mg/kg
2101-S11-6-12	04/25/2013	1	Sodium	86	Yes	U	86	mg/kg
2101-S11-6-12	04/25/2013	1	Thallium	1.7	Yes	U	1.7	mg/kg
2101-S11-6-12	04/25/2013	1	Tin	0.86	Yes	U	0.86	mg/kg
2101-S11-6-12	04/25/2013	1	Vanadium	19	Yes		1.7	mg/kg
2101-S11-6-12	04/25/2013	1	Zinc	29	Yes		1.7	mg/kg
2101-S14-0-1	04/25/2013	1	Aluminum	10000	Yes		10	mg/kg
2101-S14-0-1	04/25/2013	1	Antimony	2.1	Yes	U	2.1	mg/kg
2101-S14-0-1	04/25/2013	1	Arsenic	11	Yes		0.84	mg/kg
2101-S14-0-1	04/25/2013	1	Barium	97	Yes		10	mg/kg
2101-S14-0-1	04/25/2013	1	Beryllium	0.31	Yes	U	0.31	mg/kg
2101-S14-0-1	04/25/2013	1	Cadmium	0.65	Yes		0.31	mg/kg
2101-S14-0-1	04/25/2013	1	Calcium	4200	Yes		52	mg/kg
2101-S14-0-1	04/25/2013	1	Chromium	26	Yes		0.52	mg/kg
2101-S14-0-1	04/25/2013	1	Cobalt	7.3	Yes		2.1	mg/kg
2101-S14-0-1	04/25/2013	1	Copper	45	Yes		1.0	mg/kg
2101-S14-0-1	04/25/2013	1	Iron	16000	Yes		5.2	mg/kg
2101-S14-0-1	04/25/2013	1	Lead	140	Yes		0.84	mg/kg
2101-S14-0-1	04/25/2013	1	Magnesium	2900	Yes		52	mg/kg
2101-S14-0-1	04/25/2013	1	Manganese	300	Yes		0.52	mg/kg
2101-S14-0-1	04/25/2013	1	Molybdenum	1.0	Yes	U	1.0	mg/kg
2101-S14-0-1	04/25/2013	1	Nickel	17	Yes		2.1	mg/kg
2101-S14-0-1	04/25/2013	1	Potassium	1000	Yes		52	mg/kg
2101-S14-0-1	04/25/2013	1	Selenium	2.1	Yes	U	2.1	mg/kg
2101-S14-0-1	04/25/2013	1	Silver	15	Yes		0.52	mg/kg
2101-S14-0-1	04/25/2013	1	Sodium	100	Yes	U	100	mg/kg
2101-S14-0-1	04/25/2013	1	Thallium	2.1	Yes	U	2.1	mg/kg

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sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S14-0-1	04/25/2013	1	Tin	4.0	Yes		1.0	mg/kg
2101-S14-0-1	04/25/2013	1	Vanadium	29	Yes		2.1	mg/kg
2101-S14-0-1	04/25/2013	1	Zinc	130	Yes		2.1	mg/kg
2101-S14-1-6	04/25/2013	1	Aluminum	7100	Yes		9.3	mg/kg
2101-S14-1-6	04/25/2013	1	Antimony	2.1	Yes		1.9	mg/kg
2101-S14-1-6	04/25/2013	1	Arsenic	4.6	Yes		0.75	mg/kg
2101-S14-1-6	04/25/2013	1	Barium	97	Yes		9.3	mg/kg
2101-S14-1-6	04/25/2013	1	Beryllium	0.32	Yes		0.28	mg/kg
2101-S14-1-6	04/25/2013	1	Cadmium	0.68	Yes		0.28	mg/kg
2101-S14-1-6	04/25/2013	1	Calcium	6400	Yes		47	mg/kg
2101-S14-1-6	04/25/2013	1	Chromium	21	Yes		0.47	mg/kg
2101-S14-1-6	04/25/2013	1	Cobalt	8.8	Yes		1.9	mg/kg
2101-S14-1-6	04/25/2013	1	Copper	95	Yes		0.93	mg/kg
2101-S14-1-6	04/25/2013	1	Iron	14000	Yes		4.7	mg/kg
2101-S14-1-6	04/25/2013	1	Lead	140	Yes		0.75	mg/kg
2101-S14-1-6	04/25/2013	1	Magnesium	3500	Yes		47	mg/kg
2101-S14-1-6	04/25/2013	1	Manganese	290	Yes		0.47	mg/kg
2101-S14-1-6	04/25/2013	1	Molybdenum	4.6	Yes		0.93	mg/kg
2101-S14-1-6	04/25/2013	1	Nickel	13	Yes		1.9	mg/kg
2101-S14-1-6	04/25/2013	1	Potassium	830	Yes		47	mg/kg
2101-S14-1-6	04/25/2013	1	Selenium	1.9	Yes	U	1.9	mg/kg
2101-S14-1-6	04/25/2013	1	Silver	11	Yes		0.47	mg/kg
2101-S14-1-6	04/25/2013	1	Sodium	93	Yes	U	93	mg/kg
2101-S14-1-6	04/25/2013	1	Thallium	1.9	Yes	U	1.9	mg/kg
2101-S14-1-6	04/25/2013	1	Tin	54	Yes		0.93	mg/kg
2101-S14-1-6	04/25/2013	1	Vanadium	19	Yes		1.9	mg/kg
2101-S14-1-6	04/25/2013	1	Zinc	460	Yes		1.9	mg/kg
2101-S14-6-12	04/25/2013	1	Aluminum	7000	Yes		9.3	mg/kg
2101-S14-6-12	04/25/2013	1	Antimony	7.5	Yes		1.9	mg/kg
2101-S14-6-12	04/25/2013	1	Arsenic	9.8	Yes		0.74	mg/kg
2101-S14-6-12	04/25/2013	1	Barium	160	Yes		9.3	mg/kg
2101-S14-6-12	04/25/2013	1	Beryllium	0.31	Yes		0.28	mg/kg
2101-S14-6-12	04/25/2013	1	Cadmium	180	Yes		0.28	mg/kg
2101-S14-6-12	04/25/2013	1	Calcium	20000	Yes		46	mg/kg

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sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S14-6-12	04/25/2013	1	Chromium	54	Yes		0.46	mg/kg
2101-S14-6-12	04/25/2013	1	Cobalt	11	Yes		1.9	mg/kg
2101-S14-6-12	04/25/2013	1	Copper	150	Yes		0.93	mg/kg
2101-S14-6-12	04/25/2013	1	Iron	16000	Yes		4.6	mg/kg
2101-S14-6-12	04/25/2013	1	Lead	690	Yes		0.74	mg/kg
2101-S14-6-12	04/25/2013	1	Magnesium	6100	Yes		46	mg/kg
2101-S14-6-12	04/25/2013	1	Manganese	210	Yes		0.46	mg/kg
2101-S14-6-12	04/25/2013	1	Molybdenum	1.8	Yes		0.93	mg/kg
2101-S14-6-12	04/25/2013	1	Nickel	50	Yes		1.9	mg/kg
2101-S14-6-12	04/25/2013	1	Potassium	620	Yes		46	mg/kg
2101-S14-6-12	04/25/2013	1	Selenium	1.9	Yes	U	1.9	mg/kg
2101-S14-6-12	04/25/2013	1	Silver	8.4	Yes		0.46	mg/kg
2101-S14-6-12	04/25/2013	1	Sodium	93	Yes	U	93	mg/kg
2101-S14-6-12	04/25/2013	1	Thallium	1.9	Yes	U	1.9	mg/kg
2101-S14-6-12	04/25/2013	1	Tin	76	Yes		0.93	mg/kg
2101-S14-6-12	04/25/2013	1	Vanadium	25	Yes		1.9	mg/kg
2101-S14-6-12	04/25/2013	1	Zinc	550	Yes		1.9	mg/kg
2101-S15-0-1	04/25/2013	1	Aluminum	11000	Yes		10	mg/kg
2101-S15-0-1	04/25/2013	1	Antimony	2.0	Yes	U	2.0	mg/kg
2101-S15-0-1	04/25/2013	1	Arsenic	13	Yes		0.80	mg/kg
2101-S15-0-1	04/25/2013	1	Barium	91	Yes		10	mg/kg
2101-S15-0-1	04/25/2013	1	Beryllium	0.40	Yes		0.30	mg/kg
2101-S15-0-1	04/25/2013	1	Cadmium	4.1	Yes		0.30	mg/kg
2101-S15-0-1	04/25/2013	1	Calcium	3400	Yes		50	mg/kg
2101-S15-0-1	04/25/2013	1	Chromium	22	Yes		0.50	mg/kg
2101-S15-0-1	04/25/2013	1	Cobalt	6.7	Yes		2.0	mg/kg
2101-S15-0-1	04/25/2013	1	Copper	35	Yes		1.0	mg/kg
2101-S15-0-1	04/25/2013	1	Iron	16000	Yes		5.0	mg/kg
2101-S15-0-1	04/25/2013	1	Lead	110	Yes		0.80	mg/kg
2101-S15-0-1	04/25/2013	1	Magnesium	2900	Yes		50	mg/kg
2101-S15-0-1	04/25/2013	1	Manganese	260	Yes		0.50	mg/kg
2101-S15-0-1	04/25/2013	1	Molybdenum	1.0	Yes	U	1.0	mg/kg
2101-S15-0-1	04/25/2013	1	Nickel	16	Yes		2.0	mg/kg
2101-S15-0-1	04/25/2013	1	Potassium	850	Yes		50	mg/kg

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S15-0-1	04/25/2013	1	Selenium	2.0	Yes	U	2.0	mg/kg
2101-S15-0-1	04/25/2013	1	Silver	14	Yes		0.50	mg/kg
2101-S15-0-1	04/25/2013	1	Sodium	100	Yes	U	100	mg/kg
2101-S15-0-1	04/25/2013	1	Thallium	2.0	Yes	U	2.0	mg/kg
2101-S15-0-1	04/25/2013	1	Tin	4.2	Yes		1.0	mg/kg
2101-S15-0-1	04/25/2013	1	Vanadium	28	Yes		2.0	mg/kg
2101-S15-0-1	04/25/2013	1	Zinc	150	Yes		2.0	mg/kg
2101-S15-1-6	04/25/2013	1	Aluminum	6800	Yes		9.5	mg/kg
2101-S15-1-6	04/25/2013	1	Antimony	1.9	Yes	U	1.9	mg/kg
2101-S15-1-6	04/25/2013	1	Arsenic	4.5	Yes		0.76	mg/kg
2101-S15-1-6	04/25/2013	1	Barium	71	Yes		9.5	mg/kg
2101-S15-1-6	04/25/2013	1	Beryllium	0.31	Yes		0.29	mg/kg
2101-S15-1-6	04/25/2013	1	Cadmium	1.7	Yes		0.29	mg/kg
2101-S15-1-6	04/25/2013	1	Calcium	4700	Yes		48	mg/kg
2101-S15-1-6	04/25/2013	1	Chromium	15	Yes		0.48	mg/kg
2101-S15-1-6	04/25/2013	1	Cobalt	5.4	Yes		1.9	mg/kg
2101-S15-1-6	04/25/2013	1	Copper	30	Yes		0.95	mg/kg
2101-S15-1-6	04/25/2013	1	Iron	13000	Yes		4.8	mg/kg
2101-S15-1-6	04/25/2013	1	Lead	98	Yes		0.76	mg/kg
2101-S15-1-6	04/25/2013	1	Magnesium	2500	Yes		48	mg/kg
2101-S15-1-6	04/25/2013	1	Manganese	210	Yes		0.48	mg/kg
2101-S15-1-6	04/25/2013	1	Molybdenum	0.95	Yes	U	0.95	mg/kg
2101-S15-1-6	04/25/2013	1	Nickel	13	Yes		1.9	mg/kg
2101-S15-1-6	04/25/2013	1	Potassium	850	Yes		48	mg/kg
2101-S15-1-6	04/25/2013	1	Selenium	1.9	Yes	U	1.9	mg/kg
2101-S15-1-6	04/25/2013	1	Silver	10	Yes		0.48	mg/kg
2101-S15-1-6	04/25/2013	1	Sodium	95	Yes	U	95	mg/kg
2101-S15-1-6	04/25/2013	1	Thallium	1.9	Yes	U	1.9	mg/kg
2101-S15-1-6	04/25/2013	1	Tin	3.0	Yes		0.95	mg/kg
2101-S15-1-6	04/25/2013	1	Vanadium	22	Yes		1.9	mg/kg
2101-S15-1-6	04/25/2013	1	Zinc	120	Yes		1.9	mg/kg
2101-S15-6-12	04/25/2013	1	Aluminum	7000	Yes		8.2	mg/kg
2101-S15-6-12	04/25/2013	1	Antimony	8.1	Yes		1.6	mg/kg
2101-S15-6-12	04/25/2013	1	Arsenic	11	Yes		0.66	mg/kg

Note: This printed Excel file is excerpted from the original data spreadsheet.

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S15-6-12	04/25/2013	1	Barium	110	Yes		8.2	mg/kg
2101-S15-6-12	04/25/2013	1	Beryllium	0.29	Yes		0.25	mg/kg
2101-S15-6-12	04/25/2013	1	Cadmium	590	Yes		0.25	mg/kg
2101-S15-6-12	04/25/2013	1	Calcium	12000	Yes		41	mg/kg
2101-S15-6-12	04/25/2013	1	Chromium	20	Yes		0.41	mg/kg
2101-S15-6-12	04/25/2013	1	Cobalt	7.1	Yes		1.6	mg/kg
2101-S15-6-12	04/25/2013	1	Copper	230	Yes		0.82	mg/kg
2101-S15-6-12	04/25/2013	1	Iron	14000	Yes		4.1	mg/kg
2101-S15-6-12	04/25/2013	1	Lead	960	Yes		0.66	mg/kg
2101-S15-6-12	04/25/2013	1	Magnesium	3100	Yes		41	mg/kg
2101-S15-6-12	04/25/2013	1	Manganese	210	Yes		0.41	mg/kg
2101-S15-6-12	04/25/2013	1	Molybdenum	1.1	Yes		0.82	mg/kg
2101-S15-6-12	04/25/2013	1	Nickel	81	Yes		1.6	mg/kg
2101-S15-6-12	04/25/2013	1	Potassium	790	Yes		41	mg/kg
2101-S15-6-12	04/25/2013	1	Selenium	1.7	Yes		1.6	mg/kg
2101-S15-6-12	04/25/2013	1	Silver	11	Yes		0.41	mg/kg
2101-S15-6-12	04/25/2013	1	Sodium	82	Yes	U	82	mg/kg
2101-S15-6-12	04/25/2013	1	Thallium	1.6	Yes	U	1.6	mg/kg
2101-S15-6-12	04/25/2013	1	Tin	82	Yes		0.82	mg/kg
2101-S15-6-12	04/25/2013	1	Vanadium	29	Yes		1.6	mg/kg
2101-S15-6-12	04/25/2013	1	Zinc	1100	Yes		1.6	mg/kg
2101-S16-12-18	04/25/2013	1	Aluminum	6300	Yes		8.4	mg/kg
2101-S16-12-18	04/25/2013	1	Antimony	1.7	Yes	U	1.7	mg/kg
2101-S16-12-18	04/25/2013	1	Arsenic	2.0	Yes		0.67	mg/kg
2101-S16-12-18	04/25/2013	1	Barium	51	Yes		8.4	mg/kg
2101-S16-12-18	04/25/2013	1	Beryllium	0.25	Yes	U	0.25	mg/kg
2101-S16-12-18	04/25/2013	1	Cadmium	7.6	Yes		0.25	mg/kg
2101-S16-12-18	04/25/2013	1	Calcium	900	Yes		42	mg/kg
2101-S16-12-18	04/25/2013	1	Chromium	18	Yes		0.42	mg/kg
2101-S16-12-18	04/25/2013	1	Cobalt	6.0	Yes		1.7	mg/kg
2101-S16-12-18	04/25/2013	1	Copper	25	Yes		0.84	mg/kg
2101-S16-12-18	04/25/2013	1	Iron	11000	Yes		4.2	mg/kg
2101-S16-12-18	04/25/2013	1	Lead	55	Yes		0.67	mg/kg
2101-S16-12-18	04/25/2013	1	Magnesium	1800	Yes		42	mg/kg

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sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S16-12-18	04/25/2013	1	Manganese	320	Yes		0.42	mg/kg
2101-S16-12-18	04/25/2013	1	Molybdenum	0.84	Yes	U	0.84	mg/kg
2101-S16-12-18	04/25/2013	1	Nickel	22	Yes		1.7	mg/kg
2101-S16-12-18	04/25/2013	1	Potassium	780	Yes		42	mg/kg
2101-S16-12-18	04/25/2013	1	Selenium	1.7	Yes	U	1.7	mg/kg
2101-S16-12-18	04/25/2013	1	Silver	8.9	Yes		0.42	mg/kg
2101-S16-12-18	04/25/2013	1	Sodium	190	Yes		84	mg/kg
2101-S16-12-18	04/25/2013	1	Thallium	1.7	Yes	U	1.7	mg/kg
2101-S16-12-18	04/25/2013	1	Tin	1.8	Yes		0.84	mg/kg
2101-S16-12-18	04/25/2013	1	Vanadium	21	Yes		1.7	mg/kg
2101-S16-12-18	04/25/2013	1	Zinc	49	Yes		1.7	mg/kg
2101-S16-18-24	04/25/2013	1	Aluminum	8400	Yes		8.2	mg/kg
2101-S16-18-24	04/25/2013	1	Antimony	1.6	Yes	U	1.6	mg/kg
2101-S16-18-24	04/25/2013	1	Arsenic	1.6	Yes		0.66	mg/kg
2101-S16-18-24	04/25/2013	1	Barium	61	Yes		8.2	mg/kg
2101-S16-18-24	04/25/2013	1	Beryllium	0.26	Yes		0.25	mg/kg
2101-S16-18-24	04/25/2013	1	Cadmium	4.0	Yes		0.25	mg/kg
2101-S16-18-24	04/25/2013	1	Calcium	1300	Yes		41	mg/kg
2101-S16-18-24	04/25/2013	1	Chromium	30	Yes		0.41	mg/kg
2101-S16-18-24	04/25/2013	1	Cobalt	7.6	Yes		1.6	mg/kg
2101-S16-18-24	04/25/2013	1	Copper	28	Yes		0.82	mg/kg
2101-S16-18-24	04/25/2013	1	Iron	16000	Yes		4.1	mg/kg
2101-S16-18-24	04/25/2013	1	Lead	14	Yes		0.66	mg/kg
2101-S16-18-24	04/25/2013	1	Magnesium	2700	Yes		41	mg/kg
2101-S16-18-24	04/25/2013	1	Manganese	260	Yes		0.41	mg/kg
2101-S16-18-24	04/25/2013	1	Molybdenum	0.82	Yes	U	0.82	mg/kg
2101-S16-18-24	04/25/2013	1	Nickel	32	Yes		1.6	mg/kg
2101-S16-18-24	04/25/2013	1	Potassium	1500	Yes		41	mg/kg
2101-S16-18-24	04/25/2013	1	Selenium	1.6	Yes	U	1.6	mg/kg
2101-S16-18-24	04/25/2013	1	Silver	14	Yes		0.41	mg/kg
2101-S16-18-24	04/25/2013	1	Sodium	82	Yes	U	82	mg/kg
2101-S16-18-24	04/25/2013	1	Thallium	1.6	Yes	U	1.6	mg/kg
2101-S16-18-24	04/25/2013	1	Tin	1.3	Yes		0.82	mg/kg
2101-S16-18-24	04/25/2013	1	Vanadium	25	Yes		1.6	mg/kg

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sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S16-18-24	04/25/2013	1	Zinc	40	Yes		1.6	mg/kg
2101-S16-6-12	04/25/2013	1	Aluminum	7000	Yes		8.5	mg/kg
2101-S16-6-12	04/25/2013	1	Antimony	1.7	Yes	U	1.7	mg/kg
2101-S16-6-12	04/25/2013	1	Arsenic	1.1	Yes		0.68	mg/kg
2101-S16-6-12	04/25/2013	1	Barium	38	Yes		8.5	mg/kg
2101-S16-6-12	04/25/2013	1	Beryllium	0.26	Yes	U	0.26	mg/kg
2101-S16-6-12	04/25/2013	1	Cadmium	2.0	Yes		0.26	mg/kg
2101-S16-6-12	04/25/2013	1	Calcium	980	Yes		43	mg/kg
2101-S16-6-12	04/25/2013	1	Chromium	20	Yes		0.43	mg/kg
2101-S16-6-12	04/25/2013	1	Cobalt	6.2	Yes		1.7	mg/kg
2101-S16-6-12	04/25/2013	1	Copper	19	Yes		0.85	mg/kg
2101-S16-6-12	04/25/2013	1	Iron	10000	Yes		4.3	mg/kg
2101-S16-6-12	04/25/2013	1	Lead	21	Yes		0.68	mg/kg
2101-S16-6-12	04/25/2013	1	Magnesium	2400	Yes		43	mg/kg
2101-S16-6-12	04/25/2013	1	Manganese	190	Yes		0.43	mg/kg
2101-S16-6-12	04/25/2013	1	Molybdenum	0.85	Yes	U	0.85	mg/kg
2101-S16-6-12	04/25/2013	1	Nickel	21	Yes		1.7	mg/kg
2101-S16-6-12	04/25/2013	1	Potassium	780	Yes		43	mg/kg
2101-S16-6-12	04/25/2013	1	Selenium	1.7	Yes	U	1.7	mg/kg
2101-S16-6-12	04/25/2013	1	Silver	11	Yes		0.43	mg/kg
2101-S16-6-12	04/25/2013	1	Sodium	110	Yes		85	mg/kg
2101-S16-6-12	04/25/2013	1	Thallium	1.7	Yes	U	1.7	mg/kg
2101-S16-6-12	04/25/2013	1	Tin	0.85	Yes	U	0.85	mg/kg
2101-S16-6-12	04/25/2013	1	Vanadium	21	Yes		1.7	mg/kg
2101-S16-6-12	04/25/2013	1	Zinc	29	Yes		1.7	mg/kg
2101-S04-0-1	04/26/2013	1	Aluminum	9500	Yes		12	mg/kg
2101-S04-0-1	04/26/2013	1	Antimony	2.4	Yes	U	2.4	mg/kg
2101-S04-0-1	04/26/2013	1	Arsenic	8.5	Yes		0.95	mg/kg
2101-S04-0-1	04/26/2013	1	Barium	94	Yes		12	mg/kg
2101-S04-0-1	04/26/2013	1	Beryllium	0.35	Yes	U	0.35	mg/kg
2101-S04-0-1	04/26/2013	1	Cadmium	2.5	Yes		0.35	mg/kg
2101-S04-0-1	04/26/2013	1	Calcium	11000	Yes		59	mg/kg
2101-S04-0-1	04/26/2013	1	Chromium	28	Yes		0.59	mg/kg
2101-S04-0-1	04/26/2013	1	Cobalt	6.7	Yes		2.4	mg/kg

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sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S04-0-1	04/26/2013	1	Copper	51	Yes		1.2	mg/kg
2101-S04-0-1	04/26/2013	1	Iron	15000	Yes		5.9	mg/kg
2101-S04-0-1	04/26/2013	1	Lead	190	Yes		0.95	mg/kg
2101-S04-0-1	04/26/2013	1	Magnesium	5500	Yes		59	mg/kg
2101-S04-0-1	04/26/2013	1	Manganese	340	Yes		0.59	mg/kg
2101-S04-0-1	04/26/2013	1	Molybdenum	1.2	Yes	U	1.2	mg/kg
2101-S04-0-1	04/26/2013	1	Nickel	20	Yes		2.4	mg/kg
2101-S04-0-1	04/26/2013	1	Potassium	600	Yes		59	mg/kg
2101-S04-0-1	04/26/2013	1	Selenium	2.4	Yes	U	2.4	mg/kg
2101-S04-0-1	04/26/2013	1	Silver	9.9	Yes		0.59	mg/kg
2101-S04-0-1	04/26/2013	1	Sodium	620	Yes		120	mg/kg
2101-S04-0-1	04/26/2013	1	Thallium	2.4	Yes	U	2.4	mg/kg
2101-S04-0-1	04/26/2013	1	Tin	6.0	Yes		1.2	mg/kg
2101-S04-0-1	04/26/2013	1	Vanadium	33	Yes		2.4	mg/kg
2101-S04-0-1	04/26/2013	1	Zinc	200	Yes		2.4	mg/kg
2101-S04-12-18	04/26/2013	1	Aluminum	8800	Yes		8.1	mg/kg
2101-S04-12-18	04/26/2013	1	Antimony	1.6	Yes	U	1.6	mg/kg
2101-S04-12-18	04/26/2013	1	Arsenic	3.0	Yes		0.65	mg/kg
2101-S04-12-18	04/26/2013	1	Barium	54	Yes		8.1	mg/kg
2101-S04-12-18	04/26/2013	1	Beryllium	0.30	Yes		0.24	mg/kg
2101-S04-12-18	04/26/2013	1	Cadmium	2.3	Yes		0.24	mg/kg
2101-S04-12-18	04/26/2013	1	Calcium	1000	Yes		41	mg/kg
2101-S04-12-18	04/26/2013	1	Chromium	19	Yes		0.41	mg/kg
2101-S04-12-18	04/26/2013	1	Cobalt	6.6	Yes		1.6	mg/kg
2101-S04-12-18	04/26/2013	1	Copper	19	Yes		0.81	mg/kg
2101-S04-12-18	04/26/2013	1	Iron	13000	Yes		4.1	mg/kg
2101-S04-12-18	04/26/2013	1	Lead	34	Yes		0.65	mg/kg
2101-S04-12-18	04/26/2013	1	Magnesium	2100	Yes		41	mg/kg
2101-S04-12-18	04/26/2013	1	Manganese	200	Yes		0.41	mg/kg
2101-S04-12-18	04/26/2013	1	Molybdenum	0.81	Yes	U	0.81	mg/kg
2101-S04-12-18	04/26/2013	1	Nickel	19	Yes		1.6	mg/kg
2101-S04-12-18	04/26/2013	1	Potassium	740	Yes		41	mg/kg
2101-S04-12-18	04/26/2013	1	Selenium	1.6	Yes	U	1.6	mg/kg
2101-S04-12-18	04/26/2013	1	Silver	9.3	Yes		0.41	mg/kg

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S04-12-18	04/26/2013	1	Sodium	130	Yes		81	mg/kg
2101-S04-12-18	04/26/2013	1	Thallium	1.6	Yes	U	1.6	mg/kg
2101-S04-12-18	04/26/2013	1	Tin	0.81	Yes	U	0.81	mg/kg
2101-S04-12-18	04/26/2013	1	Vanadium	21	Yes		1.6	mg/kg
2101-S04-12-18	04/26/2013	1	Zinc	57	Yes		1.6	mg/kg
2101-S04-1-6	04/26/2013	1	Aluminum	9300	Yes		9.4	mg/kg
2101-S04-1-6	04/26/2013	1	Antimony	1.9	Yes	U	1.9	mg/kg
2101-S04-1-6	04/26/2013	1	Arsenic	9.9	Yes		0.75	mg/kg
2101-S04-1-6	04/26/2013	1	Barium	110	Yes		9.4	mg/kg
2101-S04-1-6	04/26/2013	1	Beryllium	0.39	Yes		0.28	mg/kg
2101-S04-1-6	04/26/2013	1	Cadmium	3.4	Yes		0.28	mg/kg
2101-S04-1-6	04/26/2013	1	Calcium	2400	Yes		47	mg/kg
2101-S04-1-6	04/26/2013	1	Chromium	24	Yes		0.47	mg/kg
2101-S04-1-6	04/26/2013	1	Cobalt	6.3	Yes		1.9	mg/kg
2101-S04-1-6	04/26/2013	1	Copper	49	Yes		0.94	mg/kg
2101-S04-1-6	04/26/2013	1	Iron	16000	Yes		4.7	mg/kg
2101-S04-1-6	04/26/2013	1	Lead	180	Yes		0.75	mg/kg
2101-S04-1-6	04/26/2013	1	Magnesium	2300	Yes		47	mg/kg
2101-S04-1-6	04/26/2013	1	Manganese	360	Yes		0.47	mg/kg
2101-S04-1-6	04/26/2013	1	Molybdenum	0.94	Yes	U	0.94	mg/kg
2101-S04-1-6	04/26/2013	1	Nickel	17	Yes		1.9	mg/kg
2101-S04-1-6	04/26/2013	1	Potassium	580	Yes		47	mg/kg
2101-S04-1-6	04/26/2013	1	Selenium	1.9	Yes	U	1.9	mg/kg
2101-S04-1-6	04/26/2013	1	Silver	8.6	Yes		0.47	mg/kg
2101-S04-1-6	04/26/2013	1	Sodium	290	Yes		94	mg/kg
2101-S04-1-6	04/26/2013	1	Thallium	1.9	Yes	U	1.9	mg/kg
2101-S04-1-6	04/26/2013	1	Tin	6.3	Yes		0.94	mg/kg
2101-S04-1-6	04/26/2013	1	Vanadium	31	Yes		1.9	mg/kg
2101-S04-1-6	04/26/2013	1	Zinc	150	Yes		1.9	mg/kg
2101-S04-18-24	04/26/2013	1	Aluminum	8800	Yes		9.5	mg/kg
2101-S04-18-24	04/26/2013	1	Antimony	1.9	Yes	U	1.9	mg/kg
2101-S04-18-24	04/26/2013	1	Arsenic	2.6	Yes		0.76	mg/kg
2101-S04-18-24	04/26/2013	1	Barium	40	Yes		9.5	mg/kg
2101-S04-18-24	04/26/2013	1	Beryllium	0.37	Yes		0.28	mg/kg

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sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S04-18-24	04/26/2013	1	Cadmium	4.8	Yes		0.28	mg/kg
2101-S04-18-24	04/26/2013	1	Calcium	710	Yes		47	mg/kg
2101-S04-18-24	04/26/2013	1	Chromium	16	Yes		0.47	mg/kg
2101-S04-18-24	04/26/2013	1	Cobalt	6.2	Yes		1.9	mg/kg
2101-S04-18-24	04/26/2013	1	Copper	20	Yes		0.95	mg/kg
2101-S04-18-24	04/26/2013	1	Iron	13000	Yes		4.7	mg/kg
2101-S04-18-24	04/26/2013	1	Lead	140	Yes		0.76	mg/kg
2101-S04-18-24	04/26/2013	1	Magnesium	1900	Yes		47	mg/kg
2101-S04-18-24	04/26/2013	1	Manganese	140	Yes		0.47	mg/kg
2101-S04-18-24	04/26/2013	1	Molybdenum	0.95	Yes	U	0.95	mg/kg
2101-S04-18-24	04/26/2013	1	Nickel	16	Yes		1.9	mg/kg
2101-S04-18-24	04/26/2013	1	Potassium	520	Yes		47	mg/kg
2101-S04-18-24	04/26/2013	1	Selenium	1.9	Yes	U	1.9	mg/kg
2101-S04-18-24	04/26/2013	1	Silver	6.8	Yes		0.47	mg/kg
2101-S04-18-24	04/26/2013	1	Sodium	110	Yes		95	mg/kg
2101-S04-18-24	04/26/2013	1	Thallium	1.9	Yes	U	1.9	mg/kg
2101-S04-18-24	04/26/2013	1	Tin	500	Yes		0.95	mg/kg
2101-S04-18-24	04/26/2013	1	Vanadium	18	Yes		1.9	mg/kg
2101-S04-18-24	04/26/2013	1	Zinc	49	Yes		1.9	mg/kg
2101-S04-6-12	04/26/2013	1	Aluminum	9300	Yes		9.2	mg/kg
2101-S04-6-12	04/26/2013	1	Antimony	1.8	Yes	U	1.8	mg/kg
2101-S04-6-12	04/26/2013	1	Arsenic	7.0	Yes		0.73	mg/kg
2101-S04-6-12	04/26/2013	1	Barium	76	Yes		9.2	mg/kg
2101-S04-6-12	04/26/2013	1	Beryllium	0.35	Yes		0.27	mg/kg
2101-S04-6-12	04/26/2013	1	Cadmium	3.8	Yes		0.27	mg/kg
2101-S04-6-12	04/26/2013	1	Calcium	1600	Yes		46	mg/kg
2101-S04-6-12	04/26/2013	1	Chromium	21	Yes		0.46	mg/kg
2101-S04-6-12	04/26/2013	1	Cobalt	6.4	Yes		1.8	mg/kg
2101-S04-6-12	04/26/2013	1	Copper	27	Yes		0.92	mg/kg
2101-S04-6-12	04/26/2013	1	Iron	14000	Yes		4.6	mg/kg
2101-S04-6-12	04/26/2013	1	Lead	92	Yes		0.73	mg/kg
2101-S04-6-12	04/26/2013	1	Magnesium	2100	Yes		46	mg/kg
2101-S04-6-12	04/26/2013	1	Manganese	280	Yes		0.46	mg/kg
2101-S04-6-12	04/26/2013	1	Molybdenum	0.92	Yes	U	0.92	mg/kg

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sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S04-6-12	04/26/2013	1	Nickel	17	Yes		1.8	mg/kg
2101-S04-6-12	04/26/2013	1	Potassium	570	Yes		46	mg/kg
2101-S04-6-12	04/26/2013	1	Selenium	1.8	Yes	U	1.8	mg/kg
2101-S04-6-12	04/26/2013	1	Silver	8.7	Yes		0.46	mg/kg
2101-S04-6-12	04/26/2013	1	Sodium	190	Yes		92	mg/kg
2101-S04-6-12	04/26/2013	1	Thallium	1.8	Yes	U	1.8	mg/kg
2101-S04-6-12	04/26/2013	1	Tin	1.8	Yes		0.92	mg/kg
2101-S04-6-12	04/26/2013	1	Vanadium	27	Yes		1.8	mg/kg
2101-S04-6-12	04/26/2013	1	Zinc	89	Yes		1.8	mg/kg
2101-S07-0-1	04/26/2013	1	Aluminum	7200	Yes		10	mg/kg
2101-S07-0-1	04/26/2013	1	Antimony	2.1	Yes	U	2.1	mg/kg
2101-S07-0-1	04/26/2013	1	Arsenic	8.3	Yes		0.84	mg/kg
2101-S07-0-1	04/26/2013	1	Barium	55	Yes		10	mg/kg
2101-S07-0-1	04/26/2013	1	Beryllium	0.31	Yes	U	0.31	mg/kg
2101-S07-0-1	04/26/2013	1	Cadmium	1.5	Yes		0.31	mg/kg
2101-S07-0-1	04/26/2013	1	Calcium	5400	Yes		52	mg/kg
2101-S07-0-1	04/26/2013	1	Chromium	26	Yes		0.52	mg/kg
2101-S07-0-1	04/26/2013	1	Cobalt	6.2	Yes		2.1	mg/kg
2101-S07-0-1	04/26/2013	1	Copper	38	Yes		1.0	mg/kg
2101-S07-0-1	04/26/2013	1	Iron	14000	Yes		5.2	mg/kg
2101-S07-0-1	04/26/2013	1	Lead	150	Yes		0.84	mg/kg
2101-S07-0-1	04/26/2013	1	Magnesium	2900	Yes		52	mg/kg
2101-S07-0-1	04/26/2013	1	Manganese	190	Yes		0.52	mg/kg
2101-S07-0-1	04/26/2013	1	Molybdenum	1.0	Yes	U	1.0	mg/kg
2101-S07-0-1	04/26/2013	1	Nickel	20	Yes		2.1	mg/kg
2101-S07-0-1	04/26/2013	1	Potassium	1000	Yes		52	mg/kg
2101-S07-0-1	04/26/2013	1	Selenium	2.1	Yes	U	2.1	mg/kg
2101-S07-0-1	04/26/2013	1	Silver	12	Yes		0.52	mg/kg
2101-S07-0-1	04/26/2013	1	Sodium	120	Yes		100	mg/kg
2101-S07-0-1	04/26/2013	1	Thallium	2.1	Yes	U	2.1	mg/kg
2101-S07-0-1	04/26/2013	1	Tin	13	Yes		1.0	mg/kg
2101-S07-0-1	04/26/2013	1	Vanadium	29	Yes		2.1	mg/kg
2101-S07-0-1	04/26/2013	1	Zinc	170	Yes		2.1	mg/kg
2101-S07-12-18	04/26/2013	1	Aluminum	7900	Yes		9.8	mg/kg

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sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S07-12-18	04/26/2013	1	Antimony	2.0	Yes	U	2.0	mg/kg
2101-S07-12-18	04/26/2013	1	Arsenic	12	Yes		0.78	mg/kg
2101-S07-12-18	04/26/2013	1	Barium	110	Yes		9.8	mg/kg
2101-S07-12-18	04/26/2013	1	Beryllium	0.36	Yes		0.29	mg/kg
2101-S07-12-18	04/26/2013	1	Cadmium	2.0	Yes		0.29	mg/kg
2101-S07-12-18	04/26/2013	1	Calcium	6600	Yes		49	mg/kg
2101-S07-12-18	04/26/2013	1	Chromium	23	Yes		0.49	mg/kg
2101-S07-12-18	04/26/2013	1	Cobalt	7.8	Yes		2.0	mg/kg
2101-S07-12-18	04/26/2013	1	Copper	85	Yes		0.98	mg/kg
2101-S07-12-18	04/26/2013	1	Iron	20000	Yes		4.9	mg/kg
2101-S07-12-18	04/26/2013	1	Lead	480	Yes		0.78	mg/kg
2101-S07-12-18	04/26/2013	1	Magnesium	4200	Yes		49	mg/kg
2101-S07-12-18	04/26/2013	1	Manganese	260	Yes		0.49	mg/kg
2101-S07-12-18	04/26/2013	1	Molybdenum	1.2	Yes		0.98	mg/kg
2101-S07-12-18	04/26/2013	1	Nickel	20	Yes		2.0	mg/kg
2101-S07-12-18	04/26/2013	1	Potassium	400	Yes		49	mg/kg
2101-S07-12-18	04/26/2013	1	Selenium	2.0	Yes	U	2.0	mg/kg
2101-S07-12-18	04/26/2013	1	Silver	10	Yes		0.49	mg/kg
2101-S07-12-18	04/26/2013	1	Sodium	360	Yes		98	mg/kg
2101-S07-12-18	04/26/2013	1	Thallium	2.0	Yes	U	2.0	mg/kg
2101-S07-12-18	04/26/2013	1	Tin	87	Yes		0.98	mg/kg
2101-S07-12-18	04/26/2013	1	Vanadium	29	Yes		2.0	mg/kg
2101-S07-12-18	04/26/2013	1	Zinc	140	Yes		2.0	mg/kg
2101-S07-1-6	04/26/2013	1	Aluminum	7500	Yes		8.6	mg/kg
2101-S07-1-6	04/26/2013	1	Antimony	1.7	Yes	U	1.7	mg/kg
2101-S07-1-6	04/26/2013	1	Arsenic	12	Yes		0.69	mg/kg
2101-S07-1-6	04/26/2013	1	Barium	61	Yes		8.6	mg/kg
2101-S07-1-6	04/26/2013	1	Beryllium	0.38	Yes		0.26	mg/kg
2101-S07-1-6	04/26/2013	1	Cadmium	2.4	Yes		0.26	mg/kg
2101-S07-1-6	04/26/2013	1	Calcium	1900	Yes		43	mg/kg
2101-S07-1-6	04/26/2013	1	Chromium	20	Yes		0.43	mg/kg
2101-S07-1-6	04/26/2013	1	Cobalt	6.9	Yes		1.7	mg/kg
2101-S07-1-6	04/26/2013	1	Copper	45	Yes		0.86	mg/kg
2101-S07-1-6	04/26/2013	1	Iron	16000	Yes		4.3	mg/kg

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sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S07-1-6	04/26/2013	1	Lead	190	Yes		0.69	mg/kg
2101-S07-1-6	04/26/2013	1	Magnesium	1900	Yes		43	mg/kg
2101-S07-1-6	04/26/2013	1	Manganese	230	Yes		0.43	mg/kg
2101-S07-1-6	04/26/2013	1	Molybdenum	0.86	Yes	U	0.86	mg/kg
2101-S07-1-6	04/26/2013	1	Nickel	21	Yes		1.7	mg/kg
2101-S07-1-6	04/26/2013	1	Potassium	630	Yes		43	mg/kg
2101-S07-1-6	04/26/2013	1	Selenium	1.7	Yes	U	1.7	mg/kg
2101-S07-1-6	04/26/2013	1	Silver	12	Yes		0.43	mg/kg
2101-S07-1-6	04/26/2013	1	Sodium	120	Yes		86	mg/kg
2101-S07-1-6	04/26/2013	1	Thallium	1.7	Yes	U	1.7	mg/kg
2101-S07-1-6	04/26/2013	1	Tin	11	Yes		0.86	mg/kg
2101-S07-1-6	04/26/2013	1	Vanadium	30	Yes		1.7	mg/kg
2101-S07-1-6	04/26/2013	1	Zinc	130	Yes		1.7	mg/kg
2101-S07-18-24	04/26/2013	1	Aluminum	6600	Yes		9.5	mg/kg
2101-S07-18-24	04/26/2013	1	Antimony	1.9	Yes	U	1.9	mg/kg
2101-S07-18-24	04/26/2013	1	Arsenic	6.7	Yes		0.76	mg/kg
2101-S07-18-24	04/26/2013	1	Barium	80	Yes		9.5	mg/kg
2101-S07-18-24	04/26/2013	1	Beryllium	0.28	Yes	U	0.28	mg/kg
2101-S07-18-24	04/26/2013	1	Cadmium	0.59	Yes		0.28	mg/kg
2101-S07-18-24	04/26/2013	1	Calcium	1900	Yes		47	mg/kg
2101-S07-18-24	04/26/2013	1	Chromium	18	Yes		0.47	mg/kg
2101-S07-18-24	04/26/2013	1	Cobalt	4.8	Yes		1.9	mg/kg
2101-S07-18-24	04/26/2013	1	Copper	55	Yes		0.95	mg/kg
2101-S07-18-24	04/26/2013	1	Iron	11000	Yes		4.7	mg/kg
2101-S07-18-24	04/26/2013	1	Lead	210	Yes		0.76	mg/kg
2101-S07-18-24	04/26/2013	1	Magnesium	1300	Yes		47	mg/kg
2101-S07-18-24	04/26/2013	1	Manganese	120	Yes		0.47	mg/kg
2101-S07-18-24	04/26/2013	1	Molybdenum	0.95	Yes	U	0.95	mg/kg
2101-S07-18-24	04/26/2013	1	Nickel	14	Yes		1.9	mg/kg
2101-S07-18-24	04/26/2013	1	Potassium	240	Yes		47	mg/kg
2101-S07-18-24	04/26/2013	1	Selenium	1.9	Yes	U	1.9	mg/kg
2101-S07-18-24	04/26/2013	1	Silver	4.0	Yes		0.47	mg/kg
2101-S07-18-24	04/26/2013	1	Sodium	440	Yes		95	mg/kg
2101-S07-18-24	04/26/2013	1	Thallium	1.9	Yes	U	1.9	mg/kg

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sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S07-18-24	04/26/2013	1	Tin	8.9	Yes		0.95	mg/kg
2101-S07-18-24	04/26/2013	1	Vanadium	23	Yes		1.9	mg/kg
2101-S07-18-24	04/26/2013	1	Zinc	200	Yes		1.9	mg/kg
2101-S07-6-12	04/26/2013	1	Aluminum	8300	Yes		8.5	mg/kg
2101-S07-6-12	04/26/2013	1	Antimony	1.7	Yes	U	1.7	mg/kg
2101-S07-6-12	04/26/2013	1	Arsenic	13	Yes		0.68	mg/kg
2101-S07-6-12	04/26/2013	1	Barium	71	Yes		8.5	mg/kg
2101-S07-6-12	04/26/2013	1	Beryllium	0.37	Yes		0.26	mg/kg
2101-S07-6-12	04/26/2013	1	Cadmium	3.7	Yes		0.26	mg/kg
2101-S07-6-12	04/26/2013	1	Calcium	1500	Yes		43	mg/kg
2101-S07-6-12	04/26/2013	1	Chromium	22	Yes		0.43	mg/kg
2101-S07-6-12	04/26/2013	1	Cobalt	8.2	Yes		1.7	mg/kg
2101-S07-6-12	04/26/2013	1	Copper	52	Yes		0.85	mg/kg
2101-S07-6-12	04/26/2013	1	Iron	15000	Yes		4.3	mg/kg
2101-S07-6-12	04/26/2013	1	Lead	270	Yes		0.68	mg/kg
2101-S07-6-12	04/26/2013	1	Magnesium	2000	Yes		43	mg/kg
2101-S07-6-12	04/26/2013	1	Manganese	230	Yes		0.43	mg/kg
2101-S07-6-12	04/26/2013	1	Molybdenum	0.85	Yes	U	0.85	mg/kg
2101-S07-6-12	04/26/2013	1	Nickel	23	Yes		1.7	mg/kg
2101-S07-6-12	04/26/2013	1	Potassium	540	Yes		43	mg/kg
2101-S07-6-12	04/26/2013	1	Selenium	1.7	Yes	U	1.7	mg/kg
2101-S07-6-12	04/26/2013	1	Silver	15	Yes		0.43	mg/kg
2101-S07-6-12	04/26/2013	1	Sodium	210	Yes		85	mg/kg
2101-S07-6-12	04/26/2013	1	Thallium	1.7	Yes	U	1.7	mg/kg
2101-S07-6-12	04/26/2013	1	Tin	27	Yes		0.85	mg/kg
2101-S07-6-12	04/26/2013	1	Vanadium	32	Yes		1.7	mg/kg
2101-S07-6-12	04/26/2013	1	Zinc	140	Yes		1.7	mg/kg
2101-S08-0-1	04/26/2013	1	Aluminum	7300	Yes		11	mg/kg
2101-S08-0-1	04/26/2013	1	Antimony	3.1	Yes		2.3	mg/kg
2101-S08-0-1	04/26/2013	1	Arsenic	6.5	Yes		0.90	mg/kg
2101-S08-0-1	04/26/2013	1	Barium	130	Yes		11	mg/kg
2101-S08-0-1	04/26/2013	1	Beryllium	0.34	Yes	U	0.34	mg/kg
2101-S08-0-1	04/26/2013	1	Cadmium	2.6	Yes		0.34	mg/kg
2101-S08-0-1	04/26/2013	1	Calcium	7100	Yes		57	mg/kg

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sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S08-0-1	04/26/2013	1	Chromium	35	Yes		0.57	mg/kg
2101-S08-0-1	04/26/2013	1	Cobalt	7.4	Yes		2.3	mg/kg
2101-S08-0-1	04/26/2013	1	Copper	77	Yes		1.1	mg/kg
2101-S08-0-1	04/26/2013	1	Iron	16000	Yes		5.7	mg/kg
2101-S08-0-1	04/26/2013	1	Lead	710	Yes		0.90	mg/kg
2101-S08-0-1	04/26/2013	1	Magnesium	3400	Yes		57	mg/kg
2101-S08-0-1	04/26/2013	1	Manganese	270	Yes		0.57	mg/kg
2101-S08-0-1	04/26/2013	1	Molybdenum	1.3	Yes		1.1	mg/kg
2101-S08-0-1	04/26/2013	1	Nickel	31	Yes		2.3	mg/kg
2101-S08-0-1	04/26/2013	1	Potassium	530	Yes		57	mg/kg
2101-S08-0-1	04/26/2013	1	Selenium	2.3	Yes	U	2.3	mg/kg
2101-S08-0-1	04/26/2013	1	Silver	9.1	Yes		0.57	mg/kg
2101-S08-0-1	04/26/2013	1	Sodium	500	Yes		110	mg/kg
2101-S08-0-1	04/26/2013	1	Thallium	2.3	Yes	U	2.3	mg/kg
2101-S08-0-1	04/26/2013	1	Tin	15	Yes		1.1	mg/kg
2101-S08-0-1	04/26/2013	1	Vanadium	42	Yes		2.3	mg/kg
2101-S08-0-1	04/26/2013	1	Zinc	410	Yes		2.3	mg/kg
2101-S08-12-18	04/26/2013	1	Aluminum	6900	Yes		9.0	mg/kg
2101-S08-12-18	04/26/2013	1	Antimony	2.4	Yes		1.8	mg/kg
2101-S08-12-18	04/26/2013	1	Arsenic	11	Yes		0.72	mg/kg
2101-S08-12-18	04/26/2013	1	Barium	69	Yes		9.0	mg/kg
2101-S08-12-18	04/26/2013	1	Beryllium	0.30	Yes		0.27	mg/kg
2101-S08-12-18	04/26/2013	1	Cadmium	1.1	Yes		0.27	mg/kg
2101-S08-12-18	04/26/2013	1	Calcium	3100	Yes		45	mg/kg
2101-S08-12-18	04/26/2013	1	Chromium	23	Yes		0.45	mg/kg
2101-S08-12-18	04/26/2013	1	Cobalt	6.3	Yes		1.8	mg/kg
2101-S08-12-18	04/26/2013	1	Copper	57	Yes		0.90	mg/kg
2101-S08-12-18	04/26/2013	1	Iron	14000	Yes		4.5	mg/kg
2101-S08-12-18	04/26/2013	1	Lead	550	Yes		0.72	mg/kg
2101-S08-12-18	04/26/2013	1	Magnesium	2300	Yes		45	mg/kg
2101-S08-12-18	04/26/2013	1	Manganese	220	Yes		0.45	mg/kg
2101-S08-12-18	04/26/2013	1	Molybdenum	0.90	Yes	U	0.90	mg/kg
2101-S08-12-18	04/26/2013	1	Nickel	24	Yes		1.8	mg/kg
2101-S08-12-18	04/26/2013	1	Potassium	370	Yes		45	mg/kg

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S08-12-18	04/26/2013	1	Selenium	1.8	Yes	U	1.8	mg/kg
2101-S08-12-18	04/26/2013	1	Silver	8.5	Yes		0.45	mg/kg
2101-S08-12-18	04/26/2013	1	Sodium	160	Yes		90	mg/kg
2101-S08-12-18	04/26/2013	1	Thallium	1.8	Yes	U	1.8	mg/kg
2101-S08-12-18	04/26/2013	1	Tin	12	Yes		0.90	mg/kg
2101-S08-12-18	04/26/2013	1	Vanadium	29	Yes		1.8	mg/kg
2101-S08-12-18	04/26/2013	1	Zinc	240	Yes		1.8	mg/kg
2101-S08-1-6	04/26/2013	1	Aluminum	5200	Yes		8.4	mg/kg
2101-S08-1-6	04/26/2013	1	Antimony	1.9	Yes		1.7	mg/kg
2101-S08-1-6	04/26/2013	1	Arsenic	4.6	Yes		0.67	mg/kg
2101-S08-1-6	04/26/2013	1	Barium	700	Yes		8.4	mg/kg
2101-S08-1-6	04/26/2013	1	Beryllium	0.25	Yes	U	0.25	mg/kg
2101-S08-1-6	04/26/2013	1	Cadmium	1.6	Yes		0.25	mg/kg
2101-S08-1-6	04/26/2013	1	Calcium	4900	Yes		42	mg/kg
2101-S08-1-6	04/26/2013	1	Chromium	21	Yes		0.42	mg/kg
2101-S08-1-6	04/26/2013	1	Cobalt	5.4	Yes		1.7	mg/kg
2101-S08-1-6	04/26/2013	1	Copper	56	Yes		0.84	mg/kg
2101-S08-1-6	04/26/2013	1	Iron	12000	Yes		4.2	mg/kg
2101-S08-1-6	04/26/2013	1	Lead	990	Yes		0.67	mg/kg
2101-S08-1-6	04/26/2013	1	Magnesium	3000	Yes		42	mg/kg
2101-S08-1-6	04/26/2013	1	Manganese	170	Yes		0.42	mg/kg
2101-S08-1-6	04/26/2013	1	Molybdenum	1.4	Yes		0.84	mg/kg
2101-S08-1-6	04/26/2013	1	Nickel	18	Yes		1.7	mg/kg
2101-S08-1-6	04/26/2013	1	Potassium	370	Yes		42	mg/kg
2101-S08-1-6	04/26/2013	1	Selenium	1.7	Yes	U	1.7	mg/kg
2101-S08-1-6	04/26/2013	1	Silver	7.1	Yes		0.42	mg/kg
2101-S08-1-6	04/26/2013	1	Sodium	320	Yes		84	mg/kg
2101-S08-1-6	04/26/2013	1	Thallium	1.7	Yes	U	1.7	mg/kg
2101-S08-1-6	04/26/2013	1	Tin	9.6	Yes		0.84	mg/kg
2101-S08-1-6	04/26/2013	1	Vanadium	33	Yes		1.7	mg/kg
2101-S08-1-6	04/26/2013	1	Zinc	280	Yes		1.7	mg/kg
2101-S08-18-24	04/26/2013	1	Aluminum	9600	Yes		9.4	mg/kg
2101-S08-18-24	04/26/2013	1	Antimony	1.9	Yes	U	1.9	mg/kg
2101-S08-18-24	04/26/2013	1	Arsenic	3.6	Yes		0.76	mg/kg

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sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S08-18-24	04/26/2013	1	Barium	41	Yes		9.4	mg/kg
2101-S08-18-24	04/26/2013	1	Beryllium	0.33	Yes		0.28	mg/kg
2101-S08-18-24	04/26/2013	1	Cadmium	0.28	Yes	U	0.28	mg/kg
2101-S08-18-24	04/26/2013	1	Calcium	1200	Yes		47	mg/kg
2101-S08-18-24	04/26/2013	1	Chromium	26	Yes		0.47	mg/kg
2101-S08-18-24	04/26/2013	1	Cobalt	6.4	Yes		1.9	mg/kg
2101-S08-18-24	04/26/2013	1	Copper	11	Yes		0.94	mg/kg
2101-S08-18-24	04/26/2013	1	Iron	17000	Yes		4.7	mg/kg
2101-S08-18-24	04/26/2013	1	Lead	40	Yes		0.76	mg/kg
2101-S08-18-24	04/26/2013	1	Magnesium	1800	Yes		47	mg/kg
2101-S08-18-24	04/26/2013	1	Manganese	220	Yes		0.47	mg/kg
2101-S08-18-24	04/26/2013	1	Molybdenum	0.94	Yes	U	0.94	mg/kg
2101-S08-18-24	04/26/2013	1	Nickel	17	Yes		1.9	mg/kg
2101-S08-18-24	04/26/2013	1	Potassium	220	Yes		47	mg/kg
2101-S08-18-24	04/26/2013	1	Selenium	1.9	Yes	U	1.9	mg/kg
2101-S08-18-24	04/26/2013	1	Silver	5.7	Yes		0.47	mg/kg
2101-S08-18-24	04/26/2013	1	Sodium	94	Yes	U	94	mg/kg
2101-S08-18-24	04/26/2013	1	Thallium	1.9	Yes	U	1.9	mg/kg
2101-S08-18-24	04/26/2013	1	Tin	1.2	Yes		0.94	mg/kg
2101-S08-18-24	04/26/2013	1	Vanadium	27	Yes		1.9	mg/kg
2101-S08-18-24	04/26/2013	1	Zinc	33	Yes		1.9	mg/kg
2101-S08-6-12	04/26/2013	1	Aluminum	5600	Yes		9.2	mg/kg
2101-S08-6-12	04/26/2013	1	Antimony	2.3	Yes		1.8	mg/kg
2101-S08-6-12	04/26/2013	1	Arsenic	7.1	Yes		0.73	mg/kg
2101-S08-6-12	04/26/2013	1	Barium	100	Yes		9.2	mg/kg
2101-S08-6-12	04/26/2013	1	Beryllium	0.28	Yes	U	0.28	mg/kg
2101-S08-6-12	04/26/2013	1	Cadmium	1.7	Yes		0.28	mg/kg
2101-S08-6-12	04/26/2013	1	Calcium	4100	Yes		46	mg/kg
2101-S08-6-12	04/26/2013	1	Chromium	23	Yes		0.46	mg/kg
2101-S08-6-12	04/26/2013	1	Cobalt	5.5	Yes		1.8	mg/kg
2101-S08-6-12	04/26/2013	1	Copper	53	Yes		0.92	mg/kg
2101-S08-6-12	04/26/2013	1	Iron	12000	Yes		4.6	mg/kg
2101-S08-6-12	04/26/2013	1	Lead	800	Yes		0.73	mg/kg
2101-S08-6-12	04/26/2013	1	Magnesium	2400	Yes		46	mg/kg

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sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S08-6-12	04/26/2013	1	Manganese	170	Yes		0.46	mg/kg
2101-S08-6-12	04/26/2013	1	Molybdenum	0.92	Yes	U	0.92	mg/kg
2101-S08-6-12	04/26/2013	1	Nickel	21	Yes		1.8	mg/kg
2101-S08-6-12	04/26/2013	1	Potassium	310	Yes		46	mg/kg
2101-S08-6-12	04/26/2013	1	Selenium	1.8	Yes	U	1.8	mg/kg
2101-S08-6-12	04/26/2013	1	Silver	7.3	Yes		0.46	mg/kg
2101-S08-6-12	04/26/2013	1	Sodium	160	Yes		92	mg/kg
2101-S08-6-12	04/26/2013	1	Thallium	1.8	Yes	U	1.8	mg/kg
2101-S08-6-12	04/26/2013	1	Tin	22	Yes		0.92	mg/kg
2101-S08-6-12	04/26/2013	1	Vanadium	27	Yes		1.8	mg/kg
2101-S08-6-12	04/26/2013	1	Zinc	250	Yes		1.8	mg/kg
2101-S09-0-1	04/26/2013	1	Aluminum	8900	Yes		10	mg/kg
2101-S09-0-1	04/26/2013	1	Antimony	2.1	Yes	U	2.1	mg/kg
2101-S09-0-1	04/26/2013	1	Arsenic	3.2	Yes		0.83	mg/kg
2101-S09-0-1	04/26/2013	1	Barium	89	Yes		10	mg/kg
2101-S09-0-1	04/26/2013	1	Beryllium	0.31	Yes	U	0.31	mg/kg
2101-S09-0-1	04/26/2013	1	Cadmium	3.1	Yes		0.31	mg/kg
2101-S09-0-1	04/26/2013	1	Calcium	4000	Yes		52	mg/kg
2101-S09-0-1	04/26/2013	1	Chromium	30	Yes		0.52	mg/kg
2101-S09-0-1	04/26/2013	1	Cobalt	7.5	Yes		2.1	mg/kg
2101-S09-0-1	04/26/2013	1	Copper	63	Yes		1.0	mg/kg
2101-S09-0-1	04/26/2013	1	Iron	14000	Yes		5.2	mg/kg
2101-S09-0-1	04/26/2013	1	Lead	430	Yes		0.83	mg/kg
2101-S09-0-1	04/26/2013	1	Magnesium	2900	Yes		52	mg/kg
2101-S09-0-1	04/26/2013	1	Manganese	250	Yes		0.52	mg/kg
2101-S09-0-1	04/26/2013	1	Molybdenum	1.0	Yes	U	1.0	mg/kg
2101-S09-0-1	04/26/2013	1	Nickel	26	Yes		2.1	mg/kg
2101-S09-0-1	04/26/2013	1	Potassium	830	Yes		52	mg/kg
2101-S09-0-1	04/26/2013	1	Selenium	2.1	Yes	U	2.1	mg/kg
2101-S09-0-1	04/26/2013	1	Silver	12	Yes		0.52	mg/kg
2101-S09-0-1	04/26/2013	1	Sodium	160	Yes		100	mg/kg
2101-S09-0-1	04/26/2013	1	Thallium	2.1	Yes	U	2.1	mg/kg
2101-S09-0-1	04/26/2013	1	Tin	5.1	Yes		1.0	mg/kg
2101-S09-0-1	04/26/2013	1	Vanadium	33	Yes		2.1	mg/kg

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sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S09-0-1	04/26/2013	1	Zinc	180	Yes		2.1	mg/kg
2101-S09-12-18	04/26/2013	1	Aluminum	9300	Yes		8.6	mg/kg
2101-S09-12-18	04/26/2013	1	Antimony	1.7	Yes	U	1.7	mg/kg
2101-S09-12-18	04/26/2013	1	Arsenic	2.1	Yes		0.69	mg/kg
2101-S09-12-18	04/26/2013	1	Barium	73	Yes		8.6	mg/kg
2101-S09-12-18	04/26/2013	1	Beryllium	0.32	Yes		0.26	mg/kg
2101-S09-12-18	04/26/2013	1	Cadmium	1.7	Yes		0.26	mg/kg
2101-S09-12-18	04/26/2013	1	Calcium	1200	Yes		43	mg/kg
2101-S09-12-18	04/26/2013	1	Chromium	23	Yes		0.43	mg/kg
2101-S09-12-18	04/26/2013	1	Cobalt	7.8	Yes		1.7	mg/kg
2101-S09-12-18	04/26/2013	1	Copper	26	Yes		0.86	mg/kg
2101-S09-12-18	04/26/2013	1	Iron	15000	Yes		4.3	mg/kg
2101-S09-12-18	04/26/2013	1	Lead	140	Yes		0.69	mg/kg
2101-S09-12-18	04/26/2013	1	Magnesium	2500	Yes		43	mg/kg
2101-S09-12-18	04/26/2013	1	Manganese	250	Yes		0.43	mg/kg
2101-S09-12-18	04/26/2013	1	Molybdenum	0.86	Yes	U	0.86	mg/kg
2101-S09-12-18	04/26/2013	1	Nickel	27	Yes		1.7	mg/kg
2101-S09-12-18	04/26/2013	1	Potassium	670	Yes		43	mg/kg
2101-S09-12-18	04/26/2013	1	Selenium	1.7	Yes	U	1.7	mg/kg
2101-S09-12-18	04/26/2013	1	Silver	11	Yes		0.43	mg/kg
2101-S09-12-18	04/26/2013	1	Sodium	92	Yes		86	mg/kg
2101-S09-12-18	04/26/2013	1	Thallium	1.7	Yes	U	1.7	mg/kg
2101-S09-12-18	04/26/2013	1	Tin	3.9	Yes		0.86	mg/kg
2101-S09-12-18	04/26/2013	1	Vanadium	25	Yes		1.7	mg/kg
2101-S09-12-18	04/26/2013	1	Zinc	65	Yes		1.7	mg/kg
2101-S09-1-6	04/26/2013	1	Aluminum	7200	Yes		8.9	mg/kg
2101-S09-1-6	04/26/2013	1	Antimony	1.8	Yes	U	1.8	mg/kg
2101-S09-1-6	04/26/2013	1	Arsenic	2.4	Yes		0.71	mg/kg
2101-S09-1-6	04/26/2013	1	Barium	49	Yes		8.9	mg/kg
2101-S09-1-6	04/26/2013	1	Beryllium	0.29	Yes		0.27	mg/kg
2101-S09-1-6	04/26/2013	1	Cadmium	1.4	Yes		0.27	mg/kg
2101-S09-1-6	04/26/2013	1	Calcium	1700	Yes		45	mg/kg
2101-S09-1-6	04/26/2013	1	Chromium	24	Yes		0.45	mg/kg
2101-S09-1-6	04/26/2013	1	Cobalt	6.0	Yes		1.8	mg/kg

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sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S09-1-6	04/26/2013	1	Copper	32	Yes		0.89	mg/kg
2101-S09-1-6	04/26/2013	1	Iron	12000	Yes		4.5	mg/kg
2101-S09-1-6	04/26/2013	1	Lead	160	Yes		0.71	mg/kg
2101-S09-1-6	04/26/2013	1	Magnesium	2200	Yes		45	mg/kg
2101-S09-1-6	04/26/2013	1	Manganese	170	Yes		0.45	mg/kg
2101-S09-1-6	04/26/2013	1	Molybdenum	0.89	Yes	U	0.89	mg/kg
2101-S09-1-6	04/26/2013	1	Nickel	22	Yes		1.8	mg/kg
2101-S09-1-6	04/26/2013	1	Potassium	480	Yes		45	mg/kg
2101-S09-1-6	04/26/2013	1	Selenium	1.8	Yes	U	1.8	mg/kg
2101-S09-1-6	04/26/2013	1	Silver	9.6	Yes		0.45	mg/kg
2101-S09-1-6	04/26/2013	1	Sodium	89	Yes	U	89	mg/kg
2101-S09-1-6	04/26/2013	1	Thallium	1.8	Yes	U	1.8	mg/kg
2101-S09-1-6	04/26/2013	1	Tin	2.5	Yes		0.89	mg/kg
2101-S09-1-6	04/26/2013	1	Vanadium	30	Yes		1.8	mg/kg
2101-S09-1-6	04/26/2013	1	Zinc	97	Yes		1.8	mg/kg
2101-S09-18-24	04/26/2013	1	Aluminum	6500	Yes		8.5	mg/kg
2101-S09-18-24	04/26/2013	1	Antimony	1.7	Yes	U	1.7	mg/kg
2101-S09-18-24	04/26/2013	1	Arsenic	1.7	Yes		0.68	mg/kg
2101-S09-18-24	04/26/2013	1	Barium	39	Yes		8.5	mg/kg
2101-S09-18-24	04/26/2013	1	Beryllium	0.26	Yes	U	0.26	mg/kg
2101-S09-18-24	04/26/2013	1	Cadmium	0.26	Yes	U	0.26	mg/kg
2101-S09-18-24	04/26/2013	1	Calcium	680	Yes		43	mg/kg
2101-S09-18-24	04/26/2013	1	Chromium	15	Yes		0.43	mg/kg
2101-S09-18-24	04/26/2013	1	Cobalt	6.4	Yes		1.7	mg/kg
2101-S09-18-24	04/26/2013	1	Copper	20	Yes		0.85	mg/kg
2101-S09-18-24	04/26/2013	1	Iron	12000	Yes		4.3	mg/kg
2101-S09-18-24	04/26/2013	1	Lead	26	Yes		0.68	mg/kg
2101-S09-18-24	04/26/2013	1	Magnesium	2800	Yes		43	mg/kg
2101-S09-18-24	04/26/2013	1	Manganese	130	Yes		0.43	mg/kg
2101-S09-18-24	04/26/2013	1	Molybdenum	0.85	Yes	U	0.85	mg/kg
2101-S09-18-24	04/26/2013	1	Nickel	28	Yes		1.7	mg/kg
2101-S09-18-24	04/26/2013	1	Potassium	910	Yes		43	mg/kg
2101-S09-18-24	04/26/2013	1	Selenium	1.7	Yes	U	1.7	mg/kg
2101-S09-18-24	04/26/2013	1	Silver	11	Yes		0.43	mg/kg

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sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S09-18-24	04/26/2013	1	Sodium	85	Yes	U	85	mg/kg
2101-S09-18-24	04/26/2013	1	Thallium	1.7	Yes	U	1.7	mg/kg
2101-S09-18-24	04/26/2013	1	Tin	0.85	Yes	U	0.85	mg/kg
2101-S09-18-24	04/26/2013	1	Vanadium	19	Yes		1.7	mg/kg
2101-S09-18-24	04/26/2013	1	Zinc	40	Yes		1.7	mg/kg
2101-S09-6-12	04/26/2013	1	Aluminum	8400	Yes		8.8	mg/kg
2101-S09-6-12	04/26/2013	1	Antimony	1.8	Yes	U	1.8	mg/kg
2101-S09-6-12	04/26/2013	1	Arsenic	2.4	Yes		0.71	mg/kg
2101-S09-6-12	04/26/2013	1	Barium	55	Yes		8.8	mg/kg
2101-S09-6-12	04/26/2013	1	Beryllium	0.29	Yes		0.27	mg/kg
2101-S09-6-12	04/26/2013	1	Cadmium	1.5	Yes		0.27	mg/kg
2101-S09-6-12	04/26/2013	1	Calcium	1400	Yes		44	mg/kg
2101-S09-6-12	04/26/2013	1	Chromium	24	Yes		0.44	mg/kg
2101-S09-6-12	04/26/2013	1	Cobalt	7.6	Yes		1.8	mg/kg
2101-S09-6-12	04/26/2013	1	Copper	29	Yes		0.88	mg/kg
2101-S09-6-12	04/26/2013	1	Iron	13000	Yes		4.4	mg/kg
2101-S09-6-12	04/26/2013	1	Lead	130	Yes		0.71	mg/kg
2101-S09-6-12	04/26/2013	1	Magnesium	3100	Yes		44	mg/kg
2101-S09-6-12	04/26/2013	1	Manganese	190	Yes		0.44	mg/kg
2101-S09-6-12	04/26/2013	1	Molybdenum	0.88	Yes	U	0.88	mg/kg
2101-S09-6-12	04/26/2013	1	Nickel	31	Yes		1.8	mg/kg
2101-S09-6-12	04/26/2013	1	Potassium	550	Yes		44	mg/kg
2101-S09-6-12	04/26/2013	1	Selenium	1.8	Yes	U	1.8	mg/kg
2101-S09-6-12	04/26/2013	1	Silver	11	Yes		0.44	mg/kg
2101-S09-6-12	04/26/2013	1	Sodium	91	Yes		88	mg/kg
2101-S09-6-12	04/26/2013	1	Thallium	1.8	Yes	U	1.8	mg/kg
2101-S09-6-12	04/26/2013	1	Tin	2.1	Yes		0.88	mg/kg
2101-S09-6-12	04/26/2013	1	Vanadium	26	Yes		1.8	mg/kg
2101-S09-6-12	04/26/2013	1	Zinc	81	Yes		1.8	mg/kg
2101-S12-0-1	04/26/2013	1	Aluminum	6800	Yes		11	mg/kg
2101-S12-0-1	04/26/2013	1	Antimony	2.6	Yes		2.1	mg/kg
2101-S12-0-1	04/26/2013	1	Arsenic	4.7	Yes		0.85	mg/kg
2101-S12-0-1	04/26/2013	1	Barium	74	Yes		11	mg/kg
2101-S12-0-1	04/26/2013	1	Beryllium	0.32	Yes	U	0.32	mg/kg

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sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S12-0-1	04/26/2013	1	Cadmium	2.8	Yes		0.32	mg/kg
2101-S12-0-1	04/26/2013	1	Calcium	6500	Yes		53	mg/kg
2101-S12-0-1	04/26/2013	1	Chromium	53	Yes		0.53	mg/kg
2101-S12-0-1	04/26/2013	1	Cobalt	5.8	Yes		2.1	mg/kg
2101-S12-0-1	04/26/2013	1	Copper	72	Yes		1.1	mg/kg
2101-S12-0-1	04/26/2013	1	Iron	15000	Yes		5.3	mg/kg
2101-S12-0-1	04/26/2013	1	Lead	500	Yes		0.85	mg/kg
2101-S12-0-1	04/26/2013	1	Magnesium	3700	Yes		53	mg/kg
2101-S12-0-1	04/26/2013	1	Manganese	260	Yes		0.53	mg/kg
2101-S12-0-1	04/26/2013	1	Molybdenum	1.1	Yes		1.1	mg/kg
2101-S12-0-1	04/26/2013	1	Nickel	20	Yes		2.1	mg/kg
2101-S12-0-1	04/26/2013	1	Potassium	360	Yes		53	mg/kg
2101-S12-0-1	04/26/2013	1	Selenium	2.1	Yes	U	2.1	mg/kg
2101-S12-0-1	04/26/2013	1	Silver	6.3	Yes		0.53	mg/kg
2101-S12-0-1	04/26/2013	1	Sodium	110	Yes	U	110	mg/kg
2101-S12-0-1	04/26/2013	1	Thallium	2.1	Yes	U	2.1	mg/kg
2101-S12-0-1	04/26/2013	1	Tin	12	Yes		1.1	mg/kg
2101-S12-0-1	04/26/2013	1	Vanadium	36	Yes		2.1	mg/kg
2101-S12-0-1	04/26/2013	1	Zinc	470	Yes		2.1	mg/kg
2101-S12-12-18	04/26/2013	1	Aluminum	5400	Yes		8.0	mg/kg
2101-S12-12-18	04/26/2013	1	Antimony	1.6	Yes	U	1.6	mg/kg
2101-S12-12-18	04/26/2013	1	Arsenic	4.4	Yes		0.64	mg/kg
2101-S12-12-18	04/26/2013	1	Barium	52	Yes		8.0	mg/kg
2101-S12-12-18	04/26/2013	1	Beryllium	0.26	Yes		0.24	mg/kg
2101-S12-12-18	04/26/2013	1	Cadmium	8.0	Yes		0.24	mg/kg
2101-S12-12-18	04/26/2013	1	Calcium	9400	Yes		40	mg/kg
2101-S12-12-18	04/26/2013	1	Chromium	16	Yes		0.40	mg/kg
2101-S12-12-18	04/26/2013	1	Cobalt	4.7	Yes		1.6	mg/kg
2101-S12-12-18	04/26/2013	1	Copper	33	Yes		0.80	mg/kg
2101-S12-12-18	04/26/2013	1	Iron	12000	Yes		4.0	mg/kg
2101-S12-12-18	04/26/2013	1	Lead	190	Yes		0.64	mg/kg
2101-S12-12-18	04/26/2013	1	Magnesium	6200	Yes		40	mg/kg
2101-S12-12-18	04/26/2013	1	Manganese	220	Yes		0.40	mg/kg
2101-S12-12-18	04/26/2013	1	Molybdenum	0.80	Yes	U	0.80	mg/kg

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sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S12-12-18	04/26/2013	1	Nickel	14	Yes		1.6	mg/kg
2101-S12-12-18	04/26/2013	1	Potassium	350	Yes		40	mg/kg
2101-S12-12-18	04/26/2013	1	Selenium	1.6	Yes	U	1.6	mg/kg
2101-S12-12-18	04/26/2013	1	Silver	5.9	Yes		0.40	mg/kg
2101-S12-12-18	04/26/2013	1	Sodium	80	Yes	U	80	mg/kg
2101-S12-12-18	04/26/2013	1	Thallium	1.6	Yes	U	1.6	mg/kg
2101-S12-12-18	04/26/2013	1	Tin	5.6	Yes		0.80	mg/kg
2101-S12-12-18	04/26/2013	1	Vanadium	19	Yes		1.6	mg/kg
2101-S12-12-18	04/26/2013	1	Zinc	110	Yes		1.6	mg/kg
2101-S12-1-6	04/26/2013	1	Aluminum	7000	Yes		8.0	mg/kg
2101-S12-1-6	04/26/2013	1	Antimony	1.6	Yes		1.6	mg/kg
2101-S12-1-6	04/26/2013	1	Arsenic	5.3	Yes		0.64	mg/kg
2101-S12-1-6	04/26/2013	1	Barium	61	Yes		8.0	mg/kg
2101-S12-1-6	04/26/2013	1	Beryllium	0.29	Yes		0.24	mg/kg
2101-S12-1-6	04/26/2013	1	Cadmium	2.3	Yes		0.24	mg/kg
2101-S12-1-6	04/26/2013	1	Calcium	2300	Yes		40	mg/kg
2101-S12-1-6	04/26/2013	1	Chromium	25	Yes		0.40	mg/kg
2101-S12-1-6	04/26/2013	1	Cobalt	5.7	Yes		1.6	mg/kg
2101-S12-1-6	04/26/2013	1	Copper	60	Yes		0.80	mg/kg
2101-S12-1-6	04/26/2013	1	Iron	14000	Yes		4.0	mg/kg
2101-S12-1-6	04/26/2013	1	Lead	270	Yes		0.64	mg/kg
2101-S12-1-6	04/26/2013	1	Magnesium	2900	Yes		40	mg/kg
2101-S12-1-6	04/26/2013	1	Manganese	250	Yes		0.40	mg/kg
2101-S12-1-6	04/26/2013	1	Molybdenum	0.80	Yes	U	0.80	mg/kg
2101-S12-1-6	04/26/2013	1	Nickel	22	Yes		1.6	mg/kg
2101-S12-1-6	04/26/2013	1	Potassium	330	Yes		40	mg/kg
2101-S12-1-6	04/26/2013	1	Selenium	1.6	Yes	U	1.6	mg/kg
2101-S12-1-6	04/26/2013	1	Silver	5.3	Yes		0.40	mg/kg
2101-S12-1-6	04/26/2013	1	Sodium	80	Yes	U	80	mg/kg
2101-S12-1-6	04/26/2013	1	Thallium	1.6	Yes	U	1.6	mg/kg
2101-S12-1-6	04/26/2013	1	Tin	9.1	Yes		0.80	mg/kg
2101-S12-1-6	04/26/2013	1	Vanadium	31	Yes		1.6	mg/kg
2101-S12-1-6	04/26/2013	1	Zinc	160	Yes		1.6	mg/kg
2101-S12-18-24	04/26/2013	1	Aluminum	6400	Yes		8.4	mg/kg

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sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S12-18-24	04/26/2013	1	Antimony	1.7	Yes	U	1.7	mg/kg
2101-S12-18-24	04/26/2013	1	Arsenic	6.3	Yes		0.67	mg/kg
2101-S12-18-24	04/26/2013	1	Barium	88	Yes		8.4	mg/kg
2101-S12-18-24	04/26/2013	1	Beryllium	0.27	Yes		0.25	mg/kg
2101-S12-18-24	04/26/2013	1	Cadmium	6.1	Yes		0.25	mg/kg
2101-S12-18-24	04/26/2013	1	Calcium	18000	Yes		42	mg/kg
2101-S12-18-24	04/26/2013	1	Chromium	17	Yes		0.42	mg/kg
2101-S12-18-24	04/26/2013	1	Cobalt	6.3	Yes		1.7	mg/kg
2101-S12-18-24	04/26/2013	1	Copper	43	Yes		0.84	mg/kg
2101-S12-18-24	04/26/2013	1	Iron	17000	Yes		4.2	mg/kg
2101-S12-18-24	04/26/2013	1	Lead	260	Yes		0.67	mg/kg
2101-S12-18-24	04/26/2013	1	Magnesium	12000	Yes		42	mg/kg
2101-S12-18-24	04/26/2013	1	Manganese	330	Yes		0.42	mg/kg
2101-S12-18-24	04/26/2013	1	Molybdenum	0.84	Yes	U	0.84	mg/kg
2101-S12-18-24	04/26/2013	1	Nickel	22	Yes		1.7	mg/kg
2101-S12-18-24	04/26/2013	1	Potassium	790	Yes		42	mg/kg
2101-S12-18-24	04/26/2013	1	Selenium	1.7	Yes	U	1.7	mg/kg
2101-S12-18-24	04/26/2013	1	Silver	8.2	Yes		0.42	mg/kg
2101-S12-18-24	04/26/2013	1	Sodium	140	Yes		84	mg/kg
2101-S12-18-24	04/26/2013	1	Thallium	1.7	Yes	U	1.7	mg/kg
2101-S12-18-24	04/26/2013	1	Tin	8.7	Yes		0.84	mg/kg
2101-S12-18-24	04/26/2013	1	Vanadium	23	Yes		1.7	mg/kg
2101-S12-18-24	04/26/2013	1	Zinc	140	Yes		1.7	mg/kg
2101-S12-6-12	04/26/2013	1	Aluminum	7100	Yes		9.1	mg/kg
2101-S12-6-12	04/26/2013	1	Antimony	1.8	Yes	U	1.8	mg/kg
2101-S12-6-12	04/26/2013	1	Arsenic	4.8	Yes		0.73	mg/kg
2101-S12-6-12	04/26/2013	1	Barium	55	Yes		9.1	mg/kg
2101-S12-6-12	04/26/2013	1	Beryllium	0.27	Yes	U	0.27	mg/kg
2101-S12-6-12	04/26/2013	1	Cadmium	2.7	Yes		0.27	mg/kg
2101-S12-6-12	04/26/2013	1	Calcium	8600	Yes		46	mg/kg
2101-S12-6-12	04/26/2013	1	Chromium	17	Yes		0.46	mg/kg
2101-S12-6-12	04/26/2013	1	Cobalt	5.4	Yes		1.8	mg/kg
2101-S12-6-12	04/26/2013	1	Copper	32	Yes		0.91	mg/kg
2101-S12-6-12	04/26/2013	1	Iron	13000	Yes		4.6	mg/kg

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sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S12-6-12	04/26/2013	1	Lead	130	Yes		0.73	mg/kg
2101-S12-6-12	04/26/2013	1	Magnesium	6300	Yes		46	mg/kg
2101-S12-6-12	04/26/2013	1	Manganese	230	Yes		0.46	mg/kg
2101-S12-6-12	04/26/2013	1	Molybdenum	0.91	Yes	U	0.91	mg/kg
2101-S12-6-12	04/26/2013	1	Nickel	15	Yes		1.8	mg/kg
2101-S12-6-12	04/26/2013	1	Potassium	380	Yes		46	mg/kg
2101-S12-6-12	04/26/2013	1	Selenium	1.8	Yes	U	1.8	mg/kg
2101-S12-6-12	04/26/2013	1	Silver	6.1	Yes		0.46	mg/kg
2101-S12-6-12	04/26/2013	1	Sodium	91	Yes	U	91	mg/kg
2101-S12-6-12	04/26/2013	1	Thallium	1.8	Yes	U	1.8	mg/kg
2101-S12-6-12	04/26/2013	1	Tin	4.2	Yes		0.91	mg/kg
2101-S12-6-12	04/26/2013	1	Vanadium	22	Yes		1.8	mg/kg
2101-S12-6-12	04/26/2013	1	Zinc	74	Yes		1.8	mg/kg
2101-S13-0-1	04/26/2013	1	Aluminum	6500	Yes		11	mg/kg
2101-S13-0-1	04/26/2013	1	Antimony	3.1	Yes		2.2	mg/kg
2101-S13-0-1	04/26/2013	1	Arsenic	4.9	Yes		0.89	mg/kg
2101-S13-0-1	04/26/2013	1	Barium	82	Yes		11	mg/kg
2101-S13-0-1	04/26/2013	1	Beryllium	0.33	Yes	U	0.33	mg/kg
2101-S13-0-1	04/26/2013	1	Cadmium	6.4	Yes		0.33	mg/kg
2101-S13-0-1	04/26/2013	1	Calcium	13000	Yes		56	mg/kg
2101-S13-0-1	04/26/2013	1	Chromium	37	Yes		0.56	mg/kg
2101-S13-0-1	04/26/2013	1	Cobalt	6.1	Yes		2.2	mg/kg
2101-S13-0-1	04/26/2013	1	Copper	95	Yes		1.1	mg/kg
2101-S13-0-1	04/26/2013	1	Iron	15000	Yes		5.6	mg/kg
2101-S13-0-1	04/26/2013	1	Lead	390	Yes		0.89	mg/kg
2101-S13-0-1	04/26/2013	1	Magnesium	7100	Yes		56	mg/kg
2101-S13-0-1	04/26/2013	1	Manganese	260	Yes		0.56	mg/kg
2101-S13-0-1	04/26/2013	1	Molybdenum	1.6	Yes		1.1	mg/kg
2101-S13-0-1	04/26/2013	1	Nickel	27	Yes		2.2	mg/kg
2101-S13-0-1	04/26/2013	1	Potassium	500	Yes		56	mg/kg
2101-S13-0-1	04/26/2013	1	Selenium	2.2	Yes	U	2.2	mg/kg
2101-S13-0-1	04/26/2013	1	Silver	6.5	Yes		0.56	mg/kg
2101-S13-0-1	04/26/2013	1	Sodium	220	Yes		110	mg/kg
2101-S13-0-1	04/26/2013	1	Thallium	2.2	Yes	U	2.2	mg/kg

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sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S13-0-1	04/26/2013	1	Tin	13	Yes		1.1	mg/kg
2101-S13-0-1	04/26/2013	1	Vanadium	37	Yes		2.2	mg/kg
2101-S13-0-1	04/26/2013	1	Zinc	700	Yes		2.2	mg/kg
2101-S13-12-18	04/26/2013	1	Aluminum	7700	Yes		8.9	mg/kg
2101-S13-12-18	04/26/2013	1	Antimony	1.8	Yes	U	1.8	mg/kg
2101-S13-12-18	04/26/2013	1	Arsenic	7.7	Yes		0.71	mg/kg
2101-S13-12-18	04/26/2013	1	Barium	70	Yes		8.9	mg/kg
2101-S13-12-18	04/26/2013	1	Beryllium	0.30	Yes		0.27	mg/kg
2101-S13-12-18	04/26/2013	1	Cadmium	23	Yes		0.27	mg/kg
2101-S13-12-18	04/26/2013	1	Calcium	4400	Yes		45	mg/kg
2101-S13-12-18	04/26/2013	1	Chromium	22	Yes		0.45	mg/kg
2101-S13-12-18	04/26/2013	1	Cobalt	6.5	Yes		1.8	mg/kg
2101-S13-12-18	04/26/2013	1	Copper	55	Yes		0.89	mg/kg
2101-S13-12-18	04/26/2013	1	Iron	20000	Yes		4.5	mg/kg
2101-S13-12-18	04/26/2013	1	Lead	810	Yes		0.71	mg/kg
2101-S13-12-18	04/26/2013	1	Magnesium	3400	Yes		45	mg/kg
2101-S13-12-18	04/26/2013	1	Manganese	260	Yes		0.45	mg/kg
2101-S13-12-18	04/26/2013	1	Molybdenum	0.89	Yes	U	0.89	mg/kg
2101-S13-12-18	04/26/2013	1	Nickel	19	Yes		1.8	mg/kg
2101-S13-12-18	04/26/2013	1	Potassium	410	Yes		45	mg/kg
2101-S13-12-18	04/26/2013	1	Selenium	1.8	Yes	U	1.8	mg/kg
2101-S13-12-18	04/26/2013	1	Silver	7.1	Yes		0.45	mg/kg
2101-S13-12-18	04/26/2013	1	Sodium	160	Yes		89	mg/kg
2101-S13-12-18	04/26/2013	1	Thallium	1.8	Yes	U	1.8	mg/kg
2101-S13-12-18	04/26/2013	1	Tin	430	Yes		0.89	mg/kg
2101-S13-12-18	04/26/2013	1	Vanadium	29	Yes		1.8	mg/kg
2101-S13-12-18	04/26/2013	1	Zinc	370	Yes		1.8	mg/kg
2101-S13-1-6	04/26/2013	1	Aluminum	6600	Yes		9.4	mg/kg
2101-S13-1-6	04/26/2013	1	Antimony	1.9	Yes	U	1.9	mg/kg
2101-S13-1-6	04/26/2013	1	Arsenic	5.4	Yes		0.75	mg/kg
2101-S13-1-6	04/26/2013	1	Barium	68	Yes		9.4	mg/kg
2101-S13-1-6	04/26/2013	1	Beryllium	0.34	Yes		0.28	mg/kg
2101-S13-1-6	04/26/2013	1	Cadmium	8.7	Yes		0.28	mg/kg
2101-S13-1-6	04/26/2013	1	Calcium	4600	Yes		47	mg/kg

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2101-S13-1-6	04/26/2013	1	Chromium	21	Yes		0.47	mg/kg
2101-S13-1-6	04/26/2013	1	Cobalt	7.2	Yes		1.9	mg/kg
2101-S13-1-6	04/26/2013	1	Copper	110	Yes		0.94	mg/kg
2101-S13-1-6	04/26/2013	1	Iron	15000	Yes		4.7	mg/kg
2101-S13-1-6	04/26/2013	1	Lead	750	Yes		0.75	mg/kg
2101-S13-1-6	04/26/2013	1	Magnesium	3400	Yes		47	mg/kg
2101-S13-1-6	04/26/2013	1	Manganese	240	Yes		0.47	mg/kg
2101-S13-1-6	04/26/2013	1	Molybdenum	0.94	Yes	U	0.94	mg/kg
2101-S13-1-6	04/26/2013	1	Nickel	24	Yes		1.9	mg/kg
2101-S13-1-6	04/26/2013	1	Potassium	430	Yes		47	mg/kg
2101-S13-1-6	04/26/2013	1	Selenium	1.9	Yes	U	1.9	mg/kg
2101-S13-1-6	04/26/2013	1	Silver	7.2	Yes		0.47	mg/kg
2101-S13-1-6	04/26/2013	1	Sodium	150	Yes		94	mg/kg
2101-S13-1-6	04/26/2013	1	Thallium	1.9	Yes	U	1.9	mg/kg
2101-S13-1-6	04/26/2013	1	Tin	210	Yes		0.94	mg/kg
2101-S13-1-6	04/26/2013	1	Vanadium	40	Yes		1.9	mg/kg
2101-S13-1-6	04/26/2013	1	Zinc	310	Yes		1.9	mg/kg
2101-S13-18-24	04/26/2013	1	Aluminum	8400	Yes		9.1	mg/kg
2101-S13-18-24	04/26/2013	1	Antimony	1.8	Yes	U	1.8	mg/kg
2101-S13-18-24	04/26/2013	1	Arsenic	5.0	Yes		0.73	mg/kg
2101-S13-18-24	04/26/2013	1	Barium	56	Yes		9.1	mg/kg
2101-S13-18-24	04/26/2013	1	Beryllium	0.31	Yes		0.27	mg/kg
2101-S13-18-24	04/26/2013	1	Cadmium	7.0	Yes		0.27	mg/kg
2101-S13-18-24	04/26/2013	1	Calcium	3100	Yes		45	mg/kg
2101-S13-18-24	04/26/2013	1	Chromium	20	Yes		0.45	mg/kg
2101-S13-18-24	04/26/2013	1	Cobalt	6.3	Yes		1.8	mg/kg
2101-S13-18-24	04/26/2013	1	Copper	30	Yes		0.91	mg/kg
2101-S13-18-24	04/26/2013	1	Iron	16000	Yes		4.5	mg/kg
2101-S13-18-24	04/26/2013	1	Lead	97	Yes		0.73	mg/kg
2101-S13-18-24	04/26/2013	1	Magnesium	3000	Yes		45	mg/kg
2101-S13-18-24	04/26/2013	1	Manganese	220	Yes		0.45	mg/kg
2101-S13-18-24	04/26/2013	1	Molybdenum	0.91	Yes	U	0.91	mg/kg
2101-S13-18-24	04/26/2013	1	Nickel	18	Yes		1.8	mg/kg
2101-S13-18-24	04/26/2013	1	Potassium	450	Yes		45	mg/kg

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2101-S13-18-24	04/26/2013	1	Selenium	1.8	Yes	U	1.8	mg/kg
2101-S13-18-24	04/26/2013	1	Silver	6.9	Yes		0.45	mg/kg
2101-S13-18-24	04/26/2013	1	Sodium	160	Yes		91	mg/kg
2101-S13-18-24	04/26/2013	1	Thallium	1.8	Yes	U	1.8	mg/kg
2101-S13-18-24	04/26/2013	1	Tin	6.8	Yes		0.91	mg/kg
2101-S13-18-24	04/26/2013	1	Vanadium	26	Yes		1.8	mg/kg
2101-S13-18-24	04/26/2013	1	Zinc	140	Yes		1.8	mg/kg
2101-S13-6-12	04/26/2013	1	Aluminum	7200	Yes		9.3	mg/kg
2101-S13-6-12	04/26/2013	1	Antimony	2.0	Yes		1.9	mg/kg
2101-S13-6-12	04/26/2013	1	Arsenic	6.3	Yes		0.75	mg/kg
2101-S13-6-12	04/26/2013	1	Barium	81	Yes		9.3	mg/kg
2101-S13-6-12	04/26/2013	1	Beryllium	0.35	Yes		0.28	mg/kg
2101-S13-6-12	04/26/2013	1	Cadmium	20	Yes		0.28	mg/kg
2101-S13-6-12	04/26/2013	1	Calcium	5900	Yes		47	mg/kg
2101-S13-6-12	04/26/2013	1	Chromium	23	Yes		0.47	mg/kg
2101-S13-6-12	04/26/2013	1	Cobalt	6.4	Yes		1.9	mg/kg
2101-S13-6-12	04/26/2013	1	Copper	76	Yes		0.93	mg/kg
2101-S13-6-12	04/26/2013	1	Iron	17000	Yes		4.7	mg/kg
2101-S13-6-12	04/26/2013	1	Lead	230	Yes		0.75	mg/kg
2101-S13-6-12	04/26/2013	1	Magnesium	4300	Yes		47	mg/kg
2101-S13-6-12	04/26/2013	1	Manganese	240	Yes		0.47	mg/kg
2101-S13-6-12	04/26/2013	1	Molybdenum	0.93	Yes	U	0.93	mg/kg
2101-S13-6-12	04/26/2013	1	Nickel	25	Yes		1.9	mg/kg
2101-S13-6-12	04/26/2013	1	Potassium	370	Yes	K	47	mg/kg
2101-S13-6-12	04/26/2013	1	Selenium	1.9	Yes	U	1.9	mg/kg
2101-S13-6-12	04/26/2013	1	Silver	7.1	Yes		0.47	mg/kg
2101-S13-6-12	04/26/2013	1	Sodium	160	Yes		93	mg/kg
2101-S13-6-12	04/26/2013	1	Thallium	1.9	Yes	U	1.9	mg/kg
2101-S13-6-12	04/26/2013	1	Tin	15	Yes	K	0.93	mg/kg
2101-S13-6-12	04/26/2013	1	Vanadium	32	Yes		1.9	mg/kg
2101-S13-6-12	04/26/2013	1	Zinc	320	Yes		1.9	mg/kg
2101-S16-0-1	04/26/2013	1	Aluminum	8900	Yes		11	mg/kg
2101-S16-0-1	04/26/2013	1	Antimony	2.4	Yes		2.1	mg/kg
2101-S16-0-1	04/26/2013	1	Arsenic	3.4	Yes		0.86	mg/kg

sys_sample_code	sample_date	dilution_factor	chemical_name	result_value	reportable_result	validator_qualifiers	reporting_detection_limit	detection_limit_unit
2101-S16-0-1	04/26/2013	1	Barium	84	Yes		11	mg/kg
2101-S16-0-1	04/26/2013	1	Beryllium	0.32	Yes	U	0.32	mg/kg
2101-S16-0-1	04/26/2013	1	Cadmium	2.9	Yes		0.32	mg/kg
2101-S16-0-1	04/26/2013	1	Calcium	3900	Yes		54	mg/kg
2101-S16-0-1	04/26/2013	1	Chromium	31	Yes		0.54	mg/kg
2101-S16-0-1	04/26/2013	1	Cobalt	7.6	Yes		2.1	mg/kg
2101-S16-0-1	04/26/2013	1	Copper	62	Yes		1.1	mg/kg
2101-S16-0-1	04/26/2013	1	Iron	14000	Yes		5.4	mg/kg
2101-S16-0-1	04/26/2013	1	Lead	440	Yes		0.86	mg/kg
2101-S16-0-1	04/26/2013	1	Magnesium	2900	Yes		54	mg/kg
2101-S16-0-1	04/26/2013	1	Manganese	240	Yes		0.54	mg/kg
2101-S16-0-1	04/26/2013	1	Molybdenum	1.1	Yes	U	1.1	mg/kg
2101-S16-0-1	04/26/2013	1	Nickel	26	Yes		2.1	mg/kg
2101-S16-0-1	04/26/2013	1	Potassium	820	Yes		54	mg/kg
2101-S16-0-1	04/26/2013	1	Selenium	2.1	Yes	U	2.1	mg/kg
2101-S16-0-1	04/26/2013	1	Silver	12	Yes		0.54	mg/kg
2101-S16-0-1	04/26/2013	1	Sodium	160	Yes		110	mg/kg
2101-S16-0-1	04/26/2013	1	Thallium	2.1	Yes	U	2.1	mg/kg
2101-S16-0-1	04/26/2013	1	Tin	14	Yes		1.1	mg/kg
2101-S16-0-1	04/26/2013	1	Vanadium	34	Yes		2.1	mg/kg
2101-S16-0-1	04/26/2013	1	Zinc	180	Yes		2.1	mg/kg

Catch the Latest Advice
health.ny.gov/fish

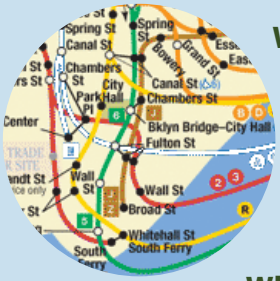
MAPS INSIDE

NEW YORK CITY AREA

Health Advice on Eating Fish You Catch

Why We Have Advisories

Fishing is fun and fish are an important part of a healthy diet. Fish contain high quality protein, essential nutrients, healthy fish oils and are low in saturated fat. However, some fish contain chemicals at levels that may be harmful to health. To help people make healthier choices about which fish they eat, the New York State Department of Health issues advice about eating sportfish (fish you catch). The health advice about which fish to eat depends on:



Where You Fish (see maps inside)

Fish from waters that are close to human activities and contamination sources are more likely to be contaminated than fish from remote marine waters. **In the New York City area, fish from the Long Island Sound or the ocean are less contaminated.**

Who You Are

Women of childbearing age (under 50) and children under 15 are advised to limit the kinds of fish they eat and how often they eat them. Women who eat highly contaminated fish and become pregnant may have an increased risk of having children who are slower to develop and learn. Chemicals may have a greater effect on the development of young children or unborn babies. Also, some chemicals may be passed on in mother's milk.

Women beyond their childbearing years and men may face fewer health risks from some chemicals. For that reason, the advice for women over age 50 and men over age 15 allows them to eat more kinds of sportfish and more often (see tables, pages 4 and 6).

What You Catch

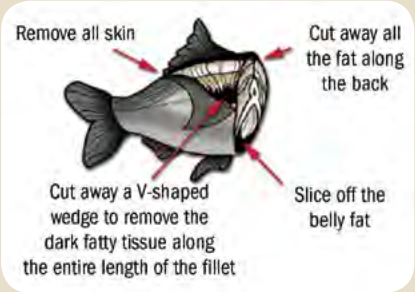
There is specific advice about limiting or not eating certain kinds of fish in the NYC area (see tables, pages 4 and 6). Some species (kinds of fish) have higher levels of chemicals than others. In general, smaller fish are less contaminated than larger, older fish of the same species.

Health Risks

The primary chemicals of concern in New York City waters are PCBs, dioxin and cadmium. These chemicals build up in your body over time. Health problems that may result from chemicals in fish range from small changes in health that are hard to detect to birth defects and cancer. (Visit www.health.ny.gov/fish for more info.)

Tips for Healthier Eating

- PCBs and dioxin are found at higher levels in the fat of fish. Reduce fat by properly trimming, skinning and cooking your catch:



- Cooking or soaking fish cannot eliminate the chemicals, but heat from cooking melts some of the fat. Broil, grill or bake the trimmed, skinned fish on a rack so that the fat drips away. Do not use drippings in sauces or gravies.
- Do not eat the soft "green stuff" (tomalley, mustard, liver or hepatopancreas) found in the body section of crabs and lobsters, and discard cooking liquid. Tomalley can contain high levels of chemicals, including PCBs, dioxin and cadmium.
- Try to space out your fish meals. For example, if the advice is that you can eat up to four meals a month, don't eat them all in the same week. This is particularly important for women and young children.
- Bacteria, viruses or parasites can be in or on fish. Keep harvested fish cold. Wear gloves when skinning and trimming. Wash hands and surfaces often when preparing fish, and keep raw foods separate. Cook fish and shellfish thoroughly before eating.

UPPER Bay, Rivers and Kills

Raritan Bay west of Wolfe's Pond Park, Arthur Kill, Newark Bay, Kill Van Kull, Upper New York Bay, Hudson River (south of Tappan Zee Bridge), Harlem River, East River

Fish	Women Under 50 & Children Under 15	Men Over 15 & Women Over 50
American eel	**DON'T EAT**	**DON'T EAT**
Atlantic needlefish	**DON'T EAT**	**Up to 1 meal/month**
Blue crabs	**DON'T EAT** **DON'T EAT tomalley**	**Up to 6 crabs/week** **DON'T EAT tomalley**
Bluefish	**DON'T EAT**	**Up to 1 meal/month**
Carp	**DON'T EAT**	**Up to 1 meal/month**
Channel catfish	**DON'T EAT**	**DON'T EAT**
Gizzard shad	**DON'T EAT**	**DON'T EAT**
Goldfish	**DON'T EAT**	**Up to 1 meal/month**
Rainbow smelt	**DON'T EAT**	**Up to 1 meal/month**
Striped bass	**DON'T EAT**	**DON'T EAT :** *Newark Bay, Arthur Kill, Kill Van Kull* **Up to 1 meal/month:** *from other waters listed above*
White catfish	**DON'T EAT**	**DON'T EAT :** *Hudson River, Harlem River, East River*
White perch	**DON'T EAT**	**DON'T EAT :** *Newark Bay, Arthur Kill, Kill Van Kull, Upper New York Bay, Western Raritan Bay* **Up to 1 meal/month :** *from other waters listed above*
Other fish not listed	**DON'T EAT**	**Up to 4 meals/month**

The health advice (see table, left) also applies to tributaries and connected waters if there are no dams, falls or barriers to stop the fish from moving upstream. This is because chemicals remain in fish when they move from one waterbody to another. If you are not sure about possible fish barriers near waters where you are fishing, call your DEC office listed on the back of this booklet.

DEC prohibits the harvest/possession of American eel for food from the Hudson, East and Harlem Rivers, and fishing for/possession of American shad from the Hudson, East and Harlem Rivers and New York State Marine waters. See www.dec.ny.gov/outdoor/fishing.html for fishing regulations.

Visit www.health.ny.gov/fish for the latest fish advisory information.

LOWER Bay, Ocean and Sound

Raritan Bay east of Wolfe's Pond Park, Lower New York Bay, Jamaica Bay, Atlantic Ocean, Long Island Sound

Fish	Women Under 50 & Children Under 15	Men Over 15 & Women Over 50
American eel	up to 1 meal/month	up to 4 meals/month
Bluefish under 20 inches	up to 4 meals/month	up to 4 meals/month
Bluefish over 20 inches	up to 1 meal/month	up to 4 meals/month
Striped bass	up to 1 meal/month	up to 4 meals/month
Weakfish under 25 inches	up to 1 meal/month	up to 4 meals/month
Weakfish over 25 inches	DON'T EAT	up to 1 meal/month
Crab or lobster tomalley	DON'T EAT	DON'T EAT

New York State does not have advice for many fish in these waters because marine fish are generally less contaminated.

The health advice (see table, left) also applies to tributaries and connected waters if there are no dams, falls or barriers to stop the fish from moving upstream. This is because chemicals remain in fish when they move from one waterbody to another. If you are not sure about possible fish barriers near waters where you are fishing, call your DEC office listed on the back of this booklet.

DEC regulations prohibit fishing for/possession of American shad from the Hudson, East and Harlem Rivers and New York State Marine waters. See www.dec.ny.gov/outdoor/fishing.html for fishing regulations.

Visit www.health.ny.gov/fish for the latest fish advisory information.

Fish from Stores and Restaurants

The US Food and Drug Administration (FDA) regulates the sale of commercial fish in markets. Due to concerns about mercury, FDA advises pregnant women, women who may become pregnant, nursing mothers and young children to avoid shark, swordfish, king mackerel and tilefish.

Food and Drug Administration: (888) SAFEFOOD, (888) 723-3366

More Information

New York State Fish Advisories

Department of Health
www.health.ny.gov/fish
(518) 402-7800
(800) 458-1158
email BTSA@health.state.ny.us

Other Fish Information

Environmental Protection Agency
www.epa.gov/ost/fish

Food and Drug Administration
www.fda.gov/Food/ResourcesForYou/Consumers/ucm110591.htm

New York State Fishing

Department of Environmental Conservation (DEC)
www.dec.ny.gov/outdoor/fishing.html

DEC Region 1
(Nassau/Suffolk counties)
Stony Brook, NY
(631) 444-0280

DEC Region 2
(New York City)
Long Island City, NY
(718) 482-4922

Fishing marine waters

DEC Bureau of Finfish and Crustaceans
East Setauket, NY
(631) 444-0435

PROJECT NOTE WESTON SOLUTIONS, INC.

To: Neo Smelting and Refining Co. Site File
Date: July 1, 2013

W.O. No.: 20405.012.013.2101.00

From: Denise Breen, Weston Solutions, Inc.

Subject: Chronological Historical Documentation for Neo Smelting and Refining Co.

References

Wolff, Max J. Neo-Smelting & Ref. v. Harris Warehs.- May 15, 2958. Downloaded from: www.leagle.com/xmlResult.aspx?smldoc=195830313Misc... January 22, 2013. [2 pages]

Long Island Star-Journal – 16. Help Wanted Ads. June 15, 1944. [1 page]

GKC Industries. Whitestone Manor Condominiums downloaded from: www.gkcindustried.com/project-2.html. December 27, 2012. [2 pages]

The information is the chart below was collected by WESTON personnel from various references found using Certified Sanborn Maps, Historic Aerial Photos, City Directories, Historic Help Wanted Ads, NYC Municipal Archives Tax Photos and general internet searches. Below is a chronological order of the Site's historical documented use from 1854 to the current use as a residential condominium complex.

YEAR(S)	SOURCE	OCCUPANT	NOTES
1854	Book – Images of America: Whitestone	John D. Locke tin & copper products factory	Current complex built (at least partially) for production of tin & copper products and hot irons for clothing & tools
1903, 1916	Sanborn Maps	The American Can Co. (Whitestone Br.), Arabol Mfg.	Ovens present in Sanborns. Arabol Mfg. did cork grinding & storage [Ref. 13]
1940	City Directories		Neo NOT listed [Ref. 10]
Ca. 1940	NYC Municipal Archives Tax Photo	**Neo-Smelting & Refining Inc.**	Northwest corner of complex – current entrance area to condos [Ref. 27]
1941	Sanborn Maps	**"Metal Reeling"**	No company names provided [Ref. 13]
1942-1944	City Directories, Sanborn Maps	**Neo Metal & Chemical Corp**, Alloy Steel Forging & Tool Co. Inc.	1942 Sanborns indicate "metal refining" in Neo's space [Ref. 10; 13]
1944-1948	City Directories, 1944 Help Wanted Ad	**Neo-Smelting & Refining**	No further info provided [Ref. 10;
1950	Sanborn Maps	**"Metal Refining"**	No company names provided for metal refining area [Ref. 13]

1958	Court case – online	**Neo-Smelting & Refining**	Case involves warehousing company losing cadmium metal in drums (~1300 lbs) which belonged to Neo
1981-2006	Sanborn Maps	Metal Scrap Warehouse	[Ref. 13]
2008	Internet Research	Whitestone Manor Condominiums	"Warehouse" was converted to the current residential building (49 units)

Denise Breen
Assistant Project Scientist

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• NEO-SMELTING & REF....

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NEO-SMELTING & REF. v. HARRIS WAREHS.

13 Misc.2d 290 (1958)

Neo-Smelting & Refining, Inc., Plaintiff,
v.
Harris Warehouses, Inc., et al., Defendants.

City Court of the City of New York, Trial Term, New York County.

May 15, 1958.

Albert T. Schwartz for plaintiff.

Aaron Z. Kassin for defendants.

[13 Misc.2d 291]

MAX J. WOLFF, Ref.

This case was tried before me by consent without a jury. Findings were waived.

The action involves losses of cadmium metal belonging to the plaintiff and contained in drums which were transported in the plaintiff's behalf by the defendant Tidewater Terminals Transportation Company, Inc., hereinafter called Tidewater, and stored for periods of time in a warehouse of the defendant Harris Warehouses, Inc., hereinafter called Harris.

It has been established by a fair preponderance of the evidence that the losses occurred while the drums were in the storage warehouse of Harris. When it received the drums, in six different shipments, Harris signed receipts which showed them to be "in apparent good order". When they were examined in the warehouse after months of storage, they were found to be in a disturbed condition; apparently they had been opened. The appearance of the drums at the time of this examination and other attendant circumstances strongly indicate that there had been pilfering while the drums were in the custody of Harris, the warehouseman. Not all but some of the contents of various drums were removed. It is not probable that this occurred during the short periods of time the drums were in the possession of the carrier, Tidewater, on six different occasions. The defendant Harris has failed to come forward with any explanation at all for such losses and has not absolved itself of negligence. There is no evidence which would sustain a finding against Tidewater.

On the back of each warehouse receipt covering the shipments in suit is the following printed provision: "Based on rates charged herein, the responsibility of the warehouse for any piece or package is limited to fifty dollars ($50.00) for any piece

[13 Misc.2d 292]

or package together with its contents, unless the value hereof is made known at the time of the storing and receipted for in the warehouse receipt."

This limitation of "the responsibility of the warehouse" did not serve to relieve such bailee from liability for its own fault or negligence (cf. *Howard v. Handler Bros. & Winell*, 279 App. Div. 72, affd. 303 N.Y. 990; *Rappaport v. Gottlieb-Sattler*, 280 App. Div. 424, affd. 305 N.Y. 594; *Abend v. Haberman*, 281 App. Div. 262, 264-265). Although the plaintiff did not specifically inform Harris of the value of the contents of the drums, nevertheless Harris knew that they contained cadmium metal and the weight of the metal. It had stored similar

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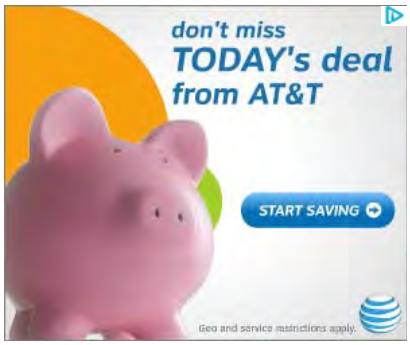

• **BOGIE v. ROSENBERG, United States Court of Appeals, Seventh Circuit**
An invasion of privacy claim against Joan Rivers made by a woman included in the film "Joan Rivers: A Piece of Work"

• **O'FARRELL v. LANDIS, Supreme Court of Ohio**
A candidate's petition to inspect ballots in an election he lost by 8 votes

• **STOCKER v. U.S., United States Court of Appeals, Sixth Circuit**
What sort of proof taxpayers may introduce in order to demonstrate the timely filing of a tax return in which they sought a federal tax refund of just over $64k

• **ALLFLEX USA, INC. v. AVID IDENTIFICATION SYSTEMS, INC., United States Court of Appeals, Federal Circuit**
A patent dispute over RFID technology used in tags attached to animals to locate them if they are lost

• **MELCHER v. GREENBERG TRAURIG, LLP, Appellate Division of the Supreme Court of New York, First Department**
A $10m claim against the Greenberg Traurig law firm alleging a partner lied about the authenticity of a key document that was later burned

1 2 3 4 5 ...

merchandise for the plaintiff over many years. It is reasonable to infer that it was aware of the fact that the contents of each drum had a value much in excess of $50. Moreover, the president of Harris testified that he had never spoken with anyone representing the plaintiff about rates based on values; that he had never discussed the question of released value until after the losses occurred; and also that the rates actually charged were based upon weight, not upon value. No "selective valuations at alternative rates" were offered to the plaintiff. It was admitted by Harris that like receipts bearing this unilateral pronouncement concerning limitation of responsibility were used for all customers. The $50 limitation was an arbitrary one, representing a nominal valuation and having nothing to do with the realities of the transactions between the parties. The warehouseman in this case is not entitled to anything better than a strict interpretation of the self-serving declaration on the back of the receipts, one which does not absolve it from liability for a series of losses totally unexplained and attributable only to its own negligence. It is true that the cases hereinabove cited are for divers reasons not precisely applicable, but I think, nevertheless, that by their broad language they have established a rule that a provision such as the one in hand, even if contractual effect be given to it, does not relate to liability for negligence. *Fire Assn. of Philadelphia v. Saks & Co.* (223 F.2d 822) perhaps unduly limits the effect of these New York decisions and in any event there are factors which distinguish it from the present situation.

I find that 1,323 pounds of cadmium metal were lost. The schedule set forth in the plaintiff's brief is in conformity with the testimony except as to the drums in lot NSR 1A/5A. The gross weight of this lot before the loss took place was 1,048 pounds. Under examination before trial, the defendant's officer,

[13 Misc.2d 293]

Don, testified to a gross weight, apparently after the loss occurred, of 863 pounds. Thus, 185 pounds were lost from this lot; from the others there was a total loss of 1,138 pounds. I find further that the cadmium metal had a value to the plaintiff of $2.40 a pound. The plaintiff is therefore entitled to recover $3,175.20.

Judgment may be entered in favor of the plaintiff and against the defendant Harris Warehouses, Inc., in the sum of $3,175.20, with interest from April 25, 1952.

The complaint against the defendant Tidewater Terminals Transportation Company, Inc., is dismissed on the merits and the judgment to be entered herein will so provide.

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- MANN v. NORTHGATE INVESTORS LLC
- WASHINGTON v. ALLSTATE PROPERTY AND CASUALTY INSURANCE COMPANY
- BEACH v. STATE
- ROSENTHAL v. STATE OF NEV.
- STATE v. SMITH
- APITZ v. TELEDYNE MONARCH RUBBER PENSION PLAN
- DEVINEY v. NATIONSBANK
- STATE v. MARCH
- LYONS BY ALEXANDER v. SMITH
- STATE v. OVERTON
- U.S. v. BOHANON
- PEOPLE v. BURTON
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- IN RE GRIFFIETH
- U.S. v. ORGAD
- FEDERAL TRADE COMMISSION v. DIRECT BENEFITS GROUP, LLC

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213-08 NORTHERN BLVD., BAYSIDE
BA. 9-1000. Phone Bus. NEvins 8-9711

Butchers and Apprentice Butchers

FULL, Part Time or Saturday Work in Manhattan.
Essential Workers Need U.S.E.S. Release
Apply All Week, 8-10 A.M. or Write Qualifications. Personnel Dept.
Gristede Bros., Inc.
Superior Food Stores
1881 PARK AVE. (128th St.) N. Y.

BUTCHER WANTED.
George Keyes, 40-37 Main avenue, Douglaston, L. I. BAyside 9-2080.

BUTCHER — EXPERIENCED, WANTED. GOOD SALARY. STEADY POSITION. CALL Flushing 3-0639.

BUTCHER WANTED—Apply 80-13 Northern boulevard, between 80th and 81st streets, Jackson Heights.

BUTCHER WANTED, STEADY, SMALL SHOP. BAUER'S MARKET,
GREAT NECK 832.

BUTCHER, experienced, good salary. ALL'S MEAT MARKET, 82-09 Roosevelt ave., Woodside, L. I.

CARPENTER, experienced, rockwool insulation, steady employment. Puritan Contracting Co., 136-56 Roosevelt ave. FLushing 9-6474.

CHAUFFEURS WANTED

ESSENTIAL INDUSTRY
EXPERIENCE UNNECESSARY
GOOD HOURLY RATES
PAID VACATIONS
SALARY WHILE LEARNING
Essential Workers Need Release Statement
NORTH SHORE BUS Co.
136-48 Roosevelt Ave., Flushing
Apply Room 200, Daily
Between 9 A.M. and 5 P.M.

CHAUFFEUR, make outside deliveries. Help inside plant when not driving. Light work. Good hours. Permanent employment if satisfactory. Standard Steel, 117-20 14th road, College Point.

CHAUFFEUR—Experienced routeman preferred. Clover Laundry, 14-47 28th avenue, Astoria.

CHAUFFEURS and HELPERS — Experienced. Also laborers for boat yard. Steady work, good pay. Coal yard, foot of Sanford ave., Flushing.

CHAUFFEUR WANTED—Light delivery truck, $40 week, good postwar job. L. I. Supply Co., 96-25 37th avenue, Jackson Heights.

CLEANER for work in P. S. 125, 47th st. and 47th ave., Woodside. See Custodian Engineer, Theodore Kaiser.

COUNTERMAN, experienced, 5 nights, $60 a week; also dishwasher, 5 nights, $40 week; no Saturday or Sunday. Ask for Mr. Kaufman, Wheeler Ship Bldg. Corp., foot of 154th st., Whitestone.

COUNTERMAN, NO SUNDAYS
IDEAL DINER,
31-01 THOMSON AVE., L. I. CITY

COUNTERMEN — Experienced, 6 days, good pay, day work. BELL DINER, 42-02 Bell blvd. BAyside 9-9643.

COUNTERMEN—COOKS
DISHWASHERS—PORTERS

Elevator Operators

Several experienced. Largest, highest class apartment. 8½ hours, 6 days $117 Monthly.
ELDORADO
300 Central Pk. West. SChuyler 4-5401

Elevator Operators

Ages, 18-50 good pay, above scale. No experience required. Vacations with pay. Free uniforms. Steady jobs. Excellent chance for advancement. Apply Supt. of Service, 9-11 A.M.; 5-7 P.M. BARBIZON PLAZA HOTEL, 101 West 58th st., N.Y.C.

Help Wanted Male

Drill Press, Milling Machine Hand Screw & Lathe Opers.

Maintenance Machinists

Electricians

General
TENT & INSTALL MOTORS

MEN
NO EXP. NEEDED
For Assembly, Wiring, General Work
40 TO 60 HOUR WEEK
$30.85 TO $45.50 WEEK

HORNI SIGNAL

MANUFACTURING CORP.,
73 VARICK ST., N. Y.
CANAL ST. STATION—ALL SUBWAYS
Essential Workers Need Release.

Employment Opportunities

FOR 100 MEN
As Bus Operators, Shop and Garage Men
Over 26 Years in This Essential Industry
Bus Operators Earn Up to 96 Cents Per Hour
Mechanics Up to $1.01 Per Hour
Helpers Up to 89c Per Hour
Bodymen Up to 94½c Per Hour
Gas Men Up to 82c Per Hour
Cleaners Up to 69c Per Hour
NOW'S THE TIME
Join this old established company which enjoys good public relations and has an excellent reputation for treating its employees fairly and decently.
Students get half of starting pay when qualified. Time and one-half for overtime after 8 hours. Two weeks pay with vacations. Free $1,000 group Life Insurance —after 6 months eligible for additional insurance.
FREE TRANSPORTATION
Apply Daily
STATEN ISLAND COACH CO. INC.
SAMUEL H. SERKNA
President & General Mgr.
92 BROOK STREET
TOMPKINSVILLE, S. I.

ENGINEERS

ELECTRICAL
MECHANICAL
INDUSTRIAL
TIME STUDY & ASSTS.

Work in connection with the manufacture of vital electronic and communications equipment

For N. Y. and N. J. Plants

APPLY EMPLOYMENT DEPT.
Mon. through Sat., 8:30-4:30.
ALSO SUNDAY
June 18 to 4:30 P. M.
For Sunday Appointment
Phone CI. 5-5925.

WESTERN ELECTRIC
11th av. & W 54 St., N.Y.C.
Release & USES Consent Needed

ENGINEER

Refrigeration and stationary. License required. $52 weekly. 6 days. Large food processing plant. Steady. Write Box 740, EQUITY, 113 West 42nd Street, New York City.

EXPERIENCED HAND WEAVERS, APPLY
142 EAST 32nd ST., N. Y. C.

FIREMAN-HANDY MAN, permanent, excellent wages, daylight room, residential building. Phone Great Neck 2912.

Help Wanted Male

ENGINEERS

ELECTRONIC
RADIO
PROJECT
MECHANICAL

HORNI SIGNAL

MANUFACTURING CORP.
73 VARICK ST., N. Y.
CANAL ST. STATION—ALL SUBWAYS
Essential Workers Need Release

FURNITURE FINISHERS

Macy's Warehouse

Requires the services of several Experienced Furniture Finishers
APPLY IN PERSON
MONDAY THRU FRIDAY
47-44 31st St., L. I. City
Essential workers need release

GAS STATION ATTENDANT AND LUBRICATION MAN, FLushing 3-2034 AFTER 7 P. M.

GROCERY OR PRODUCE CLERKS

Experience Unnecessary
FULL TIME AND PART TIME WORK
8-1 or 2-6 Daily, or 8-6 Any One Day
WORK IN MANHATTAN
ONLY THOSE INTERESTED IN JOB WITH FUTURE!
Boys Under 18 Bring Working Papers
Essential Workers need U.S.E.S. Release
Apply 9-11 All Week Exc. Wed. or Write
Gristede Bros., Inc.
Superior Food Stores
1881 PARK AVE. (128th St.) N. Y.

GROCERY CLERK — EXPERIENCED. GOOD PAY. APPLY AT 115-23 14th RD., COLLEGE POINT, FLush. 3-2038.

GUARDS

For airline terminal, at least 5'8" and physically fit. Prefer men over 40. Permanent jobs.
American Export Airlines
Marine Base LaGuardia Field
(All WMC rules observed)

HANDYMAN

Engineers Assistant, 72c hour, 8-5 P. M. Write Box 709, EQUITY, 113 West 42nd Street, N. Y. City.

HANDYMAN, Garden Apartment Development, $110 per month and room if wanted. Apply Supt., MURRAY HILL TERRACE Apartments, 147th st. and Roosevelt ave., Flushing.

HANDYMAN, full or part time, for Forest Hills apartment house. See Supt., 98-11 Queens boulevard.

HARDWARE CLERK, excellent post-war opportunity. FOX & SCHAMEL, INC., 136-41 Roosevelt ave., Flushing.

HARDWARE MAN, familiar with mill supplies, to handle sales, special orders. Excellent post-war opportunity for discharged veterans.
Box Z-3, Star-Journal, Flushing.

HOTEL HELP

ELEVATOR MAINTENANCE MAN
HOUSEMEN, PORTERS
Apply Chief Engineer
Victoria Hotel
7TH AVE. AT 51ST ST.

HOUSEMEN–PORTERS

STEADY POSITIONS—GOOD PAY
APPLY FREE EMPLOYMENT OFFICE, ROOM 330
9 a.m. to 4:30 p.m. Daily Except Sun.

HOTEL LEXINGTON

LEXINGTON AVE. at 48 ST., N. Y. C.

HOUSEMAN

$28 Weekly — Good Tips.
HOTEL MURRAY
38th St. and Park Ave., N. Y. City

INSTRUMENT & TOOLMAKERS

HORNI SIGNAL

MANUFACTURING CORP.
73 VARICK ST., N. Y.
CANAL ST. STATION—ALL SUBWAYS
Essential Workers Need Release

JANITOR

White—Full Time
Apartment, Gas, Electric
Plus Salary
QUEENSBORO CORP.
81-20 37TH AVE., JACKSON HEIGHTS

JANITOR, white, apartment hotel, energetic couple, general housecleaning, salary $140. 4 elegant rooms. HA. 1159.

JANITOR and WIFE, keep small business building painted, clean, $150 monthly, room, meals. BAyside 9-0717.

LABORERS (2), EXPERIENCED IN CEMENT WORK. MAX WERNER, 20-43 42nd ST., Astoria 8-5077.

LAUNDRY MARKER-ASSORTER wanted, experienced only apply, steady job. Bellefair Laundry, 41-29 162nd st. Flush.

MACHINISTS

FAMILIAR WITH LAYOUT
1st CLASS ALL AROUND MEN
GOOD RATES
IDEAL WORKING CONDITIONS.
Call or write for interview.
Wm. H. Jackson
COMPANY
36-29 23rd St., L. I. City
STillwell 4-4483

Machinist 1st Class
Sheet Metal Workers
Engine Lathe Operators
FOR EXPERIMENTAL WORK ON RADIO EQUIPMENT
Essential workers need release.
Hazeltine Electronic Corp.
58-25 LITTLE NECK PARKWAY, LITTLE NECK, L. I.
Free Bus from Trains and Buses

MACHINIST

Machinist Helper
Maintenance Machinist
Ass't. Toolmaker
TRAINEES

Splendid opportunity to train under top grade men in small Elmhurst war plant; 58-hour week, insurance, vacation, excellent opportunity for ambitious type. Box X-15, Star-Journal, or phone HAvemeyer 9-2600 between 9-5:30.

MAN—Opportunity to learn trade, willing individual in good health, age 40 to 50, steady employment now and postwar.
Box X-29, Star-Journal

MAN as helper for apartment house, $125 monthly and room. Apply afternoons, Supt., 132-09 Maple avenue.
FLushing 3-6061

MAN to work in storage and rug cleaning plant. Sunnyside Storage, 43-09 Queens blvd., Sunnyside.

MAN FOR PEARLIZING-DIPPER. APPLY PENT HOUSE, 13 WEST 28th ST., N. Y. CITY. MUrray Hill 3-0403.

MAN for general blacksmith and tool sharpening. 36-42 Vernon blvd., L. I. City. Call Astoria 8-0227.

MECHANIC'S HELPER and plumber's helper. Puritan Contracting Co., 136-56 Roosevelt ave., FLushing 9-6474.

Help Wanted Male

MECHANICS

For N. Y. and N. J. Plants
Men with instrument making, machine or tool shop experience
Work in connection with the manufacture of vital electronic and communications equipment.
Apply Employment Dept.
Monday through Sat., 8:30-4:30
ALSO SUNDAY
June 18, to 4:30 P. M.
WESTERN ELECTRIC
11th av. & W 54 St., N.Y.C.
403 Hudson St., N. Y. C.
Release and USES Consent Needed

MEN

Experienced Household Refrigeration Mechanics And Service Men

WE TRAIN YOU

for testing and service on high altitude testing chamber engines.
This Is An Entirely New Field WAR WORK
POST WAR OPPORTUNITY
$53 Week Start
There Is No Limit As To Earnings
Well Established Organization
MOBILE REFRIGERATION
DIVISION OF BOWSER INC.
38-32 54TH STREET
WOODSIDE

MEN WANTED

$36.40 START
48 HOUR WEEK
NO EXPERIENCE NECESSARY
Essential Industry
With Post-War Future
Essential Workers Need Release Statement
THE MONROE SANDER CORP.
10-18 46TH AVENUE
L. I. CITY
IRT to Vernon-Jackson Station
8th Ave. Subway to Ely Station

MEN

$1 PER HOUR
Time and one-half overtime.
Uniforms furnished. Excellent working conditions.
Essential Workers Not Considered!
APPLY PERSONNEL MANAGER
PEPSI-COLA CO
36th Ave. and 5th St. L. I. City

MEN
PART TIME
STOCK JOBS
Any group of hours between 9 A.M. and 6 P.M.
APPLY
MONDAY THRU FRIDAY
Macy's Warehouse
47-44 31st St., L. I. City
Essential Workers Need Release

M E N

Interested in post war security. A large food processing plant has the following openings
Elevator Operators
Freight Handlers
General Helpers
EXPERIENCED AND INEXPERIENCED
Apply
Quaker Maid Co.
80 39th STREET BROOKLYN
Release Required

MEN

15 GOOD STRONG MEN
VITAL WAR WORK
IN MIDTOWN MANHATTAN
STEADY JOBS!
DAY OR NIGHT SHIFTS
Manufacturing heavy truck springs for ARMY & NAVY
Apply daily 9-4 except Sat.
BRING WORK CLOTHES
F. R. Merrill Spring Co.
528 W. 28TH ST. (10th AVE.)

MEN & WOMEN

NO EXPERIENCE!
Clean, factory work, 5 day week. Hours: 7:30 A. M. to 4 P. M. 48 hours; time and ½ over 40 hours.
GOOD STARTING PAY!
Opportunity for ADVENCEMENT!
CAFETERIA FOOD AT COST!
PLEASANT ENVIRONMENT!
POST-WAR POSSIBILITIES!
Apply 8:30 to 5 (Sat. 9-12:30)
AMERICAN CHICLE CO.
36-30 Thomson Ave., L. I. City.
(Rawson St. Station)
Essential workers need release.

MEN – BOYS

Experience Unnecessary
LIGHT FACTORY WORK
GOOD PAY
40 Hour; 5 Day Week Plus Overtime
MAYFLOWER ICE CREAM CORP.
42-25 VERNON BLVD., L. I. CITY

MEN

FOR BAKERY SHOP
GOOD OPPORTUNITY
NO EXPERIENCE NECESSARY
STEVENSON PIE CO.
48-18 33RD STREET,
L. I. CITY

MEN—GENERAL HELPERS AND OVEN MEN

80-85c HOUR START
NO EXPERIENCE NECESSARY
Essential Industry. Steady Work
S. B. THOMAS INC.
35-01 Queens Blvd. L. I. City

MEN! MEN!

Factory Help. Experience Unnecessary
GOOD PAY!
Plenty Overtime, Permanent Positions
Crown Oil Products Corp.
2-14 49TH AVE. L. I. CITY

MEN—BOYS
KNICKERBOCKER LAUNDRY
EXPERIENCED OR INEXPERIENCED
Good pay. All departments.
FULL OR PART TIME
5-day week—Vacation with pay
Time and one half overtime
43-23 Dutch Kills Street, L. I. City
8th ave. sub. 46th st. sta. (46th st. exit)

Men–Boys Over 18

Folding Machine operators, experience unnecessary, night work, 5 P.M. to 1:30 A.M. $25 week, 40 hours. Quality Art. Next to Sunshine Bldg. (Queens Plaza Sta.) L. I. City.

Help Wanted Male
AIRCRAFT

M E N
NO EXPERIENCE

MEALS & UNIFORMS FURNISHED
FULL OR PART TIME
BAKERS
DISHWASHERS
POTWASHERS
PORTERS, Day or Night
Soda Men, good appearance
Waiters 9 P. M. Till 1 A. M.
BONUSES PAID VACATIONS
PERMANENT POSITIONS
Essential Workers Need Release
SCHRAFFT'S
APPLY ALL DAY
56 WEST 23rd ST., N. Y.
or Apply 5 P. M. to 8 P. M.
1381 B'way (nr 38 st.) N.Y.
OR APPLY
37-24 82d St., Jackson Hts.

MEN

50
TEST SET TECHNICIANS

Radio or electrical background desirable for building and maintaining electronic testing equipment.
AND
30
INSTRUMENT MAKERS

Machinists or men with instrument making experience for building mechanical parts for electronic testing equipment.
APPLY: EMPLOYMENT DEPT.
MON. THROUGH SAT. AND SUNDAY, JUNE 18, TO 4:30 P. M.
WESTERN ELECTRIC
Room 400, 403 Hudson St.,
NEW YORK CITY
Release USES consent needed

MEN

AUTOMATIC SCREW MACHINE OPERATORS
MACHINIST TRAINEES
TOOL GRINDERS
TOOL SHARPENERS
PROCESS INSPECTORS
LABORERS
MATERIAL HANDLERS
Good Wages - Overtime
Essential workers need release
METAL MFG. DIVISION
21-07 41st Ave., L. I. City
Queens Plaza Bus and Sub. Station

MEN

Experienced
and Inexperienced
For Large Modern Candy Plant
If you are not working in a war job here is an opportunity for steady employment, now and in the years to come.
Honorably discharged service men welcome . . . We may have just the job for you.
OPPORTUNITY FOR ADVANCEMENT
Apply Employment Office. (Do not phone.)
LOFT Candy Corp.
40TH AVE. at 9TH ST., L. I. CITY
IRT-BMT, 8th Ave.-8th Ave. subways to Queens Plaza Sta. Then Vernon Blvd. bus 102 to door of plant.
Essential workers need release.

MEN

For general factory work in critical defense plant. Afternoon and midnight shift. No experience necessary. Steady work with post war security. 90c per hour to start. 48 hour week. Time and a half over 40 hours.
Neo-Smelting & Refining Inc.
150-40 11th Ave.
Whitestone

MEN

Stock and Shipping Dept.
40 Hour, 5 Day Week
Plenty of Overtime
Hy-Grade Products Co., Inc.
35-35 35th Street, L. I. City
Essential Workers Need Release

MEN (2)

Receiving and Shipping
Departmental Selling
No Experience Necessary
We train you
Pleasant Working Conditions
STEADY EMPLOYMENT
Excellent Opportunity For Advancement
APPLY IN PERSON
BETWEEN 9 AND 5:30 DAILY
Sears Roebuck & Co.
48-18 Queens blvd., Woodside
ASK FOR MR. SMITH

M E N

WANTED FOR NIGHT SHIFTS
Bonus Paid — Overtime
EARN WHILE YOU LEARN
PLASTIC INJECTION, MOLDING
Atlantic Plastics, Inc.
33-18 57TH ST., WOODSIDE
HAvemeyer 9-0973

Men, Opportunity

OPERATE PAPER BAG MACHINES
FOR FOOD PRODUCTS
Experience Unnecessary, Draft Exempt
Custom Made Paper Bag Co., Inc.
33-02 SKILLMAN AVE., L. I. CITY

MEN! MEN!

INTERESTING, VITAL WAR WORK
DAY WORK, NO EXPERIENCE
MUST BE STRONG AND ABLE
PREMIER CRYSTAL LABORATORIES
63 Park Row, N. Y. (Opp. City Hall)
Essential Workers Need Release

MEN WANTED—Light factory work, essential industry. Average $40-$50 week. Midtown Finishing Co., 22-15 Borden ave., L. I. City.

Help Wanted Male

MEN! MEN!

Look ahead
with confidence
. . . armed with an
important skill.

Chance Vought Aircraft

Designers & Builders of the Corsair
STRATFORD, CONN.

will give you careful training in aircraft assembling and riveting.

Good pay while you learn, increases as you merit them, monthly production bonuses.

SUITABLE LIVING QUARTERS LOCATED BY THE COMPANY, ARE AVAILABLE TO YOU.

For full details
See Company Representative at
U. S. Employment Serv.
of the War Manpower Commission
87 Madison Av.-28th St.
(street office) NEW YORK
Monday through Friday
9 A. M. to 5 P. M.
Essential Workers Need Release.

MEN

PORTERS
GENERAL HELPERS
SNAGGERS
MAINTENANCE HELPERS

Must be able to work either Night or Day Shift and pass physical examination.
Satisfactory credentials concerning citizenship, birth, social security number and draft status will be required as well as release statement.
APPLY DAILY
8:30 A.M. TO 1 P.M.
& 2 P.M. TO 5 P.M.
SATS. 8:30 A.M. TO 11 A.M.
OR WRITE IN DETAIL TO
Ford Instrument Company, Inc.
31 PL. & THOMSON AV.
LONG ISLAND CITY
IND Subway, Queens Plaza Station
IRT or BMT Subway, Rawson St. Sta.

MEN

NO EXPERIENCE!
WHITE or COLORED
$40 PER WEEK
After Training
$35 TO START
'PEACETIME' JOBS!
Light, Factory Work
KEN'T
135-32 ROOSEVELT AVE. (Main St.) FLUSHING

MEN

Light Factory Work
EXP'D OR INEXP'D
GOOD PAY
Automatic Increases
Day and Nights Shifts
Essential Workers Need Release
ANCHOR OPTICAL CORP.
111 8TH AVE. (15th St.) N. Y. C.

MEN

FOR LARGE ICE PLANT
Experience Unnecessary
GOOD WAGES
Plenty of Overtime
Knickerbocker Ice Co.
34-33 Collins Place, Flushing, L. I.

MEN

Needed in Essential Industry
No experience. $36.00 minimum for 48 hour week. Apply mornings before noon.
Mundet Cork Corp.
65 SOUTH 11TH ST., BROOKLYN
Near Williamsburg Bridge

MEN
Several desirable positions now open in our wholesale parts department. Post war opportunities with old established company. Interesting work. Good working conditions. Excellent opportunity for advancement. 40 hours. Time and ½ overtime.
BISHOP, McCORMICK AND BISHOP,
1221 BEDFORD AVENUE,
BROOKLYN, NEW YORK,
OR
139-29 HILLSIDE AVENUE,
JAMAICA, LONG ISLAND 1, NEW YORK

MEN

General Electric Co.
For Refrigerator Repair Factory
54 Hr. Week
Essential Workers Need Release
21-02 44th Ave. L. I. City
Queens Plaza Station—All Subways

MEN AND BOYS

CANTEEN WORK
Experience Not Necessary
Good Starting Salary. Advancement
Must Be Citizens
APPLY 1-4 P.M.—MR. BARBERIS
45-17 Pearson Street,
Long Island City

MEN—Earn extra money in your spare time from 7 P. M. to midnight. Set bowling pins. Inquire Mr. Coughlin, Mapleways, 163-16 Northern boulevard, Flushing, L. I.

NIGHT WATCHMEN
PORTERS
5 NIGHTS A WEEK!
$35 START!
RAPID ADVANCEMENT!
KENT STORES
135-32 ROOSEVELT AV., FLUSHING

OPERATORS

General, on punch and power presses, day or night shift; experience unnecessary. Apply Personnel Manager, 214 Dean St., Brooklyn.

Help Wanted Male

METHODSMEN
TOOL DESIGNERS
TOOL & DIE MAKERS
MACHINISTS
GEAR CUTTERS
DRILL PRESS OPERATORS
BENCH LATHE OPERATORS
ENGINE LATHE OPERATORS
TURRET LATHE OPERATORS
BOREMATIC OPERATORS
MILLING MACHINE OPERATORS
PROFILER OPERATORS
METAL SPINNERS
GLASS BLOWERS
SHEET METAL WORKERS
WELDERS
PATTERN MAKERS
RADIO TECHNICIANS
LABORATORY ASSISTANTS
JR. DRAFTSMEN
LABORERS
UNSKILLED BENCH WORKERS
MACHINE SHOP TRAINEES
Essential Workers Need Release
SPERRY
GYROSCOPE COMPANY, INC.
MARCUS AVE & LAKEVILLE RD.
LAKE SUCCESS, NEW YORK
Apply Monday-Friday, 8 A. M.-4 P. M.
Saturday, 9-12.

Order Packer and Stock Room Helper

Man, 40-55 years. Permanent position, attractive hours, pleasant working conditions, $30 for 40 hr. week, time and half overtime, noon meal free. Write Box 124, Equity, 113 W. 42 St., N. Y. C.

PAINTERS

Steady job. Night work. 48-hour week, 80c per hour. Write giving age and experience. BOX 826, EQUITY, 113 WEST 42nd ST., N. Y.

PAINTERS

Steady jobs, 48-hour week, $1 per hour, time and half for overtime. Apply
HANSCOM PARKING CO.,
35-10 36th Avenue, L. I. City.

PAINTERS WANTED

Only A-1 Mechanics Need Apply
RUNZEL, BOulevard 3-1207

PAINTERS, EXPERIENCED, WANTED $10 A DAY
CALL IRonsides 6-8515.

PACKERS, experienced for cosmetic factory, midtown Manhattan, $30 start, 40 hour week. Overtime available, time & one half. Box X-36, Star-Journal.

PAPER BOXES

Experienced
Corner Cutters
5-DAY WEEK
With Overtime
At Time and Half
Apply Employ. Office (do not phone)
Loft Candy Corp.
40th Ave. at 9th St., L. I. City
IRT-BMT, 8th Ave.-8th Ave. subways to Queens Plaza Sta. Then Vernon Blvd. bus 102 to door of plant.
Essential workers need release

Paper Machine Operators

5 DAY WEEK, 80 HOURS
Up to $44 plus substantial production bonus if qualified. Essential workers need release. Apply Monday thru Friday 9-11 A. M.
KELLER DORIAN CORP.
516 West 34th St., N. Y. C. 7th Floor

PATROLMEN

Ages 30-45 Yrs. Night Work
Salary $35.28. 44 Hr. Week
IDEAL WORKING CONDITIONS
MODERN HIGH TYPE BUILDING
Apply Personnel Office (3rd. Floor)
ROCKEFELLER CENTER, INC.
50 Rockefeller Plaza New York City
Essential Workers Need Release

PHARMACIST, registered, cosmetic experience, full time, 3 evenings off. No Sundays, good pay. Long Island man preferred. State age, experience, salary, availability.
Box X-42, Star-Journal.

PLATFORM LOADERS

NIGHTS STEADY
Schrafft's, 56 W. 23rd St.

PORTERS

WHITE OR COLORED
NIGHT WORK
LARGE MODERN FACTORY
5 NIGHTS, 40 HOUR WORK WEEK
MINIMUM SALARY
$30.25
APPLY EMPLOYMENT OFFICE
DO NOT PHONE
LOFT CANDY CORP.
40th Ave. & 9th St. L. I. City
IRT-BMT, 8th Ave.-8th Ave. subways to Queens Plaza Sta. Then Vernon Blvd. bus 102 to door of plant.
Essential workers need release

PORTERS

NIGHT WORK
Hours: 11 P.M.-7:30 A.M.
SALARY $34.40
44 HOUR WEEK
STEADY WORK
MODERN HIGH TYPE BUILDING
Apply Personnel Office (3rd Floor)
ROCKEFELLER CENTER, INC.
50 Rockefeller Plaza New York City
Essential Workers Need Release

PORTERS

Several experienced. Largest, highest class apartment. 8½ hours, 6 days. $117 monthly.
ELDORADO
300 Central Pk. West. SChuyler 4-5401

PORTERS

Full Maintenance—Steady Position
FLUSHING HOSPITAL
44-14 PARSONS BLVD., FLUSHING

PORTER, elevator apt. house; good salary; pleasant surroundings. See Mr. Anderson, 25-50 20th rd., Astoria, or call AStoria 8-6459.

PORTER—School, steady, week vacation. See Custodian, P. S. 152, Woodside, 62nd and Northern boulevard.

Radio assemblers, wirers, solderers

NO EXPERIENCE NECESSARY
MECHANICAL APTITUDE QUALIFIES
PILOT RADIO CORP.
37-06 36th St., L. I. C. (36th St. Ind. Sub.)

REAL ESTATE SALESMEN with automobile. Very active office; plenty of buyers and plenty of houses for sale; full cooperation.
PATRICK A. PARETTA,
194-14 Roosevelt ave., Corona.
HAvemeyer 9-2725.

ROOFERS
SHINGLERS
CARPENTERS
Apply at once. Bring tools. We supply equipment. Jobs ready all through Queens, Nassau and Rockaway territory. Our men earn excellent pay and bonus because of steady work. Apply 92-36 165th st., Jamaica, or call JAmaica 6-5900.

ROOFERS and SHINGLERS

Apply Ready for Work
SEARS ROEBUCK & CO.
137-61 Northern Blvd., Flushing

SET-UP MAN

For Assembling and Repair of Summer Furniture
Full Time or Part Time
HOURS BETWEEN 8:30-5:30 P. M.
APPLY IN PERSON
MONDAY THROUGH FRIDAY
Macy's Warehouse
47-44 31st St., L. I. City
Essential Workers Need Release

SODA DISPENSER

Experienced, 40-hour week, 80 cents an hour. Holten's Confectionery, Inc., 28-08 Steinway st., Astoria 8-9035

Help Wanted Male

Spring Fitter Layout Man

EXPERIENCED
PERMANENT POSITION
ESSENTIAL INDUSTRY
POST WAR FUTURE
B & J AUTO SPRING CO.
900 ATLANTIC AVE., BROOKLYN

SUPERINTENDENT — Experienced 24-family house, 3 basement rooms and good salary. Apply R. Kusik, 30-84 36th street, Astoria.

SUPERINTENDENT

55 family, $145; 4 rooms main floor. Berman, 30-04 37 St., Astoria, 3-8 P.M.

SUPERINTENDENT for 4 small houses in Sunnyside, 2 rooms, $100 month, free electric. Tel. Boulevard 8-4764.

SUPERINTENDENT—Man and wife, for 52-family elevator apartment house. See L. Genovese, 31-05 30th ave., Astoria.

SUPERINTENDENT WANTED, — $40 MONTH. NEUFELD AGENCY, 43-16 30th AVENUE, Astoria 8-5898.

SUPERINTENDENT, 20-family, free rent, good pay. See Supt., 12-21 30th ave., Astoria. Phone Hegeman 3-6360.

SUPERINTENDENT FOR 20-FAMILY APARTMENT HOUSE. INQUIRE 23-06 33rd STREET, ASTORIA.

SUPERINTENDENT, salary $125, 4-room apartment and electricity. Apply Supt. 47-05 45th st., Sunnyside.

SUPERINTENDENT for 20 families 3-room apt. and DAY. Apply Supt., Apt. 1, 34-26 Steinway st., Astoria, or Fl. 7-1902.

Help Wanted Male

SUPERINTENDENT, for 31-family house in Jackson Heights, 3-room apt. and $120. See Supt. Mr. Henry Mueller, 30-24 72nd st., Jackson Heights. HA. 9-4091.

SUPERINTENDENT — 3-room apartment, all improvements, refrigerator, free rent, $10 per month, stoker-fired. Goetz, Astoria 8-8383 or apply store, 25-63 Steinway street.

SUPERINTENDENT for 6-family house, near subway, 3 rooms free.
THOS. RUSSO,
96-10 Roosevelt ave. HA. 9-2466.

SUPERINTENDENT — Modern 40-family walk-up, Astoria, 4 large, light rooms, ground floor front, gas and electricity. MUrray Hill 2-4528.

SUPT'S HELPER on large, modern building, live on premises, good salary. Apply Supt., 41-30 46th st., Woodside, STillwell 4-8566.

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MAINTENANCE MACHINISTS
EXPERIMENTAL MACHINISTS
HELPERS IN STOCK ROOM
GENERAL HELPERS
Vital war work. Release needed.
CARDWELL,
81 PROSPECT ST., BROOKLYN.
8th Ave. Subway (High St. Station)

TURRET LATHE OPERATORS

CASTING WORK
METALLIZING
Engineering Co., Inc.
38-14 30TH ST., L. I. CITY
Essential Workers Need Release

TURRET LATHE OPERS.
EXPERIENCED
Good Pay! Plenty Overtime!
Post-War Future
DAY & NIGHT SHIFT
STANDARD MOTOR PRODUCTS, Inc.,
37-18 Northern Blvd. L. I. City

TWO MEN, 21 to 45, for permanent position. Insurance debit experience helpful. Salary, bonus and car expense. Pleasant outdoor work. Excellent opportunity for advancement. Give full detail of past experience, salary and selective service status. Write Box R-1, Star-Journal.

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$18 A WEEK AND TIPS
SODA DISPENSERS
$30 A WEEK AND MEALS
HOWARD JOHNSON'S
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Elmhurst
8th Ave. Sub. 63rd Dr. Station
or Phone NEwtown 9-1937

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Brake Operators
Press Operators
Paint Spray Men
Shear Hands
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Good Rate. Plenty of Overtime
DAY OR NIGHT SHIFTS
STEADY, LONG RUN WORK
NOW AND POST WAR
MEDIUM SIZE PLANT
WITH FRIENDLY ATMOSPHERE
APPLY
DAVIES CORP.
36 East 12th St. N. Y. C.
Essential Workers Need Release

WANTED, MAN with mechanical background, to break in on hardware and mill supply sales and clerical work; experience valuable but not absolute essential; excellent post-war opportunity for discharged veterans.
Box Z-4, Star-Journal, Flushing

WHY NOT LINE UP YOUR POST WAR JOB NOW?
Excellent opportunity for executive by sales and contact man in large finance organization with aggressive post war plan. Rapid advancement for ambitious person. Personal Finance Co., 37-52 82 Street, Jackson Heights, HAvemeyer 9-3366.

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GRAMERCY PARK HOTEL
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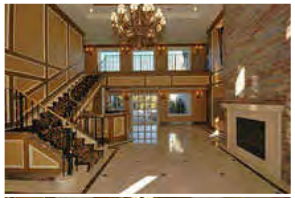
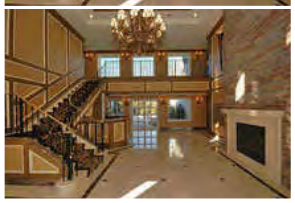




Project Description

Unit#s: 49

Conversion of existing 50,000 s.f. warehouse site to luxury apartment units.

Commercial

Ft. Washington Houses
Smith Houses
Post Office @ Parkchester
Interior Renovations Macy's Department Store
Parkchester Singas Pizza Store
Clock Tower Mall
Macy's At Smith Haven Mall
99 Hudson Street
Starbucks

New Construction

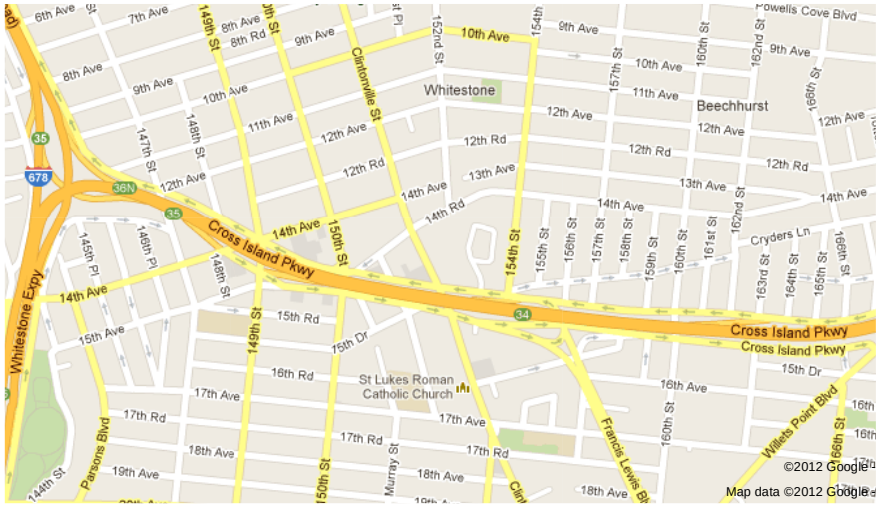
Whitestone Manor Condominiums
Park Avenue East
535 E 11th Street

Occupied Rehab

Wsur (Brownstones)
Parkchester North & South Condominiums
Pelham Parkway Houses
Glenwood Houses
Adams Houses
Edenwald Houses
Barrier Free Various Locations
Harborview Houses
Wsur Houses
Polo Grounds Towers 1
Polo Grounds Towers 2
Holmes Towers
Straus Houses
Morrisania Air Rights
Butler Houses
Fort Independence Houses
Various Manhattan Developments
Bland Houses
Baruch Houses
Hylan Houses
Oub Court Housing Company, Inc.
Mins Court Housing
Parkchester Condominiums
Lafayette Houses
Smith Houses
68 Montague Street
Barbizon 63
52 Clark Street Brooklyn, NY
654 Madison Ave. New York, NY
89 Porter Ave.
347 West 55th Street

Gut Rehab

Promesa
Bella Vista Housing
Nep VI Cluster
Wsur (Brownstones)
West Brighton Plaza II
836 Jefferson Avenue



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(718) 357-8900 | 150-44 11th Avenue, Whitestone, NY 11357

PROJECT NOTE WESTON SOLUTIONS, INC.

To: Neo Smelting and Refining Co. Site File
Date: July 2, 2013

W.O. No.: 20405.012.013.2101.00

From: Denise Breen, Weston Solutions, Inc.

Subject: Alternative Groundwater Source Documentation

References

1. NYC Environmental Protection. Groundwater Supply System for 2012 downloaded from: www.nyc.gov/html/dep/html/drinking_water/groundwater.shml. May 22, 2013. [3 pages]

2. Environmental Protection Agency (EPA), Envirofacts. List of Water Systems in SDWIS: Queens, NY. Downloaded at: oaspub.epa/gov/enviro/sdw_query_v2get_list… June 26, 2013. [1 page]

3. NYC Environmental Protection. New York City 2012 Drinking Water Supply and Quality Report downloaded from: www. nyc.gov/dep. 2012. [16 pages]

This Project Note presents additional information of population appointment for public supply wells within 4 miles of the Site. The New York City Environmental Protection Agency has provided information on the source of water provided to Queens County. The information confirms that the 68 wells within Queens County are not actively pumping ground water for distribution [Ref. 1, pp. 1-2]. The New York City System (PWSID NY7003493) provides 8,000,000 people in Queens County with the primary water source being surface water pumped in from upstate New York [Ref. 1, p. 1; 2, p.1; 3, p. 2]. The surface water which provides Queens County comes from 19 reservoirs and three controlled lakes [Ref. 3, p. 2]. More specifically, the water in the Whitestone, NY region is provided by the Catskill/Delaware water service area [Ref. 3, p. 3]. Water quality is controlled by Department of Environmental Protection (DEP) water quality monitoring program which ensures New York City's drinking water remains high and meets all health-related State and federal drinking water standards [Ref. 3, p. 8].

Denise Breen
Assistant Project Scientist

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History of New York City's Water Supply System
Wastewater
Stormwater
Harbor Water
Long Term Control Plan (LTCP)

THE WATERSHED
Watershed Protection
Watershed Recreation

CITYWIDE INITIATIVES
Regulatory Reform
Environmental Education
Conservation Programs
Air Pollution Control

Groundwater Supply System for 2012

Wells in Operation
Geology
Treatment
Operational Information
Water Quality Data
Brooklyn-Queens Aquifer Feasibility Study
Drinking Water Supply and Quality Report
Previous Years

Between 1887 and 1996, the privately owned Jamaica Water Supply Company (JWS) operated a group of wells that served the communities of southeastern Queens and portions of Nassau County. In 1996, New York City purchased the Queens portion of the JWS and took responsibility for the delivery of drinking water to those communities served by the groundwater wells. After acquiring the JWS wells, the Department of Environmental Protection (DEP) renamed the group of wells the groundwater supply system.

Located in southeastern Queens, the groundwater supply system consists of 68 supply wells at 44 well stations and several water storage tanks. Most of the system has not operated in more than 10 years, but the groundwater supply system did provide water to a limited portion of the city's distribution system in Queens until 2007. When online, residents within the service area received groundwater or a mix of ground and surface waters depending on demand and supply availability.

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Wells in Operation in 2012

There were no wells in operation in 2012:

Email a Friend

Customer Services
Contact Customer Service
NYC Lien Sale and Payment Agreements
Multi-Family Conservation Program (MCP)
Dispute Resolution
Learn About AMR
Dispose of Grease and Oil Properly
15-Day Service Termination Notice
For Businesses
More Services...

Current: 97.3%

Normal: 100.0%

Air Pollution Control
Noise Codes & Complaints

BUSINESSES & PROFESSIONALS
Forms & Permits
Economic Development Unit
Doing Business with DEP
Asbestos Abatement
Construction, Demolition & Abatement

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List of Wells (PDF)

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Geology

An aquifer is a natural underground layer of porous, water-bearing materials (sand, gravel) usually capable of yielding a large supply of water. Three aquifers run the length of Long Island, which includes Brooklyn and Queens Counties: the Upper Glacial, which is the shallowest; the Magothy, which is the middle layer; and the Lloyd, which is the deepest. Formed approximately 60 million years ago, the three aquifers are separated by layers of clay.

Cross-Section of Brooklyn and Queens Aquifer (PDF)

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Treatment Information

All groundwater entering New York City's distribution system is treated with chlorine, fluoride, food grade phosphoric acid, and, in some cases, sodium hydroxide. New York City uses chlorine to meet the New York State Sanitary Code and federal Safe Drinking Water Act disinfection requirements. Fluoride, at a concentration of approximately one part per million, is added to help prevent tooth decay and has been added since 1966 in accordance with the New York City Health Code. Phosphoric acid is added to create a protective film on pipes that reduces the release of metals such as lead and copper from household plumbing. Additionally, a sequestering phosphate or a silicate is applied at several wells to prevent the precipitation of naturally occurring minerals, mostly iron and manganese, in the distribution mains and customers' household piping. The application depends upon the iron level in the well. Air stripper facilities can be operated at several wells to remove volatile organic compounds (VOCs).

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Operational Information - 2012

The 68 wells which comprise the groundwater supply system were not used for drinking water distribution in 2012.

Individual Well Information:

Groundwater Monthly Production 2008 - 2012 (PDF)

Groundwater Annual Production 2008 - 2012 (PDF)

Number of Wells in Operation 2008 - 2012 (PDF)

2012 Groundwater Production By Month (PDF)

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Water Quality Data

Index Numbers

DEP assigns index numbers to sampling locations throughout the distribution system. The nomenclature of the index for a well sample location signifies the status of

the index for a well sample location signifies the status of the water at a specific tap. An index number followed by the letters E, F or T denotes sampling sites that are treated, or finished groundwater. Well index numbers that have no letter after the number, or are followed only by the letters A, B, C, D, I or S are considered untreated, or raw water. Examples of untreated water IDs are W5 and W23A. Examples of treated water are W5E and W23AT. The following table illustrates this in greater detail:

Index Numbers	Description
W##, W##A-D, I, S	Groundwater wells sampling points prior to final treatment
W##E	Effluent finished groundwater from wells with air-stripping
W##F	Finished groundwater effluent from wells without any special treatment
W##T	Treated finished groundwater effluent from sequestering/iron treatment wells

Data Tables and Graphs

There were no wells in operation in 2011; therefore there are no 2011 Groundwater Supplemental data available. Previous years' data are available at the links provided below.

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Previous Years

2011
2010
2009
2008
2007
2006
2005
2004

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Envirofacts

Search

SDWIS

Search Results

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Other Links

- Overview
- Search
- Model
- Law
- SDWIS Search User Guide
- Contact Us
- Office of Ground Water and Drinking Water

Report an Error

Search Selections:
State selected: **NEW YORK**
County selected: **QUEENS**
Population Selected: **Very Small (0-500), Small (501-3,300), Medium (3,301-10,000), Large (10,001-100,000), Very Large (100,000+)**
Water System Status: **active**
Search executed on: **MAY-21-2013**
Results are based on data extracted on : **JAN-30-2013**

List of Water Systems in SDWIS

Information about water systems in NEW YORK is maintained by NEW YORK STATE DEPT. OF HEALTH .

To obtain additional information about drinking water please call EPA's Safe Drinking Water hotline at 1-800-426-4791.

Community Water Systems: Water Systems that serve the same people year-round (e.g. in homes or businesses).

Water System Name	County(s) Served	Population Served	Primary Water Source Type	System Status	Water System ID
NEW YORK CITY SYSTEM	QUEENS	8000000	Surface_water	Active	NY7003493

Non-Transient Non-Community Water Systems: Water Systems that serve the same people, but not year-round (e.g. schools that have their own water system).
No systems were found.

Transient Non-Community Water Systems: Water Systems that do not consistently serve the same people (e.g. rest stops, campgrounds, gas stations).
No systems were found.

Last updated on 5/21/2013

Cannonsville Reservoir Spillway

NYC Environmental Protection

Michael R. Bloomberg
Mayor

Carter H. Strickland, Jr.
Commissioner

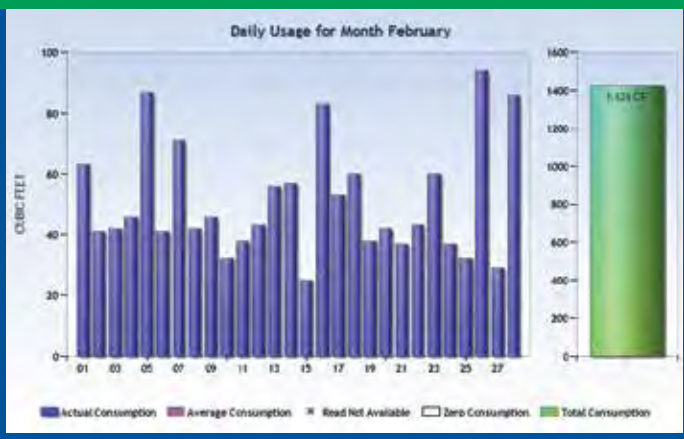
New York City 2012 Drinking Water Supply and Quality Report

Customer Service

www.nyc.gov/dep

TRACK YOUR WATER USE

Did you know that you can track your water use online? If you have a wireless meter reader installed, you can go online to see your daily water usage. The online tracking system enables you as a customer to manage your water use, reduce your water bills, and detect leaks more quickly. In addition, you can view your meter readings and see your payment and billing history online.



IDENTIFY COSTLY LEAKS

Get alerts when your water use spikes unexpectedly

The Leak Notification Program enables you to be alerted about potential water leaks on your property. Sign up online to receive email notifications when your water use increases significantly over a period of several days. This will enable you to quickly respond to potential leaks and fix them before they become a serious billing problem. Since 2011, the program has saved 37,000 customers $31 million in leak-related charges.

GO GREEN

Sign up for paperless billing

DEP is now offering its customers the convenience of paperless billing. By signing up to receive your bills online you'll save time and help improve our environment by reducing paper consumption. Instead of a paper bill, you'll receive an email notification when your next bill is due. You can then log in to My DEP Account to see an electronic copy of your bill.

Enroll online

nyc.gov/dep

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Dear Friends:

New York City's drinking water is recognized throughout the world for its quality and purity. Every day, the Department of Environmental Protection provides approximately one billion gallons of water to our city's millions of residents and visitors, while ensuring that our water supply remains safe for future generations.

To protect our drinking water, we continue to invest in a number of long-term strategies, including sustainable farming and stream restoration and management. Since 1997, the City also has acquired thousands of acres of new watershed lands. And just as important for our watershed's communities, we have made more than 115,000 acres of City-owned land and water available for recreation, protecting these invaluable resources and spurring local economic development as well.

Our city already is safer and healthier than it has ever been. Thanks to DEP and our strong partnerships with State and local stakeholders, we will ensure that New Yorkers enjoy healthy, high quality drinking water for years to come.

Sincerely,

Michael R. Bloomberg
Mayor

Dear Friends:

At the New York City Department of Environmental Protection we take great pride in providing clean and healthy drinking water to more than nine million New Yorkers each day. In fact, due to our extensive monitoring program and programs to stop erosion and other sources of pollution before they become potential problems, New York is just one of five cities in the entire country that is not required to filter our water from the Catskill and Delaware watersheds.

We are also making significant investments now to ensure the vitality of our drinking water for the future. This past year, the City began operating the $1.6 billion Catskill/Delaware Ultraviolet Disinfection Facility, which provides an additional barrier of protection to our water supply. By the end of this year the City will activate Stage 2 of City Water Tunnel No. 3 and will start to operate a plant to filter water from the Croton system, the City's oldest, smallest, but most developed watershed. Coupled with our source control programs to protect and maintain our Catskill and Delaware systems, and investments in dam upkeep and our distribution network, DEP is making sure that drinking water will remain safe and abundant for current and future generations of New Yorkers.

I am proud to present this report and share with you some of the initiatives that help keep our drinking water world-class, and to encourage you to continue drinking healthy and affordable New York City tap water. You can keep up to date on all DEP news by liking us on www.facebook.com/nycwater and www.twitter.com/nycwater.

Sincerely,

Carter H. Strickland, Jr.
Commissioner

West Branch Delaware River

NEW YORK CITY
2012 DRINKING WATER SUPPLY AND QUALITY REPORT

The New York City Department of Environmental Protection (DEP) is pleased to present its 2012 Annual Water Supply and Quality Report. This report was prepared in accordance with the New York State Sanitary Code and the National Primary Drinking Water Regulations of the United States Environmental Protection Agency (EPA), which require every drinking water supplier to provide the public with an annual statement describing the water supply and the quality of its water.

New York City's Water Supply

The New York City Water Supply System provides approximately one billion gallons of safe drinking water daily to more than eight million residents of New York City and to the millions of tourists and commuters who visit the City throughout the year, as well as about 110 million gallons a day to one million people living in Westchester, Putnam, Ulster, and Orange counties. In all, the New York City Water Supply System provides nearly half the population of New York State with high quality drinking water.

Source of New York City's Drinking Water

New York City's surface water is supplied from a network of 19 reservoirs and three controlled lakes in a nearly 2,000 square-mile watershed, roughly the size of Delaware State, that extends 125 miles north and west of New York City. The New York City Water Supply System (PWSID NY7003493) consists of three individual water supplies: the Catskill/Delaware supply, located in Delaware, Greene, Schoharie, Sullivan, and Ulster counties; the Croton supply, the City's original upstate supply, made up of 12 reservoir basins in Putnam, Westchester, and Dutchess counties; and a groundwater supply in southeastern Queens. In 2012, 100% of the City's drinking water came from the Catskill/Delaware supply.

Regulation of Drinking Water

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive materials and can pick up substances resulting from the presence of animals or from human activities. Contaminants that may be present in source water include: microbial contaminants, inorganic contaminants, pesticides and herbicides, organic chemical contaminants, and radioactive contaminants.

In order to ensure that tap water is safe to drink, the New York State Department of Health (NYSDOH) and EPA prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. The NYSDOH and the federal Food and Drug Administration's (FDA) regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline at (800) 426-4791.

New York City's Water Supply System

NYC Water-On-the-Go

Throughout the summer months, DEP's Water-On-the-Go program brings portable drinking fountains to transit hubs, highly trafficked pedestrian areas, and special events throughout the five boroughs to educate New Yorkers about the high quality of the City's drinking water and to promote environmental stewardship. In 2012, DEP tripled the number of recurring Water-On-the-Go locations, rotating fountains among 30 different locations throughout the five boroughs, and more than 500,000 people visited the drinking fountains, more than doubling the number of visitors from 2011.

Ensuring a Safe, Reliable, and Sufficient Water Supply

Source Water Assessment Program

Federal regulations require states to develop and implement Source Water Assessment Programs to: identify the areas that supply public tap water; inventory contaminants and assess water system susceptibility to contamination; and inform the public of the results. The states are given a great deal of flexibility on how to implement Source Water Assessment Programs. These assessments are created using available information to help estimate the potential for source water contamination. Elevated susceptibility ratings do not mean that source water contamination has occurred or will occur in the water supply; rather, they indicate the need for water suppliers to implement additional precautionary measures.

In 1993, New York City secured its first Filtration Avoidance Determination (FAD) for the Catskill/Delaware supply, and, in 1997, the historic New York City Watershed Memorandum of Agreement was signed. Since that time, New York City has been implementing a series of programs to reduce the susceptibility of all of its surface water supply to contamination from a variety of sources. These ongoing programs operate under the close scrutiny of both NYSDOH and EPA. Because of these efforts, which are reported on in the Watershed Water Quality Annual Report, NYSDOH did not deem it necessary to perform a Source Water Assessment Program on the New York City Water Supply.

Maintaining New York City's World-Renowned Water Supply

10-Year Filtration Avoidance Determination from EPA

Two thousand and twelve marked the fifth year of DEP's implementation of the latest 10-year FAD, issued by EPA in July 2007. The FAD maintains New York City's status as one of only five large cities in the country with a surface drinking water supply of such high quality that filtration is not required. As part of the agreement, New York City continues to enhance existing watershed protection programs while developing new efforts, including an agreement to continue to acquire certain undeveloped land in the Catskill/Delaware watershed as a means of watershed protection. In 2007, the City allocated an additional $241 million (beyond the $300 million committed in 1997) to be spent over a 10-year period for this purpose. Every five years, at the midpoint of the existing determination, New York City is required to reassess the programs comprising the FAD. In December 2011, DEP submitted a plan for the remaining five years of the existing FAD – also known as the Long-Term Watershed Protection Program for 2012-2017 – to our State and federal regulators. DEP also secured a 15-year water supply permit in 2010 from the NYS Department of Environmental Conservation that allows New York City to continue acquisition of sensitive watershed land to protect the largest unfiltered drinking water supply in the world. Over the past 20 years of source water protection, New York City has consistently demonstrated the commitment and ability to deliver effective programs to ensure the long-term purity of the water supply. For more information on DEP's watershed protection programs visit www.nyc.gov/dep.

Key programs and selected accomplishments include:

- **Land Acquisition** - New York City acquires real property interests from willing sellers to further protect and buffer its 19 reservoirs and three controlled lakes in the Catskill/Delaware and Croton watersheds. In 2012, New York City signed contracts with landowners to purchase more than 5,800 acres of sensitive watershed land. Since 1997, DEP has secured more than 128,000 acres of land and easements, adding to the roughly 45,000 acres surrounding the reservoirs that New York City owned in 1997. The property DEP owns is protected from development, which helps create natural buffers and reduce degradation of the water supply. The State of New York also owns and protects more than 200,000 acres of land in the New York City watershed.
- **Land Management** - With the acquisition of land over the past 15 years, New York City has become one of the largest landowners in the watershed region. DEP manages these properties to ensure that water quality is protected. DEP believes that protecting the watershed lands does not conflict with providing recreational access to members of the surrounding communities. Since 1997, DEP has increased the acreage of land and water open for recreation every year, and approximately 115,000 acres are now available for fishing, hiking, hunting, trapping, cross-country skiing and other activities. In 2012, DEP expanded the recreational boating program by opening the Neversink, Pepacton and Schoharie reservoirs to rowboats, canoes, kayaks, and small sailboats and issued almost 1,000 boating permits.
- **Partnership Programs** - Many of New York City's watershed protection programs west of the Hudson River are administered by a nonprofit organization called the Catskill Watershed Corporation. Together DEP and the Catskill Watershed Corporation have repaired or replaced more than 4,000 failing septic systems and authorized the construction of more

than 70 stormwater control measures on properties in the watershed. New York City has also committed ~$185 million for new community wastewater projects. When all projects are completed, they will be capable of treating a total of 1.7 million gallons of wastewater per day. Another partnership program is the Stream Management Program which encourages the stewardship of streams and floodplains in the watershed west of the Hudson River. Additionally, the Watershed Agricultural Program and Watershed Forestry Program both represent long-term successful partnerships between DEP and the nonprofit Watershed Agricultural Council. The underlying goal of both programs is to support and maintain well-managed family farms and working forests as beneficial land uses for water quality protection and rural economic viability. Together, these partnerships work with watershed residents to identify and eliminate potential pollution sources

Catskill/Delaware Water Ultraviolet Disinfection Facility

The Catskill/Delaware Ultraviolet (UV) Disinfection Facility began treating Catskill/Delaware water in the fall of 2012, and was granted disinfection credit by NYSDOH beginning December 1, 2012. This accreditation was the culmination of work that began with site preparations in 2006, followed by the start of construction in 2008. The facility is located on a New York City-owned, 153-acre property in the towns of Mount Pleasant and Greenburgh in Westchester County. The UV Disinfection Facility, the largest of its kind in the world, consists of fifty-six 40-million-gallons-per-day UV disinfection units and is designed to disinfect a maximum of 2.4 billion gallons of water per day.

The facility was built in part to fulfill the requirements of the Long Term 2 Enhanced Surface Water Treatment Rule, which requires additional treatment by many water suppliers that use surface water sources. For unfiltered surface water sources, such as the Catskill/Delaware system, the Long Term 2 Enhanced Surface Water Treatment Rule requires two types of disinfection. First, water is disinfected with chlorine before it arrives at the UV Disinfection Facility. Once at the facility, the water flows under UV light as an additional disinfection measure to protect against potentially harmful microbiological contaminants, such as *Cryptosporidium* and *Giardia*.

Although EPA now requires most surface drinking water to be filtered, due to New York City's $1.5 billion investment in watershed protection programs and operation of the UV Disinfection Facility, the federal government allows New York City to continue receiving unfiltered drinking water from the Catskill/Delaware watershed. This comprehensive and adaptive approach exempts New York City from building a mandated filtration plant estimated to cost $10 billion or more.

Croton Water Filtration Plant

The Croton water supply, because of factors related to the surrounding area and water quality, is not covered by the Filtration Avoidance Determination. Therefore, New York City is building a filtration plant for the Croton water supply under a Consent Decree entered into with the United States and the State of New York. The Croton Water Filtration Plant is also expected to reduce color levels, the risk of microbiological contamination, and disinfection by-products, and to ensure compliance with stricter water quality standards.

In addition to constructing the filtration plant, New York City remains committed to maintaining a comprehensive watershed protection program for the Croton water supply. Although the Croton water supply is not currently being used and is not anticipated to provide any drinking water to New York City until DEP begins to filter Croton water, DEP is required by law to make the following statement: Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites, which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.

City Water Tunnel No. 3

For over 30 years, the City has been building City Water Tunnel No. 3. Being built in stages, City Water Tunnel No. 3 is one of the largest capital projects in New York City's history. Begun in 1970, City Water Tunnel No. 3 will enhance and improve New York City's water delivery system and allow the City to inspect and repair City Water Tunnels Nos. 1 and 2 for the first time since they were put into service in 1917 and 1936, respectively.

- The 13-mile Stage 1 section of City Water Tunnel No. 3 went into service in August 1998. It runs from Hillview Reservoir in Yonkers, through the Bronx, down Manhattan across Central Park, and into Astoria, Queens.
- Stage 2 of City Water Tunnel No. 3 consists of the Brooklyn/Queens leg and the Manhattan leg.
    - o The Brooklyn/Queens leg is a 5.5-mile section in Brooklyn that connects to a 5-mile section in Queens. The City completed the Brooklyn/Queens leg of the tunnel in May 2001, and substantially completed the shafts in 2006. The project is on hold, and is expected to be online by 2023. When activated, the Brooklyn/Queens leg will deliver water to Staten Island, Brooklyn, and Queens.
    - o Tunneling on the 9-mile Manhattan leg of Stage 2 began in 2003 and was completed in 2008. Ten new supply shafts have been constructed that will integrate the new tunnel section with the existing distribution system. Work on installing the equipment in the distribution chambers, which are underground facilities atop the shafts, was completed in early 2013. The Manhattan leg is expected to begin water delivery in late 2013.

City Tunnel No. 3

Hillview Reservoir

Hillview Reservoir is the last reservoir in the Catskill/Delaware system prior to distribution. On May 24, 2010, New York City and EPA entered into an Administrative Order on Consent which sets forth a milestone schedule to install a cover over the Hillview Reservoir by mid-2028. The milestones of a previous Administrative Order on Consent from 2008 between New York City and NYSDOH were incorporated into the 2010 Administrative Order on Consent. DEP is currently in compliance with the milestones set forth in the orders. Additionally, in August of 2011, EPA released a report called "Improving Our Regulations: Final Plan for Periodic Reviews of Existing Regulations," in which EPA indicated that it will evaluate the reservoir cover requirement of the Long Term 2 Enhanced Surface Water Treatment Rule. DEP has been actively involved in EPA's review process.

Delaware Bypass Tunnel

One major component of DEP's Water for the Future Program is aimed at addressing the known leaks in the Rondout-West Branch Tunnel section of the Delaware Aqueduct, which conveys more than 50 percent of the daily drinking water for New York City. In November 2010, DEP unveiled a design to repair leaks in the 85-mile Delaware Aqueduct to ensure the integrity of New York City's vital infrastructure, which is fundamental to New York City's long-term growth and prosperity. The construction of the bypass tunnel and the repair of the lining will ensure that DEP can continue to deliver high quality drinking water every day for decades to come. DEP began work on the bypass tunnel in the spring of 2013, and plans to connect to the Delaware Aqueduct in 2021.

Groundwater

As part of the Water for the Future Program, the City will implement additional projects to supplement DEP's water supply and to help meet water demands in an emergency. These projects include the repair and rehabilitation of the Catskill Aqueduct, conservation initiatives, and the reactivation of the City-owned groundwater supply system in Queens. DEP is currently planning upgrades to the facilities and treatment systems at existing groundwater facilities to provide high quality drinking water that will meet all State and federal drinking water standards. DEP plans to re-activate the groundwater supply system before 2021, when the Rondout-West Branch Tunnel is scheduled to be shut down for the connection of the new bypass tunnel to the Delaware Aqueduct.

Water Conservation

The average single-family household in New York City uses approximately 80,000 gallons of water each year, at a cost of $3.39 per 100 cubic feet of water (748 gallons), or about $363 a year. Since nearly all New York City residences receive wastewater collection and treatment services in addition to water service, the combined annual water and sewer charge for the typical New York City household using 80,000 gallons per year is $939, consisting of $363 for water service and $576 for wastewater services (based on the Fiscal Year 2013 rates).

New York City is fortunate to have reasonably priced drinking water as compared to other cities around the country. However, DEP asks that everyone do his or her part to conserve this important resource. All New Yorkers should observe good water conservation habits, and are required to obey New York City's year-round water use restrictions, which include a prohibition on watering sidewalks and lawns between November 1 and March 31, and between 11am and 7pm from April 1 to October 31. Remember, it is illegal to open fire hydrants at any time. However, during the summer, you can contact your local firehouse to have a City-approved spray cap installed on a hydrant.

DEP's investment in wireless water meter readers allows customers to view their water consumption in real time and helps to detect leaks. DEP has successfully installed more than 820,000 devices in less than 4 years. Since DEP charges water customers based on consumption, varied usage and leaks can drastically affect quarterly bills. Customers can sign up online under DEP's Leak Notification Program to receive email notifications when their water use increases significantly over a period of several days, enabling homeowners to quickly respond to potential leaks and to fix them before they become a serious billing problem. In the first year of the program, DEP estimates that it has saved $30 million for more than 36,000 customers. To enroll in the leak detection program, go to www.nyc.gov/dep and sign up under My DEP Account.

Water and Sewer Service Line Protection Program

DEP has partnered with American Water Resources (AWR) to offer a Water and Sewer Service Line Protection Program to our customers. This voluntary program is designed to protect New York City homeowners from the unexpected costs of service line repairs.

Most homeowners are not aware that they are responsible for all of the costs associated with repairing damaged water or sewer service lines that run from their building's exterior to the municipal service lines in the street. These repairs are not covered by most homeowners' insurance policies and can cost thousands of dollars.

The New York City Water Board selected AWR as the exclusive provider of the Water and Sewer Service Line Protection Programs for DEP customers. If you are a homeowner and DEP customer, you can enroll in the protection programs, and AWR will take the responsibility of paying for service line repairs off your shoulders.

Special introductory rates of $3.99 per month for water line protection and $7.99 per month for sewer line protection will be offered until June 30, 2013. For future years, the New York City Water Board will adopt the annual rates for the programs along with regular water and sewer service charges. These charges will be included in your DEP water and sewer bill and must be paid for you to remain eligible.

For more information about the Water and Sewer Service Line Protection Program, call AWR toll-free at (888) 300-3570 or visit www.nyc.gov/dep.

UV Disinfection Facility

Water Treatment

In addition to disinfecting drinking water with chlorine and ultraviolet light, DEP also treats water with fluoride, food grade phosphoric acid, and sodium hydroxide. Fluoride, added since 1966, helps prevent tooth decay. Phosphoric acid is added to create a protective film on pipes that reduces the release of metals, such as lead, from household plumbing. Sodium hydroxide is added to raise the pH and reduce corrosivity, also leading to a reduction in potential exposure to lead.

Fluoride

DEP is one of the many water suppliers in New York State that treats drinking water with a controlled, low level of fluoride for consumer dental health protection. According to the United States Centers for Disease Control and Prevention, fluoride is very effective in preventing cavities when present in drinking water at an optimal range of 0.7 to 1.2 mg/L. The New York City Health Code requires a fluoride concentration of 1.0 mg/L, and NYSDOH maximum contaminant level (MCL) for fluoride is 2.2 mg/L. However, on January 13, 2011, the United States Department of Health and Human Services requested public comment on its proposal to lower the optimal fluoride target dose to 0.7 mg/L. In response, NYSDOH recommended that water suppliers reduce the optimal fluoride target dose to 0.8 mg/L. Based on these developments, on February 14, 2012, after receiving authorization from the New York City Department of Health and Mental Hygiene, DEP reduced the target dosage of fluoride from 1.0 mg/L to 0.8 mg/L.

During 2012, DEP did not continuously supply fluoride due to modifications to the fluoride delivery system and other construction activities. Fluoridation on the Catskill and Delaware aqueducts was off-line 28% and 66% of the time, respectively. DEP completely shut down the fluoride delivery system on the Delaware supply for a 214-day period, from June 1 to December 31, 2012, due to system modifications at Delaware Shaft 18.

Water Main Repair

Operational Changes

Water from the Croton and groundwater systems was not fed into distribution during 2012. Operational information for the groundwater supply system and updates on the Croton Water Filtration Plant can be found at www.nyc.gov/dep. The New York City Water Supply System map, located on page 3 of this report, represents the Catskill/Delaware and Croton service areas, and groundwater supply system. The map provides further detail on the systems' locations.

Drinking Water Quality

DEP's water quality monitoring program – far more extensive than that required by law – demonstrates that the quality of New York City's drinking water remains high and meets all health-related State and federal drinking water standards.

Drinking Water Sampling and Monitoring

DEP monitors the water in the distribution system, upstate reservoirs and feeder streams, and wells that are sources for New York City's drinking water supply. Certain water quality parameters are monitored continuously as the water enters the distribution system, and DEP regularly tests water quality at nearly 1,000 water quality sampling stations throughout the City. DEP conducts analyses for a broad spectrum of microbiological, chemical, and physical measures of quality. In 2012, DEP collected more than 30,236 samples from the distribution system and performed more than 355,647 analyses, meeting all State and federal monitoring requirements. Additionally, DEP performed 223,813 analyses on 19,929 samples from the upstate reservoir watershed to support FAD watershed protection programs and to optimize water quality. Results of this regular monitoring are an indicator of whether New York City drinking water meets all health-based and other drinking water standards.

Test Results

The results of the tests conducted in 2012 under DEP's Distribution System Monitoring Program are summarized in the tables in this report. These tables reflect the compliance monitoring results for all regulated and non-regulated parameters. The tables present both the federal and State standard for each parameter (if applicable), the number of samples collected, the range of values detected, the average of the values detected, and the possible sources of the parameters, unless otherwise footnoted. The monitoring frequency of each parameter varies and is parameter specific. All data presented are for the Catskill/Delaware system, which was the only source of water in 2012. Those parameters monitored for, but not detected in any sample, are presented in a separate box.

Lead in Drinking Water

New York City water is virtually lead-free when it is delivered from New York City's upstate reservoir system, but water can absorb lead from solder, fixtures, and pipes found in the plumbing of some buildings or homes. DEP has an active corrosion control program aimed at reducing lead absorption from service lines and internal plumbing. Under the federal Lead and Copper Rule, mandated at-the-tap lead monitoring is conducted at select households throughout New York City. In 2012, based on the results of this monitoring, the 90th percentile did not exceed 15 µg/L, the established standard or Action Level for lead. The at-the-tap monitoring results are presented in a separate table in this report.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women, infants, and young children. It is possible that lead levels at your home may be higher than at other homes in the community as a result of materials used in your home's plumbing. DEP is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested.

DEP offers a Free Residential Lead Testing Program that allows all New York City residents to have their tap water tested at no cost. The Free Residential Testing Program is the largest of its kind in the nation: DEP has distributed more than 95,000 sample collection kits since the start of the program in 1992. To request a free kit to test for lead in your drinking water, call New York City's 24-hour helpline at 311 or visit www.nyc.gov/apps/311/.

Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline (1-800-426-4791) or at http://www.epa.gov/safewater/lead.

Turbidity

Turbidity is a measure of water clarity related to the amount of suspended matter present in the water. DEP is required to monitor its drinking water supply for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not drinking water meets health standards. DEP monitors for turbidity every four hours at selected compliance locations representative of the raw source waters. Two incidents regarding turbidity monitoring or turbidity levels occurred during 2012, and are described below:

- On April 19, 2012, DEP determined that a regular compliance sample collected at 4:00pm at the Catskill Aqueduct was not representative of the raw water at that time. The sample was collected just downstream of Kensico Reservoir in Valhalla, New York in Westchester County, and had a measured turbidity value of 5.4 Nephelometric Turbidity Units (NTU). DEP analyzed the raw source water turbidity at locations upstream and downstream of this sampling location. Basing its assessment on these additional samples and the timing of the increase, DEP determined that the 5.4 NTU sample result was not an accurate representation of the raw water at that time. Upon further investigation, DEP learned that the brief increase in turbidity measurements occurred following maintenance of the sampling equipment, leading to the collection of the non-representative sample. Since this sample was judged to be not representative of source water quality, the New York City Water Supply System does not have a sample result to report for this 4-hour period.

Ashokan Reservoir

On April 27, 2012, NYSDOH notified DEP that this was a monitoring violation that requires Tier 3 public notification as specified in the federal Safe Drinking Water Act and the New York State Sanitary Code. With the exception of this one missed sample, all remaining compliance samples of source water turbidity on this date met the applicable requirements. Extensive water quality monitoring in the City's distribution system during this time period demonstrated that the water supply met all other drinking water quality standards. Although this is not an emergency and no action is required on your part, you, as our customer have a right to know about such situations. There is no reason to stop using the water supplied to your home/business as a result of this monitoring violation. An After Action Report was prepared and submitted to NYSDOH on May 24, 2012 on procedural steps and administrative controls that will be implemented by DEP to help prevent maintenance activities from affecting turbidity compliance sampling and reporting in the future.

- On October 29, 2012, the turbidity of the New York City Catskill/Delaware Water Supply at the Kensico Reservoir in Valhalla, New York in Westchester County exceeded 5 NTU at approximately 6:30pm. The turbidity returned to below 5 NTU at approximately 8:15pm. The highest recorded turbidity value was 11 NTU.

  The elevated turbidity was a direct result of the high winds that struck as Hurricane Sandy hit the region. The wind was sufficiently intense to cause large waves within Kensico Reservoir, churning up shoreline sediment near where water leaves the Kensico Reservoir and enters the Delaware Aqueduct to the City. DEP acted quickly, and through its operational controls, used an alternative source of water from its system that did not come from the Kensico Reservoir. However, some turbid water did enter the Delaware Aqueduct before operational changes could be completed. As a precaution, DEP increased chlorine treatment during this time to enhance the disinfection of the water. Additionally, before entering the distribution system, the water was also treated with UV light, which provides a secondary level of disinfection against potentially harmful microbiological contaminants such as *Cryptosporidium* and *Giardia*.

  This incident constituted a treatment technique violation as specified in the federal Safe Drinking Water Act and the New York State Sanitary Code. Extensive monitoring in the distribution system – including at many testing locations in New York City – demonstrated that the water supply met all other drinking water quality standards. State and federal drinking water rules required DEP to make public notification, which was completed by February 2013 that included the following language: Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease causing organisms. These organisms include bacteria, viruses, and parasites which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches. These symptoms can have various causes and are not caused only by organisms in drinking water. If you experience any of these symptoms and they persist, you may want to seek medical advice from a health care provider.

  An After Action Report was prepared and submitted to NYSDOH on December 5, 2012 with procedural steps and operational measures that will be implemented by DEP to help better manage and control the impact of intense wind events on turbidity levels in water leaving Kensico Reservoir.

Monitoring for Cryptosporidium and Giardia

In 1992, New York City started a comprehensive program to monitor its source waters and watersheds for the presence of *Cryptosporidium* and *Giardia*. DEP collects routine samples from the outflows of the Kensico and New Croton Reservoirs, before water is chlorinated in the Catskill/Delaware and Croton systems, and before it is treated at the Catskill/Delaware UV Disinfection Facility. While there is no evidence that any cases of cryptosporidiosis or giardiasis have been attributed to the New York City water supply, federal and State law requires all water suppliers to notify their customers about the potential risks from *Cryptosporidium* and *Giardia*. Cryptosporidiosis and giardiasis are intestinal illnesses caused by microscopic pathogens, which can be waterborne. Symptoms of infection include nausea, diarrhea, and abdominal cramps. Some people may be more vulnerable to disease causing microorganisms, or pathogens, in drinking water than the general population. Immuno-compromised persons, such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants, can be particularly at risk from infections. These people should seek advice from their health care providers about their drinking water.

From January 1 to December 31, 2012, a total of 87 routine samples were collected and analyzed for *Cryptosporidium* oocysts and *Giardia* cysts at the Kensico Reservoir effluents, and 36 routine samples were collected at the New Croton Reservoir effluent. Samples were analyzed using a standard EPA method. The test method, however, is limited in that it does not allow DEP to determine whether organisms identified are alive or capable of causing disease. Of the 87 routine Kensico Reservoir effluent samples, one was positive for *Cryptosporidium* (1 oocyst/50L), and 43 were positive for *Giardia* (0 to 4 cysts/50L). Of the 36 routine New Croton Reservoir effluent samples, one was positive for *Cryptosporidium* (1 oocyst/50L), and 14 were positive for *Giardia* (0 to 5 cysts/50L). Water from the New Croton Reservoir, which is part of the Croton supply, was not delivered to New York City in 2012. The presence of these low levels of *Cryptosporidium* and *Giardia*, detected in the source water required no action on the part of DEP. DEP's *Cryptosporidium* and *Giardia* data from 1992 to the present, along with weekly updates, can be viewed on the DEP Website at www.nyc.gov/dep.

DEP's Waterborne Disease Risk Assessment Program conducts active surveillance for cryptosporidiosis and giardiasis to track the incidence of illness and determine all possible causes, including tap water consumption. No cryptosporidiosis or giardiasis outbreaks have been attributed to tap water consumption in New York City. EPA/CDC guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium*, *Giardia* and other microbial contaminants are available from the EPA's Safe Drinking Water Hotline at (800) 426-4791.

New York City Drinking Water Quality Testing Results 2012

Detected Parameters

PARAMETERS	NYSDOH MCL	USEPA MCLG	CATSKILL/DELAWARE SYSTEM			SOURCES IN DRINKING WATER
			# SAMPLES	RANGE	AVERAGE	
CONVENTIONAL PHYSICAL AND CHEMICAL PARAMETERS						
Alkalinity (mg/L $CaCO_3$)	-		279	11.2 - 19.3	14.8	Erosion of natural deposits
Aluminum (µg/L)	50 - 200 (1)		283	15 - 57	29	Erosion of natural deposits
Barium (mg/L)	2	2	283	0.014 - 0.024	0.018	Erosion of natural deposits
Calcium (mg/L)	-		282	4.9 - 6.6	5.5	Erosion of natural deposits
Chloride (mg/L)	250		279	7 - 10	9	Naturally occurring; road salt
Chlorine Residual, Free (mg/L)	4 (2)		14867	0.00 - 1.41	0.59	Water additive for disinfection
Color - distribution system (color units - apparent)	-		13771	4 - 65	6	Presence of iron, manganese, and organics in water
Color - entry points (color units - apparent)	15 (3)		1098	4 - 14	6	Presence of iron, manganese, and organics in water
Copper (mg/L)	1.3 (4)	1.3	284	ND - 0.043	0.007	Corrosion of household plumbing systems; erosion of natural deposits
Corrosivity (Langelier index)	0 (1) (5)		279	-2.90 to -0.84	-2.37	
Fluoride (mg/L)	2.2 (3)	4.0	1345	ND - 1.2	0.5	Water additive which promotes strong teeth; erosion of natural deposits
Hardness (mg/L $CaCO_3$)	-		282	17 - 21	19	Erosion of natural deposits
Hardness (grains/gallon[US]$CaCO_3$) (6)	-		282	1.0 - 1.2	1.1	Erosion of natural deposits
Iron (µg/L)	300 (3) (7)		283	22 - 89	35	Naturally occurring
Lead (µg/L)	15 (4)	0	284	ND - 26 (8)	ND	Corrosion of household plumbing systems; erosion of natural deposits
Magnesium (mg/L)	-		282	1.0 - 1.3	1.2	Erosion of natural deposits
Manganese (µg/L)	300 (3) (7)		284	8 - 155	21	Naturally occurring
Nitrate (mg/L nitrogen)	10	10	279	0.10 - 0.23	0.17	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
pH (pH units) (9)	6.5 - 8.5 (1)		14869	**6.7 - 9.2**	7.2	
Phosphate, Ortho- (mg/L)	-		14867	0.60 - 2.75	2.07	Water additive for corrosion control
Potassium (mg/L)	-		282	0.5 - 1.4	0.6	Erosion of natural deposits
Silica [silicon oxide] (mg/L)	-		279	1.8 - 4.3	2.8	Erosion of natural deposits
Sodium (mg/L)	NDL (3) (10)		282	6 - 9	7	Naturally occurring; road salt; water softeners; animal waste
Specific Conductance (µS/cm)	-		14869	67 - 96	78	
Strontium (µg/L)	-		282	17 - 24	19	Erosion of natural deposits
Sulfate (mg/L)	250		279	4.0 - 6.1	4.8	Naturally occurring
Temperature (°F)	-		14869	39 - 83	56	
Total Dissolved Solids (mg/L)	500 (1)		279	35 - 58	47	Metals and salts naturally occurring in the soil; organic matter
Total Organic Carbon (mg/L carbon)	-		279	1.3 - 1.9	1.6	Organic matter naturally present in the environment
Turbidity (11) - distribution system (NTU)	5 (12)		13771	0.5 - 9.5	1	Soil runoff
Turbidity (11) - source water (NTU)	5 (13)		-	-	**6**	Soil runoff
UV 254 Absorbency (cm^{-1})	-		279	0.021 - 0.046	0.031	Organic matter naturally present in the environment
Zinc (mg/L)	5 (3)		284	ND - 0.021	ND	Naturally occurring
ORGANIC PARAMETERS						
Specified Organic Chemicals detected:						
Dalapon (µg/L)	50		264	ND - 1.1 (14)	ND	By-product of drinking water chlorination; runoff from herbicide use
Bromochloroacetic Acid (µg/L)	50		261	ND - 2.5	1.6	By-product of drinking water chlorination
Chloropicrin (µg/L)	50		16	0.38 - 0.64	0.5	By-product of drinking water chlorination
Haloacetonitriles (HANs) (µg/L)	50		16	1.71 - 3.89	2.8	By-product of drinking water chlorination
Halogenated Ketones (HKs) (µg/L)	50		16	1.05 - 3.85	2.8	By-product of drinking water chlorination
Total Organic Halogen (µg/L)	-		255	91 - 242	166	By-product of drinking water chlorination
Phenanthrene (µg/L)	50		93	ND - 0.25 (14)	ND	Incomplete combustion of fossil fuels
CATSKILL/DELAWARE SERVICE AREA (15)						
Haloacetic Acid 5 (HAA5) (µg/L)	60 (16)		214	16 - 64	51	By-product of drinking water chlorination
Total Trihalomethanes (µg/L)	80 (16)		219	14 - 59	53	By-product of drinking water chlorination
CROTON SERVICE AREA (15)						
Haloacetic Acid 5 (HAA5) (µg/L)	60 (16)		28	20 - 58	52	By-product of drinking water chlorination
Total Trihalomethanes (µg/L)	80 (16)		33	24 - 58	59	By-product of drinking water chlorination
GROUNDWATER SERVICE AREA (15)						
Haloacetic Acid 5 (HAA5) (µg/L)	60 (16)		19	6 - 42	40	By-product of drinking water chlorination
Total Trihalomethanes (µg/L)	80 (16)		27	19 - 52	41	By-product of drinking water chlorination

Detected Parameters (continued)

MICROBIAL PARAMETERS								
PARAMETERS	NYSDOH MCL	USEPA MCLG	CITYWIDE DISTRIBUTION					SOURCES IN DRINKING WATER
			# SAMPLES	RANGE	# SAMPLES POSITIVE	AVERAGE	HIGHEST MONTH % POSITIVE	
Total Coliform Bacteria (% of samples positive/month)	5%	0	9873	-	30	-	1.0%	Naturally present in the environment
E. coli (MPN/100mL)	(17)	0	9873	-	0	-	0.0%	Human and animal fecal waste
Heterotrophic Plate Count (CFU/mL)	TT	-	11421	ND - 5700	503	2	-	Naturally present in the environment

LEAD AND COPPER RULE SAMPLING AT RESIDENTIAL WATER TAPS: JANUARY TO DECEMBER 2012							
PARAMETER	NYSDOH AL	USEPA MCLG	# SAMPLES	RANGE	90th PERCENTILE VALUES	# SAMPLES EXCEEDING AL	SOURCES IN DRINKING WATER
Copper (mg/L)	1.3	1.3	238	0.006 - 0.592	0.185	0	Corrosion of household plumbing systems
Lead (µg/L)	15	0	238	ND - 381	10	10	Corrosion of household plumbing systems

Not Detected Parameters

UNDETECTED CONVENTIONAL PHYSICAL AND CHEMICAL PARAMETERS

Antimony, Arsenic, Asbestos, Beryllium, Bismuth-212, Bismuth-214, Cadmium, Cesium-134, Cesium-137, Chromium, Cyanide, Gross Alpha, Gross Beta, Lead-212, Lead-214, Lithium, Mercury, Nickel, Nitrite, Potassium-40, Radium-226, Radium-228, Selenium, Silver, Thallium, Thallium-208, Thorium-234, Uranium, Uranium-235

UNDETECTED ORGANIC PARAMETERS

Principal Organic Contaminants not detected:

Benzene, Bromobenzene, Bromochloromethane, Bromomethane, n-Butylbenzene, sec-Butylbenzene, tert-Butylbenzene, Carbon Tetrachloride, Chlorobenzene, Chloroethane, Chloromethane, 2-Chlorotoluene, 4-Chlorotoluene, Dibromomethane, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, Dichlorodifluoromethane, 1,1-Dichloroethane, 1,2-Dichloroethane, 1,1-Dichloroethene, cis-1,2-Dichloroethylene, trans-1,2-Dichloroethylene, 1,2-Dichloropropane, 1,3-Dichloropropane, 2,2-Dichloropropane, 1,1-Dichloropropene, cis-1,3-Dichloropropene, trans-1,3-Dichloropropene, Ethylbenzene, Hexachlorobutadiene, Isopropylbenzene, p-Isopropyltoluene, Methylene chloride, n-Propylbenzene, Styrene, 1,1,1,2-Tetrachloroethane, 1,1,2,2-Tetrachloroethane, Tetrachloroethylene, Toluene, 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, 1,1,1-Trichloroethane, 1,1,2-Trichloroethane, Trichloroethene, Trichlorofluoromethane, 1,2,3-Trichloropropane, 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene, m-Xylene, o-Xylene, p-Xylene

Specified Organic Chemicals not detected:

Alachlor, Aldicarb (Temik), Aldicarb sulfone, Aldicarb sulfoxide, Aldrin, Atrazine, Benzo(a)pyrene, Butachlor, Carbaryl, Carbofuran (Furadan), Chlordane, 2,4-D, 1,2-Dibromo-3-chloropropane, Dicamba, Dieldrin, Di(2-ethylhexyl)adipate, Di(2-ethylhexyl)phthalate, Dinoseb, Diquat, Endothall, Endrin, Ethylene dibromide (EDB), Glyphosate, Heptachlor, Heptachlor epoxide, Hexachlorobenzene, Hexachlorocyclopentadiene, 3-Hydroxycarbofuran, Lindane, Methomyl, Methoxychlor, Methyl-tertiary-butyl-ether (MTBE), Metolachlor, Metribuzin, Oxamyl (Vydate), Pentachlorophenol, Picloram, Polychlorinated biphenyls [PCBs], Propachlor, Simazine, Toxaphene, 2,4,5-TP (Silvex), 2,3,7,8-TCDD (Dioxin), Vinyl chloride

Unspecified Organic Chemicals not detected:

Acenaphthene, Acenaphthylene, Acetochlor, Acetone, Acifluorfen, Ametryn, Anthracene, Bentazon, Benzo[a]anthracene, Benzo[a]pyrene, Benzo[b]fluoranthene, Benzo[k]fluoranthene, Benzo[g,h,i]perylene, a-BHC, b-BHC, d-BHC, Bromacil, 2-Butanone (MEK), Butylate, Butylbenzylphthalate, tert-Butyl ethyl ether, Carbon disulfide, Caffeine, Carboxin, Chloramben, a-Chlordane, g-Chlordane, Chlorobenzilate, 2-Chlorobiphenyl, Chloroneb, Chlorothalonil (Draconil, Bravo), Chlorpropham, Chlorpyrifos (Dursban), Chrysene, Cycloate, 2,4-DB, DCPA(Dacthal), DCPA (total mono & diacid degradate), p,p'DDD, p,p'DDE, p,p'DDT, DEF(Merphos), Diazinon, Dibenz[a,h]anthracene, Di-n-Butylphthalate, 3,5-Dichlorobenzoic acid, 2,3-Dichlorobiphenyl, Dichlorprop, Dichlorvos (DDVP), Diethylphthalate, Di-isopropyl ether, Dimethoate, Dimethylphthalate, 2,4-Dinitrotoluene, 2,6-Dinitrotoluene, Di-N-octylphthalate, Diphenamid, Disulfoton, Endosulfan I, Endosulfan sulfate, Endrin aldehyde, EPTC, Ethoprop, Etridiazole, Fenamiphos, Fenarimol, Fluoranthene, Fluorene, Fluridone, alpha-HCH, beta-HCH, delta-HCH, 2,2',3,3',4,4',6-Heptachlorobiphenyl, Heptachlor epoxide (isomer B), 2,2',4,4',5,6'-Hexachlorbiphenyl, Hexazinone, Indeno[1,2,3-cd]pyrene, Isophorone, Malathion, Methiocarb, Methyl Paraoxon, 4-Methyl-2-Pentanone (MIBK), Mevinphos, MGK264-isomer a, MGK264-isomer b, Molinate, Naphthalene, Napropamide, 4-Nitrophenol, cis-Nonachlor, trans-Nonachlor, Norflurzon, 2,2',3,3',4,5',6,6'-Octachlorobiphenyl, Paraquat, Parathion, Pebulate, Pendimethalin, 2,2',3',4,6-Pentachlorobiphenyl, Permethrin, trans-Permethrin, Prometryn, Pronamide, Propazine, Propoxur (Baygon), Pyrene, 2,4,5-T, Simetryn, Stirofos, Tebuthiuron, Terbacil, Terbufos, Terbuthylazine, Terbutryn, 2,2',4,4'-Tetrachlorobiphenyl, Thiobencarb, Triademefon, 2,4,5-Trichlorobiphenyl, Trichlorotrifluoroethane (Freon 113), Tricyclazole, Trifluralin, Vernolate

Highlighted and **bolded** value indicates an exceedance of a drinking water standard.

Footnotes

(1) USEPA Secondary MCL: NYSDOH has not set an MCL for this parameter.

(2) Value represents MRDL, which is a level of disinfectant added for water treatment that may not be exceeded at the consumer's tap without an unacceptable possibility of adverse health effects. The MRDL is enforceable in the same manner as an MCL and is the calculated running annual average. Data presented are the range of individual sampling results and the highest of the four quarterly running annual averages.

(3) Determination of MCL violation: If a sample exceeds the MCL, a second sample must be collected from the same location within two weeks. If the average of the two results exceeds the MCL, then an MCL violation has occurred.

(4) Action Level (not an MCL) measured at the tap. The data presented in this table were collected from sampling stations at the street curb. For at-the-tap monitoring, see the Lead and Copper Rule Sampling at Residential Water Taps table.

(5) A Langelier Index of less than zero indicates corrosive tendencies.

(6) Hardness of up to 3 grains per gallon is considered soft water; between 3 and 9 is moderately hard water.

(7) If iron and manganese are present, the total concentration of both should not exceed 500 µg/L.

(8) Only one sample collected on 7/16/12 from site 31050 (Tribeca, 10013) had a lead value above the Action Level of 15 µg/L.

(9) The reported average value for pH is the median value.

(10) Water containing more than 20 mg/L of sodium should not be used for drinking by people on severely restricted sodium diets. Water containing more than 270 mg/L of sodium should not be used for drinking by people on moderately restricted sodium diets.

(11) Turbidity is a measure of the cloudiness of the water. Turbidity is monitored because it is a good indicator of water quality and can hinder the effectiveness of disinfection.

(12) This MCL for turbidity is the monthly average rounded off to the nearest whole number. Data presented are the range of individual sampling results and the highest monthly average from distribution sites.

(13) This MCL for turbidity is on individual readings taken every four hours at the source water entry points. Value presented is the highest individual sampling result.

(14) Only one sample had a detection.

(15) Although Croton water and groundwater were not put into distribution in 2012, under the Stage 1 Disinfection By-Products (DBP) rule monitoring was conducted at specified locations based on the potential distribution of the different source waters to consumers, and compliance assessed and reported by service area. All water distributed in 2012 was from the Catskill/Delaware supply.

(16) The MCLs for HAA5 and TTHMs are the calculated quarterly running annual average. The data in the Range column are the minimum and maximum values of all sample sites monitored in the distribution system whether for compliance purposes or not. The values in the Average column are the highest quarterly running annual averages computed under the Stage 1 DBP rule, which include 2011 data and which occurred in the 1st quarter of 2012. Monitoring under the Stage 2 DBP rule began in the 2nd quarter of 2012 but compliance will not be reportable until 2013.

(17) If a sample and its repeat sample are both positive for coliform bacteria and one of the two samples is positive for *E. coli*, then an MCL violation has occurred.

Exceedences

pH: The pH was elevated at two locations: site 77250 (Rosedale, 11422) on 7/7/12 and 7/9/12 at 9.1, and 8.6 respectively, and site 77650 (Queens Village, 11429) on 8/16/12 at 9.2. These temporarily elevated pH readings were attributed to water main replacement projects in the immediate areas. All other samples from these locations reflected pH in the expected ranges.

Turbidity: The one reading greater than the MCL of 5 NTU occurred on 10/29/12. See the section on turbidity for details.

Definitions

Action Level (AL):

The concentration of a contaminant, which if exceeded, triggers treatment or other requirements that a water system must follow. An exceedance occurs if more than 10% of the samples exceed the Action Level.

Maximum Contaminant Level Goal (MCLG):

The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

Maximum Contaminant Level (MCL):

The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible, using the best available treatment technology.

Maximum Residual Disinfectant Level (MRDL):

The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Maximum Residual Disinfectant Level Goal (MRDLG):

The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contamination.

Treatment Technique (TT):

A required process intended to reduce the level of a contaminant in drinking water.

90th Percentile Value:

The values reported for lead and copper represent the 90th percentile. A percentile is a value on a scale of 100 that indicates the percent of a distribution that is equal to or below the value. The 90th percentile is equal to or greater than 90% of the lead and copper values detected at your water system.

Abbreviations

CFU/mL = colony forming units per milliliter

mg/L = milligrams per liter (10^{-3} grams per liter)

MPN/100mL = most probable number per 100 milliliter

ND = Lab analysis indicates parameter is not detected

NDL = No Designated Limit

NTU = Nephelometric Turbidity Units

µg/L = micrograms per liter (10^{-6} grams per liter)

µmho/cm = micromhos per centimeter

µS/cm = microsiemens per centimeter

Frequently Asked Questions

At times, my drinking water looks "milky" when first taken from a faucet, but then clears up. Why?

Air becomes trapped in the water as it makes its long trip from the upstate reservoirs to the City. As a result, bubbles of air can sometimes cause water to appear cloudy or milky. This condition is not a public health concern. The cloudiness is temporary and clears quickly after water is drawn from the tap and the excess air is released.

At times I can detect chlorine odors in tap water. What can I do about it?

Chlorine odors may be more noticeable when the weather is warmer. Chlorine is a disinfectant and is added to the water to kill germs. The following are ways you can remove the chlorine and its odor from your drinking water:

- Fill a pitcher and let it stand in the refrigerator overnight. (This is the most effective way to address a chlorine odor in drinking water.)
- Fill a glass or jar with water and let it stand in sunlight for 30 minutes.
- Pour water from one container to another about 10 times.
- Heat the water to about 100 degrees Fahrenheit.
- Once you remove the chlorine, be sure to refrigerate the water to limit bacterial regrowth.

Does my drinking water contain fluoride?

Yes, New York City tap water contains fluoride. In accordance with Article 141.05 of the New York City Health Code, DEP, as the New York City water supplier, adds a fluoride compound that provides the water supply with a concentration of about 0.8 mg/L of the fluoride ion. Fluoridation began in 1966.

Sometimes my water is a rusty brown color. What causes this?

Brown water is commonly associated with plumbing corrosion problems inside buildings and from rusting hot water heaters. If you have an ongoing problem with brown water, it is probably due to rusty pipes. It is recommended that you run your cold water for 2 - 3 minutes, if it has not been used for an extended period of time. This will flush the line. You can avoid wasting water by catching your "flush" water in a container and using it to water plants or for other purposes. Brown water can also result from street construction or water main work being done in your area. Any disturbance to the main, including the opening of a fire hydrant, can cause pipe sediment to shift, resulting in brown water. The settling time will vary, depending on the size of the water main.

Should I buy bottled water?

New York City has safe, award-winning, affordable, and great tasting tap water. You do not need to buy bottled water for health reasons in New York City since our water meets all federal and State health-based drinking water standards. In addition, bottled water costs up to 1,000 times more per year than New York City's drinking water.

When purchasing bottled water, consumers should look for the New York State Health Department (NYSHD) CERT #. Consumers can access additional information on New York State certified bottled water facilities within the United States that can sell water within New York State at www.health.state.ny.us/environmental/water/drinking/bulk_bottle/bottled.htm. As an alternative to purchasing bottled water, use a reusable bottle and fill it with New York City tap water.

Is New York City's water "hard"?

Hardness is a measure of dissolved calcium and magnesium in drinking water. The less calcium and magnesium in the water ("soft" water), the easier it is to create lather and suds. New York City's Catskill/Delaware System water is predominantly "soft" with a hardness of about 1.0 grain/gallon ($CaCO_3$).

Ultraviolet Disinfection Frequently Asked Questions

What is UV?

Ultraviolet light (UV) is a form of energy called electromagnetic radiation. UV light is a small part of the entire electromagnetic spectrum made up of other types of radiation including visible light, x-rays, radio waves, and microwaves, all at different wavelengths. UV light is electromagnetic radiation with wavelengths in the range of 100- 400 nanometers (nm). In contrast, visible light is in the range of 400-700 nm, so UV light is not visible.

What is UV treatment?

UV treatment is the disinfection process of passing water by special lamps that emit UV waves, which can inactivate harmful microorganisms.

How does UV treatment work?

Ultraviolet light is similar to the sun's rays, but stronger. The UV alters the nucleic acid (DNA) of viruses, bacteria, molds or parasites, so that they cannot reproduce or cause disease. UV treatment does not change the water chemically as nothing is added except energy.

Is UV-treated water safe to drink?

UV-treated water is safe to drink. UV treatment does not add chemicals or change the chemical composition of the water. UV only inactivates microorganisms in the water.

When UV treatment is used to disinfect water, does the water become radioactive?

Since UV is light, it travels through air and water at the speed of light and when the UV source is turned off, the UV is gone. Nothing remains behind; the water that has been exposed to UV is the same as it was before exposure, and it does not become radioactive. The process is like shining a bright light into a glass of water.

Will you still use chlorine disinfection?

UV disinfection in combination with chlorine disinfection, which is currently in place, will provide a multiple disinfection barrier.

Does building and operating this new facility increase my water bill?

The construction and operation of the UV Disinfection Facility has already been incorporated into the water rate, so customers will not see a water rate increase associated with this specific project.

Please share this information with other people who drink New York City tap water, especially those who may not have received this publication directly, such as people who live in apartment buildings or nursing homes, attend schools, or have businesses. You can do this by posting this publication in a public place or distributing copies by hand mail or email.

Resources

For additional copies of this report, to report unusual water characteristics, or to request a free kit to test for lead in your drinking water, call 311, or from outside NYC call (212) NEW-YORK or visit 311 online. TTY services are available by calling (212) 504-4115.

For more information about *Cryptosporidium* and *Giardia*, contact the Bureau of Communicable Diseases of the New York City Department of Health and Mental Hygiene at (212) 788-9830 or call 311 or visit www.nyc.gov/apps/311.

To contact the New York City Department of Health and Mental Hygiene about other water supply health-related questions, call 311 or visit 311 online, or call New York State Department of Health, Bureau of Water Supply Protection at (518) 402-7650.

To report pollution, crime or terrorism activity occurring in the watershed, call (888) H2O-SHED (426-7433).

To view the 2012 Annual Water Supply and Quality Report, announcements of public hearings, and other information about the New York City Water Supply System, visit DEP's website at www.nyc.gov/dep.

This report was prepared in accordance with Part 5-1.72 of the New York State Sanitary Code (10NYCRR), and the National Primary Drinking Water Regulations, 40 CFR Part 141 Subpart O, of the United States Environmental Protection Agency (EPA), which require every drinking water supplier to provide the public with an annual statement describing the water supply and the quality of its water.

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Ten raport zawiera bardzo istotną informacje o twojej wodzie pitnej. Przetłumacz go albo porozmawiaj z kimś kto go rozumie.

В этом материале содержится важная информация относительно вашей питьевой воды. Переведите его или поговорите с кем-нибудь из тех, кто понимает его содержание.

這個報告中包含有關你的飲用水的重要信息。
請將此報告翻譯成你的語言，或者詢問懂得這份報告的人。

이 보고서는 귀하의 식수에 관한 매우 중요한 정보를 포함하고 있습니다.
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NYC Environmental Protection
59-17 Junction Boulevard
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2

DATE: MAY 2 3 2013

SUBJECT: Neo Smelting and Refining Site – Memo for Historic Reference Municipal Tax Archives Photographs

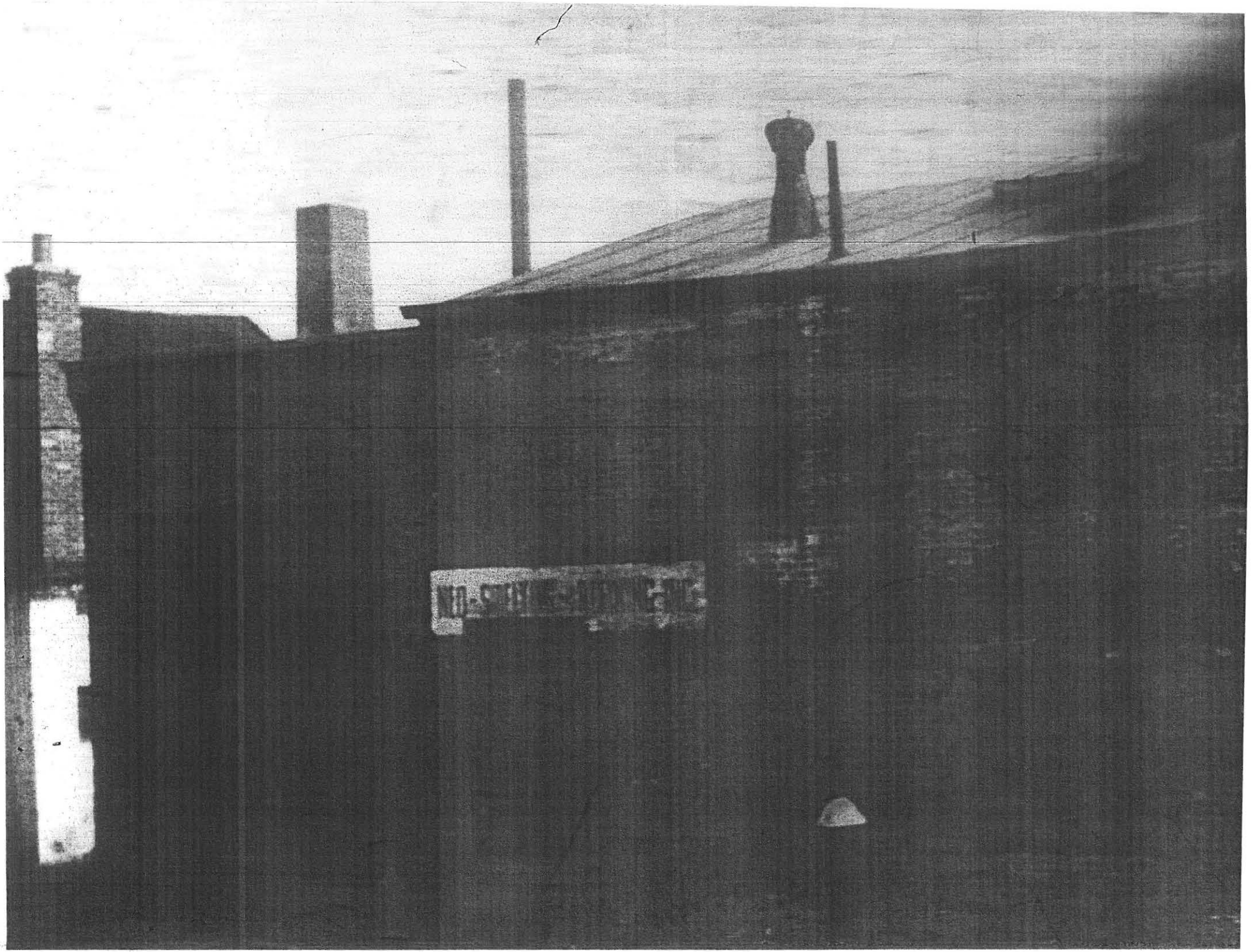
FROM: Margaret Gregor, On-Scene Coordinator Margaret Gregor
Removal Action Branch

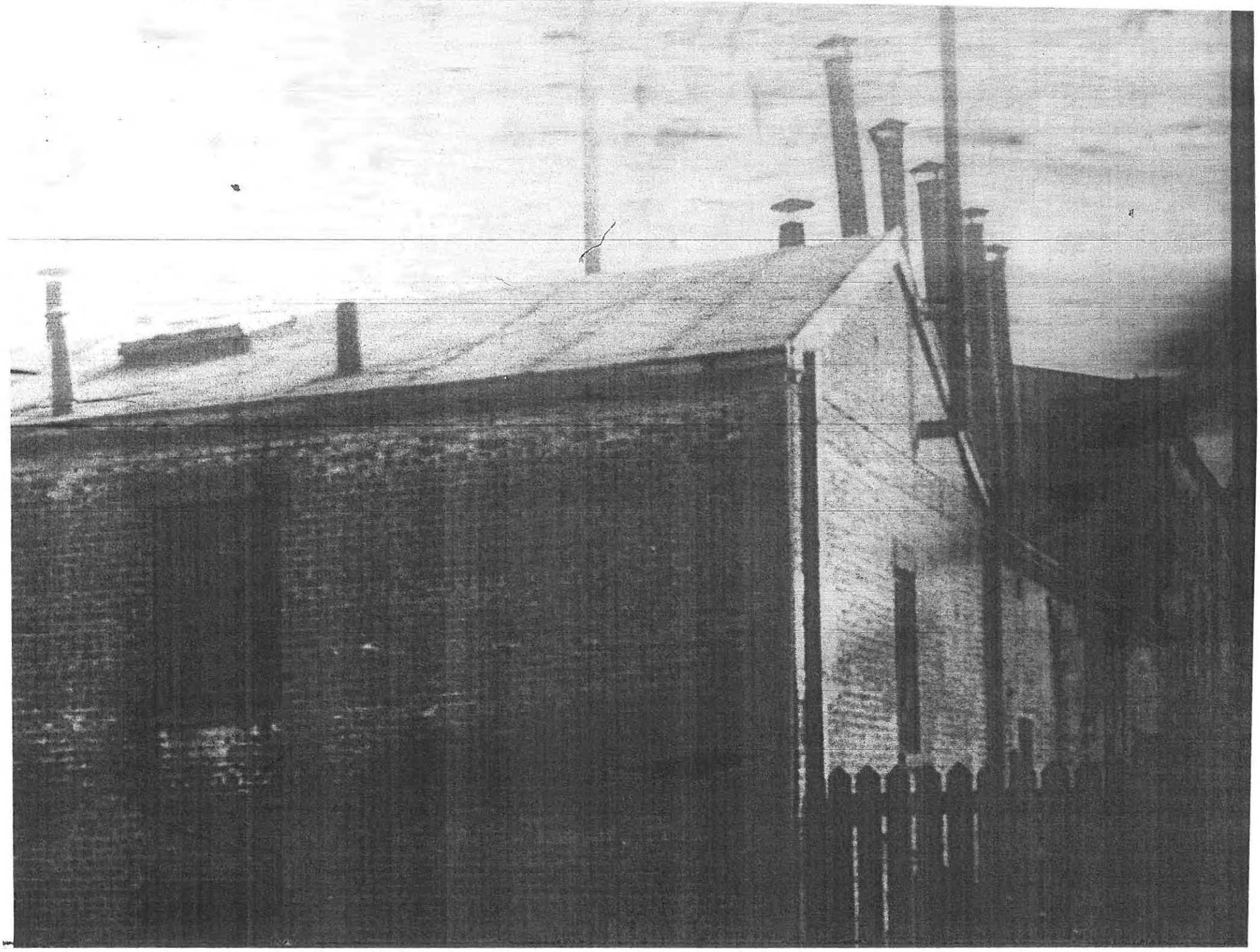
TO: File

The purpose of this memorandum is to document the reference discovered while conducting historical research on the Neo Smelting and Refining Site (Site). This reference was utilized for site assessment purposes.

On January 22, 2013, EPA Region II On-Scene Coordinator Gregor obtained the attached copies of tax photographs from the New York City (NYC) Municipal Archives Tax Photograph Collection at 31 Chambers Street, Room 103, New York, NY 10007. According to the NYC Department of Records, the photos were taken between 1939 and 1941, when the city photographed every house and building in the five NYC boroughs.

The current Site parcel is identified as Block 4516, Lot 7501. However, the tax photograph identified the Site building with an historic lot number: Block 4516, Lot 22, and the photograph is File Number T-584827. This photo shows the "Neo Smelting & Refining Inc." sign on the north face of the current Site building. This was printed onto two pages due to the width of the photo. A short stretch of building in between the two halves of the building face was omitted. This section of the building did not have any significant roof structures, or anything visible above the roof line.





UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2

DATE: MAY 2 3 2013

SUBJECT: Neo Smelting and Refining Site – Memo for Historic Reference
Whitestone 1800s Reference

FROM: Margaret Gregor, On-Scene Coordinator
Removal Action Branch

TO: File

The purpose of this memorandum is to document the reference discovered while conducting historical research on the Neo Smelting and Refining Site (Site). This reference was utilized for site assessment purposes.

On January 28, 2013, EPA Region II On-Scene Coordinator Gregor obtained the attached references regarding the original on-site factory building via an internet search for the history of Whitestone, NY, which led to a preview of *Whitestone* by Jason D. Antos, published by Arcadia Publishing in 2006. All images were obtained by searching via Google Preview through this book, with the exception of the Google Street View which is compared to the historic photo within the book.

This indicates that the Site complex was built as a tin and copper products manufacturing facility circa 1854. A map dated 1890 included in the book shows the Site complex.

This map from 1890 shows the growing population of Whitestone, which at this time was close to 1,000 people. (Author's collection.)

when in the fall of 1776, British troops entered Whitestone and destroyed Lewis's home and abducted his wife.

As Whitestone entered the 1800s, the town became more industrial with the arrival of John D. Locke. His factory, which is still located on Clintonville Street, produced tin and copper products as well as hot irons for clothing and tools. With the existence of a factory, the population of Whitestone grew. By 1860, the population had expanded to 650 people, a high increase in comparison to the several homesteads that had existed since the early 18th century.

By the end of the Civil War, Whitestone boomed. The economy of the North grew and New York City benefited greatly from this prosperity. With the arrival of the railroad in 1869, Whitestone saw the opening of saloons and hotels.

On January 1, 1898, Queens County became a borough of New York City. With the opening of the Queensborough Bridge in 1909, people moved by the tens of thousands to the wide open land of Queens.

Whitestone became an idyllic spot for celebrities and upper class citizens. The quiet country

Pictured here is the factory started by John D. Locke in 1854. The pioneer tinware manufacturer built this stamping mill on what is now Clintonville Street. Most of his workers moved here with their families from Brooklyn. The following year, in 1855, the town experienced its first major economic boom. (Photograph by Jason D. Antos.)

U.S. Department of the Interior
U.S. Geological Survey

Prepared in cooperation with New York City Department of Environmental Protection and
New York State Department of Environmental Conservation

Ground-Water Resources of Kings and Queens Counties, Long Island, New York

Water-Supply Paper 2498

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Ground-Water Resources of Kings and Queens Counties, Long Island, New York

By
Herbert T. Buxton and Peter K. Shernoff

Water-Supply Paper 2498

In cooperation with
New York City Department of Environmental Protection and
New York State Department of Environmental Conservation

U.S. DEPARTMENT OF THE INTERIOR
Bruce Babbitt, Secretary

U.S. GEOLOGICAL SURVEY
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Cover—Aerial photo of Brooklyn, NewYork, looking northwest toward Manhattan Island (NASA)

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CONVERSION FACTORS, VERTICAL DATUM, AND ABBREVIATIONS

Multiply	By	To obtain
inch (in)	25 4	millimeter
foot (ft)	0 3048	meter
mile (mi)	1 609	kilometer
acre	0 4047	hectare
square mile (mi^2)	2 590	square kilometer
gallon (gal)	3 785	liter
million gallons (Mgal)	3,785	cubic meter
billion gallons (Bgal)	3,785,000	cubic meter
inch per year (in/yr)	25 4	millimeter per year
foot per day (ft/d)	0 3048	meter per day
Foot per mile (ft/mi)	0 1894	meter per kilometer
gallon per minute (gal/min)	3 785	liter per minute
million gallons per day (Mgal/d)	3,785	cubic meter per day
million gallons per day per square mile [(Mgal/d)/mi^2]	1,461	cubic meter per day per square kilometer

Temperature is given in degrees Celsius (°C), which can be converted to degrees Fahrenheit (°F) by use of the following equation

$$°F = 1\ 8\ °C+32$$

Sea level. In this report, "sea level" refers to the National Geodetic Vertical Datum of 1929 (NGVD of 1929)—a geodetic datum derived from a general adjustment of the first-order level nets of both the United States and Canada, formerly called Sea Level Datum of 1929

Abbreviated water-quality units used in this report: Chemical concentrations and water temperature are given in metric units Chemical concentration is given in milligrams per liter (mg/L) or micrograms per liter (µg/L) Milligrams and micrograms per liter are units expressing the concentration of chemical constituents in solution as weight (milligrams or micrograms) of solute per unit volume (liter) of water One-thousandth gram per liter is equivalent to one milligram per liter One-millionth gram per liter is equivalent to one microgram per liter For concentrations less than 7,000 mg/L, the numerical value is approximately the same as for concentrations in parts per million

Ground-Water Resources of Kings and Queens Counties, Long Island, New York

By Herbert T Buxton and Peter K Shernoff

Abstract

The aquifers beneath Kings and Queens Counties supplied an average of more than 120 Mgal/d (million gallons per day) for industrial and public water supply during 1904-47, but this pumping caused saltwater intrusion and a deterioration of water quality that led to the cessation of pumping for public supply in Kings County in 1947 and in western Queens County in 1974 Since the cessation of pumping in Kings and western Queens Counties, ground-water levels have recovered steadily, and the saltwater has partly dispersed and become diluted In eastern Queens County, where pumpage for public supply averages 60 Mgal/d, all three major aquifers contain a large cone of depression The saltwater-freshwater interface in the Jameco-Magothy aquifer already extends inland in southeastern Queens County and is moving toward this cone of depression. The pumping centers' proximity to the north shore also warrants monitoring for saltwater intrusion in the Flushing Bay area

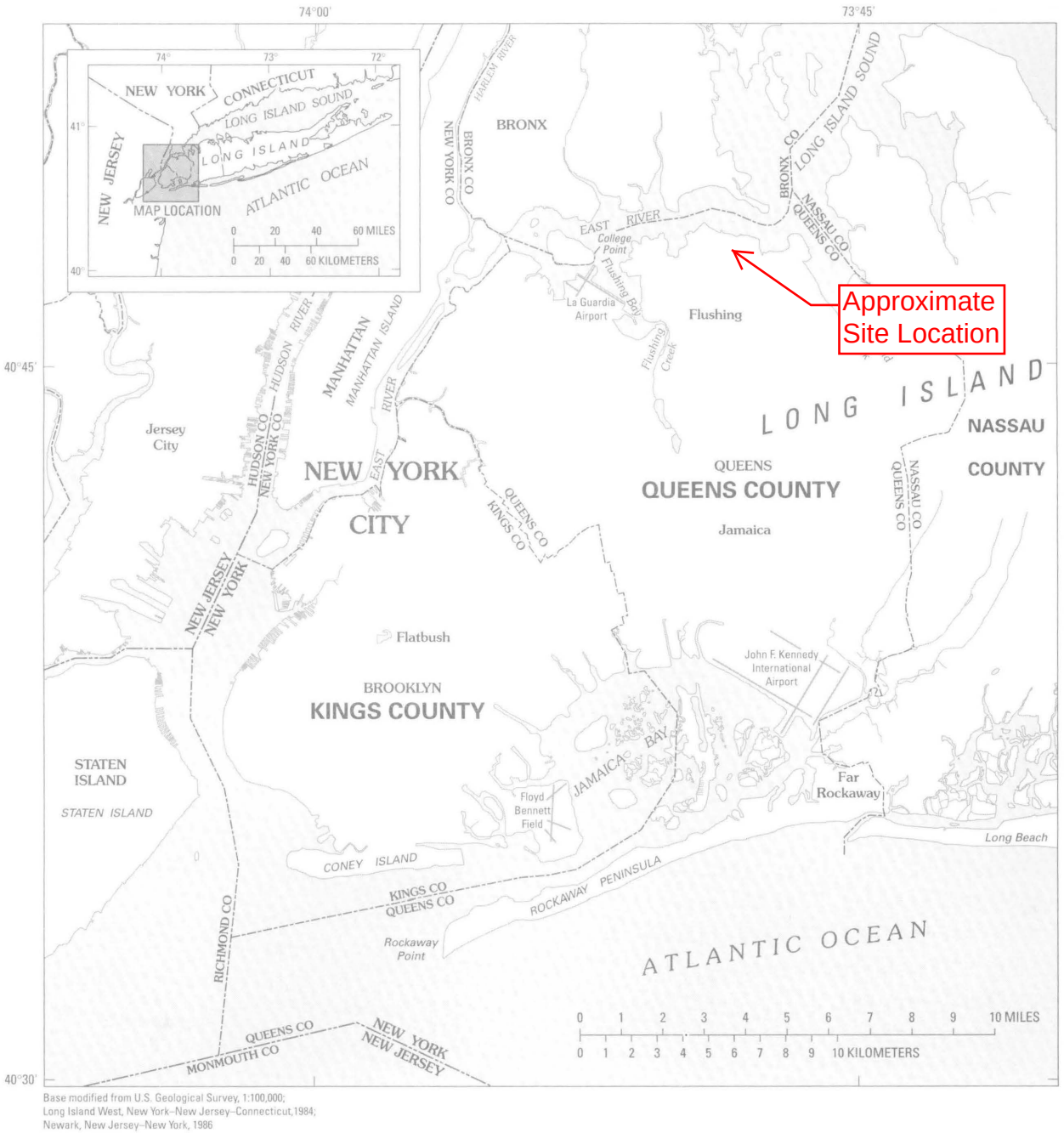
Urbanization and development on western Long Island since before the turn of this century have caused significant changes in the ground-water budget (total inflow and outflow) and patterns of movement Some of the major causes are (1) intensive pumping for industrial and public supply, (2) paving of large land-surface areas, (3) installation of a vast network of combined (storm and sanitary) sewers, (4) leakage from a water-supply-line network that carries more than 750 Mgal/d, and (5) burial of stream channels and extensive wetland areas near the shore

Elevated nitrate and chloride concentrations throughout the upper glacial (water-table) aquifer indicate widespread contamination from the land surface Localized contamination in the underlying Jameco-Magothy aquifer is attributed to downward migration in areas of hydraulic connection between aquifers where the Gardiners Clay is absent. A channel eroded through the Raritan confining unit provides a pathway for migration of surface contaminants to the Lloyd aquifer sooner than anticipated Although ground water in the Lloyd aquifer is still pristine, present pumping rates and potentiometric levels in the Lloyd aquifer indicate that it is much more sensitive to withdrawals than the other aquifers are and contains an extremely limited water supply

INTRODUCTION

Kings and Queens Counties (the boroughs of Brooklyn and Queens in New York City) are at the western end of Long Island (fig 1) This area has been extensively urbanized for more than 100 years In 1990, the population of Kings County was 2 3 million, and the population of Queens was 2 0 million The Long Island ground-water system, including the part beneath Kings and Queens Counties, is the sole source of water supply for the 2 6 million inhabitants of Nassau and Suffolk Counties to the east

Ground water has been a source of public supply for western Long Island since the mid-19th century Rapid increases in population since the turn of this century, and the attendant increases in pumping for public supply and industry, have resulted in severe water-level declines and intrusion of saline water from the surrounding bays As a result, pumping for public supply



Base modified from U.S. Geological Survey, 1:100,000; Long Island West, New York–New Jersey–Connecticut, 1984; Newark, New Jersey–New York, 1986

Figure 1. Location of Kings, Queens, and western Nassau County study area, Long Island, New York.

in Kings County was stopped in 1947 and in western Queens County in 1974. (These areas now obtain water from mainland surface-water reservoirs.) As the early pumping centers in Kings and western Queens County were abandoned, new ones were established farther east in areas more distant from the shore, where water-table altitudes are higher.

Since the cessation of pumping, water levels in Kings and western Queens Counties have recovered continually. Even in areas where the water table had been drawn down to as much as 35 ft below sea level, it is now above sea level. In many of these areas, subways and deep basements that were constructed in the early 20th century, when water levels were depressed, are now being flooded as the water table recovers and need to be dewatered continually. By 1983, eastern Queens County was withdrawing almost 60 Mgal/d for public

supply, enough to cause concern that salt-water intrusion may resume

In 1981-86, the U S Geological Survey (USGS) conducted an investigation of the western part of the Long Island ground-water system in cooperation with the New York State Department of Environmental Conservation and the New York City Department of Environmental Protection The area included all of Kings (about 76 mi^2) and Queens (about 113 mi^2) Counties and about 50 mi^2 in westernmost Nassau County (fig 1)

Purpose and Scope

This report describes the structure and operation of the western part of the Long Island ground-water system It describes the hydrologic effects associated with human development in this highly urbanized environment from 1900 to the early 1980's The ground-water quantity and quality of recent (early 1980's) conditions is characterized and a discussion of ground-water resource concerns is offered Specifically, it

1 delineates the hydrogeologic framework of the western part of the Long Island ground-water system and defines its water-bearing characteristics,
2 describes ground-water flow patterns, the ground-water-system budget, and ground-water quality under predevelopment conditions,
3 summarizes the development of the ground-water system and the effects of urbanization by presenting historical pumpage data and other urbanizing factors, and presenting the subsequent response of the ground-water system, and
4 presents the recent patterns and distribution of ground-water flow, and concentrations of selected chemical constituents that indicate the extent of human-derived contamination and saltwater intrusion throughout the ground-water system

Acknowledgments

The authors thank the New York State Department of Environmental Conservation and the New York City Department of Environmental Protection for support and cooperation Special thanks are given to Jerry Iwan and the staff of the Bureau of Water Supply Laboratory of the New York City Department of Environmental Protection for cooperation in handling and chemical analysis of water samples

HYDROGEOLOGIC FRAMEWORK

The ground-water system that underlies western Long Island consists of a series of unconsolidated deposits of clay, sand, and gravel of Late Cretaceous and Pleistocene age that are underlain by Precambrian(?) bedrock The stratigraphic relations of the geologic units are summarized in table 1, the geometry of these units is depicted in vertical sections on plate 2 and in hydrogeologic maps in figures 2A–F The water-transmitting properties of the corresponding hydrogeologic units are described also

Hydrostratigraphy

Bedrock was eroded to a peneplain before deposition the overlying Cretaceous sediments, its surface shows signs of later erosion by Pleistocene glaciation in the northwest (fig 2A, see also sections A-A' and B-B' on pl 2) Bedrock crops out in northwestern Queens County near the East River and slopes southeastward at about 80 ft/mi Consequently, the overlying unconsolidated formations form a wedge-shaped mass that attains a maximum thickness of more than 1,100 ft in the southeastern corner of Queens County The maximum thickness in Kings County is about 900 ft, in southeastern Kings

Overlying bedrock is the Raritan Formation of Late Cretaceous age, which consists of the Lloyd Sand Member and an upper, unnamed clay member Overlying the Raritan Formation are the Magothy Formation and Matawan Group, undifferentiated, also of Late Cretaceous age, the Jameco Gravel and the Gardiners Clay, both of Pleistocene age, upper Pleistocene deposits of Wisconsin age, and a generally thin soil mantle of Holocene age (table 1 and pl 2) Holocene beach deposits form most of the Rockaway Peninsula and Coney Island in the south, and Holocene salt-marsh deposits underlie and fringe the south-shore bay areas Artificial filling has buried some marsh deposits in low and swampy shore areas Because Holocene deposits occur only in relatively small areas of Kings and Queens and are not significant water bearers, they are not included in the geologic descriptions that follow

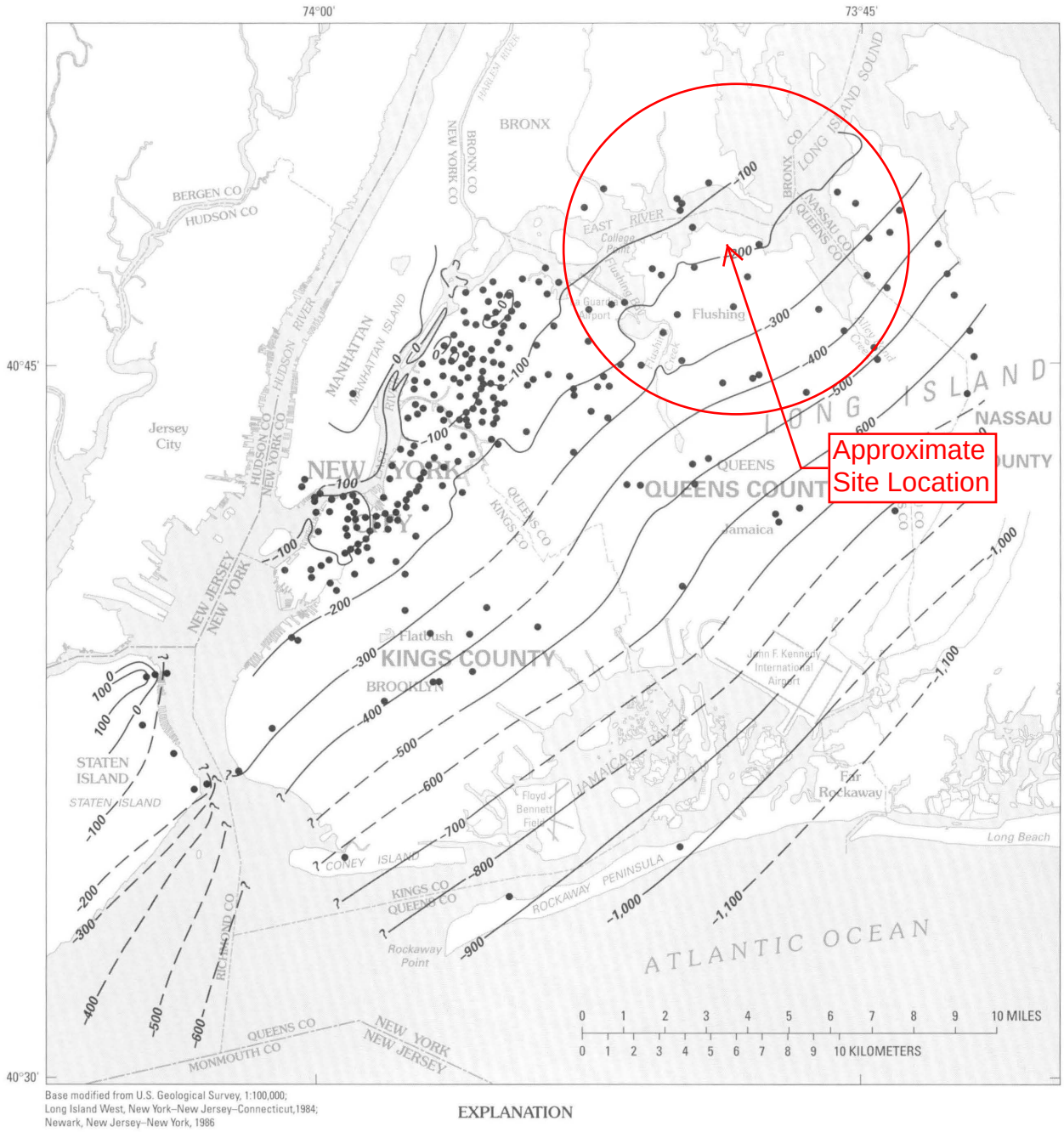
Erosion of the Cretaceous strata from Late Cretaceous through Pleistocene time has created a complex buried topography, as is seen in sections on plate 2 The data from which the hydrogeologic correlations were formulated consisted mainly of drillers' geologic logs, geophysical data, descriptive logs prepared by the

Table 1 Western Long Island stratigraphic column with geologic and hydrogeologic interpretation

System	Series	Geologic unit		Hydrogeologic unit	Range of thickness, in feet	Range of altitude of upper surface, in feet above or below sea level
Quaternary	Holocene	Shore, beach salt-marsh deposits, and alluvium				
	Pleistocene	Wisconsin glaciation (Harbor Hill, interstadial marine, and Ronkonkoma Drift)	Till (ground and terminal moraine)	Upper glacial aquifer	0 to 300	Land surface
			Outwash			
			"20-foot" clay (marine)			
			unconformity?			
		Sangamon interglaciation	Gardiners Clay (marine)	Gardiners Clay	0 to 150	-40 to -200
			unconformity?			
		Pre-Wisconsin glaciation (Illinoian?)	Jameco Gravel	Jameco aquifer[1]	0 to 200	-90 to -240
			unconformity?			
Cretaceous	Upper Cretaceous	Matawan Group–Magothy Formation (undifferentiated)		Magothy aquifer[1]	0 to 500	40 to -400
			unconformity?			
		Raritan Formation	Clay member	Raritan confining unit	0 to 200	30 to -650
			Lloyd sand member	Lloyd aquifer	0 to 300	-90 to -825
			unconformity?			
Precambrian		Crystalline bedrock		Bedrock	—	15 to -1,100

[1] The Magothy and Jameco aquifers are often considered as one hydrologic unit with differing hydraulic properties (See discussion in text)

USGS during inspection of cores of well-bore samples, and selected bridge and tunnel-boring data These data are interpreted in relation to the area's erosional and depositional history The altitude of each hydrogeologic unit's upper surface at each well is listed in table 9 (at end of report), locations of wells are shown on plate 1 The numbers of all wells at multiple-well sites are given in table 7 (at end of report) to facilitate location of wells



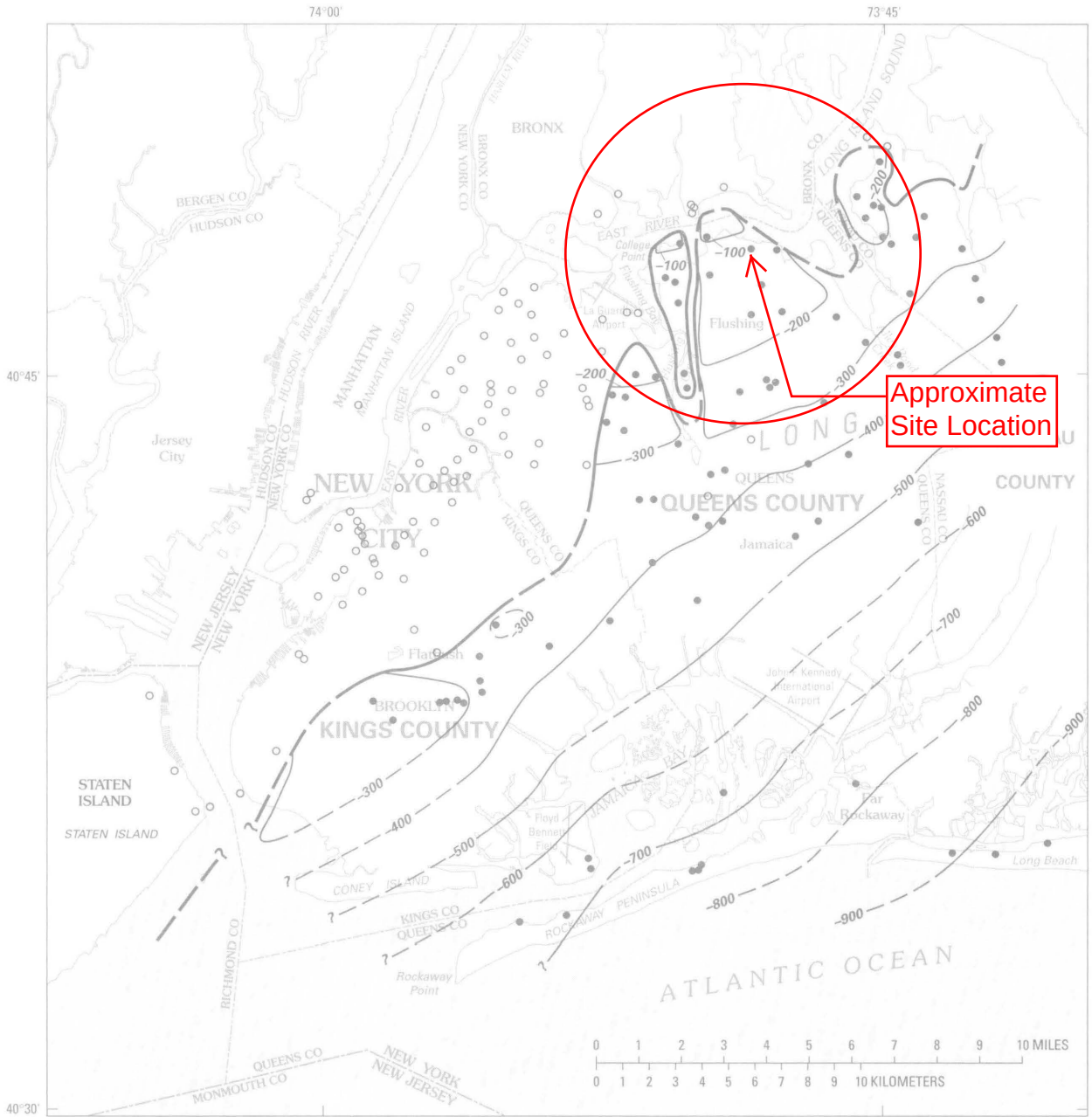
Base modified from U.S. Geological Survey, 1:100,000; Long Island West, New York–New Jersey–Connecticut,1984; Newark, New Jersey–New York, 1986

Figure 2A. Altitude of top of crystalline bedrock.

Upper Cretaceous Deposits

Lloyd Sand Member of the Raritan Formation

The Lloyd Sand Member, the oldest Cretaceous deposit in the area, lies unconformably on bedrock. Its surface and extent were shaped by post-Cretaceous erosion. It is absent in northwestern Kings and Queens Counties (fig. 2B) and in a tributary buried-valley-system that trends southward from Flushing Bay to central Queens County (section E-E', pl. 2).



Base modified from U.S. Geological Survey, 1:100,000; Long Island West, New York–New Jersey–Connecticut,1984; Newark, New Jersey–New York, 1986

EXPLANATION

?— — — — **Northern limit of Lloyd Sand Member of the Raritan Formation**—Dashed where approximately located, queried where unknown

?— —-300——— **Subsurface contour**—Shows altitude of top of hydrogeologic unit. Dashed where approximately located, queried where unknown. Contour interval 100 feet. Datum is sea level

●○ **Well or test boring**—Solid circle indicates penetration of top of hydrogeologic unit. Open circle indicates unit is absent. Well numbers are shown on plate 1

Figure 2B. Altitude of top of Lloyd Sand Member of the Raritan Formation.

The Lloyd Sand Member consists mainly of deltaic deposits of fine to coarse quartzose sand interbedded with sand and small- to large-pebble quartzose gravel. Interbeds of silt and clay and silty and clayey sand are common throughout the unit (Soren, 1978). The member is overlain by the clay member of the Raritan Formation. The northern extent of the Lloyd Sand Member and the clay member are largely coincident where eroded in the buried-valley system in northern Queens (pl. 2), but the clay member extends well north

of the underlying Lloyd Sand Member in western Queens and Kings Counties

The Lloyd Sand Member ranges in thickness from zero at its northern edge to about 200 ft in southeastern Kings County and 300 ft in southeastern Queens County The unit's surface is as high as 90 ft below sea level in northern Queens and more than 800 ft below sea level in southeastern Queens

Clay Member of the Raritan Formation

This unit is absent along the northwest shore of Kings and Queens Counties (fig 2C) and is eroded in central Queens in the same buried-valley system as the Lloyd Sand Member, but the clay member has been more extensively eroded, especially to the south The clay member consists mainly of deltaic clay and silty clay beds and some interbedded sand (Soren, 1978) It increases in thickness from a pinchout at its northern limit to about 250 ft in southeastern Kings County and about 200 ft in southeastern Queens County Its upper surface is less than 50 ft below sea level in Kings County and a few feet above sea level in parts of northern Queens It is more than 400 ft below sea level in southern Kings and 600 ft below sea level in southeastern Queens

The clay member overlies the Lloyd Sand Member with apparent conformity and, where the Lloyd Sand Member is absent, it lies unconformably on bedrock It was disconformably overlain by Upper Cretaceous deposits, but during a complex geologic history after the Late Cretaceous Epoch, it became overlain from south to north by the Magothy Formation and Matawan Group, undifferentiated, the Jameco Gravel, the Gardiners Clay, and upper Pleistocene deposits, respectively (pl 2)

Magothy Formation and Matawan Group

The Magothy Formation and Matawan Group, undifferentiated, contains the remaining Cretaceous deposits in this area This uppermost Cretaceous unit was severely eroded from the Late Cretaceous to the time of deposition of the Jameco Gravel (fig 2D) The erosion is most severe in what was probably a complex channel network from an ancestral diversion of the Hudson River (Soren, 1978, p 12-15) The Cretaceous unit in Kings and Queens Counties has a buried erosional surface with two prominent north-south trending channels, one through central Queens and one generally parallel to the Kings-Queens County line These channels are eroded through the unit to near the south shore, where they apparently join and continue south as a single channel Where the unit has been completely removed, dissection is evident in the underlying clay member and Lloyd Sand Member of the Raritan Formation (fig 2B and 2C) and even in the bedrock in a small area of north-central Queens (fig 2A)

The deposits of the Magothy Formation and Matawan Group, like the earlier Cretaceous deposits, are of continental origin and are mostly deltaic quartzose very fine to coarse sand and silty sand with lesser amounts of interbedded clay and silt The unit commonly has a coarse quartzose sand and in many places a basal gravel zone 25 to 50 ft thick

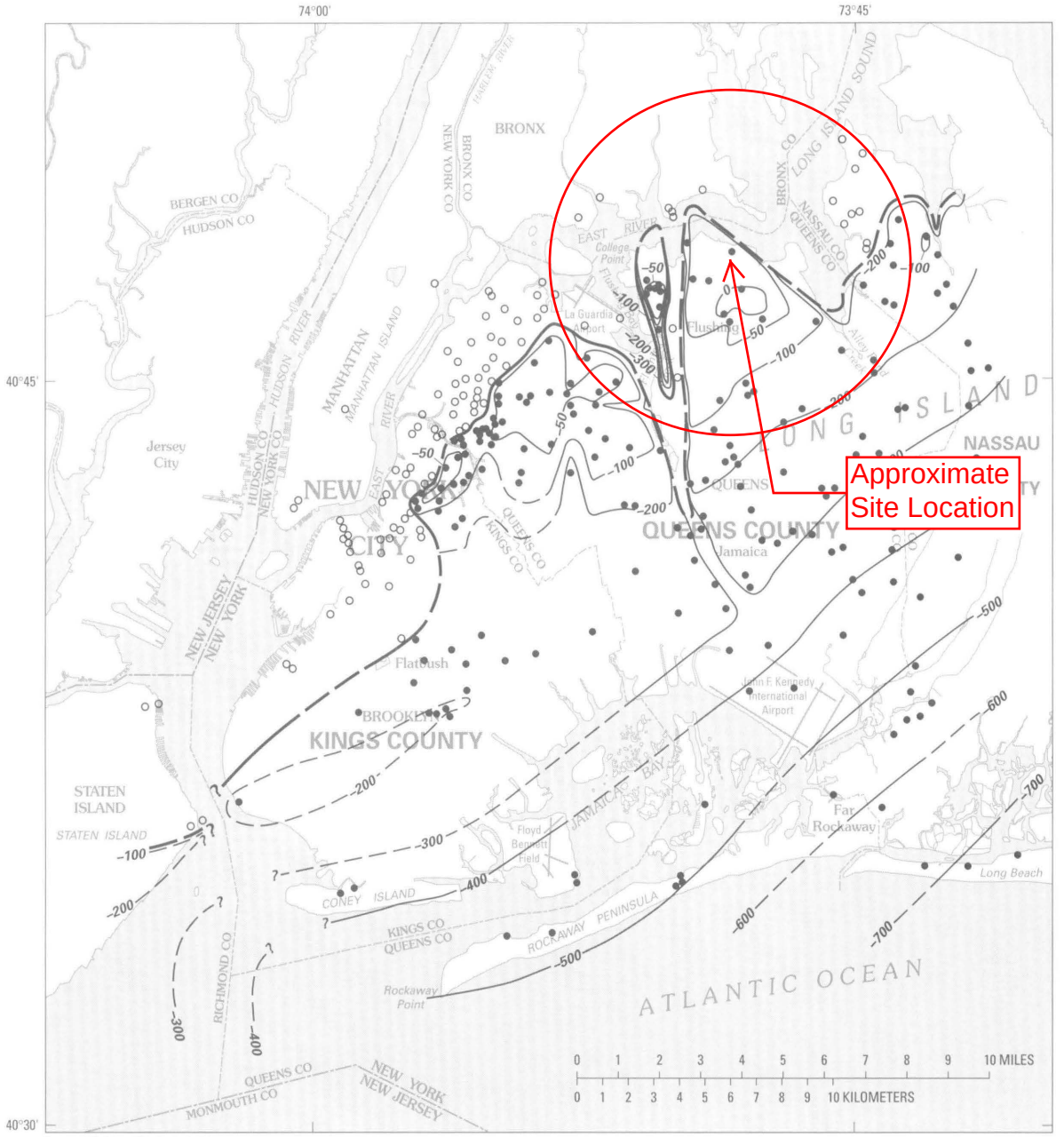
The unit ranges in thickness from zero at its northern limits to more than 200 ft in southern Kings and 500 ft in southeastern Queens It is thinner in the buried valleys The altitude of the Magothy-Matawan surface ranges from a few feet above sea level in northeast Queens to more than 400 ft below sea level in the buried valley to the south

Pleistocene Deposits

Jameco Gravel

The Jameco Gravel is the oldest Pleistocene deposit in the area (fig 2E) It is considered to be a channel filling associated with an ancestral pre-Sangamon (Illinoian?) diversion of the Hudson River (Soren, 1978, p 8) This episode of fluvial erosion probably was largely responsible for the irregular configuration of the Late Cretaceous land surface The Jameco Gravel is present in most of Kings County and southern Queens County It is thickest in the deep channels eroded into the underlying Magothy-Matawan unit and is thinnest over the higher areas For example, a small area in southeastern Queens at Far Rockaway in which the Jameco Gravel has not been found coincides with a high point on the surface of the underlying formation (fig 2D and section D-D' on pl 2) Thickness of the Jameco Gravel ranges from a feather edge at its northern limit to more than 200 ft in the main buried valley in the center of Jamaica Bay

Jameco deposits consist mainly of a heterogeneous suite of igneous, metamorphic, and sedimentary rocks and are typically dark brown The deposits grade from coarse sand and gravel with many cobbles and some boulders in the northern part of Kings County to finer grains southward The presence of diabase fragments indicates transport by meltwater from a glacial terminus northwest of New York City Soren



Base modified from U.S. Geological Survey, 1:100,000; Long Island West, New York--New Jersey--Connecticut,1984; Newark, New Jersey--New York, 1986

EXPLANATION

?— — — — **Northern limit of clay member of the Raritan Formation**—Dashed where approximately located, queried where unknown

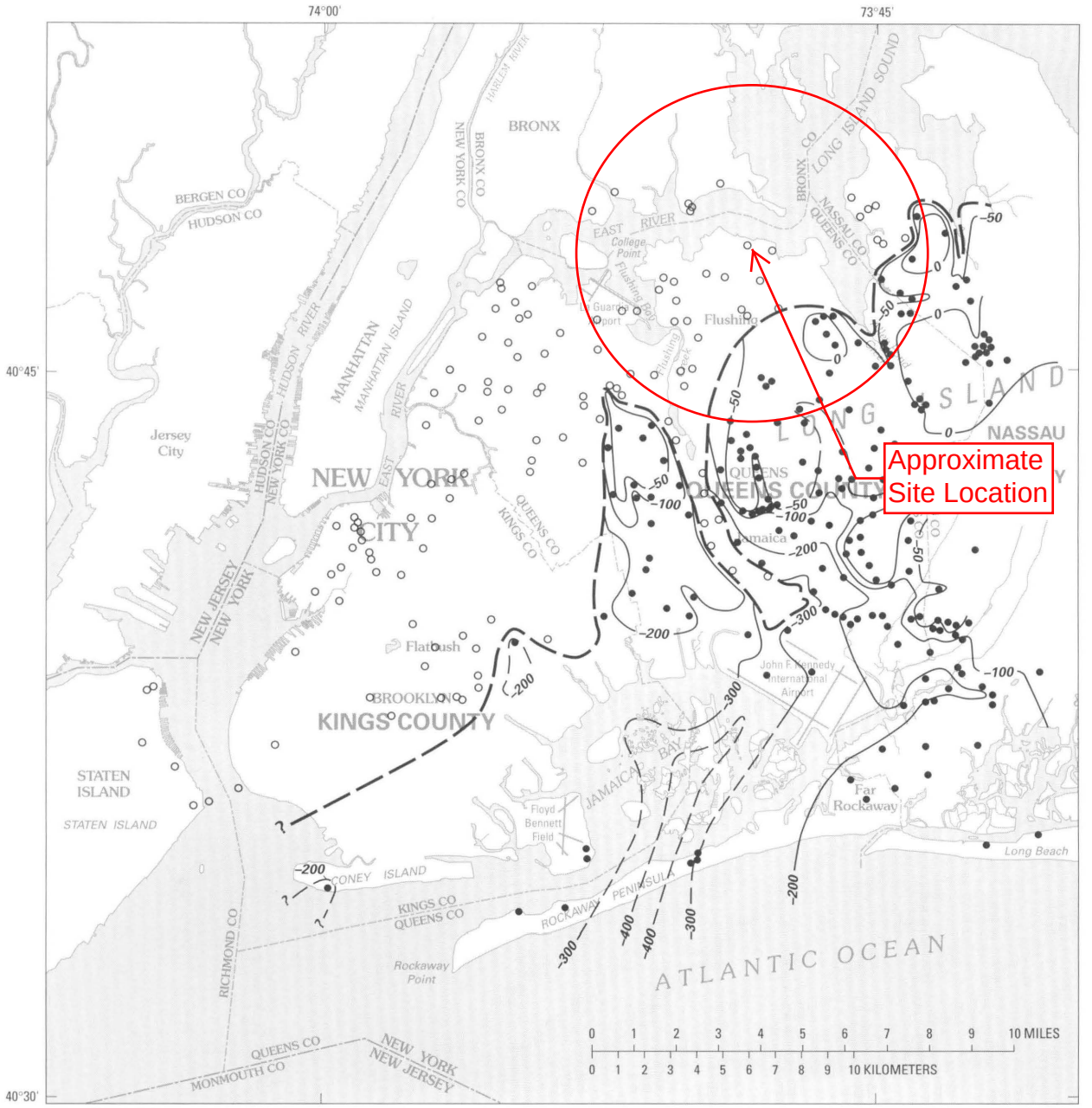
?— —300— **Subsurface contour**—Shows altitude of top of hydrogeologic unit. Dashed where approximately located, queried where unknown. Contour interval 50 and 100 feet. Datum is sea level

●○ **Well or test boring**—Solid circle indicates penetration of top of hydrogeologic unit. Open circle indicates unit is absent. Well numbers are shown on plate 1

Figure 2C. Altitude of top of clay member of the Raritan Formation.

(1978, p. 12-13) suggests that the Hudson River was diverted from its channel on the west of Manhattan Island to Queens County via the Harlem River channel and that distributary streams carried diabase fragments from there into Kings and Queens Counties.

The upper surface altitude of the Jameco Gravel is generally highest along the unit's northern edge—as little as 90 ft below sea level in western Kings County and 80 ft below sea level in eastern Queens County. It is generally lower to the south and over the deep ero-



Base modified from U.S. Geological Survey, 1:100,000; Long Island West, New York–New Jersey–Connecticut, 1984; Newark, New Jersey–New York, 1986

EXPLANATION

?— — — **Northern limit of Magothy Formation and Matawan Group**—Dashed where approximately located, queried where unknown

?— —-300——— **Subsurface contour**—Shows altitude of top of hydrogeologic unit. Dashed where approximately located, queried where unknown. Contour interval 50 and 100 feet. Datum is sea level

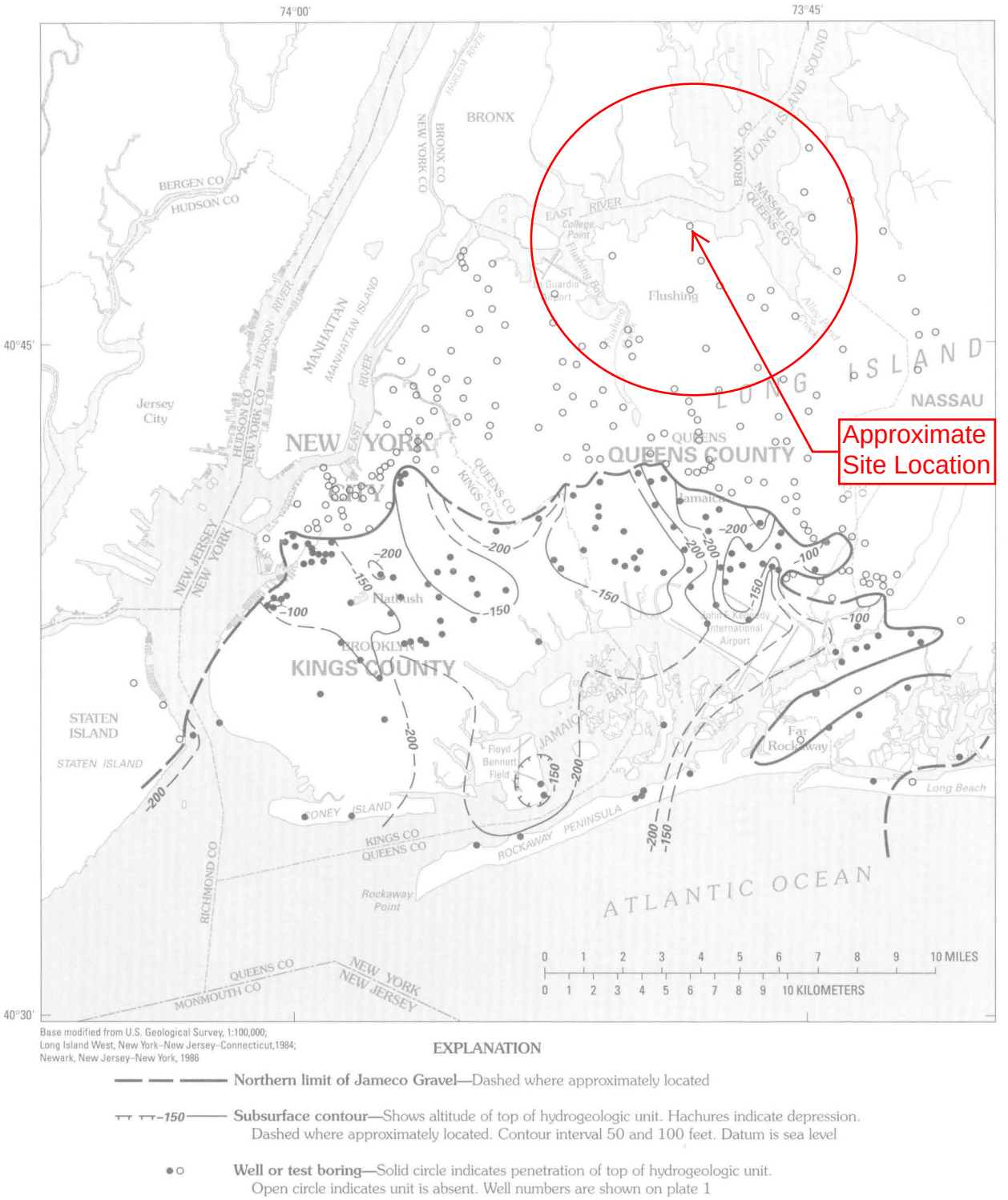
●○ **Well or test boring**—Solid circle indicates penetration of top of hydrogeologic unit. Open circle indicates unit is absent. Well numbers are shown on plate 1

Figure 2D. Altitude of top of Magothy Formation and Matawan Group.

sional channels in the Late Cretaceous surface, where it is more than 200 ft below sea level. The upper surface of the Jameco Gravel was probably modified by subsequent stream erosion and glaciation.

Gardiners Clay

The Gardiners Clay underlies most of Kings County and southern Queens County (fig. 2F). It unconformably overlies the Jameco Gravel and gener-



Base modified from U.S. Geological Survey, 1:100,000; Long Island West, New York–New Jersey–Connecticut, 1984; Newark, New Jersey–New York, 1986

EXPLANATION

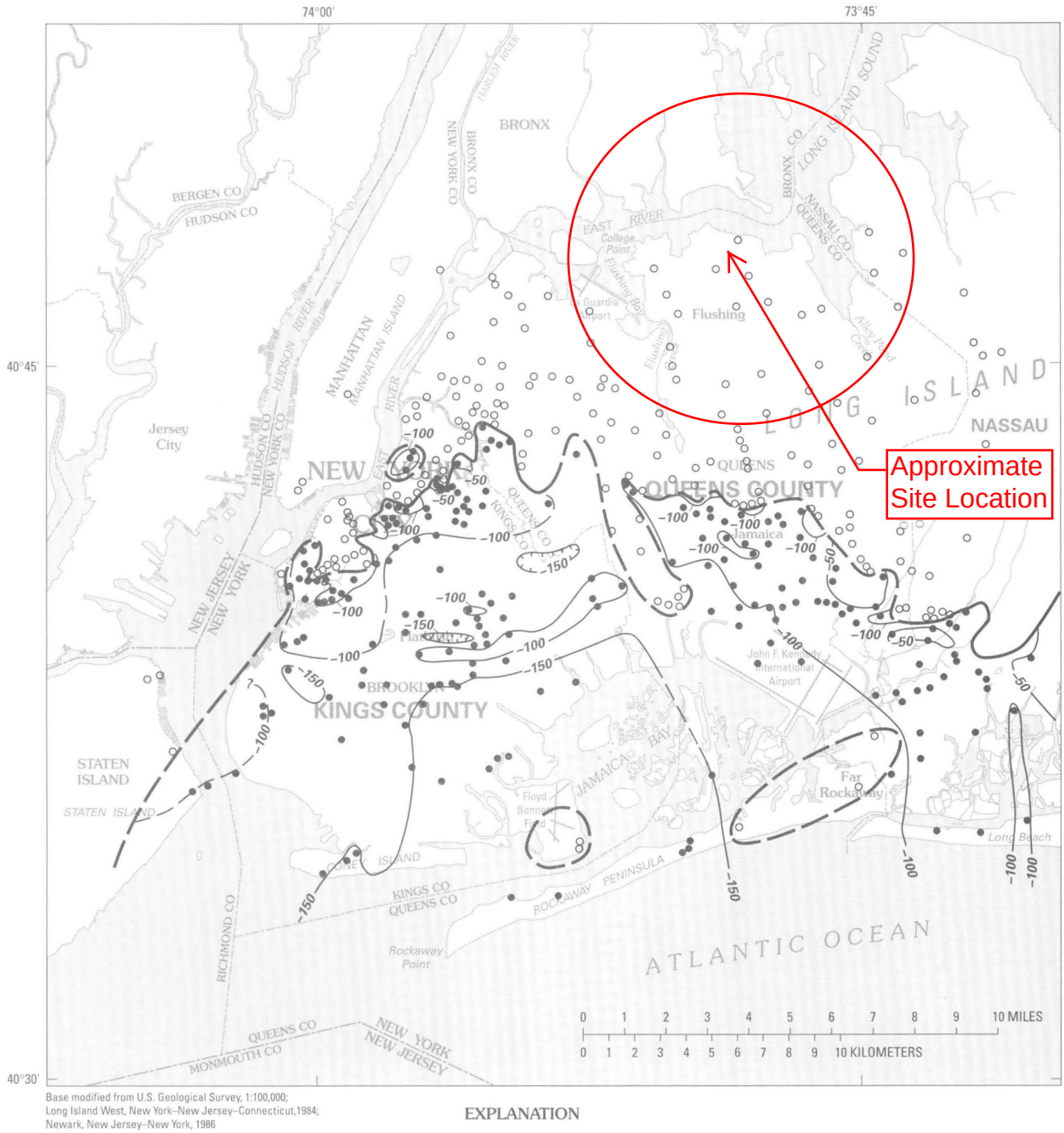
— — — **Northern limit of Jameco Gravel**—Dashed where approximately located

-150 **Subsurface contour**—Shows altitude of top of hydrogeologic unit. Hachures indicate depression. Dashed where approximately located. Contour interval 50 and 100 feet. Datum is sea level

● ○ **Well or test boring**—Solid circle indicates penetration of top of hydrogeologic unit. Open circle indicates unit is absent. Well numbers are shown on plate 1

Figure 2E. Altitude of top of Jameco Gravel.

ally overlaps it along most of its extent. It consists mainly of greenish-gray clay and silt and some interbedded sand and was probably deposited in lagoonal and marine environments during an interglacial (Sangamon) interval (Soren, 1978, p. 10). The typical blue or green color of these beds is due to glauconite, chlorite, and weathered biotite. The Gardiners Clay was described as "blue clay" in many early 20th-century drillers' logs. Fossil shells, foraminifera, and disseminated lignite are widespread in the formation.



Base modified from U.S. Geological Survey, 1:100,000; Long Island West, New York–New Jersey–Connecticut,1984; Newark, New Jersey–New York, 1986

EXPLANATION

Northern limit of Gardiners Clay—Dashed where approximately located

Subsurface contour—Shows altitude of top of hydrogeologic unit. Hachures indicate depression. Dashed where approximately located, queried where unknown. Contour interval 50 and 100 feet. Datum is sea level

Well or test boring—Solid circle indicates penetration of top of hydrogeologic unit. Open circle indicates unit is absent. Well numbers are shown on plate 1

Figure 2F. Altitude of top of Gardiners Clay.

The Gardiners Clay ranges in thickness from a feather edge at its northern limit to more than 100 ft in areas of previous erosion. The surface of the Gardiners Clay is predominantly flat but is affected locally by glacial erosion along its northern extent and by compaction in areas of greatest thickness. The upper surface ranges from less than 50 ft below sea level in the north to more than 150 ft below sea level in southern Kings County. It has not been found higher than 40 ft below sea level anywhere on Long Island, probably because

its deposition was controlled by a relatively constant sea level The Gardiners Clay is probably absent in two localized areas in the southern part of the area where underlying deposits (Magothy Formation and Matawan Group and Jameco Gravel) are at a higher altitude than the projected surface of the Gardiners Clay (fig 2F) One area is near Floyd Bennet field in southern Kings (section B-B', pl 2), the other is in Far Rockaway

Upper Pleistocene Deposits

These deposits are of Wisconsin age and of glacial origin They unconformably overlie all underlying units and are found at land surface in nearly all of Kings and Queens Counties The surficial geology of this area was mapped by Fuller (1914) The glacial deposits include (1) terminal moraine deposits emplaced by an ice front of Harbor Hill age (location shown in fig 4, p 15), (2) ground-moraine deposits north of the terminal moraine, and (3) glacial outwash deposits south of the terminal moraine The upper Pleistocene deposits range in thickness from zero in small areas of northwestern Queens, where bedrock crops out, to as much as 300 ft in the terminal moraine and near the buried valleys

The terminal moraine is an unsorted and unstratified mixture of clay, sand, gravel, and boulders that were accumulated at the front of a continental glacier The ground moraine is similar to the terminal-moraine deposits but was deposited at the base of the ice sheet during periods of melting Meltwater from the ice front flowed southward and carried sand and gravel in broad, coalescing sheets to form an outwash plain that extends from the terminal moraine south to the coast

Pre-Harbor Hill deposits are present at depth in the sequence of upper Pleistocene deposits (table 1) The "20-foot" clay in eastern Queens and Nassau Counties is a marine clay deposited during the Ronkonkoma-Harbor Hill interstade (Soren, 1978, p 11) This unit locally separates the Harbor Hill Drift from the underlying Ronkonkoma Drift and earlier deposits

Water-Transmitting Properties

The six major geologic units described in the preceding section generally correspond to hydrologic units with specific water-bearing characteristics These hydrologic units and their corresponding geologic names (table 1) are, in ascending order, the Lloyd aquifer (Lloyd Sand Member of the Raritan Formation), the Raritan confining unit (the clay member of the Raritan Formation), the Magothy aquifer (Magothy Formation and Matawan Group, undifferentiated), the Jameco aquifer (Jameco Gravel), the Gardiners Clay (Gardiners Clay), and the upper glacial aquifer (upper Pleistocene deposits)

The aquifers are areally extensive unconsolidated formations that yield significant quantities of water to wells The most permeable units are the beds of predominantly sand or sand and gravel The two clayey formations (the Gardiners Clay and Raritan confining unit) are significant confining units and have been estimated to have a vertical hydraulic conductivity of 0 001 ft/d (Franke and Cohen, 1972), several orders of magnitude lower than that of the aquifers Where present, they separate the ground-water reservoir into three major aquifer units—the Lloyd, the Jameco-Magothy, and the upper glacial aquifers (pl 2) The Gardiners Clay restricts vertical flow between the upper glacial and Jameco-Magothy aquifers, and the Raritan confining unit restricts vertical flow between the Jameco-Magothy and Lloyd aquifers Where these confining units are absent, ground-water flow between aquifer units is uninhibited The extent of the confining units is critical in defining the distribution of hydraulic head and ground-water flow patterns

The bedrock underlying the unconsolidated deposits has a low hydraulic conductivity and does not yield more than a few gallons per minute to wells The quantity of water that can flow across this boundary is insignificant compared with the quantities that flow in the overlying unconsolidated units Therefore, the bedrock surface is considered to be the bottom boundary of the ground-water flow system

Lloyd Aquifer

The Lloyd aquifer has moderate horizontal hydraulic conductivity, which McClymonds and Franke (1972) estimated to range from 50 to 70 ft/d, although individual sandy and gravelly beds within the aquifer could have much higher values High-capacity wells that tap the Lloyd aquifer generally have been pumped at rates less than 1,000 gal/min, but pumpage as high as 1,600 gal/min from a single well has been reported (Soren, 1971, p 11) Specific capacities of wells screened in the Lloyd aquifer, in gallons per minute pumped per foot of drawdown in the well, (gal/min)/ft, range from 4 to about 40 (gal/min)/ft (Soren, 1971, p 11) The Lloyd aquifer is confined between

the bedrock and the Raritan confining unit but is in good hydraulic connection with the overlying aquifers where the confining unit has been eroded (fig 2B)

Jameco-Magothy Aquifer

Although the Magothy and Jameco deposits differ in origin, lithologic character, and water-transmitting properties, they are considered as one aquifer unit in this report and are referred to as the Jameco-Magothy aquifer The Jameco Gravel was deposited in deep channels incised in the Magothy aquifer and provides good hydraulic connection between these units as shown in plate 2 (sections A-A', B-B', D-D', and E-E') In addition, these deposits are hydraulically separated from the underlying Lloyd aquifer by the Raritan confining unit and from the overlying upper glacial aquifer by the Gardiners Clay The lateral hydraulic continuity between the Jameco and Magothy aquifers enables both to act as a single aquifer in which the Jameco is merely a zone of higher hydraulic conductivity

The hydraulic conductivity of the Magothy aquifer has been estimated to range from 60 to 90 ft/d (McClymonds and Franke, 1972), but, as in the Lloyd aquifer, individual sandy and gravelly beds could have values several times higher No pumping of the Magothy aquifer in Kings County is known, but wells that tap the Magothy in Queens County have yielded as much as 1,500 gal/min The specific capacities of wells tested have ranged from 15 to 30 (gal/min)/ft in fine sand to 50 (gal/min)/ft in coarser material (Soren, 1971, p 10)

Soren (1971, p 9) estimated the horizontal hydraulic conductivity of the Jameco aquifer to be at least 270 ft/d Wells tapping the Jameco have yielded 1,600 gal/min, and specific capacities of wells in the Jameco as high as 180 (gal/min)/ft have been reported (Soren, 1971, p 9) Although the Jameco aquifer is considerably thinner than the Magothy, their transmissivities are comparable

The Jameco-Magothy aquifer system is confined in southern Queens and in Kings County wherever it lies between the Gardiners Clay and the Raritan confining unit (pl 2 and fig 2F) In northern Queens, however, the Magothy attains altitudes above sea level and is in good hydraulic connection with the water-table aquifer Lenses and beds of clay and silty clay whose overlapping arrangement produces an anisotropy of perhaps as high as 100 1 tend to cause a confining effect with depth

Upper Glacial Aquifer

The upper glacial aquifer consists of saturated glacial drift Sand and gravel beds deposited as outwash south of the terminal moraine are highly permeable and are capable of yielding large quantities of water Horizontal hydraulic conductivity of glacial outwash has been estimated to be 270 ft/d (Franke and Cohen, 1972), horizontal hydraulic conductivity of moraine deposits on the north shore, which include considerable clay and silt and are poorly sorted, is probably less than half that value Public-supply and other high-capacity wells that tap outwash deposits have commonly yielded as much as 1,500 gal/min and have specific capacities ranging from 50 to 60 (gal/min)/ft (Soren, 1971, p 8) Scattered coarse sand and gravel lenses within the morainal deposits have the potential for yielding significant amounts of water, but their locations can not be predicted

Water in the upper glacial aquifer is under water-table (unconfined) conditions but probably is confined locally between beds of clay and silt within the morainal deposits Such clayey and silty beds, where near the water table, impede ground-water recharge and thus locally cause unusually high water levels and temporary ponding that is often confused with perched conditions

PREDEVELOPMENT HYDROLOGIC CONDITIONS

The only natural source of freshwater recharge to the Long Island ground-water system is precipitation, which replenishes the large volume of fresh water stored in the unconsolidated deposits The ground-water system is bounded on top by the water table, on the bottom by bedrock, and on the sides by saline ground water or surface-water bodies (fig 3) The ground water is in continuous motion from the water table to its point of discharge The path of flow is three dimensional and is affected by the geometry and hydraulic characteristics of the aquifers and confining units, and by the proximity and nature of discharge boundaries

Much of the water that enters the ground-water system remains in the upper glacial aquifer, where it moves laterally and discharges to streams or the surrounding saltwater bodies (fig 3) ground-water seepage to streams results in shallow ground-water circulation patterns or flow subsystems (Franke and

Cohen, 1972). (These shallow flow systems are not shown in fig. 3.)

The rest of the water that enters the system flows downward to the Jameco-Magothy aquifer (fig. 3), and some flows still deeper to the Lloyd aquifer. This downward movement of water is greater in areas of continuity between aquifer units than in areas of confining units, where it moves much more slowly and is refracted to near vertical through the confining units. All ground water eventually moves seaward. Near the shore, downward gradients reverse, and water moves upward into shallower aquifers. The seaward extent of fresh ground water in the confined aquifers is the interface between fresh and saline ground water. Water generally flows upward along this interface. Saline water has a greater density than freshwater; at large scales, the two fluids behave largely as though immiscible. Although a zone of diffusion forms at the interface, mixing is minimal under nonpumping conditions, and flow across the interface is virtually nil. Water from the confined aquifers flows upward through the Raritan confining unit or Gardiners Clay and mixes with overlying saline ground water and thus is lost from the freshwater system.

Water-Table Configuration

The configuration of the water table indicates the horizontal pattern of ground-water movement and the amount of freshwater stored in the ground-water reservoir. The first map of the water-table configuration on Long Island, made in 1903 (fig. 4), provides the best available estimate of the predevelopment water-table configuration, although urbanization and development of the ground-water system even then had begun to affect water levels.

The water table in 1903 had a steep gradient westward into Queens County (fig. 4), which indicates that a significant quantity of ground water entered Queens County from the east and helped maintain water levels in both Kings and Queens Counties. The water table reached an altitude of over 50 ft at the Queens-Nassau County line (fig. 4) and, in central Nassau County, attained a maximum altitude of over 90 ft (Veatch and others, 1906).

Long Island's major ground-water divide trends east-west through northern Queens County, then gradually southward through Kings County (fig. 4). The asymmetry of the water table from north to south, with steep northward gradients and flatter southward gradi-

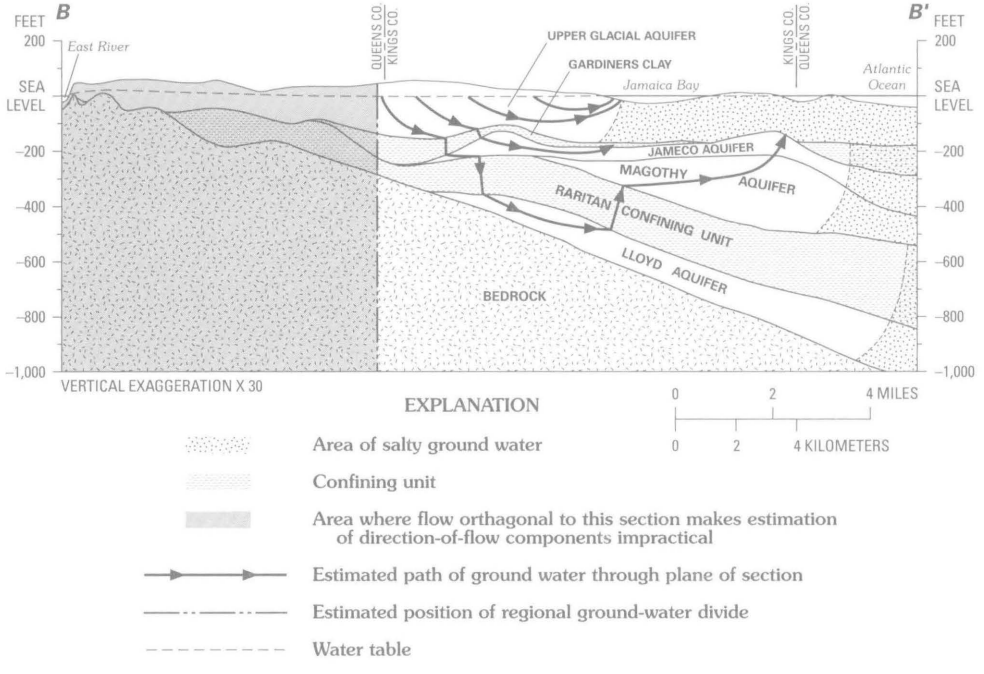
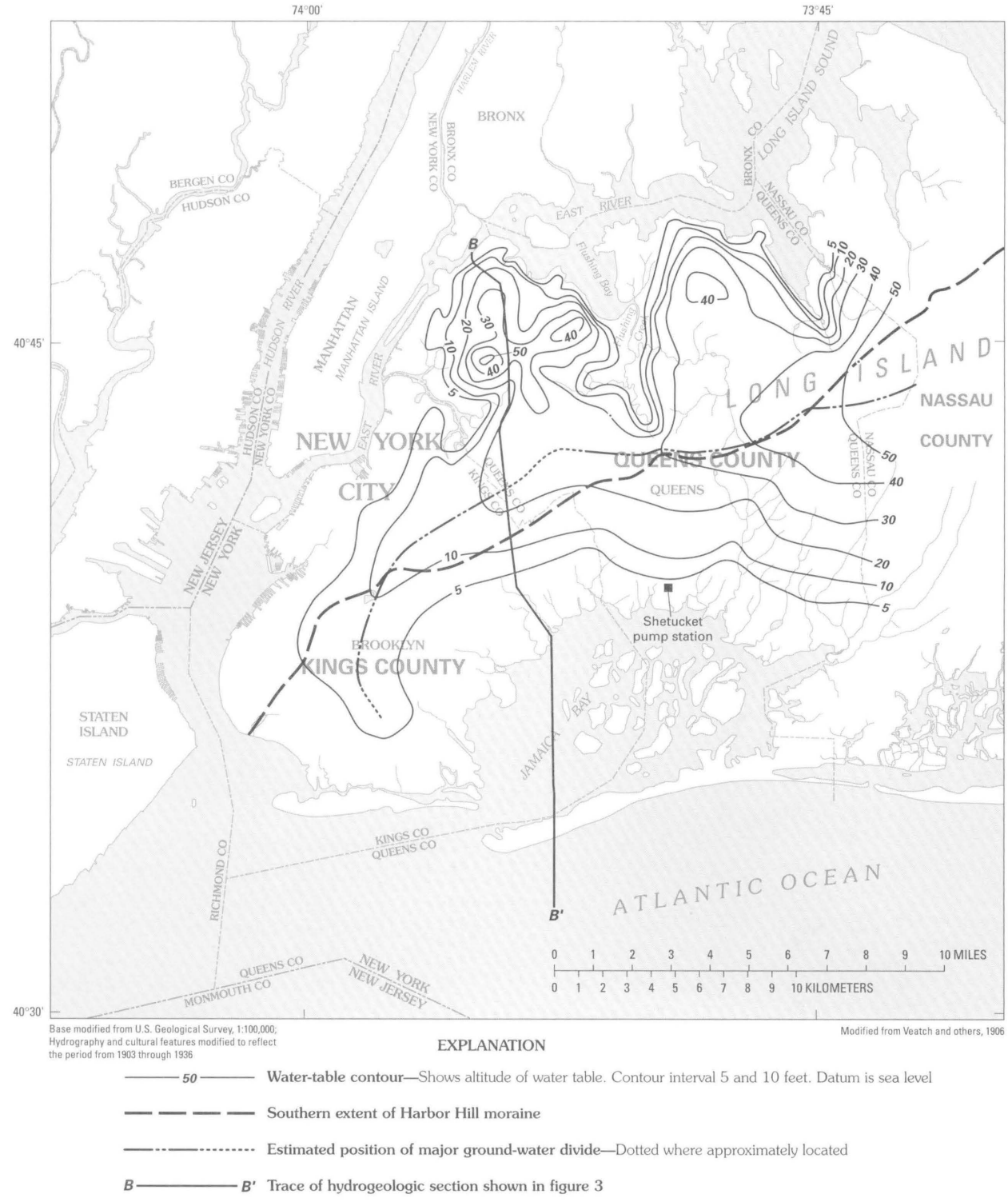


Figure 3. Estimated flow patterns along section *B–B'* under predevelopment conditions. (Location is shown in fig. 4.)

ents (fig. 4), has three causes: (1) the thickening of the aquifers southward, (2) higher hydraulic conductivity in the outwash plain south of the divide than in moraine deposits north of it, and (3) more ground-water seepage to south-shore streams than to north-shore streams. These characteristics also are observed in the present water-table configuration.

The ground-water levels of 1903 indicate steep ground-water gradients toward several stream channels in Kings and Queens Counties. Flow in these channels,



Base modified from U.S. Geological Survey, 1:100,000; Hydrography and cultural features modified to reflect the period from 1903 through 1936

Modified from Veatch and others, 1906

EXPLANATION

50 — **Water-table contour**—Shows altitude of water table. Contour interval 5 and 10 feet. Datum is sea level

Southern extent of Harbor Hill moraine

Estimated position of major ground-water divide—Dotted where approximately located

B — *B'* **Trace of hydrogeologic section shown in figure 3**

Figure 4. Water table in 1903. Section *B–B'* is depicted in figure 3.

which are relict from the glacial period, was sustained primarily by ground-water seepage The presence of many stream channels and swampy areas in southern Kings and Queens Counties suggests that a significant quantity of ground water discharged to surface-water bodies in this area

Areas of anomalously high water levels are evident on the north shore of Queens County (fig 4) These are caused by the high altitude of the bedrock surface (fig 2A) in this area and by zones of low hydraulic conductivity in the moraine deposits, which restrict ground-water discharge to Long Island Sound Similarly high water levels are associated with moraine deposits farther east on Long Island

Water Budget

Before development, the Long Island ground-water system was in a state of dynamic equilibrium Although the system fluctuates in response to natural variations in precipitation, an average predevelopment hydrologic condition can be estimated Under predevelopment conditions, water entered the part of the Long Island ground-water system that underlies Kings and Queens Counties as recharge from precipitation and, to a lesser degree, as ground-water inflow from Nassau County Water discharged by seepage to streams and to the surrounding saline ground-water and surface-water bodies The quantities of these inflows and outflows under predevelopment (equilibrium) conditions are presented in table 2 The estimates given in table 2 were obtained through evaluation of hydrologic records in conjunction with results of flow-model analysis of the entire Long Island ground-water system This model is being developed in a concurrent study by the U S Geological Survey (H T Buxton and D A Smolensky, U S Geological Survey, written commun , 1988), and much of the hydrogeologic information presented here was used in model construction

Hydrologic data from central and eastern Long Island indicate that, under predevelopment conditions, about 50 percent of the annual precipitation infiltrated to the water table and recharged the ground-water system (Franke and McClymonds, 1972), the remainder was lost through evapotranspiration and direct (overland) runoff Precipitation on Long Island ranges from 42 to 47 inches per year and averages 44 inches (Miller and Frederick, 1972) About 21 inches is estimated to have been lost through evapotranspiration, and only 1 inch lost as direct runoff

About 396 Mgal/d of precipitation fell on the 189-mi^2 area of Kings and Queens Counties during predevelopment conditions Of this total, 209 Mgal/d is estimated to have become recharge (table 2), this equals an average recharge rate of 1 1 (Mgal/d)/mi^2 (82 Mgal/d over the 76 mi^2 of Kings County and 127 Mgal/d over the 113 mi^2 of Queens County) The remaining inflow to western Long Island (from Nassau County) is estimated to have been 6 Mgal/d Therefore, the total inflow to the ground-water reservoir beneath Kings and Queens Counties under predevelopment conditions was 215 Mgal/d

Table 2 Predevelopment ground-water budget
[Values are in million gallons per day]

Inflow	
Recharge from precipitation	209
Ground-water inflow from Nassau County	6
Total	215
Outflow	
Base flow to streams	62
Subsea discharge	153
Total	215

An equal rate of ground-water discharge to streams (base flow) and to saline ground-water bodies (subsea discharge) balances this inflow Before 1900, about 15 streams flowed in Kings and Queens Counties, the base flow of which is estimated to have been between 90 and 95 percent of their total flow An examination of streamflow measurements made around the turn of the century (Veatch, 1906, Burr, Hering, and Freeman, 1904, and Spear, 1912), indicated that about 62 Mgal/d discharged from the ground-water system to streams as base flow—almost 30 percent of the water budget of the area Thus, the remaining 153 Mgal/d discharged as subsea discharge, as explained in the previous section and shown in figure 3

Ground-Water Quality

Little if any information on ground-water quality in western Long Island under predevelopment conditions is available The chemical composition of water samples taken from wells in eastern Long Island during 1932-65 is summarized in table 3 The eastern part of the island generally is similar to Kings and Queens

geologically and climatically but was not urbanized until much later These data, therefore, are the most reliable indication of pre-development ground-water quality in the western part of Long Island

The Jameco Gravel, which underlies only western Long Island, could affect the ground-water quality there, however, because it contains abundant ferromagnesium minerals, but no data are available to indicate its effect on water quality under predevelopment conditions Elsewhere the aquifers consist primarily of quartz and, except for the dissolution of silica, are relatively unreactive Much of the dissolved-solids content of Long Island's ground water under predevelopment conditions was derived from constituents dissolved in precipitation (table 3) Pearson and Fisher (1971) suggest a method of estimating chemical concentrations in water that recharges the ground-water system–the concentration in precipitation is multiplied by a specific factor to account for the effects of evapotranspiration Given that about half of the precipitation on Long Island is lost through evapotranspiration (Franke and McClymonds, 1972, p 19), a factor of 2 would be used This method can be used throughout the following discussion to indicate what proportion of a conservative constituent was introduced in recharge water

As water passes through the soil zone and moves through the aquifer, it undergoes reactions that modify its chemical character The following paragraphs briefly describe the major inorganic constituents of Long Island's ground water

Nitrate

Nitrate is the only major constituent found in lower concentrations in ground water than in precipitation (table 3) Nitrogen in the form of nitrate is an essential nutrient for most plants When water from precipitation enters the soil zone, it is absorbed by roots and converted to organic nitrogen (nucleic acids and proteins) As a result, ground water contains less nitrogen than does precipitation (table 3) Kimmel (1972, p D200) surveyed the available data on nitrate in ground water on eastern Long Island and concluded that the nitrate concentration of water in the upper glacial aquifer under predevelopment conditions was 0 2 mg/L The nitrate analyses shown in table 3 suggest that the predevelopment levels of nitrate could have been even lower

Silica

Silica (SiO_2) is the most abundant dissolved constituent of ground water under predevelopment conditions Little if any silica enters the ground with recharge from precipitation (Hem, 1970, p 48-50) Silica is taken into solution during the chemical decomposition of silicate minerals, such as quartz, feldspars, and amphiboles Silica concentrations are about equal to the solubility of quartz (6 mg/L at 25°C), the most common mineral in Long Island aquifers Silica concentrations listed in table 3 range from 5 9 to 10 mg/L The silica in pristine ground water makes up 20 to 33 percent (by weight) of the total dissolved-solids content

Iron

Iron concentrations of pristine ground water range from 0 01 to 3 2 mg/L Only 4 of 22 analyses given in table 3 show iron concentrations above 0 75 mg/L, and all samples were from the Magothy and Lloyd aquifers The dissolution of iron-bearing minerals, such as pyrite (FeS_2) and ferromagnesium silicates, is the most likely source of iron Iron occurs in the upper glacial aquifer where dissolved oxygen is present Under these oxidizing conditions, the iron-bearing minerals are generally stable because the iron is already in the ferric (Fe^{+3}) oxidation state (Vecchioli and others, 1974) In the deeper aquifers, where dissolved oxygen is lacking, reducing conditions cause the iron-bearing minerals to decompose, releasing ferrous iron (Fe^{+2}) into the ground water Iron in ground water generally is in the ferrous state (Hem, 1970) Ground water in western Long Island could be affected by contact with the iron-bearing Jameco Gravel

Sulfate

Concentrations of sulfate in the upper glacial aquifer range from 2 6 to 12 mg/L, those in five of six analyses were 8 mg/L or less In shallow ground water, where dissolved oxygen is high, additional sulfate can be introduced by oxidation of pyrite and marcasite deposits Sulfate concentrations in precipitation are about 4 mg/L (table 3) and, when concentrated by evapotranspiration, can account for most sulfate in solution

As ground water moves downward along natural flow paths and enters a reducing environment, bacteria and organic matter can decrease sulfate concentrations through reactions that produce hydrogen sulfide and bicarbonate (Hem, 1970, p 170) Sulfate concentra-

Table 3 Chemical composition of Long Island ground water and precipitation under predevelopment conditions

[Data from U S Geological Survey records, mg/L, milligrams per liter, —, no analysis available, n a , not applicable, ND, not detectable, methods of analysis and detection limits vary]

Source of sample	Date of sample collection	Silica, dissolved (mg/L as SiO_2)	Iron (mg/L as Fe)	Calcium, dissolved (mg/L as Ca)	Magnesium, dissolved (mg/L as Mg)	Hardness, (mg/L as $CaCO_3$)	Sodium, dissolved (mg/L as Na)	Potassium dissolved (mg/L as K)	Bicarbonate (mg/L as HCO_3)	Sulfate, dissolved (mg/L as SO_4)	Chloride, dissolved (mg/L as Cl)	Nitrate, dissolved (mg/L as NO_3)	Total dissolved solids (mg/L)	pH (units)
PRECIPITATION														
[1]Station A	11/65 to 3/66	—	—	0 5	0 3	2 5	1 6	0 1	—	3 8	2 7	0 8	10	4 5
[2]Station B	8/31/65 to 9/30/65	—	—	3	4	2 4	1 5	2	—	4	2 2	4	—	—
GROUND WATER														
Upper glacial aquifer														
S 3197	4/16/48	9 1	0 37	1 6	1 2	—	3 9	5	8	4	4	2	28	6 3
S 5518	10/15/48	6	01	1 5	1 3	9 1	3 2	6	4	6	5	1	26	6 5
S 6405	12/17/48	5 9	19	2 1	1 6	11 8	4 7	9	1	12	6	1	36	5 5
S 6432	12/17/48	9 6	75	2 1	1 1	9 8	3 8	4	11	2 6	4 4	1	29	6 7
S 9141	2/13/50	6 1	41	1 3	1 3	8 6	5 4	1 1	10	6 6	5 9	1	32	6 9
S 9142	2/13/50	6	23	1 4	2	11 7	5 5	1 4	8	8	6 9	2	34	6 5
Magothy aquifer														
[3]N 2790	n a	7 4	6	34	17	1 5	3 7	60	6 0	4 1	3 75	ND	23	5 6
N 3866	10/14/52	9 8	2 9	1 3	4	5	3 9	5	6 0	5 0	3 5	31	28	6 0
N 4149	9/30/53	6 5	61	5	1	2 0	2 4	3	2 6	1 6	2 5	1	15	5 8
[3]N 7787	n a	7 5	18	1 08	24	3 7	3 9	68	7 5	4 0	3 78	ND	24	5 58
[3]N 7889	n a	7 5	25	39	30	2 2	4 0	50	5 0	3 9	3 75	ND	23	5 25
S 12	5/2/33	—	—	1 0	—	4	—	—	10	20	7 0	ND	—	—
S 40	10/26/32	—	38	1 0	—	<5	—	—	22	10	4 0	04	—	—
S 51	10/10/32	—	13	2 0	—	10	—	—	20	1 0	6 8	04	—	—
S24769	7/7/65	5 9	31	1 4	6	6	3 7	6	9	3 2	4 0	ND	24	6 2
S24770	8/10/65	6 4	14	2 1	2	6	3 0	3	8	2 0	3 5	1	16	6 2
Lloyd aquifer														
N 67	8/2/62	8 2	3 2	9	8	6 0	3 2	4	2 0	6 5	4 2	ND	25	5 1
N 1618	4/30/57	7 5	14	2 6	1 4	12	2 9	7	12	5 0	3 8	ND	30	6 00
N 2602	5/26/57	8 3	—	1 1	6	5	2 8	7	8	8	3 8	09	22	6 10
N 3355	6/25/51	9 2	ND	2 2	8	9	3 8	6	13	8	4 5	ND	28	6 80
N 3448	7/31/62	9 0	—	1 8	2 7	16 0	8 9	1 2	ND	20	8 2	ND	52	4 5
N 3687	1/16/52	10	37	—	—	8	7 6	ND	1	16	5 0	ND	—	4 80
N 4405	9/15/54	8 2	—	2 0	7	8	—	—	6	15	10	09	53	6 80
N 5227	11/14/61	—	1 5	9	5	4 3	6 2	5	4	14	2	1	36	5 3
S 6409	11/8/48	7 5	1 3	1 5	1 6	10 3	4 4	2 2	16	3 5	4 1	1	32	6 4
S 6434	6/2/49	8 4	47	4 3	2 7	21 9	7 2	2 4	24	12	5 6	1	53	6 5

[1] Average of six composite monthly samples from gage near Brookhaven National Laboratory, October 1965 through March 1966 From Franke and McClymonds (1972, p 36)

[2] Composite of 1 02 inches of precipitation collected from gage at Upton, N Y Analyses by U S Geological Survey Data from U S Geological Survey (1965)

[3] From Vecchioli and others (1974, p C25)

tions in both the Magothy and Lloyd aquifers vary locally (table 3), ranging from 1 0 to 20 mg/L in the Magothy aquifer and from 0 8 to 20 mg/L in the Lloyd aquifer These variations can be attributed to local variation in abundance of (1) bacteria, and (2) an organic food supply required for sulfate reduction Several analyses show high bicarbonate concentrations in association with low sulfate concentration, this may indicate sulfate reduction These variations also could result from local differences in the availability of pyrite as a source, or from the presence of water that entered the ground-water system before the mid-19th century, when sulfate concentrations in precipitation were lower than 4 mg/L Average sulfate concentrations appear to be higher in the Lloyd than in the Magothy, but this cannot be explained

Hardness

Water hardness is due to the presence of calcium and magnesium ions Calcium and magnesium are present in several of the silicate minerals, such as feldspar (plagioclase), amphiboles, and pyroxenes, which are prevalent throughout the upper glacial aquifer (DeLaguna, 1964) The dissolution of these minerals is the most likely source of hardness in the ground water The data in table 3 indicate that the hardness of ground water is extremely low, ranging from 1 5 to 21 9 mg/L as $CaCO_3$ Natural hardness on western Long Island could be higher than farther east because the Jameco aquifer contains abundant ferromagnesium minerals Soren (1971) states that uncontaminated ground water in Queens contains less than 60 mg/L of hardness.

Sodium

Sodium in ground water is derived from two sources—airborne salt from the sea, and aquifer materials Salt spray from the ocean is blown landward, then carried to the water table with infiltrating precipitation The sodium concentration of precipitation is about 1 5 mg/L, which then increases through evaporation before it reaches the ground-water system The rest of the sodium in the ground water is derived from the dissolution of minerals such as sodic feldspars in the soil zone and aquifer DeLaguna (1964) concludes that the sodium in natural ground water on Long Island is probably derived in about equal amounts from sea salt in precipitation and the dissolution of minerals

Chloride

The source of practically all chloride in Long Island's ground water under predevelopment conditions was salt spray picked up by the wind and introduced into the ground-water system through infiltration of precipitation (Franke and McClymonds, 1972)

Jackson (1905, p 29-31) estimates that the predevelopment concentrations of chloride in water on Long Island ranged from 3 to 8 mg/L This agrees with concentrations shown in table 3 for the eastern part of Long Island Lusczynski and Swarzenski (1966, p 19) assumed that, before development, ground water on Long Island contained less than 10 mg/L chloride Chloride contamination was evident by the turn of this century in Kings and Queens Counties, where contamination from land surface began long before 1900 During 1898-1902, average chloride concentrations in the base flow of four streams in Queens County ranged from 8 8 to 12 4 mg/L, whereas those in 12 streams in Nassau County ranged from 5 3 to 6 7 mg/L (Burr, Hering, and Freeman, 1904, p 406-423) (Base-flow samples represent ground water that originated over large areas of the land surface and thus are reliable indicators of ground-water quality)

Dissolved Solids

The dissolved-solids concentration of water in all aquifers on Long Island is generally low compared to that in most other places and ranges from 15 to 53 mg/L (table 3) This is due to the lack of soluble minerals in the aquifer materials (Cohen and others, 1968) The highest dissolved-solids concentrations are in the Lloyd aquifer, probably because this water has traveled longer and farther through the ground-water system than water in the other aquifers and has had a greater contact time in which to react with the aquifer material

EFFECTS OF URBANIZATION ON THE HYDROLOGIC SYSTEM

Ground water on western Long Island was developed rapidly in the early 19th century along with the rapid population growth in Kings and western Queens Counties The early residents obtained water from shallow wells and from streams (which are primarily base flow) and springs and returned most of it to the aquifer through septic systems This withdrawal and return probably caused only minor changes in the

water-table configuration and in shallow ground-water flow patterns

As the demand for public and industrial water supply increased, the number of wells and the quantity pumped also increased, increasing the infiltration of wastewater contaminants introduced to the ground-water system In the mid-19th century, storm and sanitary sewers were installed in Kings and discharged wastewater to the sea Although this prevented contaminants from entering the ground-water system, it also diverted a large quantity of water that would have recharged the ground-water system At the same time, the ever-increasing amounts of paved land surface reduced the area available for infiltration of precipitation, further decreasing recharge By the 1930's, these changes, along with the continuous increase in industrial and water-supply pumpage, caused severe declines in the water table and in the hydraulic head in the deeper aquifers Declines in the water-table altitude caused many lakes and streams to disappear and severely decreased the flow in remaining streams At the same time, the decrease in hydraulic head caused intrusion of saltwater into the aquifers in nearshore areas

Development of Ground-Water Supply

Pumping for industrial and public supply in the 20th century has imposed a severe stress on the western part of the Long Island ground-water system Ground water pumped and lost either by evaporation or discharge to the sea is considered consumptive (net) pumpage and is a net draft on the ground-water system

Virtually all of the ground water pumped in western Long Island is lost either through evaporation or to combined (storm and sanitary) sewers with ocean outfall Developed parts of Kings and Queens had an extensive sewer network by the turn of this century As a result, only a small, undetermined fraction of pumped ground water infiltrated back to the ground-water system in unpaved areas and from leaking sewer and water-supply lines

History of Ground-Water Development

Public-supply and industrial pumpage from 1904-83 are plotted in figure 5 (No data are available for industrial pumpage in Queens County before 1948, it probably was considerably less than in Kings County but followed similar trends) Pumpage and ground-water development through the 20th century are summarized in four general phases, described below

1900 to 1917

By 1900, the ground-water reservoir of western Long Island was used extensively for both public-supply and industrial uses Johnson and Waterman (1952, p 7) estimate that in 1904, 6 4 Mgal/d was obtained from surface storage of ground-water-fed springs and streams in Queens County, and 77 4 Mgal/d was obtained from surface storage from nearby Nassau County

By 1904, pumpage for public supply had reached 14 Mgal/d in Kings County and 28 Mgal/d in Queens, most of which was used in Kings County The average pumpage for public supply during 1909-16 was 30 Mgal/d in Kings County and 58 Mgal/d in Queens County (fig 5) Industrial pumpage in 1904, although only a few million gallons per day in Queens, was 14 Mgal/d in Kings County and increased markedly in both counties thereafter

In 1917, New York City water tunnel 1 was completed, and surface water from reservoirs in upstate New York was transported to the water-supply-distribution system in Kings and Queens This water replaced a significant amount of ground-water pumpage, as indicated in figure 5 The City of New York, Department of Water Supply, Gas, and Electricity, which had pumped more than 14 Mgal/d in Kings County and 40 Mgal/d in Queens County during the preceding 10 years, all but ceased pumping in 1917

1918 to 1930

The post-World War I period in western Long Island was marked by a consistent increase in consumptive ground-water use for both public supply and industrial use After the abrupt reduction in pumpage for public supply in 1917, continued demand resulted in an increase in public-supply pumpage from 13 Mgal/d in Kings County and 23 1 Mgal/d in Queens in 1918 to 29 2 Mgal/d and 62 0 Mgal/d, respectively, in 1931 (fig 5) Industrial pumpage also continued to increase and, by 1930, had exceeded 50 Mgal/d in Kings County and was probably about 20 Mgal/d (estimated by the authors) in Queens

1931 to 1946

Pumping for public supply during this period was relatively constant in Kings County but ranged

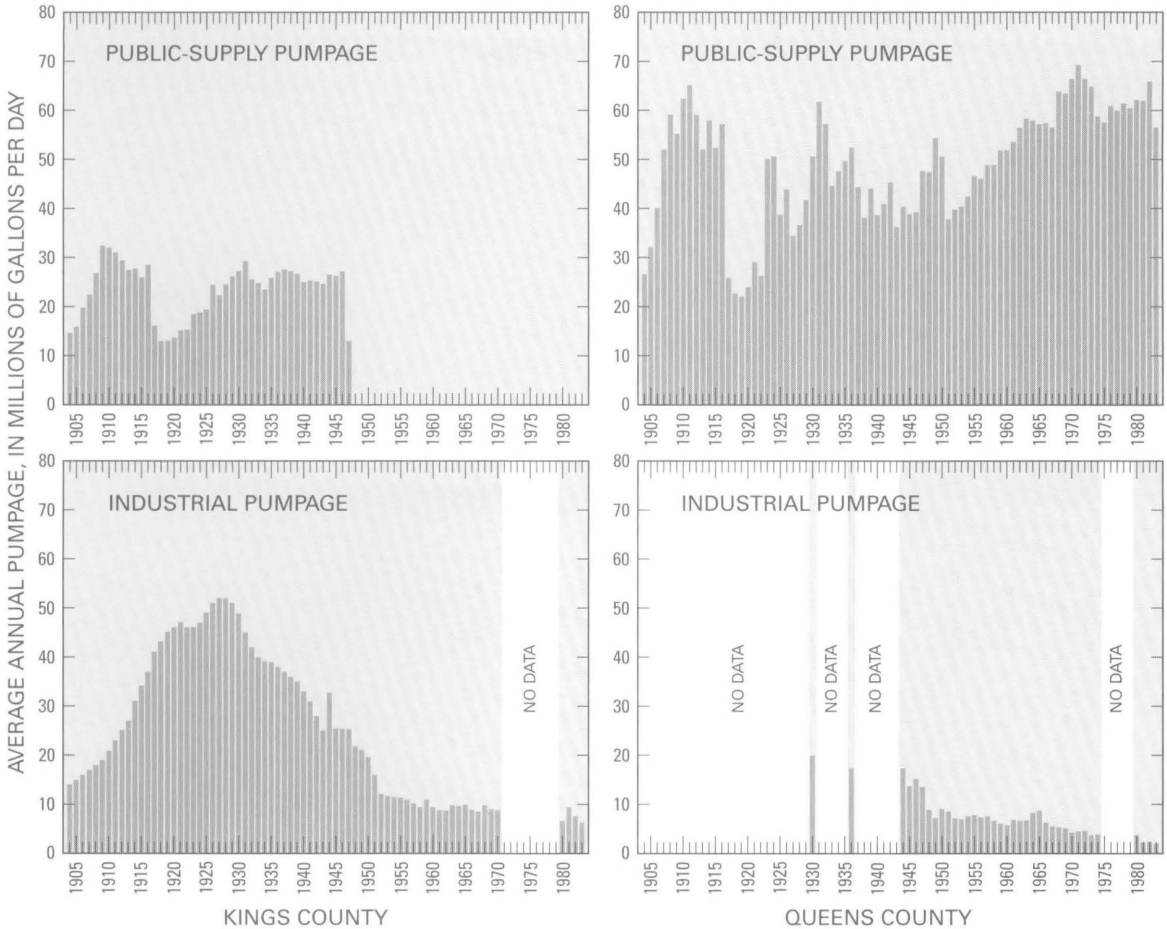


Figure 5. Annual average pumpage for industrial and public supply in Kings and Queens Counties, 1904–83. (Compiled from Johnson and Waterman, 1952; Thompson and Leggette, 1936; Suter, 1937; and New York State Department of Environmental Conservation.)

from more than 60 to less than 40 Mgal/d in Queens. In 1936, tunnel 2 was completed and increased the capacity to supply upstate surface water to Kings and Queens. The effect is not evident in ground-water pumping data for Kings and may have caused only a minor decrease in Queens (fig. 5). Much of the imported water probably was used for conversion of new areas to public supply.

The 1930's brought a noticeable decline in industrial pumpage (fig. 5) for two major reasons:

1. Concern over the extensive use of ground water by industry prompted the adoption of the New York State Water Conservation Law of 1933, which required that water pumped at a rate greater than 70 gal/min (0.1 Mgal/d) be reinjected into the source aquifer after use. (Ground water pumped for industrial use and returned to the source aquifer is not included in the net pumpage shown in fig. 5.) Leggette and Brashears (1938, p. 413) estimate that only one recharge well was operating in western Long Island at the end of 1933, but by 1937, the number had increased to 105. The average daily rate of recharge reached a high of 22 Mgal/d in the air-conditioning season during these years but maintained an average annual rate of about 12 Mgal/d.
2. The widespread adoption of electric refrigeration severely reduced the quantity of water pumped for ice making. Lusczynski (1952, p. 4) states that the quantity of water pumped for ice-making during 1936-47 decreased from 18 Mgal/d to 4 Mgal/d.

During World War II (1940-45), industrial pumpage increased slightly in Kings County; a similar increase was likely in Queens County.

1947 to 1983

In 1947, New York City stopped all public-supply pumping in Kings County, primarily because of

saltwater intrusion, but pumping for public supply continued in Queens, where it increased from 45 Mgal/d in 1950 to more than 60 Mgal/d in the 1970's (fig. 5). The trend of pumping in Queens has been to abandon wells showing contamination and to install new ones eastward and farther inland, where water levels are higher.

Pumpage declined in 1974 (fig. 5), when all pumping for public supply (10 Mgal/d) in the Woodhaven franchise area (fig. 6A) of the New York Water Service Corporation (NYWSC) was halted as a result of saltwater intrusion. Industrial pumpage declined gradually in both counties and fell below 10 Mgal/d in Kings and 3 Mgal/d in Queens.

Development of Individual Aquifers

Annual average pumpage for public supply in Kings and Queens during 1904-83 is plotted by aquifer in figure 6. Such a breakdown for industrial pumpage is unavailable, but most pumping for industrial pur-

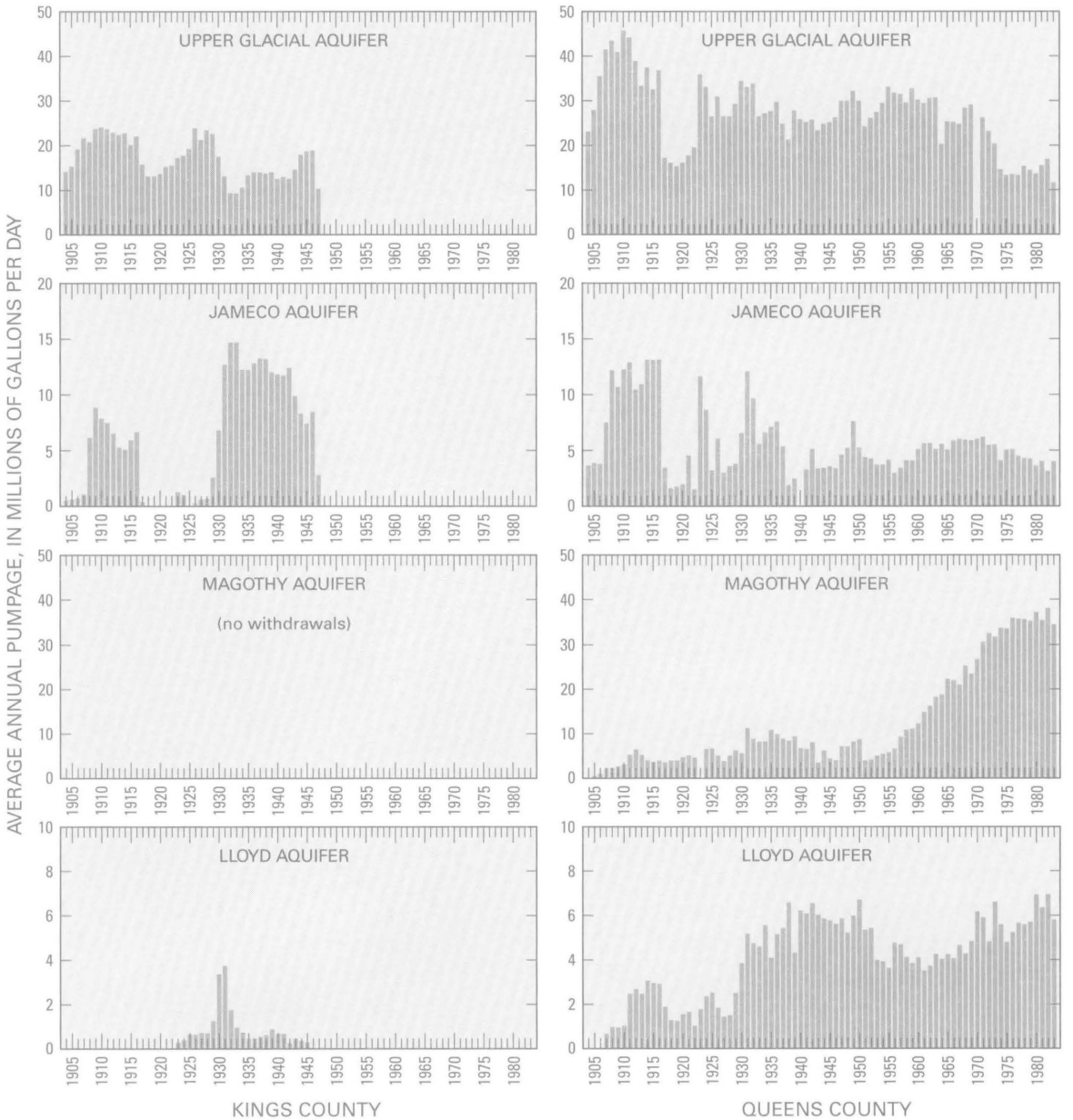


Figure 6. Annual average public-supply pumpage from individual aquifers in Kings County (left) and Queens County (right), 1904–83. (Compiled from Johnson and Waterman, 1952; and New York State Department of Environmental Conservation; pumpage records obtained from the New York Water Service Corporation and Jamaica Water Supply Company.)

poses probably has been from the upper glacial (water-table) aquifer

Early in this century (1904-17), most groundwater pumpage was derived from the upper glacial aquifer, it attained a maximum of 70 Mgal/d in 1910 (24 1 Mgal/d in Kings and 46 0 Mgal/d in Queens) At the same time, pumping from the Jameco was 20 5 Mgal/d (8 Mgal/d in Kings and 12 5 Mgal/d in Queens), and pumping from the Magothy aquifer was about 5 Mgal/d (No water was pumped from the Magothy aquifer in Kings County throughout 1904-83 because this aquifer is not extensive there) Pumping from the Lloyd aquifer started as early as 1905 but reached a maximum of only about 3 Mgal/d during 1904-17

Pumping from the upper glacial and Jameco aquifers decreased substantially in 1917 with the completion of the first water tunnel to bring upstate surface water to the city, but in the following years, pumping from all aquifers gradually increased A distinct shift in pumping from the upper glacial to the Jameco aquifer in Kings County is evident during 1928-33 (fig 6), pumpage from the upper glacial aquifer decreased from 23 4 Mgal/d in 1928 to 9 5 Mgal/d in 1933, while pumping from the Jameco aquifer increased from 0 8 Mgal/d to 14 9 Mgal/d This shift was in response to saltwater intrusion, which by 1947 had caused the cessation of all public-supply pumping in Kings County.

A similar shift from the upper glacial aquifer to the Magothy aquifer occurred in Queens County during 1955-76, when pumping from the upper glacial aquifer decreased from 33 0 Mgal/d to 13.9 Mgal/d, and pumping from the Magothy aquifer increased from 5 9 Mgal/d to 36 5 Mgal/d This shift also was due, at least in part, to saltwater intrusion, which ultimately caused the shutdown of pumping in the Woodhaven Franchise area of the NYWSC (See fig 7A)

Pumping from the Lloyd and Jameco aquifers in Queens County has remained relatively stable since the 1930's, and pumping from the Lloyd in Kings County has been almost negligible—it exceeded 1 Mgal/d only during 1929-32, with a maximum of 3 6 Mgal/d in 1931

Declines in Water Levels

The most marked effect of urbanization on the hydrologic system of western Long Island has been a decline in the water table and in the potentiometric surface of the deeper aquifers The configuration of the water table before development was discussed previously (see fig 4), water-table maps for subsequent years (figs 7A-7E) depict the changes resulting from urbanization and related stresses during the 20th century

By 1936, the water table showed severe declines resulting from heavy pumping and loss of recharge (Compare figs 4 and 7A) An asymmetric cone of depression in northern Kings County, an area of extensive industrial pumping at that time, reached a depth of 35 ft below sea level and extended into western Queens County

The decline in industrial pumping that started around 1930 (fig 5) resulted in some recovery of the water table by 1943 (fig 7B) (Note that the water table in northern Queens County was not contoured, possibly because, at that time, Jacob (1945) was uncertain whether anomalous high water levels were perched or were the actual water-table surface) The water-table configuration of 1943 showed a partial recovery in northern Kings and western Queens Counties

After the cessation of pumping for public supply in Kings in 1947, the water table recovered further The water-table configuration of 1951 (fig 7C) shows a rise in the southern half of Kings County to altitudes above sea level, and the cone of depression in the north is smaller and shallower than in 1936 (fig 7A)

By 1961, the water table (fig 7D) had risen to above sea level throughout Kings County except in a small area in the north Perlmutter and Soren (1962, p 128) report that the dewatering rates at several subway stations in Flatbush increased from less than 20 gal/min in 1947 to as much as 1,000 gal/min by 1961

A sizable cone of depression is evident in the Woodhaven franchise area in Queens County, where pumping increased in response to a continuing rise in demand The cone of depression extended into Jamaica, where pumpage by the Jamaica Water Supply Company in 1961 was nearly 50 Mgal/d Although the cone of depression in 1961 was not as deep as that in Kings County in the 1930's (fig 7A), the initial water levels in Queens County were 20 ft higher than in Kings, so that the respective declines represent similar losses in ground-water storage

By 1974, the water table had recovered further in Kings County (fig 7E), and the cone of depression in Queens had shifted from Woodhaven, where pumping stopped in 1974, eastward to Jamaica, where the Jamaica Water Supply Company was pumping about 60 Mgal/d Water levels in this cone of depression rep-

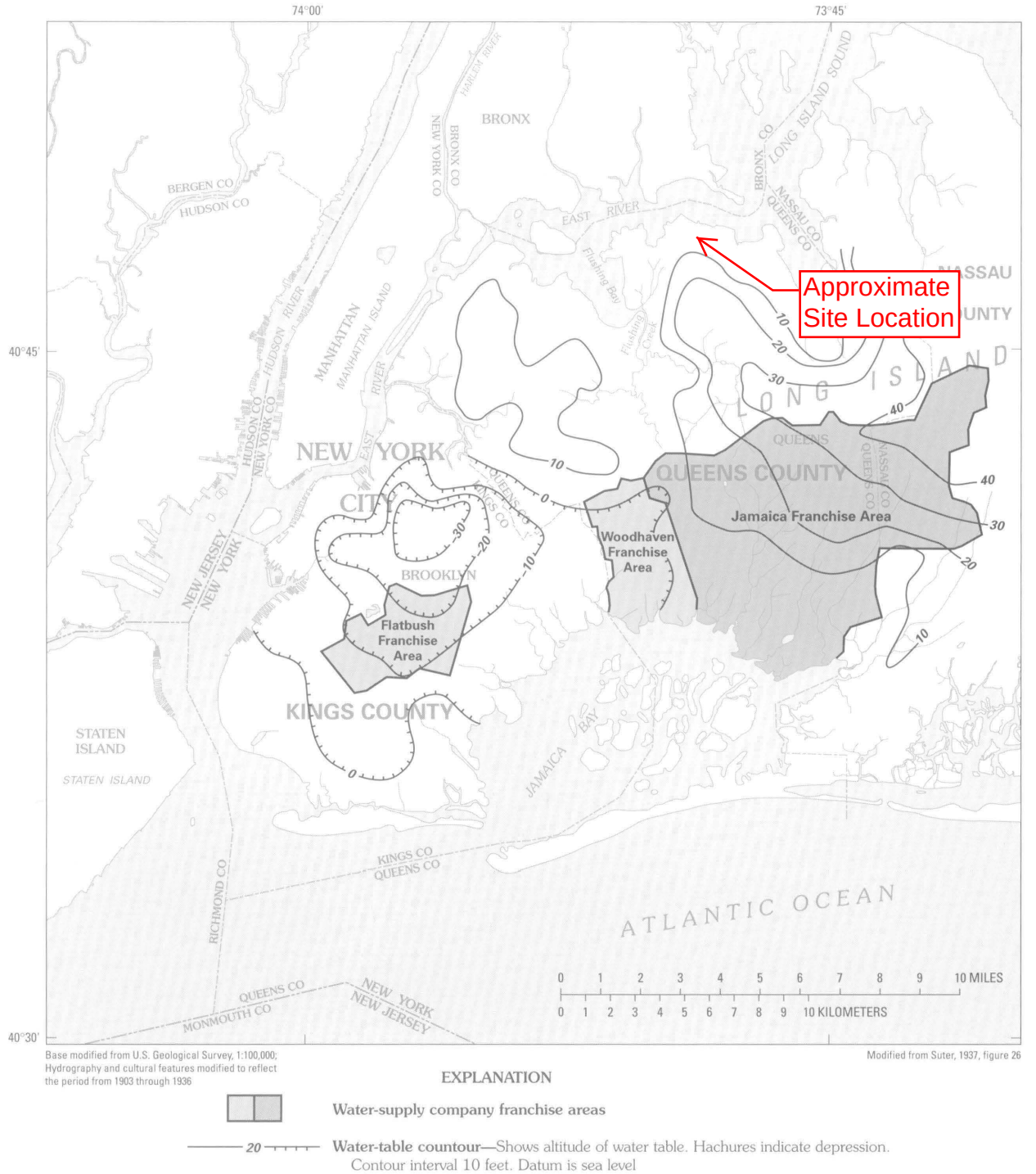


Figure 7A. Water-table configuration in 1936.

resent a regional drawdown of about 35 ft from water levels in 1903 (fig. 4).

Similar declines in the potentiometric surface of the deeper aquifers have resulted from increased pumping and urbanization. Historical data on the potentiometric surface of these aquifers are sparse, but recent water-level records for wells screened in the deeper aquifers confirm that drawdown propagates rapidly from one aquifer to the next in areas where confining units are absent. Pumping confined parts of the deeper

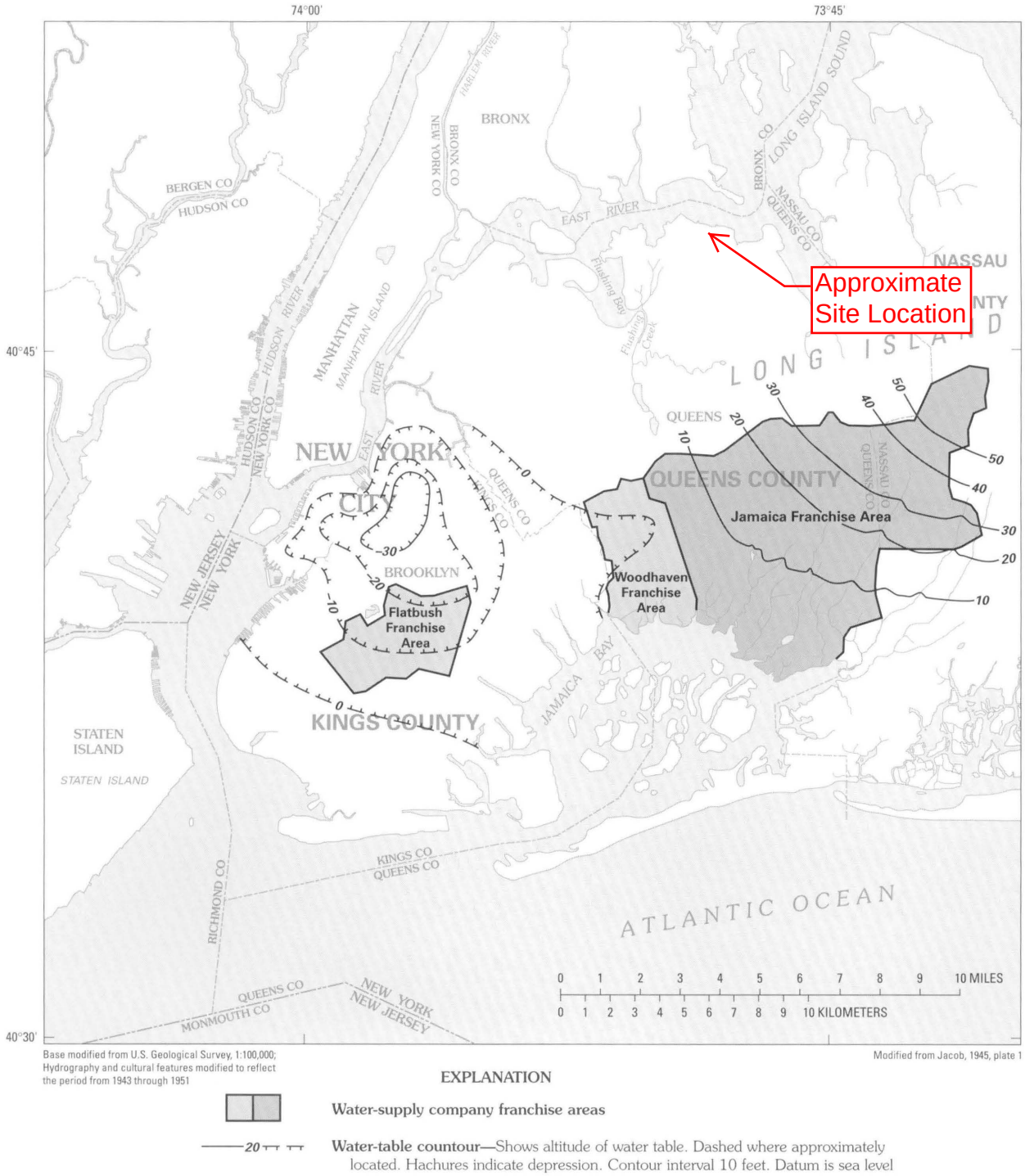


Figure 7B. Water-table configuration in 1943. (Water levels were measured in late May.)

aquifers produces a cone of depression within the pumped aquifer that is broader than the one in the water-table aquifer. Because confined storage coefficients are typically much lower than the specific yield of the water-table aquifer, the transient response to stress is more rapid in the deeper aquifers. Also, the absence of local stream and surface-water boundaries in confined aquifers forces propagation of drawdown to more distant boundaries.

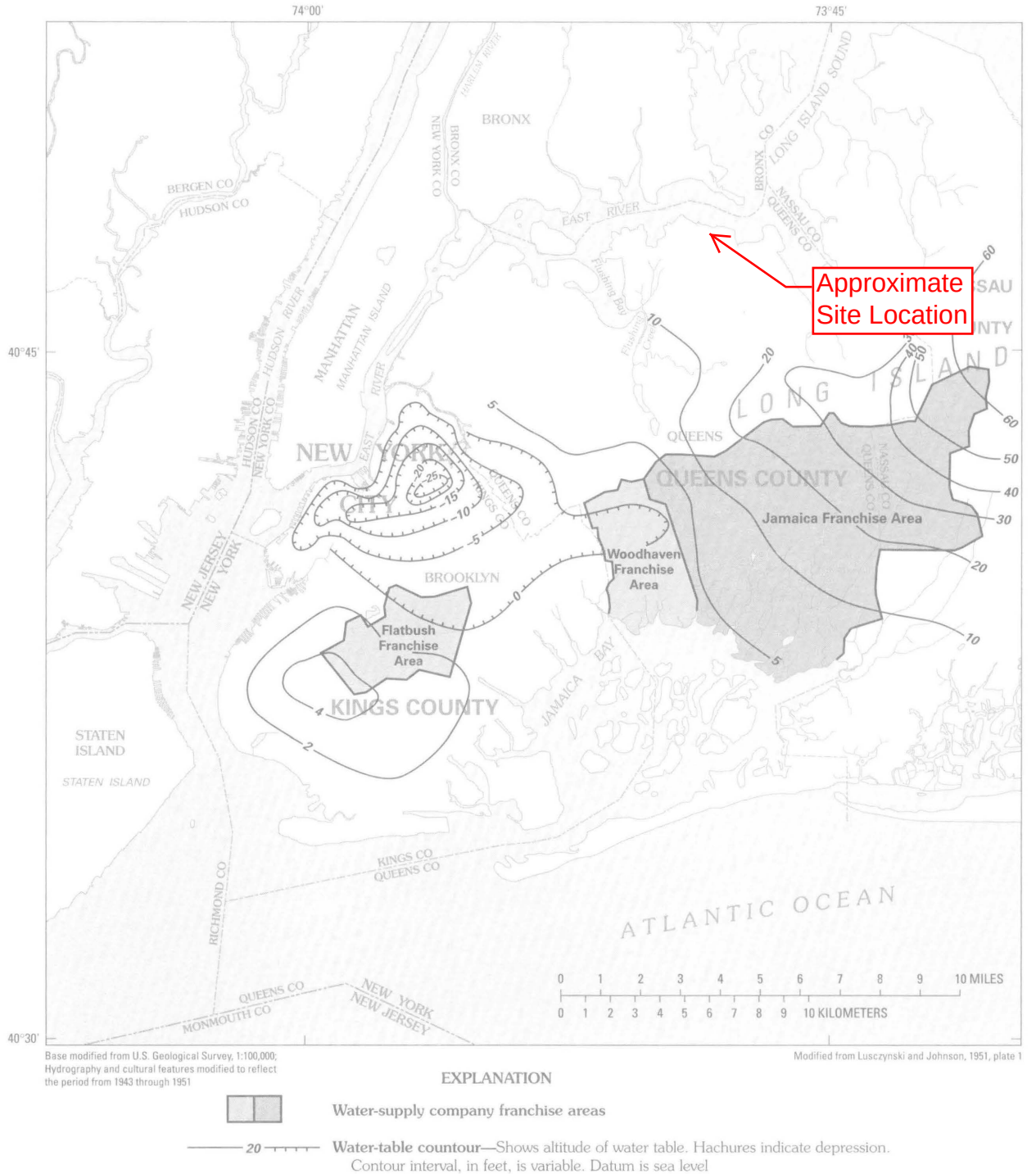


Figure 7C. Water-table configuration in 1951. (Water levels were measured in January.)

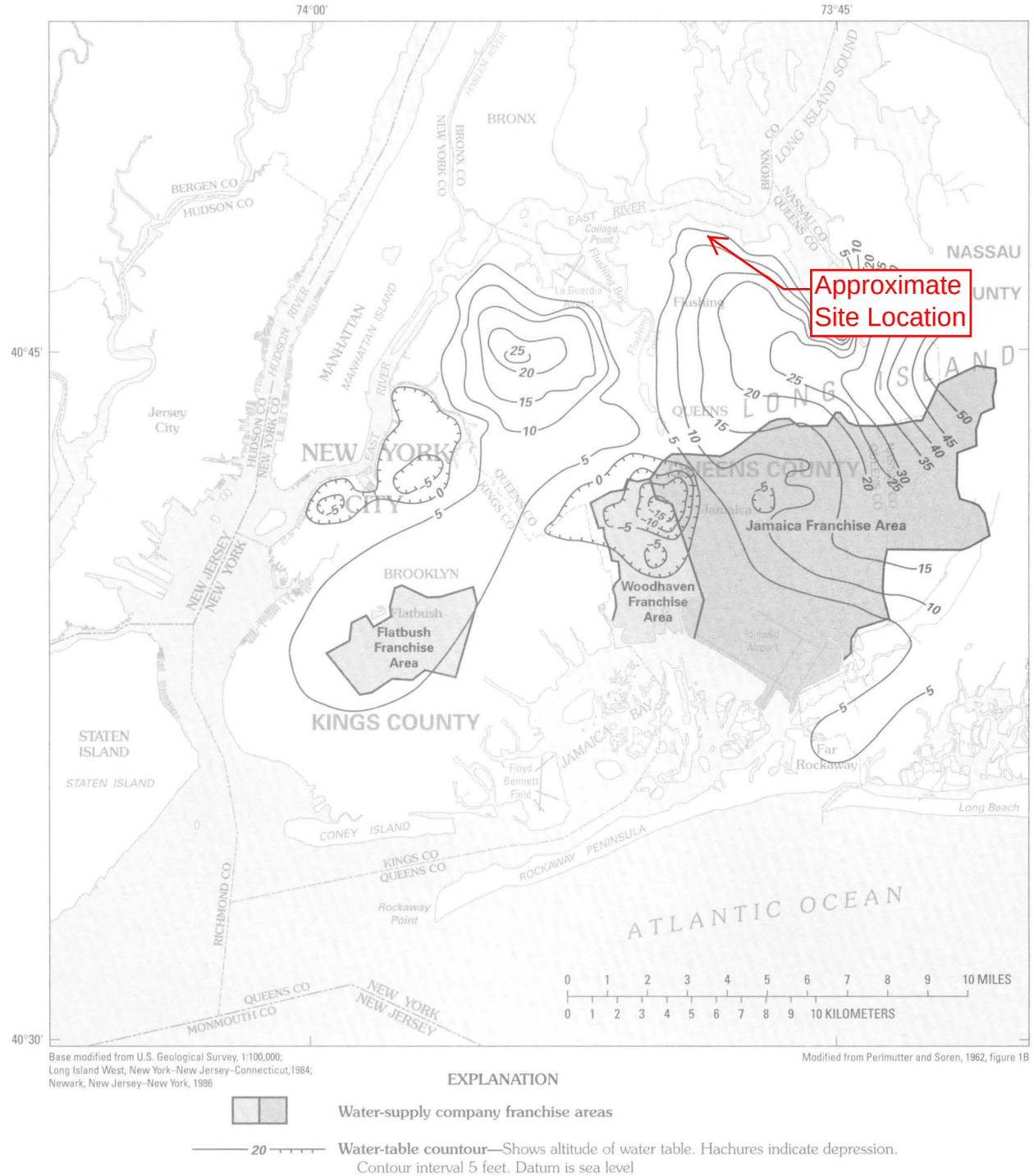
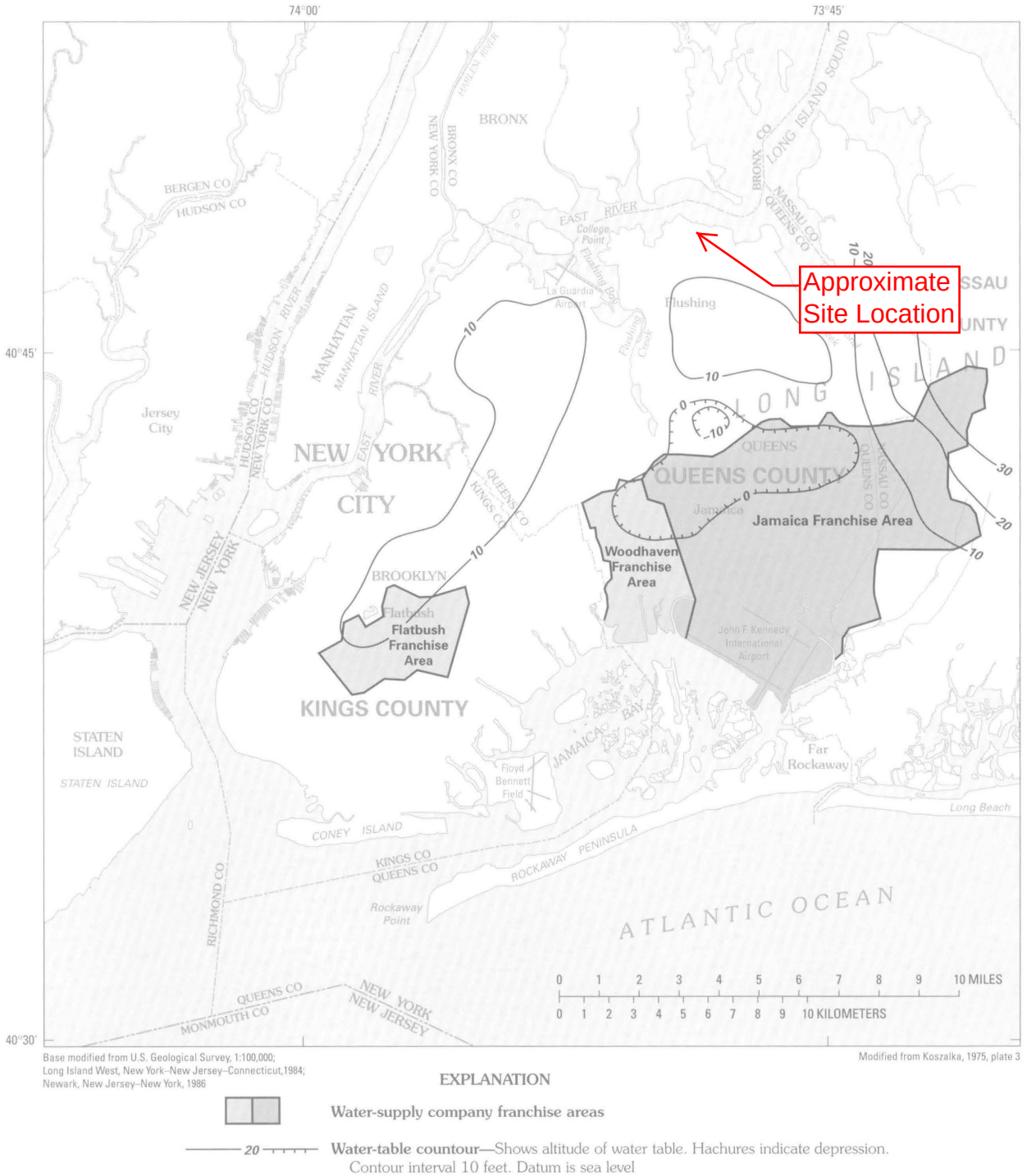


Figure 7D. Water-table configuration in 1961. (Water levels were measured in December.)



Base modified from U.S. Geological Survey, 1:100,000; Long Island West, New York–New Jersey–Connecticut, 1984; Newark, New Jersey–New York, 1986

Modified from Koszalka, 1975, plate 3

EXPLANATION

Water-supply company franchise areas

20 Water-table contour—Shows altitude of water table. Hachures indicate depression. Contour interval 10 feet. Datum is sea level

Figure 7E. Water-table configuration in 1974. (Water levels were measured in March.)

Deterioration of Ground-Water Quality

In addition to lowering ground-water levels in Kings and Queens Counties, urbanization and development of the ground-water resources have caused serious deterioration of ground-water quality. The most striking example has been the encroachment of saltwater from surrounding saltwater boundaries in response to excessive drawdown. Other sources of contamination, some of which were present from the early stages of development, include fertilizers, underground sewage-disposal systems, landfills, large cemeteries, road salts, leaking sewers, chemical spills at land surface, and industrial and other wastewater impoundments.

Historical water-quality data are sparse, but chloride and nitrate data were collected as far back as 1900 and are used here to give an indication of changes in ground-water quality during this century. Elevated chloride concentrations accompanied by very low nitrate concentrations generally are considered indicative of seawater encroachment, whereas elevated nitrate and chloride together are considered to indicate contamination from land surface.

Nitrate and chloride are among the earliest contaminants to be introduced to the ground-water system. They first entered the system on a widespread basis about 200 years ago as fertilizers and domestic wastes and are considered indicators of water that has been affected by human activities.

Chloride

Encroachment of saline ground water has affected public-supply wells in western Long Island since the turn of this century. Spear (1912) shows the increase in chloride in water pumped from driven wells at the Shetucket pumping station near Jamaica Bay during 1897-1905 (fig. 8). Chloride concentrations rose to 500 mg/L in these 9 years. Once saline ground water was drawn into the area of the pumping wells, even a significant reduction in pumping rate did little to improve water quality.

Later, pumping wells were installed inland to avoid the saline ground water. By the early 1930's, however, high pumping rates had caused saltwater intrusion even in inland areas. A sharp increase in chloride concentration in water from two public-supply wells screened in the upper glacial aquifer in the Flatbush franchise area occurred during the 1940's (fig. 9A). Saline ground water probably was drawn this far inland from beneath surrounding tidal waters by the expanding cone of depression that extended to shore areas. The migration of saltwater so far inland during this period probably indicates that saline ground water moved through preferential and highly conductive pathways. The water-table configuration of 1903 (fig. 4) shows seaward gradients; that of 1936 (fig. 7A) indicates a change to flat or slightly landward gradients near much of the shore in Kings County, which would

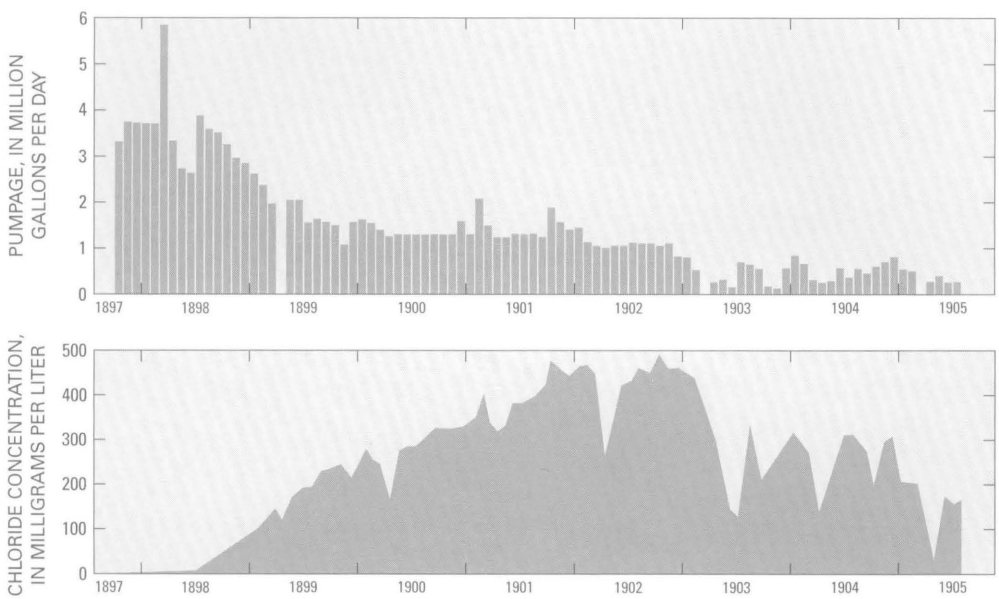


Figure 8. Total pumpage and average chloride concentration from eight driven wells at the Shetucket pumping station, 1897–1905. (From Spear, 1912, sheet 12.)

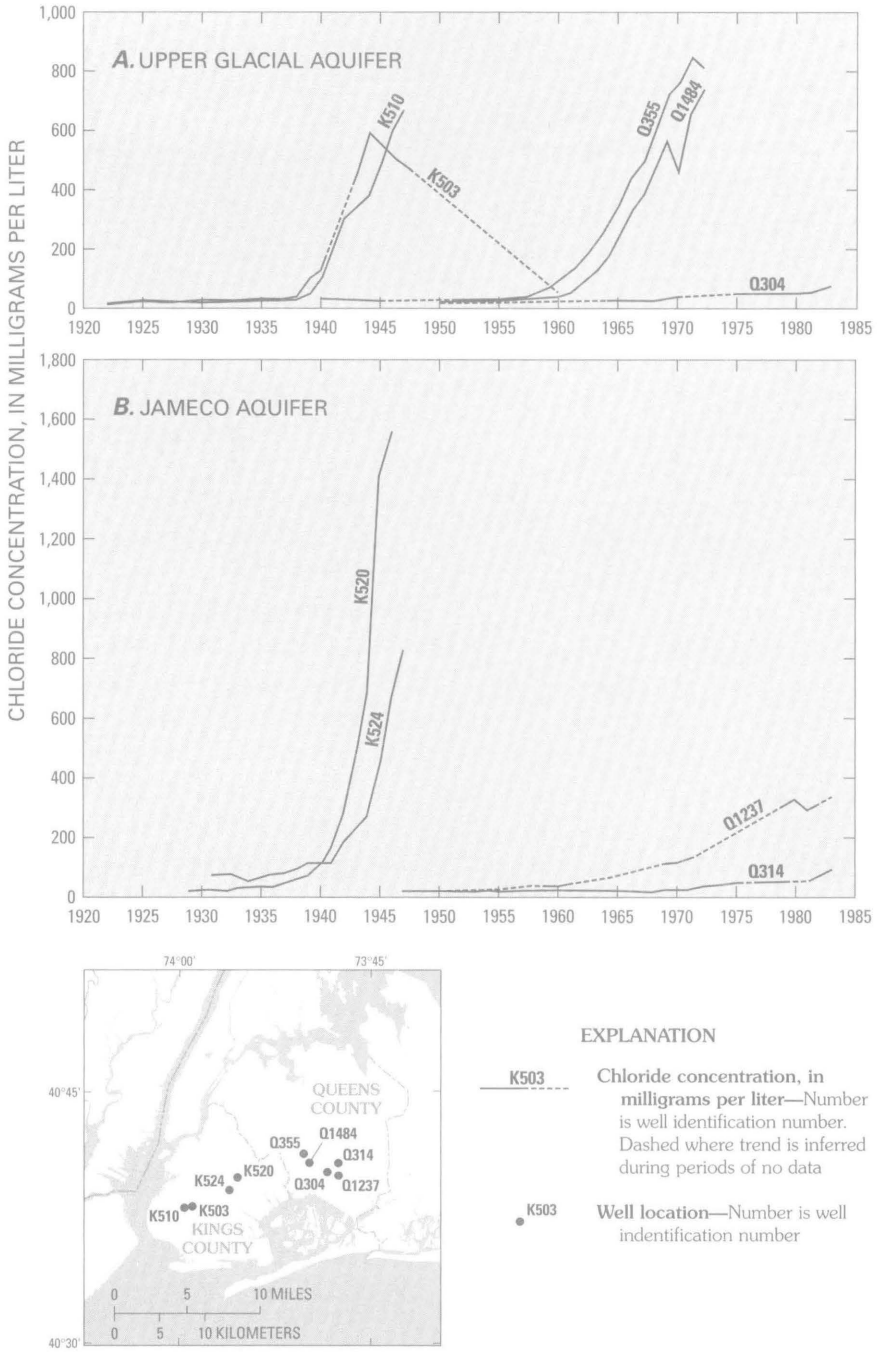


Figure 9—Chloride concentration in water from selected wells in Kings and Queens Counties: (***A***) Wells screened in the upper glacial aquifer. (***B***) Wells screened in the Jameco aquifer. (Data from U.S. Geological Survey files; Lusczynski, 1952; and selected annual reports of the Bureau of Water Supply, City of New York.)

accelerate saltwater encroachment. Pumping was stopped in wells in Kings County in 1947 (see fig. 9A).

When the chloride concentration of water from the upper glacial aquifer began to increase, pumping was shifted eastward and to deeper aquifers, but a similar increase in chloride concentration in the deeper aquifers soon followed (fig. 9B). The transient response of water levels in the confined aquifers to pumping is quicker than that in the water-table aquifer; that is, changes in hydraulic head are transmitted more rapidly, and saltwater intrusion follows. Lusczynski (1952, p. 5-6) indicates that, during the 1930's and 1940's saltwater intrusion into the Jameco aquifer was more rapid than in the upper glacial aquifer and

extended farther inland and caused higher chloride concentrations The rise in chloride concentration at two wells screened in the Jameco aquifer is more rapid than at corresponding wells screened in the upper glacial aquifer (Compare figs 9A and 9B)

The Lloyd aquifer shows no evidence of saltwater intrusion, most likely because it is tapped by only a few wells Pumpage from the Lloyd in Kings County began in 1920 and, until 1940, averaged less than 1 Mgal/d (fig 6) Well K464, on the western shore of Jamaica Bay and screened in the Lloyd aquifer (pl 1), had chloride concentrations of 6 to 10 mg/L during 1937-50 High chloride concentrations were measured in water from this well in 1950, but because this was immediately after repair work had been done on these wells, it is probably a result of a damaged well casing that allowed shallow saline ground water to contaminate the well

The maximum recommended concentration of chloride in community water systems is 250 mg/L (New York State Department of Health, 1977)—the approximate taste threshold for most people By 1940, public-supply water in Kings County had begun to exceed this amount, and, by 1947, chloride contamination in the upper glacial aquifer was widespread (fig 10A) Although background chloride concentrations are probably 10 mg/L or less (see previous section), much of the shallow ground water in Kings County had been affected to some degree by chloride contamination from land surface (fig 10A) Therefore, 40 mg/L has been used as a background level for chloride in shallow ground water (Soren, 1971)

Chloride concentrations at wells near the shore had reached 1,000 to 8,000 mg/L by 1947, and the concentrations inland were as high as 700 mg/L At the same time, chloride concentrations in the Jameco aquifer in Kings County were as high as 1,500 mg/L Queens County in 1947 had only traces of chloride in the upper glacial aquifer, however (figs 9A and 10A)

Pumping in Queens County increased sharply in the early 1950's (figs 5 and 6) and was accompanied by an increase in chloride concentrations Water from two wells that tap the upper glacial aquifer in the Woodhaven franchise area (fig 9A) showed a marked increase in chloride concentration from the late 1950's until 1974, when pumping for public supply (which was entirely from the upper glacial aquifer) in that area was stopped

The map in figure 10B indicates that, in 1960, water from much of the upper glacial aquifer in western Queens County had chloride concentrations greater than 40 mg/L Chloride contamination appears to be greatest in shore areas and in the cone of depression around pumping centers in the Woodhaven franchise area (fig 7D) and is largely the result of saltwater intrusion

Some of the chloride contamination in Queens County is undoubtedly derived from inland surface sources, especially in northwestern Queens, which has been extensively developed since the 19th century and where water-table gradients indicate that saltwater intrusion is unlikely

Chloride concentrations in Kings County in 1960 (fig 10B) appear to show a decrease since the cessation of pumping in 1947 through dilution and the gradual recovery of ground-water levels (fig 7D) Water at well K503 in 1960 (fig 9A) shows a considerable decrease in chloride concentration since 1947

By 1970, chloride contamination in the Woodhaven franchise area had become even more extensive (figs 7E and 10C), and, by 1974, pumping for public supply had been stopped because of saltwater intrusion Chloride contamination in the Jamaica area in 1970 was still virtually negligible (fig 10C)

Wells in the Jamaica Water Supply Company area (southeastern Queens County)—Q304 in the upper glacial aquifer and Q1237 and Q314 in the Jameco aquifer (fig 9)—all show a steady increase in chloride concentration since the 1960's This could be a forewarning of sharp increases similar to those that occurred in western Queens in the 1960's and in Kings in the 1940's

Nitrate

Nitrate is the predominant form of nitrogen found in ground water After introduction at the water table, it has been found to be a persistent indication of contamination from land surface The first introduction of nitrate to ground water resulted from domestic waste disposal and agricultural sources, which became widespread about 200 years ago Other sources of nitrate are leaking sewer lines and leachate from landfills Because elevated nitrate concentrations in water can be harmful, a limit of 10 mg/L nitrate (as nitrogen) is defined as drinking-water standard (New York State Department of Health, 1977) Data on nitrate concentrations in the upper glacial aquifer in Kings County during 1897-1916 (Kimmel, 1972) indicate that ground water in developed areas was already contaminated by the turn of this century Nitrate concentrations (as

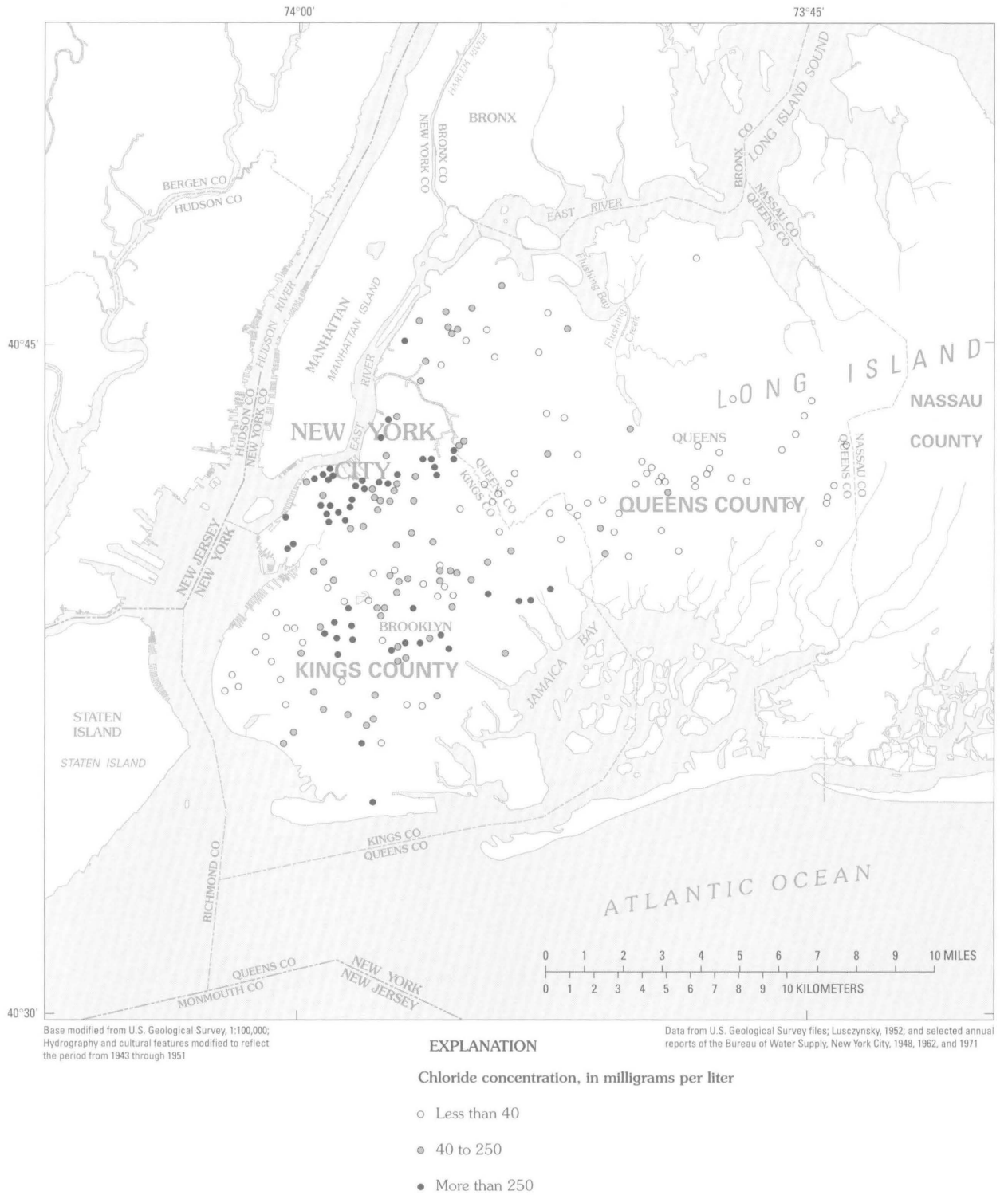


Figure 10A. Chloride concentrations in the upper glacial aquifer in Kings and Queens Counties in 1947.

Base modified from U.S. Geological Survey, 1:100,000; Long Island West, New York–New Jersey–Connecticut,1984; Newark, New Jersey–New York, 1986

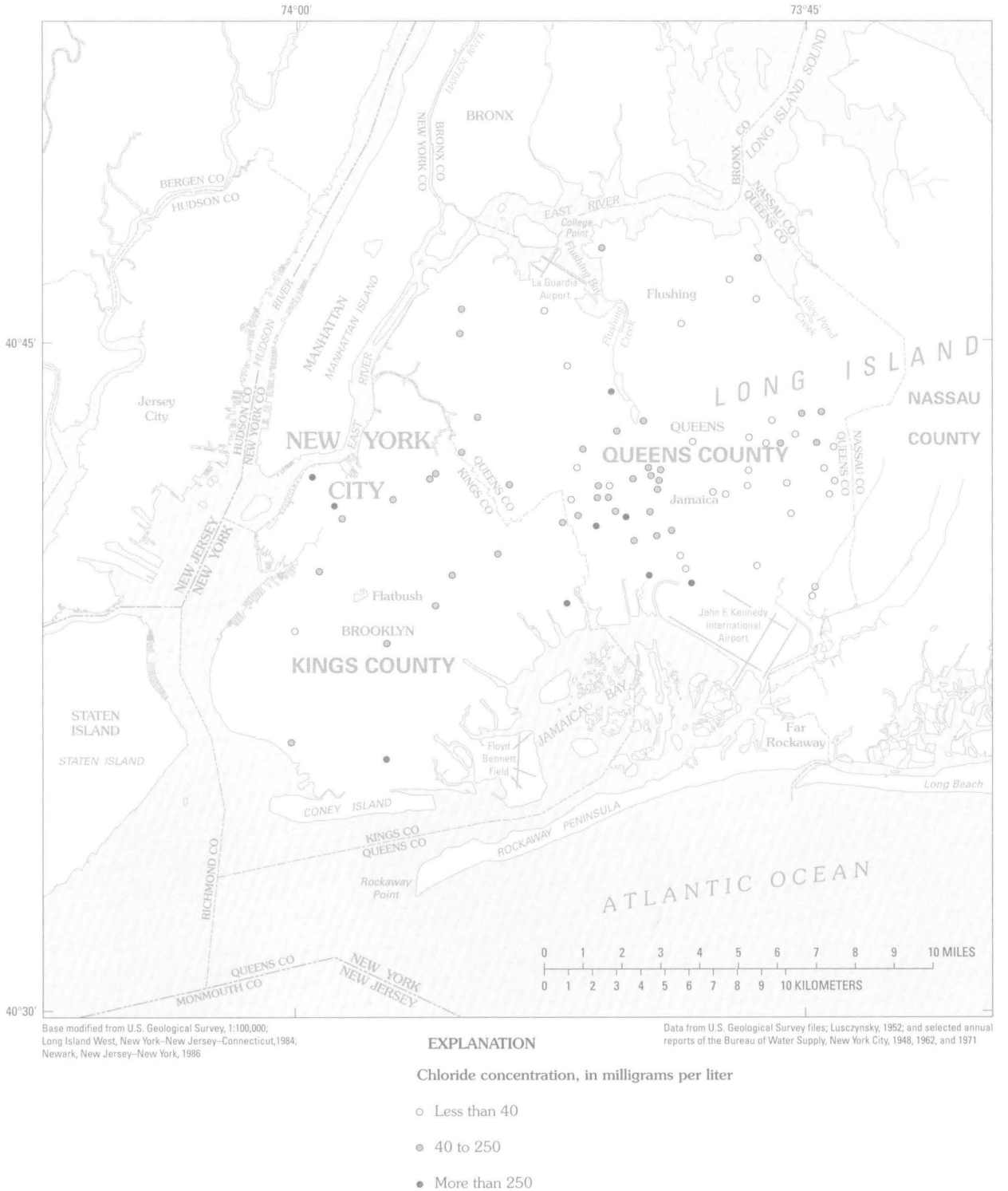
Data from U.S. Geological Survey files; Lusczynsky, 1952; and selected annual reports of the Bureau of Water Supply, New York City, 1948, 1962, and 1971

EXPLANATION

Chloride concentration, in milligrams per liter

- ○ Less than 40
- ◎ 40 to 250
- ● More than 250

Figure 10B. Chloride concentrations in the upper glacial aquifer in Kings and Queens Counties in 1961.



Base modified from U.S. Geological Survey, 1:100,000; Long Island West, New York–New Jersey–Connecticut,1984; Newark, New Jersey–New York, 1986

Data from U.S. Geological Survey files; Lusczynsky, 1952; and selected annual reports of the Bureau of Water Supply, New York City, 1948, 1962, and 1971

EXPLANATION

Chloride concentration, in milligrams per liter

- ○ Less than 40
- ◉ 40 to 250
- ● More than 250

Figure 10C. Chloride concentrations in the upper glacial aquifer in Kings and Queens Counties in 1970.

nitrogen) in 13 of 14 wells in Kings sampled in 1942 ranged from 6 to 25 mg/L (Kimmel, 1972), the concentration in the remaining well was 2 mg/L

Data on nitrate contamination of the deeper aquifers in Kings County are scant The amount of denitrification in deeper aquifers is undetermined, however, elevated concentrations in deep aquifers as early as 1929 indicate some downward migration of nitrate from the water-table aquifer (Kimmel, 1972, p D202)

Veatch and others (1906) state that 8 of 13 private wells or pumping stations in Queens County sampled before 1903 had nitrate concentrations greater than 1 mg/L as N and as high as 34 mg/L Additional data on nitrate in Queens County are summarized in Soren (1971, table 1), which includes analyses of water from 38 wells (10 in the Lloyd aquifer, 15 in the Jameco-Magothy aquifer, and 13 in the upper glacial aquifer) that were sampled during the 1950's and 1960's Nitrate (as N) concentrations were above 10 mg/L in water from only four of the wells, but many samples, including several from the Magothy aquifer, had concentrations higher than 0 2 mg/L (predevelopment level), which indicates some contamination in the upper glacial aquifer and local downward movement to the deeper aquifers These data indicate that nitrate contamination in Queens County was not as advanced as Kings County

RECENT HYDROLOGIC CONDITIONS (1983)

Hydrologic data collected in 1983 indicate that the ground-water reservoir in eastern Queens County is still severely stressed The following paragraphs refer to maps and hydrogeologic sections that (1) represent the current three-dimensional distribution of hydraulic head, (2) indicate the patterns of ground-water movement, (3) define the distribution of ground-water quality on western Long Island, and (4) quantify the effects of the stresses of urbanization on the ground-water-system budget

Water-Table and Potentiometric-Surface Altitudes

Routine water-level measurements made by USGS throughout Long Island are used to monitor changes in the ground-water reservoir that result from natural hydrologic fluctuations or continued development by man Water-level measurements in 194 wells in Kings, Queens, and western Nassau County from January through April 1983 were used to construct a set of maps showing the configuration of the water table and the potentiometric surfaces in the confined aquifers of western Long Island (pl 3, 4, and 5) Table 8 (at end of report) lists all observation wells, their location by latitude-longitude, and their screened interval

Measurements were made in all available observation wells and industrial or public-supply wells that were not pumped during or immediately before the measurement period The distribution of these wells is summarized by aquifer and county in table 4 The deeper aquifers have fewer wells, especially in Kings County, primarily because installation expenses are greater, and many wells in Kings County, abandoned since the 1940's or earlier, have been destroyed

Table 4 Number of observations wells in which water levels were measured, January through April 1983

	Aquifer				
County	**Upper glacial**	**Jameco[1]**	**Magothy[1]**	**Lloyd**	**Total**
Kings	31	2	0	1	34
Queens	48	5	13	11	77
Nassau[2]	53	1	21	8	83
Total	132	8	34	20	194

[1] The Jameco and Magothy aquifers are considered one hydrogeologic unit for purposes of mapping the distribution of hydraulic head
[2] That part of Nassau County adjacent to the Queens County border

Plates 3, 4, and 5 show the distribution of hydraulic head in the upper glacial (water table) aquifer, the Jameco-Magothy aquifer, and the Lloyd aquifer, respectively As described previously, the Jameco and Magothy aquifers are presented as one hydrogeologic unit

Construction of these maps entailed overlaying maps of successive aquifers to verify that vertical gradients consistently represented the three-dimensional pattern of ground-water flow Hydrologic sections presented on plate 6 show the vertical distribution of head throughout the entire thickness of unconsolidated deposits Together, the sections and maps give an indication of the three-dimensional distribution of hydraulic head throughout the ground-water system and the

pattern of ground-water flow Most vertical gradients occur within confining units (except in the water-table aquifer near streams), enabling a set of maps and sections to be used effectively to represent three-dimensional flow patterns

Additional information on hydrologic factors that affect the distribution of hydraulic head and movement of ground water within the system can be useful in constructing such maps The location and average pumping rate during the measurement period of 103 industrial and public-supply wells are shown on plates 4 and 5, plate 6 shows the screened interval of each well on a cross section These data help define the configuration of the cones of depression that are centered at the screens of the pumping wells Other hydrogeologic characteristics that affect the head distribution and are shown on these maps include (1) hydrogeologic-unit geometry, particularly the extent of confining layers, which affect vertical head relations and patterns of flow between aquifers, (2) locations of permeability boundaries, that is, the boundary between zones that differ considerably in hydraulic conductivity, and (3) natural hydrologic boundaries such as gaining-stream channels and the saltwater-freshwater interface in the confined aquifers

Water-Table Configuration

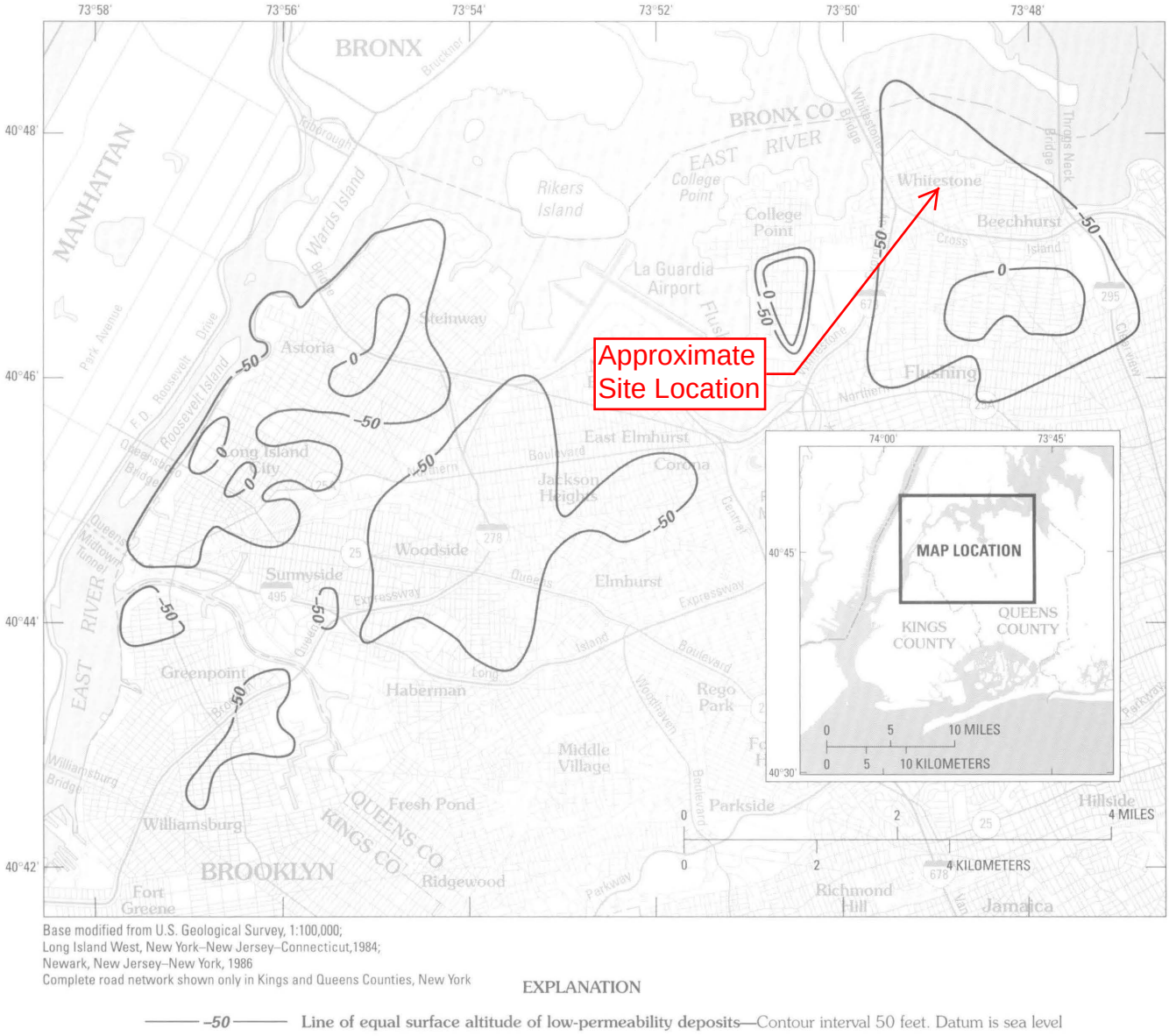
The configuration of the water table in western Long Island, shown on plate 3, was constructed from water levels measured in 132 observation wells screened in the upper glacial aquifer (table 4) in March and April 1983 The water table shows anomalous mounds along the north shore The water level in well Q2791 in northeastern Queens was more than 50 ft above sea level and has been comparably high in recent years These features are not perched ground water because they are hydraulically connected with the water table, as indicated by the fact that well Q2791 is screened from 11 to 19 ft above sea level Rather, this mounding is attributed to two causes The first is that the upper glacial material on the north half of Long Island consists of moraine deposits that, on the average, have a hydraulic conductivity 2 to 10 times lower than the outwash deposits on the south shore and locally could be several orders of magnitude lower This contrast in hydraulic conductivity is a major reason for the north-to-south asymmetry of the water table throughout Long Island The water-table divide is much closer to the northern shore than the southern shore throughout Kings and Queens Counties

The second reason for the anomalous high ground-water levels along the north shore is the configuration of the base of the water-table aquifer This aquifer is underlain by either bedrock or confining-unit material overlying bedrock, either of which forms a virtually impermeable bottom boundary to the aquifer at a shallow depth (fig 11) The Raritan confining unit is above sea level in northeast Queens, and bedrock crops out in northwest Queens (fig 11 and sections B-B' and D-D' on pl 6), which further restricts groundwater discharge to the north shore and results in the steep northward gradients (pl 3)

Locations of 38 wells pumped for either industrial supply or public supply are shown on plate 3 Two major cones of depression caused primarily by pumping (during the measurement period) of 13 8 Mgal/d for public supply are evident in southern Queens County, where water levels have been drawn down to below sea level A considerable increase in gradients from Nassau into Queens County since the predevelopment period indicates that the amount of ground water flowing across the county line has increased significantly The western (smaller) cone of depression has no discharging wells at its center in the upper glacial aquifer Comparison of the water-table map with the potentiometric-surface map of the Jameco-Magothy aquifer (pl 4) indicates, however, that the larger cone of depression in the water table is caused by pumping in the Jameco-Magothy aquifer This occurs in an area where the Gardiners Clay is absent and the aquifers have substantial hydraulic connection

Potentiometric Surface of the Jameco-Magothy Aquifer

The potentiometric-surface altitude in the Jameco-Magothy aquifer is shown on plate 4 Water levels measured in 42 wells screened in this aquifer in March and April 1983 were used to construct the map The number of available observation wells decreases westward rapidly in the area, only two are available in Kings County (table 4) Plate 4 also shows the northern extent of this aquifer unit and the Gardiners Clay (The Gardiners Clay, where present, separates the Jameco-Magothy aquifer from the overlying upper glacial aquifer) The Gardiners Clay overlaps the Jameco-Magothy aquifer throughout Kings County, thus, all ground water that moves vertically between the Jameco-Magothy and upper glacial aquifers must move through the confining unit In Queens County, the aquifer extends farther north, and the confining unit recedes southward



Base modified from U.S. Geological Survey, 1:100,000;
Long Island West, New York–New Jersey–Connecticut,1984;
Newark, New Jersey–New York, 1986
Complete road network shown only in Kings and Queens Counties, New York

EXPLANATION

—— –50 —— **Line of equal surface altitude of low-permeability deposits**—Contour interval 50 feet. Datum is sea level

Figure 11. Upper surface altitude of deposits with low permeability at base of water-table aquifer in northern Kings and Queens Counties.

In areas where the aquifer is not overlain by the Gardiners Clay, the Jameco-Magothy aquifer is in direct contact with the upper glacial aquifer.

Careful consideration was given to the extent of the confining unit in plotting the head relations between the Jameco-Magothy and upper glacial aquifers. Vertical head differences between the aquifers are greater, and flow rates lower, where the confining unit is present. The resulting distribution of head in both aquifers (pls. 3 and 4) indicates vertical gradients consistent with the three-dimensional patterns of ground-water flow. For example, ground-water gradients are downward beneath the water-table mound in northeast Queens County, but to the east, under Alley Pond Creek, seepage to the creek results in upward gradients.

Head distribution in the Jameco-Magothy in Kings County indicates that water enters the aquifer vertically from the upper glacial aquifer by downward seepage through the Gardiners Clay and then flows southward to near the shore, where it discharges by upward seepage back through the Gardiners Clay.

Ground-water flow patterns in Queens County are more complex than in Kings County. A deep erosional channel through the Cretaceous deposits trends north-south through Queens County. (The origin of this channel is discussed in a previous section; a map of

the configuration of the Cretaceous surface is shown in Smolensky and others, 1989) This channel also cuts through the Raritan confining unit and was subsequently filled with upper glacial deposits, which act as a conduit for ground-water flow between all aquifer units (sections C-C' and E-E', pl 6) The area in which these glacial deposits are laterally contiguous with the Jameco-Magothy aquifer is shaded on plate 4 to identify this pathway for ground-water flow, this is a significant factor in the three-dimensional pattern of ground-water movement in this area The Jameco-Magothy aquifer is underlain everywhere by the Raritan confining unit except in this eroded channel

Well Q2410 taps the eroded channel in north-central Queens, it is screened in upper glacial deposits but at a depth equivalent to the Jameco-Magothy aquifer The hydraulic head in this well is similar to that in the overlying glacial deposits, which is consistent with the contention that the channel acts as a direct pathway for water from the upper glacial aquifer to pumping wells in the Jameco-Magothy aquifer

Pumping for public supply in the Jameco-Magothy aquifer in Queens County during the measurement period was 31 26 Mgal/d, most pumping wells are in the east-central part of the county, and ground-water levels have been drawn down below sea level in an extensive cone of depression The Gardiners Clay is absent throughout most of this area, and the effects of pumping have propagated into the water-table aquifer (pl 3) A concentration of pumping in southwestern Nassau County has drawn ground-water levels down to below sea level in that area

An important lateral hydrologic boundary in the Jameco-Magothy aquifer is the interface between fresh and saline ground water This interface is actually a zone of diffusion in which chloride concentrations increase from the typical concentration in the fresh ground-water system (less than 40 mg/L) to that of seawater, about 19,000 mg/L Under undisturbed conditions, this zone of diffusion probably does not exceed several hundred feet in width, but nearby pumping can cause considerable mixing and expansion of this zone Chloride concentrations in water samples from wells near the shore were used as a guide to estimate the approximate position of the interface, results are discussed in greater detail in the section "Saltwater Intrusion" (p 53)

The configuration of the saltwater-freshwater interface is controlled by the distribution of head within the ground-water system and tends toward an equilibrium state in which the pressures in saltwater and freshwater balance The interface typically extends farther landward with increasing depth (pl 6) The interface in southern Kings and Queens extends several miles inland in the Jameco-Magothy aquifer Two holes in the Gardiners Clay along the south shore (pl 4) probably partly explain the extreme landward position of the interface in this part of the Jameco-Magothy aquifer Before development, these holes permitted discharge upward, lowering head in the Jameco-Magothy aquifer, during pumping, they provide a pathway for intrusion downward into the aquifer

The altitude of the base of the Jameco-Magothy aquifer at the edge of the interface ranges from 300 to 600 ft below sea level across southwestern Long Island Freshwater heads of 7 5 to 15 ft are required to balance static saline ground water at these depths Hydraulic heads along the edge of the freshwater system range from 1 to 5 ft (pl 4), indicating that the interface is not in an equilibrium position and is moving landward

Water levels at several wells in southwestern Nassau County have been below sea level (fig 12) and are depicted as a separate cone of depression in several published potentiometric-surface maps of the Magothy aquifer This area has no known stress that could cause such a local cone of depression, however An inspection of recent water-quality analyses shows that the dissolved-solids concentrations at these wells are elevated by sea water and are high enough to significantly increase the density of water in the well This would cause the measured hydraulic head to be lower than if freshwater were in the well casing Thus, the observed depressions in this area do not indicate converging flow patterns, but are rather an artifact of pressure-head measurement in terms of a fluid that is denser than freshwater

Evaluation of horizontal gradients and flow rates in a system of dilute seawater such as this require adjustment of head measurements to the calculated head of a common fluid (freshwater) These head data are referred to as freshwater or equivalent-freshwater head The equation for freshwater head (h_f) is given as

$$h_f = (h_s - z)\frac{\rho_s}{\rho_f} + z$$

where h_s is measured head of saline ground water,

ρ_s is density of saline ground water,

ρ_f is density of fresh ground water, and

z is altitude of the well screen

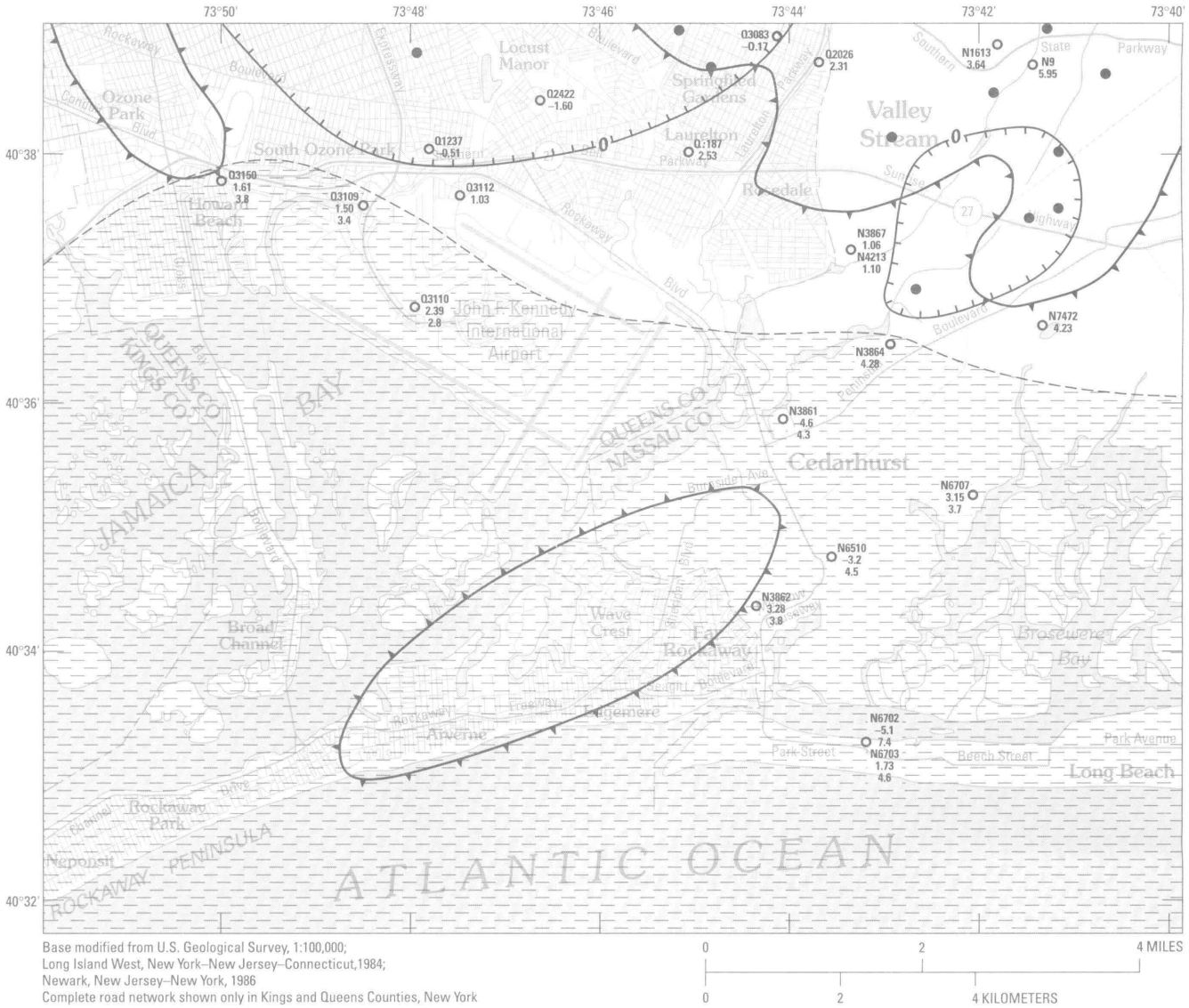


Figure 12. Distribution of hydraulic head in southern Queens and southwestern Nassau County, as measured and converted to freshwater equivalent head.

The density of the water in the casing (the measurment fluid) was estimated assuming a proportional mixture of freshwater and seawater determined by the measured chloride concentration The chloride concentration, estimated density, and freshwater and saltwater heads, in pertinent wells are presented in table 5 Corrections to freshwater head resulted in changes of as much as 12 ft (well N6702) The distribution of head in wells in southern Queens and southwestern Nassau County, both as actually measured and as equivalent-freshwater head, is shown in figure 12 The measured heads in wells N3861, N6510, and N6702 were below sea level as a result of saline water in the well casings The distribution of equivalent freshwater head does not show a cone of depression Hydraulic gradients in freshwater head indicate a landward movement of ground water toward pumping centers to the north

Ground-water levels shown on plates 3, 4, and 5 were made as part of an islandwide synoptic measurement, water samples were not collected at the time of measurement Estimates of fluid density were made from chloride concentrations in the most recent sampling of these wells, the dates of these analyses are included in table 5 A more accurate estimate of the effects of local differences in fluid density would be possible if sampling and chemical analyses were included with future water-level measurements Thus, if a well is expected to be affected by saltwater, it would first be pumped to ensure that the water in the casing is indicative of the local ground water, then a sample would be taken for chemical analysis, and finally the recorded static water level would be measured

The rate of movement of the saltwater-freshwater interface is difficult to estimate To obtain an approximation, Darcy's law was applied along a transect trending from the center of Jamaica Bay north-northeastward toward the center of pumping Estimates of the horizontal component of velocity based on published values of water-transmitting coefficients ranged from 0 5 to 1 0 ft/d Although this rate may seem slow, at a rate of 1 0 ft/d, the interface would advance 1 mi in 15 years, a distance of major consequence to long-range resource management, especially because intrusion could be more rapid near well screens or in local zones with high permeability and,or low porosity

Table 5. Equivalent freshwater head at wells affected by saline water in the Jameco-Magothy aquifer
[Well locations are shown in figure 12]

Well number	Date of sample collection	Average screen altitude (feet below sea level)	Chloride concentration (milligrams per liter)	Density[1] (grams per cubic centimeter)	Saltwater head (feet above or below sea level)	Freshwater head (feet above sea level)
N6073	10/5/83	–460	5,800	1 0061	1 7	4 6
N6702	8/6/81	–672	15,000	1 0187	–5 1	7 4
N6510	4/10/62	–447	14,000	1 0173	–3 2	4 5
N3861	9/1/81	–517	14,000	1 0173	–4 6	4 3
N6707	9/28/83	–492	1,900	1 0010	3 2	3 7
N3862	8/26/81	–294	1,900	1 0010	3 3	3 6
Q3110	7/18/83	–306	2,300	1 0014	2 4	2 8
Q3109	8/18/83	–278	6,400	1 0069	1 5	3 4
Q3150	6/21/83	–119	15,000	1 0187	1 6	3 8

[1] Estimated from a relation between chloride concentration and density in dilute seawater solutions (Weast,1981, p D229)

Potentiometric Surface of the Lloyd Aquifer

The potentiometric-surface altitude of the Lloyd aquifer measured in January 1983 is shown on plate 5 Only 20 wells that tap the Lloyd aquifer were available for measurement, and only one is in Kings County The Raritan confining unit overlaps the Lloyd aquifer throughout Kings and western Queens In central Queens, where the ancestral Hudson River channel eroded the Raritan confining unit away (shaded on pl 5), upper glacial sediments lie either directly on bedrock or on deposits of the Lloyd aquifer and thus afford a direct pathway for ground-water exchange among all three aquifers

The potentiometric-surface map (pl 5) shows four public-supply wells, all in Queens County, that tap the Lloyd aquifer Together they pumped at a rate of 5 94 Mgal/d during the measurement period The cone of depression created by these wells is deeper and more extensive than that in the overlying Jameco-Magothy aquifer (pl 4), where pumping is more than six times greater No observation wells are near the center of the cone of depression, thus, the shape of the potentiometric surface near these wells is only estimated Water levels measured in the pumping wells after they had been temporarily shut down for several hours were still more than 20 ft below sea level Although these data are difficult to interpret and are not used to indicate absolute head values, they are considered to indicate the maximum ground-water level in an area immediately surrounding the pumping wells during their operation

The configuration of the potentiometric surface near the eroded channel indicates that water flows downward through the channel-fill deposits from the overlying aquifers to recharge the Lloyd aquifer Head contours in the Lloyd aquifer indicate that water is diverging from this source area

The Lloyd aquifer is expected to be more sensitive to pumping than the overlying aquifers for two reasons First, probably only about 5 percent of the total volume of water in the system moves through the Lloyd because it is the deepest aquifer and is almost everywhere separated from the rest of the system by the Raritan confining unit Second, even though pumping in the Lloyd aquifer would increase the downward hydraulic gradients between the overlying Jameco-Magothy aquifer and the Lloyd aquifer and would increase the downward flow of water into the Lloyd, the considerable pumping in the overlying aquifer has caused a significant drawdown in that aquifer, thus, even a small amount of pumping from the Lloyd would lower the hydraulic head to below that in the overlying aquifer The result is that any pumping causes a more extensive and deeper cone of depression in the Lloyd aquifer than in the overlying aquifer, as seen through comparison of plates 4 and 5

Pumping for public supply from the Lloyd aquifer occurs at two locations in Nassau County, near the Queens County line One is near the north shore, where the Lloyd aquifer is fairly close to land surface, the other is at Long Beach on the south-shore barrier island, where it is the only source of fresh ground water

The saltwater-freshwater interface in the Lloyd aquifer is estimated to lie just off the south shore (pl 5) Here the base of the Lloyd ranges from 600 to 1,200 ft below sea level Freshwater heads of 15 to 30 ft would be needed to balance static seawater at these depths, but water-level measurements along the interface indicate that head in the Lloyd aquifer does not exceed a few feet Thus, data indicate that, as in the overlying Jameco-Magothy aquifer, the interface is not in an equilibrium position and is moving landward

Darcy's Law was used to estimate the rate of landward movement on a transect due north through the center of Jamaica Bay (pl 5) Estimates of the horizontal velocity are from 0 02 to 0 05 ft/d—much lower than in the overlying Jameco-Magothy aquifer and consistent with the smaller ground-water gradients observed in the Lloyd (pl 4, 5)

Distribution of Hydraulic Head Along Selected Vertical Sections

The five hydrogeologic sections shown on plate 6 depict the vertical variations in hydraulic head within the system All pumping wells and observation wells that lie along or close to the sections are indicated with their screened intervals, the observed head values shown are considered the average head over the screened interval Equipotential lines are near vertical in each aquifer unit, where ground-water gradients are generally horizontal, but refract toward the horizontal where they enter the confining units because here, the vertical gradients are much larger than in the aquifers

In the interpretation of head maps (plan view), ground-water flow paths are assumed to be aligned with the direction of the steepest hydraulic gradient In the interpretation of hydrologic sections, however, this is not always true In vertical sections, flowlines generally are not perpendicular to equipotential lines

because the aquifer units are anisotropic, and the section is drawn with extreme vertical exaggeration

The estimated configuration of the saltwater-freshwater interface is also indicated, it typically extends landward with depth and is near vertical within confining layers It could contain more irregularities than are shown as a result of extensive clay lenses within the aquifer units or local drawdown from pumping

Section A-A' (pl 6) trends north-south in Kings County The water table along this profile is asymmetric because the ground-water divide is close to the north shore The water-table mound at the divide is probably caused by a local zone of low permeability in the moraine deposits Low head in the Jameco-Magothy aquifer, caused by pumping in Queens County, has caused the salt-water-freshwater interface in this aquifer to move inland As a result, subsea discharge upward through the Gardiners Clay has probably ceased

Freshwater in the Lloyd aquifer extends considerably farther seaward than in the Jameco-Magothy, but, as stated previously, head in the freshwater system is inadequate to balance sea water at the depths of the Lloyd aquifer Thus, saline ground water in the Lloyd probably is moving slowly landward

Section B-B' (pl 6) trends from northwestern Queens County southward to near the Kings-Queens County line The extreme thinning of the upper glacial aquifer at the north shore is evident in the section Within the north-central part of the section is a large area in which the bedrock is overlain by confining-unit material, as a result, the bottom boundary of the aquifer system is less than 50 ft below sea level locally This is considered a major cause of high ground-water levels along the north shore

Freshwater in the Jameco-Magothy aquifer is limited along this section The hole in the over-lying Gardiners Clay, which is evident in this section, provides a pathway for intrusion of saline ground water Ground water in the Lloyd aquifer at section B-B' flows generally eastward toward the major pumping center

Section C-C' (pl 6) trends southward from Flushing Bay and crosses the ancestral Hudson River channel, which has eroded through all Cretaceous deposits and forms a pathway for water to the Lloyd aquifer from above Water at well Q2418 has attained a chloride concentration as high as 550 mg/L (1981), which may indicate that saltwater from Flushing Bay and its estuary was drawn into the ground-water system, possibly by intensive pumping during the 1964-65 World's Fair or from public-supply wells screened in the Jameco-Magothy and Lloyd aquifers to the south The latter possibility warrants concern for potential saltwater intrusion from the north shore toward the major pumping centers in central Queens

Section D-D' (pl 6) trends north-south near the Queens-Nassau County border Only small traces of the Jameco Gravel have been found this far east This section indicates that the high pumping rates in southeastern Queens County have caused landward gradients in the Lloyd and Jameco-Magothy aquifers Flow in small zones along the north and south shores in the upper glacial aquifer is seaward, though

Saline ground water probably is migrating downward into the Lloyd aquifer from the overlying Jameco-Magothy aquifers Darcy's Law for fluids of variable density was used with data from wells N6703 and N8011 to estimate the vertical velocity and traveltime for saline ground water to cross the Raritan confining unit Darcy's Law is given as

$$V_z = -\frac{k_z}{n\mu}\left(\frac{\Delta P}{\Delta Z} + \rho g\right)$$

where V_z is vertical velocity component,
k_z is vertical intrinsic permeability,
n is porosity,
μ is viscosity,
ΔP is change in pressure across the confining unit,
ρ is density, and
ΔZ is thickness of confining unit, and
g is the gravitational constant

Conservative values for aquifer properties were assumed, including $n = 0\ 2$, and k_z is calculated from a vertical hydraulic conductivity of 0 002 ft/d for freshwater A density of 1 019 g/cm^3 was used for ground water overlying the Raritan confining unit The resulting velocity was about 0 2 ft/yr, and the traveltime across the confining unit was about 1,250 years This indicates that lateral intrusion of saltwater within the Lloyd aquifer poses a greater threat than intrusion from the overlying aquifer

Section E-E' (pl 6) runs east-west through Kings and Queens Counties This section shows the severe effects of pumping in Queens County Large westward gradients indicate movement of ground water from Nassau County into Queens and downward into the Lloyd aquifer The vertical pathway for water

to the Lloyd aquifer through the ancestral Hudson River channel is also evident in this section Sections D-D' and E-E' show a larger cone of depression in the Lloyd than in the over-lying aquifers despite the lower pumpage

Water Budget

Even though much of the ground-water system in Kings County is recovering from previous stress, and water levels now approach those of 1903, some severe, perhaps irreversible, deviations from the predevelopment flow patterns persist Under predevelopment conditions, ground water was replenished entirely by recharge from precipitation and discharged solely by seepage to streams and as subsea outflow to the surrounding saltwater bodies Urbanization and pumping have altered recharge and discharge patterns and introduced new components to the water budget The estimated quantities of inflow and outflow in 1983 are compared with predevelopment values in table 6 The water budget was developed through evaluation of hydrologic data and through calibration of a three-dimensional ground-water flow model of the Long Island ground-water system (H T Buxton and D A Smolensky, U S Geological Survey, written commun , 1988), which was being developed concurrently with this project

Inflow

The large expanses of paved, impervious surfaces in Kings and Queens Counties have caused increased runoff and evaporation, which in turn have led to a major reduction in recharge from precipitation Analysis of land use in Kings and Queens by the City of New York (New York City Department of Environmental Protection, 1979) indicates that Kings County has been the most severely affected by development and that Queens, although also affected, still has areas of permeable land surface such as parks, cemeteries, and low-density residential communities About 15 percent of precipitation, 24 Mgal/d countywide or 0 32 (Mgal/d)/mi^2 in Kings County, and about 35 percent of precipitation, 83 Mgal/d countywide or 0 73 (Mgal/d)/mi^2 in Queens County, is estimated to enter the ground-water system as recharge, a considerable decrease from that which reached the aquifers before development, 1 1(Mgal/d)/mi^2 (table 6) Recharge in neighboring Nassau County continues to equal about 50 percent of precipitation, even under present urban conditions, because an extensive recharge-basin system captures runoff and returns it to the ground

A large volume of water is returned or added to the ground-water system as leakage from artificial structures, which include water-supply lines and sewer lines, and as infiltration of water used for purposes such as lawn sprinkling In areas where the water was pumped from the ground, such infiltration would constitute only a partial return to the system In 1983, 57 Mgal/d of water was pumped from local aquifers to supply about 500,000 people and 7,600 commercial and industrial users in southeastern Queens All of Kings County and most of Queens County are supplied with water totaling almost 700 Mgal/d from upstate surface-water reservoirs, however (New York City Bureau of Water Supply, written commun , 1983) Infiltration of water leaking from this source constitutes artificial recharge from an external and potable source In all, a total of about 760 Mgal/d (450 Mgal/d in Kings and 310 Mgal/d in Queens) is transmitted through the water-supply system, which contains 4,270 mi of supply lines (1,900 mi in Kings County and 2,370 mi in Queens) and has 613,000 service connections (313,000 in Kings County and 300,000 in Queens) (New York City Department of Environmental Protection, 1981, and Jamaica Water Supply Co , oral commun , 1984) Although

Table 6 Water budgets for predevelopment and recent (1983) conditions
[Values are in million gallons per day]

Budget component	Predevelopment (pre-1900) conditions	Recent (1983) conditions
Inflow		
Recharge from precipitation	209	107
Leakage from water-supply lines and other infiltration	0	70
Ground-water inflow from Nassau County	6	9
Total	215	186
Outflow		
Base flow to streams	62	11
Pumpage		
Public supply	0	57
Private (net)	0	17
Subsea discharge	153	101
Total	215	186

many water-main breaks are tabulated annually by the New York City Bureau of Water Supply, constant leaking of the aging water-supply system is the largest source of recharge from artificial sources

The total volume of leakage from artificial sources is difficult to estimate but undoubtedly constitutes a major part of the present ground-water budget The total rate of infiltration from these sources is estimated to be about 70 Mgal/d, although it could be larger The distribution of this recharge corresponds to water-supply and sewer networks About 30 Mgal/d is estimated to infiltrate in Kings and 40 Mgal/d in Queens

The final component of inflow to western Long Island is ground-water flow from Nassau County Large hydraulic gradients in all aquifer units indicate that a significant amount of water enters from Queens County as subsurface flow A flow-model analysis indicated that about 9 Mgal/d of ground water flows across the Nassau-Queens border, a 50-percent increase from pre-development conditions as a result of the steeper gradients induced by current pumping rates

Total inflow to the western Long Island ground-water system from the above sources is 186 Mgal/d This is less than the total amount of water entering before development Even the significant inflow from leakage of imported surface water is insufficient to compensate for the loss of natural recharge through urbanization

Outflow

Water is discharged from the ground-water system in three ways—as stream base flow, through pumpage, and as subsea outflow Under predevelopment conditions, base flow constituted a significant outflow from the ground-water system Today, however, only two major streams remain in Kings and Queens (Flushing Creek and Alley Creek) These, along with several smaller creeks, receive a total of about 11 Mgal/d in ground-water seepage (base flow)

As stated earlier, ground water that is pumped and either lost by evaporation or discharged to the sea is considered consumptive (net) pumpage and represents a net draft on the ground-water system In 1983, pumpage for public supply from Queens aquifers was 57 Mgal/d Of the 57 Mgal/d of public-supply pumpage in Queens County, 11 8 Mgal/d was pumped from the upper glacial aquifer, 39 3 Mgal/d from the Jameco-Magothy aquifer (35 Mgal/d from the Magothy aquifer and 4 3 Mgal/d from the Jameco aquifer), and 5 9 Mgal/d from the Lloyd aquifer (Jamaica Water Supply Company, written commun , 1984)

Private pumping includes pumping for industrial purposes and for dewatering in areas of ground-water flooding The water pumped for these purposes is discharged to sewers with ocean outfall and is assumed consumptive Net industrial pumpage in 1983 is estimated to have been 2 3 Mgal/d in Queens and 6 6 Mgal/d in Kings (New York State Department of Environmental Conservation, written commun , 1984) In 1983, subway dewatering in the Flatbush area of Kings County averaged 4 Mgal/d (New York City Transit Authority, oral commun , 1984) Fourteen additional wells with a maximum pumping capacity of 20 Mgal/d are planned in the East New York and Bedford sections of Kings County (New York City Transit Authority, oral commun , 1985) Undoubtedly homes, businesses, and institutions are dewatering also Temporary dewatering is often required for the construction of underground structures, but no information is currently available A total of about 8 Mgal/d is pumped for dewatering purposes in western Long Island (6 Mgal/d in Kings and 2 Mgal/d in Queens) (New York City Department of Environmental Protection, oral commun , 1984) Therefore, a total of about 17 Mgal/d is pumped for private purposes in Kings and Queens Counties

The remaining discharge component of the ground-water budget, subsea outflow to the surrounding saltwater bodies, is considerably smaller than under predevelopment conditions but is still the largest discharge component Because subsea discharge is impossible to measure, it is typically estimated as the flow rate required to balance the ground-water budget Subsea outflow from the upper glacial and Jameco-Magothy aquifers at present is estimated to be 101 Mgal/d, this value is corroborated by ground-water-flow model analysis (H T Buxton and D A Smolensky, U S Geological Survey, written commun 1988) Subsea outflow from the Lloyd is negligible because pumping has lowered hydraulic heads throughout that aquifer in Kings and Queens, producing landward gradients

Ground-Water Quality

The present quality of the ground water of western Long Island has been affected by more than 200 years of development and urbanization The natural quality of Long Island's ground water (before man's influence) was the product of chemical constituents

introduced with recharge from precipitation and natural geochemical reactions that occur between the ground water and the aquifer material Present groundwater quality is affected further by contaminants introduced by human activities as well as by additional geochemical reactions

This study used the results of analyses of ground-water samples collected in 1983 to describe the present quality of ground water on western Long Island An earlier, preliminary study by Buxton and others (1981) used results from a network of 77 observation wells supplemented by concurrent data from 67 public-supply wells provided by the Jamaica Water Supply Company These samples were collected in 1981 In 1983, the network of observation wells sampled by the USGS was expanded to 107 wells (locations are shown on pl 7) Samples were collected from June through October 1983, results are presented in table 10 (at end of report, 1981 data are included where available) Concurrent data from 84 public-supply wells sampled during 1983 and analyzed by the Jamaica Water Supply Company are presented in table 11 (at end of report)

Chloride and nitrate concentration data are used to indicate the extent to which contamination from land surface and saltwater intrusion has propagated within the ground-water system A brief summary of the distribution of other major inorganic constituents is provided in support of this analysis In addition, concentrations of selected organic compounds detected in public-supply wells of the Jamaica Water Supply Company are used to indicate the effect of these chemicals and related human activities on the ground-water system

Extent of Human-Induced Contamination

In the following discussion, maps and vertical sections are used to provide a three-dimensional representation of (1) the extent to which land-surface contamination has migrated through the ground-water system, and (2) the extent to which the saltwater-freshwater interface has moved landward in all three major aquifers Chloride and nitrate are used as indicators as described in the section "Deterioration of ground-water quality" (p 29) Background concentrations of both are low, less than 10 mg/L and 0 2 mg/L as N, respectively, compared to concentrations observed in 1983 The maps (figs 13-15, p 46-51) and cross sections (fig 16, p 52) can be evaluated in conjunction with the corresponding potentiometric maps (pl 3, 4, and 5) and hydrogeologic sections (pl 6), to indicate the extent of contamination in relation to the patterns of groundwater movement

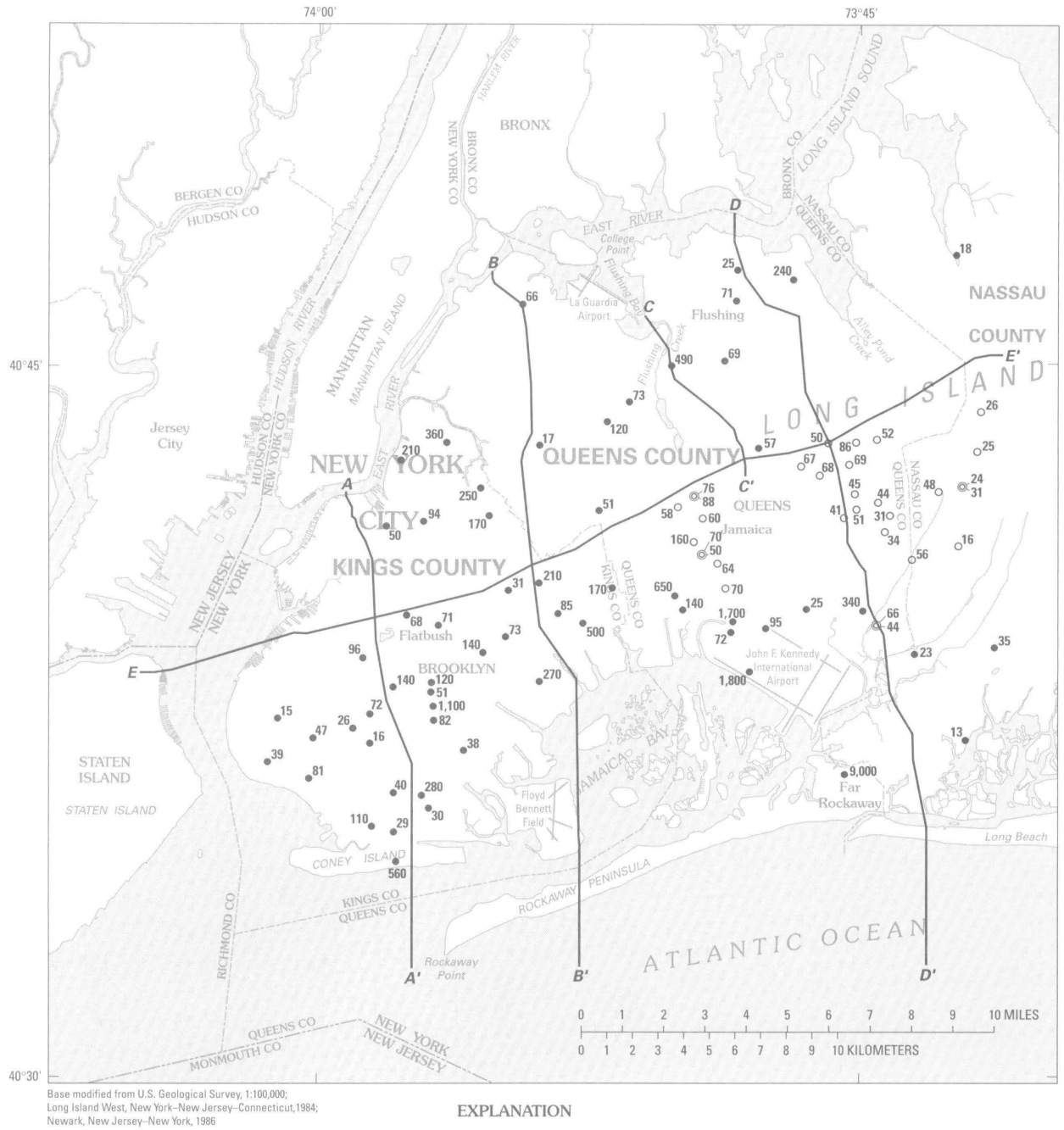
Contamination from Land Surface

Nitrogen, in the form of nitrate, was one of the first contaminants to be introduced to the ground-water system, it entered as fertilizers and domestic waste dissolved in natural recharge Even today, nitrate continues to enter the system through leakage from New York City's extensive combined-sewer network (Kimmel, 1972)

The shaded areas on the sections in figure 16 indicate the extent of ground water that has been affected by contamination from land surface This area is defined on the assumption that nitrate has entered the system at the water table uniformly and consistently over the years and has migrated along natural groundwater flow paths through the system Only three wells in the shaded area (Q2978, section D-D', Q2418, section C-C', and Q2137, section E-E') had nitrate concentrations less than 1 0 mg/L, and Q2418, one of these wells, is affected by seawater intrusion This format is used to indicate areas with a high expectation of contamination from land-surface sources and to provide a means to assess further migration of contaminated ground water

Nitrate concentrations throughout the upper glacial aquifer indicate severe contamination that appears to decrease eastward (figs 13B and 16) Concentrations in 19 of 35 samples from Kings County exceeded the public health standard of 10 mg/L, and concentrations in 27 of the 35 samples were greater than 5 mg/L (as N) In Queens County, 8 of 39 samples had concentrations greater than 10 mg/L (as N), and 24 exceeded 5 mg/L (as N) Of 11 samples from Nassau County, only 1 exceeded the public health standard, but 8 had concentrations of 3 7 mg/L (as N) or higher

Nitrate concentrations in samples from only 2 of 72 wells in the Jameco-Magothy aquifer were greater than 10 mg/L (as N) The distribution of these values is plotted in figure 14B (p 49) Of 69 samples from wells in Queens and Nassau Counties that were not affected by seawater, 12 were from wells in the area where the Gardiners Clay separates the Jameco-Magothy and upper glacial aquifers The highest nitrate concentration in these wells was 0 79 mg/L, and all but two wells had concentrations of 0 28 mg/L or less Of the 47 samples taken from inland wells where the Gar-



Base modified from U.S. Geological Survey, 1:100,000; Long Island West, New York–New Jersey–Connecticut,1984; Newark, New Jersey–New York, 1986

EXPLANATION

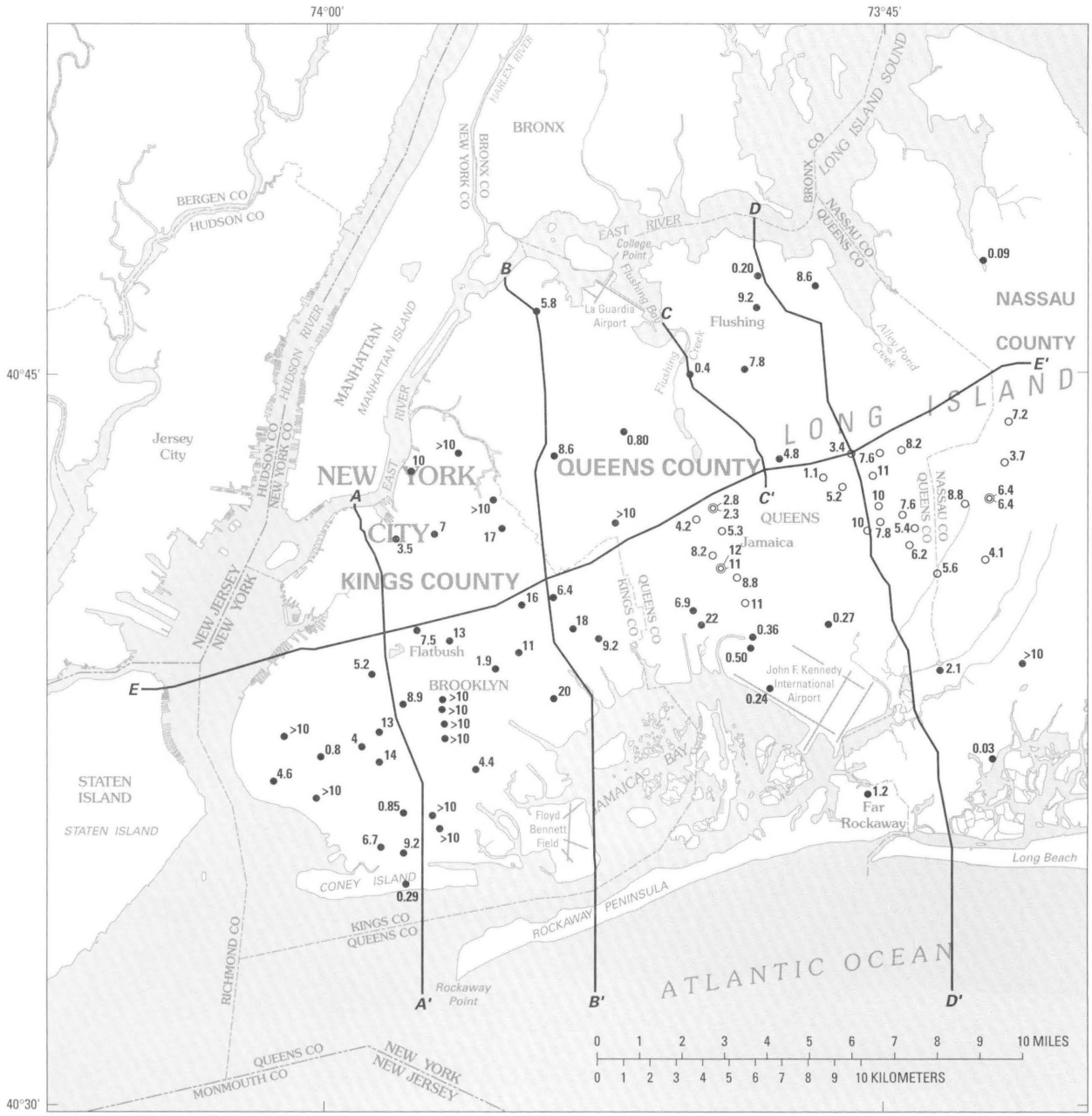
D ——— D' Trace of hydrogeologic sections shown in figure 16

38 **Well sampled by U.S. Geological Survey and analyzed by New York City Department of Environmental Protection**—Number is chloride concentration, in milligrams per liter

16 **Well sampled and analyzed by Jamaica Water-Supply Company**—Number is chloride concentration, in milligrams per liter

76/88 **Multiple-well site**—Numbers are chloride concentrations, in milligrams per liter. Upper and lower numbers refer to shallow and deep screens respectively

Figure 13A. Chloride concentrations in the upper glacial aquifer, 1983.



Base modified from U.S. Geological Survey, 1:100,000; Long Island West, New York–New Jersey–Connecticut,1984; Newark, New Jersey–New York, 1986

EXPLANATION

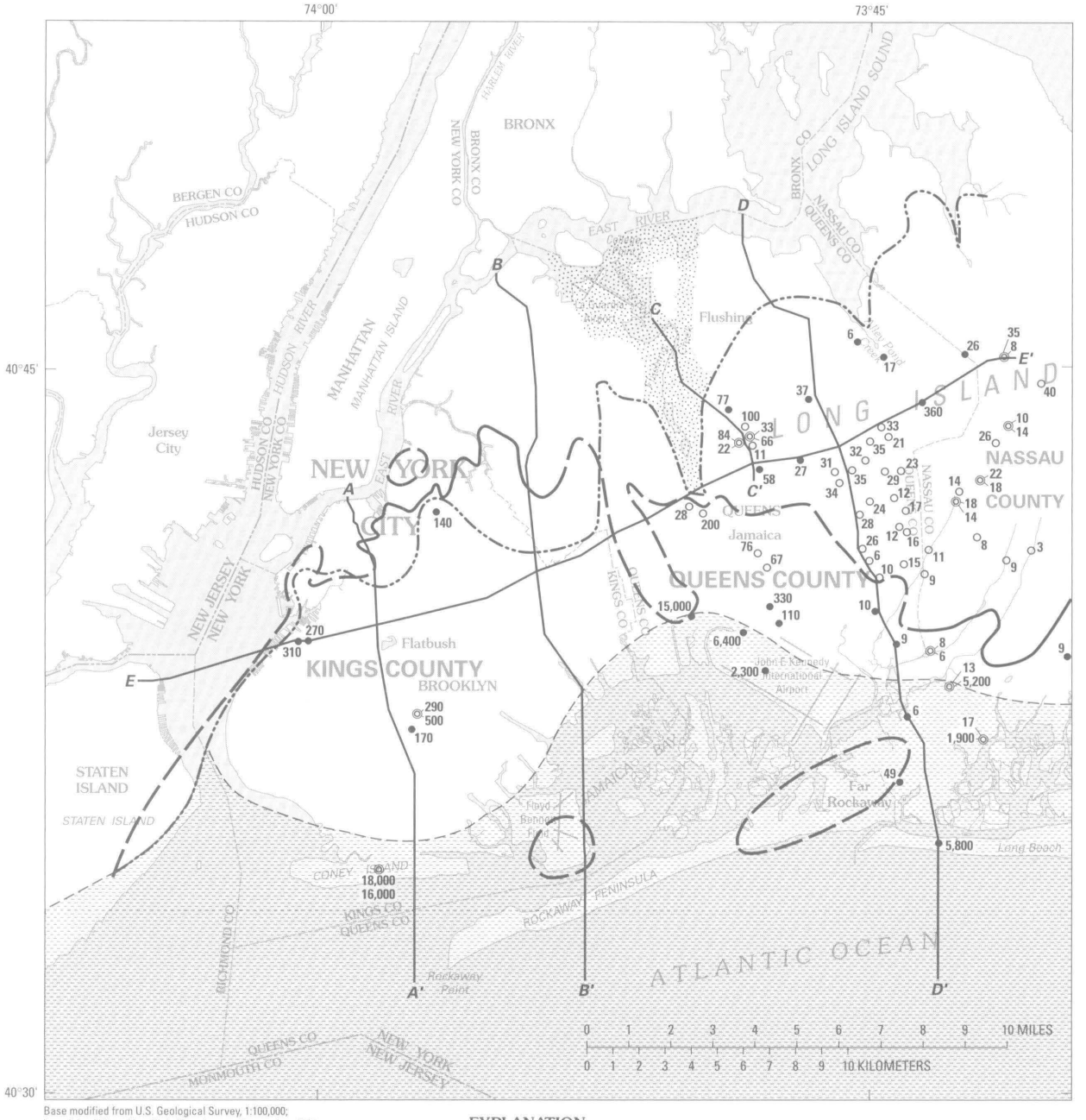
D ——— D' Trace of hydrogeologic sections shown in figure 16

●0.29 **Well sampled by U.S. Geological Survey and analyzed by New York City Department of Environmental Protection**—Number is nitrate concentration, in milligrams per liter

○8.8 **Well sampled and analyzed by Jamaica Water-Supply Company**—Number is nitrate concentration, in milligrams per liter

◎12/11 **Multiple-well site**—Numbers are nitrate concentrations, in milligrams per liter. Upper and lower numbers refer to shallow and deep screens respectively

Figure 13B. Nitrate concentrations in the upper glacial aquifer, 1983.

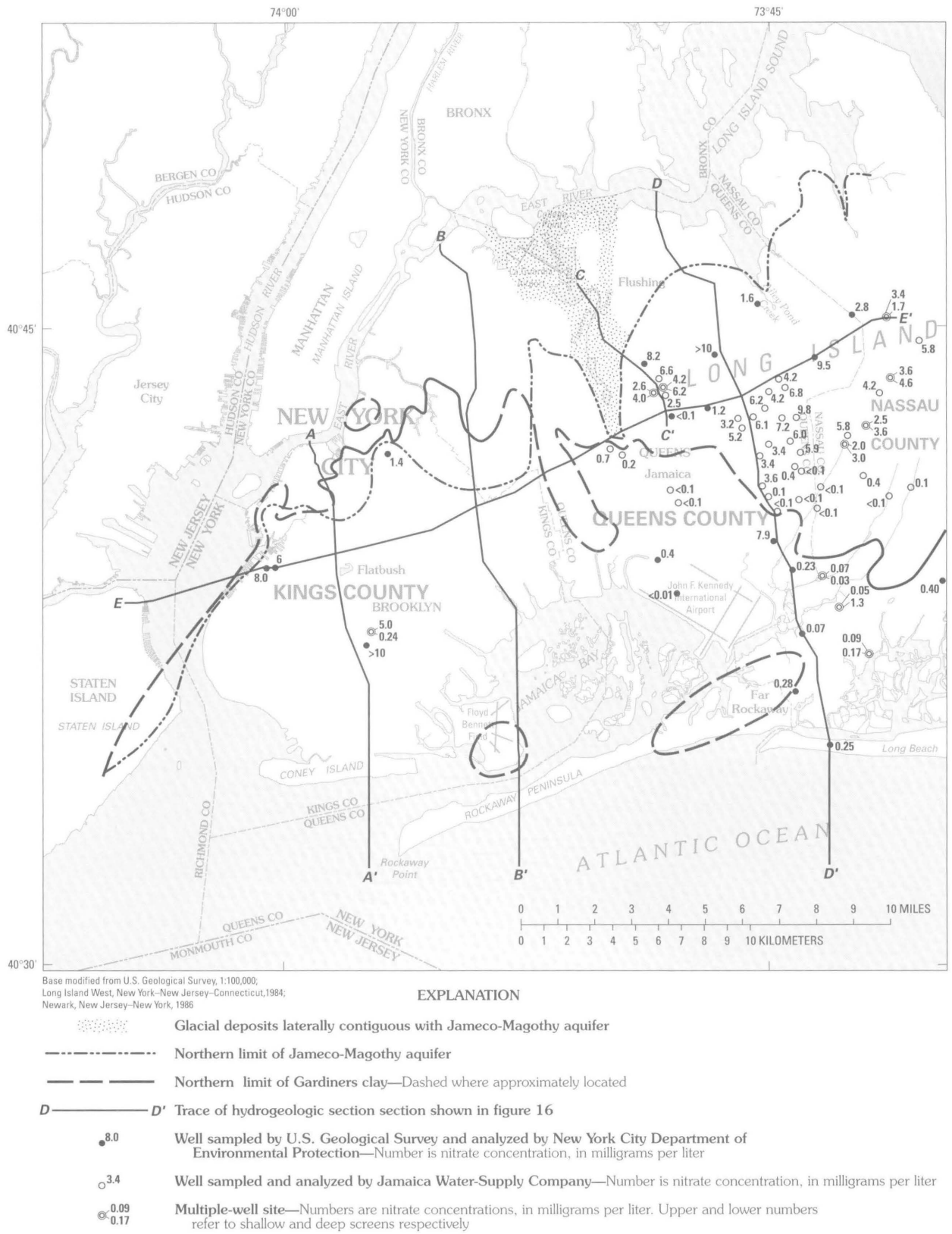


Base modified from U.S. Geological Survey, 1:100,000; Long Island West, New York–New Jersey–Connecticut,1984; Newark, New Jersey–New York, 1986

EXPLANATION

- Glacial deposits laterally contiguous with Jameco-Magothy aquifer
- Area of salty ground water
- Northern limit of Jameco-Magothy aquifer
- Northern limit of Gardiners clay—Dashed where approximately located
- Estimated position of toe of saltwater interface
- D——D' Trace of hydrogeologic section section shown in figure 16
- 140 Well sampled by U.S. Geological Survey and analyzed by New York City Department of Environmental Protection—Number is chloride concentration, in milligrams per liter
- 76 Well sampled and analyzed by Jamaica Water-Supply Company—Number is chloride concentration, in milligrams per liter
- 290 / 500 Multiple-well site—Numbers are chloride concentrations, in milligrams per liter. Upper and lower numbers refer to shallow and deep screens respectively

Figure 14A. Chloride concentrations in the Jameco-Magothy aquifer, 1983.



Base modified from U.S. Geological Survey, 1:100,000; Long Island West, New York–New Jersey–Connecticut,1984; Newark, New Jersey–New York, 1986

EXPLANATION

Glacial deposits laterally contiguous with Jameco-Magothy aquifer

Northern limit of Jameco-Magothy aquifer

Northern limit of Gardiners clay—Dashed where approximately located

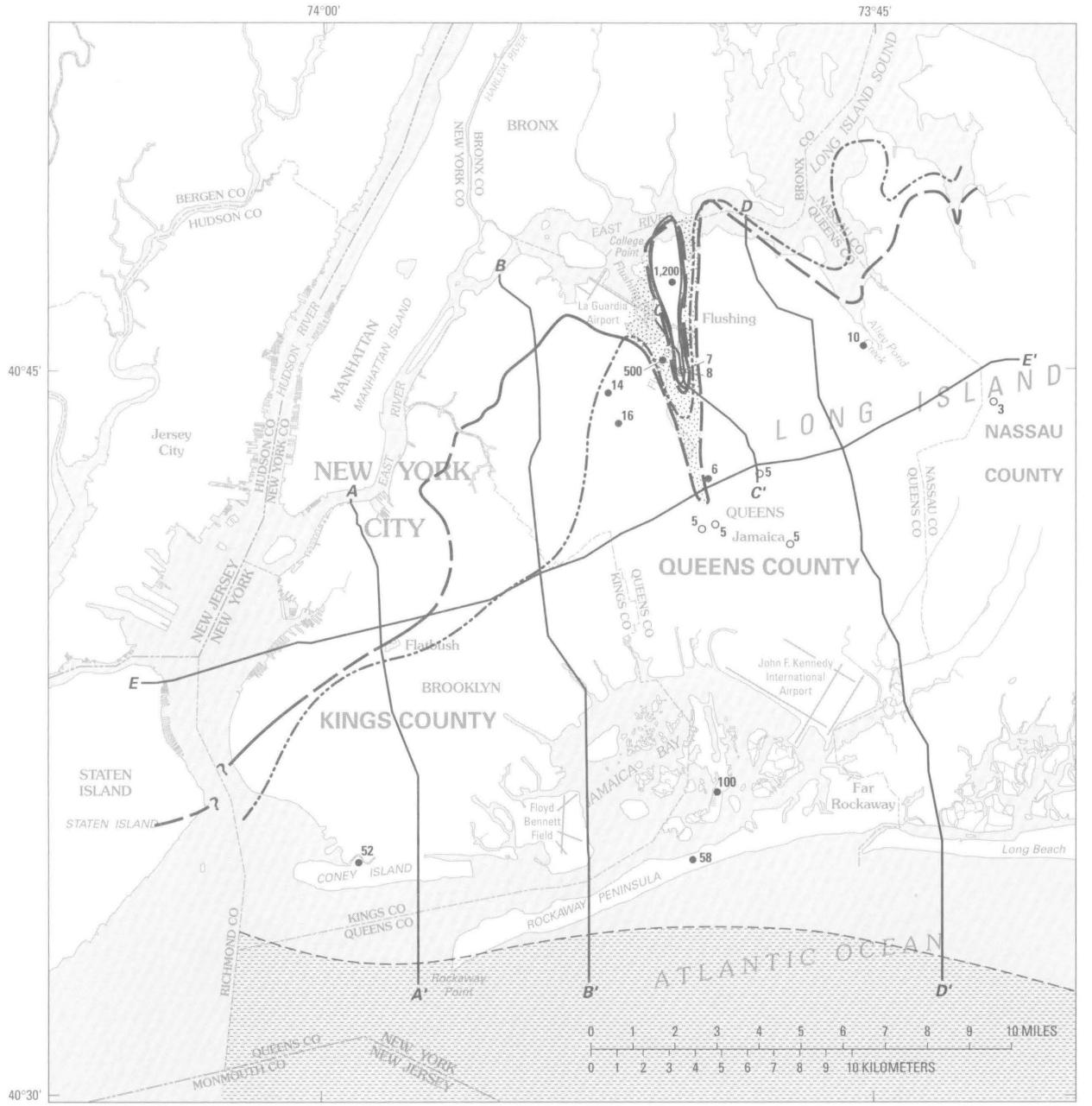
D——D' Trace of hydrogeologic section section shown in figure 16

8.0 Well sampled by U.S. Geological Survey and analyzed by New York City Department of Environmental Protection—Number is nitrate concentration, in milligrams per liter

3.4 Well sampled and analyzed by Jamaica Water-Supply Company—Number is nitrate concentration, in milligrams per liter

0.09 / 0.17 Multiple-well site—Numbers are nitrate concentrations, in milligrams per liter. Upper and lower numbers refer to shallow and deep screens respectively

Figure 14B. Nitrate concentrations in the Jameco-Magothy aquifer, 1983.

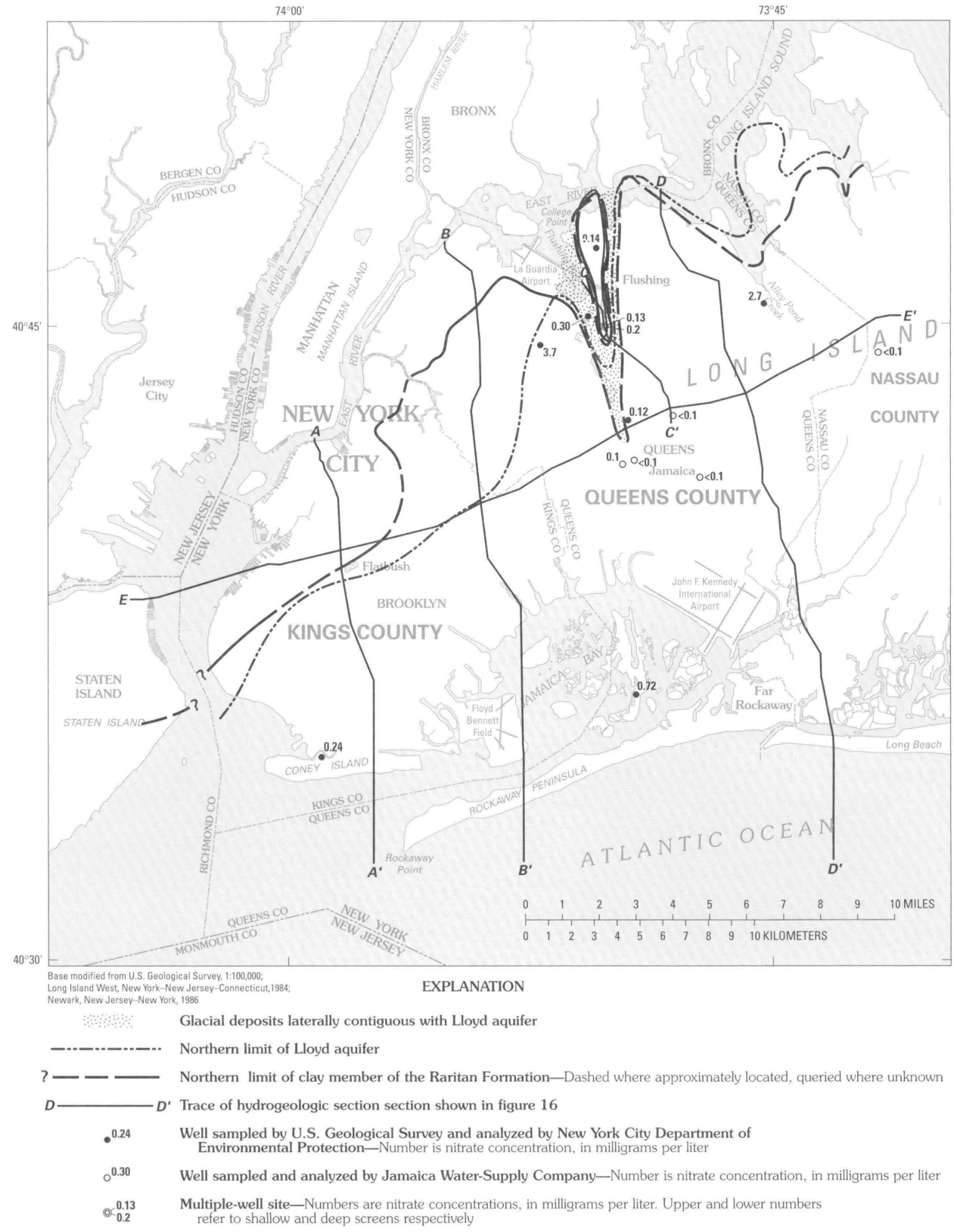


Base modified from U.S. Geological Survey, 1:100,000; Long Island West, New York–New Jersey–Connecticut, 1984; Newark, New Jersey–New York, 1986

EXPLANATION

- Glacial deposits laterally contiguous with Lloyd aquifer
- Area of salty ground water
- Northern limit of Lloyd aquifer
- Northern limit of clay member of the Raritan Formation—Dashed where approximately located, queried where unknown
- Estimated position of toe of saltwater interface
- D — D' Trace of hydrogeologic section section shown in figure 16
- ●52 Well sampled by U.S. Geological Survey and analyzed by New York City Department of Environmental Protection—Number is chloride concentration, in milligrams per liter
- ○5 Well sampled and analyzed by Jamaica Water-Supply Company—Number is chloride concentration, in milligrams per liter
- ◎7/8 Multiple-well site—Numbers are chloride concentrations, in milligrams per liter. Upper and lower numbers refer to shallow and deep screens respectively

Figure 15A. Chloride concentrations in the Lloyd aquifer, 1983.



Base modified from U.S. Geological Survey, 1:100,000; Long Island West, New York–New Jersey–Connecticut, 1984; Newark, New Jersey–New York, 1986

EXPLANATION

Glacial deposits laterally contiguous with Lloyd aquifer

Northern limit of Lloyd aquifer

Northern limit of clay member of the Raritan Formation—Dashed where approximately located, queried where unknown

D — D' Trace of hydrogeologic section section shown in figure 16

0.24 Well sampled by U.S. Geological Survey and analyzed by New York City Department of Environmental Protection—Number is nitrate concentration, in milligrams per liter

0.30 Well sampled and analyzed by Jamaica Water-Supply Company—Number is nitrate concentration, in milligrams per liter

0.13 / 0.2 Multiple-well site—Numbers are nitrate concentrations, in milligrams per liter. Upper and lower numbers refer to shallow and deep screens respectively

Figure 15B. Nitrate concentrations in the Lloyd aquifer, 1983.

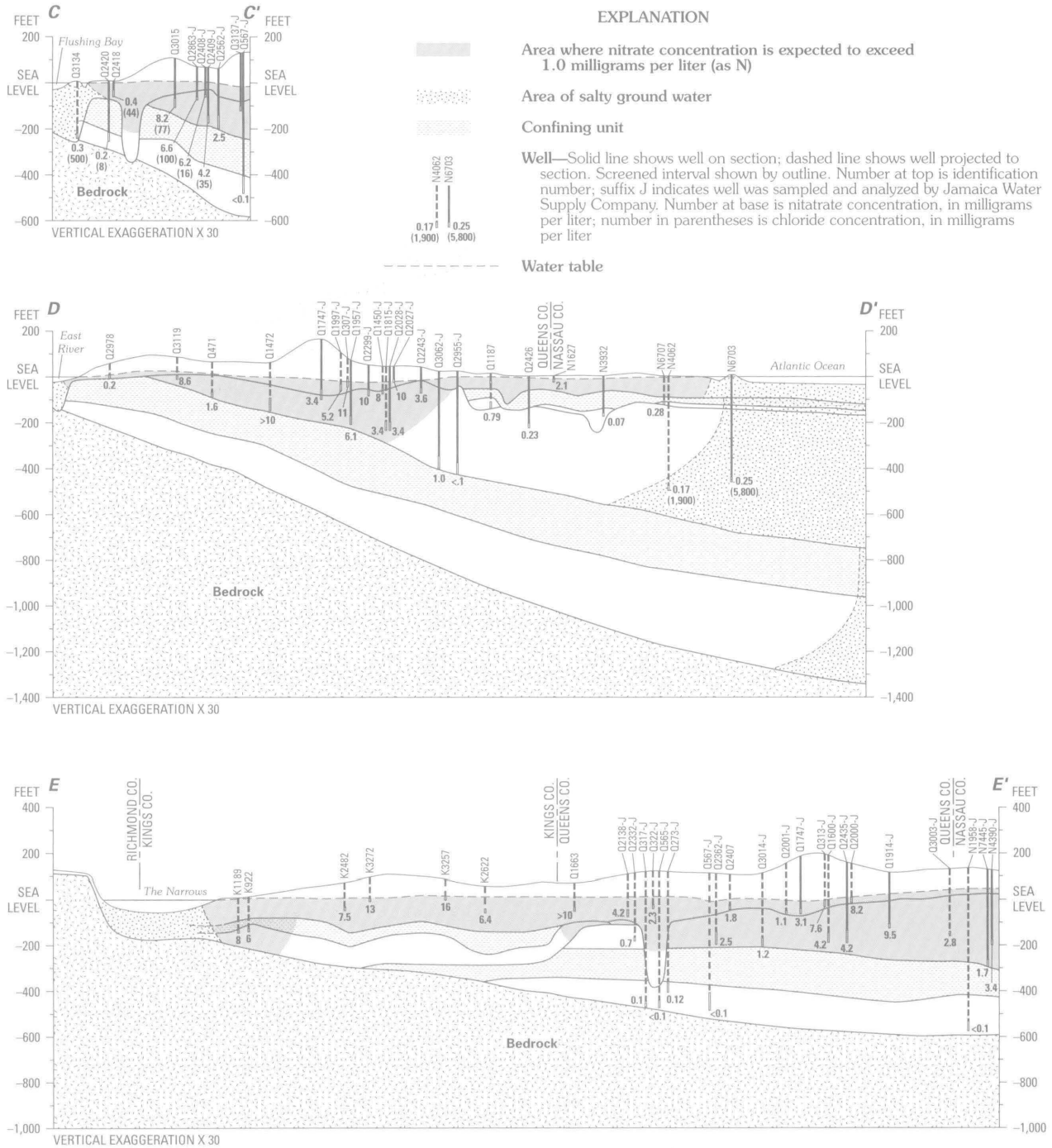


Figure 16. Nitrate and chloride concentrations along sections *C–C'*, *D–D'*, and *E–E'*. (Trace of sections shown on plate 1.)

diners Clay is absent, 34 had nitrate concentrations greater than 2 mg/L (as N).

The Gardiners Clay slows the downward movement of ground water, which suggests that water in the Jameco-Magothy aquifer beneath this confining unit is older than in areas where the unit is absent. Section D-D' (fig. 16) illustrates the difference between nitrate concentrations in the part of the Jameco-Magothy aquifer that is confined and protected by the Gardiners Clay and those in the part that is in good hydraulic connection with the upper glacial aquifer. Sections C-C' and E-E' (fig. 16) both show large areas where the confining

unit is absent, and nitrate concentrations in the Jameco-Magothy aquifer indicate contamination from land-surface sources

The Jameco-Magothy aquifer in Kings County is completely overlain by the Gardiners Clay As noted previously, however, the Gardiners Clay is much sandier in Kings than in Queens and would inhibit vertical flow much less Samples from four of six wells that tap the Jameco-Magothy in Kings County had nitrate concentrations ranging from 6 mg/L to more than 10 mg/L, which suggests that, as expected, flow rates through the Gardiners Clay are more rapid in Kings County than in Queens

Of the 14 samples from the Lloyd aquifer, 12 had nitrate concentrations ranging from less than 0 1 to 0 72 mg/L in 1983, this indicates little, if any, contamination from land surface The absence of land-surface contamination in the Lloyd aquifer is attributed to the aquifer's greater depth and to separation from overlying aquifers by the Raritan confining unit Franke and Cohen (1972) estimated that the age of water in the Lloyd aquifer was 1,000 to 10,000 years—1 or 2 orders of magnitude older than water in the shallower aquifers Therefore, this water entered the ground-water flow system (at the water table) long before the contamination from land surface appeared

Two factors suggest that water in the Lloyd aquifer in western Long Island could be younger than that farther east, however The first is the erosional channel that cuts through the Raritan confining unit in central Queens County and forms a pathway for more rapid vertical movement of ground water downward to the Lloyd aquifer (The area where Raritan and Lloyd deposits were eroded away and subsequently replaced by glacial material is shaded in figs 15A and 15B, the erosional channel also is indicated in the sections in fig 16) The second factor is that the Lloyd aquifer in Kings and Queens Counties has been pumped since the turn of this century, and the increased downward gradients caused by this pumping have probably accelerated vertical ground-water movement The sections in figure 16 indicate that, even though water affected by man has not yet reached the Lloyd aquifer, the pathway for downward movement through the eroded channel in the Raritan confining unit could allow it to reach there within decades rather than the millennia it could take to move through the confining unit

Saltwater Intrusion

Ground water that has been affected by seawater is readily identified by elevated chloride along with other principal constituents of seawater (sodium, sulfate, and hardness) and low nitrate concentrations Total nitrogen concentration (as nitrate, nitrite, ammonia, and nitrogen gas) in seawater is 0 5 mg/L (as N) (Hem, 1970, p 11) Concentrations of chloride and nitrate and the other principal constituents of seawater were used to define the general position of the zone of diffusion of the saltwater-freshwater interface

A history of intense pumping in Kings and western Queens Counties has caused the zone of diffusion in western Long Island to become more dispersed than anywhere else on Long Island In some areas, the residue of past seawater intrusion extends inland and undoubtedly contributes to contamination that, when combined with elevated nitrate concentrations, appears to be solely of land-surface origin Delineation of areas that have been affected by both seawater and land-surface contaminants was beyond the scope of this study, however

Chloride concentrations in the upper glacial aquifer ranged from 13 to 9,000 mg/L in 1983 (fig 13A) Chloride concentrations in inland areas of Kings and southwestern Queens County differ locally in an erratic fashion—concentrations of less than 20 mg/L can be found close to concentrations well over 200 mg/L This could indicate a combination of past saltwater intrusion and land-surface-derived contamination In contrast, chloride concentrations in inland parts of eastern Queens and Nassau Counties range from 16 to 86 mg/L and do not indicate saltwater intrusion Most samples with chloride concentrations above 250 mg/L were from nearshore areas and indicate the landward extent of the zone of diffusion of the saltwater interface The saltwater interface, as a lateral boundary to the fresh ground-water system and as mapped in figures 14A and 15A, is assumed to coincide with a chloride concentration of about 1,000 mg/L

The three sections in figure 16 show that the saltwater interface in the upper glacial aquifer is close to shore The elevated chloride concentration at well Q2418 (section C-C') indicates that it possibly is being drawn landward from Flushing Bay (fig 13A, p 46)

The distribution of chloride in samples from the Jameco-Magothy aquifer is shown in figure 14A (p 48) The interface configuration is based on the average values for the entire thickness of the aquifer and gives a general indication of the extent of saline ground

water in plan view The vertical configuration of the interface is shown in the hydrogeologic sections in figure 16 (p 52) The interface is expected to advance landward with depth, but data on chloride concentrations at the base of the Magothy aquifer are too sparse to indicate the landward extent of the toe of the interface Additional monitoring wells at the base of the Jameco-Magothy aquifer would be needed to ensure that saltwater intrusion has not progressed significantly farther inland there than in the shallower parts of the aquifer The interface is estimated to have migrated inland in southern Queens and southwestern Nassau Counties in response to the extensive pumping in southeastern Queens and Nassau Counties during recent years Elevated concentrations in wells K2510 and K2511, in the extreme south of Kings County (pl 7 and fig 14A), indicate that the saltwater interface in the Jameco-Magothy aquifer is inland in Kings County as well Chloride concentrations as high as 500 mg/L in samples from inland wells in Kings County could indicate a residue of past saltwater intrusion

Chloride concentrations at inland wells in Queens County are much lower than in Kings Only eight Queens wells had chloride concentrations exceeding 100 mg/L, probably because pumping has been continually shifted eastward to avoid severe saltwater intrusion locally Except at three wells screened near the saltwater-freshwater interface, chloride concentrations in Nassau County wells were less than 50 mg/L

The Jameco-Magothy aquifer could have a potential for saltwater intrusion from the north shore near Flushing Bay, where the aquifer is close to land surface and glacial deposits form a good hydraulic pathway for saltwater intrusion (fig 16, section C-C')

In the Lloyd aquifer, chloride concentrations in samples from inland wells range from 3 to 16 mg/L, within the predevelopment range Three samples taken along the south shore of Kings and Queens Counties had chloride concentrations between 50 and 100 mg/L, which probably indicates the farthest landward extent of the saltwater-freshwater interface These data are insufficient to indicate how rapidly the chloride concentrations increase seaward, however The configuration of the interface, as shown in figure 15A (p 50) is estimated

As shown in the sections in figure 16, the interface in the Lloyd aquifer on the north shore is close to the northern edge of the Raritan confining unit, which in this area is close to the shore Several wells on the north shore have elevated chloride concentrations, indicating possible saltwater intrusion Well Q1373 in College Point (pl 7) had a chloride concentration of 1,200 mg/L in 1983 This well, along with well Q1374 (not sampled) at the same location and depth, were industrial pumping wells drilled in 1946 This pumping induced the saltwater to move into the College Point area Soren (1971) reports that Q1374 had a chloride concentration of 1,718 mg/L in 1955

The extensive regional cone of depression in the Lloyd aquifer could be sufficient to induce saltwater intrusion from the north as well as the south shore Saline ground water could affect the Lloyd aquifer (fig 16) either by lateral movement of the interface from its current position in the Lloyd or by vertical migration through the channel in the Raritan confining unit Well Q3134 (figs 15A and section C-C' in fig 16), in the erosional channel in the Raritan confining unit near Flushing Bay, had a chloride concentration of 500 mg/L in 1983 Saline ground water probably was drawn into the Flushing area during the 1964-65 World's Fair, when large-scale ground-water withdrawals occurred (Soren, 1971, p A32) Additional discussion of the movement of the saltwater-freshwater interface is given in the earlier section, "Water-Table and Potentiometric-Surface Altitudes"

Inorganic Constituents

As described in the previous section, two general trends are observed in the concentrations of human-induced inorganic constituents in ground water in western Long Island Concentrations tend to decrease eastward in each aquifer and also with depth at any location These trends reflect the facts that (1) development began in western Kings County and progressed eastward, and (2) land use today ranges from intense urbanization in Kings to mixed residential-industrial use in western Nassau These trends in individual aquifers are discussed in the following paragraphs

Upper Glacial Aquifer

The analyses of samples from 96 wells in the upper glacial aquifer during 1983 (table 10, at end of report) indicate that human activities have altered the ground water's natural chemical composition The dissolved-solids concentration, a measure of all chemical constituents dissolved in ground water, is elevated throughout the upper glacial aquifer in Kings and Queens, all samples had concentrations greater than

100 mg/L Under natural conditions, the dissolved-solids concentration is extremely low, generally below 35 mg/L (table 3) These data indicate that the public-health standard of 500 mg/L is exceeded at 33 wells—18 in Kings and 15 in Queens

Hardness values have risen since development (table 3) Predevelopment concentrations in Kings and Queens Counties were less than 25 mg/L (as $CaCO_3$), but 1983 values ranged from 42 to 3,100 mg/L (except one sample, which had 20 mg/L) Except for five wells that were considered to be significantly affected by seawater (chloride and hardness concentrations 650 mg/L or above), hardness values ranged from 20 to 740 mg/L in Kings County, from 42 to 440 mg/L in Queens, and from 54 to 250 mg/L in Nassau Higher concentrations in Kings are caused at least in part by a residue of saltwater intrusion from the 1940's

Fluoride concentrations are extremely low in ground water throughout Kings and Queens Counties Natural concentrations are 0 5 mg/L or less and are probably derived from dissolution of amphibole, hornblende, and mica (Hem, 1970) Most ground-water contaminants (manmade waste and saltwater) do not contain significant concentrations of fluoride Seven wells in Kings and Queens had fluoride concentrations ranging from 0 8 to 1 0 mg/L Fluoride is added to the drinking-water supply of New York City at an average concentration of 0 93 mg/L (New York City Department of Environmental Protection, written commun , 1984) Therefore, these concentrations could indicate leakage from water-supply lines

Sulfate concentrations are considerably higher than in predevelopment times, when they were less than 12 mg/L (table 3) Only 3 of 67 wells in Kings and Queens in 1983 had sulfate concentrations less than 12 mg/L, the maximum observed value in samples representative of predevelopment conditions Samples from the remaining wells, excluding two affected by seawater, ranged from 15 to 200 mg/L and averaged about 75 mg/L No distinct east-west trend is evident from these data

Jameco-Magothy Aquifer

Analyses of samples from 80 wells screened in the Magothy-Jameco aquifer are available Eight of these are in Kings County (all are screened in the Jameco), 47 are in Queens, and 25 are in Nassau

The dissolved-solids concentrations of almost all samples from the Jameco-Magothy aquifer exceed predevelopment levels The eight samples from Kings County had the highest concentrations—all were above the 500-mg/L public-health standard The dissolved-solids concentrations in 39 of 44 samples from Queens County were below the public health standard, and 28 were below 250 mg/L Wells in Nassau County showed still lower dissolved-solids concentrations Except for two samples that were affected by seawater, concentrations in 17 samples ranged from 32 to 224 mg/L

The hardness of samples ranged from a low of 8 mg/L (as $CaCO_3$) in Nassau County to a high of 14,000 mg/L in a well affected by seawater in southern Queens Except for nine wells affected by seawater (chloride and hardness concentrations of 1,100 mg/L or above), values ranged from moderately hard to hard, averaging 330 mg/L in Kings County, 140 mg/L in Queens, and 38 mg/L in western Nassau

Sulfate concentrations in the Jameco-Magothy aquifer were slightly above predevelopment concentrations but were lower than those in the upper glacial aquifer Except for the same nine wells that were affected by seawater, sulfate concentrations were less than 100 mg/L in Kings County, less than 110 mg/L in Queens, and less than 63 mg/L in Nassau

Lloyd Aquifer

Analyses are available from only 15 wells screened in the Lloyd aquifer (which has only a few wells because drilling to that depth is costly, and water is generally available from the other aquifers) Of these wells, 13 are in Queens County, 1 is in Kings, and 1 is in western Nassau One well (Q1373, pl 8), on the north shore of Queens County, where the Lloyd aquifer is close to land surface, is affected by seawater, at the remaining 14 wells, the total dissolved-solids concentration was 265 mg/L or less and, at 7 wells, was 100 mg/L or less Hardness at those 14 wells was less than 65 mg/L, and sulfate concentrations were less than 35 mg/L, in 10 wells they were less than 20 mg/L

Organic Constituents

The widespread use of a variety of organic compounds in highly industrialized and urbanized areas of western Long Island has created concern over the potential for ground-water contamination Even though the toxicity of many organic compounds is unknown, their distribution is a critical factor in decisions as to where ground water is safe for drinking

No extensive ground-water-sampling effort had been undertaken in Kings or Queens Counties before this project to document the presence of organic compounds, only ground water pumped in southeastern Queens by the Jamaica Water Supply Company is routinely monitored for organic compounds This monitoring began in 1979 and is under the auspices of the New York City Department of Health Results indicate contamination by organic compounds During the fall and winter of 1983, when 54 wells of the Jamaica Water Supply Company were sampled for total volatile organic compounds, 42 showed detectable levels (detection limit 0 1 parts per billion, ppb) (New York City Department of Health, 1984) Of these 42 wells, two exceeded the recommended guidelines set by the New York City Department of Health (1984) and were ordered closed by that department Since the Department of Health began monitoring in 1979, it has ordered 14 wells closed for exceeding the guidelines, 12 of these wells are screened in the upper glacial aquifer, and the remaining two in the Magothy aquifer The closed wells could be monitored and reopened if the concentrations of organic compounds drop below the recommended guidelines

Detectable levels of organic contamination have been found mostly in the upper glacial and Magothy aquifers, where most of the pumping occurs The New York City Department of Health (1984) reports that, in 1983, detectable levels of contamination were found at 22 of 23 wells screened in the upper glacial aquifer, at 19 of 25 wells screened in the Magothy aquifer, and at 1 of 4 wells screened in the Lloyd aquifer Two wells screened in the Jameco aquifer showed no contamination

The New York City Department of Health (1984) also reports that samples from 28 contaminated wells contained more than one organic compound, a total of 16 different volatile organic compounds were detected in 1983

Data from southeastern Queens County indicate that organic compounds have migrated through the upper glacial aquifer and into the Jameco-Magothy aquifer Many of the organic compounds enter the ground-water system from sporadic, dispersed point sources, which makes correlation extremely difficult In fact, some wells found not to have detectable levels of organic compounds at one sampling may contain detectable levels at a subsequent sampling as sporadic and irregular plumes pass the well screen These data are few, however, and whether the conclusions drawn from them can be applied to the rest of western Long Island is uncertain Yet, ground water that contains other indicators of land-surface contamination, as described in the previous section, would have the highest probability of containing organic compounds as well

GROUND-WATER-RESOURCE CONCERNS

The hydrologic conditions observed in 1983 indicate that pumping has caused an extensive cone of depression in all three major aquifers Whether current pumping exceeds the safe yield of the aquifer system is difficult to determine until unacceptable levels of specific undesirable hydrologic effects of development have been identified and measured Undesired results of ground-water development on western Long Island include severe water-level declines, intrusion of saline ground water, downward migration of land-surface contamination into confined aquifers, and flooding of underground structures The first three are closely related, in that extreme drawdown that results from pumping of deep aquifers will increase the rate of landward movement of the saltwater-freshwater interface and the rate of downward movement of contaminants (introduced at the water table) into confined aquifers The major result of these undesired effects is that the potable ground-water supply would be continually diminished

The data in this report indicate that the saltwater-freshwater interface is moving landward and that contaminants in shallow aquifers are moving into the confined aquifers Any increase in pumping will accelerate these effects to some extent, however, a realistic resource-management strategy could include location of wells in inland areas beyond the threat of saltwater intrusion, and beneath the extent of migration of land-surface contaminants which would prolong the period until treatment is needed to maintain an adequate supply of potable water

With the liklihood of additional decreases in ground-water pumping, flooding of underground structures by rising water levels is another serious concern Such flooding is already occurring in areas where pumping has been curtailed and could extend farther if present pumping rates are reduced Reducing ground-water pumpage while increasing the use of upstate surface water would require monitoring of ground-water levels, especially near shores and buried stream chan-

nels, where depths to water are smallest Redistribution of pumping for public supply can provide a means to mitigate both severe drawdown in the east and excessive water levels farther west, but significant financial, institutional, and water-quality considerations would need to be resolved first

Ground-water quality is worst in the westernmost and shallowest parts of the aquifer system but improves eastward and with depth Potable ground water is still largely available in eastern Queens, even from the upper glacial aquifer, but probably not in areas farther west The Lloyd aquifer, which is still uncontaminated, cannot greatly supplement the supply because it is sensitive to pumping and is expected to yield only small volumes of water without incurring excessive drawdown Therefore, redistribution of ground-water pumping, even at current rates, would probably require some treatment to ensure potable quality

In 1983, only about 60 Mgal/d, or 8 percent, of the 750 Mgal/d used for public supply in Kings and Queens Counties was derived locally from ground water, the remainder was supplied from an upstate surface-water-reservoir system A conjunctive-resource-development strategy that takes advantage of the inherent differences in the nature of ground-water and surface-water systems could enable a reduction in the harmful effects of the present development strategy At present, water is developed continuously from both sources and used in separate areas The use of ground water as a periodic supplement to the surface-water supply could result in a combined system with greater productivity than the separate ground- and surface-water-supply systems as they are operated at present

SUMMARY

The aquifers underlying Kings and Queens Counties supplied an average of about 120 Mgal/d during 1904-47 Intensive pumping in Kings County during the 1930's lowered ground-water levels and caused intrusion of saline ground water into the upper glacial and Jameco-Magothy aquifers until 1947, when all pumping for public supply in the county was stopped Subsequently, pumping in Queens County has been increased A severe cone of depression that developed in southwestern Queens County during the 1960's also caused intrusion of saline ground water, as a result, pumping for public supply in the Woodhaven franchise area of the New York Water Supply Company was halted in 1974 Pumping for public supply has persisted in eastern Queens County, where the Jamaica Water Supply Company has pumped an average of about 60 Mgal/d since 1974

Since the cessation of pumping in Kings and southwestern Queens, ground-water levels have been recovering steadily In 1983, ground-water levels in Kings were close to predevelopment levels, and contamination by saltwater had partly dispersed and become diluted An extensive cone of depression remains in all three major aquifers in eastern Queens County, however The saltwater-freshwater interface in the Jameco-Magothy aquifer, which is already inland, is moving toward the center of pumping Available data indicate that saline ground water in the Lloyd aquifer is not far offshore and is also moving landward

At present, elevated nitrate and chloride concentrations throughout the upper glacial aquifer indicate widespread contamination from land surface Some contamination in the Jameco-Magothy aquifer is attributed to downward migration in areas of substantial hydraulic connection between aquifers (where the Gardiners Clay is absent) A channel eroded through the Raritan confining unit provides a pathway for migration of contaminants to the Lloyd aquifer The cone of depression in the Lloyd has increased the downward gradients through this channel, which could cause contaminants to enter the Lloyd sooner than anticipated

Although chloride and nitrate have been used as the principal indicators of ground-water contamination, other constituents introduced from point sources also may affect ground-water quality locally The extent to which nitrate and chloride from the land surface have moved through the ground-water system indicates that treatment eventually could be needed to ensure the quality of water pumped from the upper glacial or Jameco-Magothy aquifers Ground water in the Lloyd aquifer is still largely uncontaminated, but present pumpage and ground-water levels indicate that this aquifer is much more sensitive to withdrawals than the overlying aquifers and could be more susceptible to contamination from land-surface sources in western Long Island than in other areas

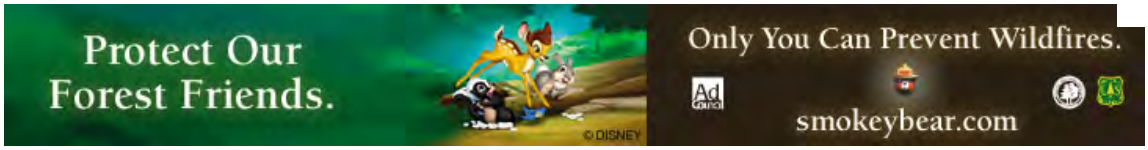
REFERENCES CITED

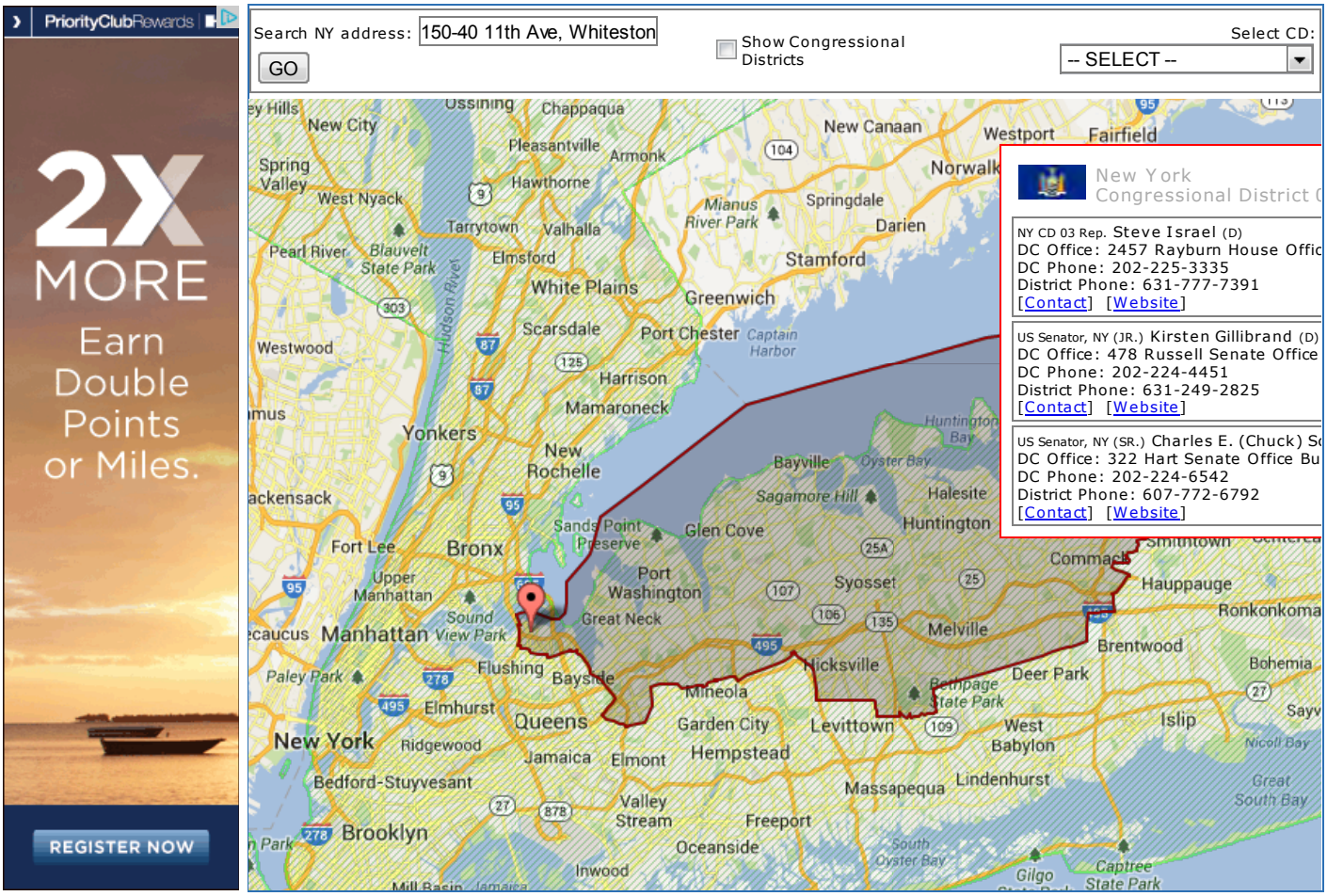
American Public Health Association, 1976, Standard methods for the examination of water and waste water, 14th ed Washington, D C , American Public Health Association, 543 p

NY HomeTownLocator ®
... local information, resources & data

New York Congressional District Maps
113th United States Congress

New York Congressional Districts (Interactive Map of New York Congressional Districts)





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PROJECT NOTE WESTON SOLUTIONS, INC.

To: Neo Smelting and Refining Site File

Date: June 20, 2013

Page: 1 of 1

W.O. No.: 20405.012.013.2101.00

From: Denise Breen, Weston Solutions, Inc.

Subject: Wetland Calculations

In order to calculate HRS-eligible wetlands within a specified radii within the 4-mile target distance limit of the Neo Smelting and Refining site, Weston personnel:

1. Obtained a wetland GIS shapefile is obtained from the U.S Fish & Wildlife Service's National Wetland Inventory. The link to that database is: http://www.fws.gov/wetlands/Data/State-Downloads.html.
2. Wetlands are then classified as HRS eligible or not HRS eligible based on the 40CFR 230.3 definition of a wetland.
3. Using the ESRI ArcGIS 10.1 Multiple Ring Buffer tool, ¼, ½. 1, 2, 3, and 4 mile buffers around the site reference location.
4. Using the ESRI ArcGIS 10.1 Clip tool HRS eligible wetlands are clipped to each radius ring.
5. Using XTools Pro 7.1 for ArcGIS Desktop areas are calculated for each of the individual wetlands.
6. The total area of each individual HRS wetland within each radius ring is then summed up resulting in the total HRS wetland area between each radius ring. The results are summarized as follows:

   ¼ mile distance ring – 0.00 acre

   ½ mile distance ring – 0.00 acre

   1 mile distance ring – 2.25 acres

   2 mile distance ring – 68.96 acres

   3 mile distance ring – 20.52 acres

   4 mile distance ring – 329.79 acres

   Total area – 421.52 acres

Denise Breen
Assistant Project Scientist

PROJECT NOTE	WESTON SOLUTIONS, INC.

To: Neo Smelting and Refining Site File
Date: June 26, 2013

W.O. No.: 20405.012.013.2101.00

From: Denise Breen, Weston Solutions, Inc.

Subject: Determination of Site Boundary and Calculation of Site Acreage

The site boundary for the Neo Smelting and Refining Site was determined by reviewing existing documents: The 1942 and 1950 Sanborn Maps indicate "Metal Refining" operations are located at Block 4516 which correlated to 15-40 11th Avenue, Whitestone, NY [Ref. 5]. An Abbreviated Preliminary Assessment Report confirms that site operations occurred on Block 4516 lot 16 [Ref.5]. Weston personnel determined an inferred extent to the northwest portion of the site boundary. Using XTools Pro desktop version 7.1 for ArcGIS 10.1, Weston personnel calculated the acreage of the Site to be approximately 3300 ft^2 or 0.076 acre. The site boundary can be seen on Figure 2 [Ref. 2].

Denise Breen
Assistant Project Scientist

PROJECT NOTE	WESTON SOLUTIONS, INC.

To: Neo Smelting and Refining Co. Site File
Date: July 1, 2013

W.O. No.: 20405.012.013.2101.00

From: Denise Breen, Weston Solutions, Inc.

Subject: Groundwater Population

References

Water Authority of Great Neck North. Facts about the Water Authority downloaded from www.waterauthorityofgreatnecknorth.com/we_we_are.html. June 20, 2013. [3 pages]

Moriarty, Steve, Great neck North Water Department. Phone correspondence with Denise Breen, WESTON, Subject: RE: Population Served for great Neck North Water Department. July 1, 2013. [1 page]

WESTON took the following steps to determine the population served by groundwater within a 4-mile radius of the Site:

1. Obtained Public Supply Well information in KML format from USEPA Region 2.
2. Used the ESRI ArcGIS 10.1 KML To Layer (Conversion) tool to convert the KML file into a shapefile.
3. Used the ESRI ArcGIS 10.1 Multiple Ring Buffer tool to create a 4-mile radius around the site reference location.
4. Brought the shapefile containing all of the Public Supply Well information into the 4-mile radius map.
5. Used the ESRI ArcGIS 10.1 Clip feature to separate all the Public Supply Wells within the 4-mile radius into separate files.

As a result, it was determined that there are 3 actively pumping public supply wells within the 4-mile radius of the Site.

WESTON used information provided by Great Neck North Water Company to confirm that there are approximately 32,400 people in the service area including private residences, commercial enterprises, municipal and other governmental institutions [Reference (Ref.) 1]. The Great Neck North water system is a completely groundwater blended system [Ref. 2].

WESTON personnel calculated the approximate amount of people served by the wells within 4 miles of the site:

1. Subtracted the total number of wells within the Great Neck North system by the number of wells within the Great Neck North system which lay within a 4-mile radius of the Site.

2. Calculated the percentage of wells only within the 4-mile radius of each water system.
3. Multiplied the percentage of wells within the 4-mile radius by the total population served within the Great Neck North water system.
4.

Table 1: Number of People Serviced by Great Neck North Water Company

Well Water System	Total Population Served	Total # of Wells in System	Number of Wells in 4-mile Map	% of Wells in 4-mile Map	Number of People Serviced by Wells in 4-mile Radius
Great Neck North	32,400	11	3	27.27%	**8837**

The only wells within a 4-mile radius of the Site are located within the outer-most radius ring (3-4 mile radius). There are no other public supply wells located within a 4-mile radius of the Site.

Following these steps, the approximate populations served by wells located within 4 miles of the site that are drawn from the aquifer of concern are listed as follows:

Distance	**Population**
0 - ¼ mile	None Identified.
>¼ - ½ mile	None identified.
>½ - 1 mile	None identified.
>1 - 2 miles	None identified.
>2 - 3 miles	None identified.
>3 - 4 miles	8,837 people

All three of the wells fall within the 3-4 mile radius ring; therefore, there are a total of 8,837 people served with the 3-4 mile radius ring as well as a total 4-mile radius from the Site.

Denise Breen
Assistant Project Scientist

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WATER AUTHORITY OF GREAT NECK NORTH

THE HISTORY

The Water Authority of Great Neck North was established in 1985 as a public benefit corporation by Title 8-B, Section 1197, of the Public Authorities Law of the State of New York.

In December 1989, the Water Authority purchased the assets of the Citizens Water Supply Company, which was a private for profit business enterprise. The completion of the public acquisition of Citizens Water Supply Company by the Water Authority of Great Neck North on December 28, 1989, was the culmination of many years of analysis and research by a dedicated group of local public officials.

Since its creation by the State of New York, the Water Authority has been authorized to provide potable (drinking) water to the northern areas of the Great Neck Peninsula, which encompasses the villages of Great Neck, Great Neck Estates, Kensington, Kings Point, Saddle Rock, portions of Great Neck Plaza and Thomaston. and portions of the unincorporated areas of the Town of North Hempstead.

The Water Authority is a corporate governmental agency constituting a public benefit corporation. All revenues received must be used for operating expense, capital improvements and paying outstanding debts. It operates solely for the benefit of the approximately 35,000 people that rely on its product and dependable service 24 hours a day, 365 days a year.

FACTS ABOUT THE WATER AUTHORITY

The Board of Directors:

The Board of Directors of the Water Authority of Great Neck North is made up of the designated representatives from each of the seven villages and the Town of North Hempstead in the Authority's service area. The Water Authority's service area is generally that part of the Great Neck peninsula situated north of the Long Island Railroad tracks.

Location:

The offices of the Water Authority of Great Neck North are located on the westerly side of the peninsula at 50 Watermill Lane, Great Neck, New York 11021. The offices are open Monday through Friday, from 8 a.m. to 4 p.m.

Meetings of the Board of Directors:

The Water Authority of Great Neck North conducts regularly scheduled Board meetings on the third Monday of every month at the Water Authority's offices. Meeting dates and times are listed on the BOD Meetings & Agendas Tab. All interested parties are urged to call (516) 487-7973, extension 12, to confirm time and date of meetings, in case of any conflicts or other scheduling problems.

Management and Operations:

The person in charge of operating the water supply system is the Superintendent of the Water Authority, Gregory C. Graziano, who may be reached by telephone at (516) 487-7973, extension 12. He will be delighted to answer any of your questions or address any of your concerns regarding the water supply.

Oversight by Nassau County:

The Nassau County Department of Health oversees the Authority's water system. The Nassau County Department of Health is located at 240 Old Country Road, Mineola, New York 11501-4250, and representatives may be reached by telephone at (516) 571-2260 or (516) 571-3323.

Who are served:

There are approximately 32,400 people in the service area including private residences, commercial enterprises, municipal and other governmental institutions .

Distribution System:

The Water Authority owns and maintains over 117 miles of water mains. Water main diameters vary from 1-inch to 24-inches throughout the service area. Most of the mains are constructed of ductile or cast iron with the remaining water mains constructed of materials including wrought iron, transite, steel, copper, or PVC piping. All water services are metered by the Authority in the supply service area. In addition, the Water Authority maintains an interconnection with an adjacent water supplier.

Service Area Security

Employees:

The Water Authority employs a staff, who work in the departments of maintenance, operations, meters, and office.

Every employee is provided with a Water Authority of Great Neck North photo identification card. Every employee is instructed to exhibit the I.D. card upon request.
The I.D. card is signed by the Superintendent of the

Water Authority of Great Neck North

If you have any questions, you may call the Water Authority at 516-487-7973 for verification of an employee's status if work is being done at your location. Please note that every field employee is required to wear a uniform with the Water Authority of Great Neck North logo. If anyone allegedly representing the Authority refuses to exhibit an I.D. card or is not wearing an appropriate uniform please call the Authority or law enforcement authorities immediately. Not only are we concerned about your water supply, we are also concerned about the safety of the people we serve.

WATER SUPPLY & QUALITY

The drinking water supplied by the Water Authority of Great Neck North meets and/or exceeds all New York State and Federal government standards for potable water. All of the water supplied by the Water Authority comes only from water drawn from ten wells at eight sites throughout the peninsula. The water from the wells is drawn from wells constructed in both the Magothy and Lloyd aquifers deep underground. The Water Authority of Great Neck North does not obtain any water from above ground reservoirs.

An annual Drinking Water Quality Report detailing the quality of the water supply is required to be printed each year and it is distributed throughout the service area. The annual Drinking Water Quality Report will be exhibited on this website when published.

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Water Authority of Great Neck North
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PHONE MEMO

Contact: Steve Moriarty	Phone Number: 516-377-2379
Of: Great Neck North Water Department	Date: July 1, 2013
Case Name: Neo Smelting and Refining	Case Number: 20405.012.013.2101.00

RE: Population Served for Great Neck North Water Department

On July 1, 2013, at approximately 09:30, Denise Breen called 516-478-7973 extension 30 and spoke with Steve Moriarty, which serves as Assistant Superintendent of the Great Neck North Water Department. Mr. Moriarty told Denise Breen that Great Neck North has a total of eleven public supply wells which supply water to approximately 32,400 people. Only three of these public supply wells (or 27%) fall within a 4-mile radius of the Site. He confirmed that the three wells located within a 4-mile radius of the Site, Well 5, Well 6 and Well 7, are active as of July 1st, 2013. Mr. Moriarty stated that all eleven wells are all equally blended and that there are no wells which pump more than 40% of the water for the system.

U.S. DEPARTMENT OF COMMERCE
LUTHER H. HODGES, Secretary

WEATHER BUREAU
F. W. REICHELDERFER, Chief

TECHNICAL PAPER NO. 40

RAINFALL FREQUENCY ATLAS OF THE UNITED STATES

for Durations from 30 Minutes to 24 Hours and Return Periods from 1 to 100 Years

Prepared by
DAVID M. HERSHFIELD
Cooperative Studies Section, Hydrologic Services Division
for
Engineering Division, Soil Conservation Service
U.S. Department of Agriculture

WASHINGTON, D.C.

May 1961

Repaginated and Reprinted January 1963

For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C. Price $1.25

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*No. 1. Ten-year normals of pressure tendencies and hourly station pressures for the United States. Washington, D.C. 1943.
*Supplement: Normal 3-hourly pressure changes for the United States at the intermediate synoptic hours. Washington, D.C. 1945.
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*Out of print.

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PREFACE

This publication is intended as a convenient summary of empirical relationships, working guides, and maps, useful in practical problems requiring rainfall frequency data. It is an outgrowth of several previous Weather Bureau publications on this subject prepared under the direction of the author and contains an expansion and generalization of the ideas and results in earlier papers. This work has been supported and financed by the Soil Conservation Service, Department of Agriculture, to provide material for use in developing planning and design criteria for the Watershed Protection and Flood Prevention program (P.L. 566, 83d Congress and as amended).

The paper is divided into two parts. The first part presents the rainfall analyses. Included are measures of the quality of the various relationships, comparisons with previous works of a similar nature, numerical examples, discussions of the limitations of the results, transformation from point to areal frequency, and seasonal variation. The second part presents 49 rainfall frequency maps based on a comprehensive and integrated collection of up-to-date statistics, several related maps, and seasonal variation diagrams. The rainfall frequency (isopluvial) maps are for selected durations from 30 minutes to 24 hours and return periods from 1 to 100 years.

This study was prepared in the Cooperative Studies Section (Joseph L. H. Paulhus, Chief) of Hydrologic Services Division (William E. Hiatt, Chief). Coordination with the Soil Conservation Service, Department of Agriculture, was maintained through Harold O. Ogrosky, Chief, Hydrology Branch, Engineering Division. Assistance in the study was received from several people. In particular, the author wishes to acknowledge the help of William E. Miller who programmed the frequency and duration functions and supervised the processing of all the data; Normalee S. Foat who supervised the collection of the basic data; Howard Thompson who prepared the maps for analysis; Walter T. Wilson, a former colleague, who was associated with the development of a large portion of the material presented here; Max A. Kohler, A. L. Shands, and Leonard L. Weiss, of the Weather Bureau, and V. Mockus and R. G. Andrews, of the Soil Conservation Service, who reviewed the manuscript and made many helpful suggestions. Caroll W. Gardner performed the drafting.

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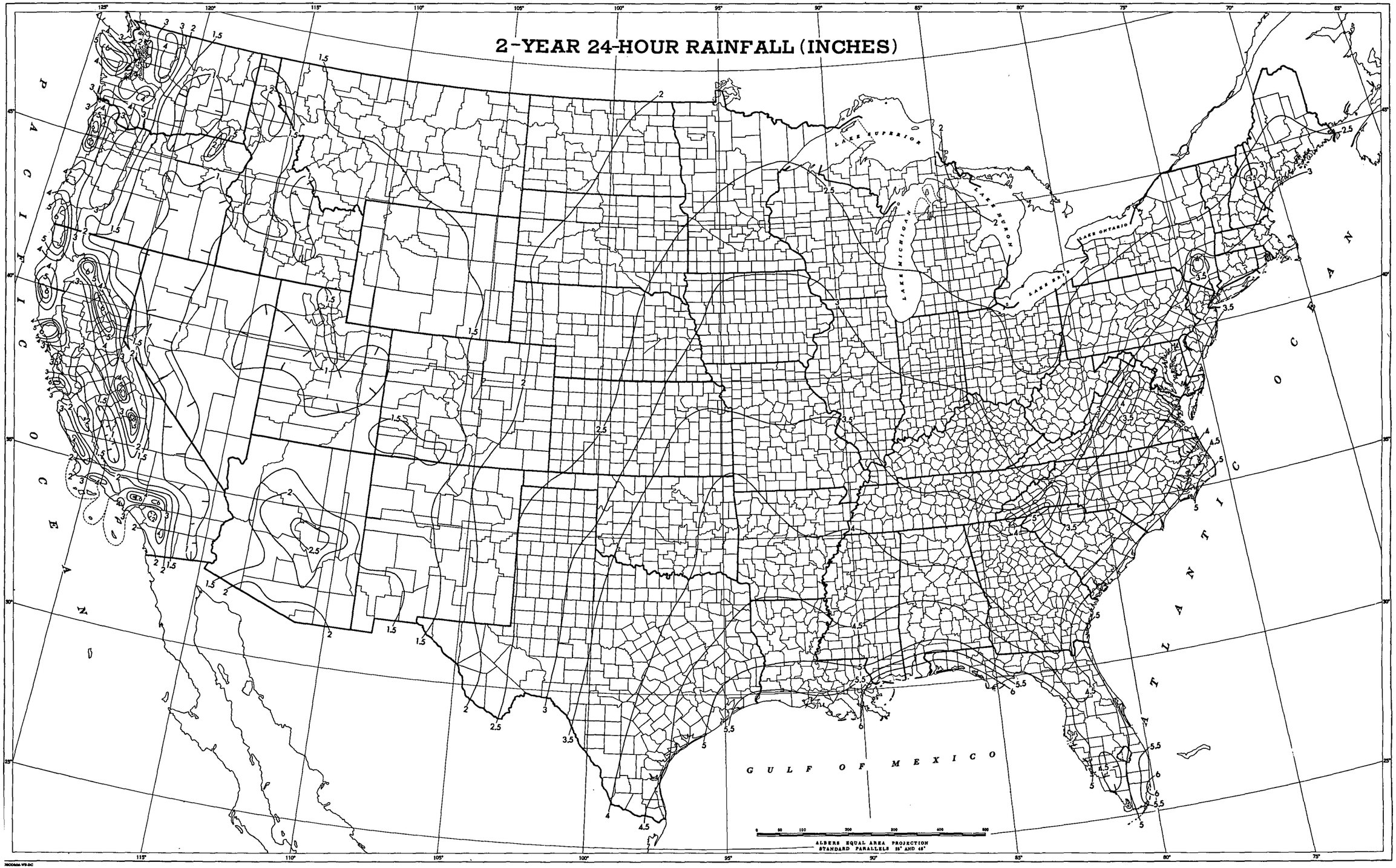

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National Weather Service

Climatological Report (Annual)

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CLIMATE REPORT
NATIONAL WEATHER SERVICE NEW YORK NY
1245 PM EST WED JAN 2 2013

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...THE KENNEDY NY CLIMATE SUMMARY FOR THE YEAR OF 2012...

CLIMATE NORMAL PERIOD 1981 TO 2010
CLIMATE RECORD PERIOD 1949 TO 2012

WEATHER          OBSERVED           NORMAL   DEPART   LAST YEAR`S
                  VALUE   DATE(S)   VALUE    FROM     VALUE  DATE(S)
                                             NORMAL
.................................................................
TEMPERATURE (F)
RECORD
 HIGH              104   07/03/1966
 LOW                -2   01/21/1985
                         02/08/1963
HIGHEST             99   07/07         MM       MM       103  07/22
LOWEST              13   01/04         MM       MM         6  01/24
AVG. MAXIMUM      64.1               61.6      2.5      63.2
AVG. MINIMUM      49.8               47.3      2.5      48.4
MEAN              57.0               54.5      2.5      55.8
DAYS MAX >= 90      16                8.8      7.2        13
DAYS MAX <= 32       3               14.2   -11.2         13
DAYS MIN <= 32      47               71.9   -24.9         75
DAYS MIN <= 0        0                0.0      0.0         0

PRECIPITATION (INCHES)
RECORD
 MAXIMUM         59.12   1983
 MINIMUM            MM     MM
TOTALS           39.85              42.77   -2.92     55.78
DAILY AVG.        0.11               0.12   -0.01      0.15
DAYS >= .01        124              119.4     4.6       116
DAYS >= .10         78               73.7     4.3        75
DAYS >= .50         23               28.8    -5.8        36
DAYS >= 1.00         8               11.2    -3.2        15
GREATEST
 24 HR. TOTAL    2.39   MM
 STORM TOTAL       MM                                   MM
 (MM/DD(HH))             MM

SNOWFALL (INCHES)
RECORDS
 TOTAL           61.9   2003
 24 HR TOTAL       MM   MM
 SNOW DEPTH        MM   MM
TOTALS             6.9               23.8   -16.9     27.7
 LIQUID EQUIV    0.69               2.40   -1.71      2.77
SINCE 7/1          4.7               4.9    -0.2       1.5
 LIQUID 7/1      0.47               0.50   -0.03      0.15
SNOWDEPTH AVG.      0                 MM      MM         1
DAYS >= TRACE      21               13.6     7.4        21
DAYS >= 1.0         2                5.4    -3.4         7
GREATEST
 SNOW DEPTH         4   11/08                          12  01/27
 24 HR TOTAL      4.0   MM
 STORM TOTAL       MM                                   MM
 (MM/DD(HH))             MM
```

```
DEGREE_DAYS
HEATING TOTAL    4053             4840    -787     4498
 SINCE 7/1         MM             1669      MM       MM
COOLING TOTAL    1229             1004     225     1267
 SINCE 1/1       1229             1005     224     1267
.................................................

WIND (MPH)
AVERAGE WIND SPEED              10.8
RESULTANT WIND SPEED/DIRECTION   3/273
HIGHEST WIND SPEED/DIRECTION    56/100    DATE  10/29
HIGHEST GUST SPEED/DIRECTION    85/100    DATE  10/29

SKY COVER
POSSIBLE SUNSHINE (PERCENT)   MM
AVERAGE SKY COVER           0.60
NUMBER OF DAYS FAIR           52
NUMBER OF DAYS PC            178
NUMBER OF DAYS CLOUDY        136

AVERAGE RH (PERCENT)     65

WEATHER CONDITIONS. NUMBER OF DAYS WITH
THUNDERSTORM              0     MIXED PRECIP              0
HEAVY RAIN               41     RAIN                     63
LIGHT RAIN              161     FREEZING RAIN             0
LT FREEZING RAIN          1     HAIL                      1
HEAVY SNOW                0     SNOW                      4
LIGHT SNOW               18     SLEET                     5
FOG                     142     FOG W/VIS <= 1/4 MILE    30
HAZE                     39

-  INDICATES NEGATIVE NUMBERS.
R  INDICATES RECORD WAS SET OR TIED.
MM INDICATES DATA IS MISSING.
T  INDICATES TRACE AMOUNT.

$$
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National Weather Service
National Weather Service National Headquarters
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BOATING the Marine Waters of Long Island

New York State Department of Environmental Conservation

NY Sea Grant

FOREWORD

This list of boat ramp facilities is provided for your convenience. While it is as complete as we could make it, we may have omitted some facilities. The listed information is subject to change, which is beyond the control of the New York State Department of Environmental Conservation (NYSDEC).

The list is divided into groups based upon the specific water body of interest. The main road that the ramp is located on is included as well as its nearest cross street. We suggest using a Suffolk or Nassau County Hagstrom map to help you navigate to each site. The ramps in each group are managed by entities with a specific set of rules for each. Before setting out for a day's boating, you should familiarize yourself with the rules that apply to your destination ramp. Call the phone numbers provided in the directory for current information.

Besides knowing the rules that govern the use of the ramp, you should be aware that conditions at each ramp vary. We have tried to provide you with some information to help you determine whether the ramp is suitable for your vessel and abilities.

Montauk Point

Also, several private marinas are listed that have boat ramps which may be open to the public for a fee. These are listed under their appropriate town as "Private." Call the numbers listed for more information. NYSDEC does not endorse any of these facilities.

At the end of this brochure are some tips for trailering and launching your boat, hunting and fishing resources and more. For additional boating locations, safety and vessel registration information, log onto: nysparks.state.ny.us/boating/resource.asp.

DIRECTORY

NYSDEC - The New York State Department of Environmental Conservation maintains two small boat ramps in the Long Island region. Others are under development. There are no fees or permits required. However, visitors at the Oyster Bay site must fill out a free permit application on-site. A drop box is available for completed applications.They are open to all, sunrise to sunset. General information: 631-444-0439

State Parks - New York State Office of Parks, Recreation and Historic Preservation (OPRHP) operates boat ramps in some waterfront parks on Long Island. While there is no additional ramp fee, regular seasonal parking fees apply to boaters. The parks are open to all, sunrise to sunset. General information: 631-669-1000

Nassau County Parks - Nassau County facilities are open to county residents only. Open all year, sunrise to sunset. An annual-fee permit is required to park. General information: 516-572-0200

Suffolk County Parks - Suffolk County facilities are open to all 24-hours, 7 days a week, though non-residents pay higher fees to use them. A green key must be purchased and is valid for three years. A seasonal permit is required year-round to use the Smith Point facility. General information: 631-854-4949

Town of Babylon - Open to all, though non-residents pay substantially more for daily launching. End of June through Labor Day, 8 AM to 8 PM. General information: 631-893-2100

Town of Brookhaven - Brookhaven ramps are open to all, though non-residents pay a substantially higher fee for permits. Open 24 hours, year-round. General information: 631-451-6100

Town of East Hampton - East Hampton facilities are open year-round, 24 hours free of charge to residents. Non-residents must purchase annual permits for both parking and launching. General information: 631-324-4142

Town of Hempstead - Hempstead facilities are open free of charge to all, sunrise to sunset, April through November. There is a limit on vessel size. Parks and Recreation: 516-292-9000; Conservation and Waterways: 516-431-9200

Town of Huntington - Facilities are for town residents only, except as noted. Open 8:30 AM to 8 PM daily, Memorial Day through Labor Day only, except as noted. General information: 631-351-3089

Town of Islip - Open 24 hours, year-round for residents, seasonal-fee permit required (March 15 - November 15); open sunrise to sunset for non-residents, daily-fee permit required. Marinas and Docks: 631-224-5648

Hempstead Bay

Town of North Hempstead These facilities are open to town residents only. Open 24 hours, fee-permit required. There is a 21-foot boat limit. Parks and Recreation: 516-767-4622

Town of Oyster Bay - The facilities are open to all, though non-residents pay more for the required seasonal permits (Memorial Day through Labor Day). Open 24 hours, year-round. General information: 516-797-4128; Beaches: 516-797-4110

Town of Riverhead - Open to all, 24 hours, year-round, permit required. Non-residents pay a substantially higher fee for the permit. General information: 631-727-5744

Town of Shelter Island - Open to all, 24 hours, year-round, no permits required, no fees. Non-residents must take a pay ferry to get there however. Most town ramps were built for launching of small skiffs and are unsuitable for large fiberglass V-hulled boats. General information: 631-749-0291

Town of Smithtown - Open year-round to residents only, ½-hour before sunrise to 1 hour after sunset, permit required in season (April 15 - November 15). General information: 631-360-7533

Town of Southampton - These ramps are primarily operated by the town trustees. Open to all, 24 hours, year-round, with parking permit. Non-residents pay a substantially higher fee for the permit. General information: 631-283-6000, ext. 259

Town of Southold - Open to all for a fee, though non-residents pay a substantially higher fee. Hours and season vary per ramp. General information: 631-765-1801

LONG ISLAND SOUND – WEST

TOWN of HUNTINGTON

Access to: Northport Bay

Asharoken Beach Ramp: Eatons Neck Road off Ocean Avenue, Northport. Single-lane hard-surface ramp; small boats only; restrooms; ample parking.

Prices Bend Hobart Beach Ramp: Birmingham Road off Worcester Drive off Eaton's Neck Road, Eatons Neck, Northport. Single-lane hard-surface ramp; steep and slippery; restrooms; ample parking.

Access to: Cold Spring Harbor, Oyster Bay Harbor

Cold Spring Harbor Boat Ramp: off Route 25A, Cold Spring Harbor. Single-lane concrete ramp; steep and slippery; launch and recover at high tides; restrooms; dock; boat wash-down; limited trailer rig parking.

Access to: Huntington Harbor

Mill Dam Marina: Mill Dam Road off Route 110, Huntington. Open year-round, 6 AM to 8 PM; non-residents allowed (fee). Multi-lane concrete ramp; docks; ample parking.

Access to: Northport Harbor

Scudder Beach: Ketcham Place off Beach Avenue, Northport. Single-lane concrete ramp; small boats only; good for canoes and kayaks; no trailer parking spots; restrooms; open 6 AM to 10 PM.

Soundview Ramp: Eatons Neck Road off Ocean Avenue, Northport. Open seasonally, 24 hours; multi-lane concrete ramp; docks; more than 100 trailer rig parking spots; bait store; restrooms.

TOWN of NORTH HEMPSTEAD

Access to: Hempstead Harbor

Bar Beach Park: off West Shore Road, Port Washington. Multi-lane concrete ramp; boat wash-down; docks; restrooms; phone; 40 trailer rig parking spots.

Access to: Manhasset Bay

Manorhaven Beach Park: Manorhaven Boulevard off Sands Point Road/Shore Road, Manorhaven. Single-lane concrete ramp; boat wash-down; dock; restrooms; ample parking; launch and recover at high tide.

Access to: Little Neck Bay

Stepping Stone Park and Marina: Stepping Stone Lane off Steamboat Road, Great Neck. Single-lane concrete ramp; boat wash-down; pumpout; dock; restrooms; ample parking.

TOWN of OYSTER BAY

Access to: Hempstead Bay

Garveys Point Ramp: Garveys Point Road off The Place, Glen Cove. Single-lane concrete ramp; docks; restrooms; limited trailer parking. Facility open to all, though non-residents pay more for the required annual permits; owned by the City of Glen Cove, 516-676-2000.

Oyster Bay

Access to: Oyster Bay Harbor, Cold Spring Harbor

Oyster Bay Western Waterfront Waterway Access Site: West End Avenue off Bayside Avenue, Oyster Bay. Project complete; hours not yet set; for more information, call NYSDEC at 631-444-0276.

Access to: Oyster Bay Harbor

Ships Point Road End: Ships Point Road off East Main Street, Oyster Bay. Single hard-surface ramp at end of road; small boats only; launch and recover at high tide; no parking.

Theodore Roosevelt Park: Larrabee Avenue off West Main Street, Oyster Bay. Multi-lane concrete ramp; boat wash-down; pump out; docks; restrooms; parking for more than 100 trailer rigs.

Access to: Hempstead Harbor

Tappan Beach Ramp: off Shore Road, north of Glenwood Road, Glenwood Landing. Multi-lane concrete ramp; high-tide recovery recommended; docks; restrooms; 30 trailer parking spots.

LONG ISLAND SOUND – CENTRAL

TOWN of BROOKHAVEN

Access to: Mount Sinai Harbor

Cedar Beach Park: Harbor Beach Road off Landing Road, Mount Sinai. Multi-lane concrete ramp; docks; boat wash-down; pumpout; restrooms; 75 trailer rig parking spots.

Shore Road Ramp: Shore Road off North Country Road, Mount Sinai. Single-lane ramp in poor condition; recommend hand launch of small boats only; mainly used for clamming at low tide.

Access to: Port Jefferson Harbor

Port Jefferson Boat Ramp: Main Street/Route 25A Port Jefferson. Multi-lane concrete ramp; docks; restrooms; parking for more than 90 trailer rigs.

Access to: Stony Brook Harbor, Smithtown Bay

Stony Brook Beach Ramp: Sand Street off Christian Avenue, Stony Brook. Wide concrete ramp; restrooms; dock; limited parking; strong currents in Stony Brook Channel.

TOWN of BROOKHAVEN — PRIVATE

Access to: Mount Sinai Harbor

Mount Sinai Marina: Harbor Beach Road off Landing Road, Mount Sinai.
Fee - 631-928-0199.

TOWN of SMITHTOWN

Access to: Stony Brook Harbor, Smithtown Bay

Long Beach Town Marina: Long Beach Road off Boney Lane, Nissequogue. Multi-lane concrete ramp; docks; boat wash-down; pumpout; restrooms; ample parking.

Otto Schubert Boat Ramp/Little Africa Town Park: Long Beach Road off Boney Lane, Nissequogue. Multi-lane concrete ramp; docks; boat wash-down; pumpout; restrooms; fish-cleaning station; 40 trailer rig parking spots.

Access to: Nissequogue River, Smithtown Bay

Nissequogue River/Smithtown Boat Ramp: Old Dock Road off Sunken Meadow Road, Kings Park. Multi-lane concrete ramp; docks; boat wash-down; restrooms; 200 trailer rig parking spots.

TOWN of RIVERHEAD

Access to: Wading River Creek

Creek Road Ramp: Creek Road off Sound Road, Wading River.
Single-lane concrete ramp; small boats only; ample parking; small boats only; recommended mid-high tide use only.

Nissequogue River

LONG ISLAND SOUND – EAST

TOWN of RIVERHEAD

Access to: Long Island Sound

Edwards Avenue Beach: Edwards Avenue off Sound Avenue, Baiting Hollow. Gravel beach; no amenities; 4x4 recommended; small boats only; exposed to strong wave action; limited on-street parking.

Iron Pier Beach: Pier Avenue off Sound Avenue, Jamesport. Multi-lane concrete ramp; dock; restrooms; 15 trailer rig parking spots; exposed to strong wave action.

TOWN of SOUTHOLD

Access to: Long Island Sound

Goldsmiths Inlet: Mill Road off Middle Road/County Road 48, Southold. Gravel beach launch; small boats only; open beach; 4x4 recommended; ample parking.

Oyster Ponds Waterway Access Site: Main Road/Route 25, East Marion. Single concrete ramp, stops at high-tide mark; 24 trailer parking spots; no amenities; launch and recover at higher tides; 4x4 helpful; small boats only; exposed to strong wave action; opens 1st of April and closes December 15. NYSDEC, 631-444-0276.

Town Beach: County Road 48, Southold. Gravel beach launch; small boats only; open beach; 4x4 recommended; restrooms in season; limited trailer rig parking.

Access to: Mattituck Creek

Mattituck Creek Boat Ramp: Middle Road/County Road 48, Mattituck. Single-lane concrete ramp; drop off at end; ample parking in gravel lot.

Mattituck Inlet Waterway Access Site (formerly Petersen's Marina): Naugles Road off Breakwater Road, Mattituck. Temporary ramp now open; construction of a new two-lane concrete ramp anticipated 2009; hours 8 AM to 4 PM, M-F and 7 AM to 5 PM, Sa-Su. NYSDEC, 631-444-0276.

Mattituck Village Park District Boat Ramp: Middle Road/County Road 48, Mattituck. Single-lane concrete ramp; dock; restrooms; ample parking; open to Village of Mattituck residents only, with permit and key.

PECONIC ESTUARY – NORTH FORK

TOWN of RIVERHEAD

Access to: Peconic River

Corwell Avenue Ramp: Corwell Avenue off Riverside Drive, Riverhead. Street ends at water; asphalt and gravel surface; small boats only; limited on-street parking.

Access to: East Creek, Great Peconic Bay

South Jamesport Boat Ramp: Peconic Bay Boulevard off Bay Avenue, South Jamesport. Multi-lane concrete ramp; docks; more than 80 trailer rig parking spots; state-sponsored, non-residents pay same fee as residents.

TOWN of SOUTHOLD

Access to: Little Peconic Bay, Noyac Bay, Southold Bay, Shelter Island Sound

Cedar Beach Ramp: Cedar Beach Road off Jacobs Lane/Bayview Road, Southold. Single-lane concrete ramp; no amenities; launch and recover at higher tides; ample parking at Cedar Beach Park in Suffolk County or limited on street.

Access to: Southold Bay, Shelter Island Sound

Founders Landing Park and Boat Ramp: Terry Lane off Town Harbor Lane, Southold. Single-lane asphalt ramp in fair condition; very limited on-street parking.

Access to: Goose Creek, Southold Bay, Noyac Bay, Little Peconic Bay, Shelter Island Sound

Gagen's Landing: Gagen's Landing Road off Clearview Avenue, Southold. Single-lane concrete ramp; small boats only; limited parking on street.

Access to: Hallocks Bay, Orient Harbor, Gardiners Bay

Narrow River Road Ramp: Narrow River Road off Main Street/County Route 25, Orient. Wide, concrete ramp; no amenities; ample parking.

Access to: Little Peconic Bay, Great Peconic Bay

New Suffolk Boat Ramp: First Street off Orchard Street, New Suffolk. Single-lane concrete ramp; dock; 20-foot vessel limit; ample parking in lot across street; restrooms in season.

Long Island Boat Ramp Areas: Nassau and Western Suffolk Counties

Long Island Boat Ramp Areas: Eastern Suffolk Counties

Access to: Shelter Island Sound, Orient Harbor

Norman Klipp Marine Park: Manhansett Avenue off Main Road/Route 25, Greenport. Multi-lane concrete ramp; dock; restrooms in season; ample trailer rig parking.

Access to: Richmond Creek, Hog Neck Bay, Little Peconic Bay, Great Peconic Bay

Parker's Landing: Parker's Landing Road off Indian Neck Road, Peconic. Single-lane concrete ramp in fair condition; small boats only; very limited parking on road.

Access to: Mouth of Jockeys Creek, Southold Bay

Pine Neck Road Ramp: end of Pine Neck Road off Bayview Road, Southold. Two single-lane ramps, one asphalt, one concrete; limited on-street parking; 20-foot limit.

Access to: Stirling Basin, Shelter Island Sound, Orient Harbor

Sandy Point Beach Road Boat Ramp: Sandy Point Beach Road off Manhasset Avenue, Greenport. Single-lane concrete ramp; small boats only; water available on adjacent dock; limited parking.

TOWN of SOUTHOLD — PRIVATE

Access to: Wickham Creek, Cutchogue Harbor, Great Peconic Bay, Little Peconic Bay

Cutchogue Harbor Marina, Inc.: 3350 West Creek Avenue, Cutchogue. Fee - 631-734-6993.

Plum Gut

Access to: Greenport Harbor, Orient Harbor

Greenport Yacht and Ship Building Co., Inc.: 201 Carpenter Street, Greenport. Fee - 631-477-2277.

Access to: Gardiners Bay, Block Island Sound

Orient By-The-Sea Marina: 40200 Main Road, Orient. Open 24 hours; closest launch ramp to fishing in Plum Gut and the Race. Fee - 631-323-2424.

Access to: Southold Bay

Port of Egypt Marine: 62300 Main Road, Southold. Open 6 AM to 10 PM year-round; 24-foot limit. Fee - 631-765-2445.

Access to: Great Peconic Bay

Strong's Marine: Camp Mineola Road off New Suffolk Avenue, Mattituck. Single-lane concrete ramp; dock; limited trailer parking. Fee - 631-298-4770.

PECONIC ESTUARY – SHELTER ISLAND

TOWN of SHELTER ISLAND

Access to: Silver Beach Lagoon, Shelter Island Sound, Noyac Bay

Brander Parkway Ramp: Brander Parkway off West Neck Road, Shelter Island Heights. Single-lane concrete ramp; very steep; small boats only; very limited parking at ramp, additional parking at Silver Beach, 1/8 mile away.

Access to: Congdons Creek, Coecles Harbor, Gardiners Bay

Congdon Road Town Dock and Ramp: Congdon Road off South Cartwright Road, Shelter Island. Single-lane concrete ramp; small boats only; bulkhead; dock with boat slips; limited on-street parking.

Access to: West Neck Creek, West Neck Bay, Shelter Island Sound, Noyac Bay

Daniel Lord Road Ramp: Daniel Lord Road off Menantic Road, Shelter Island. Single-lane concrete ramp; small boats only; ample parking in lot and on street.

Access to: West Neck Harbor, Shelter Island Sound, Noyac Bay

North Silver Beach Road Ramp: North Silver Beach Road off Brander Parkway, Shelter Island Heights. Single-lane concrete ramp; severe erosion at base of ramp makes it unusable at present--better call; small boats only; very limited parking.

Access to: West Neck Creek, Shelter Island Sound, Noyac Bay

Simpson Road Ramp: Simpson Road off Gibbs Road/Menantic Road, Shelter Island. Single-lane concrete ramp; ramp approach in poor condition; small boats only; limited on-street parking.

Access to: Menantic Creek, Shelter Island Sound, Noyac Bay

Tarkettle Road Ramp: Tarkettle Road off South Midway Road, Shelter Island. Single-lane concrete ramp in poor condition; small boats only; very limited (essentially no) on-street parking.

Access to: Smith Cove, Shelter Island Sound, Sag Harbor

Thompson Road Ramp: Thompson Road off Route 114, Shelter Island. Single-lane concrete ramp; small boats only; steep hill at entrance; very limited turnaround, parking.

Access to: West Neck Bay, Shelter Island Sound, Noyac Bay

West Neck Road Ramp: West Neck Road off Shore Road/Neck Road, Shelter Island Heights. Small concrete ramp right off main road; no turnaround—must use road; no parking, except on narrow road; small boats only.

PECONIC ESTUARY-SOUTH FORK

TOWN of SOUTHAMPTON/EAST HAMPTON

Access to: Sag Harbor, Shelter Island Sound

Village of Sag Harbor Boat Ramp: Bay Street off Route 114, Sag Harbor. Operated by the village; open to all, but non-residents pay a fee; single-lane concrete ramp; narrow; dock; turn-around is on street; very limited parking on street; Bayview Marine and Tackle, 631-725-2368.

TOWN of EAST HAMPTON

Access to: Northwest Harbor

Alewife Brook Road Launching Ramp: Alewife Brook Road off Old House Landing Road/Springy Banks Road, East Hampton. Single-lane concrete ramp on open beach; small boats only; parking on road.

Access to: Three Mile Harbor

Gann Road Dock and Launching Ramp: Gann Road off Route 40, Three Mile Harbor. Multi-lane concrete ramp; dock, cleats; limited parking in lot, on dock and on street.

Hands Creek Launching Ramp: Hands Creek Road off Ely Brook Road/Alewife Brook Road, East Hampton. Single-lane concrete ramp; small boats only (no personal watercraft); limited parking on street.

Head of the Harbor Dock and Launching Ramp: Three Mile Harbor Road off Old House Landing Road, Three Mile Harbor. Single, wide concrete ramp; dock; limited parking; restrooms.

Access to: Accabonac Harbor

Landing Lane Launching Ramp: Landing Lane off Old Stone Highway, Springs. Single concrete ramp in poor condition; small boats only; launch and recover at higher tides; limited on-street parking.

Shipyard Lane Launching Ramp: Shipyard Lane off Old Stone Highway, Springs. Single-lane concrete ramp; small boats only; limited street parking.

Acabonic Harbor

Access to: Napeague Harbor

Lazy Point Launching Ramp: Shore Road off Lazy Point Road, Napeague. Multi-lane concrete ramp; small boats only; limited parking.

Access to: Northwest Creek

Northwest Harbor Park: Northwest Landing Road off Old Northwest Road/Swamp Road, East Hampton. Single-lane

concrete ramp in poor condition; small boats only; dock; parking on dock; owned by Suffolk County Parks.

Access to: Lake Montauk

West Lake Launching Ramp: West Lake Drive off Route 27, Montauk. Multi-lane concrete ramp; parking for 25 trailer rigs in lot.

Off Montauk Point

TOWN of EAST HAMPTON — PRIVATE

Access to: Three Mile Harbor

East Hampton Marine: 936 Boatyard Road, East Hampton. Open April through November, 8 AM to 4:30 PM. Fee - 631-324-4042.

Access to: Lake Montauk

Gone Fishing Marina: 467 East Lake Drive, Montauk. Open year-round. Fee - 631-668-3232.

Montauk Yacht Club: 32 Star Island Road, Montauk. Launch and recover at higher tides; 25-foot limit. Fee - 631-668-3100.

TOWN of SOUTHAMPTON

Access to: Bullhead Bay, Sebonac Creek, Great Peconic Bay

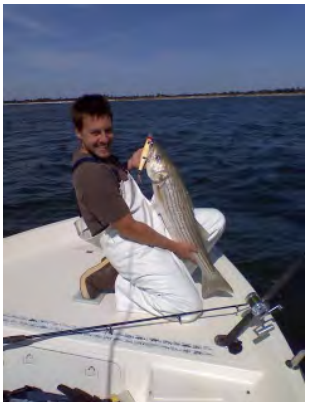
Barkers Island Road End: Barkers Island Road off Millstone Brook Road/Scott Road, Southampton. Single-lane beach launch; small boats only; badly deteriorated, 4x4 recommended; limited parking.

Bullhead Bay Ramp: West Neck Road off Millstone Brook Road/Scott Road, Southampton. Single-lane concrete ramp; dock; limited on-street parking.

Access to: Sag Harbor Cove, Sag Harbor, Northwest Harbor

Bay View Drive Ramp: Bay View Drive off Cliff Drive, Sag Harbor. Single-lane concrete ramp in poor condition; small boats only; limited on-street parking.

Cove Road Ramp: Cove Road off Redwood Road, Sag Harbor. Single-lane concrete ramp; small boats only; limited on-street parking.


Great South Bay

Access to: Reeves Bay, Flanders Bay, Great Peconic Bay

Birch Creek Road Ramp: Birch Creek Road off Route 24, Flanders. Single-lane beach launch; small boats only; end of Trustee Road, but Suffolk County owns property; no permit required to park; 4x4 recommended; very rough, rutted dirt road.

Access to: Noyac Creek, Noyac Bay

Cedar Point Ramp: Cedar Point Lane Avenue off Noyac Road, Sag Harbor. Single-lane asphalt ramp in fair condition; small boats only; limited on-street parking; steep dropoff at end of ramp (dredged).

Access to: North Sea Harbor, Little Peconic Bay

Conscience Point Road Ramp: Conscience Point Road off North Sea Road, Southampton. Single-lane asphalt ramp; dock; 25 trailer parking spots.

Access to: Cold Spring Pond, Great Peconic Bay

Inlet Road Ramp: Inlet Road off North Road/Route 39 or Sunrise Highway/Route 27, Southampton. Single-lane stone ramp in poor condition; small boats only; limited on-street parking.

Access to: Noyac Creek, Noyac Bay

Maple Road Lane Ramp: Maple Lane off Noyac Road/Route 38, Sag Harbor. Single-lane asphalt ramp in fair condition; small boats only; limited on-street parking; steep dropoff at end of ramp (dredged).

Access to: Mill Creek, Noyac Bay

Pine Neck Avenue Ramp: Pine Neck Avenue off Noyac Road, Sag Harbor. Single-lane concrete ramp, near marina and moorings; dock; ample on-street parking.

Access to: Reeves Bay, Flanders Bay, Great Peconic Bay

Point Road Ramp: Point Road off Shore Avenue, Flanders. Single-lane concrete ramp; dock; approach to ramp in poor condition; 20 trailer rig parking spots.

Access to: Cold Spring Pond, Great Peconic Bay

Shrubland Road: Shrubland Road off Route 39, Southampton. Beach launch on side of road; limited street parking; small boats only.

Access to: Bullhead Bay, Little Sebonac Creek, Great Peconic Bay

West Neck Point Road End: West Neck Point Road off Millstone Brook Road/ Scott Road, Southampton. Single-lane beach launch; small boats only; deteriorated but could be used in a pinch; very limited on-street parking.

TOWN of SOUTHAMPTON — PRIVATE

Access to: Reeves Bay, Flanders Bay

Strong's Marine: 1110 Flanders Road (Route 24), Flanders. Fee - 631-298-4770.

MORICHES BAY and NARROW BAY

TOWN of BROOKHAVEN

Access to: Forge River, Moriches Bay

Forge River Ramp and Marina: Riviera Drive off Mastic Road, Mastic. Multi-lane concrete ramp; docks; recommend small boats only; boat wash-down; pumpout; restrooms; parking for 25 trailer rigs.

Access to: Moriches Bay

Maple Avenue Ramp: Maple Avenue off Atlantic Avenue, East Moriches. Wide concrete ramp; street parking; street floods on moon tides.

Moriches Bay Waterway Access Site: Moriches Island Avenue off Atlantic Avenue, East Moriches. Single concrete ramp; 12 trailer parking spots; no amenities; launch and recover at higher tides; open year-round; 24 hours; shallow water; small boats only. NYSDEC, 631-444-0276.

Orchard Neck Creek Ramp: Laura Lee Drive off Belleview Avenue, Center Moriches. Single-lane concrete ramp in poor condition; drop off at end of ramp; limited parking on street within a short walk from ramp.

Access to: Seatuck Creek, Moriches Bay

Seatuck Creek Ramp: Seatuck Avenue off Montauk Highway/Main Street, Eastport. Single-lane concrete ramp in poor condition; limited parking on narrow street; difficult turnaround.

Access to: Great South Bay, Narrow Bay, Moriches Bay

Smith Point County Marina: southern end of William Floyd Parkway, Smith Point, Shirley. Multi-lane concrete ramp; 50 trailer parking spots; boat wash-down (bring your own hose); portable toilets in season; seasonal-fee permit required; owned by Suffolk County Parks, 631-281-7788.

TOWN of BROOKHAVEN – PRIVATE

Silly Lily Fishing Station: Adelaide Avenue off Montauk Highway/Main Street, East Moriches. Narrow concrete ramp. Fee - 631-878-0247.

TOWN of SOUTHAMPTON

Access to: Seatuck Cove, Moriches Bay

Bay Avenue Dock and Ramp: South Bay Avenue off Main Street/South County Road, Eastport. Single-lane concrete ramp; steep; dock; very limited on-street parking.

Access to: Moriches Bay

Bay Crest Avenue Ramp: Bay Crest Avenue off South Road, Westhampton. Single-lane concrete ramp; steep; very limited on-street parking.

MECOX BAY, SHINNECOCK BAY and the QUANTUCK CANAL

TOWN of SOUTHAMPTON

Access to: Shinnecock Bay

Argonne Road Ramp: East end of Argonne Road off Ponquogue Avenue, Hampton Bays. Single-lane concrete ramp on open beach; sanded over, 4x4 recommended; small boats only; two trailer rig parking spots on street.

Access to: Weesuck Creek, Shinnecock Bay

Bay Avenue Ramp: Bay Avenue off Montauk Highway, East Quogue. Wide, single-lane concrete ramp in poor condition; steep; dock; limited on-street parking.

Edward Warner "Old Ponquogue Bridge" Marine Park: Dune Road off Route 32, Hampton Bays. Single-lane concrete ramp; dock; operated by town parks; restroom; parking for 16 trailer rigs; strong currents.

Peconic Road Ramp: Peconic Road South (Ext.) off Montauk Highway, Southampton. Single-lane concrete ramp on open beach; small boats only; limited on-street parking.

Access to: Tiana Bay, Shinnecock Bay

Corwin Lane Ramp: Corwin Lane off East Tiana Road, Hampton Bays. Single-lane asphalt ramp; small boats only; parking for six trailer rigs on street; hours 6 AM to 1 AM.

Access to: Penniman Creek, Shinnecock Bay

Penniman Creek Ramp: Quaquanantuck Lane off Shinnecock Road, Quogue. Operated by the Village of Quogue, 631-653-4498; residents only; 24 hours, year-round; single-lane asphalt ramp; small boats only; mud, 4x4 not a bad idea; no turnaround; limited on-street parking.

Access to: Mecox Bay

Rose Hill Road Ramp: Rose Hill Road off Montauk Highway, Watermill. Single-lane asphalt ramp, sanded over; 4x4 not necessary but recommended; small boats only; limited on-street parking.

Access to: Old Fort Pond, Shinnecock Bay

Seaplane Ramp: Little Neck Road off Montauk Highway, Southampton. Multi-lane concrete ramp; dock; parking for 15 trailer rigs in lot, plus on-street spots.

Access to: Quantuck Bay, Quantuck Canal

Village of Quogue Recreation Area: Quogo Neck Lane off Quogue Street/Main Street, Quogue. Operated by the Village of Quogue, 631-653-4498; residents only; 24 hours, year-round; single-lane asphalt ramp; small boats only; limited on-street parking.

Access to: Moneybogue Bay, Moriches Bay, Quantuck Canal

Westhampton Village Marina: Library Avenue off Main Street/Main Road, Westhampton. Operated by the Village of Westhampton Beach, 631-288-1654; open 5 AM to 1 AM, year-round; non-residents welcome for a fee; single-lane concrete ramp; docks; restrooms; parking for 20 trailer rigs; drop off at end of ramp.

TOWN of SOUTHAMPTON — PRIVATE

Access to: Tiana Bay, Shinnecock Bay

Colonial Shores Resort and Marina: 83 West Tiana Road, Hampton Bays. Open year-round; launch and recover at higher tides; 20-foot limit. Fee - 631-728-0011.

Access to: Bennet Cove, Shinnecock Canal, Shinnecock Bay

Mariner's Cove: 9 Canoe Place Road, Hampton Bays. Open year-round, 9 AM to 6 PM; 4x4 required. Fee - 631-728-0286.

Access to: Shinnecock Bay

Mill River Boat Works: 74 Foster Road, Hampton Bays. 26-foot limit; 4x4 required. Fee - 631-728-6768.

GREAT SOUTH BAY

Moriches Bay

TOWN of BABYLON

Access to: Great South Bay

Babylon Village Boat Ramp: Fire Island Avenue off Route 27A, Babylon. Village residents only; fee; open year-round, dawn to dusk; security gate; single-lane concrete ramp; small boats only; boat wash-down; docks; 10 trailer rig parking spots; 631-669-1500.

Tanner Marine Park: Kerrigan Road off Eastern Concourse Avenue off Route 27A, Copaigue. Single-lane concrete ramp; boat wash-down; pumpout; docks; restrooms; more than 100 parking spots for trailer rigs.

Venetian Shores: Grenada Parkway off Route 27A, Lindenhurst. Single-lane concrete ramp; docks; restrooms; more than 100 parking spots for trailer rigs.

Access to: Great South Bay

Village of Amityville Boat Ramp: Amityville Beach, South Bayview Avenue off Route 27A, Amityville. Single-lane asphalt ramp; docks; parking for 20 trailer rigs, overflow in adjacent lot; open 6 AM to 11 PM; village residents only; permit required.

TOWN of BABYLON – PRIVATE

Access to: Great South Bay

Charlie's Marina: 910 South Broadway, Lindenhurst. Fee - 631-226-6250.

Frost Boat Yard: 21 Shore Road, Babylon. Fee.

TOWN of BROOKHAVEN

Access to: Great South Bay

Corey Avenue Ramp and Marina: Corey Avenue off Atlantic Avenue, Blue Point. Single-lane concrete ramp; pumpout; docks; restrooms; more than 30 trailer rig parking spots.

Pine Neck Road Avenue Ramp: Pine Neck Road Avenue off Route 36, Patchogue. Multi-lane concrete ramp; docks; restrooms; 24 trailer rig parking spots.

Village Dock: Bellport Lane off Route 36, Bellport. Single-lane concrete ramp; boat wash-down; pumpout; docks; restrooms; limited parking; open year-round, seasonal-fee permit required; 631-286-0327.

Shinnecock Bay

TOWN of BROOKHAVEN — PRIVATE

Access to: Patchogue Bay, Great South Bay

Morgan's Swan River Marina: 363 Grove Avenue, Patchogue. Fee-631-758-3524.

TOWN of ISLIP

Access to: Great South Bay

Bay Shore Marina: South Clinton Avenue off Route 27A, Bay Shore. Multi-lane concrete ramp; docks; boat wash-down; restrooms; 60 trailer rig parking spaces.

East Islip Marina: Bayview Avenue off Route 17, East Islip. Multi-lane concrete ramp, docks; boat wash-down; pumpout; 30 trailer parking spots.

Heckscher State Park: end of Heckscher Parkway, East Islip. Multiple-lane concrete ramp; more than 100 parking spots; restrooms; boat wash-down; owned by State Parks, 631-581-2100.

Timber Point Marina West: end of Great River Road off Route 27A, Great River. Single-lane concrete ramp, for use by marina patrons; no parking; owned by Suffolk County Parks, 631-854-4952.

West Islip Marina: Beach Drive off Route 27A, West Islip. Single-lane concrete ramp; docks; boat wash-down; restrooms; 45 trailer rig parking spots.

Access to: Homan Creek, Great South Bay

Bayport Marina and Launching Ramp: Paulanna Drive off Esplanade off Route 65, Bayport. Multi-lane concrete ramp; docks; limited parking; personal watercraft not allowed.

Access to: Great South Bay, Fire Island Inlet

Captree State Park: Robert Moses Causeway, Babylon. Multiple-lane concrete ramp; 67 parking spots; restrooms; boat wash-down; pumpout; owned by State Parks, 631-669-0449.

Access to: Champlin Creek, Great South Bay

Champlin Creek Dock: Dock Road off South Bay Avenue, East Islip. Single-lane concrete ramp; docks; boat wash-down; 35 trailer rig parking spots; 24-foot vessel limit.

Access to: Connetquot River, Great South Bay

Great River Ramp: Great River Road off Route 27A, Great River. Single-lane, steep concrete ramp; dock; around 30 trailer rig parking spots.

SOUTH OYSTER BAY to JAMAICA BAY

TOWN of HEMPSTEAD

Access to: Merrick River, Freeport Creek, Jones Inlet

Albany Avenue Boat Ramp: Albany Avenue off Merrick Road, Freeport. Multi-lane concrete ramp; docks; ample trailer rig parking; free to all; sunrise to sunset.

Atlantic Ocean, Long Beach

Access to: Hewlett Bay, Broad Channel, Reynolds Channel

Bay Park Boat Ramp: Marjorie Lane off First Avenue, Bay Park. Multi-lane concrete ramp; docks; 150 trailer parking spots; restrooms.

Access to: Reynolds Channel, Jones Inlet

Hempstead Town Marina West: Lido Boulevard off Loop Parkway, Point Lookout. Multi-lane concrete ramp; dock; boat wash-down; pumpout; limited trailer rig parking; restrooms; 21-foot limit.

Access to: Mott Basin, Jamaica Bay

Inwood Marina: Bayswater Boulevard off Sheridan Boulevard/Burnside Avenue, Inwood. Single-lane concrete ramp; 10 trailer parking spots; boat wash-down; pumpout; docks; restrooms; 25-foot limit.

Inwood Park Boat Ramp: Bayview Avenue off Sheridan Boulevard/Burnside Avenue, Inwood. Single-lane concrete ramp; dock; restrooms; 15 trailer parking spots; owned by Nassau County Parks.

Access to: Freeport Bay, Middle Bay, Reynolds Channel

Millburn Creek Boat Ramp: Atlantic Avenue near West End Avenue and Eastern Boulevard, Freeport. Multi-lane concrete ramp; docks; 50 trailer parking spots; owned by Nassau County Parks.

Access to: East Bay, Jones Inlet

Wantagh County Park Boat Ramp: Kings Place and Canal Road off Merrick Road, Wantagh. Multi-lane concrete ramp, boat wash-down; docks; 150 trailer parking spots; restrooms; owned by Nassau County Parks.

TOWN of HEMPSTEAD — PRIVATE

Access to: Seaford Creek, Goose Drain, Bulkhead Drain, South Oyster Bay

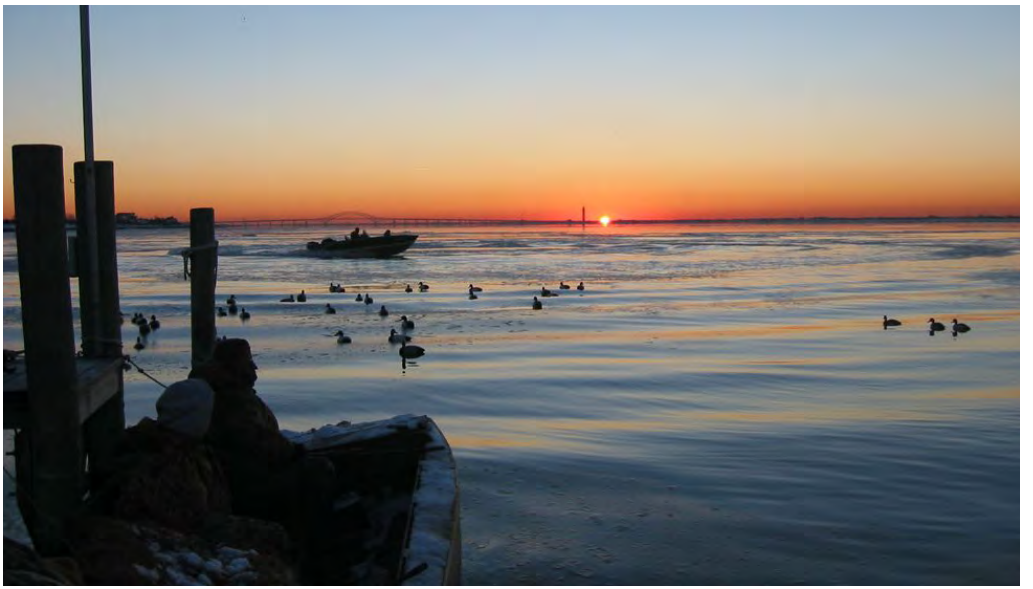
Old Harbor Marina: 2479 Adler Place, Seaford. Open 6:30 AM to 5 PM, Tue-Sun.; 23-foot limit. Fee - 516-785-0358.

Treasure Island Marine Basin: 2880 Ocean Avenue, Seaford. Open 24 hours daily; no personal watercraft allowed. Fee - 516-221-7156.

TOWN of OYSTER BAY

Access to: Jones Creek, South Oyster Bay

John J. Burns Park: Merrick Road, Massapequa. Multi-lane concrete ramp; docks; restrooms; parking for 150 trailer rigs.



Fire Island Inlet

TRAILER BOATING TIPS

Before you leave:

- Check tires for recommended pressure.
- Check hubs and bearings for grease.
- Make sure straps and chains are secure.
- Use a hitch lock.
- Make sure side- and rear-view mirrors are adjusted.
- Be sure trailer lights are operating properly.

At the Ramp:

- Find a quiet spot away from ramp to ready boat for launch, and gather up gear.
- Unplug trailer lights.
- Remove straps, except for bow strap at winch.
- Make sure the transom plug is inserted and tight.

Putting in:

- Back up to ramp in slow, deliberate manner.
- Make small movements of steering wheel.
- Back in until boat can be pushed off easily.
- Set parking brake.
- Tie up to far end of dock.
- Proceed at idle speed until well away from ramp area.

End of day:

- Remove any visible mud, plants, fish or animals before transporting.
- Eliminate water from equipment before transporting.
- Clean and dry anything that comes into contact with water (boats, trailers, equipment, clothing, dogs, etc.).
- Never release plants, bait, fish or animals into a body of water unless they came out of that same body of water.

For more information, log onto: www.dec.ny.gov/animals/48221.html

OTHER INFORMATION

Hunting:

For information regarding hunting, log onto: http://www.dec.ny.gov/outdoor/hunting.html

Fishing:

For information regarding fishing, log onto: http://www.dec.ny.gov/outdoor/fishing.html

Law Enforcement:

To report an environmental violation or suspicious act, call 1-800-TIPP DEC. TIPP DEC is a 24-hour, toll-free hotline.

For more information about law enforcement, log onto: www.dec.ny.gov

Gardiner's Bay

Long Island beaches are world-renowned for their fine white sand, spectacular waves, miles of boardwalks, beach trails, restaurants, picnic areas, and beautiful sunrises and sunsets.

Of all the activities in Long Island, New York, spending a day at the beach is at the top of the list. From Jones Beach State Park, one of Long Island's beaches within an hour from New York City, to Montauk and Orient State Parks on the east end, you'll find your place in the sun. In fact two Long Island beaches, Coopers Beach in Southhampton and Main Beach in East Hampton, are consistently named in the annual 'Top Ten Beaches in America,' list by Dr. Stephen Leatherman (aka Dr. Beach).

Plus fishing, kayaking, surfing and scuba diving, you'll never tire of all the things to do on Long Island.

Page 1 of 7 <<Previous **1** 2 3 4 5 6 7 Next>> Record 1 to 10 of 64 Back to Search

Asharoken Beach
Asharoken Beach Asharoken Avenue / Northport, NY 11768 / 631 351-3089

535 feet on Northport Bay, nonresident fee. The beaches are open from:

May 23, 2009 through September 7, 2009
8:30 AM to 8:00 PM
Seven days per week
>More

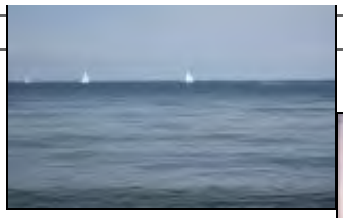
Cedar Beach Babylon
Ocean Parkway / Babylon, NY 11702 / 631 893-2100

Beach is 3/4 mile on ocean. Open to non-residents, $10 daily, $20 on weekends and holidays. Residents can obtain a sticker for annual $30 recreational fee at Babylon Town Hall.
>More

Cedar Beach Brookhaven
Harbor Beach Road / Mt. Sinai, NY 11776 / 631 451-TOWN

3,450 feet on the Sound, non-resident fee
>More

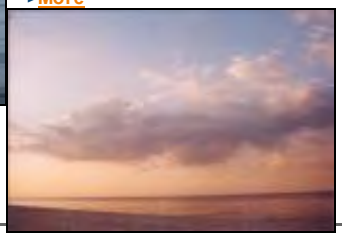
Centerport Beach



Centerport Beach Little Neck Road / Centerport, NY 11721 / 631 351-3089

230 feet on Northport Bay, nonresident fee

>More



Centre Island Beach

Centre Island Beach Bayville Avenue / Oyster Bay, NY 11717 / 516 624-6124

Town of Oyster Bay residents and non residents. Bathing in Oyster Bay Harbor and Long Island Sound, refreshment stand. 650 feet on the Sound, nonresident fee.

>More

Coopers Beach

268 Meadow Lane / Southampton, New York 11968 / 631 283-0247

Coopers Beach in Southampton places top in the 2010 Top Ten Beaches in America according to Dr. Beach, and is consistently named on the listing of America's Top Ten Beaches. Visitors can enjoy the whi >More

Corey Beach

Middle Rd. and Atlantic Ave. / Blue Point, NY 11715 / 631 451-6100

www.brookhaven.org

500 feet on Great South Bay, nonresident fee

>More

Crab Meadow Park

Crab Meadow Beach, Waterside Ave / Northport, NY 11768 / 516 571-8685

Beach - 1,060 feet on the Sound, nonresident fee

Crab Meadow Beach is located within Huntington Township on Long Island's North Shore. This calm water beach is located at the end of Waterside Av >More

Crescent Beach

110 Crescent Beach Dr / Halesite, NY 11743

400 feet on Northport Bay

>More

Cupsogue Beach County Park

906 Dune Road / Westhampton, NY 11978 / 631 852-8111

www.suffolkcountyny.gov/parks

This 206 acre barrier beach park offers lifeguard supervised Atlantic Ocean swimming, sun bathing on white sand

http://www.epa.gov/Region2/water/whp.htm
Last updated on Tuesday, October 05, 2010

Region 2 Water

Wellhead Protection Program

- The Safe Drinking Water Act Amendments of 1986 requested states to establish a Wellhead Protection Program (WHP) for ground water-based public water supplies. (The term "wellhead" is essentially synonymous with either a well or the column or "head" of water within a well.)

- Each state was asked to develop, with public participation, a Wellhead Protection Program Plan that was to be reviewed and approved by EPA. The Plan would describe how the state would accomplish the following three tasks:

  1. Determination of a wellhead protection area based on ground water flow and other hydrogeologic information;

  2. Development of an inventory of potential pollution sources within the wellhead protection area;

  3. Management and control of the potential sources of pollution identified within the wellhead protection area. Anticipated management techniques would range from purely voluntary approaches such as outreach and education to regulatory approaches such as ordinances containing land-use prohibitions.

- Between 1990 and 1991, New York, New Jersey, and Puerto Rico submitted Wellhead Protection Program Plans that were approved by EPA. (The U.S. Virgin Islands has not yet submitted its final plan for approval.)

- Since 1992, the states have been receiving EPA funding to implement the various components of wellhead protection. The states are required to submit to EPA a Biennial Wellhead Protection Report, summarizing their accomplishments.

WHP State Contacts:

- **New York**: Ron Entringer, NYSDOH, 518-458-6743
- **New Jersey**: Robert Kecskes, NJDEP, 609-777-1053
- **Puerto Rico:** Roberto Ayala, PREQB, 787-767-8073

Contact: Gould.Stephen@epa.gov

1 of 1

Wellhead Protection Program

May 2002

Overview

The Wellhead Protection Program was transferred from the New York State Department of Environmental Conservation (DEC) to the New York State Department of Health (DOH) and integrated with the DOH's Source Water Assessment Program. The Source Water Assessment Program provides information on the potential threat of contamination to both ground water and surface water sources that supply New York's public drinking water systems. Integrating the Wellhead Protection Program and the Source Water Assessment Program assures program efficiency and compatibility and provides additional protection to New York's drinking waters. Communities developing a wellhead protection program should contact their local health department to formulate a strategy to integrate their Source Water Assessment into their Wellhead Protection Program.

The Wellhead Protection Program was created by the 1986 Amendments to the Safe Drinking Water Act. The DEC developed New York's Wellhead Protection Program, which was approved by the U.S. Environmental Protection Agency in 1990. The goal of the Wellhead Protection Program is to protect the ground water sources and wellhead areas that supply public drinking water systems from contamination. New York's approach to wellhead protection recognizes and includes the existing federal, state and county programs that protect groundwater and complements these programs through a combination of activities and efforts using existing public and private agencies and organizations at all levels.

In October 1998, Governor Pataki transferred the administration of New York's Wellhead Protection Program from the DEC to the DOH. This transfer was initiated to improve program efficiency and compatibility with the DOH's Source Water Assessment Program. The 1996 Amendments to the federal Safe Drinking Water Act mandate that each state develop a Source Water Assessment Program. In New York, the Source Water Assessment Program is being developed and implemented by the DOH. Although the Wellhead Protection Program has been transferred to the DOH, the DEC retains the lead responsibility for several key programs that provide a foundation for wellhead and source water protection. The DOH will administer the Wellhead Protection Program in accordance with the EPA approved Wellhead Protection Program plan.

Under the Source Water Assessment Program, source water assessments will be completed for all sources of public drinking water, including surface water sources, which are used by public water systems. Source water assessments will provide information on the potential contaminant threats to public drinking water sources. Each assessment will include:

- a delineation of the aquifer and/or watershed area(s) contributing to the drinking water supply;
- an inventory of the potential contaminant sources within these defined areas that may pose a threat to the drinking water quality; and
- an evaluation of the likelihood that the drinking water supply could become contaminated.

Completed source water assessments will provide a rational basis for future source water protection activities in wellhead and watershed areas because the source water assessments will identify the most significant threats of contamination to the source of public drinking water.

One of the underlying principals of the Source Water Assessment Program is to maximize use of existing information. As part of the source water assessment process, information related to wellhead protection efforts will be reviewed and utilized whenever possible. The Wellhead Protection Program includes developing a specific management plan for protecting the ground water resource. This may require a detailed delineation to determine where the ground water is coming from within an aquifer. The management plan may also include an inventory of possible sources of contamination that could affect the water quality of the ground water resource. The source water assessments will build upon the delineations and contaminant inventories that were completed for public water systems under the Wellhead Protection Program.

Get Involved with Source Water Protection in Your Wellhead Area

The support and involvement of public water suppliers is vital to effective protection of public drinking water supplies. The DOH is encouraging local government, public water suppliers and local, state and federal

agencies and groups that work with them to become involved in source water protection. You can become involved with source water protection in your wellhead area by working with your local health department. Small public water systems can receive technical advice from various sources, including the New York Rural Water Association. You can contact the New York Rural Water Association at www.nyruralwater.org/downloads/bulletins/wellhead_protection.pdf, or by contacting Mr. Steve Winkley at 1-888-NYRURAL.

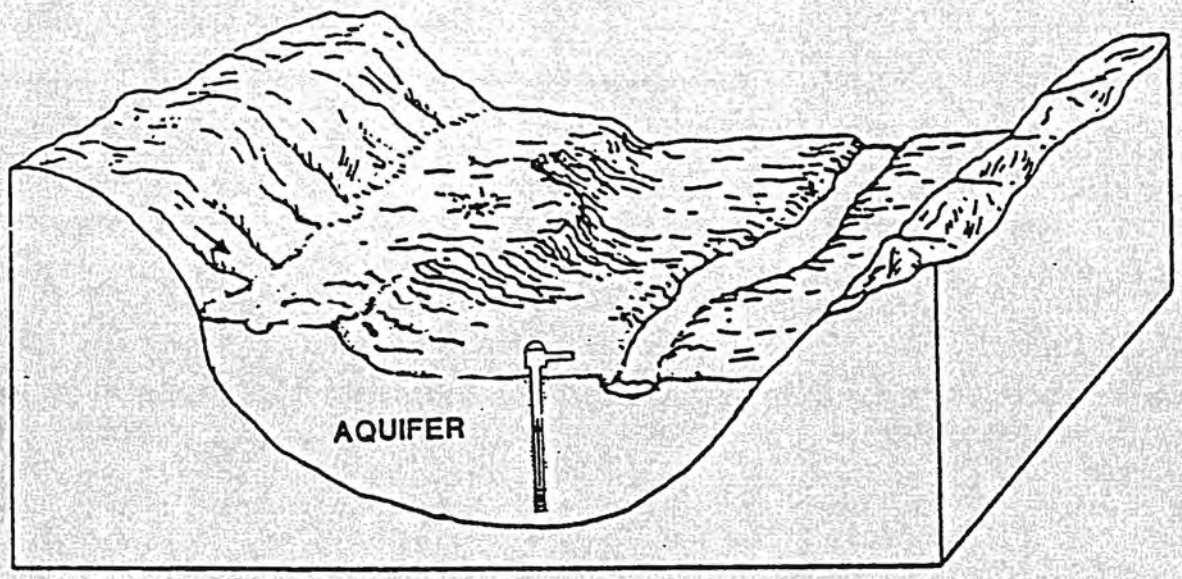
For More Information:

Center for Environmental Health
Bureau of Water Supply Protection
Empire State Plaza-Corning Tower, Room 1110
Albany, New York 12237

Questions or comments: bpwsp@health.state.ny.us
Revised: August 2012

Department of Environmental Conservation

NEW YORK STATE WELLHEAD PROTECTION PROGRAM



Submittal
to
United States Environmental Protection Agency

New York State Department of Environmental Conservation
MARIO M. CUOMO, *Governor* THOMAS C. JORLING, *Commissioner*

September 1990

NEW YORK STATE
WELLHEAD PROTECTION PROGRAM

SUBMITTAL
TO
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
IN
APPLICATION FOR IMPLEMENTATION FUNDS

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF WATER
ALBANY, NY

SEPTEMBER 1990

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PREFACE

This report represents a revision of the Proposed New York State Wellhead Protection Program, submitted to the U.S. Environmental Protection Agency on June 19, 1989. Following the June 1989 submittal, there was an additional review by the New York State Wellhead Protection Advisory Committee (see ACKNOWLEDGEMENTS) and by key program managers and regional staff of the NYS Department of Environmental Conservation. The initial comments of the USEPA concerning the submittal were received by New York in January 1990. In March 1990, the USEPA, in accordance with the provisions of the Safe Drinking Water Act amendments, notified the state that the submittal was incomplete. A public hearing was held in August, 1990 to complete the process. Comments received were used in revising this document, and are also discussed in an attachment to this Submittal. The revisions contained in this document primarily include many clarifications of statements made ih the original document, but also include additional items to complete the original submittal (e.g., public participation summary) and items to address the adequacy concerns of USEPA.

The wellhead protection activities of the Department of Environmental Conservation in the intervening period have included further development of new source management programs (e.g., chemical bulk storage), incorporation of wellhead protection in existing programs (e.g., water supply permit program), assistance to regional planning agencies in wellhead protection activities (e.g., 205(j) projects on source identification), regional and statewide outreach and education efforts, and providing geologic information and unconsolidated aquifer delineation information.

Most importantly, the interest of county agencies and municipal governments in New York in wellhead protection has grown considerably since the June 1989 submittal, with significant activity by key counties and municipalities in Upstate New York, by the Long Island Regional Planning Board concerning Long Island's Special Groundwater Protection Areas, and by Long Island's major water suppliers. Substantial interest in training (including delineation models and management tools), and in developing protection ordinances has been expressed.

Agencies and local government associations apart from the Department of Environmental Conservation have initiated public discussion and training activities concerning wellhead protection and groundwater management.

These activities demonstrate the desired evolution of local wellhead protection programs that the New York State Wellhead Protection Program is designed to foster.

ACKNOWLEDGEMENTS

The New York State Department of Environmental Conservation gratefully acknowledges the assistance and recommendations of the members of the Wellhead Protection Advisory Committee. To date, these members have included the following:

- Aldo Andreoli, Suffolk County Dept. of Health Services
- Donald Beavers, Temporary Commission on Tug Hill
- Donald Bingham, U.S. Geological Survey
- Jessica Breiten, Herkimer-Oneida Planning Dept.
- James Coon, NYS Dept. of State;
- Robert Denz, Broome County Health Dept
- Hope Donovan, League of Women Voters
- John Edwards, Long Island Water Conference
- James Feuss, Cortland Co. Dept. of Health
- Robert Fickies, NYS Geological Survey
- William Gollnitz, Chautauqua Co. Health Dept.
- Bernard Gorman, Long Island Water Conference
- Nancy Jarvis, Cortland Co. Planning Dept.
- Richard Kasprowicz, NYS Dept. of Health
- Margaret Kavanaugh, Schenectady Co. Planning Dept.
- John Kent, Herkimer-Oneida Planning Dept.
- William Lee, American Water Resources Association
- Sarah Meyland, Suffolk Co. Water Authority
- Todd Miller, U.S. Geological Survey
- Jacqueline Moody, NYS Dept. of Agriculture & Markets
- James Napoli, Dutchess Co. Health Dept.
- Donald O'Dell, NYS Dept. of State
- Francis Padar, Nassau Co. Dept. of Health
- Kenneth Pokalsky, Business Council of NYS
- Keith Porter, NYS Water Resources Institute-Cornell University
- George Proios, NYS Legislative Comm. on Water Resource Needs of L.I.
- Thomas Reamon, NYS Dept. of Health
- Joseph Salvato, American Water Works Association
- Ronald Slotkin, Broome Co. Health Dept.
- David Stern, NYS Legislative Comm. on Water Resource Needs of L.I.
- John Stonebanks, Suffolk Co. Water Authority
- Edith Tannenbaum, Long Island Regional Planning Board
- Mark Walker, NYS Water Resources Institute-Cornell University
- Patricia Walsh, Association of Towns of the State of New York
- John Williams, U.S. Geological Survey
- Donald Zizzi, Schenectady Co. Planning Dept

The original submittal (June 19, 1989) was prepared by Allan Tedrow, Kevin Roberts and James Lister of the NYS Department of Environmental Conservation, Division of Water, Groundwater Management Section. The revised document (September, 1990) was prepared by Kevin Roberts and Allan Tedrow.

The typing of this document by Barbara J. Crier, of the Department of Environmental Conservation, is also gratefully acknowledged.

CHAPTER 1

WELLHEAD PROTECTION PROGRAM SUMMARY AND PURPOSE

1.1. Introduction

Responsible and effective environmental management demands careful focus on geographic areas where resource management is most needed to achieve the greatest benefit for a given level of effort. This is the overriding objective of wellhead area protection. The resource is groundwater. The benefit is reducing the risk of contamination of drinking water supply wells for the greatest number of people. The level of effort includes the cost of activities ranging from planning and assessment to the implementation and enforcement of appropriate groundwater quality protection controls at all levels of government. The issues to be evaluated and resolved include better defining the federal, state and local government partnership in groundwater protection, establishing the most rational geographic targeting and preventive management framework, and determining the optimum allocation of funds, if they become available, to achieve results.

This report is intended to satisfy the requirements of Section 1428 of the Safe Drinking Water Act in describing New York State's overall goal and plan for groundwater resource and wellhead area protection. Many important elements of wellhead area protection will evolve as local plans are designed and evaluated, especially aspects involving education, local government roles, and data collection and assessment. This submittal is intended to serve as supporting information in application for assistance funds from EPA to further develop and implement the plan. It presents the basic direction for using additional support obtained through new funding or reallocation of existing resources.

The elements of this report include the following:

- Duties of state agencies, local governments and public water supply systems (Chapter 2).
- Delineation of wellhead protection areas (Chapter 3).
- Identification of potential groundwater contamination sources (Chapter 4).
- Discussion of groundwater management approaches (Chapter 5).
- Discussion of groundwater-dependent public water system contingency planning (Chapter 6).
- Discussion of wellhead protection planning for new wells (Chapter 7).
- Discussion of public participation aspects (Chapter 8).

It is important to recognize that the proposed Wellhead Protection Program is not the first groundwater resource protection program in New York State. It does not replace the state's existing groundwater management program. Indeed, its goals and structure are already contained within that comprehensive program. This submittal refines and extends the geographic targeting framework already adopted as a principal groundwater protection policy. The basic groundwater program will continue to apply to the entire groundwater resource of the state and thus will provide a significant degree of protection for all groundwaters.

The remainder of this chapter provides additional introductory background on New York State's groundwater resources, its existing groundwater management program, and the general meaning of wellhead area protection.

1.2. Background: Groundwater and Groundwater Management in New York State

Groundwater is a critically important and uniquely vulnerable source of drinking water for over six million people in New York State, roughly one-third of the state's residents. These people draw their water from over 5,000 community wellfields or wells (serving over four million people), and more than 10,000 non-community public wells and an unknown number of private wells (serving

over two million people). In recent years, increased use of chemicals in our society has been accompanied by increasing evidence of contamination of groundwater resources. This contamination, in some cases, has been caused by chemicals of significant toxicological concern and has been sufficient to require closure or treatment of public and private water supplies.

New York State recognized the importance of groundwater resource and drinking water protection relatively early and began the development of its groundwater quality management programs in the years following World War II. Groundwater classifications and standards evolved into groundwater discharge limitations and early wellhead protection area approaches. The adoption of 83 ambient groundwater quality standards in 1978, supplemented by drinking water quality standards, coincided with the development of comprehensive groundwater protection programs. This culminated in the final publication of two major reports, the Long Island Groundwater Management Program (1986), and the Upstate New York Groundwater Management Program (1987).

These comprehensive programs form the foundation for all groundwater management efforts in the state. They encompass many major groundwater protection programs, including but not limited to solid waste, hazardous waste, pesticides, petroleum, hazardous substances, mining, and wastewater disposal and discharge. They include the activities of all relevant state agencies and form a bridge to local government activities. Most importantly, the comprehensive program reports specifically describe geographic targeting frameworks for groundwater protection that are the basis for wellhead area protection.

More recently, the New York State Water Resources Planning Council published a comprehensive New York State Water Resources Management Strategy (1989). This Strategy, prepared with major input from the New York State Departments of Environmental Conservation and Health, from local government and public representatives, and from six other state agencies, comprises 14 volumes and addresses specific issues in 13 regions of the state. It endorses the geographic targeting frameworks of the previous Groundwater Management Program reports and supports the adoption of Watershed Rules and Regulations as a protective management approach for public water supplies.

As a general rule, wellhead area protection is a targeting approach to protect groundwater supplying specific wells. In certain cases, wellfields with multiple wells or regions with high densities of wells and complicated recharge characteristics must be considered together. Aquifer-level or aquifer segment targeting is a potentially useful approach for wellhead protection in New York because the aquifers are typically not geographically extensive (Upstate New York) or are pumped using a great number of wells (Long Island).

An important aspect of New York State's groundwater program is that <u>all</u> fresh groundwaters in the state are classified for best usage as a source of potable water supply (Class GA) regardless of location or current use. The comprehensive set of ambient groundwater quality standards and guidelines apply to all groundwater. These standards and guidelines (which include drinking water standards) underlie all major groundwater protection programs currently operating or under development.

New York's groundwater management programs have either already adopted or have begun to set a targeting framework that goes beyond commonly recognized wellhead area concepts. In Nassau and Suffolk counties (which share a single aquifer system on Long Island), considerable effort has been devoted to the delineation and revision of the boundaries of eight hydrogeologic zones. The Deep Flow Recharge Area (which comprises three of these zones) is considered to be the highest priority area for protecting wells in the deeper Magothy and Lloyd aquifers. Management program targeting on Long Island is keyed to these eight zones.

Additionally, nine Special Groundwater Protection Areas (SGPAs) have been delineated on Long Island and are the subject of an extensive planning effort funded in part by New York State and by the Long Island Regional Planning Board. Suffolk County has also defined "Water Supply Sensitive Areas" for protecting wells in the Glacial aquifer. The implementation of wellhead area

protection on Long Island will not replace this targeting approach. Additional geographic assessment may be included in the Wellhead Program for Long Island. It is important to emphasize that management program targeting and implementation are ultimately the most critical aspects of wellhead protection. The groundwater protection accomplishments of county-wide ordinances on Long Island must also be recognized.

In Upstate New York, unconsolidated aquifers are not as extensive as on Long Island. A considerable degree of geographic targeting has been achieved by the mapping and categorizing of Upstate aquifers. Many of these are relatively thin deposits of glacial drift in narrow valleys (less than one or two miles wide). Certain state-level programs, particularly waste management and disposal, are already strongly tied to these delineations.

The partnership between federal, state and local government is perhaps the most important part of a successful wellhead protection effort. Certain local land use control elements of a successful program are not within the state's statutory authority and are more appropriately implemented at the local level. Under the home rule provisions of New York State Law, towns, cities and villages are responsible for regulating land use. Land use controls are an important component of wellhead protection plans.

The state/local partnership is also important in adjusting protection efforts to be sensitive to local and regional differences in the groundwater resources and vulnerability, uses, programs, and local capacity for management. Local authorities in many areas of the state also have the principal authority for inspecting and testing potential contamination sources and have important roles in enforcement.

1.3. Wellhead Protection Program: Purpose and Goal

The purpose and goal of New York State's Wellhead Protection Program are to protect wellhead areas within New York State from contaminants which may have any adverse effects on the health of persons, as described in the federal Safe Drinking Water Act. This goal is more explicitly described in the adopted New York State Groundwater Management Program as follows:

1. Protect and conserve groundwater resources for the best use as drinking water supply.

2. Emphasize problem prevention.

3. Target the groundwater program to most effectively use available program resources by focusing special emphasis on critical high-yielding aquifer systems.

4. Foster a state/local partnership.

The quantity management goal of the comprehensive program has been deleted from this list. However, the Wellhead Protection Program, essentially a quality management effort, is indirectly supportive of the quantity goal because protection of existing wells reduces the need to abandon supplies and develop new sources.

The key goal for emphasis in the Wellhead Protection Program is the third, that of geographic targeting, which has been left in the original groundwater program wording above. Part of the emphasis of the Wellhead Protection Program will be to refine and strengthen this goal.

The Wellhead Protection Program will promote targeting of staffing and funding resources and adjust program operations to achieve the maximum water quality protection benefits. Determining the optimum balance between expenditures on geographic assessment (delineation and mapping) and expenditures on improved enforcement of existing programs and development of new programs is the key challenge in developing the wellhead protection effort. This balance will differ in different areas of the state. In all areas of the state, a major need is actual program implementation and enforcement.

Wellhead protection cannot be viewed in a discrete, piecemeal fashion. The steps of delineation, source inventory and source management and control must be considered together. A scheme of very costly groundwater flow delineation analyses cannot be consistent

with the overall wellhead protection objectives if they unduly diminish funds available for management program implementation or if the management program does not require great sophistication. Increased refinements of delineations are justifiable to the extent that corresponding refinements in management and enforcement are practical and possible.

1.4. Wellhead Protection Program Summary

This summary is an overview of material developed in more detail in Chapters 2 through 8.

1.4.1. Agency Responsibilities

The Department of Environmental Conservation (DEC) is the principal agency responsible for developing and implementing state-level aspects of the Wellhead Protection Program and for coordination. The Department of Health (DOH) is responsible for certain aspects related to public water supply well data, contingency planning, new well planning, and Watershed Rules and Regulations. Regional and county planning agencies and county governments are responsible for county-level planning, management and educational outreach elements in the overall program, in addition to any county-level ordinances developed for wellhead protection. Town, village and city governments are responsible for local land use control, local ordinances and other local-level aspects of wellhead protection. Water suppliers will have a role in developing local Watershed Rules and Regulations, education, land acquisition and other program aspects determined by DEC and DOH. The educational effort will be shared by all levels, including Cooperative Extension, the universities and the State Education Department. Federal agencies and other state agencies will participate as appropriate, as coordinated by DEC with the assistance of EPA for federal agencies.

1.4.2. Wellhead Protection Area Delineation

The Safe Drinking Water Act defines a Wellhead Protection Area (WHPA) as "the surface and subsurface area surrounding a water well or wellfield, supplying a public water system, through which contaminants are reasonably likely to move toward and reach such water well or wellfields." This definition is not specific because there is no time framework and because there is a requirement that contaminants be reasonably likely to reach the well, a condition that is very difficult to accurately predict. States are given flexibility by the Safe Drinking Water Act in determining delineation approaches.

New York State proposes that unconsolidated aquifer boundaries serve as the fundamental delineation of wellhead protection areas and that a multiple zone approach be used within the total WHPA for varying management relative to risk. This approach is modified for Long Island and for bedrock aquifers, as described in Chapter 3. New York's approach proposes to allow local flexibility in an evolutionary process of delineation refinements, and to allow utilization of previously delineated protection areas, where appropriate.

There are many distinct advantages in this overall approach. A very important advantage is that considerable aquifer characterization and mapping work has already been accomplished. Second, it is consistent with the evolution and principal policies of both the comprehensive New York State Groundwater Management Program (1987) and New York State Water Resources Management Strategy (1989), in addition to the New York State Watershed Rules and Regulation policies. Third, it focuses attention of local governments on the entire aquifer resource and facilitates contingency planning and new (or future) well protection. Finally, it provides a base within which more sophisticated delineations (e.g., subdividing the overall WHPA) can be made as programs require and funding permits.

A possible drawback of using aquifer boundaries--that aquifers may be broad regional systems--is not a major problem in most of New York State. In Upstate New York most public water supplies using groundwater are in unconsolidated aquifers of rather limited areal extent. Most important recharge areas are within the boundaries of the unconsolidated aquifers, another advantage of this approach.

Chapter 3 provides further details and background on wellhead protection area delineation.

1.4.3. Potential Contamination Source Identification

The New York State Wellhead Protection Program proposes to use the classification of potential contamination sources based on process or operation proposed by the Office of Technology Assessment and endorsed by USEPA.

Many source inventory and identification programs are already in place or are being developed for individual groundwater protection programs. These include but are not limited to registries of hazardous waste disposal sites, petroleum storage locations, the Industrial Chemical Survey, records of the State Pollutant Discharge Elimination System (SPDES), and the hazardous material storage registry (in development). Similar information is available for other potential sources (mining, municipal waste, etc.). Other inventories (pesticides, salt storage) are needed and certain improvements (locational data, data formats) are needed in the existing registries.

The effort expended in pinpointing and mapping any possible source will be determined in balance with the effort needed to manage the most important sources. The current registries will be used as much as possible at the greatest level of geographic detail feasible within the constraints of the registry. Using these registries, some sources outside of the actual wellhead protection areas may be listed. An effort will be made to explore new formats for processing available registry data to maximize compatibility and ease of interpretation.

Chapter 4 provides further detail on potential contamination source inventory.

1.4.4. Groundwater Management Approaches

The emphasis in groundwater management efforts from the state level will be to continue to develop and implement the program recommendations made as part of the comprehensive groundwater management program, with a special focus on aspects relevant to geographic targeting of program elements.

Groundwater protection for all fresh groundwaters in New York is accomplished in the existing state regulatory programs by classifying all fresh groundwaters as potential drinking water sources, and using the stringent 6 NYCRR Part 703 groundwater standards as the management objectives statewide. Solid and hazardous waste management programs formally utilize geographic targeting as a management tool. Other state-level programs (e.g., spill response) have integrated major water supply aquifer targeting into day-to-day functions even though such targeting may not be explicitly stated in written policy.

Current and developing state-level programs will be evaluated to determine useful new approaches or cost-effective methods for targeting management practices. The needs identified will be considered in allocating available funds or staff, soliciting new funds, and in regulatory and program development.

Local governments, with the authority to regulate land use, have the capability of controlling new facilities through zoning and site plan review. Density of new development can also be controlled through zoning. Adoption of specific groundwater protection ordinances is also an avenue available to municipal and county governments, through sanitary codes or other approaches. Finally, land acquisition for groundwater protection is a viable management tool for local governments and water suppliers.

Watershed Rules and Regulations can be promulgated by the New York State Health Department following initiation and development by public water purveyors, whether municipal or privately-owned. The WHPA delineation proposals in this submittal are compatible with the models for Watershed Rules and Regulations.

The state will also use its available resources and explore new approaches for technical assistance, outreach and education to local governments to encourage participation and local initiatives. The potential for using "facilitated training", or training intermediate parties to train local groups, will be considered.

Management aspects are described in further detail in Chapter 5.

1.4.5. Contingency Planning

The existing contingency planning requirements of the New York State Department of Health's emergency planning program meet and exceed the requirements of Section 1428(a)(b) of the Safe Drinking Water Act. The existing New York program deals with all forms of water supply emergencies. In addition, the Superfund Amendments and Reauthorization Act (SARA) Title III emergency planning activities in New York support contingency planning needs for wellhead protection.

Chapter 6 further discusses contingency planning.

1.4.6. New Well Planning

The existing New York State Water Supply Permit Program enables the Department of Environmental Conservation to require, as part of the permit approval process, the adoption of a groundwater (or wellhead) protection plan for proposed new wells. The New York State Wellhead Protection Program proposes that development of such a plan be required for new wells. The plan may include Watershed Rules and Regulations, local ordinances (town, village, or city), or county ordinances. Such plans often will entail the collection of hydrogeologic information to support WHPA delineations. Such plans must be consistent with existing authorities of the water supplier and they may include intermunicipal or county-level agreements or Watershed Rules and Regulations (NYSDOH).

This aspect of the Wellhead Protection Program is further discussed in Chapter 7.

1.4.7. Public Participation

There has been substantial public participation in the evolution of these proposals, particularly in the two major planning and strategy development projects from which New York's Wellhead Protection Program was derived. The public participation in both the New York State Groundwater Management Plan and the New York State Water Resources Management Strategy fully adhered to public participation procedures.

In addition, the Wellhead Protection Program development has established a Wellhead Protection Advisory Committee to assist in development of the submittal.

Public participation is further discussed in Chapter 8.

1.5. Evaluation of Wellhead Protection Program Progress

Program progress reports which evaluate Wellhead Protection Program development and implementation will follow one of two alternative approaches. In the event that an Assistance Agreement is adopted between EPA and DEC in accordance with the provisions of the Safe Drinking Water Act, three types of reports will be submitted to EPA which are specific to the Wellhead Protection Program and which follow the "Guidance for Applicants for State Wellhead Protection Program Funds Under the Safe Drinking Water Act" (EPA 440/6-87-011).

These are:

a. Interim and End-of-Year Progress Reports;

b. Biennial Status Report; and

c. Annual Financial Status Report.

The precise content and schedule for these reports would be negotiated as part of the Assistance Agreement.

If EPA does not provide assistance and an Assistance Agreement is not established, the progress of the Wellhead Protection Program will be reported within the context of the already established procedures for reviewing the DEC Division of Water Management Plan between DEC and EPA.

CHAPTER 2

DUTIES AND RESPONSIBILITIES

2.1. Introduction

New York State's designation of the wellhead area as the highest priority area for groundwater protection is documented in New York State's Groundwater Management Program. Wellhead protection is a concept that has been utilized by a number of environmental and public health programs in New York State for decades. The passage of the 1986 Amendments of the Safe Drinking Water Act creating the Wellhead Protection Program serves as an opportunity for New York State to build on previous efforts and to foster a coherent and consistent statewide approach for a wellhead protection program through additional management efforts.

New York State's proposed Wellhead Protection Program (WHPP) has been developed from existing regulatory and management structures. Within the state there are agencies and programs at all levels of government established to regulate, enhance and manage natural resources and protect the public health. As in the State's Groundwater Management Program, it will be largely these agencies and programs that will be called upon to implement an effective WHPP.

2.2. Federal Agencies: General Responsibilities

There are two principal federal agencies with important roles and responsibilities relating to groundwater protection in New York State. These are the U.S. Environmental Protection Agency (USEPA) and the U.S. Geological Survey (USGS), a unit of the Department of Interior.

2.2.1. Environmental Protection Agency

The USEPA is the agency responsible for most of the major federal regulatory programs which provide for protection of the environment and public health. These include: the Clean Water Act (CWA), the Safe Drinking Water Act (SDWA), the Resource Conservation and Recovery Act (RCRA), Superfund (CERCLA), the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), the Toxic Substances Control Act (TSCA), and the Clean Air Act (CAA).

EPA generally delegates many of the specific program activities to the states upon request and upon attainment of legislative requirements. This allows the state to be flexible in tailoring the program to local environmental needs (to the extent permitted by statute). EPA continues to play a role in overseeing state performance in carrying out delegated national programs which use federal grants and in supporting the states through technical expertise and research.

New York State has received delegation of programs under the Clean Water Act, the Safe Drinking Water Act, RCRA, and the Clean Air Act. The authorities in the Acts are generally mirrored by comparable state legislation, and the delegated programs have in the past decade provided essential funding support to assist strong state programs in water pollution control, public water supply regulation, air pollution control, and solid and hazardous waste management.

Not all elements of federal programs have been delegated. Examples of program activities for which USEPA maintains direct responsibility in New York include:

- Development of national drinking water quality standards (note that New York maintains a more comprehensive set of state drinking water standards);
- Designation of "sole source" aquifers under the Safe Drinking Water Act;
- Underground injection control under the Safe Drinking Water Act;
- Registration of pesticides for use under FIFRA;

- Administration of federal Superfund.

2.2.2. U.S. Geological Survey

The second federal agency with major responsibility relating to groundwater in New York State is the U.S. Geological Survey - Water Resources Division (USGS-WRD). The mission of the USGS-WRD, which is a non-regulatory agency, is to develop and disseminate scientific knowledge and understanding of the Nation's water resources. In cooperation with federal, state and local agencies, the USGS-WRD maintains an observation-well network for collection of groundwater levels and conducts interpretive investigations of the groundwater resources in New York State. The USGS-WRD maintains extensive files of groundwater data including computerized databases containing information from over 40,000 wells in the state.

The USGS-WRD will provide technical support to the Wellhead Protection Program by providing groundwater data and through cooperatively funded investigations. Wellhead protection-related investigations include regional studies of the hydrogeology and water quality of the state's aquifers and demonstration projects involving the delineation of contributing areas and sources of recharge to wellfields in selected representative hydrogeologic settings.

2.2.3. Other Federal Agencies

Several other federal agencies have indirect relationships to wellhead protection in New York. With respect to technical support, the soil information collected by the U.S. Department of Agriculture - Soil Conservation Service (SCS) may be utilized in various aspects of the program. This information is generally available in published form. Coordination between NYS and the SCS State Office in Syracuse is generally routine and direct, and no new arrangements are needed.

There is relatively little federal land in New York State outside of several military facilities. Of these, only Fort Drum in Jefferson County is a significant user of groundwater for public water supply. In such cases, the policies described in this submittal apply. The WHPA's have already been determined according to the delineation approach in Chapter 3. General coordination with the facility will be through the Department of Environmental Conservation's Regional Office. Such coordination has been routine in the past.

For other coordination with federal agencies not related to site-specific concerns, the USEPA-Region II office (New York City) will be responsible for assisting the Central Office of the Department of Environmental Conservation in communications and issue resolution.

2.3. State Agencies: General Responsibilities

There are a variety of state agencies with interests and responsibilities relating to groundwater and wellhead protection. The two agencies with the most direct responsibilities are the Department of Environmental Conservation (DEC) and the Department of Health (DOH).

2.3.1. Department of Environmental Conservation

The DEC is the state's environmental agency, with responsibility for administering a full array of environmental quality and natural resource programs. The Department is the state's custodian for water in the environment. It is charged with the "coordinated management of water resources" (ECL Section 3-03031), the control of water pollution and the maintenance of reasonable standards of purity of the state's waters, both ground and surface (ECL Article 17). The DEC is also the agency that has been delegated authority to administer a number of EPA programs under the CWA and RCRA such as the SPDES program and the municipal and hazardous waste programs. The DEC has been designated by the Governor to be responsible for the wellhead protection elements of the Safe Drinking Water Act.

Integral elements of the Department's groundwater management and wellhead protection programs include water resources planning, issuing water supply permits, setting ambient water quality standards and classifications, water quality monitoring and surveillance, issuing municipal and industrial

wastewater discharge permits (SPDES), spill response, regulating hazardous substance and petroleum bulk storage, regulating the development, operation and maintenance of municipal wastewater facilities, and the nonpoint source management program.

Several other programs regulate important potential sources of groundwater contamination. Principal among these are programs in the areas of solid and hazardous waste (including waste facilities regulation) permitting of industrial waste transport, state Superfund (relating to hazardous waste site remediation), and hazardous waste enforcement.

Other programs which have a relationship to wellhead protection include those in the areas of pesticides and other hazardous substances regulation, mineral resources, and oil and gas regulation.

2.3.2. Department of Health

The Department of Health (DOH), under the New York State Public Health Law, is responsible for the protection of public health and more particularly, to assure a potable supply of drinking water for the state's citizens. Generally, it is responsible for water which has been withdrawn by public water suppliers for distribution to the consumer.

EPA delegated the water system supervision aspects of the Safe Drinking Water Act to the DOH in the late 1970's. The DOH implements this aspect of the SDWA through Part 5 of the State Sanitary Code. Under the Public Health Law and Part 5, the DOH inspects public water supply systems in the state to ensure proper operation and maintenance and delivery of a potable and adequate supply of water. This program includes regulation of public water supply facility design and construction; monitoring of the quality of waters delivered to the tap; inspection surveillance, and evaluation of all public water systems; emergency response to water supply systems experiencing critical water quality or quantity problems; laboratory services; establishment of state drinking water standards; and enforcement of both state and federal drinking water standards. In addition, the DOH plays an integral role in DEC's water supply permit program through the review of water quality and plans for any needed treatment process, well construction or other improvements needed as part of the water supply permit.

The DOH evaluates available health effects data and establishes appropriate drinking water standards and guidelines.

Standards for installing on-site domestic sewage disposal systems are promulgated by the DOH with protection of public health and groundwater protection as goals.

The DOH has statutory authority for two programs which will play a significant role in the state's WHPP. These two programs are the Emergency Planning Program, and the Watershed Rules and Regulations Program.

2.3.3. Other State Agencies

Other state agencies also have roles and responsibilities which form parts of the state's current program for groundwater management and thus have a role in the state's WHPP. For example, the Department of State is responsible for many aspects related to local government, particularly training of zoning and planning board officials. The NYS Geological Survey is responsible for mapping the bedrock and surficial deposits of the state, and providing geologic advice and data to the various federal, state and local agencies concerned with protection of the state's groundwater resource. The Attorney General represents the state in cases of litigation to enforce regulatory controls and obtain clean-up by responsible parties. The New York State Soil and Water Conservation Committee provides guidance and training for managing certain nonpoint source threats. The NYS Legislative Commission on Water Resource Needs of Long Island is authorized to recommend groundwater protection approaches, new legislative or administrative actions for groundwater protection, and to investigate and evaluate water resource studies.

2.4. Regional Planning Agencies

Regional planning agencies exist in many areas of New York State, including most of the areas which contain heavily utilized aquifer systems. These agencies prepare regional plans for a variety of public purposes, and undertake planning-related studies. In many cases, their activities have included water quality management planning under Sections 208 and 205(j) of the federal Clean Water Act. Regional planning agencies have supported wellhead protection program goals through assisting in coordination with counties, towns and municipalities, compiling hydrogeologic and contamination source location data, and applications of geographic information systems.

2.5. County and Local Governments

Land use controls are within the regulatory jurisdiction of local government, and are an important aspect of groundwater protection. Such land use controls may prohibit or otherwise manage activities that adversely affect wellhead areas and sensitive aquifer systems.

County agencies in many parts of New York State play an important role in assisting the administration of state-level regulatory programs, thereby effectively augmenting the effort devoted to these activities, as well as carrying out important management activities which cannot be accomplished within available state or federal resources.

2.5.1. County Government Agencies

Planning agencies and health agencies exist in most of New York State's counties.

County health agencies may administer major elements of state-level (DEC and DOH) programs for water pollution control and water supply regulation. In some cases, county health agencies also administer their own programs, resulting in a more comprehensive overall program than that administered by the state. A major example is Suffolk County on Long Island, where the County's Article 12 Program provides for comprehensive regulation of the storage and handling of toxic and hazardous chemicals.

County planning agencies are often involved in environmental or natural resource planning activities, as well as in providing expertise and technical assistance to local government on the development and implementation of local land use controls. In many cases, these agencies can assist in tailoring environmental management activities, such as wellhead or groundwater management, to best meet local needs and conditions. They also may be able to provide an important program linkage with local government on the development and implementation of land use controls to better protect wellheads and groundwaters.

County planning boards, under the General Municipal Law (Sections 239:l, m, n), must review certain municipal zoning actions and, where the county legislative body has so authorized, subdivision plats before the municipal board can take final action. While this is a limited power (if the county planning board opposes a certain action, the municipal board needs a majority plus one of the full board to approve said action), it can serve as a tool to raise the awareness of municipalities concerning groundwater and wellhead protection.

Several counties, such as Chautauqua and Cortland, have established the position of county groundwater coordinator. This position may be located either in the County Health Department or Planning Department. The general role of the position is to serve as a focal point for all groundwater protection and related activities within the county and to provide assistance to towns and municipalities. These positions are proving to be significant positive steps in furthering groundwater protection efforts in these counties.

All counties, except those in New York City, in New York State have County Soil and Water Conservation Districts (SWCDs) as well as Cooperative Extension offices. These agencies have strong working relationships with the rural/agricultural community in the state and increasingly with local governments in urbanizing

areas. The SWCDs work directly with farmers to develop farm conservation plans which include soil erosion control and nonpoint source control. SWCDs also review environmental data pertaining to soil properties, terrain, and associated watershed characteristics.

Cooperative Extension is an important vehicle for providing public education and information in rural areas. In its work with individual farmers, Cooperative Extension implements Integrated Pest Management and soil testing programs throughout the state. Where fertilizer and pesticide use in wellhead areas or over critical aquifer systems may be an issue, or where public education may be an appropriate means of addressing wellhead concerns generic to rural areas, these agencies represent important potential participants in the wellhead program.

2.5.2. Towns, Cities and Villages

Towns, cities and villages in New York State are vested under state law with responsibility for regulation of land use. Local land use controls (e.g., zoning) are not used widely at present for wellhead/groundwater protection, although a few important examples have recently emerged. In the future, however, effective local land use control powers must be an important element of management programs.

Zoning requirements which have been used for groundwater and wellhead area protection include: use restrictions; density limits; lot coverage; setbacks; special use permits; and performance standards.

In addition to zoning, municipalities also have authority for site plan and subdivision review and local ordinance adoption, all of which can play a significant role in wellhead/groundwater protection.

2.6. Public Water Supply Systems

While public water system purveyors generally do not have regulatory authority, they do have roles to play in the protection of water supply sources. Two specific areas of responsibility fall to the water purveyor; compliance with terms of the water supply permit authorizing the taking of water (administered by DEC), and the decision to develop Watershed Rules and Regulations (which are ultimately promulgated by the State Department of Health). Water supply permits for wells generally require the control of lands close to the well through ownership or easement.

Water purveyors also share the responsibility to educate their consumers about wellhead protection and what the consumer can do to promote groundwater and wellhead protection. It is therefore essential that the officials of public water supply systems be aware of potentially contaminating activities within their wellhead areas. It is further incumbent on these officials to identify the need for local wellhead protection programs. Without strong support by these officials, local programs may be difficult to establish.

2.7. Coordination

The Department of Environmental Conservation will have the central coordination role in the Wellhead Protection Program. Wellhead protection activities of the U.S. Environmental Protection Agency within New York State, including those related to local governments and the New York State Water Resources Institute's activities in New York State's WHPP, will be coordinated through the Department of Environmental Conservation's Wellhead Protection Program unit. The DEC's interactions with local governments will be through its existing agency structure, including both the DEC regional offices and direct coordination by the Central Office. The Department of Environmental Conservation will also be responsible for coordination with other NYS agencies and with other adjacent states concerning wellhead protection issues.

Interstate wellhead protection issues in actuality will be a rare concern in New York State. A review of public water supply well locations shows that very few systems are in the vicinity of state boundaries. In addition, there are relatively few interstate aquifer systems. The Department of Environmental Conservation will have the lead

responsibility for interstate coordination, where needed. Chapter 5 further discusses this issue.

2.8. Summary

The existing institutional structure in New York State can accommodate the program activities required to provide wellhead protection. Most of the required program elements already exist. Major new programs are not required. It is more important to provide adequate funding and carry out existing programs and responsibilities, with appropriate adjustment and targeting to provide a high level of wellhead protection. The following listing summarizes major responsibilities in wellhead protection.

SPECIFIC DUTIES IN WELLHEAD PROTECTION PROGRAM

Federal Agencies

1. **Environmental Protection Agency**
   - Oversight and approval of WHPP's
   - Technical guidance and assistance
   - Funding
   - Assist NYS in coordination with federal agencies
2. **U.S. Geological Survey**
   - Development of information on groundwater resources
   - Assessing utility of various technical procedures for delineating wellhead areas
   - Determining usefulness of generic wellhead delineations using aquifer classification systems or other parameters
3. **Other Agencies**
   - Implementation of NYS WHPP (as appropriate)

State Agencies

1. **Department of Environmental Conservation**
   - Lead agency responsibility for WHPP as delegated by Governor.
   - Administering the major statewide environmental protection programs which regulate potential sources of groundwater contamination.
   - Installing and implementing wellhead protection concepts in environmental management programs.
   - Establishing wellhead protection area delineation policies, and review of enhanced local delineations.
   - Providing available records of potential contamination sources to local wellhead protection programs.
   - Providing guidance for local agencies for wellhead protection area delineations and management and promoting local WHPP's.
   - Reviewing and commenting on local programs.
   - Funding assistance for regional and local efforts to develop wellhead programs.
   - Oversight of reporting requirements and recordkeeping for Superfund Amendments and Reauthorization Act Title III data. Planning oversight is the responsibility of the State Emergency Management Office.
   - Oversight of the Water Supply Permit Program for new wells, and coordination with wellhead protection.

- Coordination (local governments, other state agencies, EPA and federal agencies, other states).
- Funding USGS cooperative program to continue groundwater and wellhead information development.

2. **Department of Health**
   - Promulgating watershed rules and regulations for groundwater supplies.
   - Promoting local initiatives for watershed rules and regulations.
   - Administering emergency planning requirements of State Law and SDWA.
   - Providing assistance for water supply programs administered by counties.

3. **Department of State**
   - Local government interactions and training of zoning and planning officials.

4. **State Geological Survey**
   - Miscellaneous aspects of geologic information management and assessment.

5. **New York State Water Resources Institute, Cooperative Extension and State Universities**
   - Community and local government education.
   - Research

6. **New York State Soil and Water Conservation Committee**
   - Guidance and outreach for certain nonpoint source threats.

7. **New York State Legislative Commission on Water Resource Needs of Long Island**
   - Education.
   - Recommending State legislation.

Local Agencies

1. **Municipal Governments**
   - Adopting local groundwater protection ordinances (including delineation), implementing and enforcing the ordinances.
   - Using zoning, site plan review, subdivision review powers to protect groundwater and wellhead areas.
   - Inventorying sources of contamination, as coordinated with water supplier and other state and local agencies, and as determined by local management programs for wellhead protection.

2. **County Governments**
   - Implementing NYSDEC and NYSDOH programs that are related to wellhead protection (as coordinated by the relevant state agency).
   - Adopting ordinances to supplement existing state regulations (6 NYCRR and 10 NYCRR), as appropriate, and implementing and enforcing the ordinances.
   - Providing local assistance to municipal and town governments related to wellhead protection.
   - Inventorying sources of contamination, as coordinated with water supplier and other state and local

agencies, and as determined by local management programs for wellhead protection.

- Educating county citizens and commercial sector concerning groundwater and wellhead protection.

3. **Regional Planning Agencies**

- Promoting and supporting local wellhead protection efforts.

- Inventorying sources of contamination, as coordinated with water supplier and other state and local agencies, and as determined by local management programs for wellhead protection.

4. **Public Water Supply System Purveyors**

- Evaluating need for and initiating (if appropriate) adoption of watershed rules and regulations including definition of protection zones.

- Inventorying sources of contamination, as coordinated with other state and local agencies, and as determined by local management programs for wellhead protection.

- Enforcing Watershed Rules and Regulations, in coordination with relevant state and local agencies.

- Implementing conditions of water supply permits, in coordination with relevant state and local agencies.

- Complying with emergency planning requirements of DOH.

- Participating in water user and public education efforts.

CHAPTER 3

WELLHEAD PROTECTION AREA DELINEATION

3.1. Introduction and Institutional Processes

3.1.1. Introduction

The comprehensive New York State Groundwater Management Program, developed in the early 1980's and published in revised and final documents in 1986 (for Long Island) and 1987 (for Upstate), recommended key policies and program initiatives endorsing geographic targeting and critical area protection. These concepts were forerunners of the Safe Drinking Water Act's Wellhead Protection Program. Significant progress has been made in different aspects of geographic targeting of programs and in different parts of New York State. New York acknowledges these accomplishments as an integral part of its overall Wellhead Protection Program.

Delineation determines geographic areas for which different levels of groundwater protection activities are to be instituted. The Wellhead Protection Program in New York State is intended to accomplish a wider recognition of targeting objectives by all levels of government, by citizens in general, and to begin an evolutionary process toward improved targeting and protective program implementation.

The basic wellhead protection delineation approach in New York State recognizes aquifers as the fundamental geographic unit for targeting management efforts. This approach must be modified where aquifers are broad regional systems (DEC considers this case to occur only on Long Island), or where aquifers are not well characterized (considered to be the case for bedrock aquifers, in general). Elsewhere, the unconsolidated aquifers of New York tend to be of limited areal extent and they generally include the important recharge areas within their boundaries. These unconsolidated aquifers also are the source of the large majority of groundwater-derived public water supply systems.

The New York State Wellhead Protection Program proposes that unconsolidated aquifer boundaries (the land surface overlying the aquifer) serve as the baseline definition for the overall wellhead protection area (WHPA). For the baseline definition, both confined and unconfined unconsolidated aquifers are grouped together. Revisions are allowable based on site-specific evaluations. This aquifer boundary approach is proposed to be modified on Long Island and for wells in bedrock aquifers as described in Section 3.2. For all public water supply wells, specific proposed WHPA delineation policies are described in Section 3.2.

The aquifer boundary approach for the overall WHPA has several distinct advantages. It takes advantage of considerable recent and ongoing work in mapping and detailed assessments of aquifer boundaries. Incorporating this work directly into the Wellhead Protection Program provides a practical way for more effective targeting to move forward rapidly rather than being constrained by the need to perform modeling to delineate protection areas.

The aquifer approach also encompasses other non-public wells and potential future well sites, and places major focus on the high-yielding groundwater resources which are most important and most vulnerable. This last aspect is considered very important in the education component of wellhead protection, both for local officials and for the general public.

Wellhead protection area delineation is an evolutionary process. The first need for refinement is the further subdivision of the total wellhead protection area, as required for differentiated management objectives. A second area for potential refinement is delineation of the overall WHPA in the Glacial Aquifer on Long Island and in bedrock aquifers. Issues related to these topics are reviewed in both Sections 3.2 and 3.3. Flexibility for refinement or revision is very important due to the wide variability in

hydrogeologic settings, data availability, and local degree of contamination threat in New York State.

3.1.2. Institutional Processes for Overall Delineation Policies

Advisory committee and work group input into the original comprehensive Groundwater Management Program was substantial. The basic concept of geographic targeting was set forth in that program. The groups included:

- Federal Agencies (EPA, USGS)
- State Agencies (DEC, DOH, DOT, Agriculture & Markets, Energy Office, Geological Survey)
- Cornell University
- County Agencies (Health, Planning)
- Associations (Conference of Mayors, American Water Works Association, Business Council)
- Citizen Groups (NRDC, League of Women Voters)

DEC reconvened most of the original contributors into an advisory committee to assist in guiding the Wellhead Protection Program, with particular emphasis on delineation issues. Added to the original group have been:

- State Agencies (Department of State)
- County Agencies (a wider range of county participants)
- Regional Agencies and Commissions (additional planning and legislative commissions)
- Associations (Association of Towns, American Water Resources Association)

The new group, the Wellhead Protection Advisory Committee, has also included additional participation from the U.S. Geological Survey and DEC geological staff.

The delineation approach proposed in this submittal was recommended by the DEC Groundwater Management Section (responsible for developing the program) and agreed to by the Wellhead Protection Advisory Committee (members listed in front of submittal). The delineation approach directly conforms with the policies in the formally adopted Upstate New York Groundwater Management Program and Long Island Groundwater Management Program.

The DEC has also established a Memorandum of Understanding (MOU) with the DOH concerning the development of the Wellhead Protection Program. Additional MOU's will be developed as needed to institutionalize interagency working arrangements.

To support the technical needs of DEC and of local governments in carrying out and refining delineations, DEC plans to convene an ongoing Delineation Technical Workgroup consisting of geologists and groundwater management staff of DEC, DOH, State Geological Survey, USGS, and local governments. This group would consider revisions or improvements in the overall delineation approach, and would essentially be concerned with hydrogeologic aspects of the program rather than administration or contamination source control. The mission of this group is to provide recommendations to the DEC staff responsible for the overall Wellhead Protection Program. It will be convened upon EPA approval of New York State's submittal and will meet on at least a semi-annual basis or as needed.

Local authorities involved in wellhead protection may vary, as discussed elsewhere in this submittal. Therefore, uniform institutional processes at the local level will not be proposed across the entire state. Local agencies may act according to their own needs and authority. However, in all cases where Watershed Rules and Regulations are utilized as the local wellhead protection approach, the existing requirements of the New York State Department of Health (DOH) will be followed. Similarly, for all new wells, the institutional requirements of the New York State Department of Environmental Conservation's (DEC) Water Supply Permit Program will apply.

The proposed responsibility for initiating refinements of the baseline delineations described in this submittal will depend upon the regulatory approach adopted. Delineation refinements to be incorporated in Watershed Rules and Regulations approaches will be initiated and performed by water purveyors. Delineation refinements to be incorporated in county, town, village or city ordinances (including local public health ordinances) will be initiated and performed by the corresponding political authority. Delineation refinements to be incorporated in state-level regulatory programs will be performed by DEC.

In practice, most local activities will involve coordination with the State DEC and DOH. Each Department routinely reviews local activities to ensure that there are no conflicts with respect to policies and procedures and advises on the availability of technical information for delineation purposes. The overall coordination for aspects specifically related to the WHPP is the responsibility of DEC.

Other institutions, particularly the U.S. Geological Survey and Cornell and other universities, may be involved in special projects or case studies, as coordinated by DEC.

3.2. Delineation Criteria, Thresholds and Methods

3.2.1. Background - Existing Geographic Targeting

The existing, and still evolving, geographic targeting framework for groundwater protection provides a priority system for managing risks to groundwater. Following is a brief summary:

- **Groundwater Classification - 6 NYCRR Part 703**

  Ambient water quality standards and guidelines apply to all Class GA (fresh) groundwaters. Class GA groundwaters are defined as having best use as a source of drinking water and must meet New York State's drinking water standards in addition to the ambient standards. State management programs use this framework for protection of all fresh groundwaters in New York State.

- **Unconsolidated Aquifers**

  Mapping of unconsolidated aquifers has progressed significantly including State-defined primary and principal aquifers which are subsets of the unconsolidated aquifers. Site-specific detailed mapping is still in progress.

  Primary and principal aquifers are generally similar geologically (both are highly productive unconsolidated deposits); primary aquifers are those which have large populations using them as drinking water sources. Primary aquifers have high priority for mapping additional hydrogeologic data through the DEC/USGS cooperative program, and in special Long Island programs.

  These delineations are used in the process for siting new waste disposal facilities.

- **Long Island Hydrogeologic Zones**

  Eight hydrogeologic zones have been delineated, covering all of Long Island. Three of these together comprise the Deep Flow Recharge Area. Management program initiatives (e.g., hazardous substance storage) are based on this Deep Flow Recharge Area.

- **Special Groundwater Protection Areas**

  Nine Special Groundwater Protection Areas have been delineated within the Deep Flow Recharge Area in both Nassau and Suffolk Counties and are currently the subject of a planning project by the Long Island Regional Planning Board.

- **Other Geographic Targeting Approaches**

  Suffolk County has specifically defined "Water Supply Sensitive Areas" which include zones 500 feet downgradient to 1,500

feet upgradient of public wells in the Upper Glacial Aquifer.

Watershed Rules and Regulations are promulgated by the NYS Department of Health upon initiation by local water purveyors. These include delineations of protection management zones for public water supply wells. The WRR delineations do not conflict with the wellhead protection area delineation policies proposed in this submittal.

The NYS Solid Waste Management Program, in 6 NYCRR Part 360, has defined "public water supply wellhead area" as the surface and subsurface area between a public water supply well or wellfield and the 99% theoretical maximum extent of the stabilized cone of depression of that well or wellfield considering all flow system boundaries and seasonal fluctuations. New landfills are banned in these areas, in addition to all primary and principal aquifers in the Upstate area. Special provisions are defined in law for Long Island siting. As with the Watershed Rules and Regulations, there is no conflict in terminology between the Part 360 public water supply wellhead area and the overall wellhead protection area proposed in this submittal. The overall protection area includes, and is larger than, the Part 360 wellhead itself. For landfill siting, Part 360 regulations will prevail. Part 360 determinations are made only for proposed landfill siting cases.

Other setback requirements have been utilized in various state or local management programs. When used, such as for pesticides (e.g., aldicarb) or septic tanks, the setbacks apply to all wells, public or private. As with the other targeting approaches, such setbacks do not conflict with the proposed wellhead protection area policies.

- Well Construction Specifications

  Direct protection of the wellhead itself is achieved through adoption of construction specifications and standards. These are administered by the New York State Department of Health and follow the "Recommended Standards for Water Works" (NYS Health Department Bulletin #42, 1982). They apply to public water supply wells.

3.2.2. Wellhead Protection Area Delineation Objectives

The USEPA guidance for development of wellhead protection programs (Guidance for Applicants for State Wellhead Protection Program Assistance Funds under the Safe Drinking Water Act, EPA 440/6-87-011) contains the expectation that proposed programs will be designed to provide protection from three types of threats: direct introduction of contaminants in the immediate well area, microbial contaminants, and chemical contaminants. The first is dealt with through well construction and completion standards to be applied at the wellhead itself. The second is managed by delineating a zone to keep potential sources sufficiently distant from the well to allow die-off of the microorganisms. Establishing a minimum distance by measurement or by time-of-travel is the most common procedure for delineating areas for protection against microbial contamination.

To achieve protection against chemical contamination, EPA suggests three delineation approaches: delineation of wellfield management areas, contamination attenuation zones, or remedial action zones. Since chemicals can travel long distances, all or part of the recharge area for a well becomes the zone to be delineated for protection efforts.

The overall goals of New York State's delineation approach are essentially a combination of the wellfield management and remedial action zone goals described by EPA.

Wellfield management is used to define areas where heightened levels of protection will be

emphasized. A number of different zones may be delineated for a single water supply to provide different levels of management. The management options may range from selected land use prohibitions to specialized design specifications, enhanced facility inspections, or increased monitoring and education.

The remedial action area approach excludes high risk activities from a specifically defined zone but still allows them in more distant recharge areas. This may be refined by varying exclusions in different zones according to risk or the importance of the activity. The remedial action area concept is best applied to new or changing land uses, whereas wellfield management may be applied to existing or new land uses.

The contamination attenuation zone approach described by EPA is difficult to strictly apply due to limited capabilities to accurately predict chemical migration and persistence. In addition, the New York State groundwater standards apply to all fresh groundwaters, reducing the utility of an attenuation zone approach.

3.2.3. Delineation Policy

The underlying objective of delineation is to use different degrees of management to control risks to water supplies. The significant diversity in geological conditions, aquifer use, and in local government capabilities across New York State indicates that the approach to delineation can not be uniform and rigid for all locations.

The ideal technical goal of wellhead delineation is to have sufficient knowledge of the hydrogeology of each public water supply well or wellfield to allow precise determination of the catchment area along with accurate times-of-travel for the entire flow system. Such information is not uniformly available across the state. New information will become available unevenly as funding from various local, state and federal sources is applied to specific priority areas.

In this setting, the New York State Wellhead Protection Program proposes general recognition of high-yielding aquifers (both confined and unconfined) as the fundamental wellhead protection area units. As described in Section 3.2.4., this policy recognizes that more targeted delineations will be necessary on Long Island because it is entirely an aquifer. Also, bedrock aquifers are not adequately characterized now to allow this approach; however, most of the major, high-yielding aquifers in New York are in unconsolidated deposits. Within the wellhead protection area, delineation of an area designated as the remedial action area is proposed, as described in Sectin 3.2.5.

This policy is intended to reinforce public and management program recognition of the need to protect high-yielding aquifers. It takes advantage of considerable past and ongoing work on aquifer mapping and delineation and will permit further progress in communities which have already delineated aquifer boundaries and protection areas. These communities may directly proceed to management implementation or may utilize available funds on more advanced hydrogeologic evaluations within the WHPA, depending on local needs and goals.

Within this framework, utilization of alternative delineation approaches (such as time-of-travel) is allowed and encouraged. In most cases, such alternative approaches would be applied to subdividing the WHPA within the unconsolidated aquifer boundaries for applying different levels of management. The WHPA itself would remain the area defined by aquifer boundaries. In some cases, such as for bedrock aquifers, the alternative approaches may be used to redefine the WHPA itself. The Department of Environmental Conservation will be responsible for providing guidance for such alternative approaches.

3.2.4. Wellhead Protection Area Delineations

The wellhead protection area delineation approach is summarized in Table 3.1. It recognizes that the aquifer system on Long Island and bedrock aquifers in Upstate New York must be treated differently than the unconsolidated aquifers in Upstate. The unconsolidated aquifer boundaries for the wellhead protection areas are those delineated on a series of maps titled

TABLE 3.1.
WELLHEAD PROTECTION AREA
DELINEATION SUMMARY

Geographic Region	Aquifer Area	Wellhead Protection Area Baseline Delineation
Long Island	Magothy & Lloyd Aquifers	Deep Flow Recharge Area
	Glacial Aquifer	Simplified Variable Shape: 1,500 ft. radius upgradient 500 ft. radius downgradient
Upstate	Unconsolidated Aquifers	Aquifer Boundaries (land surface)
	Bedrock Aquifers	Fixed Radius: 1,500 ft. radius

"Potential Yields of Wells in Unconsolidated Aquifers in Upstate New York" by the U.S. Geological Survey. Specifically, these maps, distributed for sale by the U.S. Geological Survey, are as follows:

1. Bugliosi, E.F., et al., 1988. Potential Yields of Wells in Unconsolidated Aquifers in Upstate New York - Lower Hudson Sheet. Water Resources Investigations Report 87-4274. U.S. Department of the Interior, Geological Survey, Albany, NY.

2. Bugliosi, E.F., et al., 1988. Potential Yields of Wells in Unconsolidated Aquifers in Upstate New York - Hudson Mohawk Sheet. Water Resources Investigations Report 87-4275, U.S. Department of the Interior, Geological Survey, Albany, NY.

3. Bugliosi, E.F., et al., 1988. Potential Yields of Wells in Unconsolidated Aquifers in Upstate New York - Adirondack Sheet. Water Resources Investigations Report 87-4276, U.S. Department of the Interior, Geological Survey, Albany, NY.

4. Miller, T.S., 1988. Unconsolidated Aquifers in Upstate New York - Finger Lakes Sheet. Water Resources Investigations Report 87-4122, U.S. Department of the Interior, Geological Survey, Albany, NY.

5. Miller, T.S., 1988. Potential Yields of Wells in Unconsolidated Aquifers in Upstate New York - Niagara Sheet. Water Resources Investigations Report 88-4076. U.S. Department of the Interior, Geological Survey, Albany, NY.

The boundaries illustrated on these maps serve as the total wellhead protection areas for public water supplies utilizing those aquifers. In certain cases, more detailed aquifer boundary maps or determinations for primary or principal aquifers (subsets of the full range of unconsolidated aquifers) have been or will be made by the U.S. Geological Survey or NYS Department of Environmental Conservation. These more detailed boundary determinations will generally supersede boundaries illustrated on the above referenced maps as "revised" delineations of wellhead protection areas.

Both unconfined and confined unconsolidated aquifers are included on these maps and both are included in this definition of the overall wellhead protection area.

For all public water supplies utilizing groundwater, the overall wellhead protection area (WHPA) delineation will be subdivided into two parts. The innermost zone is referred to as the Remedial Action Area. The remainder of the WHPA is referred to as the Wellfield Management Area. The terminology is derived from the EPA guidance referenced earlier. Depending on local management objectives for groundwater protection, local hydrogeology, and data availability and resource availability, the Wellfield Management Area may be further subdivided. This further subdivision of the Wellfield Management Area would be considered a refinement of the "baseline" delineation. Methodologies, criteria and thresholds used for such revisions are flexible. Approaches proposed by local water purveyors will be evaluated and approved or disapproved upon submittal to the New York State Department of Environmental Conservation.

The term "baseline" delineation, as used in this submittal, is intended to represent the initial WHPA delineation advocated by the Department of Environmental Conservation. The delineation may be directly utilized in implementing management activities for groundwater protection. However, if site-specific conditions suggest that alternative delineations are appropriate (including the further subdivision of the Wellfield Management Area already cited), those delineations may be accepted by the Department of Environmental Conservation. The evolution of improved delineation techniques, the growing availability of hydrogeologic information, and the longer-term enhancements of groundwater protection programs may lead to a redefinition of the baseline delineations by the Department of Environmental Conservation.

These baseline delineations apply to public water supply wells. Applicants for new public water supply wells may be required to perform

alternative site-specific delineations according to conditions stipulated through the Water Supply Permit Program (refer to Chapter 7).

The proposed WHPA delineations are described according to the following geographic and hydrogeologic settings. They are also summarized in Table 3.1.

- Unconsolidated Aquifers - Upstate New York

1. WHPA Definition:

The boundaries of wellhead protection areas for public water supplies in unconsolidated aquifers in Upstate New York are the land surface boundaries of the aquifers as illustrated on the five-aquifer sheet maps for Upstate published and distributed by the U.S. Geological Survey (see earlier reference). These boundaries may be revised in accordance with more detailed primary and principal aquifer maps and boundary determinations as approved by the Department of Environmental Conservation. The maps provide definition for both unconfined and confined aquifers. Revisions of these boundaries may be made, pending approval by the Department of Environmental Conservation.

2. Rationale:

The delineations proposed above are hydrogeologically-based and are consistent with the policies and goals of the Upstate Groundwater Management Program already adopted and certified by the Governor of New York as an element of the New York State Water Quality Management Plan.

3. Mapping and Case Studies:

Mapping of these areas is already completed and published. Case studies are not considered appropriate, as the maps have been reviewed and approved by the U.S. Geological Survey and the Department of Environmental Conservation as part of the publication process.

4. Public Water Supply Significance:

The large majority of public water supplies using groundwater, particularly for municipal and community systems, are located in unconsolidated aquifers. It is expected that a significant proportion of additional future supplies will also tap these systems.

- Bedrock Aquifers - Upstate New York

1. WHPA Definition:

The baseline boundaries of wellhead protection areas for public water supplies in bedrock aquifers are fixed radius areas with a radius of 1,500 feet from the wellhead. Revisions based on site-specific information are desirable, with the goals being to identify and delineate principal recharge areas. Revisions may be developed, pending approval by the Department of Environmental Conservation.

2. Rationale:

The fixed radius approach for the initial WHPA is not based on estimated times-of-travel or drawdown. It provides a substantial increase in protection over more commonly existing protection zones (typically 100 feet or 200 feet). The principal rationale is that the baseline delineation gives a basis for immediate action on wellfield management without requiring expensive site-specific delineations. Revisions based on local conditions are encouraged, particularly for municipal community systems, of which there are relatively few in the State. The geographic targeting benefits of uniformly delineating substantially larger fixed radius areas for all bedrock wells are very questionable. Many of the bedrock public water supply wells are among the approximately 10,000 non-community public wells (e.g., isolated public buildings, roadside rest areas, etc.). There will be little geographic targeting advantage for groundwater protection programs if

numerous 3 to 12 square mile WHPA's (1-2 mile radius) for non-community wells intersect or nearly intersect across the State. It must be recognized that all fresh groundwaters in bedrock aquifers are classified as GA groundwaters and thus are already protected by substantial statewide protection programs which use rigorous ambient water quality standards in their design.

3. Mapping and Case Studies:

Mapping will be performed according to the phasing priorities described in Section 3.3. Case studies of fixed radius approaches are not considered to be of significant benefit. As proposals for revisions based on alternative approaches are submitted to the Department of Environmental Conservation, they will be evaluated for potential use as models for comparable hydrogeologic conditions.

4. Public Water Supply Significance:

Relatively few municipal community systems utilize bedrock aquifers in New York State and those that do are generally with low population dependence. Public water supplies in bedrock aquifers are typically non-community wells serving small numbers of people.

Magothy and Lloyd Aquifers - Long Island

1. WHPA Definition:

The boundaries of the wellhead protection area for public water supplies using the Magothy and Lloyd aquifers are the boundaries of the Deep Flow Recharge Area as recognized by the Department of Environmental Conservation. Refinements within the overall WHPA may include further definition of Wellfield Management Areas, pending approval by the Department of Environmental Conservation.

2. Rationale:

The Deep Flow Recharge Area was determined to be the most important overall groundwater protection area for wells in the Magothy and Lloyd aquifers in the Long Island Groundwater Management Program already adopted and certified by the Governor of New York as an element of the New York State Water Quality Management Program. The delineations have also been adopted in the Suffolk County Sanitary Code.

3. Mapping and Case Studies:

Mapping of the Deep Flow Recharge Area is already completed. Additional case studies are not considered appropriate.

4. Public Water Supply Significance:

Most public water in Nassau County is withdrawn from the Magothy aquifer. The majority of public water supplies in Suffolk County are also withdrawn from the Magothy aquifer. Of those public water supplies in Suffolk County utilizing the Glacial aquifer, approximately half are located within the Deep Flow Recharge Area. Thus, these wells are included within the overall wellhead protection area for the deeper aquifers.

Glacial Aquifer - Long Island

1. WHPA Definition:

The boundaries of the wellhead protection area for public water supplies using the Glacial aquifer are defined as a fixed variable shape zone with a fixed radius in the upgradient groundwater flow direction of 1,500 feet and a fixed radius in the downgradient direction of 500 feet. Revisions may be made, pending approval by the Department of Environmental Conservation.

2. Rationale:

Fixed-shape zones are not based on calculated time-of-travel or drawdown. The proposed definition is consistent with Water Supply Sensitive Areas already delineated by Suffolk County (which contains nearly all of the Glacial wells on Long Island) and for which enhanced protection programs have already been implemented in the Suffolk County Sanitary Code. Approximately half of the Glacial wells are within the Deep Flow Recharge Area and are thus protected within a larger overall WHPA. Significant expansion of the WHPA for all Glacial wells may not provide any reasonable geographic targeting benefits, as most of the WHPA's would intersect or nearly intersect. All fresh groundwaters in the Glacial aquifer are already covered by substantial protection programs which utilize a rigorous set of ambient water quality standards.

3. Mapping and Case Studies:

Mapping of the WHPA's for Glacial wells in Suffolk County has been completed through the Water Supply Sensitive Area delineations. For the relatively few Glacial wells in Nassau County, mapping will be completed according to the phasing priorities described in Section 3.3. Case studies of fixed-shape delineations are not considered to be of significant benefit. As proposals for revisions based on alternative approaches are submitted to the Department of Environmental Conservation, they will be evaluated for potential use as models for other Glacial well delineations.

4. Public Water Supply Significance:

As stated previously, approximately one-fourth of the public water supplies in Suffolk County are based in Glacial wells that are outside of the Deep Flow Recharge Area. If Nassau County is included, only about one-eighth of the water supply dependency is from Glacial wells outside of the Deep Flow Recharge Area.

3.2.5. Remedial Action Areas

For all community public water supply wells, regardless of setting, a remedial action area will be delineated within the WHPA. For those supply wells, the proposed baseline delineation of this area will be a fixed radius zone of 200 feet radius from the well. Revisions may be made after evaluation by the Department of Environmental Conservation. For non-community public water supply wells (e.g., isolated public buildings, etc.), the existing New York State Department of Health standards for well separations (e.g., from waste disposal facilities) are to be followed.

The rationale for this baseline delineation is based upon general observations in the past that such a zone has been adequate for protection against microbiological contamination. An alternative time-of-travel basis for delineating revised remedial action area boundaries would be to use a time-of-travel from a minimum of 60-days up to one year. The 60-day period has been used in New York State and in many European countries (USEPA, EPA 440/6-87-010, Guidelines for Delineation of Wellhead Protection Areas). A one-year period is considered conservative. In certain cases, the site-specific hydrogeology (e.g., confined aquifer conditions or long times-of-travel) and the nature of existing land uses and management options may allow remedial action areas smaller than 200 feet radius.

3.2.6. Potential Refinements and Summary

Table 3.1 summarizes the baseline delineations for wellhead protection areas.

Refinements may include:

- Subdivision of the Wellfield Management Area portion of the WHPA, to allow application of different levels of management within the WHPA.
- Revision of the Remedial Action Area portion of the WHPA, according to alternative methods, including time-of-travel or drawdown analysis.

- Revised boundary determinations of the unconsolidated aquifers in Upstate, including primary and principal aquifers, or of the Deep Flow Recharge Area on Long Island.

- Alternative hydrogeologic determinations of appropriate WHPA's in bedrock aquifers or for wells in the Glacial aquifer on Long Island.

3.3. Phasing Considerations

The published unconsolidated aquifer maps cited in the previous section complete the baseline WHPA delineations for all public water supply wells within those aquifers. The completed delineation of the Deep Flow Recharge Area on Long Island has been defined according to road boundaries. That delineation defines the WHPA for all public water supply wells in the Magothy and Lloyd aquifers. The baseline WHPA boundaries for public water supply wells using the Glacial aquifer in Suffolk County have been determined by the Suffolk County Department of Health Services through its Water Supply Sensitive Area designations.

The remaining baseline WHPA boundary determinations that are needed consist of a relatively small set of Glacial aquifer wells and public water supply wells in bedrock aquifers. The phasing priorities for these groups are, in order:

1. Municipal community wells

2. Non-municipal community wells

3. Non-community public wells

Within each priority group additional phasing may be generally ordered by population dependency with modifications made if there are significant known or suspected threats to the wells.

It is emphasized that the baseline WHPA delineations for the very large majority of public water supply wells (by population served) are completed. The delineations for the remaining bedrock wells and Glacial wells will be performed as resources permit.

3.4. Summary

The baseline wellhead protection area delineations are considered to be completed through the published aquifer maps cited in this chapter. These cover both confined and unconfined aquifers and low- and high-yielding aquifers. The Deep Flow Recharge Area on Long Island has also been delineated. It is noted that the Deep Flow Recharge Area on Long Island also includes many wells using the shallow Glacial aquifer, and thus provides an added layer of protection.

Refinements (i.e., delineation of additional sub-zones of the overall WHPA) have been completed in many areas. However, such refinements are optional. Their evaluation and delineation will be a goal of future efforts in wellhead protection

CHAPTER 4

SOURCE IDENTIFICATION

4.1. Categories of Potential Groundwater Contamination Sources

4.1.1. Introduction

Potential contamination sources as described in the federal Safe Drinking Water Act include those anthropogenic sources, both point and nonpoint, which involve the manufacture, use, storage, handling, transport, or disposal of toxic and hazardous substances which may have any adverse effect on human health. Certain activities (e.g., mining) may also be considered potential sources, because they may increase vulnerability to contamination and may be associated with other activities of concern.

In the broadest sense, potential contamination sources may include nearly all commercial, and many governmental and domestic activities. To be useful in guiding the management of contamination sources to maximize groundwater protection benefits, some differentiation or priority system is needed.

Priorities are based on the significance of the source and the intended management application of the inventory. Source significance is based on the type of contaminant (mobility in groundwater, known impacts on public water supplies, toxicology, pathogenicity), the quantity of the contaminant at that location, and the potential of that source type to release contaminants to groundwater and impact water supplies.

The management applications of the source inventory may include:

- Developing local awareness and support for groundwater protection program adoption;
- Emergency response planning;
- Inspection planning or sequencing;
- Monitoring design;
- Enforcement; tracking compliance;
- Targeting education efforts;
- Regional and local planning;
- Local land use regulations development; and
- Identifying new program or program improvement needs.

4.1.2. Classification of Sources

Potential contamination sources may be classified in many ways. The major need for groundwater protection is to provide a structure for collecting and interpreting data regarding existing contamination sources which is readily useable in a variety of programs.

The United States Office of Technology Assistance developed a comprehensive listing of potential contamination sources, including 33 types within six major groups (Table 4.1). This classification has been included in wellhead protection program guidance manuals prepared by USEPA. All of these source types occur within New York State, although mine tailings, mine waste and mine drainage are less important than in many other states. Mining (e.g., sand and gravel) is still considered to be a potential source in that may be associated with other activities (fuel usage) that can contaminate groundwater.

The OTA classification in Table 4.1 is endorsed by the Department of Environmental Conservation as a useful structure for collecting data related to potential contamination sources.

A long-term goal of contamination source inventory is to utilize computer geographic information systems (GIS) to manage and interpret the data collected. The mapping keys of GIS methods or other maps will not be required to explicitly duplicate the OTA classification, as this would be counterproductive if more efficient

TABLE 4.1
SOURCES OF GROUNDWATER CONTAMINATION

CATEGORY 1: Sources Designed To Discharge Substances

- Subsurface percolation (e.g., septic tanks and cesspools)

- Injection wells

  . Hazardous waste
  . Non-hazardous waste (e.g., brine disposal and drainage)
  . Non-waste (e.g., enhanced recovery, artificial recharge solution mining and in-situ mining)

- Land application

  . Wastewater (e.g., spray irrigation)
  . Wastewater by-products (e.g., sludge)
  . Hazardous waste
  . Non-hazardous waste

CATEGORY 2: Sources Designated to Store, Treat, and/or Dispose of Substances; Discharge Through Unplanned Release

- Landfills

  . Industrial hazardous waste
  . Industrial non-hazardous waste
  . Municipal Sanitary

- Open dumps, including illegal dumping (waste)

- Residential (or local) disposal (waste)

- Surface impoundments

  . Hazardous waste
  . Non-hazardous waste

- Waste tailings

- Waste piles

  . Hazardous waste
  . Non-hazardous waste

- Materials stockpiles (salt, coal, etc.)

- Graveyards

- Animal burial

- Aboveground storage tanks

  . Hazardous waste
  . Non-hazardous waste
  . Non-waste (petroleum, etc.)

- Underground storage tanks

  . Hazardous waste
  . Non-hazardous waste
  . Non-waste (petroleum, etc.)

- Containers

  . Hazardous waste
  . Non-hazardous waste
  . Non-waste

- Open burning and detonation sites

- Radioactive disposal sites

CATEGORY 3: Sources Designed to Retain Substances During Transport or Transmission

- Pipelines

  . Hazardous waste
  . Non-hazardous waste
  . Non-waste (petroleum, etc.)

SOURCE: Office of Technology Assessment, Protecting the Nation's Groundwater from Contamination, October 1984.

TABLE 4.1
SOURCES OF GROUNDWATER CONTAMINATION
(Continued)

- Materials transport and transfer operations

  . Hazardous waste
  . Non-hazardous waste
  . Non-waste (petroleum, etc.)

CATEGORY 4: Sources Discharging Substances as a Consequence of Other Planned Activities

- Irrigation practices (e.g., return flow)

- Pesticide applications

- Fertilizer applications

- De-icing salts applications

- Urban runoff

- Percolation of atmospheric pollutants

- Mining and mine drainage

  . Surface mine-related
  . Underground mine-related

CATEGORY 5: Sources Providing Conduit or Inducing Discharge Through Altered Flow Patterns

- Production wells

  . Oil (and gas) wells
  . Geothermal and heat recovery wells
  . Water supply wells

- Other wells (non-waste)

  . Monitoring wells
  . Exploration wells

- Construction excavation

CATEGORY 6: Naturally occurring Sources Whose Discharge Is Created and/or Exacerbated by Human Activity

- Groundwater-surface water interactions

- Natural leaching

- Saltwater intrusion/brackish water upconing (or intrusion of other poor quality natural water)

SOURCE: Office of Technology Assessment, Protecting the Nation's Groundwater from Contamination, October 1984.

keys are developed. However, the goal of all acceptable source inventory approaches will be to include the categories in the OTA listing.

4.2. Contamination Source Inventory Procedures

Mapping of sources should use a minimum base map scale of 1:24,000 for printed map or map overlays. The use of alternative larger scale base maps which enable more precise locations (e.g., tax maps) should be considered on a case-by-case basis. GIS methods may be accepted, pending approval by the Department of Environmental Conservation. Overall GIS compatibility will be a major concern.

Extensive source-related data systems and registries for the most important potential contamination sources already exist in New York State. However, these vary in design and geographic specificity. These important data systems include, but are not limited to:

- Groundwater discharge permits
- Industrial Chemical Survey: Locations of usage, handling and storage of industrial and toxic chemicals
- Underground Injection Control (UIC) Program data, especially UIC Class V wells (USEPA program)
- Emergency management and response data, including the Superfund Amendments Reauthorization Act (SARA) Title III data
- Solid waste facility locations
- Hazardous waste site locations (inactive and active)
- Hazardous waste generators
- Mining operation locations
- Oil and gas production locations
- Petroleum storage locations
- Petroleum and chemical spill or leak locations
- Hazardous substance storage locations
- Radioactive waste storage locations

The recommended procedure for contamination source inventory at the local level is as follows:

1. The lead responsible local authority obtains the location data for the major categories listed above with the assistance of DEC and other local, state and federal agencies. The lead responsibility is determined by the intended management approach (e.g., county agency if county ordinances are intended, town officials if town ordinances are intended, water purveyor if Watershed Rules and Regulations are intended, etc.).

2. Lead responsible local authority collects available information on other categories of sources listed in the OTA classification in Table 4.1.

3. General field survey performed to confirm or revise collected information and to fill in information gaps.

4. If used, GIS mapping methods are coordinated with DEC to ensure compatibility.

5. If GIS methods are not directly used, hard copy maps are prepared on a 1:24,000 scale or larger.

Baseline wellhead protection areas have already been determined by the policies described in Chapter 3. In certain cases, where a locality has further subdivided the overall wellhead protection area into higher priority and lower priority areas, source inventory activities may be phased to focus on the higher priority area. Contamination source inventories should generally follow delineation activities to focus those efforts. The inventory stage may collect information from areas larger than the WHPA itself, depending on the geographic specificity of the available data bases cited above.

The general priorities for source inventory, if phasing is necessary, should be to focus on waste disposal sites, petroleum storage sites,

hazardous/toxic substance usage, storage and handling locations first, as most known public water supply well contaminations have been related to these sources. Out of the wide array of hazardous substance locations, first priority should be given to the chlorinated solvents, because these are the most common type of public water supply well contamination. Alternatively, higher priorities may be placed on inventorying sources of chemicals included in the New York State drinking water quality standard category known as "Principal Organic Contaminants" (10 NYCRR Part 5), which includes the chlorinated solvents and other high priority chemicals of concern to public water supplies.

4.3. Completion, Refinement and Update of Contamination Source Inventory

A major goal of source inventory is to support the needs of a groundwater protection management program. Therefore, the ideal completion target for source inventory is prior to final adoption or promulgation of groundwater protection ordinances or Watershed Rules and Regulations. Source inventory should be performed in support of and as part of the overall management planning process for local protection programs.

In some cases, as in complex commercial or industrial areas, phasing of source inventory activities will be necessary. The first level should be identifying industrial or commercial zones. More detailed phases may categorize the industrial or commercial land uses. The ideal, exhaustive inventory of all specific sources may not ultimately reside within a wellhead protection program data base. Rather, the most detailed data bases will reside with the appropriate regulatory program (e.g., petroleum bulk storage registry, etc.). Unnecessary duplication of efforts should be avoided.

The adoption of GIS mapping procedures will allow continuous updating of the source inventory. In the absence of GIS capabilities, printed or overlay updates should be completed at least every five years by the entity assuming the lead role in local protection program implementation (county, town, municipality, or water supplier). Management program staff at the local and state level ordinarily maintain continuously updated files regarding regulated sources of contamination.

The Department of Environmental Conservation has initiated systematic inventories for several areas of the state by contracting with regional planning and development boards or councils utilizing Clean Water Act, Section 205(j)(5) pass-through funds. In eight different regions, the boards have selected municipal water supply systems and are inventorying contamination threats generally within a mile of the wells. This will be a beginning for a statewide system with some of the boards preparing their information in a GIS format as well as on 1:24000 maps.

For Nassau and Suffolk Counties on Long Island, Region 1 staff of DEC has been participating in a GIS user's group, comprised of representatives of federal, state, county, and local agencies. The group is building a shared data system which will result in an inventory of many groundwater contamination threats and of known groundwater quality problem areas in relation to public water supply wells. Additionally, the Long Island Regional Planning Board, in conjunction with other local agencies, is assessing major threats to groundwater as part of a comprehensive planning project for nine Special Groundwater Protection Areas covering large areas of Long Island.

CHAPTER 5

SOURCE MANAGEMENT

5.1. Introduction

Water resource protection programs in New York State have a long history. It was largely within the structure of New York State's existing programs and institutions that the state's groundwater management program was developed and it is within this structure that the Wellhead Protection Program will evolve. The provisions of the New York State Environmental Conservation Law and Public Health Law provide adequate authorities and mechanisms for Wellhead Protection Program implementation in New York at both the state and local levels. For example, statutory authority exists for promulgating watershed rules and regulations for local programs. The principal local needs are for local governments (including counties) to obtain staff resources to further implement protection activities. Adoption of local ordinances may be needed as well as support from the state through technical assistance, financial assistance and training.

The foundation of nearly all groundwater protection programs is New York's stringent sets of standards and guidelines for ambient groundwater quality and drinking water quality. The standards themselves include broad classes of compounds, substantially reducing the possibility of unforeseen problems and the need for their revision. The availability of guidelines as a tool enables quick response to concerns with new substances. All fresh groundwaters in New York State are classified as potential sources of drinking water and are protected through statewide application of programs designed to prevent degradation with respect to these stringent standards. Anti-degradation goals are applied to all groundwater. It is important to recognize that groundwaters outside of wellhead protection areas are not left unprotected.

New York State has already adopted stringent protection programs for the most important categories of potential contamination sources. Certain nonpoint source categories are not directly controlled through specific state-level regulatory oversight (e.g., fertilizer applications, road salt applications). However, for these source categories (and any source category) any harm (e.g., contamination) is actionable through "public nuisance", a long standing common law doctrine in New York State. Liability, therefore, does exist even for sources not directly regulated. In these cases, best management practices (BMPs) and other tools may be more viable than direct regulation. The New York State Nonpoint Source Management Program, a new effort, is designed to address these needs.

A complete identification and evaluation of all existing federal, state and local source management programs that have bearing on groundwater protection or potential contamination sources is far beyond the scope of this submittal or of any single work. Rather, major programs are briefly summarized in Section 5.2. Section 5.3. summarizes future source management considerations and management coordination.

5.2. Existing Source Control Programs

5.2.1. Federal Agencies

The USEPA is responsible for most of the major federal regulatory control programs for groundwater protection. These programs are given authority under the Clean Water Act (CWA), the Safe Drinking Water Act (SDWA), the Resource Conservation and Recovery Act (RCRA), Superfund (CERCLA), the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), and the Toxic Substances Control Act (TSCA). An overview of the coverage of these Acts is provided in Table 5.1.

EPA policy in administering these programs is generally to delegate many of the specific program activities to the states upon request and upon attainment of legislative requirements; to provide flexibility for states to tailor the programs

Table 5.1

OVERVIEW OF USEPA STATUTORY AUTHORITY
RELATING TO GROUNDWATER

Clean Water Act	Principal regulatory programs focus primarily on surface water. The Act contains only general references to groundwater. However, the Act provides major sources of funding for state water pollution control programs.
Safe Drinking Water Act	Authorizes EPA to set maximum contaminant levels and monitoring requirements for public water systems; provides for regulation of underground injection wells to protect drinking water aquifers; provides for designation of "sole source" drinking water aquifers; provides source of funding for state programs of public water supply regulation. Authorizes states to develop Wellhead Protection Programs.
Resource Conservation and Recovery Act	Provides for establishment of standards for hazardous waste treatment, storage, and disposal facilities; and requirements for ensuring that land disposal of solids or hazardous waste protects groundwater. Establishes the Federal Underground Storage Tank Program.
Superfund (Comprehensive Environmental Response Compensation, and Liability Act of 1980)	Creates a trust fund to provide for emergency clean-up of chemical spills or hazardous waste dumps for which no responsible party can be immediately found. Trust fund money is derived from taxes on oil and 42 other specific chemical compounds.
Toxic Substances Control Act	Authorizes EPA to restrict or prohibit the manufacture, distribution, or use of products which may adversely affect the environment.
FIFRA (Federal Insecticide, Fungicide and Rodenticide Act)	Gives EPA the responsibility to control the use of pesticides; specifically, EPA is responsible for registering, canceling, suspending, or changing the classification of individual pesticides for use, and considering a broad range of environmental impacts including impacts as groundwater.

to most effectively meet environmental needs within each state, to the extent permitted by statute; to oversee state performance in carrying out delegated national programs which use federal grants; and to support the states through provision of technical expertise and research. The Underground Injection Control (UIC) program, a program not delegated to New York State, may benefit the Wellhead Protection Program through inventory activities, particularly for existing UIC Class V wells.

The DOH must also approve the subdivision of land when more than 4 new lots are created within a three-year time period and when the lots are smaller than 5 acres each. Through this review process, development within a protection zone of a public water supply well is strictly controlled or prohibited.

5.2.2 State Agencies

The two state agencies with the major responsibility for managing potential threats to groundwater are the Department of Environmental Conservation (DEC) and the Department of Health (DOH).

DEPARTMENT OF ENVIRONMENTAL CONSERVATION

The DEC is responsible for administering a full array of environmental programs to be used in implementing the Wellhead Protection Program. An overview of these programs follows:

- **SPDES**

  The New York State Pollutant Discharge Elimination System (SPDES) is a program for the issuance of permits and regulatory control of discharges of appropriately treated sanitary, industrial, or commercial wastewater into the surface or groundwaters of the state. It is a comprehensive program for protecting water quality encompassing effluent limitations, monitoring requirements, and, for existing discharges not yet meeting effluent limitations, a schedule for achieving compliance. The SPDES Program is authorized by Article 17, Title 8 of the New York State Environmental Conservation Law (ECL) as amended in 1973. All groundwater discharges must be permitted with the exception of those which are less than 1,000 gallons per day and are composed entirely of domestic wastewater.

- **Petroleum Bulk Storage**

  In effect since December 1985, the program regulates the storage and handling of petroleum. Major provisions of the program include registration of all stationary tanks over 1,100 gallons that store petroleum; establishment of standards for retrofitting; operation and closure of existing facilities; and establishment of standards for new and substantially modified petroleum facilities. The program is authorized by Article 17, Title 10 of the ECL.

- **Hazardous Substance Storage and Handling (Chemical Bulk Storage)**

  Phase I of the program (effective July 15, 1988) and Phase II (expected to be effective during 1991) will regulate the storage and handling of hazardous substances. Phase I requires the registration of all underground tanks and those aboveground stationary tanks storing 185 gallons (750 kilograms) or greater. Phase II will regulate the storage and handling of hazardous substances and include standards for dikes, piping systems, vents, transfer stations, monitoring, inventory record keeping, closure, container storage and the storage of bulk solids. The program is authorized under Articles 37 and 40 of the ECL.

- **Spill Response**

  The program, started in 1978, is designed to protect both public health and the environment from the effects of petroleum and chemical spills and leaks. Major

omponents of the program include reporting requirements, a 24-hour hotline telephone/response network, on-site response by regional staff, stand-by clean-up contractors, a data management system, and coordination with the other public agencies. The program also provides assistance to local governments in emergency planning related to spills and leaks and monitors compliance with Superfund Amendments and Reauthorization Act Title III requirements. The Department maintains geotechnical services to assist the program, both in the central office and in regional offices. The program is authorized by Article 12 of the Navigation Law.

- Water Supply Permits

The Water Supply Permit Program, also discussed in Chapter 7, is primarily a quantity management program. However, it indirectly controls potential contamination sources by controlling the influences on groundwater flow. The most important is the control on intrusion of naturally-occurring saline groundwater. The program is authorized by the ECL Article 15, Title 15 and is regulated under 6 NYCRR Parts 601 and 602.

- Flood Plain Management

The program, which is consistent with the Natural Flood Insurance Program, includes performance standards for water supply systems. Water systems within the 100-year flood plain are required to be designed to minimize or eliminate infiltration of flood waters into the systems. Over 1,350 cities, towns and villages in New York State have adopted local laws containing the federal standards for flood protection of water supply systems. In addition, the state flood plain regulations (6 NYCRR Part 500) are applicable within 136 towns and villages. The New York State Flood Plain Management Program maintains an outreach and education effort to assist local governments in implementing flood protection, including water supply protection. The program is authorized by ECL Article 36.

- Municipal Solid Waste

The program regulates the collection, transport, processing, incineration and ultimate disposal of municipal solid waste. Pertinent landfill requirements include: limitations on acceptance of hazardous waste; geological siting standards, including a minimum verticle separation between the base of the constructed landfill liner and groundwater of five feet and between the base of the constructed landfill liner and bedrock of ten feet; environmental monitoring of facilities; engineering standards, including design provisions for impermeable liners and leachate collection systems to restrict subsurface migration of contaminants and closure provisions for low permeability caps to minimize infiltration in the waste mass and subsequent leachate generation; and hydrogeologic siting restrictions on new landfills and landfill expansions including prohibitions within public water supply wellhead areas and primary and principal aquifers. The program is authorized by the ECL, Article 27.

- Hazardous Waste Management

The program regulates the entire scope of industrial and commercial hazardous waste management. Hazardous wastes are identified, regulated at the point of generation, tracked in transport from generation to point of ultimate disposal, and regulated with regard to treatment, storage and disposal. The siting of new facilities for off-site treatment, storage and disposal (i.e., those facilities receiving hazardous waste from other facilities) must conform to stringent siting requirements in accordance with 6 NYCRR Part 361. The overall program is

authorized by the ECL, Articles 19, 23 and 27.

- Hazardous Waste Remediation

The program deals with the problems associated with inactive hazardous waste sites. The three major aspects of the program include identifying, evaluating and remediating hazardous waste sites. The 1986 Environmental Quality Bond Act provided the program with access to $1.2 billion for remediation costs. The program is authorized by the ECL, Article 27, Title 13.

- Low Level Radioactive Wastes

The program develops and implements low-level radioactive waste regulations, reviews permit applications for radioactive waste discharges, issues permits for transporters of low-level radioactive waste, provides technical support on low-level radioactive waste and assists in the siting of a low-level radioactive waste disposal facility. The program is also responsible for oversight of ground and surface water quality at extant disposal sites such as West Valley, New York, and potential new sites such as the proposed low-level radioactive disposal facility. The existing siting regulations ban new sites overlying primary and principal aquifers and require evaluation of potential groundwater impacts in all other areas. The program is authorized by the ECL, Articles 27 and 29.

- Pesticides

Under the state program, pesticides must be registered, and a permit is required for the distribution, sale, or offer-for-sale of "restricted use" pesticides, as defined by DEC. A permit is also required for the purchase, possession, or use of these products, and all applicators must be certified. The primary emphasis of the program is on the certification of pesticide users and on issuing permits to distributors of "restricted use" products. Nearly all pesticides registered in New York State have been previously registered by EPA. The existing registration procedure in New York State relies heavily on EPA review, supplemented by additional state DEC and DOH review. The USEPA's pesticide registration procedures include the evaluation of a variety of chemical characteristics, such as water solubility and chemical persistence, relating to potential leaching to groundwaters. The New York State program is authorized by the ECL, Articles 15 and 33.

- Mineral Resource Extraction

The DEC administers New York State's Mined Land Reclamation Program under Article 23, Title 27 of the ECL. The program involves the permitting of all mining operations in the state from which more than 1,000 tons of mineral are extracted within twelve successive calendar months. DEC's rules and regulations require the preparation and filing of plans and, through the process of an application review and field inspection, the determination that the mining operation will be conducted in an environmentally sound manner and that upon completion of mining, the affected land will be returned to a condition which encourages future productive use. Provisions for protection of ground and surface waters from potential adverse impacts of mining activity are included within the program.

- Oil and Gas Program

The program regulates the drilling, operation, and plugging and abandonment of oil, natural gas, underground gas storage, solution salt mining, brine disposal, geothermal and stratigraphic wells. Pertinent parts of the program include inspections of operations and facilities; financial security requirements that ensure availability of

funds for well plugging and surface restoration costs; well construction and plugging requirements; drilling, completion and production requirements; and the imposition of supplementary permit conditions for all drilling in primary and principal aquifers and other environmentally sensitive areas. The program is authorized under the ECL, Article 23.

DEPARTMENT OF HEALTH

The New York State Department of Health is responsible for the protection of public health and assuring provision of potable public water supplies. While most of the DOH's water supply program attention is on water delivered to the consumer, the Public Health Law authorizes the Commissioner of Health to promulgate rules and regulations for the protection of any public water supply from contamination. It is under this authority that the DOH's Watershed Rules and Regulations Program is based. Under the program, the DOH enacts state regulations to protect a specific water supply upon request from the water supplier. Existing and proposed Watershed Rules and Regulations for groundwater sources limit specific activities, set requirements for existing operations and facilities, and prohibit potential sources of contamination from locating within specifically defined areas and may include design specifications for groundwater protection for new facilities allowed in the areas. The level of protection for each area reflects the vulnerability of the source to contamination by activities within the area. Watershed Rules and Regulations are considered to be fully compatible with the Wellhead Protection Program.

5.2.3. Local Government

COUNTY GOVERNMENT

County health agencies in many of the counties in New York State assist, through delegation, in administering major elements of state level (DEC and DOH) programs for water pollution control and water supply regulation. In some cases, county health agencies administer more comprehensive overall programs than those administered by the state. One example is Suffolk County, which provides for enhanced regulation of the storage and handling of toxic and hazardous chemicals. A similar program is also provided by Nassau County. In such cases, county health agencies perform the bulk of the day-to-day activities required for groundwater management, either through delegation from the state or directly under their own statutory authority. Although these counties have more extensive programs than most Upstate New York counties, they illustrate the important role potential for county health agencies in groundwater management.

An important management role may also be assumed by county planning departments, either through overall coordination of groundwater protection activities among towns or through direct assistance in drafting ordinances or other activities. Among the examples are Schenectady County and Cortland County.

Each county also maintains a County Emergency Management Office as part of the statewide network of emergency planning, data management and response. Their activities are an integral part of local wellhead protection efforts.

A key management issue for counties is to evaluate the potential adoption of county-wide groundwater protection ordinances. Such approaches may be more efficient than town-by-town ordinance implementation. Examples where this has been utilized include counties on Long Island.

TOWNS, CITIES AND VILLAGES

Municipal and town governments have two significant management tools that can be used to provide protection of groundwater and wellhead areas - land use controls and municipal or town ordinances. Under state law, towns, cities and villages are vested with the power to regulate land use. By the home rule provisions of New York State law, the state government will not impose zoning controls and land use requirements on local governments. The enactment of land use controls or zoning allows a municipality to

prescribe the type of permitted land use and related activities in a specific land area. Thus, it can prohibit inappropriate land uses such as industrial use in sensitive groundwater areas, while allowing more appropriate land uses. Within this framework, the site plan review mechanism may be used to require specific engineering designs to protect groundwater for an allowed land use. In addition to zoning, municipalities can adopt local ordinances to control or prohibit activities which may contaminate groundwater such as sewage disposal, hazardous material storage, etc. The development of zoning ordinances and other groundwater protection ordinances at the local government level is voluntary. Statewide groundwater protection controls prevail in all areas. In New York State, the Office of Local Government Services of the Department of State provides training and guidance to local officials in the use and development of zoning and site plan review.

WATER PURVEYORS

The groundwater management activities of water purveyors, whether municipally-owned or privately-owned, are described in Chapter 2, under "Public Water Supply Systems". Briefly, these include compliance with conditions of the water supply permit, initiation and development of optional Watershed Rules and Regulations for submittal to the state DOH, and consumer and water-user education. Because of their exclusive responsibility for providing a potable water supply, water purveyors can and should play a central role in motivating other local officials to implement groundwater protection efforts, and motivating the general public to assist in the effort.

5.2.4. Existing Technical Assistance Program

Technical assistance is available for local governments and water purveyors from a variety of sources. This assistance varies from basic information about groundwater resources to assistance with data interpretation and analysis.

- Groundwater Reports and Maps

The Division of Water maintains a limited inventory of reports and maps which are available for loan or possession. In some cases, when a particular item is scarce and cannot leave the office, citations are provided for library searches. The USGS also has much of the same information.

- Source Data from Regulatory Programs

Data regarding the potential contamination sources controlled by the various programs described in Section 5.2.2., above, are available to local management agencies. The nature, size, and location of the facility, in addition to requirements imposed by permits, can be retrieved on request. There are limitations with the ease of retrieval and with the locational information, as discussed in Chapter 4.

- Technical Assistance

Assistance from geologists in the Division of Water is available on a limited basis to interpret and analyze groundwater information. This can include modelling of groundwater flow.

- Data Acquisition and Interpretation

The Division of Water maintains a cooperative program with the USGS whereby water resources data are collected, organized, and interpreted. Information developed in this program can be used in the creation of local wellhead protection programs.

- Other Data Sources

Other types of useful data are available from such sources as county Soil and Water Conservation Districts (soils, land use) and the NYS Geological Survey (geology). Various data sets are available in a geographic information system format through the State Office of Equalization and Assessment.

5.2.5. Existing Financial Assistance Programs

- Section 205(j) Funds

NYSDEC has contracted with a number of regional planning and development agencies to undertake a series of demonstration projects in association with the Wellhead Protection Program. The projects include collection and information on public groundwater supplies, inventorying and mapping contamination threats, and meeting with local officials to explore the development of local protection programs.

- New York State Environmental Quality Bond Act of 1986

The Act provides money for acquisition of aquifer recharge areas when in association with an appropriate local groundwater protection program.

- Nonpoint Source Control Program

Under both the federal Section 319 Program and the state-enacted Nonpoint Source Law, there is the potential for funding wellhead protection activities.

- Federal Clean Water Act - Section 106 Funds

The 1990 appropriation of 106 funds provides monies for wellhead protection.

5.2.6. Existing Education and Training Programs

Education and training activities are carried out by a number of agencies through publication and distribution of guidance materials, presentations at meetings, and direct "one-on-one" assistance.

NYSDEC has underwritten the preparation of a document for guiding the development of local water supply protection programs and distributes it on request and at relevant workshops. The NYSDOH provides guidance on the writing of watershed rules and regulations, which are a primary tool for implementing water supply protection measures. The State Water Resources Institute at Cornell University (WRI) produces written materials and computer software products to provide self-help support to local government. The NYS Department of State distributes a range of guidance manuals on zoning, site plan review, and other aspects of land use control and instructs local officials on these tools at statewide and regional conferences and workshops.

Presentations on wellhead protection options are made by DEC staff at such places as the meetings of the NYS Planning Federation and the Association of Towns of New York State where training workshops for local officials are held. WRI stages short courses and training sessions as part of their educational programs.

Finally, direct assistance is provided by NYSDEC and WRI as resources are available and as demand exists.

5.3. Future Management Considerations

Given the variety and extent of programs available at the federal, state and local level, there are no totally uncontrolled sources of contamination for wellhead areas. The basic structure exists for addressing all formats.

The primary task for the future is to bring the available program tools to bear on the threats to wellheads, and improve the controls and regulations where needed. This will be accomplished as a result of increased recognition of threats, outreach and training programs to inform government officials at all levels concerning control options, further development of information on groundwater resources, and development of efforts to focus particular attention of existing programs on wellhead areas.

The future management considerations for wellhead protection areas may be divided into state-level activities and local government activities. In New York State, the principal needs for state-level activities do not entail developing new legislation or regulations, as the existing structure is essentially adequate for protection of all fresh groundwaters, including the wellhead

comprehensive implementation of the existing groundwater protection programs and carrying out the remaining implementation recommendations of the adopted Groundwater Management Program relevant to wellhead protection.

Local government activities have a broader range of future management considerations, because current activities are not usually as highly developed as the state-level protection programs. The needs range from coordination and education to developing, implementing and enforcing the appropriate mix of land use controls and contamination source controls. Generally, the greatest need is implementation and enforcement staff development. Local groundwater and wellhead area protection plans and ordinances, including the preparatory delineation and source inventory, will have little benefit if implementation and enforcement staff resources are inadequate. Education and provision of guidance to local governments are important responsibilities of the state programs.

The key recommendation to local governments in developing wellhead protection management is to first assess local needs and goals for groundwater protection. As part of this process, local officials should familiarize themselves with the basics of the existing groundwater protection efforts at all levels of government and establish a communication and coordination "network" with the many parties that may assist them. These include county health and planning officials, regional planning agencies, DEC, DOH, Soil and Water Conservation Districts, Cooperative Extension, and many of the other parties cited in this document. The importance of communication cannot be overemphasized. Local officials would benefit from the experience of other communities within the state.

From this needs and goals assessment, and from a basic knowledge of available state programs and local management options, local officials can best select a preferred "framework" and general plan for local wellhead protection (e.g., Watershed Rules and Regulations, zoning, local ordinances, county ordinances, etc.).

The basic stages of a wellhead protection effort described in the Safe Drinking Water Act (e.g., delineation refinements, inventory, etc.) should be executed within this framework. It is anticipated that localities could waste considerable resources if they proceed directly into advanced delineation refinements or inventories without doing any preliminary goal assessment or coordination with other groundwater management officials.
The following sections briefly highlight three aspects of wellhead protection management relevant to future program considerations.

5.3.1. State Environmental Quality Review (SEQR)

SEQR is a required review process for all levels of government within the state for considering the environmental impact of various decisions early in the planning stages. It applies to actions which are undertaken, funded, or approved by state, regional, and local government agencies.

A particular feature of SEQR which may have use in wellhead protection and groundwater management is the provision for designation of Critical Environmental Areas. Any unlisted action proposed in a CEA must be reviewed as a Type I action under SEQR. This means that any state or local agency action within or contiguous to the Area will be more likely to be considered environmentally significant and requires the preparation of a full environmental assessment form and coordinated review. This provision of SEQR has potential application in areas with sensitive groundwater resources, especially wellhead protection areas. The Division of Regulatory Affairs in the DEC oversees the SEQR program and provides training and assistance concerning SEQR procedures.

5.3.2. Options and Tools for Protection Program Enhancement

The options and tools for protection program enhancement may have applicability in both state-level and local government programs. They include both regulatory and non-regulatory approaches. The following review is necessarily brief. Further details are available through the appropriate programs (e.g., zoning assistance

from Department of State, emergency planning from State Emergency Management Office and DEC, source reduction from DEC Resource Recovery Program and Pollution Prevention Program, etc.). Among the options and tools are:

- Engineering Design: New facilities may be designed, or existing facilities may be retrofitted, with specific groundwater protection barriers or controls that enable continued operation or siting of facilities. Examples include: secondary and/or tertiary containment for petroleum or hazardous materials storage; structural coverage of stockpiles; leak detection systems; etc. Approaches may include special permitting, performance standards, septic system upgrades, and other methods. Continued enforcement is needed for these approaches.

- Source Reduction: A wide range of management options may be titled source reduction. Existing facilities may continue to operate with emphasis on reducing the threat to groundwater by methods that supplement prohibitions and engineering design. Among the source reduction options are: (1) reducing quantities of chemicals used; (2) conversion to lower-risk alternative chemicals; (3) modifying methods of use to increase efficiencies, including better targeting of applications (e.g., pesticides, coatings, cleaning operations); (4) waste reduction and recycling; (5) updating equipment, replacing storage tanks and container, and more frequent equipment calibration and inspection; (6) improving site plan and layout to reduce accident probability; and (7) improving site to reduce rainfall or runoff entering critical areas. There are many other options. Education and specifically targeted technology transfer and outreach (e.g., material prepared for specific types of businesses) are important tools in source reduction. Approaches may include both voluntary and mandatory elements.

- Inspections and Testing: Increasing the frequency or intensity of inspections and testing of facilities and operations is a straightforward approach to enhancing protection. Options for managing the costs of these approaches should be explored, including the potential for utilizing consulting "environmental monitors" as inspectors, funded by a fee system.

- Reporting: More frequent or more detailed reporting requirements for specific facilities and operations is a potential protection tool. However, this option is only useful to the extent that the information can be evaluated and properly stored, and that appropriate responses can be carried out. Staff resources for public agencies is again an important concern. The key need is for improvements in electronic data management, automated transfers of information, developing automated interpretive techniques, and in quality assurance efforts. Improved accuracy and completeness of reporting is an important concern. Solutions may include redesign of reporting requirements and formats and improved guidance.

- Prohibitions: Prohibitions are evaluated based on the relative risk of the facility or operation and the availability of engineering design alternatives. Prohibitions may also target specific chemicals themselves, such as solvent septic tank cleaners, rather than entire types of land use. Prohibitions may be adopted as part of Watershed Rules and Regulations, zoning ordinances, or other municipal, county or state ordinances.

- Land Use Controls: Land use controls include other options and tools beside prohibitions. Zoning density changes for residential development may be used. Transfer of development rights, whereby certain commercial or industrial development rights are transferred

outside of wellhead protection areas (or portions of the overall WHPA) or designated groundwater protection districts, is another tool. Cluster or planned unit development (PUD) design may also be used to guide residential development outside of more sensitive groundwater areas or to allow better management of wastewater disposal and nonpoint sources. Various growth controls may be utilized to allow more comprehensive development of local groundwater and wellhead protection programs. Subdivision rules may be used to better control drainage and runoff in subdivisions in sensitive groundwater areas. Site plan review may be utilized to require engineered contamination prevention barriers and other designs for permitted development. These opportunities provide a diverse menu of tools that enable more sophisticated local protection programs than generalized land use prohibitions.

- Water Withdrawal Controls: Water withdrawal controls are commonly recognized as a primary tool for water quantity management, but they also may play a role in water quality management. The DEC Water Supply Permit Program, described in Chapter 7, regulates water withdrawals for both objectives. Water withdrawal management is particularly important for controlling saltwater intrusion in coastal areas, for controlling the influences of withdrawals on migration of contaminants from nearby contamination plumes or contaminated aquifers (in multiple aquifer systems), and for altering groundwater flow patterns and consequently the relevant shapes and sizes of existing wellhead protection areas.

- Monitoring: Groundwater sample collection and analysis is a potential option associated with others cited above. Monitoring is useful to the extent that the sampling is truly representative of the groundwater regime of concern, that frequency is adequate, that data variability does not prevent determination of actual contamination, and that reported data are managed in a retrievable and interpretable fashion. The greatest potential for monitoring applications is in "source monitoring"; that is, monitoring at or very close to known high priority potential contamination sources. Generalized ambient monitoring of aquifers or wellhead protection areas (i.e., not targeting a potential source or the water supply well itself), sometimes called "early warning monitoring", may be conceptually desirable but is very likely to be impractical and very inefficient if attempted for all systems. It may be appropriate in special circumstances. The major problem is that truly representative sampling would require many locations, several depths at each location, frequent sampling, and many chemical constituents. Data variability and statistical interpretations are serious concerns in properly using monitoring results. Associated with this is the major burden of well installation, hydrogeologic characterization, proper sample collection and handling, and data management. The total analytical costs, themselves, would be enormous. Although ambient monitoring can have special value in specific locations and in research, the total resources for universal adoption would be far better spent on other options cited above to achieve greater degrees of groundwater protection.

- Emergency Planning: Emergency planning is an ongoing activity to plan for response to accidents, spills, and other emergencies. The principal goal in this case is to facilitate the fastest, most efficient and most effective proper response to emergencies that threaten groundwater quality. The existing emergency planning and response programs can be enhanced by various options including: (1) requiring risk management and emergency planning for

a wider range of facilities or operations than at present; (2) requiring clearly visible posting at all facilities of key contacts (owners/operators, hazmat response teams, standby cleanup contractors, fire departments, etc.); (3) fire department preplanning for responses at all important facilities; and (4) instituting county or regional hazmat (emergency response) teams to assist in local emergencies. The keys are speed and appropriate response. Any approach that enhances these may have potential. Facilities and industries may have standby emergency cleanup contractors that can mobilize faster than state government contractors. Local authorities should maintain records of these cases. Knowledge of who to contact is a critical concern.

- Land Acquisition and Conservation Easements: Land acquisition is the most effective method for ensuring control of sensitive groundwater areas. However, it is very urgent that lands acquired for such purposes not be misused for government activities which represent potential contamination threats (e.g., waste disposal, petroleum storage, salt storage, etc.). Donations and conservation easements should also be explored. The passage of a special additional 0.25% sales tax by a public vote in Suffolk County to provide funds for land acquisition should demonstrate the interest and concern of citizens to support this approach.

- Best Management Practices (BMPs) and Guidance: To supplement regulatory oversight, best management practice documents and other types of guidance may be developed and distributed to specifically targeted types of facilities or operations, concerning risk reduction and other forms of protection against groundwater contamination. These approaches may require follow-through, redistribution and special training to maintain or enhance their effectiveness.

- Education, Guidance and Technical Assistance: Citizen education, guidance for local government officials and technical assistance have obvious benefits for enhancing wellhead protection efforts. Despite this generally accepted notion, the potential cost savings by providing well targeted guidance are often overlooked. Good guidance will avoid unnecessary costs and overspending on less important elements, and, most importantly, can save considerably by getting the job done right much more quickly. Technology transfer and training assistance are key areas where a state-federal partnership can improve local protection programs. Road sign posting of protection areas may be a useful approach to promote public recognition of wellhead protection.

- Coordination: Directly related to the issue of guidance and assistance is the subject of coordination at all levels of government. In New York State, the level of government which generally has the greatest potential for enhancing groundwater protection through coordination is the county level. County agencies are best suited to assist their towns and villages directly and frequently. They are also an excellent link with state agencies. It is most cost-efficient for towns, villages and small cities to rely on county staff for groundwater coordination. Counties which have developed this capability in either their health or planning agencies (or in environmental agencies, if they exist) have benefitted considerably. The skills that may be tapped or developed at this level include both technical skills (hydrogeology, environmental chemistry, environmental engineering) and management skills (ordinance drafting, public speaking and writing, enforcement techniques). Coordination is further discussed in the following section.

5.3.3. Jurisdictional Coordination in Wellhead Protection Areas

As with most facets of government and public authority, multi-jurisdictional issues may occur with wellhead protection areas. Given the existing governmental structure in New York State, the locations of public water supply wells, and other factors (existence and nature of federal lands, the nature and extent of aquifers, availability of State Watershed Rules and Regulations, etc.), significant problems are considered to be unlikely.

First, one means for resolving multi-jurisdictional issue among municipalities or counties is the promulgation of Watershed Rules and Regulations. Coordination is directly achieved through promulgation of the regulations, which are considered by New York State to represent an acceptable wellhead protection program.

County government is generally strong in New York State and a significant portion of multi-jurisdictional coordination is achieved directly by county agencies. Among counties, coordination is achieved through several avenues. First, regional planning agencies are well established in New York State and have been increasingly involved with groundwater protection in recent years. Second, the State Department of Environmental Conservation, in particular, and the State Department of Health have strong regional presence in New York State with responsibilities for local coordination with both counties and municipalities. Finally, coordination is provided by a wide range of assisting associations and agencies (including the Association of Towns, Association of Counties, Conference of Mayors, New York Planning Federation, Cooperative Extension, Soil and Water Conservation Districts, Water Resources Institute, etc.).

Concerning international jurisdictional issues, problems are nonexistent because public water supply wells in the general border area are extremely rare. Those located there would have appropriate protection areas entirely within New York State.

Nearly the same conditions occur along the interstate borders. Interstate coordination has not been a problem with respect to groundwater. In the event that such coordination is needed, New York's interstate borders are covered by the following interstate compacts of which New York is a member:

- New England Interstate Water Pollution Control Commission (NEIWPCC)
- Ohio River Valley Water Sanitation Commission (ORSANCO)
- Susquehanna River Basin Commission (SRBC)
- Delaware River Basin Commission (DRBC)

Federally-owned land is very limited in New York State, and the occurrence of public water supply wells on or in the vicinity of federal land is very rare. Coordination with other federal agencies concerning wellhead protection will be accomplished by the Department of Environmental Conservation working through the U.S. Environmental Protection Agency - Region II Office, and direct interaction with the federal authorities on-site where possible. This approach has been successful in the past and no problems are anticipated.

5.4. Summary

A simplified summary of existing institutions responsible for management of potential groundwater contamination sources is presented in Table 5.2.

TABLE 5.2

EXISTING INSTITUTIONAL RESPONSIBILITIES FOR SOURCE MANAGEMENT

SOURCE	INSTITUTIONS (See Key)
CATEGORY 1: Sources Designed To Discharge Substances	
- Subsurface percolation (e.g., septic tanks and cesspools)	CHD*, DOH*, MUN
- Injection wells	
. Hazardous waste	DOH*, EPA*, DEC
. Non-hazardous waste (e.g., brine disposal and drainage)	DEC*, DOH*
. Non-waste (e.g., enhanced recovery, artificial recharge solution mining and in-situ mining)	DOH
- Land application	
. Wastewater (e.g., spray irrigation)	DEC*
. Wastewater by-products (e.g., sludge)	DEC*
. Hazardous waste	DEC*
. Non-hazardous waste	DEC*, DOH
CATEGORY 2: Sources Designated to Store, Treat, and/or Dispose of Substances: Discharge Through Unplanned Release	
- Landfills	
. Industrial hazardous waste	DEC*, DOH*, EPA*, CHD*, MUN
. Industrial non-hazardous waste	DEC*, CHD*, DOH, EPA, MUN
. Municipal Sanitary	DEC*, CHD*, MUN*, EPA
- Open dumps, including illegal dumping (waste)	DEC*, CHD*, DOH, MUN
- Residential (or local) disposal (waste)	DEC*, CHD*, MUN
- Surface Impoundments	
. Hazardous waste	DEC*, CHD*, DOH
. Non-hazardous waste	DEC*, CHD*, DOH

TABLE 5.2
EXISTING INSTITUTIONAL RESPONSIBILITIES FOR SOURCE MANAGEMENT
(Continued)

SOURCE	INSTITUTION (See Key)
- Waste tailings	DEC*
- Waste piles	
. Hazardous waste	DEC*, DOH*, CHD*, EPA
. Non-hazardous waste	DEC*, CHD*, DOH
- Materials stockpiles (salt, coal, etc.)	DEC*, CHD*, DOT, MUN, DOH
- Graveyards	DOH*, CHD*
- Animal burial	DOH*, DEC*
- Aboveground storage tanks	
. Hazardous waste	DEC*, MUN, CHD
. Non-hazardous waste	DEC*, MUN, CHD
. Non-waste (petroleum, etc.)	DEC*, MUN, CHD
- Underground storage tanks	
. Hazardous waste	DEC*, MUN, CHD
. Non-hazardous waste	DEC*, MUN, CHD
. Non-waste (petroleum, etc.)	DEC*, MUN, CHD
- Containers	
. Hazardous waste	DEC*, MUN, CHD
. Non-hazardous waste	DEC*, MUN, CHD
. Non-waste	DEC*, MUN, CHD
- Open burning and detonation sites	DEC*, CHD*, MUN
- Radioactive disposal sites	DEC*. DOH*, MUN
CATEGORY 3: Sources Designed to Retain Substances During Transport or Transmission	
- Pipelines	
. Hazardous waste	DEC*
. Non-hazardous waste	DEC*
. Non-waste (petroleum, etc.)	DEC*

TABLE 5.2
EXISTING INSTITUTIONAL RESPONSIBILITIES FOR SOURCE MANAGEMENT
(Continued)

SOURCE	INSTITUTION (See Key)
- Materials transport and transfer operations	
. Hazardous waste	DEC*, DOH
. Non-hazardous waste	DEC*, DOH, MUN
. Non-waste (petroleum, etc.)	DOT*, DEC
CATEGORY 4: Sources Discharging Substances as a Consequence of Other Planned Activities	
- Irrigation practices (e.g., return flow)	CE, SWCD
- Pesticide applications	DEC*, DOH, CE, SWCD
- Fertilizer applications	CE, SWCD
- De-icing salts applications	DEC, DOT, MUN
- Urban runoff	DEC, MUN
- Percolation of atmospheric pollutants	DEC*
- Mining and mine drainage	
. Surface mine-related	DEC*, SWCD
. Underground mine-related	DEC*, SWCD
CATEGORY 5: Sources Providing Conduit or Inducing Discharge Through Altered Flow Patterns	
- Production wells	
. Oil (and gas) wells	DEC*
. Geothermal and heat recovery wells	DEC*
. Water supply wells	DOH*, DEC*, CHD*, MUN*
. Solution Mining Wells	DEC*

TABLE 5.2
EXISTING INSTITUTIONAL RESPONSIBILITIES FOR SOURCE MANAGEMENT
(Continued)

SOURCE	INSTITUTION (See Key)
- Other wells (non-waste)	
. Monitoring wells	DEC, DOH, CHD
. Exploration wells	DEC*, DOH
- Construction excavation	MUN*, DEC, SWCD
CATEGORY 6: Naturally occurring Sources Whose Discharge Is Created and/or Exacerbated by Human Activity	
- Groundwater-surface water interactions	DEC*
- Natural leaching	DEC*
- Saltwater intrusion/brackish water upconing (or intrusion of other poor quality natural water)	DEC*

KEY: * = Major Responsibility

CE = Cooperative Extension
CHD = County Health Departments
DEC = NYS Department of Environmental Conservation
DOH = NYS Department of Health
DOT = NYS Department of Transportation
EPA = U.S. Environmental Protection Agency
MUN = Municipal Government
SWCD = Soil and Water Conservation District

Absence of a designation does not preclude additional or related responsibilities of similar or other local, state or federal institutions.

CHAPTER 6

CONTINGENCY PLANNING

6.1. Introduction

In New York State, the Department of Health, through the authorities provided to it in the Public Health Law (PHL), oversees and regulates the development of contingency or emergency plans for public water systems. In addition, the New York State Division of Military and Naval Affairs, Office of Disaster Preparedness, oversees and coordinates the stockpiles of emergency equipment that are available to assist in responding to public water supply emergencies.

The federal Safe Drinking Water Act requirements for contingency planning (Subsections 1413(b)(5) and 1428(a)(5)) are satisfied by the program administered by the Department of Health. An additional aspect of contingency planning is required under the federal Superfund Amendments and Reauthorization Act (SARA) Title III. The SARA emergency planning program, which requires reporting of routine and accidental releases of toxics to air, water and land, is administered by the New York State Department of Environmental Conservation. In actual practice, this program is most useful for indicating potential problem areas. Response to immediate public water supply threats is coordinated with DOH and water suppliers.

6.2. Emergency Planning Program

The new emergency (or contingency) planning program administered and coordinated by the New York State Department of Health contains all four elements suggested by USEPA for consideration by states in the Wellhead Protection Program along with additional items. The first two elements, temporary and long-term alternate water supply assessment, are included in the DOH requirement for identification of existing and future water supply sources in both emergency and non-emergency conditions. The final two, coordination and financial responsibility assessment, are included in the DOH requirement for specific action plans. The key responsibilities are with the water purveyor, with oversight by the New York State Department of Health.

On September 24, 1988, revisions to Section 5-1.33 of Part 5 of the New York State Sanitary Code were promulgated. This section entitled "Water Supply Emergency Plans" requires the following:

1. All community water systems with an annual gross operating revenue of greater than $125,000 must develop and submit to the state a water supply emergency plan by December 31, 1990 and update the plan every five years.

2. The plan must include at a minimum:

   - The development of procedures for providing consumer notification during all phases of the water supply emergency;

   - The development of criteria and procedures for determining the subsequent reporting of critical water levels of safe yield of the source or sources of water;

   - The identification of existing and future sources of water available during normal non-emergency and water supply emergency conditions;

   - The identification of all available water storage, including source, transmission and distribution system storage;

   - The identification, capacity and location of existing interconnections. Identification of additional interconnections needed to provide potable water during a water supply emergency;

   - The development of a specific action plan outlining all the steps to be implemented, taken or followed during a water supply

emergency, including state notification, emergency notification rosters of key water supply personnel with current telephone numbers (both business and home), and follow-up correction action to minimize the reoccurrence of an emergency;

- The identification and implementation of procedures for water conservation and water use restrictions to be put in place during a water supply emergency;

- The identification of and the procedures for prioritization of potable water use during a water supply emergency;

- The identification of availability of emergency equipment needed during a water supply emergency;

- A development of criteria and procedures for determining and the subsequent reporting of the water supplier's capacity and ability to meet peak water demands and fire flow conditions concurrently.

3. A vulnerability assessment must be performed for the source or sources of water supply, the public water system, disinfection stations and water treatment plants to determine the vulnerability of these water supply components to a water supply emergency. The water supplier shall take whatever steps are necessary to ensure that potable water can be and is available during a water supply emergency.

4. The state can require any other community or non-community water system to develop emergency plans.

The NYS Department of Health currently is revising its guidance available for use by public water systems in developing their emergency plans. It is not expected that the revised guidance will deviate significantly from the existing guidance. The existing guidance includes a generic outline or framework of worksheets and checklists that will assist the water system in developing its plan. This outline includes topics such as: map of the entire public water system, including source locations and activities that may affect the system such as contamination threats, transportation corridors, etc.; data on sources; assessments of types of emergencies; component vulnerability assessment forms; notification roster; and hazardous material spill vulnerability checklist.

The DOH has also developed statewide policy procedures and guidance for dealing with ongoing water supply emergencies. These include procedures for dealing with community water system emergencies, reporting water borne disease outbreaks and guidance on boil water notices and blending of sources.

6.3. Emergency Equipment Stockpiles

The New York State Division of Military and Naval Affairs, Office of Disaster Preparedness (ODP), coordinates the New York State Emergency Equipment Stockpiles. This equipment is available on an emergency loan basis to local political subdivisions and other state agencies primarily to assist in responding to potable water supply emergencies. The stockpiles consist of high capacity pumps, water filters, chlorination equipment, generators, light weight-quick coupling aluminum pipe, water couplings, and adapters necessary to provide delivery of an emergency source of drinking water.

In addition to the stockpile maintained by New York State at Waterford (near Albany) and Pittsford (near Rochester), each District Office of Disaster Preparedness coordinates a district stockpile which is maintained by various counties in each District. The District stockpile equipment is federal property and is considered a Civil Defense resource. District stockpiles of emergency equipment are not intended to be under direct state control in times other than an emergency. However, this equipment is a district resource available on a cooperative basis to any jurisdiction which is in need of it. District stockpile equipment loans are coordinated through the ODP District Offices.

6.4. Wellhead Protection Program Submittal

Section 1428(a)(5) of the SDWA requires that the State WHP Program include contingency plans "for the location and provision of alternate drinking water supplies for each public water system in the event of well or wellfield contamination."

The requirements of NYSDOH's emergency planning program not only meet the state's requirements of Section 1428(a)(5) of the SDWA, but actually go beyond them since the state's program deals with all forms of water supply emergencies.

For the purposes of meeting the federal Wellhead Protection Program, New York State will define those community water systems with an annual gross operating revenue of greater than $125,000 as "major" public water systems. The federal guidance calls for all major public water systems to have a completed contingency plan at the time of the state's Wellhead Protection Program submittal. The recent promulgation of the revisions to the State Sanitary Code required plan submittals to the NYSDOH by December 31, 1990. It is not feasible to revise this schedule, nor does New York State consider it reasonable or necessary.

Implementation of the emergency plan requirements at other groundwater source community and non-community public water systems should be accomplished as resources permit. Remaining community water systems should be dealt with first on the basis of population served -- the greater the population served, the higher the priority. Non-community systems should then be addressed.

CHAPTER 7

NEW WELLS

7.1. Institutional Processes

The protection of new public water supply wells will be accomplished through a variety of methods from state-level contamination source controls, to county, town and village or city land use controls. The institutional mechanism that will guide the protection and management of new wells is the set of procedures for the Public Water Supply Permit Program, operated by the New York State Department of Environmental Conservation.

This program, authorized by the Environmental Conservation Law Article 15, Title 15 and regulated under 6 NYCRR Parts 601 and 602, is more thoroughly described in DEC's Division of Water Technical Operation Guidance Series (TOGS) 3.2.1., "Public Water Supply Permit Program Application Processing." This document contains complete descriptions of responsibilities, technical review, procedures for objections and hearings, and permit conditions along with other information.

The permit conditions currently include elements that are consistent with Wellhead Protection Program objectives. The permit conditions will be revised to strengthen wellhead protection principles at the time that a new well permit is approved.

Currently, these permit conditions include, but are not limited to, the following:

- Direct Control of the Wellhead

  Construction and installation standards (NYS Health Department Bulletin 42, "Recommended Standards for Water Works"; administered by NYSDOH).

- Strict Protection Zone

  A strict protection zone of a minimum 200-foot radius (variances possible in special circumstances, if approved by DEC) shall be protected and controlled by direct ownership of the land, by the acquisition of protection easements or by other appropriate measures (to be approved by DEC).

  This area shall further be protected from pollution by surface waters by the construction of suitable diversion ditches or embankments, and the development of the wells shall be carried out that there shall be no opportunity for pollution to enter the wells.

- Water Quality Monitoring Requirement

  Prior to permit approval.

- Watershed Protection Requirement

  The permittee is required to adopt Watershed Rules and Regulations, pursuant to Section 1100 of the NYS Public Health Law, for all surface water sources. However, this requirement may be waived by the DEC Water Supply Permit Program for groundwater sources if the degree of protection provided by a specifically defined zone (fixed radius or calculated) and other existing control measures is considered adequate by DEC.

The permit procedure and the permit conditions designated by DEC provide the best and simplest means for including new wells in the Wellhead Protection Program. The watershed protection permit conditions, including potential enhancements of the above conditions, afford the best opportunity for refinement of wellhead protection for new wells. Permit conditions, for example, enable DEC's Public Water Supply Permit Program to require new surface water supply permittees to adopt Watershed Rules and Regulations even though they are otherwise voluntary under New York State Department of

Health programs. This and other aspects are discussed in the next section.

7.2. Wellhead Protection for New Wells

The current procedures for permit conditions allow applicants for new wells the option of not adopting Watershed Rules and Regulations if the protection zone (fixed radius or calculated) and other measures are considered adequate by the DEC Water Supply Permit Program.

The New York State Wellhead Protection Program proposes that the new well permit conditions be amended to require the permittee to develop and adopt a wellhead protection plan to be approved by DEC. DEC recognizes that these plans may vary depending on local conditions and capabilities and that implementation will be an evolutionary process. This plan may take the form of local ordinances (town, village, city, county) or protection program enhancements, or the form of Watershed Rules and Regulations (DOH approval), or other options described in Chapter 5. The local program should be consistent with the proposed State Wellhead Protection Program.

In cases where privately-owned public water systems are the permittees, the supplier is still proposed to be responsible for developing the required wellhead protection plan. Adoption and implementation of such a plan will, however, typically require the endorsement and cooperation of local government authorities. In such cases, it is proposed that the Water Supply Permit Program require the permittee, in cooperation with the appropriate local authorities, to provide a wellhead protection implementation plan. This may include Watershed Rules and Regulations or other appropriate agreements with local authorities, and is subject to DEC approval.

It is also proposed that the permit conditions be amended to require the permittee to show site-specific hydrogeologic evidence that the remedial action area (or inner zone proposed in the local plan) is adequately protective against biological contamination. For this portion of the wellhead protection area, a guideline of a 60-day minimum time-of-travel may be allowed. The 60-day criterion has been used in New York State and many European nations to provide adequate die-off of microorganisms. Time-of-travel should be considered from the point of potential contamination discharge. Alternative methods and criteria may be accepted in delineating this zone. In certain cases, existing land uses may be considered in delineating the remedial action zone as approved by DEC. Finally, it is proposed that all applicants for new well permits file a well log with the DEC Water Supply Permit Program at the time of completion of the well.

This approach for new wells will still allow local flexibility for delineating further subdivisions with the overall WHPA, and in determining the appropriate local management controls. The overall delineation for the total wellhead protection area and other policies of the State Wellhead Program would be retained. Such flexibility is necessary due to considerable variation in hydrogeologic conditions, contamination threats, and local authorities and capabilities. However, the approach is stronger in that wellhead protection plan adoption is mandatory for new well permit approval. Many existing wells are covered or will be covered by local wellhead protection plans. The Water Supply Permit Program may reopen the permit process to include existing wells in this process. The delineations performed as part of this procedure may utilize the baseline delineations described in Chapter 3, but should preferably utilize a three-zone approach.

Finally, the program accomplishments and strategies described in the Upstate and Long Island Groundwater Management plans (Department of Environmental Conservation) are recognized as part of the Wellhead Protection Program for new wells. Specific projects, such as the Special Groundwater Protection Area project by the Long Island Regional Planning Board, target planning for additional protection of groundwater resources with potential for future use. Similarly, in Upstate New York, inclusion of aquifer areas in the Wellhead Protection Program provides a means of protecting groundwater resources that may be utilized for future public water supplies even though specific well locations may not yet be known.

The NYS Water Resources Management Strategy (NYS Water Resources Planning Council, 1989; 14 volumes) also includes elements related to new wells. The recommendations of this strategy for water supply source protection, endorsed by the Water Resources Planning Council representing both public members and eight New York State agencies, support the "multiple-layer" management concepts (state and local controls) and the Watershed Rules and Regulations and local ordinance options. Comprehensive water supply system management, which includes an analysis of future water needs and creation or revision of Watershed Rules and Regulations, is a major recommendation of the Water Resource Strategy.

The Water Supply Permit Program itself does not specifically manage the sources of contamination. The permit program is used to require adoption of local programs for wellhead protection. The management of the sources is accomplished first and most importantly by the comprehensive state-level management programs described elsewhere in this submittal. Local government protection programs may take various forms, including county-level sanitary codes, town ordinances, water supplier watershed rules and regulations, and zoning ordinances. The implementation and enforcement of these local programs provide additional levels of source controls, and are the responsibility of corresponding local authority.

CHAPTER 8

SUMMARY OF PUBLIC PARTICIPATION IN THE DEVELOPMENT OF THE WELLHEAD PROTECTION PROGRAM

Section 1428(b) of the Safe Drinking Water Act requires that state wellhead protection programs be developed with the participation of the public including technical and citizens' advisory committees.

For partial compliance with the federal requirements and to gain the benefit of expertise of people outside the Department, a Wellhead Protection Advisory Committee was convened by the Director of the Division of Water October 12, 1988. The advisory committee con-sisted a broad spectrum of persons active and interested in groundwater protection efforts. Included were representatives of water purveyors, county government, regional planning boards and commissions, legislative staff, state agencies and private citizens. The roster is presented in the ACKNOWLEDGEMENTS at the front of this report.

The committee met formally three times to discuss the issues to be addressed in the wellhead program. The members also reviewed draft materials as the document took shape.

Issues which the Advisory Committee raised included the following:

1. The level of knowledge about groundwater varies enormously among local officials across the state. Some have a sophisticated understanding of groundwater and the tools available to protect public supplies; some need a basic knowledge of groundwater hydrology. The wellhead program must reach both extremes of the audience.

2. DEC should have its data bases on facilities it regulates organized and available for use by others to facilitate the understanding of sources of potential groundwater contamination.

3. Authorization for the Wellhead Protection Program in New York State will not require new legislation or regulations. Guidance, education, and promotion should be the primary means of establishing local programs.

4. To effectively deliver the wellhead protection message, there must be an aggressive outreach program which goes beyond printing brochures and reports.

5. Delineation procedures must be considered in the context of what is to be accomplished on the management programs. They are not purely technical exercises.

6. For implementing local protection programs, flexibility should be provided in having choices available to municipal officials and water purveyors. Watershed Rules and Regulations may be appropriate in many instances, but alternative protection schemes such as groundwater protection ordinances, zoning and site plan review procedures should be recognized as legitimate elements of a wellhead protection program.

7. While baseline delineations are needed, the program must recognize that where technical justification is available, deviations from the baseline criteria must be allowed. For instance, deep wells in confined aquifers that tap a horizontal groundwater flow regime may gain no increased protection from a 200-ft. radius Zone I than one of lesser area.

8. In densely developed areas and in many areas where critical aquifer segments cross municipal boundaries, a county-wide approach to groundwater protection may be appropriate.

9. Outreach and education programs should also focus on groups outside of government and the water supply industry. Bankers, insurance agents and other business persons should be aware of wellhead protection issues.

10. To assist the development of a consistent approach to creation of data bases and geographic information systems, the state should provide guidance and specification.

11. The outreach effort should include input from other capable agencies such as Cooperative Extension, Soil and Water Conservation Districts, the Department of State, the Water Resources Institute, and others.

12. In selecting source control programs for adjustment for wellhead protection concerns, the occurrence of problems should be reviewed so that the most significant sources are addressed first.

The public hearing procedures and the results of the Wellhead Protection Program Public Hearing held on August 7, 1990, are provided in an attachment to this Submittal.

Water-Table Altitude in Kings and Queens Counties, New York, in March 1997

Introduction

Kings and Queens Counties, on western Long Island, N.Y. (fig. 1), obtain nearly all potable water from an extensive upstate reservoir system. The possibility that this source will be inadequate during future droughts, or during infrastructure repairs or other emergencies, has prompted consideration of using the underlying aquifer system as a supplemental source of water. In 1992, the U.S. Geological Survey, in cooperation with the New York City Department of Environmental Protection, began a long-term study of the aquifer system beneath Kings and Queens Counties to determine the feasibility of using ground water to supplement a possible shortfall in the city's reservoir-water-supply system. As part of this study, an observation-well network has been established to monitor water levels in the upper glacial, Magothy, and Lloyd aquifers. This fact sheet depicts the configuration of the water-table altitude in March 1997 as inferred from water-level measurements at selected observation wells.

Hydrogeologic Setting

The upper glacial aquifer is the uppermost hydrogeologic unit on Long Island; it consists of till deposits (clay, silt, sand, gravel, and boulders) along the north shore and outwash deposits (mostly sand, gravel, and clay) to the south. The outwash deposits are highly permeable—horizontal hydraulic conductivity is estimated to be 270 feet per day (Franke and Cohen, 1972); till deposits are typically less than half as permeable (Smolensky and others, 1989; Buxton and Shernoff, 1995).

The water table is within the upper glacial aquifer throughout most of Kings and Queens Counties. Thickness of the upper glacial aquifer in central Kings County is more than 200 feet (de Laguna, 1948), and in Queens County, it ranges from 0 to 300 feet (Soren, 1978; Buxton and Shernoff, 1995).

Water-Level Measurements

All observation wells represented in figure 1 are screened in the upper glacial aquifer. Water-level measurements were made by the wetted-steel-tape method and recorded to 1/100 of a foot. The water-level monitoring network contains 59 observation wells, of which 26 are in Kings County, and 33 in Queens County. The average elevation of the screened zone in the wells in this network ranges from 9 to 19 feet below sea level.

Water-Table Configuration

The water-level contours show local mounds in the water-table with steep gradients in the northern part of Queens County, where low-permeability bedrock and the clay member of the Raritan Formation are near sea level (Soren, 1978; Buxton and Shernoff, 1995) and poorly permeable till deposits are present. Similar anomalously high water levels can be found on the peninsulas along the north shore of Nassau County to the east. The contours in the central and southern part of Kings and Queens Counties indicate a gentler gradient than in the northern part of Queens because the outwash deposits in these areas have higher hydraulic conductivity than the deposits to the north. Small depressions are likely to form in eastern Queens County as a result of public-supply pumping.

— By Jack Monti, Jr. and Anthony Chu

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This fact sheet and related information can be found on the World Wide Web at: *http://ny.usgs.gov*

Additional earth science information can be obtained by accessing the USGS "Home Page" on the World Wide Web at: *http://water.usgs.gov*

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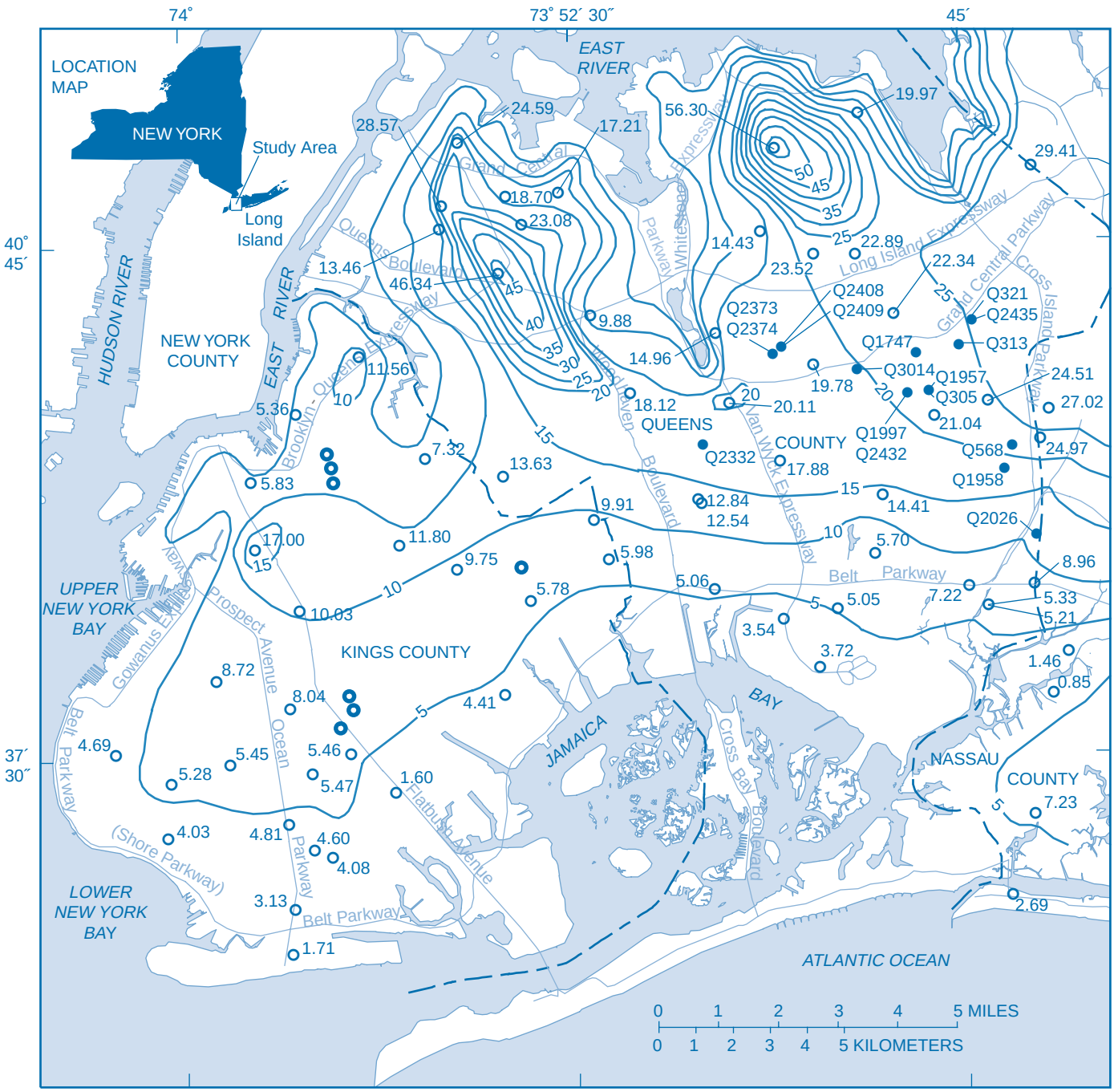

Base from New York State Department of Transportation, 1:24,000

EXPLANATION

—5— WATER-TABLE CONTOUR- Shows altitude of water table. Contour interval 5 feet. Datum is sea level.

22.76 OBSERVATION WELL- Number is water-level altitude, in feet above sea level.

Q2435 PUBLIC-SUPPLY WELL PUMPING IN MARCH 1997

DEWATERING SITE- Metropolitan Transit Authority subway

Fig. 1. Water-table configuration of Kings and Queens Counties, Long Island, N.Y., in March 1997

Visit Long Island, NY for some of the best saltwater fishing in the United States.

Geographically situated just outside New York City, Long Island is 120 miles long by 20 miles wide and is the largest island adjoined to the continental U.S, perfect for your next party boat or charter boat saltwater fishing trip. Originally named "Paumanauke" by the Native Americans, meaning "tribute to the sea," this fish-shaped island on the East Coast extends from the Hudson River far into the Atlantic Ocean.

Fishing Permits

The New York State legislature established a no-fee recreational marine fishing registry through 2013. There is no fee for the permit, but you must register and carry the permit if you are planning to fish. You need to register at a local bait & tackle store, or at the state website here: www.dec.ny.gov/permits/6091.html
Also find current salt water 'Open Season' and other information here: www.dec.ny.gov/outdoor/7894.html

Miles of Spectacular Shoreline

Surrounded by water on all sides, Long Island, NY has over 400 miles of coastline. That adds up to a lot of spectacular shoreline and a wide variety of ocean fishing experiences.
Due to the regions geographic diversity, **Long Island fishing charters** offer a variety of salt water fishing adventures from calm bay fishing to exciting Long Island deep sea fishing. Both northern and southern fish species frequent Long Island waters, including Atlantic cod, winter flounder and mackerel in the spring, or bluefish, summer flounder and Spanish mackerel in the fall. Other species of fish include blackfish, porgies, and fluke, in addition to shark, tuna, and abundant striped bass. Check here for the most up-to-date information.
Private Long Island fishing charters are available to both the serious and the novice fisherman in addition to party boat fishing or "rent your own" boating. Find a list of fishing charter, party boats and marinas here.
Shoreline fishing is also permitted at several state park beaches, along with many other opportunities to put your hook in the water. Permit may be required.

World-Class Fishing

Bait your hook and whet your appetite for the great outdoors at the tail end of Long Island, Montauk Point and Orient Point. The two points offer distinct sport fishing experiences for everything from striped bass to shark fishing. In fact, Montauk Point on Long Island is often called the "sport fishing capital of the northeast."
There are various types of overnight vacation opportunities throughout Long Island, ranging from nearby spa hotels, oceanfront motels and budget accommodations.

Fishing Variety

Long Island fishing charters and party boats offer different types of excursions depending on the season. Most provide reels, bait, and tackle with captains and crew who are more than happy to show up-and-coming sea anglers how to use them. Reservations are recommended for most trips. Fishing boats are regulated by the Department of Environmental Conversation to insure against over fishing and to keep the waters healthy for future generations.
The big fall run starting in September is when Long Island locals and dedicated fishermen know there are rewards to be had as the fish bulk up before they migrate for the winter. Embark on an unforgettable **Long Island deep sea fishing** charter from

Montauk, Orient or any of the other local marinas that offer ocean fishing.
You can also sail away in sapphire colored waters of Long Island's Great South Bay or Moriches Bay from marinas such as Captree, Point Lookout, Smith Point and Freeport. Bay fishing offers calm waters and a relaxed atmosphere. The unique bay water has a variety of fish such as black and blue fish, summer and winter flounder, striped bass, cobia, sea bass, and many other species. Choose from half or full day excursions. Click on the above map to begin planning your next adventure.

Stay for a While

Many marinas are located near bustling seaport towns. After a day of Long Island deep sea fishing, enjoy the sites as a perfect end to the evening. Enjoy the catch of the day at fine waterside restaurants and clam bars. Attend annual events including national fishing tournaments and festivals, as well as a wide variety of other activities while you're here.
Other Long Island fishing marinas are located at Port Jefferson Harbor, Greenport, Howard Beach, Huntington, Oceanside, Port Washington, Southold, Glen Cove and Shinnecock Bay in Hampton Bays. Or fish right off the beach at parks such as Sunken Meadow, Wildwood, Montauk Point or Orient Point.

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New York City's Wastewater Treatment System

Cleaning the Water We Use • Protecting the Environment We Live In

New York City Department of Environmental Protection

Michael R. Bloomberg, Mayor

Emily Lloyd, Commissioner

List of Acronyms

NYCDEP . . . . . New York City Department of Environmental Protection
NYSDEC . . . . . New York State Department of Environmental Conservation
NYCDOS . . . . . New York City Department of Sanitation
USEPA . . . . . United States Environmental Protection Agency
NYPA . . . . . New York Power Authority
NYCSWCD . . . . . New York City Soil and Water Conservation District
ALS . . . . . American Littoral Society
WPCP . . . . . Water Pollution Control Plant
NYOFCo . . . . . New York Organic Fertilizer Company
IPP . . . . . Industrial Pretreatment Program
PERC . . . . . Perchloroethylene
CSO . . . . . Combined Sewer Overflow
EBPP . . . . . Enhanced Beach Protection Program
MGD . . . . . Million Gallons per Day
CWA . . . . . Clean Water Act
PCB . . . . . Polychlorinated Biphenols
PAHs . . . . . Poly-Aromatic Hydrocarbons
BOD . . . . . Biochemical Oxygen Demand
TSS . . . . . Total Suspended Solids
DO . . . . . Dissolved Oxygen
BNR . . . . . Biological Nutrient Removal

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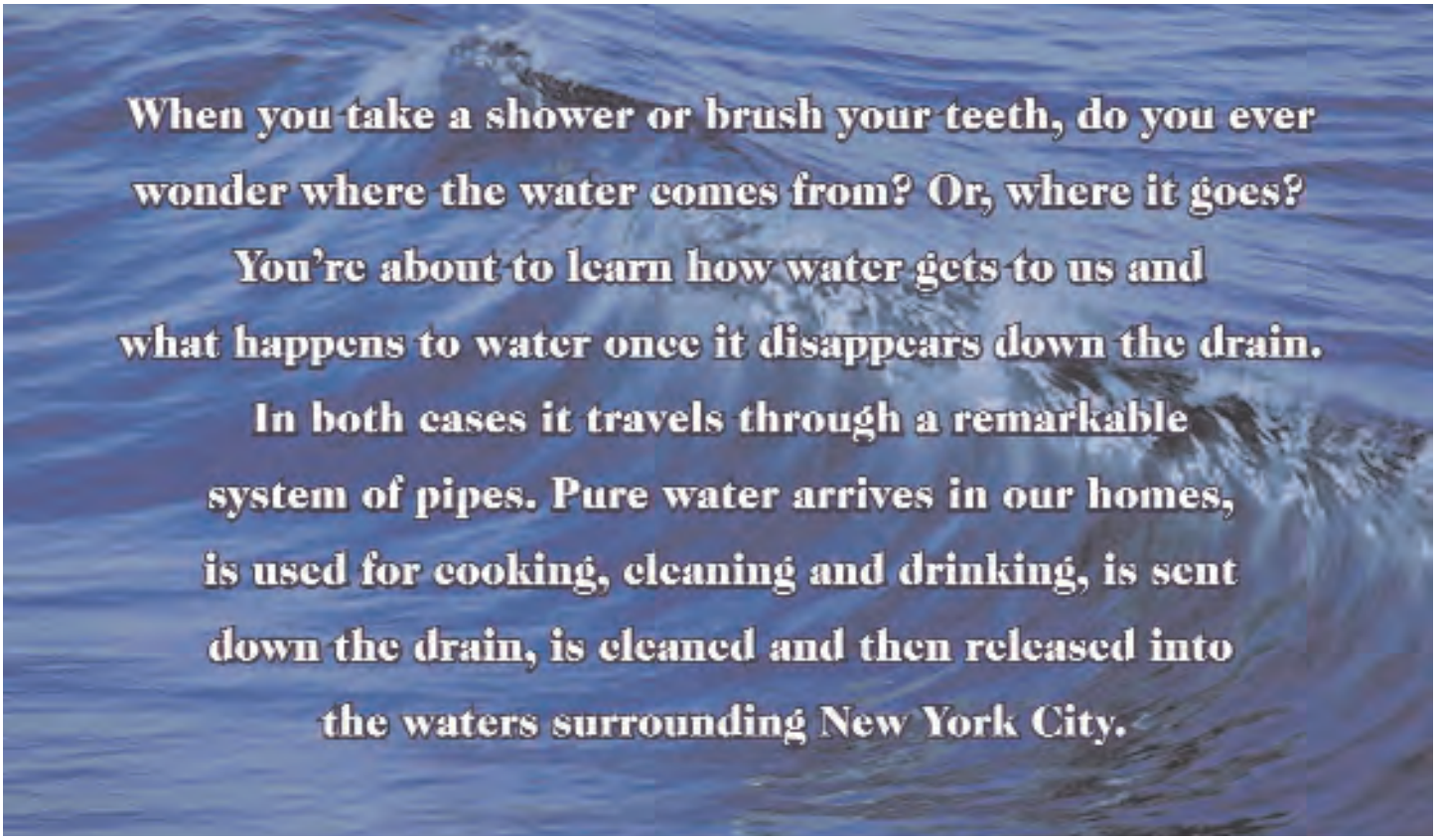


History of New York City Water

Where does New York City's water come from?

Each day New York City delivers about 1.3 billion gallons of safe drinking water to over 8 million City residents and another 1 million consumers who live in Westchester, Putnam, Ulster and Orange Counties north of the City. The source of New York City's drinking water is supplied by a network of 19 reservoirs and three controlled lakes in a 1,972 square-mile watershed that extends 125 miles north and west of New York City.

Between the water supply and wastewater treatment systems are millions of New Yorkers and visitors to the City and an elaborate network of sewers and water mains. Each person can help these systems run better by conserving water, disposing of garbage and household chemicals properly and being concerned about water quality in the City's surrounding waters.

Where does used water go?

Used water goes into New York City's extensive wastewater treatment system. This amazing network system that cleans our wastewater consists of: over 6,000 miles of sewer pipes; 135,000 sewer catch basins; over 494 permitted outfalls for the discharge of combined sewer overflows (CSOs) and stormwater; 93 wastewater pumping stations that transport it to 14 wastewater treatment plants located throughout the five boroughs.

The New York City Department of Environmental Protection (DEP), Bureau of Wastewater Treatment (BWT) is responsible for the operation and maintenance of all facilities related to the treatment of sewage. The Bureau of Wastewater Treatment has 1,900 employees, an annual operating budget of $262 million, and an annual capital budget of $114 million. With these resources, the 1.4 billion gallons of wastewater discharged by eight million residents and workers in New York City each and every day is processed at the treatment plants. After the treatment process is completed, the plants release high-quality, treated wastewater, called effluent, into the waterways surrounding New York City.

Ashokan Reservoir

Wastewater Treatment Past and Present

Before the City's first upstate reservoir system was developed in 1842, New Yorkers depended on well water – and enterprising street vendors – for their drinking water.

The Dutch, who first settled on the lower tip of Manhattan, got their water from ponds, streams and shallow wells. As the population multiplied, the demand for fresh water grew. With no system for disposing of sewage and garbage, human and animal waste polluted the water supply, causing frequent epidemics of contagious waterborne diseases, such as yellow fever and cholera. It soon became abundantly clear that something had to be done to rid NYC streets of human and animal waste and trash.

Wastewater treatment began in New York City in the late 1890s and early 1900s at two locations in Brooklyn and one in Queens. These became the 26th Ward, the Coney Island Water Pollution Control plants (WPCP) in Brooklyn and the Jamaica WPCP in Queens. Because of the tremendous use of the City public beaches, these three areas were considered a high priority. Wastewater treatment consisted of chemical coagulation for settling as well as seasonal disinfection with chlorine. The impetus was to keep the beaches clean and to protect the health of beach goers rather than maintaining water quality. As the population grew to 3.5 million, these plants became overburdened. When the link was made between waterborne bacteria and diseases in humans, it was recognized that a master plan was needed to study and protect the surrounding waterways. As a result, in 1904, the Metropolitan Sewerage commission was created. The commission undertook harbor surveys and water quality analysis. It performed studies of the tides, studied the harbor's natural flushing action, and developed a City Master Plan for wastewater treatment plants. The plan included construction of treatment plants to meet the needs of the growing population and identify the optimum locations for future sites.

Between 1935 and 1945 three new plants were constructed – Wards Island in Manhattan and Bowery Bay and Tallman Island in Queens. The Wards Island plant was built to handle flows from the east side of Manhattan and the lower part of the Bronx. This plant, which came on line in 1936, was the first to use the conventional activated sludge concept to treat sewage. Bowery Bay and Tallman Island also used activated

sludge. As the population approached 7.5 million, the Coney Island, 26th Ward and Jamaica plants were upgraded. These six plants brought the citywide capacity for treatment to 497 million gallons per day (mgd). Between 1945 and 1965, five new plants were built to meet the needs of the continually expanding population, which was now nearing eight million. These were Hunts Point in the Bronx, Oakwood Beach and Port Richmond in Staten Island, and the Rockaway and Owls Head plants in Brooklyn. During this period, the older Bowery Bay, Coney Island and Tallman Island plants underwent upgrades. These upgrades included the newly invented step-aeration process where primary effluent is added incrementally into the aeration tanks thereby reducing the detention times and allowing for a more flexible and accommodating process. With the addition of these five, there were eleven sewage treatment plants in the City and the citywide capacity for sewage treatment increased from 497mgd to 1,037mgd.

Between 1965 and 1979, the Newtown Creek wastewater treatment plant was built in Brooklyn. It was designed to treat 310mgd and was built on a relatively small footprint of 30 acres. Its design lacked primary tanks and, as a result, wastewater traveled from the grit chamber to the aeration tanks to the final tanks without intermediate channels, thereby conserving space and minimizing pumping requirements. The Spring Creek auxiliary plant was also built. (A pilot combined sewer overflow (CSO) facility, connected to the 26th Ward plant consisting of a 10 million gallon holding tank for storm water.)

By 1968, 12 wastewater treatment plants were operating in the area of New York City. They treated over one billion gallons a day and removed an average of 65 percent of pollutants from New York City wastewater. In 1972, the federal government passed the Clean Water Act (CWA). It dictated minimum standards for wastewater treatment plants throughout the country. That meant that plants had to be upgraded to secondary treatment, which removed up to 85 percent of pollutants. The CWA made people realize the importance of protecting the environment. Upgrades were performed at eight plants, bringing the citywide capacity to 1,390mgd. By 1979, nine of the city's plants had been upgraded to secondary treatment.

Between 1979 and 1995, the Coney Island and Owls Head plants were upgraded to full secondary treatment. Also during this time, two more treatment plants were completed, the Red Hook plant in Brooklyn and the North River plant, which was positioned on a platform in the Hudson River to treat flows from the west side of Manhattan. This brought the total number of wastewater treatment plants to 14. With their completion, virtually all raw sewage generated in New York City was being captured and treated. Today, the City's wastewater treatment plants have the capacity to treat dry weather flows of 1,805 millions gallons daily.

Nitrogen Control Applied Research Program

Applied Research Facilities

Interior of Applied Research Facilities

View of Centrate Tank at 26th Ward WPCP

Wastewater Treatment Process

Every day, wastewater goes down toilets and drains in homes, schools, businesses and factories and then flows into New York City's sewer system. Runoff from rain and melting snow, street and sidewalk washing, and other outdoor activities flows into catchbasins in the streets and from there into the sewers. In some New York City neighborhoods, runoff from the streets is carried by separate storm sewers directly to local streams, rivers and bays. In most areas of the City, sanitary and industrial wastewater, rainwater and street runoff are collected in the same sewers and then conveyed together to the City's treatment plants. This is known as a combined sewer system. Sometimes, during heavy rains or snow, combined sewers fill to capacity and are unable to carry the combined sanitary and storm sewage to the plants. When this occurs the mix of excess storm water and untreated sewage flows directly into the City's waterways. This is called combined sewer overflow (CSO). Approximately 70 percent of the City sewers are combined.

Wastewater treatment plants, also called sewage treatment plants or water pollution control plants, remove most pollutants from wastewater before it is released to local waterways. At the plants, physical and biological processes closely duplicate how wetlands, rivers, streams and lakes naturally purify water. Treatment at these plants is quick, taking only about seven hours to remove most of the pollutants from the wastewater. In the natural environment this process could take many weeks and nature alone cannot handle the volume of wastewater that New York City produces.

At the City's wastewater treatment plants, wastewater undergoes five major processes: preliminary treatment, primary treatment, secondary treatment, disinfection and finally, sludge treatment. Primary and secondary treatments remove about 85% to 95% of pollutants from the wastewater before the treated wastewater is disinfected and discharged into local waterways. Sludge, the by-product of the treatment process, is digested for stabilization and is then dewatered for easier handling. The resulting material, known as biosolids, is then applied to land to improve vegetation or processed further as compost or fertilizer. (See illustration – "Diagram of Treatment Process" on page 16-17.)

Preliminary treatment

Several stories underground, wastewater flows into the plants from sewers connected to New York City's homes and businesses. The incoming wastewater, called influent, passes through screens consisting of upright bars, spaced one to three inches apart. These bars remove large pieces of trash including rags, sticks, newspaper, soft drink cans, bottles, plastic cups and other similar items. This protects the main sewage pumps and other equipment. The garbage is transported to landfills. The main sewage pumps then lift the wastewater from the screening chamber to the surface level of the plant.

Primary treatment

Next, the wastewater enters primary settling tanks, also called sedimentation tanks, for one to two hours. The flow of the water is slowed, allowing heavier solids to settle to the bottom of the tank and the lighter materials to float. At the end of the process, the floatable trash, such as grease and small plastic material, rises and is skimmed from the top of the tanks surface.

Heavy solids – everything that has sunk – is then scraped off the bottom.

The settled solids, called primary sludge, are then pumped through cyclone degritters – devices that use centrifugal force to separate out sand, grit (such as coffee grinds) and gravel. This grit is removed, washed and taken to landfills.

The degritted primary sludge is pumped to the plant's sludge handling facilities for further processing. The partially treated wastewater from the primary setting tanks then flows to the secondary treatment system.

Secondary treatment

Secondary treatment is called the activated sludge process. This is because air and "seed" sludge from the plant treatment process are added to the wastewater to break it down further. Air pumped into large aeration tanks mixes the wastewater and sludge that stimulates the growth of oxygen-using bacteria and other tiny organisms that are naturally present in the sewage. These beneficial microorganisms consume most of the remaining organic materials that are polluting the water and this produces heavier particles that will settle later in the treatment process. Wastewater passes through these bubbling tanks in three to six hours.

The aerated wastewater then flows to the final settling tanks which are similar to the primary settling tanks. Here the heavy particles and other solids settle to the bottom as secondary sludge. Some of this sludge is re-circulated back to the aeration tanks as "seed" to stimulate the activated sludge process. The returned sludge contains millions of microorganisms that help maintain the right mix of bacteria and air in the tank and contribute to the removal of as many pollutants as possible.

The remaining secondary sludge is removed from the settling tanks and added to the primary sludge for further processing in the sludge handling facilities. Wastewater passes through the settling tanks in two to three hours and then flows to a disinfection tank.

Disinfection

Even after primary and secondary treatment, disease-causing organisms may remain in the treated wastewater. To disinfect and kill harmful organisms, the wastewater spends a minimum of 15-20 minutes in chlorine-contact tanks mixing with sodium hypochlorite, the same chemical found in common household bleach. The treated wastewater, or effluent, is then released into local waterways. Disinfection is an essential step because it protects the health of people who use local beaches and enjoy other recreational activities on or near the water.

Sludge treatment

The following are typical stages of the sludge treatment process.

Thickening

The sludge produced by primary and secondary treatment is approximately 99% water and must be concentrated to enable its further processing. Thickening tanks allow the sludge to collect, settle and separate from the water for up to 24 hours. The water is then sent back to the head of the plant or to the aeration tanks for additional treatment.

Thickening tanks allow the sludge produced by primary and secondary treatments to settle and thicken (an important step which aids the sludge digestion process).

Digestion

After thickening, the sludge is further treated to make it safer for the environment. The sludge is placed in oxygen-free tanks, called digesters, and heated to at least 95 degrees Fahrenheit for between 15 to 20 days. This stimulates the growth of anaerobic bacteria, which consume organic material in the sludge. Unlike the bacteria in the aeration tanks, these bacteria thrive in an oxygen-free or "anaerobic" environment. The digestion process stabilizes the thickened sludge by converting much of the material into water, carbon dioxide and methane gas. The black sludge that remains after digestion has the consistency of pea soup and has little odor. This is called digested sludge.

Methane gas is often used as an energy source at the City's wastewater treatment plants. The gas may be used in engines to produce electricity or directly drive plant equipment. Gas is also used in boilers to provide heat for digestion and plant-wide buildings. Currently, DEP and the New York Power Authority (NYPA) have jointly installed fuel cells at four of the City's water pollution control plants; 26th Ward, Red Hook, Oakwood Beach and Hunts Point. Fuel cells convert the methane gas and carbon dioxide into heat and electricity that is then used to operate the plants. This technology contributes to New York City's efforts to enhance clean air operations at its facilities. There is a significant reduction in air emissions as a result of using fuel cells.

Digester sludge is stored temporarily in a sludge storage tank prior to dewatering and while awaiting shipment to a plant with a dewatering facility

Digester sludge is pumped from sludge storage tanks to a dewatering facility. At some treatment plants, where there are no dewatering facilities on site, the sludge is transported for processing through a pipeline or by a sludge boat to a plant that has a dewatering facility. (See pictures of sludge vessels on page 25.)

Sludge dewatering

Dewatering reduces the liquid volume of sludge by about 90%. New York City operates dewatering facilities at eight of its 14 treatment plants. At these facilities, digested sludge is sent through large centrifuges that operate like the spin cycle of a washing machine. The force from the very fast spinning of the centrifuges separates most of the water from the solids in the sludge, creating a substance knows as biosolids. The water drawn from the spinning process is then returned to the head of the plant for reprocessing. Adding a substance called organic polymer improves the consistency of the "cake", resulting in a firmer, more manageable product. The biosolids cake is approximately 25 to 27percent solid material.

Beneficial Use of Biosolids

Since 1938, sewage sludge had been treated as a waste byproduct and removed from New York City treatment plants by barge and disposed of at sea. In 1988, Congress passed the Ocean Dumping Ban Act, forbidding ocean disposal of sewage sludge by June 30, 1992. DEP devised a three-pronged approach – an immediate, an interim, and a long-term program – to administer the 1,200 wet tons of sludge produced each day. The immediate program resulted in a final design of eight dewatering facilities with construction to begin in March 1991. By December 1991 the first facility went on line. The other seven were finished and became operational by June 1992 at a cost of$670 million. Today, the remaining six plants not served by onsite dewatering facilities transport their sludge for dewatering either through force mains or sludge vessels.

For the interim program, three contractors were hired through five-year contracts at a cost of $100 million per year to provide land-based biosolids management. The contractors were responsible for the processing, production and shipment of biosolids as high-quality soil amendments and the application thereof. The long-term program currently costs $50 million annually, and includes three 15-year contracts that were let for the city's entire biosolids production through June 2013. After dewatering, the sludge, now known as biosolids, is 100 percent beneficially used as a valuable resource because of its high nutrient and organic contents. Biosolids and biosolids products are used as fertilizers or soil conditioners which are spread on parkland, farmland, lawns, golf courses and cemeteries. Biosolids can also be used to cover inactive landfills or as a daily cover for active ones.

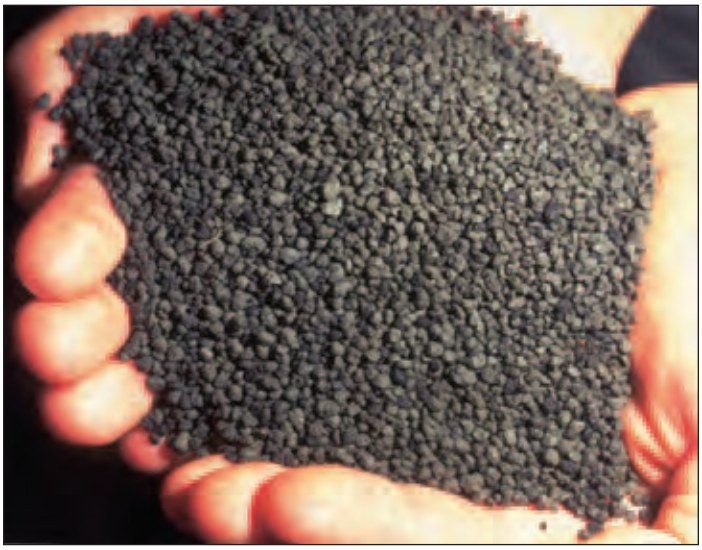
How Biosolids Are Used

Land application of Class 'B' biosolids to Texas rangeland.

Florida citrus grove where pellets have been applied.

Biosolids applied to corn crops in Virginia.

Fertilizer pellets used by New York City Department of Transportation to beautify highways.



Heat dried pellets are over 99% pathogen free – the nutrient content for pellets is: 5 – 4 – 3 (5% nitrogen, 4% phosphorus and 3% potassium)

Land Application – Biosolids are spread on land to return nutrients to the soil. Biosolids are spread less than a quarter inch thick and are sometimes plowed into the soil. Biosolids have been directly applied to corn crops, wheat and grazing land in Colorado and Virginia.

Composting – Biosolids are mixed with a bulking agent (for example – wood chips) which allows oxygen to mix with the biosolids more easily. The biosolids decompose, creating compost. This compost is similar to peat moss and is used as mulch or soil conditioner at golf courses, nurseries, home gardens, lawns, etc. New York City's biosolids are being composted at a facility in Pennsylvania.

Alkaline Treatment – Biosolids are mixed with a highly alkaline material, such as lime or Portland cement. This process results in a product, which resembles soil and is used as an agricultural liming agent. New York City's biolosids are alkaline stabilized at a facility in New Jersey.

All of these processes destroy disease-causing organisms and reduce moisture content, resulting in products that are easy to handle and have characteristics similar to many commercial agricultural products.

Heat Drying – Biosolids are heated to a very high temperature to remove moisture and kill pathogens. What remains are fertilizer pellets. New York City's biosolids are made into pellets at a facility in the Bronx. These pellets are sold across the country, many of them for use in citrus groves in Florida.

New York City is strongly committed to the continued beneficial use of its biosolids through environmentally safe land application programs.

Pelletizer plant in the Bronx

How New York City Protects Its Water Environment

DEP maintains and operates the City's wastewater treatment system; however, its responsibilities extend far beyond the management of the plants. Wastewater treatment is only one part of a very broad program to protect and improve the City's water environment that includes: pollution prevention and remediation; maintenance and upgrading of the City's sewer and wastewater treatment infrastructure; technically innovative wastewater collection and treatment; ecosystem protection; and ongoing scientific and technical research.

The ultimate goal is to reduce and control pollution before it reaches our wastewater treatment plants.

Testing New York City Waterways

DEP's Harbor Survey Program tests the New York Harbor waters and sediments at 37 locations. Sampling takes place year-round. Weekly sampling takes place from May through September and monthly from October thru April. Typical tests measure bacteria, turbidity, temperature and the level of dissolved oxygen in the water. The results are used to assess the effectiveness of all of the City's water quality programs and to monitor water quality trends. The Osprey, a vessel equipped with a small laboratory is used to sample the New York City Harbor waters. Since 1909, DEP has monitored water quality in New York Harbor, the East River and the Hudson River, and has published the results annually in its "New York Harbor Water Quality Report."

Environmental Concerns

DEP manages a comprehensive range of programs to address many of the most pressing concerns that threaten our water environment. Following are program summaries.

Toxic substances

Heavy metals and other toxic chemicals, such as cadmium and mercury, solvents and pesticides, enter our wastewater treatment plants every day. Many of these substances come from industries and business that dispose of chemicals in their wastewater as part of their regulated industrial processes. They also come from people who use and improperly dispose of hazardous household items such as cleaning products, paints and pesticides. One potential source of lead and copper in wastewater comes from corroding pipes in existing building plumbing systems. Some toxins in wastewater begin as air pollutants that have fallen to the ground and are carried by rain water to our plants and waterways. Wastewater treatment plants cannot destroy all of these substances so they remain in small amounts (still below standards set by the State and federal governments) in the treated wastewater discharged to local waterways.

DEP tests the treated wastewater effluent released from all 14 treatment plants daily for conventional pollutants, and annually for over 130 "priority pollutants" that the United States Environmental Protection Agency (EPA) lists as the worst pollutants to ensure that federal and State standards are met. These include metals and organic chemicals.

DEP runs programs aimed at reducing some key sources of toxic substances.

The Industrial Pretreatment Program (IPP): a federally authorized program, works to control commercial discharges by requiring industries targeted by federal and local pretreatment regulations to remove specific toxins from their wastewater before it is released into the City's sewer system.

IPP helps to protect the sewers, the wastewater treatment plants and the City's receiving waters. The EPA requires approximately 1,500 municipalities around the country to implement industrial pretreatment programs. DEP has been a control authority since January 1987. DEP's program is annually audited by either the New York State Department of Conservation (NYSDEC) of the EPA. Since 1987, the amount of heavy metals being discharged by regulated businesses fell from over 2000 lbs/day to 37 lbs/per day.

Two successful IPP programs are the ***Persistent Pollutant Track-down Program*** and the ***Perchloroethylene (PERC) Reduction Program***.

Persistent Pollutant Track-down Program: a collaborative effort between DEP and the DEC. Together, the two agencies work to track down the sources of PCBs (polychlorinated biphenols), PAHs (Poly-Aromatic Hydrocarbon), mercury and other organic chemical compounds found in our harbor waters. When businesses responsible for pollution are identified, DEP and DEC work with them to help establish improved (or first-time) methods of pretreatment.

PERC Reduction Program: enforces special sewer regulations that require dry cleaners to implement a best management program to limit *perchloroethylene* (PERC) discharges into the sewer system. (PERC is a solvent widely used by drycleaners.) DEP regularly inspects the City's dry cleaning establishments to make sure owners are adhering to PERC regulations.

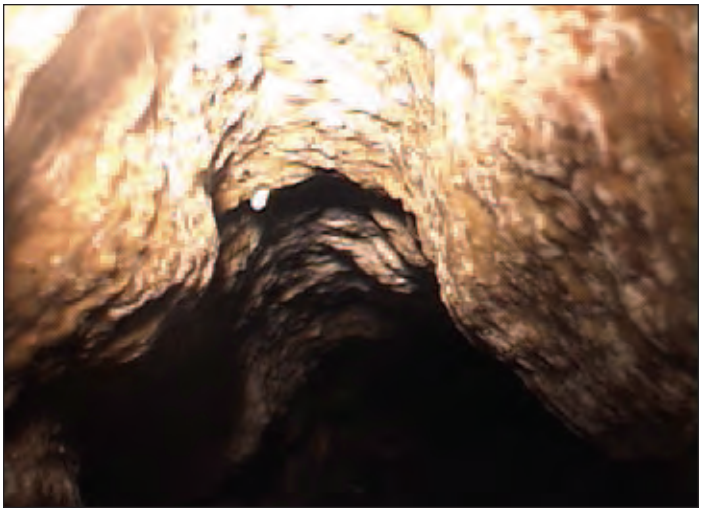
DEP regulates industrial users of the public sewers in a variety of categories such as electroplating, metal finishing, organic chemical and pharmaceutical manufacturing. As part of the IPP, DEP issue permits setting forth applicable pollutant limits as well as wastewater sampling and reporting requirements. DEP also regularly inspects IPP facilities and performs its own wastewater monitoring to ensure that the regulated facilities are in compliance with pretreatment standards. Whenever it is determined that a facility is not meeting its permit limits due to a failure in operating and maintaining its pretreatment system, or not installing the proper equipment, DEP will require, through Notice of Violation and/or Commissioner's Order, that remedial action be taken.

Pollution Prevention Program: Pollution Prevention Programs focus on reduction of toxins from commercial sources through education and information about "green" technology and good business management practices.

Dry Weather Discharges: In 1988 DEP initiated the *Shoreline Survey Program*. Its purpose was to identify and eliminate sources of raw sewage discharge into the City's waters during dry weather. This program in conjunction

Osprey Vessel

Chlorine Residual Analysis performed by Operations personnel.



Sewer backup – caused illegal discharge of grease into the sewer system

with a more recent one, DEP's *Sentinel Monitoring Program*, has enabled the elimination of 99 percent of dry weather discharges. DEP continues to work on controlling the remaining discharges by constructing new sewers and taking enforcement action to correct illegal connections to storm sewers.

Grease: Discharges of grease (cooking oil) into the sewer system from restaurants and other food related establishments can block sewers, causing backups and bypasses. To ensure proper disposal of grease, and prevent sewer backups, the City requires by law that grease generating establishments correctly install, operate and maintain properly sized grease interceptors. Special DEP staff inspect these establishments to make sure that the required equipment is installed and working properly. DEP has initiated an educational program to address grease discharges from the over 21,000 restaurants in New York City. The *Grease Response Education and Strategic Enforcement Program* approaches the problem with a combination of education materials, including foreign language material, which are distributed to restaurants in target areas. Sewer blockages can also be caused by grease and oil improperly disposed of in kitchen sinks and toilets in homes and apartments.

Grease thrown down kitchen sinks in homes and apartments can also cause sewer blockages.

Pumping Station Telemetry: Telemetry is the ability to send "real-time" (as it is happening) data to a remote terminal (computer) by utilizing a radio signal or telephone line. Since 1998, telemetry has been in operation at DEP's 93 wastewater pumping stations enabling personnel to check the daily operation of these facilities from a remote computer. This program has already succeeded in reducing dry and wet weather discharges by allowing DEP pumping station operators to respond more rapidly to station malfunctions, breakdowns and other potentially serious system disruptions.

Combined Sewer Overflows (CSO): The completion of the Red Hook WPCP (on the lower East River in Brooklyn) in 1987 ended the last, permitted, dry weather discharge of raw sewage into New York Harbor. However, the City still faces the problem of combined sewer overflows. As noted earlier, CSOs can occur in wet weather when wastewater treatment plants and/or parts of the sewer system fill to capacity with rain or snow. To relieve pressure on the already filled to capacity wastewater treatment system, the excess flow is forced into the open waters of a river, bay or inlet. These overflows can increase the number of harmful bacteria and add other organic pollutants that consume dissolved oxygen, which marine plants and animals need to survive. CSOs also carry trash and litter washed from streets and may contain toxic chemicals.

As a part of a multi-year, $1.8 billion CSO Abatement Program, the City is building retention tanks to hold the overflows near heavily impacted bays and tributaries, installing separate sewers where no sewers exist, and exploring other innovative solutions. The planning, design and construction of some of these facilities has already begun. In addition to construction of these retention tanks, CSO pollution has already been noticeably controlled through improvements in DEP's operation of its treatment plants and intercepting sewer system during wet weather.

Floating debris: Litter that washes down storm drains in the street can easily wind up in local waters and on City beaches. This unsightly pollution, called floatables, can kill birds, turtles and other marine animals that mistake trash – especially plastic – for food. Street litter that goes to the treatment plants must be separated from the wastewater so it won't damage plant equipment. Litter can also clog storm drains and cause sewer backups and flooding.

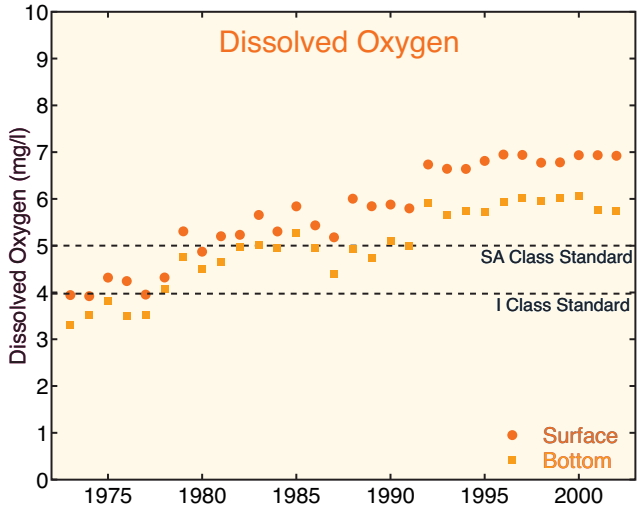
The City is also tackling the problem of debris with a multi-faceted program that includes increased street cleaning in critically located neighborhoods; regular catch basin maintenance; replacement of hoods on catch basins that trap debris before it enters the sewer system; the booming and netting of sites where combined sewer overflows enter local waters; operational improvements at

treatment plants and collections systems, and a fleet of skimmer vessels that collect floatables from the open waters.

To eliminate illegal shoreline dumping (another source of floatable materials), DEP set up a Shoreline Dumping Prevention Program to monitor the City's many miles of shoreline for evidence of recent illegal disposal activities. Findings are reported to the Department of Sanitation (DOS) Police for follow-up and possible apprehension of illegal dumpers.

Additional programs credited with limiting the discharge of floatables into the Harbor include the use of demolition vessels to remove decaying piers, and collaborative efforts by the US Army Corps of Engineers, EPA and DEC to collect large floatable debris and skim litter from the open waters and shorelines.

Water quality monitoring: To gauge the effectiveness of wastewater treatment plant programs, water quality is analyzed at 37 sampling stations throughout New York Harbor. Since 1970, DEP's Annual Harbor Survey has tracked trends showing increases in dissolved oxygen and decreases in fecal coliform – indicators of improved water quality. The following diagrams detail these improvements through fecal coliform measurements. Before 1974, there was a large area suitable for "fish survival only" (the worst indicator) and very few areas were labeled as suitable for bathing. By 1985, the number of "fish survival only" areas had decreased dramatically while the bathing areas had increased. By 1988, the "fish survival only" indicator was issued only for an area of the Hudson River west of Manhattan and for another small area near Manhattan in the East River. By 2001, many of the waterways around New York City were suitable for bathing. (See Diagram "Fecal Coliform in Surface Waters.") There have been no beach closures since 2001, except for precautionary closings, during the 2003 blackout.



Area-wide decreases in sewage loading have resulted in greater environmental improvement in the Harbor. Indicative of this improvement has been the increase of dissolved oxygen (DO) to levels that better support aquatic life.

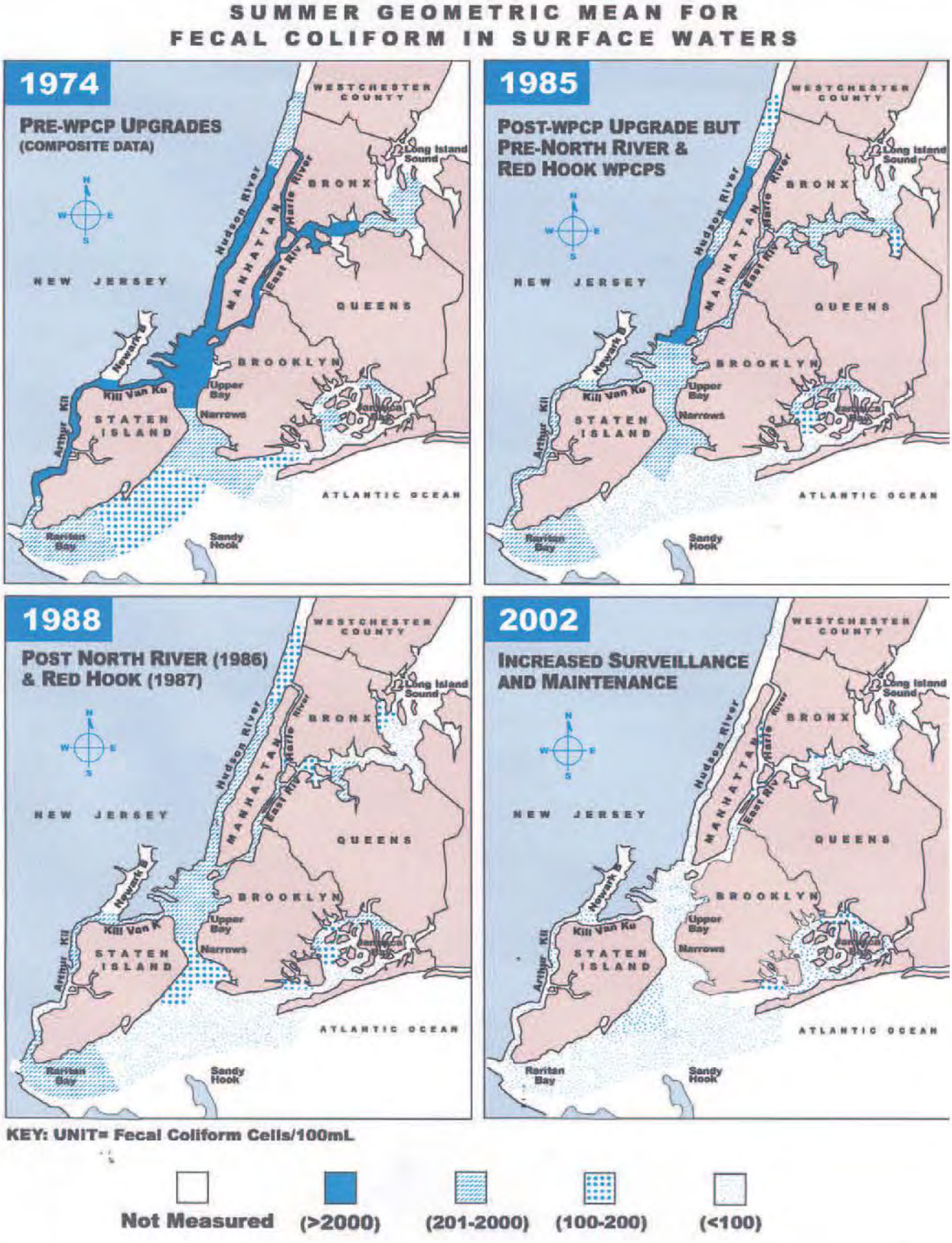
Harbor Survey monitoring has documented significant Harbor-wide increases in DO concentrations (~2 mg/L) over the past 30 years (see below). Today, portions of the Harbor have DO concentrations above levels first recorded at the beginning of the 20th century.

Regulator Telemetry System "Enhanced Beach Protection Program": Regulator telemetry systems are, at present, fully installed and operational at 102 regulators. (A regulator is a device used in New York City's combined sewers to control or regulate the diversion of sewage flow to the treatment plants during dry and wet weather.) These systems are links to an internet software package that allows DEP to monitor each individual site continuously. The telemetry system transmits alarms as soon as the level of the water reaches a predetermined elevation in the regulator. DEP initiated the "Enhanced Beach Protection Program" (EBPP) in 1997 to monitor pumping stations and regulators that could have an impact on the City's beaches. The immediate goal of the program is to prevent negative water quality impacts that may result as a consequence of unintended dry weather bypasses and, ultimately, to prevent beach closures. This program incorporated the use of telemetry to replace site visits. The successful implementation of the regulator telemetry system has had a significant impact in the reduction of raw sewage bypasses, most important during the recreational beach season.

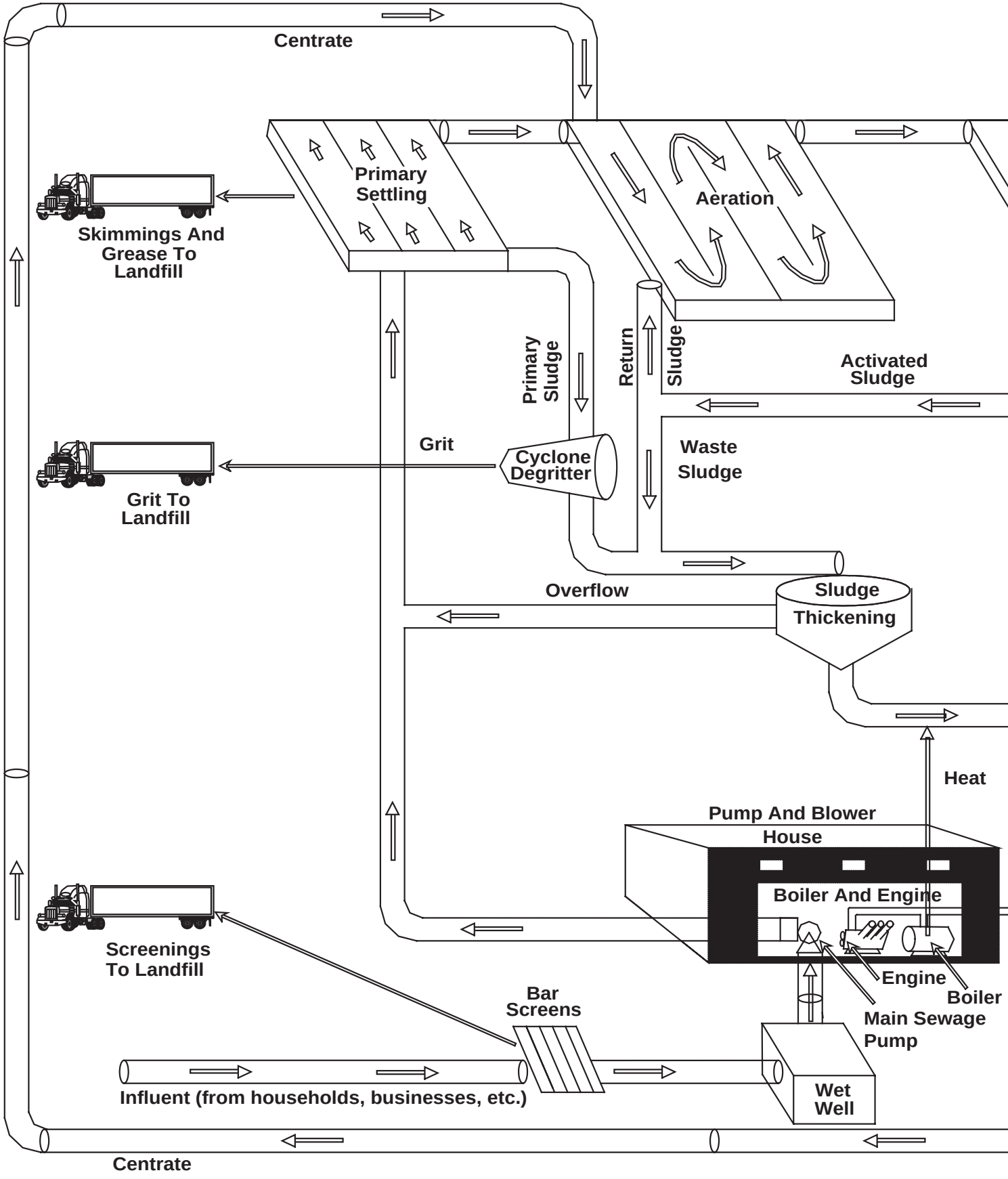
Nutrients: Carbon, nitrogen and phosphorus are substances that are excreted by humans and thus found in wastewater. Excess nutrients can stimulate the growth of algae and other aquatic plants. When these plants die and decompose, they may reduce the amount of oxygen in the water. This condition, called hypoxia, can affect the survival of fish and other aquatic organisms.

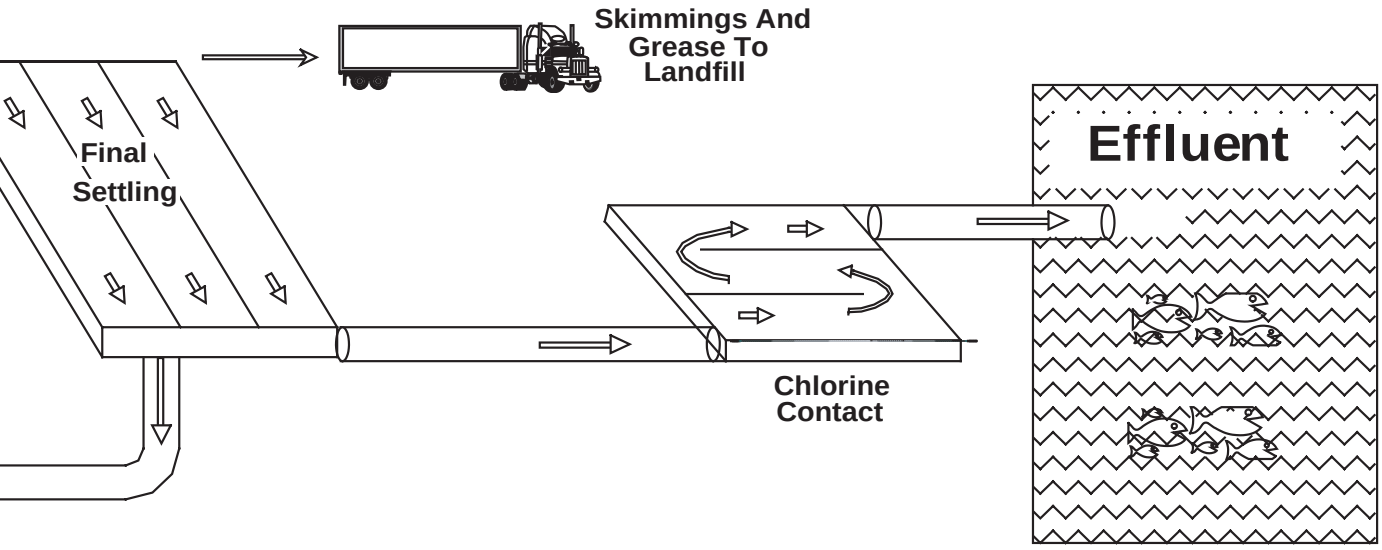
Nutrients can also get into wastewater from industrial discharges, common household detergents and cleaners, runoff from streets and lawns and air pollutants that fall to the ground. Treatment plants cannot remove all nutrients from the wastewater. They can be reduced by controlling pollution that comes from lawns, farmland, streets and construction sites.

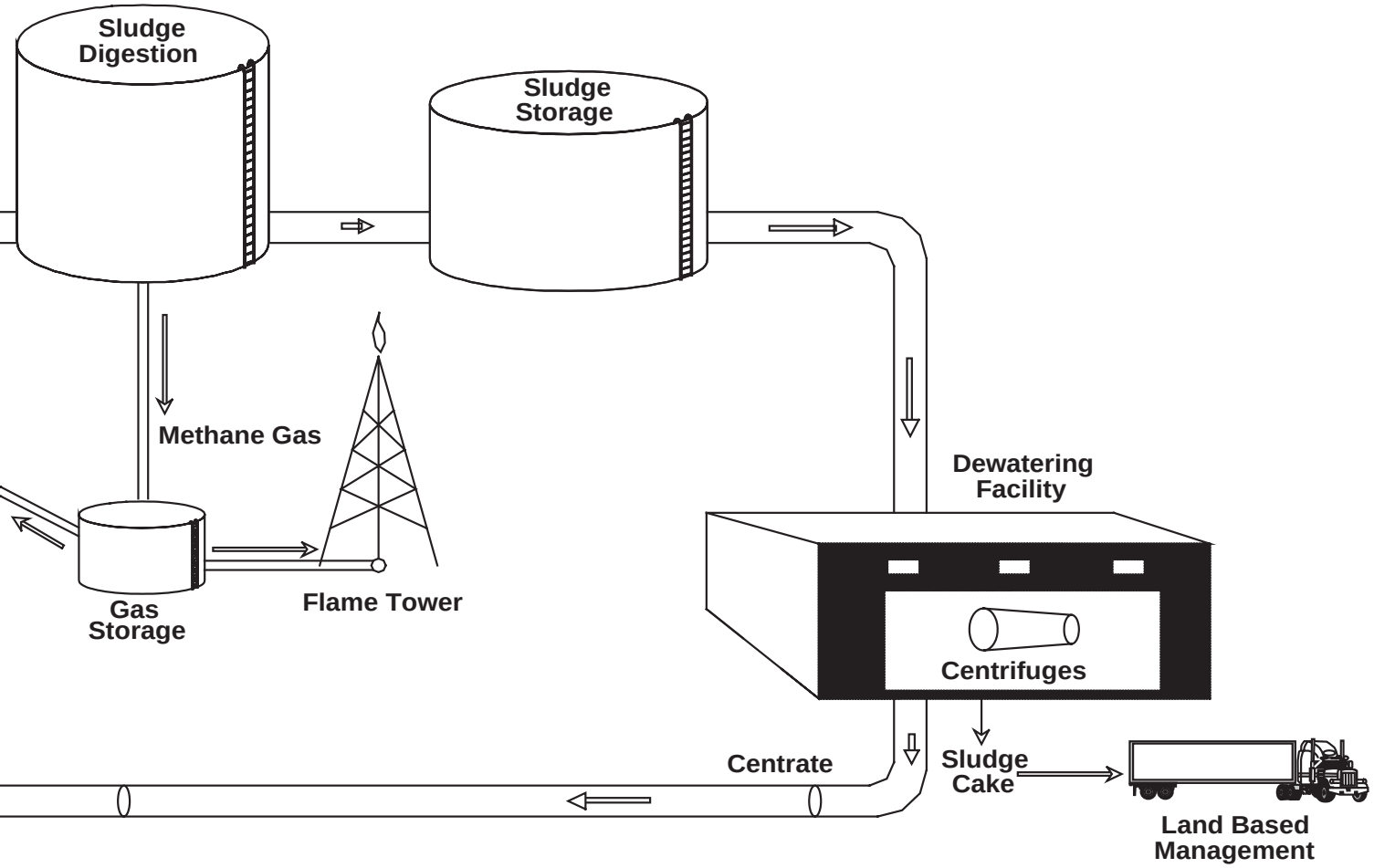
Map of New York Harbor and Historical Sampling Sites



Process Layout of a Typical New York City Water Pollution Control Plant




Skimmings And
Grease To
Landfill
Final
Settling
Effluent
Chlorine
Contact


Sludge
Digestion
Sludge
Storage
Methane Gas
Dewatering
Facility
Gas
Storage
Flame Tower
Centrifuges
Centrate
Sludge
Cake
Land Based
Management

DEP has developed a long-term plan to reduce nitrogen in the effluent that is discharged into New York waters by the City's wastewater plants. This process is called Step Feed Biological Nutrient Removal (BNR). Because hypoxia is a particular problem in Long Island Sound and Jamaica Bay, the plan will focus primarily on wastewater treatment plants that discharge into the upper East River and Jamaica Bay. To remove nitrogen at these plants, existing treatment facilities and processes are being modified. Some interim changes are already in operation at several of the critically located plants, and additional work will be in place at the other treatment plants by the end of 2010. While costly, the test results show that this technology has been successful in lowering nitrogen concentrations in the affected bodies of water. The City has been and continues to invest millions of dollars in the research and development of new, more cost-effective technologies, programs and processes that will reduce nitrogen levels in the wastewater.

Water waste: On average, each New Yorker uses about 100 gallons of water daily – twice as much as residents of most European cities and many other places in this country. Naturally, the more water we use, the more wastewater the treatment plants must process. Since each New York City plant is designed to handle a certain amount of wastewater, when too much comes into a plant, it reduces its spare capacity. Unless flows can be lessened, added treatment capacity may be required.

DEP has initiated a comprehensive program to encourage water conservation and to reduce flows into the City's treatment plants. The program, which began in 1989, included the following:

- installation of almost 630,000 residential water meters;
- electronic water main leak detection;
- commercial and residential surveys to locate leaks within buildings;
- incentives to replace old toilets and showerheads with low flow fixtures;
- permanent and seasonal year-round restrictions on water use such as watering lawns, and hosing sidewalks;
- installation of fire hydrant locking devices;
- public education for school children and City residents.

These programs and others, have proven successful and cumulatively together have reduced water consumption in the City by approximately 200 million gallons per day in the last ten years.

How You Can Make a Difference

Although wastewater treatment seems like an enormous and technical process, New Yorkers can help to maintain a healthy water and environment. Here are some of the things everyone can do:

Conserve water: There are many simple ways to use less water every day, such as taking shorter showers, turning off the faucet when you brush your teeth or shave and fixing leaks.

Keep hazardous substance out of the sewer system: Reduce the use of hazardous household products. Never pour hazardous materials down a sink or toilet or dump them into a storm drain. Save hazardous wastes for a DOS household waste collection day or wrap them safely in plastic and call the DOS for instructions. And remember, it's against the law to dump used motor oil down a storm drain. It should be taken to a gasoline service station for recycling.

Don't litter: Everyday items like coffee cups, straws and candy wrappers tossed into the street may wash down storm drains and end up on our beaches. If you've got litter to discard, look for a corner waste can or take it home with you.

Use Mass Transportation: Vehicles are responsible for 90 percent of the carbon monoxide in the air and are the greatest contributor to ground-level ozone, the major component of smog. By taking public transportation or carpooling, you help reduce the toxic chemicals that enter the wastewater treatment systems as a result of air pollution.

Dispose of grease properly: Don't throw used cooking oil down the sink or toilet as grease accumulations in the sewer system can cause serious blockages. Every time you cook, place the leftover oil in a non-recyclable, plastic container (like a yogurt container or a clear, plastic, take-out food container). Cover and store the container in the refrigerator. When the container is filled, throw it out with your regular trash.

Volunteer for Shoreline Cleanup and Survey Programs: These efforts are co-sponsored by DEP, the New York City Soil and Water Conservation District (NYCSWCD) and the American Littoral Society (ALS). Scheduled beach surveys take place throughout the City. Volunteers record the amounts and types of floatable materials that wash up on the beaches. This information helps DEP keep track of the effectiveness of its floatables capture programs. If you are interested in participating, contact the NYCSWCD at (212) 431-9676 and the ALS at (718) 471-2166.

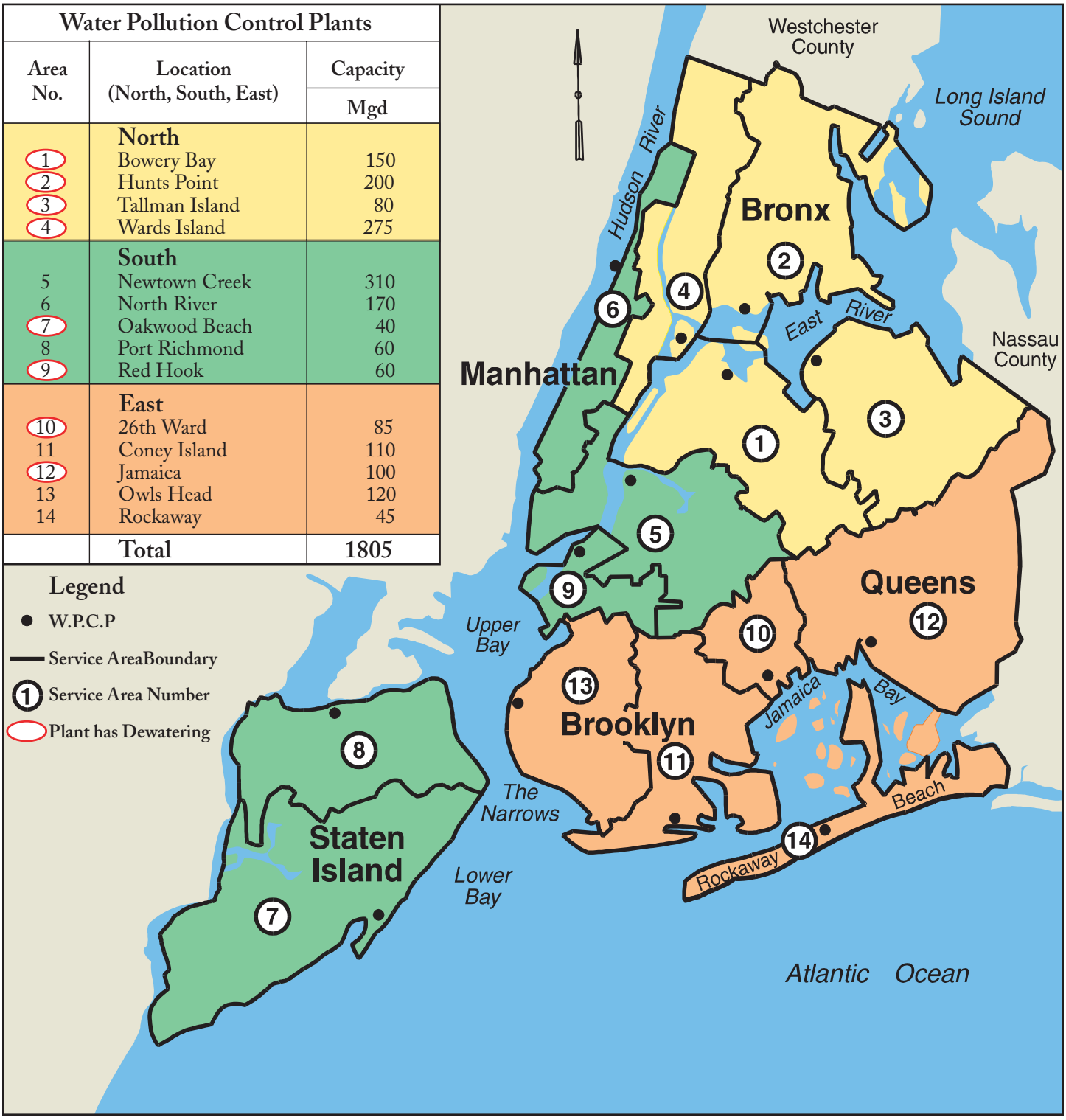
The Cormorant Skimmer Vessel patrolling the New York Harbor for floatables

Report dry weather: If you see dry weather sewage discharges from any of New York City's 700 combined sewer outfalls (an outfall is an outlet along the waterfront connecting the City's sewers to the open waters) report it to the City's Citizen Service Center at 311.

Each outfall has a sign with the identification number assigned to it by DEC. Be sure to give the 311 operator the outfall number when calling to report a problem.

New York City Plant Locations and Capacities

Water Pollution Control Plants		
Area No.	Location (North, South, East)	Capacity Mgd
	North	
1	Bowery Bay	150
2	Hunts Point	200
3	Tallman Island	80
4	Wards Island	275
	South	
5	Newtown Creek	310
6	North River	170
7	Oakwood Beach	40
8	Port Richmond	60
9	Red Hook	60
	East	
10	26th Ward	85
11	Coney Island	110
12	Jamaica	100
13	Owls Head	120
14	Rockaway	45
	Total	1805



New York City Wastewater Treatment Plants

26th Ward WPCP

Plant in operation:	1944
Design Capacity:	85 MGD
Dewatering:	26th Ward
Population Served:	283,428
Receiving Waterbody:	Jamaica Bay
Drainage Area:	5,907 Acres, eastern section of Brooklyn, near Jamaica Bay
Plant Staff:	93

Bowery Bay WPCP

Plant in operation:	1939
Design Capacity:	150 MGD
Dewatering:	Bowery Bay
Population Served:	848,328
Receiving Waterbody:	Upper East River
Drainage Area:	15,203 Acres, northeast section of Queens
Plant Staff:	81

Coney Island WPCP

Plant in operation:	1935
Design Capacity:	110 MGD
Dewatering:	26th Ward
Population Served:	596,326
Receiving Waterbody:	Jamaica Bay
Drainage Area:	15,087 Acres, south and central Brooklyn
Plant Staff:	69

Hunts Point WPCP

Plant in operation:	1952
Design Capacity:	200 MGD
Dewatering:	Hunts Point
Population Served:	684,569
Receiving Waterbody:	Upper East River
Drainage Area:	16,664 Acres, eastern section of the Bronx
Plant Staff:	108

Jamaica WPCP

Plant in operation:	1903 / 1943
Design Capacity:	100 MGD
Dewatering:	Jamaica WPCP
Population Served:	728,123
Receiving Waterbody:	Jamaica Bay
Drainage Area:	25,313 Acres, southern section of Queens
Plant Staff:	66

Newtown Creek WPCP

Plant in operation:	1967
Design Capacity:	310 MGD
Dewatering:	Hunts Point WPCP
Population Served:	1,068,012
Receiving Waterbody:	East River
Drainage Area:	15,656 Acres, south and eastern midtown sections of Manhattan, northeast section of Brooklyn and western section of Queens
Plant Staff:	88

North River WPCP

Plant in operation:	1986
Design Capacity:	170 MGD
Dewatering:	Wards Island WPCP
Population Served:	588,772
Receiving Waterbody:	Hudson River
Drainage Area:	6,030 Acres, west side of Manhattan above Bank Street
Plant Staff:	109

First and only Wastewater Treatment Plant in NYC to have a public park built on top.

Oakwood Beach WPCP

Plant in operation:	1956
Design Capacity:	39.9 MGD
Dewatering:	Oakwood Beach WPCP
Population Served:	244,918
Receiving Waterbody:	Lower New York Bay
Drainage Area:	10,779 Acres, southern section of Staten Island
Plant Staff:	59

Rockaway WPCP

Plant in operation:	1952
Design Capacity:	45 MGD
Dewatering:	26th Ward WPCP
Population Served:	90,474
Receiving Waterbody:	Jamaica Bay
Drainage Area:	6,259 Acres, Rockaway Peninsula
Plant Staff:	41

Owls Head WPCP

Plant in operation:	1952
Design Capacity:	120 MGD
Dewatering:	26th Ward/ Wards Island WPCPs
Population Served:	758,007
Receiving Waterbody:	Upper New York Bay
Drainage Area:	12,947 Acres, western section of Brooklyn
Plant Staff:	68

Wards Island WPCP

Plant in operation:	1937
Design Capacity:	275 MGD
Dewatering:	Wards Island WPCP
Population Served:	1,061,558
Receiving Waterbody:	Upper East River
Drainage Area:	12,056 Acres, western section of the Bronx and upper east side of Manhattan
Plant Staff:	118

Tallman Island WPCP

Plant in operation:	1939
Design Capacity:	80 MGD
Dewatering:	Tallman Island WPCP
Population Served:	410,812
Receiving Waterbody:	Upper East River
Drainage Area:	16,860 Acres, northeast section of Queens
Plant Staff:	71

Port Richmond WPCP

Plant in operation:	1953
Design Capacity:	60 MGD
Dewatering:	Oakwood Beach WPCP
Population Served:	198,128
Receiving Waterbody:	Kill Van Kull
Drainage Area:	9,665 Acres, northern section of Staten Island
Plant Staff:	46

Red Hook WPCP

Plant in operation:	1987
Design Capacity:	60 MGD
Dewatering:	Red Hook WPCP
Population Served:	192,050
Receiving Waterbody:	Lower East River
Drainage Area:	3,200 Acres, northwest section of Brooklyn and Governor's Island
Plant Staff:	55

DEP Sludge Vessels

Presently, NYC-DEP Marine Section uses these three sludge vessels for the transportation of liquid sludge from wastewater treatment plants without dewatering capabilities.

North River sludge vessel

Newtown Creek sludge vessel

Owls Head sludge vessel

Wastewater Treatment Plants Before Modernization

Rockaway

Oakwood Beach

Owls Head

Wastewater Treatment Plants Before Modernization

Port Richmond

Red Hook

Newtown Creek

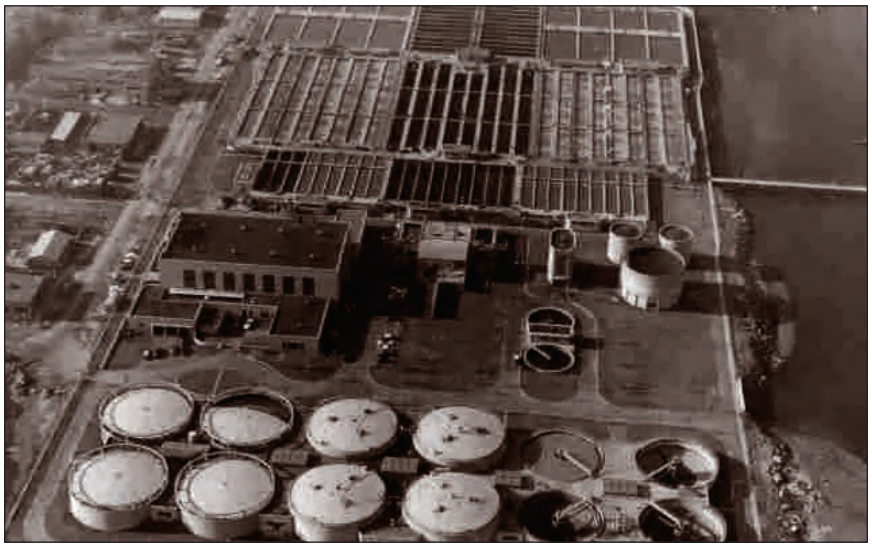
Wastewater Treatment Plants Before Modernization

26th Ward

Coney Island

Jamaica

Wastewater Treatment Plants Before Modernization



Bowery Bay

Hunts Point

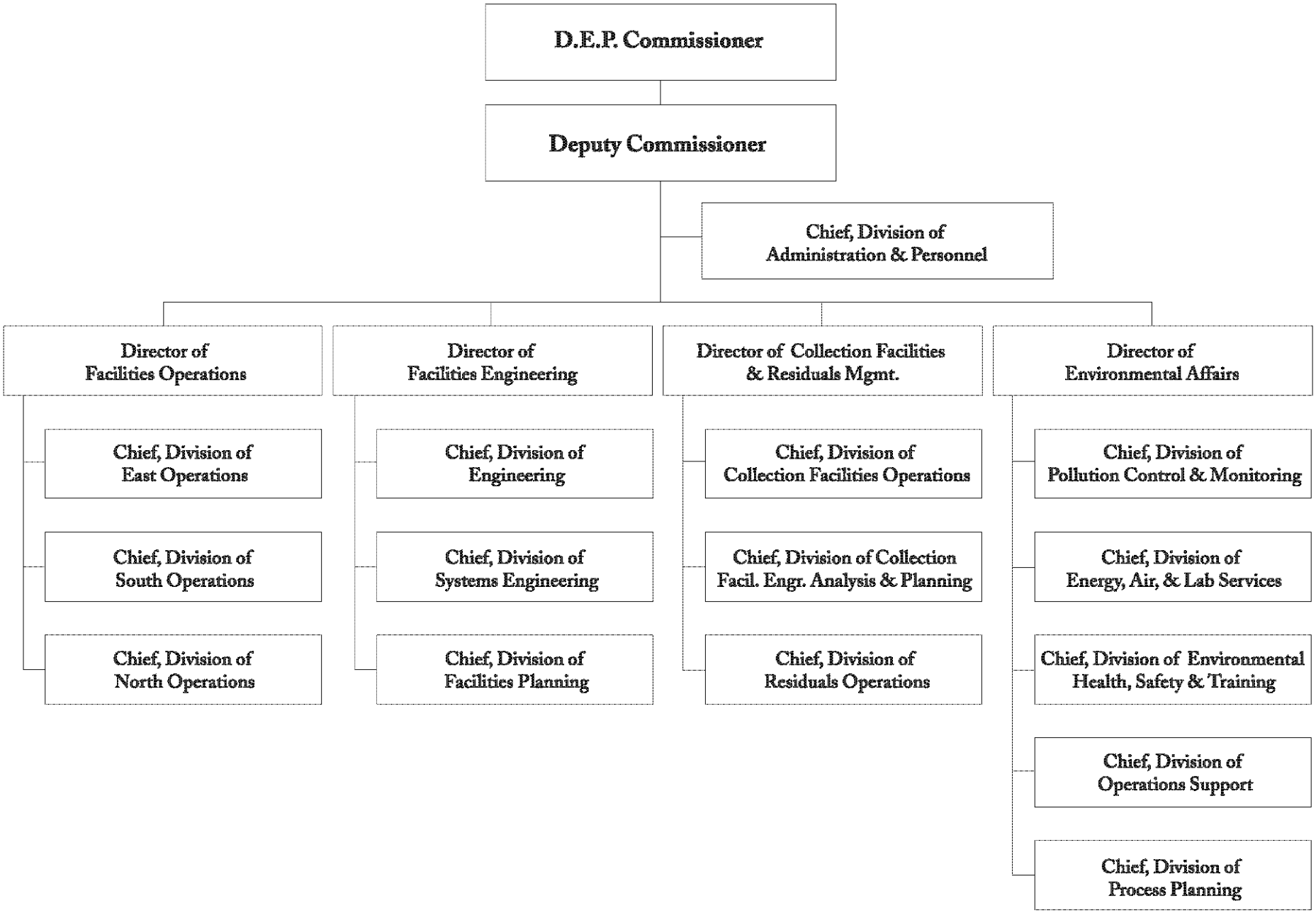
Tallman Island

Wastewater Treatment Plants Before Modernization

North River

Wards Island

Bureau of Wastewater Treatment



The New York City Department of Environmental Protection distributes publications about wastewater treatment, the water supply system, water conservation and other environmental issues. For further information, or to obtain publications, or report water main breaks, streets leaks, open fire hydrants, sewer or storm drain backups and other problems, contact **New York City's 24-hour Citizen Service Center at 311.**

You may also visit the New York City DEP web site at:

www.nyc.gov/dep

Call 311 for assistance.

New York City
Department of Environmental Protection
59-17 Junction Blvd., Flushing, New York 11373

Michael R. Bloomberg, Mayor

Emily Lloyd, Commissioner

Bureau of Wastewater Treatment
Alfonso R. Lopez, P.E. Deputy Commissioner

Wards Island Wastewater Treatment Plant - 1938

NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION

DEP

www.nyc.gov/dep

U.S. Department of Commerce

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People Business Geography Data Research Newsroom Search Go

State & County QuickFacts

Queens County (Queens Borough), New York

People QuickFacts	Queens County (Queens Borough)	New York
Population, 2012 estimate	2,272,771	19,570,261
Population, 2010 (April 1) estimates base	2,230,725	19,378,104
Population, percent change, April 1, 2010 to July 1, 2012	1.9%	1.0%
Population, 2010	2,230,722	19,378,102
Persons under 5 years, percent, 2012	6.1%	6.0%
Persons under 18 years, percent, 2012	20.5%	21.8%
Persons 65 years and over, percent, 2012	13.2%	14.1%
Female persons, percent, 2012	51.5%	51.5%
White alone, percent, 2012 (a)	50.0%	71.2%
Black or African American alone, percent, 2012 (a)	20.9%	17.5%
American Indian and Alaska Native alone, percent, 2012 (a)	1.3%	1.0%
Asian alone, percent, 2012 (a)	24.8%	8.0%
Native Hawaiian and Other Pacific Islander alone, percent, 2012 (a)	0.2%	0.1%
Two or More Races, percent, 2012	2.7%	2.2%
Hispanic or Latino, percent, 2012 (b)	27.9%	18.2%
White alone, not Hispanic or Latino, percent, 2012	27.2%	57.6%
Living in same house 1 year & over, percent, 2007-2011	89.5%	88.5%
Foreign born persons, percent, 2007-2011	47.8%	21.8%
Language other than English spoken at home, percent age 5+, 2007-2011	56.3%	29.5%
High school graduate or higher, percent of persons age 25+, 2007-2011	80.1%	84.6%
Bachelor's degree or higher, percent of persons age 25+, 2007-2011	29.8%	32.5%
Veterans, 2007-2011	62,591	986,313
Mean travel time to work (minutes), workers age 16+, 2007-2011	41.9	31.4
Housing units, 2011	832,132	8,119,364
Homeownership rate, 2007-2011	44.9%	54.8%
Housing units in multi-unit structures, percent, 2007-2011	71.6%	50.5%
Median value of owner-occupied housing units, 2007-2011	$474,000	$301,000
Households, 2007-2011	773,130	7,215,687
Persons per household, 2007-2011	2.83	2.59
Per capita money income in the past 12 months (2011 dollars), 2007-2011	$26,234	$31,796
Median household income, 2007-2011	$56,406	$56,951
Persons below poverty level, percent, 2007-2011	13.7%	14.5%

Business QuickFacts	Queens County (Queens Borough)	New York
Private nonfarm establishments, 2011	44,067	521,537[1]
Private nonfarm employment, 2011	490,435	7,369,731[1]
Private nonfarm employment, percent change, 2010-2011	1.3%	1.4%[1]
Nonemployer establishments, 2011	218,488	1,596,899
Total number of firms, 2007	236,900	1,956,733
Black-owned firms, percent, 2007	14.4%	10.4%
American Indian- and Alaska Native-owned firms, percent, 2007	1.0%	0.7%
Asian-owned firms, percent, 2007	29.0%	10.1%

Native Hawaiian and Other Pacific Islander-owned firms, percent, 2007	S	0.1%
Hispanic-owned firms, percent, 2007	16.3%	9.9%
Women-owned firms, percent, 2007	29.6%	30.4%
Manufacturers shipments, 2007 ($1000)	5,654,377	162,720,173
Merchant wholesaler sales, 2007 ($1000)	15,308,450	313,461,904
Retail sales, 2007 ($1000)	14,587,146	230,718,065
Retail sales per capita, 2007	$6,404	$11,879
Accommodation and food services sales, 2007 ($1000)	2,223,352	39,813,499
Building permits, 2012	1,428	24,872

Geography QuickFacts	**Queens County (Queens Borough)**	**New York**
Land area in square miles, 2010	108.53	47,126.40
Persons per square mile, 2010	20,553.6	411.2
FIPS Code	081	36
Metropolitan or Micropolitan Statistical Area	New York-Northern New Jersey-Long Island, NY-NJ-PA Metro Area	

1: Includes data not distributed by county.

(a) Includes persons reporting only one race.
(b) Hispanics may be of any race, so also are included in applicable race categories.

D: Suppressed to avoid disclosure of confidential information
F: Fewer than 25 firms
FN: Footnote on this item for this area in place of data
NA: Not available
S: Suppressed; does not meet publication standards
X: Not applicable
Z: Value greater than zero but less than half unit of measure shown

Source U.S. Census Bureau: State and County QuickFacts. Data derived from Population Estimates, American Community Survey, Census of Population and Housing, State and County Housing Unit Estimates, County Business Patterns, Nonemployer Statistics, Economic Census, Survey of Business Owners, Building Permits
Last Revised: Thursday, 27-Jun-2013 14:28:37 EDT

PROJECT NOTE WESTON SOLUTIONS, INC.

To: Neo Smelting and Refining Site File
Date: May 18, 2013

W.O. No.: 20405.012.013.2101.00

From: Denise Breen, Weston Solutions, Inc.

Subject: Determination of Student Enrollment in Schools/Daycare Facilities Within 200 Feet of Observed Soil Contamination.

References

1. Gembressi, Michele, Pee Week Folks Preschool Daycare Childcare. Phone correspondence with Denise Breen, WESTON, Subject RE: Number of Students Attending Pee Wee Folks Preschool Daycare Childcare. July 15, 2013. [1 page]
2. Pee Week Folks, Whitestone. Pee Week Folks Preschool Daycare Childcare downloaded from peeweefolksschool.com/pee-wee-folks-whitestone. July 15, 2013. [2 pages]

This project note and attached references provided serve as documentation for the number of students enrolled in local Daycare/School facilities within 200 feet of observed surface soil contamination. There is one Daycare/School facilities within 200 feet of observed contamination:

- Pee Wee Folks Preschool Daycare Childcare, located at 12-45 Clintonville Street, Whitestone, NY, has a license which allows no more than 79 enrolled students. The number of faculty/workers varies dependent on enrollment and could not de definitively calculated.

The total number of children that are enrolled in Daycare/School facilities, within 200 feet of observed contamination, is a maximum of 79 students. The total number of faculty/workers could not be calculated due to the fluctuating number of staff at the facility.

Denise Breen
Assistant Project Scientist

PHONE MEMO

Contact: Michele Gembressi	Phone Number: 718-746-6107
Of: Pee Wee Folks Preschool Daycare Childcare	Date: July 15, 2013
Case Name: Neo Smelting and Refining	Case Number: 20405.012.013.2101.00

RE: Number of Students Attending Pee Wee Folks Preschool Daycare Childcare

On July 15, 2013, at approximately 13:00, Denise Breen called 718-746-6107 and spoke with Michele Gembressi, which serves as the Director of the Whitestone, Queen, NY location of Pee Wee Folks Preschool, Daycare Childcare. Ms. Gembressi told Denise Breen that Pee Wee Folks, located at 12-45 Clintonville Street, Whitestone, NY is licensed to 79 children. The maximum number of students attending Pee Wee folks is 79 children. Ms. Gembressi explained that the number of faculty varies depending fluctuating enrollment and events held at Pee Wee Folks.

Links

Welcome to our School
About Us
Curriculum
Our Staff
Our Locations
Email
Contact Us

Fall Registration Is Ongoing At All Sites

Limited seats still available

Contact the location nearest you!
Pee Wee Folks Preschool

Pee Wee Folks, Whitestone

Hi, Welcome to Pee Wee Folks Whitestone. My name is Michele Gembressi and I am the director of our Whitestone location.

Our school has been a part of the Whitestone community since 1981. Many children in our community have attended our school, in fact some of them are currently staff members here. Nothing gives me greater pleasure then to meet former students and hear their fond memories of our school!

We take great pride in creating a program that exceeds the industry standards. Our goal is to light the spark in your child's imagination.
Our teachers are dedicated and continually updating the Pee Wee curriculum to provide your child with an exceptional school experience,and our reputation in the community is a testiment to that fact.

Registration for our Fall session is ongoing with limited space still available. If you are looking for a school or an after school program in our town, please give us a call. I will be happy to show you what Pee Wee Folks is all about!

Pee Wee Folks also partners with Little Meadows Early Childhood Center to provide an integrated classroom at our Whitestone location.

At Pee Wee Folks our curriculum provides children with interesting and challenging ways to explore the world around them!

2013-Summer Camp At Pee Wee Folks and Kids Kamp-Registration Form Here

Toddler Program Rates for Ages 2, 3, 4 2012-Registration Form Here

Universal Pre K 2012-2013 Pre Registration Form Here

After School Program 2011-12 Registration Form Here

12-45 Clintonville St. Whitestone, NY 11357

View Pee Wee Folks Preschool in a larger map

woollyCARE™

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Pre school, daycare, childcare, early learning center, pre-k and after school programs.

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SITE SUMMARY AND RECOMMENDATION

The Neo Smelting and Refining site (CERCLIS ID No. NYN000206646) (hereafter referred to as "the Site") consists of approximately 3,300 square feet (ft^2) located at 150-40 11th Avenue, Whitestone, NY 11357. The historic smelting operations were primarily conducted on Block 4516, Lot 16 (historic Lot 22), in the eastern-most portion of the. Neo Smelting and Refining was identified as a secondary lead smelter in a doctoral dissertation focused on unrecognized secondary lead smelters.

Smelting is a key process in lead production that involves heating lead ore or recovered lead with chemical reducing agents. The Site operated as a secondary smelter; however, both secondary and primary smelting processes can be responsible for releasing large amounts of lead contamination into the surrounding environment.

According to historical documents, the Site was in operation from the late 1940s until sometime after 1958, and the potential of a lead release to the surrounding residential properties existed for approximately two decades. In addition, historic Certified Sanborn® maps from 1941, 1942, and 1950 indicate that a "Metal Refining" facility occupied the subject property where the smelting building footprint was located. The 1981 Sanborn map shows "Metal Scrap" as the subject property. The Sanborn maps reviewed indicated that the subject property operated as "The American Can Co." in 1903 and 1916 prior to smelting activities.

The current owner of the Site property is La Famiglia Di Bugey Inc., which owns and operates the Whitestone Manor Condominiums. Between 2006 and 2008, the former smelter building was converted into the current residential condominiums, which include 49 residential units. The Site is bound to the west by residential properties, to the east by residential and commercial properties, and to the north and south by mostly commercial stores and some residential homes. The surrounding properties located on 11th and 12th Avenues have been residential with yard areas since the early 1900s. Whitestone Manor Condominiums has an unpaved courtyard area with exposed soil as well as a driveway

From April 25-26, 2013, Weston Solutions, Inc. (WESTON®) personnel collected a total of 75 surface soil samples from right-of-way (ROW) locations downwind of the Site, from the courtyard of the former smelter building footprint, and from ROW locations in surrounding neighborhoods within a ½-mile radius. Soil samples were also collected from four locations outside of the influence of site activities to document background conditions [Ref. 4, pp. 10-23; 17, p. 3].

The soil samples collected by WESTON were submitted for analysis of Target Analyte List (TAL) Inorganics (including tin). Analytical results indicate concentrations of lead found in the Whitestone Manor Condominiums courtyard and one downwind location to be significantly higher than at background conditions.

An HRS QuickScore (Version 3.0.5) analysis of the Neo Smelting and Refining site was conducted on the basis of an area of observed contamination for the soil exposure pathway (i.e., on-site soil contaminated with lead) with resident populations and potential to release to air.

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SITE SUMMARY AND RECOMMENDATION

This analysis results in a site score of 16.13, which is below the 28.5 minimum score required for placement on the NPL.

Based on an evaluation of the above conditions, a recommendation of **NO FURTHER REMEDIAL ACTION PLANNED (NFRAP)** is given to the Neo Smelting and Refining site.

****** CONFIDENTIAL ******
******PRE-DECISIONAL DOCUMENT ******
****** SUMMARY SCORESHEET ******
****** FOR COMPUTING PROJECTED HRS SCORE ******

****** Do Not Cite or Quote ******

Site Name: Neo Smelting and Refining

Region: Region 2

Scenario Name: Historic Lead Smelting Facility

City, County, State: Whitestone, Queens, New York

Evaluator: Denise Breen

EPA ID#: NYN000206646

Date: 07/19/2013

Lat/Long: 40:47:30,-73:48:50

Congressional District: 03

This Scoresheet is for: SI

Scenario Name: Historic Lead Smelting Facility

Description:

	S pathway	S^2 pathway
Ground Water Migration Pathway Score (S_{gw})	0.0	0.0
Surface Water Migration Pathway Score (S_{sw})	0.0	0.0
Soil Exposure Pathway Score (S_s)	32.18	1035.55
Air Migration Score (S_a)	2.21	4.88
$S^2_{gw} + S^2_{sw} + S^2_s + S^2_a$		1040.44
$(S^2_{gw} + S^2_{sw} + S^2_s + S^2_a)/4$		260.11
$\sqrt{(S^2_{gw} + S^2_{sw} + S^2_s + S^2_a)/4}$		16.13

Pathways not assigned a score (explain): GW and SW pathways are not scored because there is no observed or suspected release.

TABLE 5-1 --SOIL EXPOSURE PATHWAY SCORESHEET

Factor categories and factors	Maximum Value	Value Assigned	
Likelihood of Exposure:			
1. Likelihood of Exposure	550		550.0
Waste Characteristics:			
2. Toxicity	(a)	10000.0	
3. Hazardous Waste Quantity	(a)	10.0	
4. Waste Characteristics	100		18.0
Targets:			
5. Resident Individual	50	45.0	
6. Resident Population:			
6a. Level I Concentrations	(b)	0	
6b. Level II Concentrations	(b)	218.0	
6c. Population (lines 6a + 6b)	(b)	218.0	
7. Workers	15	5.0	
8. Resources	5		
9. Terrestrial Sensitive Environments	(c)	0.0	
10. Targets (lines 5 + 6c + 7 + 8 + 9)	(b)		268.0
Resident Population Threat Score			
11. Resident Population Threat Score (lines 1 x 4 x 10)	(b)		2653200.0
Nearby Population Threat			
Likelihood of Exposure:			
12. Attractiveness/Accessibility	100	10.0	
13. Area of Contamination	100	5.0	
14. Likelihood of Exposure	500		5.0
Waste Characteristics:			
15. Toxicity	(a)	10000.0	
16. Hazardous Waste Quantity	(a)	10.0	
17. Waste Characteristics	100		18.0
Targets:			
18. Nearby Individual	1	0.0	
19. Population Within 1 Mile	(b)	20.8	
20. Targets (lines 18 + 19)	(b)		20.8
Nearby Population Threat Score			
21. Nearby Population Threat (lines 14 x 17 x 20)	(b)		1872.0
Soil Exposure Pathway Score:			
22. Pathway Score[d] (S_s), [lines (11+21)/82,500, subject to max of 100]	100		32.18

[a] Maximum value applies to waste characteristics category
[b] Maximum value not applicable
[c] No specific maximum value applies to factor. However, pathway score based solely on terrestrial sensitive environments is limited to a maximum of 60
[d] Do not round to nearest integer

TABLE 6-1 --AIR MIGRATION PATHWAY SCORESHEET

Factor categories and factors	Maximum Value	Value Assigned	
Likelihood of Release:			
1. Observed Release	550	0.0	
2. Potential to Release:			
2a. Gas Potential to Release	500	0.0	
2b. Particulate Potential to Release	500	280.0	
2c. Potential to Release (higher of lines 2a and 2b)	500	280.0	
3. Likelihood of Release (higher of lines 1 and 2c)	550		280.0
Waste Characteristics:			
4. Toxicity/Mobility	(a)	2.0	
5. Hazardous Waste Quantity	(a)	10.0	
6. Waste Characteristics	100		2.0
Targets:			
7. Nearest Individual	50	20.0	
8. Population:			
8a. Level I Concentrations	(b)	0.0	
8b. Level II Concentrations	(b)	0.0	
8c. Potential Contamination	(c)	305.3	
8d. Population (lines 8a + 8b + 8c)	(b)	305.3	
9. Resources	5	0.0	
10. Sensitive Environments:			
10a. Actual Contamination	(c)	0.0	
10b. Potential Contamination	(c)	0.22	
10c. Sensitive Environments (lines 10a + 10b)	(c)	0.22	
11. Targets (lines 7 + 8d + 9 + 10c)	(b)		325.52
Air Migration Pathway Score:			
12. Pathway Score (S_a) [(lines 3 x 6 x 11)/82,500][d]	100		2.21

[a] Maximum value applies to waste characteristics category
[b] Maximum value not applicable
[c] No specific maximum value applies to factor. However, pathway score based solely on sensitive environments is limited to a maximum of 60.
[d] Do not round to nearest integer

Longitude	Latitude	Height	Sample ID	Description	Max PDOP	Max HDOP
-73.81385231	40.791669	16.012	S01	sample location 1	4.88577032	2.11290812
-73.81418252	40.79159	17.575	S02	sample location 02	3.18137479	1.55452895
-73.81378932	40.7909787	18.635	S03	sample location 3 - infront of 150-21 and 150-17 12th ave	4.41130304	1.89317465
-73.8148834	40.7913641	20.322	S04	sample location S04	3.99957633	2.73624754
-73.81358923	40.7910206	17.093	S05	sample location 5 - front of 150-25 12th ave	22.7688522	11.0851746
-73.81285497	40.7910828	12.467	S06	sample location 6 - infront of 150-46 12th ave	5.9882493	2.72236013
-73.81116352	40.7914676	9.298	S07	sample location S07	4.41081142	3.64211369
-73.81173596	40.790305	13.969	S08	sample location S08	3.79411793	1.52850807
-73.81432034	40.7898167	23.255	S09	sample location 9 - intersection on 150th and 12th road	5.19118929	1.818084
-73.81508986	40.7924197	22.506	S10	sample location 10-background	4.47439814	2.4071548
-73.81464672	40.792527	23.012	S11	sample location 11-background	2.7939887	1.42663801
-73.81248414	40.7930319	9.571	S12	sample location S12	4.95440578	2.73960137
-73.81234766	40.7930613	9.378	S13	sample location S13	5.57444429	2.85611606
-73.81326253	40.7912883	17.543	S14	sample location 14	4.12483788	2.51643658
-73.81333705	40.7913174	14.126	S15	sample location 15	4.61298037	2.5314641

Sample ID	Rcvr Type	GPS Date	GPS Time	Unfilt Pos	Filt Pos	GNSS Height	Vert Prec	Horz Prec	Std Dev	Point_ID
S01	GeoXH 6000	25-Apr-13	1:45:38 PM	131	131	16.01217193	0.50934748	0.42834296	0.26124119	5
S02	GeoXH 6000	25-Apr-13	1:50:14 PM	121	121	17.57483357	0.37595943	0.30634049	0.20738805	6
S03	GeoXH 6000	25-Apr-13	3:30:58 PM	122	122	18.63499336	2.09265783	1.49516939	1.7541316	8
S04	GeoXH 6000	26-Apr-13	9:53:20 AM	120	120	20.32167961	0.75067017	0.71909738	2.37585117	12
S05	GeoXH 6000	25-Apr-13	3:28:24 PM	131	131	17.09262772	1.79970089	1.21409711	0.56100881	7
S06	GeoXH 6000	25-Apr-13	3:56:35 PM	123	123	12.46652653	0.4202669	0.32117996	0.24159124	9
S07	GeoXH 6000	26-Apr-13	9:09:40 AM	121	121	9.297591417	3.19848786	2.60100725	2.54150984	11
S08	GeoXH 6000	26-Apr-13	1:53:40 PM	122	122	13.96876406	2.40552161	1.81113967	0.34132948	15
S09	GeoXH 6000	26-Apr-13	7:05:04 AM	130	130	23.25516153	0.41579257	0.31105022	0.268927	10
S10	GeoXH 6000	25-Apr-13	8:48:03 AM	121	121	22.50582588	0.72272248	0.42562611	0.24632472	1
S11	GeoXH 6000	25-Apr-13	8:50:35 AM	121	121	23.01209027	0.40506484	0.31638145	0.14362634	2
S12	GeoXH 6000	26-Apr-13	10:11:33 AM	123	123	9.571318031	0.84750414	0.69631363	0.30568437	13
S13	GeoXH 6000	26-Apr-13	10:16:21 AM	126	126	9.378167289	0.62656867	0.55664014	1.38147216	14
S14	GeoXH 6000	25-Apr-13	10:50:12 AM	135	135	17.5427087	3.43701686	2.14329376	1.57558995	3
S15	GeoXH 6000	25-Apr-13	10:53:30 AM	124	124	14.12632851	0.38999579	0.33053496	0.42290357	4

Longitude	Latitude	Height	Comment	Max PDOP	Max HDOP	Rcvr Type	GPS Date	GPS Time	Unfilt Pos
-73.814978	40.7924453	23.367	S01 at 10-01 150th St	5.67381573	2.94570518	ProXRS	04-Mar-13	2:17:54 PM	129
-73.81249538	40.7930284	9.227	S02 at 151-14 10th Ave	3.31199169	1.52359653	ProXRS	04-Mar-13	2:32:02 PM	131
-73.81485453	40.7912966	20.973	S03 at 11-02 150th St	3.31199169	1.52359653	ProXRS	04-Mar-13	2:39:38 PM	121
-73.81285187	40.7910877	13.42	S04 at 150-46 12th Ave	3.7783668	1.81111801	ProXRS	04-Mar-13	2:46:06 PM	122
-73.81359571	40.7910132	19.283	S05 at WM driveway 12th Ave	5.00702333	3.08848572	ProXRS	04-Mar-13	2:55:37 PM	122
-73.81388086	40.7916618	16.574	S06 at 150-24 11th Ave	1.89892638	0.99007982	ProXRS	04-Mar-13	3:06:38 PM	121
-73.81118991	40.7914642	11.448	S07 at 12-03 151st Pl (crnr12th)	2.98849678	1.30644178	ProXRS	04-Mar-13	3:23:51 PM	122
-73.81167786	40.7903167	15.564	S08 at 12thRd-Clintonville	2.97568774	1.37408721	ProXRS	04-Mar-13	3:35:43 PM	129
-73.81432795	40.7898135	24.457	S09 at 12thRd-150th St	2.48897028	1.63145804	ProXRS	04-Mar-13	3:45:02 PM	120

Comment	Filt Pos	GNSS Height	Vert Prec	Horz Prec	Std Dev	Point_ID
S01 at 10-01 150th St	129	23.36671852	1.61110808	1.42190593	5.60772584	1
S02 at 151-14 10th Ave	131	9.227266443	2.67117945	1.95328802	0.52707262	2
S03 at 11-02 150th St	121	20.97259336	1.74912944	1.26340052	0.47740308	3
S04 at 150-46 12th Ave	122	13.42029788	1.7350732	1.27456238	0.62017678	4
S05 at WM driveway 12th Ave	122	19.28348565	3.79370946	2.78010321	0.70434672	5
S06 at 150-24 11th Ave	121	16.57350307	1.51972177	1.10322191	0.93306982	6
S07 at 12-03 151st Pl (crnr12th)	122	11.44817321	1.76294626	1.20569957	1.40758607	7
S08 at 12thRd-Clintonville	129	15.5640913	1.77699021	1.2624496	0.60420262	8
S09 at 12thRd-150th St	120	24.45723801	1.62036433	1.18516533	1.56912924	9