FINAL REPORT
FOR
CREESE & COOK CO. (FORMER) 1
SITE REASSESSMENT
DANVERS, MASSACHUSETTS

Prepared For:
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ACRONYM/ABBREVIATIONS LIS

%	Percent
°	Degrees
′	Minutes
″	Seconds
ABN	Acid Base Neutral
ACM	Asbestos-Containing Material
ACOP	Administrative Consent Order with Penalty
AG	Attorney General
a.k.a.	Also Known As
AST	Aboveground Storage Tank
bgs	Below Ground Surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
cfs	Cubic Feet Per Second
CLP	Contract Laboratory Program
Co.	Company
CO	Carbon Monoxide
COD	Chemical Oxygen Demand
COPC	Compounds of Potential Concern
CRQL	Contract Required Quantitation Limit
CWA	Clean Water Act
DAS	Delivery of Analytical Service
ELCR	Excess Lifetime Cancer Risk
EPA	U.S. Environmental Protection Agency
EMPC	Estimated Maximum Possible Concentration
EP	Extraction Procedure
Ft	Feet
ft^2	Square feet
FID	Flame Ionization Detector
FWEC	Foster Wheeler Environmental Corporation
Geomega	Geomega, Inc.
GFS	Geological Field Services, Inc.
GIS	Geographic Information System
GPS	Global Positioning System
H_2S	Hydrogen Sulfide
HI	Hazard Index
HpCDD	Heptachlorodibenzodioxin
HpCDF	Heptachlorodibenzofuran
HxCDD	Hexachlorodibenzodioxin
HxCDF	Hexachlorodibenzofuran

ACRONYM/ABBREVIATIONS LIST (Continued)

ID	Identification
IWPA	Interim Wellhead Protection Area
IHE	Imminent Hazard Evaluation
IRA	Immediate Response Action
LEL	Lower Explosive Limit
LSP	Licensed Site Professional
MA	Massachusetts
MBTA	Massachusetts Bay Transportation Authority
MCP	Massachusetts Contingency Plan
MassDEP	Massachusetts Department of Environmental Protection
MADEQE	Massachusetts Department of Environmental Quality and Engineering
MassGIS	Massachusetts Geographical Information System
MGL	Massachusetts General Law
mil	Millimeter
µg/Kg	Micrograms Per Kilogram
µg/L	Micrograms Per Liter
µmhos/cm	Micromhos per Centimeter
mg/Kg	Milligrams Per Kilogram
mg/L	Milligrams Per Liter
mg $CaCO_3$/L	Milligram of Calcium Carbonate per Liter
MS/MSD	Matrix Spike/Matrix Spike Duplicate
OCDD	Octachlorodibenzodioxin
OCDF	Octachlorodibenzofuran
NA	Not Applicable
NERO	Northeast Regional Office
ng/Kg	Nanograms per Kilogram
NL	Not Listed
No.	Number
NOAA	National Oceanic and Atmospheric Administration
NON	Notice of Noncompliance
NOR	Notice of Responsibility
O_2	Oxygen
OHM	Oil and/or Hazardous Materials
ORP	Oxidation Reduction Potential
ORS	Office of Research and Standards
PA	Preliminary Assessment
PAHs	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyl
PeCDD	Pentachlorodibenzodioxin
PeCDF	Pentachlorodibenzofuran
PEL	Probable Effects Level
PID	Photoionization Detector

ACRONYM/ABBREVIATIONS LIST (Continued)

PLM	Polarized Light Microscopy
ppb	Parts Per Billion
PPE	Probable Point of Entry
ppm	Parts Per Million
ppt	Parts Per Thousand
PRP	Potentially Responsible Party
PVC	Polyvinyl Chloride
PWS ID	Public Water System Identification
QAPP	Quality Assurance Project Plan
RAM	Release Abatement Measure
RAO	Response Action Outcome
RAS	Routine Analytical Service
RCRA	Resource Conservation and Recovery Act
RCRIS	Resource Conservation and Recovery Information System
Ref	Reference
REW	R.E.W. Environmental Consultants
RFI	Request for Information
RTN	Release Tracking Number
SI	Site Inspection
SIP	Site Inspection Prioritization
SP	SP Engineering, Inc.
SQL	Sample Quantitation Limit
SQuiRT	Screening Quick Reference Table
SR	Site Reassessment
START	Superfund Technical Assessment and Response Team III
Stone & Webster	Stone & Webster Environmental Technology and Services
SVOC	Semivolatile Organic Compounds
SWP	Surface Water Pathway
SWSPA	Surface Water Supply Protection Area
TCDD	Tetrachlorodibenzo(p)dioxin
TCDF	Tetrachlorodibenzofuran
TCLP	Toxicity Characteristic Leaching Procedure
TDD	Technical Direction Document
TEQ	Toxic Equivalent
TEL	Threshold Effects Level
TEF	Toxicity Equivalent Factor
TKN	Total Kjedahl Nitrogen
TPH	Total Petroleum Hydrocarbons
TS	Total Solids
TVS	Total Volatile Solids
USDA	United States Department of Agriculture
US	United States

ACRONYM/ABBREVIATIONS LIST (Concluded)

USGS	United States Geologic Survey
VOC	Volatile Organic Compound
W&C	Woodard & Curran, Inc.
WPA	Wellhead Protection Area
XRF	X-Ray Fluorescence
yd^3	Cubic yard

Final Site Reassessment Report
Creese & Cook Co. (Former) 1
Danvers, Massachusetts

CERCLIS No.: MAD001031574
State ID Nos.: 3-0000303, 3-0012711, 3-0026474
TDD No.: 9-11-0005
Work Order No.: 20114-081-998-0603-50

INTRODUCTION

The Weston Solutions, Inc., Superfund Technical Assessment and Response Team III (START) was requested by the U.S. Environmental Protection Agency (EPA) Region I, Office of Site Remediation and Restoration to perform a Site Reassessment (SR) of the Creese & Cook Co. (Former) 1 property located at 55 Clinton Avenue in Danvers, Essex County, Massachusetts (MA). Tasks were conducted in accordance with the SR scope of work and technical specifications provided by EPA Region I.

In 1911, the Creese & Cook Company purchased the Clinton Avenue property to expand their Water Street operations and in 1914 completed construction of the new Clinton Avenue brick beamhouse [9, p. 59; 13]. From 1914 to 1981, the Creese & Cook Company operated a leather tannery on the property [16, p.1]. In 1981, Creese & Cook Company went out of business and leased the property and equipment to the Danversport Tanning Company. The Danversport Tanning Company ceased tanning operations at the property in spring 1983 [10, p. 1]. The property is listed under Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) Identification (ID) Number (No.) MAD001031574 [6-8]. The property is also listed under Massachusetts Department of Environmental Protection (MassDEP) Release Tracking Nos. (RTNs) 3-0000303, 3-0012711, and 3-0026474 [153].

Based on previous investigations that established the extent and contents of the former disposal areas, EPA initiated the SR of the Creese & Cook Co. (Former) 1 property to confirm potential source areas associated with the property and to identify and investigate potential impacts to sediments within the adjacent Crane River.

Background information used in the generation of this report was obtained through file searches conducted at EPA Region I, MassDEP, and Town of Danvers offices; telephone interviews with town officials; conversations with persons knowledgeable of the Creese & Cook Co. (Former) 1 property; and conversations with other Federal, State, and local agencies.

This package follows the guidelines developed under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended, commonly referred to as Superfund. However, these documents do not necessarily fulfill the requirements of other EPA Region I regulations such as those under the Resource Conservation and Recovery Act (RCRA) or other Federal, State, or local regulations. Site Reassessments are intended to provide a preliminary screening of sites to facilitate EPA Region I's assignment of site priorities. They are limited efforts and are not intended to supersede more detailed investigations.

The street address, coordinates, and contaminant locations presented in this SR report identify the general area in which the site is located. They represent one or more locations EPA considers to be part of the site based upon the screening information collected or generated in the course of this or previous investigation(s). The EPA Site Assessment Program is designed to identify "releases or threats of releases" of hazardous substances, and the focus of this investigation is on the release(s) or potential release(s), rather than precisely delineated site boundaries. A site is

defined under the EPA Site Assessment program as where a hazardous substance has been "deposited, stored, placed, or otherwise come to be located." EPA anticipates that the preliminary description of site boundaries will be refined as more information is developed regarding where the contamination has come to be located.

SITE DESCRIPTION

The Creese & Cook Co. (Former) 1 property is located at 55 Clinton Avenue in Danvers, Essex County, MA (see Figure 1) [1]. The geographic coordinates of the property, as measured from its approximate center, are 42° 33′ 14″ north latitude and 70° 55′ 50″ west longitude [2]. The 55 Clinton Avenue parcel is approximately 12.65 acres and is identified on the Town of Danvers Tax Assessor's Map No. 59 as Lot No. 002B [3; 4].

The property is bordered to the north, northeast, and east by wetlands and the Crane River; to the southeast by private residences (the immediately adjacent parcel is occupied by a burned-out building); to the southwest and west by Clinton Avenue, Clinton Avenue Extension, and commercial properties; and to the northwest by MA Route 128 (see Figure 2). A railroad bridge and a former steam/process water pipe/footbridge extend over the Crane River from the northeastern and southeastern portions of the property, respectively. The municipal sewer line extends onto the property along the railroad bridge crossing, along the former railroad spur, west of the on-site Former Tannery Beamhouse building footprint [149]. The 0.33-acre historic Endicott and Russell Cemetery is located at 25 Clinton Avenue, within the northwest portion of the 55 Clinton Avenue property, and is identified on the Town of Danvers Tax Assessor's Map No. 59 as Lot No. 002A (see Figure 2) [4; 5]. The historic Endicott and Russell Cemetery is not considered to be part of the site, as it predates the former tannery operations on the Creese & Cook Co. (Former) 1 property [149].

The 55 Clinton Avenue property was the location of the former Creese & Cook Company Tannery Beamhouse leather processing facility [6-8]. The property includes the demolished Former Tannery Beamhouse building (debris and foundation remain in place); four fenced Imminent Hazard areas here-on referred to in this report as Landfill Area A, Landfill Area B, Sludge Lagoon Area C, and the Upland Pile Area (which includes an Upland Soil Pile); a Waste Disposal Cell; an abandoned railroad spur; a former steam/process water pipe/footbridge which extends across the Crane River; several soil piles, including a mixed soil/leather scrap pile; several areas of scrub brush, grassland, and forested vegetation; the former Clinton Avenue extension; and wetlands along the Crane River (see Figure 2) [4; 5; 149].

Previous documents and reports apply a variety of names for several of these areas located on the Creese & Cook Co. (Former) 1 property. Landfill Area A is also known as (a.k.a.) Former Landfill Area A, Imminent Hazard Area A, Area A, and Landfill A. Landfill Area B is a.k.a Former Landfill Area B, Imminent Hazard Area B, Area B, and Landfill B. Sludge Lagoon Area C is a.k.a. the Former Sludge Lagoon Area, Lagoon Area, Landfill/Sludge Lagoon Area C, Former Lagoons 1 & 2, and Sludge Lagoon and Landfill Area. The Upland Pile Area is a.k.a. the Upland Imminent Hazard Area, the Upland Disposal Pile Area, the Upland Pile, Upland Soil Pile, Upland Landfill Area, Upland Area, and the Upland Soil Pile Imminent Hazard Area. The Waste Disposal Cell is a.k.a. the on-site lined and covered containment cell, and the containment cell.

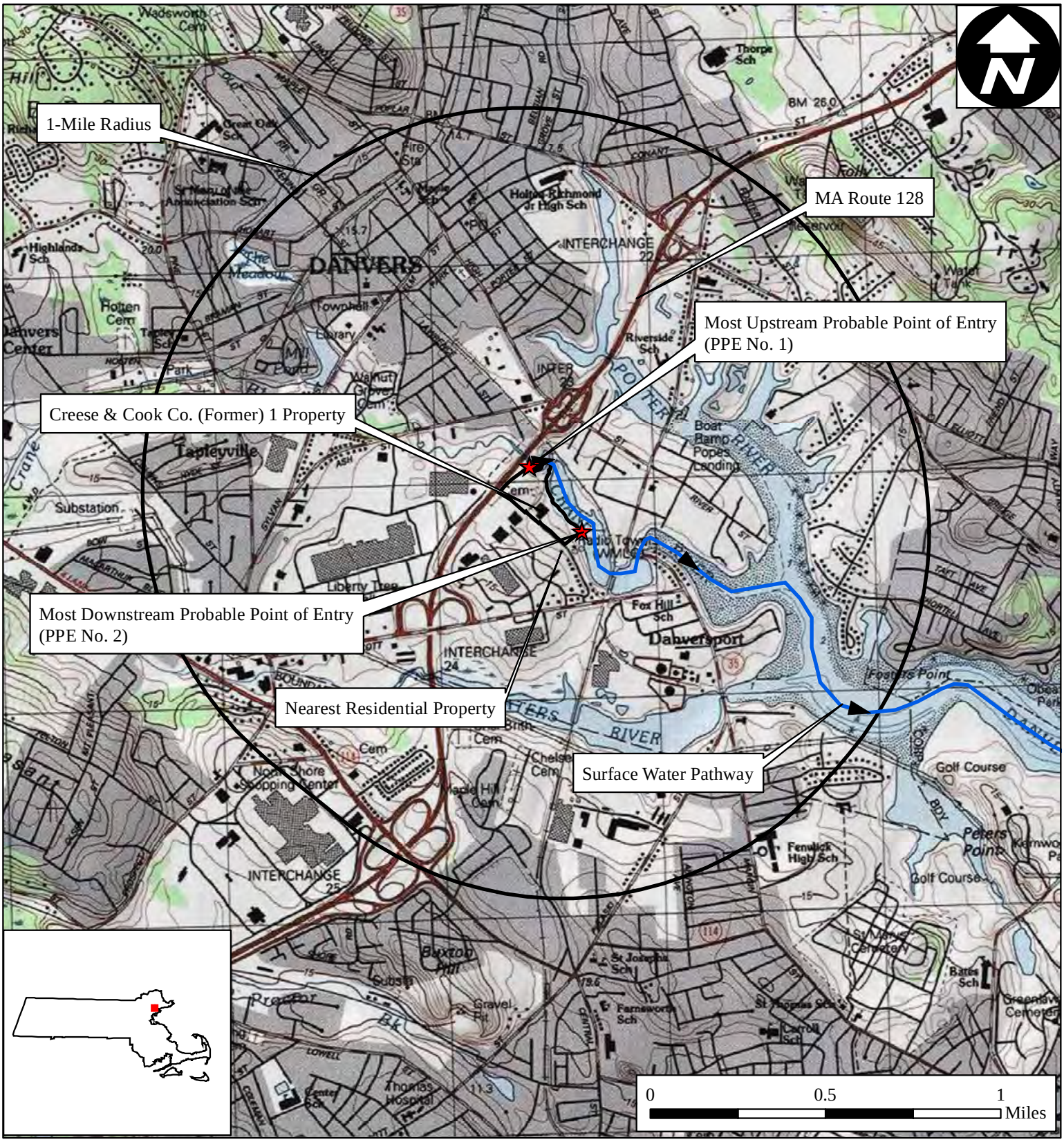

Figure 1

Site Location Map

Creese & Cook Co. (Former) 1
55 Clinton Ave
Danvers, Massachusetts

EPA Region I
Superfund Technical Assessment and Response Team (START) III
Contract No. EP-W-05-042

TDD Number:	09-11-0005
Created by:	D. Brammer
Created on:	12 January 2010
Modified by:	G. Hornok
Modified on:	8 August 2012

Data Sources:
Topos: Bing Maps (Microsoft)
All other data: Weston START

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Figure 2

Site Map

Creese & Cook Co. (Former) 1
55 Clinton Avenue
Danvers, Massachusetts

EPA Region I
Superfund Technical Assessment and Response Team (START) III
Contract No. EP-W-05-042

TDD Number:	09-11-0005
Created by:	D. Brammer
Created on:	11 January 2010
Modified by:	G. Hornok
Modified on:	8 August 2012

Legend

- Creese & Cook Co. (Former) 1
- Creese & Cook Co. (Former) 2
- Probable Point of Entry
- Fenced Imminent Hazard Areas
- Cemetery
- On-Site Disposal Cell
- Mixed Soil/Leather Scrap Pile
- Former Tannery Beamhouse Building Footprint

0 200 400 Feet

Data Sources:
Imagery: Bing Maps Aerial (Microsoft)
Topos: MicroPath
All other data: START

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On 21 April 2010, as part of the EPA SR, START personnel accompanied by EPA, MassDEP, and property owner's representatives conducted an on-site reconnaissance of the Creese & Cook Co. (Former) 1 property [149].

START personnel observed the area of the Waste Disposal Cell located in the northwestern portion of the property (adjacent to the theater parking area and Route 128). The area was vegetated with tall grass and some shrubs. Three previously installed monitoring wells were noted, and based on site history/investigations, estimated to be SMW-1, SMW-3, and SMW-4. The wells appeared to be in poor condition. The MassDEP Representative explained that the Waste Disposal Cell is the only source area with any type of containment features (i.e., impermeable cover, liner, or runoff controls) [149].

START personnel noted the fenced Upland Pile Area and the Former Tannery Beamhouse building footprint, and Landfill Area A located southeast of the Waste Disposal Cell. Evidence of dumping of off-site debris/trash was observed along the property boundary with the adjacent movie theater, including a 55-gallon steel drum (apparently empty) [149].

START personnel noted the fenced imminent hazard Upland Pile Area located southeast of the Waste Disposal Cell and north of the Former Tannery Beamhouse building footprint. The topography surrounding the fenced Imminent Hazard Upland Pile Area is generally flat with a slight slope to the east and southeast toward the Crane River. Rainfall flowing off the Upland Soil Pile within the Upland Pile Area would generally flow east towards the Crane River. START personnel noted that the fence surrounding the Upland Pile Area was intact. START members also noted two areas within the pile that possibly contained leather scraps, along the southeastern and northern sections of the Upland Pile. START members observed leather scraps on the ground surface between the Upland Pile Area and the Waste Disposal Cell [149].

The Former Tannery Beamhouse building footprint generally consists of a concrete floor/foundation, portions of standing wall structures, and piles of demolition debris surrounded by a fence. Evidence of trespassing was observed, including graffiti on the building walls and holes in the gate and fences which were previously repaired holes. START personnel noted that topography within Landfill Area A slopes to the east towards the Crane River. START personnel also noted several open trenches and vaults (missing man-hole covers) along the former Tannery Beamhouse building pad [149].

The fenced imminent hazard Landfill Area A is located immediately adjacent to the Former Tannery Beamhouse building footprint. Landfill Area A generally consists of piles of soil debris, waste construction debris (metal, asphalt, concrete, brick, etc). START personnel noted that topography within Landfill Area A slopes to the east toward the Crane River. Access to Tannery Beamhouse building footprint appeared to have been breached by trespassers via holes in the fence, climbing over the fence utilizing a staged shopping cart and concrete blocks adjacent to the former Clinton Avenue extension [149].

The Endicott and Russell Cemetery was observed to be at least periodically maintained and evidence of recent visitors (flowers, flags, etc.) was noted on the grave markers. START personnel noted grave markers dating back to the mid-1700's (including Mrs. Margaret Endicott – 1759 and Capt. Samuel Endicott – 1766) [4; 5; 149].

START personnel noted Landfill Area B (fenced), and the former railroad spur/bridge and sewer line easement in the northeastern portion of the property. Homeless camps/shelters were

observed at locations west of Landfill Area B and north of the Endicott and Russell Cemetery; and on the north side of the Crane River (between the railroad spur and Route 128). Steep banks sloping down to the Crane River were observed along the east side of the railroad spur from the fenced Landfill Area A to the railroad spur bridge. Areas of stone/gravel were observed in and around Landfill Area B. The MassDEP Representative explained that the gravel was installed to allow Danvers Sewer Department personnel to access the sewer line without contacting potentially contaminated surface soils [149].

A pile consisting of mixed soil/leather scraps was observed extending from the fenced Landfill Area B to the Crane River, and extending beyond a northeastern property boundary marker (granite marker located by START personnel). START personnel also observed several leather scraps protruding from the cut bank of the slope, along the border of the property with the Crane River. The granite property marker/stake was found near the former homeless encampment area along the bank of the Crane River. Leather scraps were observed eroding out of the bank of the river and depositing into the river sediments [149].

START personnel noted between the railroad spur bridge (upstream) to the Water Street Bridge (downstream) a wide extent of the mudflats and the narrow, shallow center channel within the Crane River during the outgoing low tide [149].

START personnel noted concrete Jersey barriers blocking the former entrance to the property along Clinton Avenue. The Clinton Avenue Extension continues north from the Jersey barriers, along the west edge of the property, past the Former Tannery Beamhouse building footprint and the fenced Upland Pile Area. START personnel noted that the Clinton Avenue Extension pavement was severely cracked and broken. Water was observed flowing across the Clinton Avenue extension from a waterline valve into the low-lying areas toward Sludge Lagoon Area C (fenced). START also noted three propane cylinders in the wooded area between the Clinton Avenue extension and Sludge Lagoon Area C. A 55-gallon polyethylene (poly) drum was also observed in a fenced detention basin along the western property boundary with the adjacent parking area [149].

START members noted that Sludge Lagoon Area C consisted of two former lagoons with raised berms outlining the lagoons. A fence with a gate surrounds the Sludge Lagoon Area C. The elevation of the lagoon floors was lower than the surrounding surface elevation (outside the lagoon area). START personnel noted that there were remnants of pipe materials within the lagoons. START personnel noted that general topography surrounding the fenced imminent hazard Sludge Lagoon Area C slopes to the east towards the Crane River. Former lagoon materials overflowing the berms would generally flow east towards the Crane River. START noted a drainage pipe from the detention basin which runs beneath the Clinton Avenue Extension, into an open stream channel, which then enters a culvert, directing water through the fenced Sludge Lagoon Area C, which terminates as an outfall pipe discharging into the Crane River. Hazard warning signage was noted on Sludge Lagoon Area C fencing and along the adjacent Crane River mudflats [149].

A 1930 aerial photograph of the property reportedly indicated the presence of wastewater treatment lagoons on the property, east of the beamhouse [16, p. 2]. A 1950 map plan of an easement for an existing sanitary sewer line and a planned 8-inch sanitary sewer line depicts “Pres. Basins” (assumed to be preservation basins) connected to the southeast side of the beamhouse, with overflow piped directly to the Crane River [17].

The area south of Sludge Lagoon Area C was observed to be a large grassy field surrounded by shrub brush and trees. A monitoring well (estimated to be previously installed MW-1) was observed in a grassy area southeast of Sludge Lagoon Area C. The grassy area shows evidence of several foot paths and according to the MassDEP representative is used by local residents as a dog walking area.

Vehicle access to the property via Clinton Avenue and access points along the western property border are currently blocked with concrete Jersey barriers and boulders. Pedestrian access is unrestricted. START personnel also observed pedestrian trespassers using the on-site paths to cut through the property to get to adjacent commercial properties [149].

As part of the on-site/off-site activities, START personnel photodocumented and recorded global positioning system (GPS) data for pertinent site features including identified potential source areas and observed monitoring wells [149].

On 1 November 2011, as part of the EPA SR, START members accompanied by EPA Regional and EPA Headquarters contractor staff conducted an on-site meeting and reconnaissance to observe and decipher the complexities of the site, assess current site conditions/features, and review site history and analytical results from previous sampling events at both for Creese & Cook Co. (Former) 1 and Creese & Cook Co. (Former) 2. On-site personnel observed the source areas located on the Creese & Cook Co. (Former) 1 property including the Upland Pile Area, Landfill Area A, Landfill Area B, and Sludge Lagoon Area C. In addition, the sensitive environment areas associated with the Creese & Cook Co. (Former) 1 and Creese & Cook Co. (Former) 2 properties were observed (including wetland areas along the Crane River) [149]. On-site personnel also observed the Creese & Cook Co. (Former) 2 property and Crane River, noting the tidal effect and other areas along the river [149].

On 2 November 2011, as part of the EPA SR, START personnel provided assistance and documentation for a Wetland Delineation Survey of the Crane River conducted by EPA. The wetland delineation was performed by an EPA Senior Wetland Scientist and plotted utilizing a GPS unit by START personnel. Wetland frontage along the Crane River was mapped from the most upstream sediment sample location (SD-01) to the most downstream sediment sample location (SD-26) [149].

On-site START personnel also investigated and documented additional potential source areas along the banks of the Crane River, to identify and document areas of direct observation (areas where contamination was being directly released into the surface water pathway). START personnel observed a large number of leather scraps protruding and eroding from the cut bank, along the northeastern border of the Creese & Cook Co. (Former) 1 property with the Crane River. The leather scraps were observed to be protruding from the river bank, which is composed of a mixed soil/leather scrap pile that extended from Landfill Area B to the Crane River and beyond the northeastern property marker. Leather scraps were observed eroding out of the bank of the river and depositing into the river sediments. START personnel documented locations where leather scraps were observed at the surface and mapped the aerial extent of the mixed soil/leather scrap pile [149].

On 15 November 2011, as part of the EPA SR, START personnel investigated and refined the area of the mixed soil/leather scrap pile containing visible leather scraps on the Creese & Cook Co. (Former) 1 property. START personnel also documented locations where leather scraps and mixed soil/leather scrap pile materials were in direct contact with the Crane River sediments and

surface water on both the Creese & Cook Co. (Former) 1 and Creese & Cook Co. (Former) 2 properties. Soil and leather scrap materials (source material) were eroding from the river bank along the two parcels, falling directly into the Crane River, and mixing with sediment deposits. START personnel documented locations of leather scraps and noted that the lower portion of the river bank containing leather scraps, located along the northeastern property boundary property, was in direct contact with tidal waters of the Crane River. This allowed the freshly exposed soil and leather scrap materials along the edge of the eroding river bank to come into direct contact with tidal waters from the Crane River [149].

On 22 November 2011, as part of the EPA SR, START conducted a reconnaissance at the Creese & Cook Co. (Former) 1 property. As part of the reconnaissance, START personnel marked potential sample locations and further documented the locations where soil materials with leather scraps were eroding from the Creese & Cook Co. (Former) 1 and Creese & Cook Co. (Former) 2 river banks and coming into direct contact with the Crane River surface water and sediments [149].

On 27 November 2011, as part of the EPA SR, START was on-site to document the range of tidal influence in the Crane River. START conducted and documented salinity measurements and tidal influence along the Crane River. START was able to document tidal influence to locations near Purchase Street and recorded a maximum salinity measurement of 16.8 ppt [149].

OPERATIONAL AND REGULATORY HISTORY AND WASTE CHARACTERISTICS

The Creese & Cook Company processed raw animal hides and produced shoe, handbag, glove, and garment leather, primarily from cowhide stock.

From an unknown time until 1910, the 55 Clinton Avenue property was owned by Edmund N. Russell and operated as farmland [12]. In 1911, the Creese & Cook Company purchased the Clinton Avenue property to expand their 33 Water Street tannery operation across the Crane River. In 1914, Creese & Cook Company completed construction of a brick beamhouse on the Clinton Avenue property and tannery operations shifted to the new beamhouse facility [9, p. 59; 13]. From 1914 to 1981, Creese & Cook Company operated a leather tannery on both properties [16]

Details of which of the tannery operations were shifted and which continued at the 33 Water Street facility following construction of the new beamhouse in 1914 were not found in available documentation, except that leather finishing continued at the 33 Water Street property after this time [16, 38]. Tanning processes on the 55 Clinton Avenue property included operations within the beamhouse, where hides were dehaired, delimed, and prepared for tanning [10; 14, pp. 5-10]. The Creese & Cook Company tanning process required several operations, each of which produced wastewaters, and included the hide wash, dehairing, liming, bating, pickling/deliming, tanning, wringing, and rendering steps. Dehairing and liming included treating the hides with lime (calcium hydroxide) through the addition of reducing agents such as sodium sulfide, cyanides, and amines. Dehairing agents typically used during liming included sodium sulfide, sodium hydroxide, sodium hydrosulfite, arsenic sulfide, calcium hydrosulfide, dimethyl amine, and sodium sulphydrate. Depending on the end use of the leather, hides may have been treated with enzymes to soften them, referred to as bating. Before bating, the pH level of the collagen (hide proteins) was lowered so that enzymes could act on the hides. This is referred to as deliming. Once bating was complete, the hides and skins were treated with a mixture of salt and sulphuric acid, to lower the pH of collagen which facilitated the penetration of the mineral

tanning agent into the hides. This was known as pickling. Before tanning was completed, the skins were dehaired, degreased, desalted and soaked in water over a period of 6 hours to 2 days. To prevent damage of the skin by bacterial growth during the soaking period, biocides, such as pentachlorophenol (from 1930s onward), may have been used [113].

In 1981, a Potential Hazardous Waste Site Identification and Preliminary Assessment (PA) was completed by EPA, in response to a citizen complaint in December 1979 regarding odor from the on-site disposal areas at the 55 Clinton Avenue beamhouse, and a complaint in October 1980 regarding waste disposal adjacent to the Crane River [18-20]. The PA identified existing waste retention basins and sludge lagoons, and indicated that the property owner had completed closure of the sludge lagoons in April 1981 [20].

In 1981, Creese & Cook Company went out of business and leased the properties and equipment to the Danversport Tanning Company [21]. The Danversport Tanning Company ceased tanning operations in spring 1983 [10]. During the end of the tannery operations conducted by the Danversport Tanning Company, average wastewater generation was approximately 235,000 gallons per day (and up to an estimated 400,000 gallons of wastewater per day during maximum production). Between 1981 and 1983, wastewater was discharged to the municipal sewer system after neutralization. Available file information did not indicate on which property associated with the Creese & Cook Company this wastewater was produced. Average leather production between 1981 and 1983 was approximately 2,000 sides per day [14].

On 30 September 1982, Massachusetts Department of Environmental Quality Engineering (MADEQE) (now known as MassDEP) conducted a site/facility inspection to determine the status of “an on-site open pit waste disposal operation for tannery beamhouse waste”. The inspection reported no evidence of current dumping by Danversport Tanning Company and no leachate breaks around the abandoned disposal areas [21].

In 1983, fire damaged portions of the 33 Water Street tannery buildings and a connecting wood building was torn down [11]. Additional information regarding the fire and the post-fire demolition activities and/or details were not discussed in the available documentation. The Danversport Tanning Company ceased tanning operations at the 55 Clinton Street property in spring 1983 [10, p. 1].

On 7 December 1983, Creese & Cook Company (Mr. George Hebb, President and Treasurer) sold the Creese & Cook Company (Former) properties, including the parcels at 33 Water Street, 55 Clinton Avenue, and 20 Cheever Street, to the Crane River Realty Trust (Emmanuel Papanickolas, Trustee) [22].

On 9 February 1984, MADEQE conducted a site visit with the Danvers Board of Health [10]. The following observations were documented during the site visit: the beamhouse was closed; concrete settling basins in the northern corner of the beamhouse contained a layer of ice; an area of suspected landfill (estimated to be 100 feet by 200 feet) was located between a cemetery and the Crane River, with no leachate breakouts; two above-ground storage tanks (ASTs) with “Bichromate”, “Formic Acid”, “Sulfuric Acid”, and “Sugar Syrup” labels, and unknown remaining contents, were located within the western corner of the beamhouse; and a pile of leather scraps was located on the southern side of the beamhouse. Air monitoring with an H-NU did not indicate any readings above background levels [10, p. 2 and attached hand-drawn figure].

In May 1984, SP Engineering, Inc. (SP) conducted an initial site investigation (engineering report) for the Crane River Real Estate Trust prior to potential redevelopment of the Creese & Cook Co. (Former) 1 property [14; 16, p. 2]. The investigation consisted of excavating 21 test pits in known or suspected waste burial/disposal areas, and conducting sampling of soil, groundwater, groundwater seeps, and abandoned tank and container contents. In addition to the containers, vats, pits, and drums were observed in and around the former beamhouse building. In addition, the investigation identified tannery waste sludge lagoons [Sludge Lagoon Area C and two areas which were used to landfill tannery waste (Landfill Areas A and B)]. Layers of tannery waste and sludge were identified in the test pits including black organic waste, black oily waste, and lime with strong ammonia and sulfide odors [14, attached Test Pit Logs]. Selected test pit soil samples were analyzed via EP Toxicity for metals, total volatile organic compounds (VOCs), and petroleum hydrocarbons. Samples of tank and container contents were analyzed for pH, conductivity, alkalinity, acidity, total solids, total volatile solids, and density. The samples were analyzed by Princeton Testing Laboratory for VOCs and through the SP in-house laboratory for the remaining analytes [14, attached Laboratory Reports]. Analytical results of the soil and container/tank samples will be discussed in greater detail in the Waste/Source Sampling section of this evaluation. Analytical results of the groundwater and groundwater seep samples will be discussed in greater detail in the Groundwater Pathway section of this evaluation. According to the 1984 SP report, initial volume estimates of the disposed waste quantities were 1,300 cubic yards (yd^3) for Landfill Area A and 5,700 yd^3 for Landfill Area B, for a total of 7,000 yd^3 [14, p. 17].

On 17 October 1984, the property was purchased by Thomas Pyburn, Jr. [23]. On 26 October 1984, Thomas Pyburn, Jr. sold the property to Riversedge Realty Trust (John Anezis and Harry Hewitt, Trustees) [24].

In March 1985, MADEQE conducted a Site Inspection and an updated PA of the property in response to the 1984 SP investigation [16]. According to the Site Inspection report, on-site disposal reportedly ceased around 1975, when the Creese & Cook Company connected the beamhouse waste settling process to the municipal sewer system [16, p. 2]. However, local residents claim disposal continued until 1980 and the original EPA PA appears to support the conclusion since it listed the lagoon system as being closed in April 1981 [16; 20]. The Site Inspection report and updated PA also reported waste sludge being transported to the Peabody Landfill from 1967 to 1981 (no record of the precise dates or years of disposal were documented) and that the sludge was disposed of on-site when not accepted by the landfill [16, PA Form part 10].

On 16 May 1985, MADEQE sent a letter to Riversedge Realty Trust regarding the updated potential redevelopment plans for the property, which included potential construction of residential condominiums [25]. Concerns noted in the 1985 MADEQE letter included leaching of waste contaminants, generation of toxic gases, release of obnoxious odors, potential future excavation of buried waste material, and impacts to sensitive receptors. The letter also described the following two measures that must be taken under the Solid Waste Management Act [Massachusetts General Law (MGL) Chapter 111, Section 150A], regardless of the redevelopment plans for the property: 1) record in the Registry of Deeds that a solid waste disposal facility operated on-site; and 2) per applicable regulations, close the landfilled areas according to a MADEQE-approved closure plan [25, p.2].

In December 1985, SP conducted a supplemental investigation to the May 1984 sampling event to further refine the volume of sludge and buried tannery wastes, and to provide additional

characterization of soil, soil gases, groundwater, and groundwater seeps and sediment along the Crane River [14, Appendix]. SP excavated 10 additional trenching test pits in Landfill Areas A and B and collected soil samples from the test pits. The following three monitoring wells were installed: MW1 in Landfill Area B; MW2 outside of Area B, near the cemetery; and MW3 in Landfill Area A, adjacent to the beamhouse. At each groundwater monitoring well, headspace screening was conducted with Draeger tubes [for natural gas (propane, methane, and ethane), hydrogen sulfide, and ammonia]. In addition, groundwater samples were collected from the monitoring wells, as well as from groundwater seep locations. Sediment samples were collected at the upstream railroad bridge and the downstream former steam/process water pipe/footbridge. Test pit soil samples were analyzed for total metals. Groundwater and groundwater seep samples were analyzed for VOCs, chemical oxygen demand (COD), total Kjedahl nitrogen (TKN), ammonia, sulfide, and metals. Sediment samples were analyzed for grain size, polychlorinated biphenyls (PCBs), petroleum hydrocarbons, metals, percent volatile solids, and percent oil and grease. The samples were analyzed by Princeton Testing Laboratories for VOCs, and by the SP in-house laboratory for the remaining analytes [14, Appendix Tables 1 and 2]. Groundwater monitoring well headspace screening with the Draeger tubes indicated the presence of hydrogen sulfide at 400 parts per million (ppm) at MW2 [14, Appendix Table 5]. Laboratory analytical results of the soil samples will be discussed in greater detail in the Waste/Source Sampling and Soil Exposure Pathway sections of this evaluation. Analytical results of the sediment samples will be discussed in greater detail in the Surface Water Pathway section of this evaluation. Analytical results of the groundwater samples will be discussed in greater detail in the Groundwater Pathway section of this evaluation.

Based on the results of trenching test pit excavations conducted during the 1985 investigation, SP revised the volume estimates of the disposed waste quantities to 2,800 yd^3 for Landfill Area A and 10,400 yd^3 for Landfill Area B, for a total of 13,200 yd^3 [14, Appendix Summary of Results].

In May, June, and July 1986, SP developed an Environmental Development Plan for the property outlining options for remedial actions (capping or waste removal) and follow up periodic sampling [26].

In September 1986, in response to a MADEQE request, SP advanced seven cores in the two sludge lagoons [Sludge Lagoon Area C] northeast of the former beamhouse, and collected six composite soil samples from the cores [27, Site Plan]. The soil logs indicated primarily sand and gravel, and narrow bands of cinder slag (0-9 inches in Core 4) and blue chips (0-3 inches in Core 7) [27, p. 3 attached soil logs]. The soil samples were analyzed for VOCs, pesticides/PCBs, and bulk metals by the SP in-house laboratory. Analytical results of the soil samples will be discussed in greater detail in the Waste/Source Sampling and Soil Exposure Pathway section of this evaluation.

On 27 August 1986, MADEQE issued a letter regarding site-specific soil excavation cleanup criteria for several compounds, as follows: arsenic [12.0 milligrams per kilogram (mg/Kg)], mercury (0.06 mg/Kg), chromium (200.0 mg/Kg), cadmium (1.0 mg/Kg), and lead (20.0 mg/Kg) [28].

On 7 October 1986, the Town of Danvers Planning Board approved and issued a special permit under Section XIX of the Zoning By-law and a waiver of Section II-C of the Planning Board Rules and Regulation to the property owners (Riversedge Realty Trust), thereby allowing the property to be redeveloped with construction of 110 multi-family dwelling units [29].

On 15 January 1987, MADEQE assigned RTN 3-0000303 to the property for the release(s) of oil and/or hazardous material (OHM) resulting from the on-site disposal of wastes during former tannery operations [30].

In October 1987, SP submitted an initial Tannery Waste Solidification Project Plan [31]. To avoid prohibitive costs of excavating and disposing of on-site wastes off site prior to residential development of the property, SP proposed a remedial action involving treating/stabilizing buried solid and sludge waste, and disposing of treated waste in a designed lined and capped containment cell on the site. Based on pilot tests conducted with on-site material, the excavated tannery wastes would be chemically fixed with fly ash, lime, and cement and a deodorant added to limit odors. Successfully treated waste material would then be backfilled into a 32-millimeter (mil) hypalon lined and capped cell [31, p. 15 and Figure 4].

In March 1988, SP submitted a revised Tannery Waste Solidification Project Plan based on comments received from MADEQE regarding construction of the containment cell and the sample quality assurance/quality control program [32, p. 25 (Figure 4) and amended appendix].

On 3 March 1988, the Danvers Board of Health awarded a site assignment to the proposed containment cell and designated it a Limited Solid Waste Disposal site. On 24 March 1988, the Danvers Planning Board approved the solidification project plans. On 7 April 1988, the Danvers Conservation Commission issued an Order for the Notice of Intent [33, p. 9].

On 27 September 1988, MADEQE reviewed and approved the Tannery Waste Solidification Project Plan with comments and provisions. Provisions required by MADEQE included revisions to the cap design, submission of a long-term maintenance and operation plan, collection of groundwater samples, and collection of soil samples to confirm that clean-up goals were met [34].

In October 1988, SP submitted an operation and maintenance manual for the proposed on-site disposal cell to MADEQE for review [35]. Additional documents submitted by SP included a seller's disclosure statement and condominium rules and regulations [36]. On 8 February 1989, MADEQE approved the operation and maintenance plan and additional submissions [36].

From December 1989 to May 1990, SP excavated tannery wastes/contaminated soils from Landfill Areas A and B and from Sludge Lagoon Area C, treated and stabilized the soils, and backfilled the soils into the constructed lined on-site containment cell [37]. The final total estimated areas or volumes of tannery wastes deposited in the containment cell, and any final as-built plans of the containment cell, were not found in available documentation. According to a later estimate presented in a 1995 R.E.W. Environmental Consultants (REW) report, 5,000 yd^3 of waste material/soil were excavated and backfilled into the containment cell [38, p. P-2].

In 1990, SP installed five groundwater monitoring wells (MW-1 through MW-5) around the perimeter of the containment cell to monitor potential leaching of metals from the treated waste. Monitoring well MW-3 was installed as an upgradient background well between the containment cell and Route 128 [33, p. 4 Figure 2 Site Plan; 39]. In February 1990, following installation of the groundwater monitoring wells, SP collected groundwater samples from wells MW-1, MW-3, MW-4, and MW-5, as well as from a groundwater (Seep No. 2). Groundwater samples were analyzed by the SP in-house laboratory for VOCs, COD, TKN, ammonia, sulfide, and metals. In March 1990, groundwater samples were collected from three groundwater seeps (Seep Nos. 1, 2,

and 3) and analyzed by the SP in-house laboratory for COD, TKN, ammonia, sulfide, and metals. In April 1990, groundwater samples were collected from monitoring wells MW-1 through MW-5 and from groundwater Seep Nos. 1 and 2, and were analyzed by the SP in-house laboratory for VOCs, COD, TKN, ammonia, sulfide, and metals. Analytical results of the groundwater and seep samples will be discussed in greater detail in the Groundwater Pathway section of this evaluation.

In April 1990, SP collected 12 post-excavation soil samples from selected grids in the excavated landfill and lagoon areas [two samples from Landfill Area A, six samples from Landfill Area B, and four samples from the Sludge Lagoon Area C] to confirm that clean-up goals were met [33, Appendix p. A-18]. Selected grid soil samples were analyzed for total chromium and total lead, and three composite grid soil samples were also analyzed for EP Toxicity metals, by the SP in-house laboratory. Analytical results of the soil samples will be discussed in greater detail in the Waste/Source Sampling and Soil Exposure Pathway sections of this evaluation.

In June 1990, SP conducted post-containment cell sampling at the site. Groundwater samples were collected from monitoring wells MW-1 through MW-5, and from three groundwater seeps (Seep Nos. 1 through 3) located along the Crane River. The groundwater and seep samples were analyzed for VOCs, COD, TKN, chloride, sulfide, pH, and metals. Analytical results of the groundwater and seep samples will be discussed in greater detail in the Groundwater Pathway section of this evaluation.

Throughout the implementation of the Tannery Waste Solidification Project Plan, representatives from MADEQE and the Town of Danvers regularly inspected the site. The containment cell was constructed with a gas vent. Subsequent landfill gas monitoring did not indicate the presence of landfill gases, and the Town of Danvers Board of Health granted permission to seal the vent pipe in Fall 1990 [33, p. 5].

On 21 February 1991, SP submitted a summary letter to MADEQE regarding the completed remedial waste solidification project [39]. According to the summary letter, all visible sludge and landfill materials had been removed, with the exception of a thin layer directly under the manhole and the sewer line extending through Landfill Area B. Analytical sampling results of post-excavation samples indicated an average total chromium concentration of 586 mg/Kg [33, Appendix p. A-18; 40, p. 2].

In a 17 April 1991 letter, MADEQE indicated that the site clean-up was incomplete, due to the analytical sampling results of post-excavation samples collected at the limits of the excavated tannery waste area, which indicated the presence of chromium with average concentrations approximately three times greater than the clean-up criteria established by MADEQE for chromium (200 mg/Kg). Furthermore, a complete risk characterization had not been completed to date [28; 41].

From 28 May to 4 June 1992, and in March and April 1994, SP conducted sampling as part of a Chapter 21E Site Assessment [33]. As part of the 1992 investigation, SP collected four groundwater samples from monitoring wells MW-1 through MW-4, and three groundwater seep samples from Seep Nos. 1 through 3. One surface water sample was collected from the Crane River, near the railroad bridge. Nine soil samples (BH A-1 through BH A-3, BH B-1 through BH B-3, and BH C-1 through BH C-3) were collected from filled-in lime pits inside the former beamhouse. Two additional soil samples (BH T-1 and BH T-2) were collected from drainage trenches in the floor of the beamhouse. Three wall scrapings (W-1 through W-3) were collected

from visible stains on the western wall of the former beamhouse. The groundwater and seep samples were analyzed by the SP in-house laboratory for VOCs, COD, TKN, chloride, sulfide, pH, and metals. The soil and wall scrapings samples were analyzed for total chromium, lead, phenols, and percent oil/grease [33, pp. 22, 23 Figure 5, 24-26]. In March and April 1994, SP conducted clean-up of the beamhouse pits and trenches, and in April 1994, collected composite samples from the debris remaining in the cleaned-out pits (Pit Debris) and trenches (Trench Debris). In April 1994, SP completed a Chapter 21E Site Assessment Report for Riversedge Realty Trust, which summarized the 1992 and 1994 sampling results [33]. Analytical results of the soil, wall scraping, and debris samples are discussed in greater detail in the Waste/Source Sampling section of this evaluation. Analytical results of the groundwater and surface water samples are discussed in greater detail in the Groundwater, and Surface Water Pathway sections of this evaluation.

In June 1995, following the 1993 revision to the Massachusetts Contingency Plan (MCP), REW conducted sampling on the property as part of an Initial Site Characterization for Riversedge Realty Trust [38]. As part of characterization, REW advanced 13 borings (BH-101 through BH-113) and installed eight monitoring wells (MW-101 through MW-108) in the vicinity of the former landfill and sludge lagoon areas, and excavated six test pits (TP-1 through TP-6) [38, p. P-8]. Fifteen soil samples were collected from the soil borings and test pits, which were analyzed for VOCs, SVOCs, polycyclic aromatic hydrocarbons (PAHs), and metals by Geolabs, Inc. After installation, 11 groundwater samples were collected from MW-101 through MW-108 and from pre-existing wells MW1, MW4, and MW5 (referred to as SMW-101, SMW-104, and SMW-105 in the report). The results of the investigation are presented in a July 1995 Initial Site Characterization Report, by a Licensed Site Professional (LSP) from REW [38]. Analytical results of the soil samples will be discussed in greater detail in the Waste/Source Sampling and Soil Pathway Evaluation sections of this evaluation. Analytical results of the groundwater samples will be discussed in greater detail in the Groundwater Pathway section of this evaluation.

On 20 July 1995, due to analytical results of two surface soil (0-2 feet) samples indicating arsenic concentrations greater than 40 mg/Kg, REW notified MassDEP, formerly referred to as MADEQE, of a potential Imminent Hazard at the property related to the former tannery waste sludge lagoons. MassDEP assigned RTN 3-12711 to the property for the release of arsenic in surface soils meeting the 2-hour notification provisions of the MCP [42, p. P-2; 43].

On 21 July 1995, REW collected six additional surface soil samples (SS-1 through SS-6) in a random pattern at a depth of 0-4 inches near the location of the June 1995 sludge lagoon boring sample locations (BH-103 and BH-104), to confirm the presence of arsenic in surface soils. The soil samples were analyzed by Geolabs, Inc. for arsenic. Analytical results of the soil samples indicted that two of the six samples exceeded the surface soil Imminent Hazard concentration of 40 mg/Kg for arsenic: SS-1 at 46.5 mg/Kg, and SS-3 at 57.8 mg/Kg [42, p. P-2].

On 7 August 1995, MassDEP conducted a site visit with the property owner and consulting LSP (REW) in response to the reported Imminent Hazard in surface soils (RTN 3-12711). On-site personnel discussed delineation of the contamination, including defining the location of hot spots, and the recommendation for conducting an Imminent Hazard Evaluation (IHE) for the site [44].

On 9 August 1995, the property owner, Riversedge Realty Trust, submitted a Tier 1C Permit application for RTN 3-0000303 to MassDEP, per the MCP requirements for sites with an Imminent Hazard present at the time of Tier Classification [45].

On 17 August 1995, MassDEP issued a Notice of Responsibility (NOR) to Riversedge Realty Trust for response actions at the property regarding RTN 3-12711 [46].

On 30 August 1995, REW conducted additional soil sampling of the former Sludge Lagoon Area C to delineate the horizontal extent of the arsenic-contaminated surface soils. Twenty-five surface soil [0-4 inches below ground surface (bgs)] samples (C-1 through C-25) were collected from a 25-foot grid extending over the former sludge lagoons. In addition, five surface soil samples (BS-1 through BS-5) were collected from random locations upgradient and cross-gradient to the Sludge Lagoon Area C [42, p. P-3]. The samples were analyzed for arsenic, and selected samples for total chromium, by Geolabs, Inc. [42, attached laboratory reports]. Analytical results of the soil samples are discussed in greater detail in the Waste/Source Section and Soil Exposure Pathway section of this evaluation.

On 20 September 1995, REW submitted an Immediate Response Action Plan (IRA Plan) to MassDEP to address the Imminent Hazard conditions of arsenic in surface soils [42]. The IRA Plan proposed to conduct additional sampling of the Sludge Lagoon Area C to assess the depth of arsenic contamination, prior to excavation and removal of the arsenic- and chromium-contaminated soils. The IRA Plan stated that if these actions were not achieved by 15 November 1995, a protective barrier would be installed to minimize the imminent threat posed by the lagoon surface soils [42, pp. P-3 – P-4].

On 4 October 1995, in response to the IRA Plan submitted by REW, MassDEP issued an IRA Plan Denial and Interim Deadline [47]. MassDEP denied the IRA Plan due to the Plan being deficient or lacking in the following two items: 1) specific plan(s), including a detailed site plan showing the areas sampled in relation to on-site structures and the Crane River; and, 2) a statement as to whether remediation waste is to be excavated, collected, stored, treated, or re-used at or disposed of from the site, and a schedule for implementation. MassDEP required that a revised IRA Plan be submitted within 7 days of receipt and that the revised IRA Plan include provisions for restricting access to the areas of potential Imminent Hazard [47, p. 2].

On 16 October 1995, REW submitted an IRA Plan Addendum to address MassDEP's requirements presented in the IRA Plan Denial and Interim Deadline. The addendum included a plan to install a 6-foot-high chain-linked fence around the Sludge Lagoon Area C Imminent Hazard area, with approximate dimensions of 125 feet by 120 feet, on 24 October 1995 [48].

On 3 November 1995, MassDEP conducted a site inspection of the property with representatives of the property owner, Riversedge Realty Trust, and their consultants, REW [49]. The site inspection was conducted for the purpose of documenting site conditions in conjunction with MassDEP's review of the submitted Tier IC permit application. During the site inspection, MassDEP observed the identified source areas, including the former beamhouse. MassDEP noted that the former sludge lagoons were fenced off; and that the ground surface of all three source areas (Landfill Areas A and B, and former Sludge Lagoons Area C) appeared depressed, and were apparently not completely backfilled following the previous excavation and placement of material into the on-site containment cell [49, pp. 2-3, attached site sketch].

In December 1995, Stone & Webster Environmental Technology and Services (Stone & Webster) conducted sampling in support of an EPA Site Inspection Prioritization (SIP) Report [50]. As part of the SIP, Stone & Webster collected six surface water samples (SW-1 through SW-6) and seven sediment samples (SD-1 through SD-7) from along the Crane River, including one designated background sample location (SW-1/SD-1) immediately upstream of the railroad bridge. The samples were analyzed for VOCs, SVOCs, pesticides/PCBs, and metals by a Contract Laboratory Program (CLP) laboratory [50, pp. 10, 27 (Table 8)]. Analytical results of the surface water and sediment samples will be discussed in greater detail in the Surface Water Pathway Evaluation section of this evaluation.

On 11 January 1996, MassDEP issued a Tier IC Permit No. 104028 for the property requiring response actions related to RTN 3-0303 to be completed within five years [52].

In May and June 1996, in preparation for re-development of the property into 58 single-family lots, REW advanced 88 borings (B1 through B88) throughout the property, using a geoprobe [53, p. 7, Table 2, Exhibits A-D]. The distribution and sample depths of the soil borings were selected based on the location and orientation of the proposed 58 residential lots, open space lots, and the general areas of the proposed road. Soil samples were collected from the following depth intervals: 1 to 2 feet; 4 to 5 feet; 8 to 9 feet; 8 to 12 feet; 13 to 14 feet; and 12 to 16 feet. In addition, in 1998 six sediment borings (HBTF #1 through HBTF #6) were manually advanced to collect sediment samples along the Crane River. Sediment samples were collected from these borings at 1 foot, representing surface sediment quality, and at 3 feet, representing the maximum depth of river sedimentation [79]. The soil samples were field-screened by NES, Inc. for arsenic, with selected samples also field-screened for chromium, lead, and mercury, using an X-Ray Fluorescence (XRF) analyzer (portable Metorex, Inc. Model 920). Selected samples were analyzed for VOCs, SVOCs, toxicity characteristic leaching procedure (TCLP) SVOCS, PAHs, TCLP lead, and metals by Geolabs, Inc.; however, complete results and data were not found in available documentation. Field screening results indicated the presence of arsenic, chromium, lead, and mercury at each depth interval. Analytical results of sediment samples presented in the REW report were not found, but were summarized later by Geologic Field Services, Inc. (GFS) [79]. Analytical results of the soil samples are discussed in greater detail in the Waste/Source Sampling and Soil Exposure Pathway section of this evaluation. Analytical results of the sediment samples are discussed in the Surface Water Pathway sections of this evaluation.

In June 1996, to further delineate the lateral and vertical extent of the potential Imminent Hazard conditions due to arsenic-contaminated soil in and around the former Sludge Lagoon Area C, REW established a 15-foot sampling grid over the area. A total of 115 borings (HB001 through HB113, P-1 B-16, and P-2 B-16) were advanced using hand augers. Of these, 106 borings were advanced to a depth of 0 to 1 feet, and nine borings were advanced to 3 to 4 feet. Soil samples were collected from the borings and field-screened for arsenic by NES, Inc. using an XRF instrument. Eleven samples were selected and submitted to Geolabs, Inc. for arsenic laboratory confirmation analysis. Arsenic field screening results ranged from 1 ppm to up to 250 ppm, and arsenic results of laboratory confirmation samples ranged from 7.81 mg/Kg to 198 mg/Kg [55, Appendix A and attached laboratory reports]. Analytical results of soil samples collected will be discussed in greater detail in the Waste/Source and Soil Exposure Pathway sections of this report.

In February 1997, REW submitted split soil samples from selected borings (B72, B73, HB48, HB61, HB89, and HB93) advanced in June 1996 to Geomega, Inc. (Geomega) to conduct arsenic speciation and potential bioavailability analysis. The analytical results of the samples indicated

the prevalent form of arsenic in site soils was arsenate (AsO_4^{3-}), a relatively soluble form of arsenic with an average bioavailability of 33.5% [56].

On 18 March 1997, REW submitted a letter report which summarized an IHE conducted by Foster Wheeler Environmental Corporation (FWEC) for arsenic and cadmium in surface soils (0-3 feet) within Sludge Lagoon Area C (RTN 3-12711). In addition, the REW letter report summarized the results of the Geomega arsenic speciation and bioavailability analysis. Based on the assumptions for likely receptors (older children and adults, ages 6 – 30 years) and a trespasser/short-cut scenario, the IHE concluded that the lifetime cancer risks and total site risk did not exceed MassDEP Risk Management criteria for "long-term" exposures, and that the identified Compounds of Potential Concern (COPC) (arsenic and cadmium) did not pose an Imminent Hazard based on current conditions [55, Appendix B].

On 20 June 1997, REW submitted a Supplemental Site Characterization (Volume 1), further summarizing the collected data and providing additional data analysis. Volume 1 of the Supplemental Site Characterization included a statistical analysis of arsenic in soil data, an evaluation of the chemical profile of site groundwater, an assessment of TCLP data, and a supplement to the MCP Method 3 Risk Characterization. Based on available data and current site conditions, REW developed a site-specific residential soil cleanup standard for arsenic of 30 mg/Kg for the child/adult resident scenarios [53, pp. 24-25].

On 26 June 1997, REW submitted a Site Summary Profile and Release Abatement Measure (RAM) Plan to MassDEP, and proposed response actions to address the contamination identified in the REW site characterization, IHE, and risk characterization [57]. The stated objectives of the RAM including the following: to abate phthalate-contaminated soil in the concrete chute, located in Landfill Area B; to abate solid waste, consisting of hide scraps, in the wooded portion of Landfill Area B; to abate arsenic-contaminated soil along the bank of the Crane River, in Landfill Area B; to abate PAH-contaminated soil along and beneath the existing sewer line through Landfill Area B; and to abate arsenic-contaminated soil throughout the property, including Sludge Lagoon Area C. The cleanup approach selected for the RAM was removal of contaminated soil and construction of a disposal cell under the proposed roadway planned for the south-southwestern portion of the property (Clinton Avenue Extension) [57, pp. 22-27 and Exhibit B].

On 20 August 1997, REW submitted a report which included a Phase III Selection of Comprehensive Remedial Actions Remedial Action Plan and a Phase IV Remedy Implementation Plan, which replaced the 26 June 1997 RAM Plan [58; 59]. As part of the report, REW evaluated various remedial action alternatives, and selected a cleanup approach which included the excavation of contaminated soils and placement of soils in an on-site cell constructed under the proposed roadway [58, pp. 26-32].

On 20 October 1997, MassDEP conducted a site inspection with the property owner, Riversedge Realty Trust, and their consultant, REW, to discuss the proposed re-development of the property into an estimated 58 single-family lots. During the inspection, MassDEP noted that the fence previously installed around Sludge Lagoon Area C had been removed, reportedly by the fencing contractor due to non-payment [60; 61].

On 17 November 1997, the property owner and REW met with MassDEP to discuss the review of the Phase III and Phase IV reports. MassDEP expressed the need for additional soil data for proposed residential lots not assessed during previous investigations [62].

From 17 December 1997 to 6 January 1998, REW conducted additional soil sampling, due to MassDEP's request made during the November 1997 meeting. Using a geoprobe, REW advanced 83 additional borings (B87 through B169) throughout the site. A total of 128 soil samples were collected from the 0-4 feet and 4-8 feet depth intervals and analyzed by Geolabs for arsenic. Analytical results of the soil samples indicated concentrations of arsenic ranging from non-detect to 19,000 mg/Kg in a layer identified as hides/tannery waste (boring B150, at the 5-6 feet depth interval) [54, p. 9, Table 1, pp. 10-11, Exhibits A-D]. Analytical results of soil samples will be discussed in greater detail in the Waste/Source Sampling section of this report.

On 20 January 1998, MassDEP issued a Notice of the Need to Conduct an Immediate Response Action and Interim Deadlines to Riversedge Realty Trust [63]. The Notice was issued due to the following: 1) the submitted IHE did not meet MassDEP Office of Research and Standards (ORS) guidance as complete and acceptable, and an Imminent Hazard condition remained on the property; 2) the fencing installed during the IRA for the arsenic in soil Imminent Hazard had been removed, as noted by MassDEP during the October 1997 site inspection; and 3) Riversedge Realty Trust had failed to notify MassDEP of the fence removal. The MassDEP Notice established deadlines for the following actions required to address the Imminent Hazard conditions at the property: 1) properly secure all areas where soils pose an Imminent Hazard; 2) conduct an Imminent Hazard assessment; and 3) provide additional information including a summary of recent groundwater, sediment, surface water, and seep data, and an updated site plan [63, p. 3].

On 30 January 1998, in response to the 20 January 1998 MassDEP Notice, FWEC submitted a letter review providing comments and revised calculations that concluded no Imminent Hazard existed at the property [64]. On 2 February 1998, REW, on behalf of the property owner, forwarded the letter review to MassDEP [65].

On 17 February 1998, REW collected groundwater samples from monitoring wells MW-4 (SMW-4) and MW-5 (SMW-5) previously installed by SP. Other monitoring wells could not be located due to snow cover. The groundwater samples were submitted to Geolabs for total arsenic, cadmium, chromium, lead, and mercury analysis. Analytical results of the groundwater samples indicated that no metals were above the laboratory reporting limit [54, Table 8 and Appendix D].

On 10 March 1998, MassDEP requested the ORS to conduct a review of the IHE submitted by REW and FWEC. The request stated that MassDEP staff had conducted a risk evaluation using the MassDEP Residential Short Form, resulting in a hazard index (HI) and Excess Lifetime Cancer Risk (ELCR) exceeding MassDEP acceptable levels [61]. No documentation of the ORS review or response was found in available documentation.

On 3 April 1998, REW submitted a Supplemental Phase III Selection of Comprehensive Remedial Actions Remedial Action Plan and Phase IV Remedy Implementation Plan [54]. The supplemental plans included additional soil and groundwater data requested by MassDEP during the November 1997 meeting. The additional soil and groundwater data were collected in December 1997 and in January to February 1998 as described above [54, Tables 3-8]. In the 1998 supplemental plans, REW estimated that 1,200 yd^3 of contaminated soil would be disposed of off-site, and 6,200 yd^3 would be disposed of on site in a proposed containment cell constructed on top of the previous cell constructed by SP [54, p. 14].

On 21 May 1998, MassDEP met with the property owner and their consultants, REW, to review the proposed cleanup and the residential redevelopment of the property. MassDEP provided a list of concerns/issues that needed to be addressed, including, but not limited to, the following: application for modification of the existing landfill assignment through the Danvers Board of Health; compliance with Solid Waste Regulations; submission of an operations and maintenance plan for continued maintenance (at least 30 years) of the landfill; and completion of a full Risk Assessment, including ecological risk with sediment sampling [66].

On 29 June 2000, the Town of Danvers, Office of the Collector of Taxes took the property from Riversedge Realty Trust for non-payment of property taxes [67]. On 17 July 2001, the Town of Danvers foreclosed on the property in Land Court [68].

In September 2001, REW conducted sediment sampling of the Crane, Porter, Waters, and Danvers Rivers for the Danvers Board of Health [69]. The sampling was conducted to determine the management requirements for stockpiling dredged material at Parker Island. A total of 13 sediment samples were collected as part of the sampling event. Three sediment samples (CR1, CR2, and CR3) were collected from the Crane River, at locations downstream of the Creese & Cook Co. (Former) 1 property, between the Water Street Bridge and the mouth of the Crane River with the Porters River. The sample cores were manually advanced approximately four feet into the sediment. The sediment samples were analyzed by R.I. Analytical Laboratories, Inc. for RCRA metals, total petroleum hydrocarbon (TPH), PCBs, SVOCs, VOCs, pH, and reactive sulfides. Analytical results of the Crane River sediment samples collected downstream of the property indicated the presence of six metal including arsenic and chromium [69, Table 1]. Analytical results are discussed in greater detail in the Surface Water Pathway section of this report.

On 5 May 2003, MassDEP sent the Riversedge Realty Trust information and Applications for Financial Inability Status [70].

On 7 August 2003, the property was sold by advertised Essex County Sheriff's Sale to the current owner, Orchard Farm Trust (Mr. Nicholas J. Decoulos, Trustee) [71].

On 27 February 2004, lawyers for the Riversedge Realty Trust notified MassDEP of the property transfer to Orchard Farm Trust (Mr. Nicholas J. Decoulos, Trustee) and provided documentation of the Sheriff's Sale [71; 72].

On 16 July 2004, MassDEP issued a NOR for RTNs 3-0000303 and 3-12711 to the new property owner, Orchard Farm Trust, regarding responsibility to complete the ongoing actions at the property per the MCP [73].

On 1 October 2004, MassDEP issued a Notice of Noncompliance (NON) with the MCP to Orchard Farm Trust regarding failure to submit a Tier I Permit Extension and Transfer Application within an established interim deadline [74]. On 29 October 2004, GFS, consultants retained by Orchard Farm Trust, submitted a Tier I Permit Extension and Transfer Application to MassDEP, and requested an additional three years beyond the standard two year permit extension [190]. On 9 November 2004, MassDEP acknowledged receipt of the Tier I Permit Transfer and Extension application [75]. On 10 November 2004, GFS submitted a Tier I Minor Permit Modification Transmittal Form to link the release of arsenic to surface soil Imminent Hazard RTN 3-12711 to the original RTN 3-0303 [76].

In November 2004, the former beamhouse was reportedly demolished. According to the official tax card for the property, on 1 November 2004, a demolition building permit (No. B040882) was issued by the Town of Danvers [3]. The demolition debris piles were staged on top of the intact floor/foundation [149].

On 4 January 2005, MassDEP issued a Permit Expiration Date (Permit No. 104028) and Notice of Interim Deadline to Orchard Farm Trust, regarding the expiration of the Tier IC permit on 1 February 2007, and the required continuation of the 9 October 1995 IRA [78].

On 11 February 2005, according to a cover letter which appears to be mistakenly dated 10 November 2004 (based on the date of receipt stamp), GFS submitted an IRA Status Report to MassDEP to meet the interim deadlines issued by MassDEP in the 4 January 2005 letter [77]. A copy of the IRA Status Report was not found in available documentation. The GFS letter also described a site visit conducted by GFS on 4 January 2005. According to the GFS letter, no fencing was installed around the Sludge Lagoon Area C, and remnants of the former beamhouse had been knocked down and access was limited by fences and earthen berms [77, p. 2].

In April 2005, GFS collected 24 sediment samples, including one duplicate, from 19 locations along the Crane River. Sediment samples M-1 through M-12 were collected from salt marsh areas, and sediment samples F-1 through F-7 were collected from salt flats near the low water line [79, Figure C-1]. The samples were collected from each of the 19 locations at depths of 0 to 18 inches, and from four selected locations at depths of 18 to 36 inches. The sediment samples were analyzed by Toxikon Corporation for arsenic. Analytical results are discussed in greater detail in the Surface Water Pathway section of this evaluation.

On 6 June 2005, GFS submitted a letter report regarding a limited assessment of the wetland resource areas on the property along the Crane River. The report included the results of sediment sampling conducted along the downstream rivers in 2001 by REW; the arsenic data from sediment sampling conducted in April 2005 by GFS; and a Sanborn Map Report which included the locations and historical Sanborn maps of seven other tannery/leather facilities near the former Creese & Cook Co. (Former) 1 property. According to the letter report, GFS concluded that there were elevated arsenic and chromium concentrations in sediments adjacent to the property. However, GFS also discussed the difficulty in evaluating background conditions, and noted that there were elevated concentrations of arsenic and chromium in other areas of the estuarine system, and other potential sources along the surface water pathway [79, pp. 2-4].

On 12 May 2006, the Town of Danvers requested MassDEP to provide an update on the investigation and clean up of the Creese & Cook Co. (Former) 1 property [80]. In response to this request, MassDEP conducted a file review and summarized the property status in a 19 May 2006 Technical Evaluation Memorandum to the File. The Memorandum identified the need for an updated and revised IHE for arsenic contamination in surface soils based on the revised 2006 MCP Method 1 S-1 standard for arsenic (which reduced the standard from 30 mg/Kg to 20 mg/Kg); the need for further evaluation of site characterization data based on new standards promulgated on 3 April 2006; and the need to fully evaluate the site contaminants, including hexavalent chromium and dioxins [80, pp. 4-5].

In July 2006, GFS notified MassDEP that it was no longer the consultant/LSP of record for Orchard Farm Trust [81]. On 2 August 2006, Orchard Farm Trustee, Mr. Decoulos, submitted a letter to MassDEP updating their new consultant as Woodard & Curran, Inc. (W&C) [82].

On 4 August 2006, MassDEP issued a NON (NON-NE-06-3C001) to Orchard Farm Trust for failing to submit a scheduled IRA Status Report by August 2005 and conduct a revised IHE by May 2006 [83]. The NON further noted that revisions to the IHE should include evaluation of arsenic in surface soils (0-12 inches rather than 0-3 feet), other contaminants of concern (chromium, cyanide, and dioxin), and other areas of concern (Upland Pile Area and Crane River sediments) [83, attached Noncompliance Summary].

On 24 August 2006, MassDEP met with Orchard Farm Trust and their consultants, W&C, to review the findings of the MassDEP technical review of the site file and discuss the conditions outlined in the 4 August 2006 NON [84, p. 3-1].

On 19 September 2006, MassDEP and W&C conducted a site walk of the property. The MassDEP site visit report noted that access to the property was unrestricted and there was evidence of trespasser and/or recreational visitor use of the property. Several footpaths and biking trails were observed on the property [84, p. 3-1; 85, p. 5].

On 4 October 2006, in response to the NON, W&C, on behalf of Orchard Farm Trust, submitted an IRA Plan Modification and Status Report outlining a proposed IHE to MassDEP [84]. As part of the response, W&C proposed additional sampling to address data gaps in surficial soil sampling, additional testing and characterization of the former beamhouse debris by a licensed asbestos inspector, and conducting a revised IHE. W&C also proposed analyzing the additional 11 surface soil samples (WC-1 through WC-11) for hexavalent chromium, cyanide, and dioxin [84, p. 4-1].

On 25 October 2006, MassDEP issued an IRA Plan Denial, Notice of Response Action, Notice of Intent to Mobilize, and Interim Deadlines in which MassDEP denied the IRA Plan Modification and the proposed revised IHE submitted by W&C [85]. MassDEP determined that the plan was insufficient. MassDEP outlined the requirements for conducting an acceptable IHE under the MCP. These requirements included collecting samples at an additional 43 surface soil (0-1 foot) sample locations throughout each source area, and the collection of 24 sediment samples from the Crane River. Sample locations included 12 locations in Landfill Area A, four locations in Landfill Area B, 12 locations in Sludge Lagoon Area C, 12 locations in/around the former beamhouse, three locations in the Upland Pile Area, and 24 locations along Crane River sediments. The letter noted several drums, as well as one large AST northwest of the former beamhouse, which also required evaluation [85, pp. 2-4]. In addition, MassDEP issued a Notice of Response Action if Orchard Farm Trust failed to conduct the modifications to the IRA and IHE and meet the MassDEP-issued interim deadlines [85, p. 5].

On 9 November 2006, W&C submitted a revised IRA Plan Modification and proposed IHE in response to the 25 October 2006 MassDEP denial letter [86]. The revised IRA outlined the proposed sampling of 43 additional surface soil sample (0-1 foot bgs) locations (WC-1 through WC-12 in Landfill Area A, WC-13 through WC-16 in Landfill Area B, WC-17 though WC-28 in Sludge Lagoon Area C, WC-29 through WC-40 in/around the beamhouse, and WC-41 through WC-43 in the Upland Pile Area); and 20 sediment sample locations (WC-SED-1 through WC-SED-20) along the Crane River. W&C also proposed collecting samples from the former beamhouse debris for asbestos analysis via polarized light microscopy (PLM) [86, pp. 4-2 – 4-4].

On 21 and 22 November 2006, as part of the revised IRA and IHE evaluation, W&C collected 32 surface soil samples (0-1 foot bgs) from the following locations/source areas: 12 surface soil samples (WC-1 through WC-12) from Landfill Area A; four surface soil samples (WC-13

through WC-16) from Landfill Area B; 12 surface soil samples (WC-17 through WC-28) from the Sludge Lagoon Area C; three surface soil samples (WC-41 through WC-43) from the Upland Pile Area between the historic cemetery and the adjacent retail parking (west of the former beamhouse); and one surface soil sample (WC-44) from the southeastern corner of the property as a potential background sample. In addition, 20 sediment samples (WC-SED-1 through WC-SED-20) were collected from locations along the Crane River [87, p. 3-1, Figure 2, and Table 1]. The soil and sediment samples were field screened with an XRF for arsenic, chromium, and lead. In addition, soil samples were analyzed by Accutest Laboratories for cyanide, physiological available cyanide, dioxins, arsenic, and total and hexavalent chromium. Sediment samples were analyzed for cyanide, physiological available cyanide, dioxins, arsenic, total and hexavalent chromium, and total organic carbon [87, Table 1]. Analytical results of the soil samples will be discussed in greater detail in the Waste/Source Sampling and Soil Exposure Pathway sections of this evaluation. Analytical results of the sediment samples will be discussed in greater detail in the Surface Water Pathway section of this evaluation.

On 22 November 2006, as part of the revised IRA and IHE evaluation, a licensed asbestos inspector from Enviro-Safe Engineering conducted an investigation/inspection of the former beamhouse demolition debris. Enviro-Safe Engineering personnel collected samples of suspected asbestos-containing material (ACM), including black mastic on concrete and transite, and confirmed the presence of ACM in the demolition debris. However, no asbestos analytical data or laboratory report was found for this sampling in available documentation [87, p. 3-1].

On 14 December 2006, W&C orally notified MassDEP regarding the release of ACM in the former beamhouse demolition debris. MassDEP assigned RTN 3-26474 to the property for the release of asbestos in the beamhouse demolition debris meeting the 2-hour provisions of the MCP [88].

On 26 December 2006, W&C submitted an IRA Status Report to MassDEP summarizing the November 2006 surface soil and sediment sampling and the revised IHE [87]. W&C concluded that risk to human health at the property was driven by arsenic and dioxin in soil and sediment, and that the concentrations of these contaminants pose an Imminent Hazard to human health but do not appear to pose an Imminent Hazard to the environment [87, p. 4-7]. As part of the IRA Status Report, W&C proposed the off-site disposal of the ACM in beamhouse demolition debris, and the installation of fencing around the identified Imminent Hazard areas of Landfill Areas A and B and around the area of dioxins in upland surface soils (vicinity of WC-41), beginning in January 2007 [87, p. 5-1].

On 28 December 2006, MassDEP issued a NOR to Orchard Farm Trust for response actions related to the oral notification of release of asbestos under RTN 3-26474 [89].

On 11 January 2007, MassDEP issued an IRA Conditional Approval Letter and Designation of Interim Deadlines for the response actions proposed by W&C in the 26 December 2006 IRA Status Report [90]. The IRA response actions were approved with the following conditions: additional fencing was required around the arsenic-contaminated soils in Sludge Lagoon Area C, and signage was required indicating a contaminated sediment hazard along the shoreline of the Crane River (to be completed within 30 days of the letter); additional surface soil sampling was required in the Upland Pile Area (24 locations) for arsenic and dioxin analyses, with an updated IHE for upland soils (to be completed within 60 days of the letter); and a revised asbestos abatement plan was needed for the removal and off-site disposal of the beamhouse demolition ACM debris (to be submitted within 14 days of the letter) [90, pp. 2-3].

On 27 February 2007, MassDEP issued a Notice of Response Action, Notice of Intent to Mobilize and Interim Deadlines to Orchard Farm Trust, regarding missed interim deadlines issued in the MassDEP 11 January 2007 letter and required for response actions under RTNs 3-0303 and 3-12711 [91]. The letter stated that since no revised asbestos abatement plan had been submitted, the installation of fencing and signage had not been completed, and additional soil sampling has not been initiated, MassDEP would initiate response actions to complete these tasks on or after 9 March 2007, unless written notification was submitted by the property owner of the intent to complete these actions [91, p. 2].

On 9 March and 13 March 2007, W&C submitted a letter regarding the intent to conduct response actions at the property, and a request for extension of the MassDEP-issued interim deadlines regarding asbestos and surface soil assessment and sampling to April and May 2007, due to weather and snow conditions at the property [92].

On 16 March 2007, a meeting was held at the MassDEP Northeast Regional Office (NERO) with the property owner and consultants, W&C, regarding the current site status [93].

On 4 May 2007, W&C submitted an IRA Plan Modification to MassDEP regarding the installation of 6-foot chain-link fencing around the identified Imminent Hazard soil areas, including Landfill Area A, Landfill Area B, former Sludge Lagoon Area C, and the Upland Pile Area west of the former beamhouse. The IRA Plan Modification indicated the fence installation would begin as soon as the plan was approved by MassDEP [94, p. 2-2].

On 24 May 2007, MassDEP issued an IRA Conditional Approval Letter and Designation of Interim Deadlines for the 4 May 2007 IRA Plan Modification submitted by W&C [95]. The MassDEP conditions for approval included the following: submission of a signed contract with a fencing contractor (required within 7 days of the letter); submission of a revised asbestos abatement plan (required within 14 days of the letter); installation of fencing around Imminent Hazard areas and posting of contaminated soil and sediment signage (required within 30 days of the letter); and completion of Upland Pile Area soil sampling and submission of an IRA Status Report with a revised IHE (required within 60 days of the letter) [95, p. 3].

On 8 June 2007, MassDEP extended the interim deadline by 15 days, to 8 July 2007, to allow for the subcontractor's schedule for installing the fencing [96].

On 13 June 2007, W&C submitted a request to the Danvers Conservation Commission for an emergency exception from an Order of Conditions to install the fencing around the Imminent Hazard areas [97].

On 18 June 2007, W&C collected 25 additional surface soil samples (0-1 foot) to assess contaminant concentrations in the upland areas of the site, as required by the MassDEP 24 May 2007 IRA conditional approval [98]. Twelve soil samples (WC-45 through WC-56) were collected from a grid established in the area between the former beamhouse and Route 128; 12 soil samples (WC-58 through WC-69) were collected from a grid in the area between the former beamhouse and Clinton Avenue; and one soil sample (WC-57) was collected from the on-site historic cemetery for use as a background sample [98, p. 2-1, Figure 2]. The surface soil samples were field-screened for arsenic using an XRF, and submitted to Alpha Woods Hole Laboratory for arsenic confirmation analysis. Analytical results of the soil samples are discussed in more detail in the Soil Pathway section of this evaluation.

From 16 to 25 July 2007, initial fence installation around Imminent Hazard areas was completed. On 20 July 2007, MassDEP conducted an inspection of fencing installed to date [98, p. 2-2].

On 25 June 2007, W&C, on the behalf of Orchard Farm Trust, submitted a Tier I Major Permit Modification and Extension Application to MassDEP for the Tier IC Permit No. 104028 [99]. The permit modification was submitted since the previously undocumented concentrations of arsenic, chromium, lead, and dioxins detected in surface soils and sediment were used to update the Numerical Ranking System Scoresheet for the RTNs at the property, thereby requiring the reclassification of the site from Tier 1C to Tier 1B [99, Appendix C, p. 1].

On 2 July 2007, MassDEP issued an Acknowledgment of Receipt of Tier I Permit Extension application for Permit No. 104028 [100].

On 1 August 2007, MassDEP issued a Decision to Modify Permit from Tier 1C to Tier 1B and Decision to Grant Permit Extension with Conditions. The decision outlined MassDEP's approval of the Tier 1B Permit application, and established interim deadlines to meet a Response Action Outcome (RAO) Statement under the MCP by 1 February 2009 [101].

On 16 August 2007, W&C submitted an IRA Status Report for RTNs 3-12711 (arsenic in soil) and 3-26474 (asbestos release) [98]. The IRA Status Report summarized the analytical results of the additional 25 surface soil samples (0-12 inches), collected from upland areas of the property in June 2007; the incorporation of these results (for locations outside of the areas fenced in July 2007) into a revised IHE for soil and sediment; and the submission of a revised asbestos abatement plan. The IHE presented in the IRA Status Report concluded that for a trespasser scenario, the concentrations of COPCs in sediment (primarily dioxins) posed an Imminent Hazard to human health, and that revised calculations of the cumulative cancer risk for the soil exposure pathway was below the Imminent Hazard threshold [98 pp. 3-3, Tables 5-19]. The IRA status report also indicated that the beamhouse ACM demolition debris had not been addressed, as the property owner had not yet retained demolition and asbestos monitoring contractors [98, p. 4-1].

In October 2007, the Town of Danvers submitted an application for a Brownfields assessment grant for the property [102].

On 5 September 2008, MassDEP held an enforcement conference with Orchard Farm Trust to discuss and review a draft MassDEP Administrative Consent Order with Penalty (ACOP) for noncompliance with MGL Chapter 21E and the MCP. The property owner claimed financial inability to comply with the required response actions outlined in the draft ACOP, which included posting of signage along the Crane River, addressing the ACM beamhouse demolition debris, and completion and repair of fencing around Imminent Hazard areas [103; 104, p. 1].

On 10 September 2008, MassDEP issued a letter to Orchard Farm Trust summarizing the response actions outlined in the draft ACOP and the established deadlines to complete the response actions in September 2008. The MassDEP letter stated that failure to meet the deadlines would result in MassDEP initiating the response actions, and included a property access agreement required to be signed by the property owner to allow access by MassDEP to complete the response actions [104, p. 2].

On 18 September 2008, MassDEP collected four samples of black mastic from the beamhouse demolition debris to determine the nature and extent of asbestos in the debris. The asbestos samples were analyzed by ProScience Analytical Services, Inc., using a visual estimate quantitative method to determine the percentage of asbestos in the samples, via EPA/600/R-93/116, Method for the Determination of Asbestos in Bulk Building Materials. Analytical results indicated that one sample (091808AJ) of the black mastic contained 10% chrysotile fibers. The remainder of the samples contained cellulose (10 to 20%) and non-fibrous material (80 to 90%) [105; 106].

On 14 November 2008, MassDEP referred the property to the MA Attorney General's (AG) Office for potential enforcement actions [107].

On 27 March 2009, MassDEP issued a Request for Information (RFI) and Establishment of Interim Deadlines to Orchard Farm Trust for a list of current beneficial interests of the Trust [108].

On 4 June 2009, MassDEP issued a NOR to the Trustee of Orchard Farm Trust, Mr. Decoulos, as a Potentially Responsible Party (PRP) for the property [109].

On 11 June 2009, the MA AG Office filed a complaint in Suffolk Superior Court against Mr. Decoulos regarding the failure to complete response actions related to the arsenic- and dioxin-contaminated soils and sediments at the property [110].

On 23 June 2009, the Suffolk Superior Court issued a preliminary injunction against Mr. Decoulos. Under terms of the court order, Mr. Decoulos was required to allow MassDEP onto the property to ensure that contaminated areas were secured with fencing and that signs were posted to notify the public of potential hazards on the property. Mr. Decoulos was also required to maintain the fencing and signage, regularly inspect the property, and report trespasser use of the property to MassDEP [111].

No additional response actions have been conducted at the Creese & Cook Co. (Former) 1 property since the Suffolk Superior Court ordered installation and repair of fencing and posting of signage. Vehicle access to the property via Clinton Avenue is currently blocked with concrete Jersey barriers. The demolition debris from the former beamhouse remains on-site.

Between 5 May and 6 December 2011, START conducted sediment and soil/source sampling activities on the Creese & Cook Co. (Former) 1 property as part of an EPA SR to document hazardous substance sources on site and to determine if a release to the surface water pathway (SWP) has occurred.

On 23 and 24 May 2011, as part of the Creese & Cook Co. (Former) 1 SR, START personnel collected 23 soil/source samples (SO-01 through SO-05, SO-05B, SO-06 through SO-20, SO-25, and SO-26), including two field duplicates, from hand auger soil borings advanced throughout the Creese & Cook Co. (Former) 1 property to identify contaminants associated with potential source areas located on the property (see Figure 3). On 5 December 2011, during a second phase of the Creese & Cook Co. (Former) 1 on-site source sampling, START personnel collected 15 additional soil/source samples (SO-50 through SO-61, SO-64, SO-65, and SO-70), including one field duplicate, from locations throughout the Creese & Cook Co. (Former) 1 property. Soil/source samples SO-50, SO-51, SO-54 though SO-61, and SO-70 were collected from

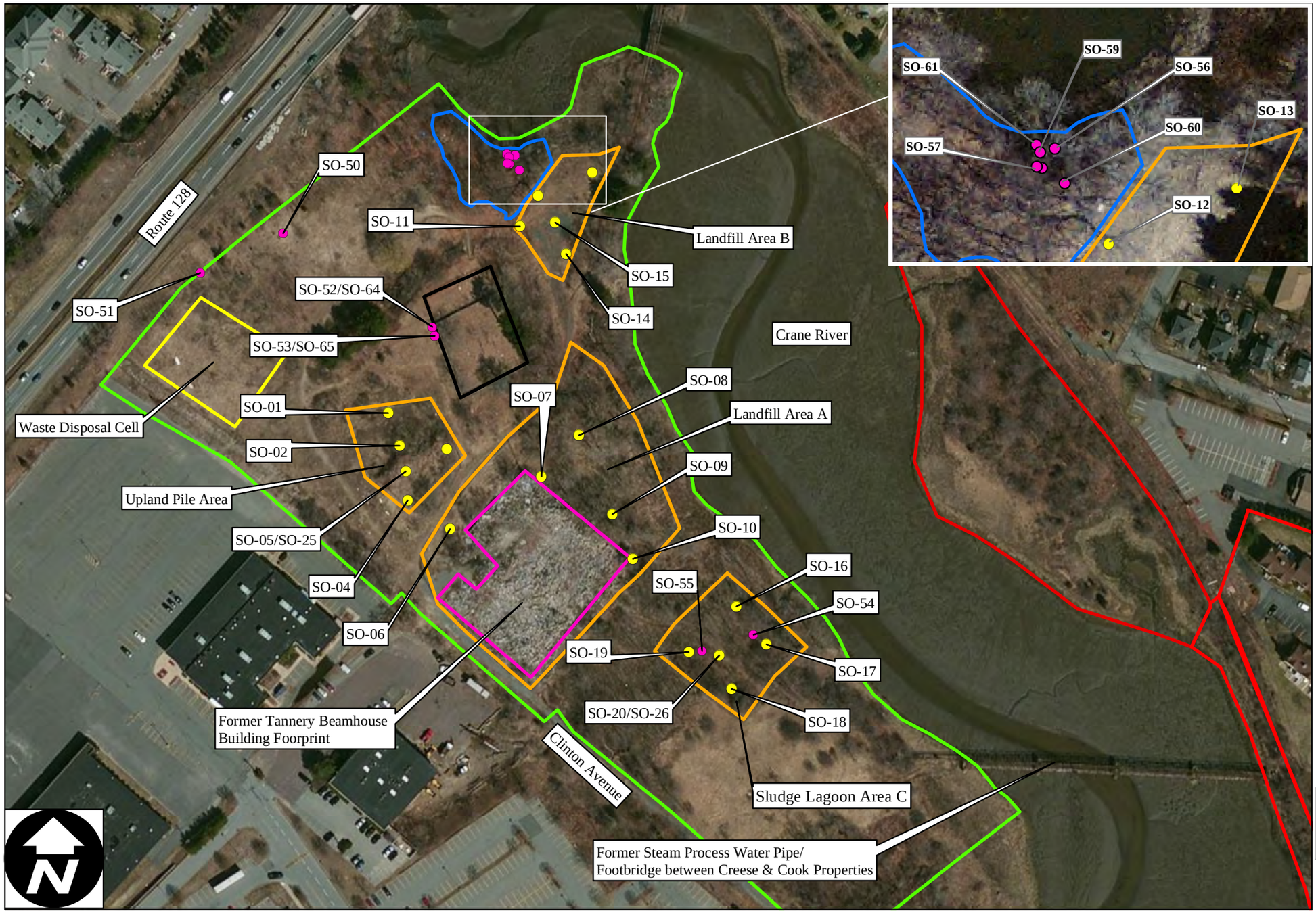

Figure 3
Soil/Source Sample Location Map

Creese & Cook Co. (Former) 1
55 Clinton Avenue
Danvers, Massachusetts

EPA Region I
Superfund Technical Assessment and Response Team (START) III
Contract No. EP-W-05-042

TDD Number:	09-11-0005
Created by:	G. Hornok
Created on:	17 November 2011
Modified by:	G. Hornok
Modified on:	8 August 2012

Legend

- Creese & Cook Co. (Former) 1
- Creese & Cook Co. (Former) 2
- May 2011 Soil/Source Sample
- Dec. 2011 Soil/Source Sample
- Fenced Imminent Hazard Areas
- On-Site Disposal Cell
- Mixed Soil/Leather Scrap Pile
- Cemetery
- Former Tannery Beamhouse Building Footprint

0 145 290 Feet

Data Sources:
Imagery: Bing Maps Aerial (Microsoft)
Topos: MicroPath
All other data: START

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suspected source areas located on the property. Soil/source sample SO-52, SO-53, SO-64, and SO-65 were collected from an area directly adjacent to the exterior side of the granite stone wall, marking the Endicott and Russell Cemetery (listed to be located at 25 Clinton Street). The samples were collected from an area presumed to be outside the influenced by waste disposal practices from the tannery since the Endicott and Russell Cemetery predates the tannery operations. These four soil/source samples (two surface and two subsurface) were collected to document potential soil/source background conditions [149].

Soil/source samples (SO-01 through SO-21, SO-23, and SO-25 through SO-26) were sent to CLP laboratories for SVOC, PCB, and total metals including mercury analyses; to CLP Non-RAS laboratory for dioxin analysis; and to a DAS laboratory for hexavalent chromium and soil pH/ORP analyses. Soil/source samples SO-22 and SO-24 were sent to a CLP laboratory for total metals including mercury analysis only [149]. In addition, 11 soil/source samples (SO-50, SO-51, SO-53, SO-56 through SO-61, SO-64, and SO-70) were submitted to CLP laboratories for total metals and dioxin analyses, while four soil/source samples (SO-52, SO-54, SO-55, and SO-65) were submitted to a CLP laboratory for total metals only [149].

Based on analytical results, contaminated soil/source areas containing 17 dioxin/furan congeners and 14 total metals has been documented. Analytical results of SVOC, pesticide, PCB, and hexavalent chromium analysis were not compared against background concentrations and are therefore not used to document contaminated soil areas. The comparison of sample concentrations against background concentration and analytical results of START soil/source samples collected as part of this SR are discussed in greater detail in the Waste/Source Sampling section of this report [117; 160-168].

From 16 through 18 May 2011, as part of the Creese & Cook Co. (Former) 1 SR, START personnel collected 26 sediment samples (SD-03 through SD-26, SD-29, and SD-30) from locations on the Crane River south of Purchase Street to immediately east (downstream) of the Water Street Bridge. On 6 December 2011, during a second phase of sediment sampling as part of the Creese & Cook Co. (Former) 1 SR, START personnel collected nine additional sediment samples (SD-50, SD-51, SD-56 through SD-61, and SD-70) from the Crane River south of Purchase Street and in areas directly adjacent to the Creese & Cook Co. (Former) 1 and Creese & Cook Co. (Former) 2 properties. Sediment samples SD-03, SD-50, and SD-51 were collected from south of Purchase Street, along the Crane River, in an area documented to be influenced by tidal waters but presumably outside the influence of contaminants from the former Creese & Cook Company properties to establish background concentrations for comparison. The remaining 33 sediment samples were collected to evaluate if a release of hazardous substances from source areas on the Creese & Cook Co. (Former) 1 property had occurred. Refer to Figure 5 for the locations of sediment samples collected by START as part of the Creese & Cook Co. (Former) 1 SR and presented as part of this report [149].

Sediment samples SD-03 through SD-26, SD-29, and SD-30 were submitted to CLP laboratories for SVOC, PCB, and total metals analyses, to a CLP Non-RAS laboratory for dioxin/furan analysis, and to a Delivery of Analytical Services (DAS) laboratory for hexavalent chromium analysis. Sediment samples SD-56 through SD-61 and SD-70 were submitted to a CLP Non-RAS laboratory for dioxin/furan analysis and to a CLP laboratory for total metals analyses, with sediment samples SD-50 and SD-51 submitted to a CLP laboratory for total metals analysis only [149].

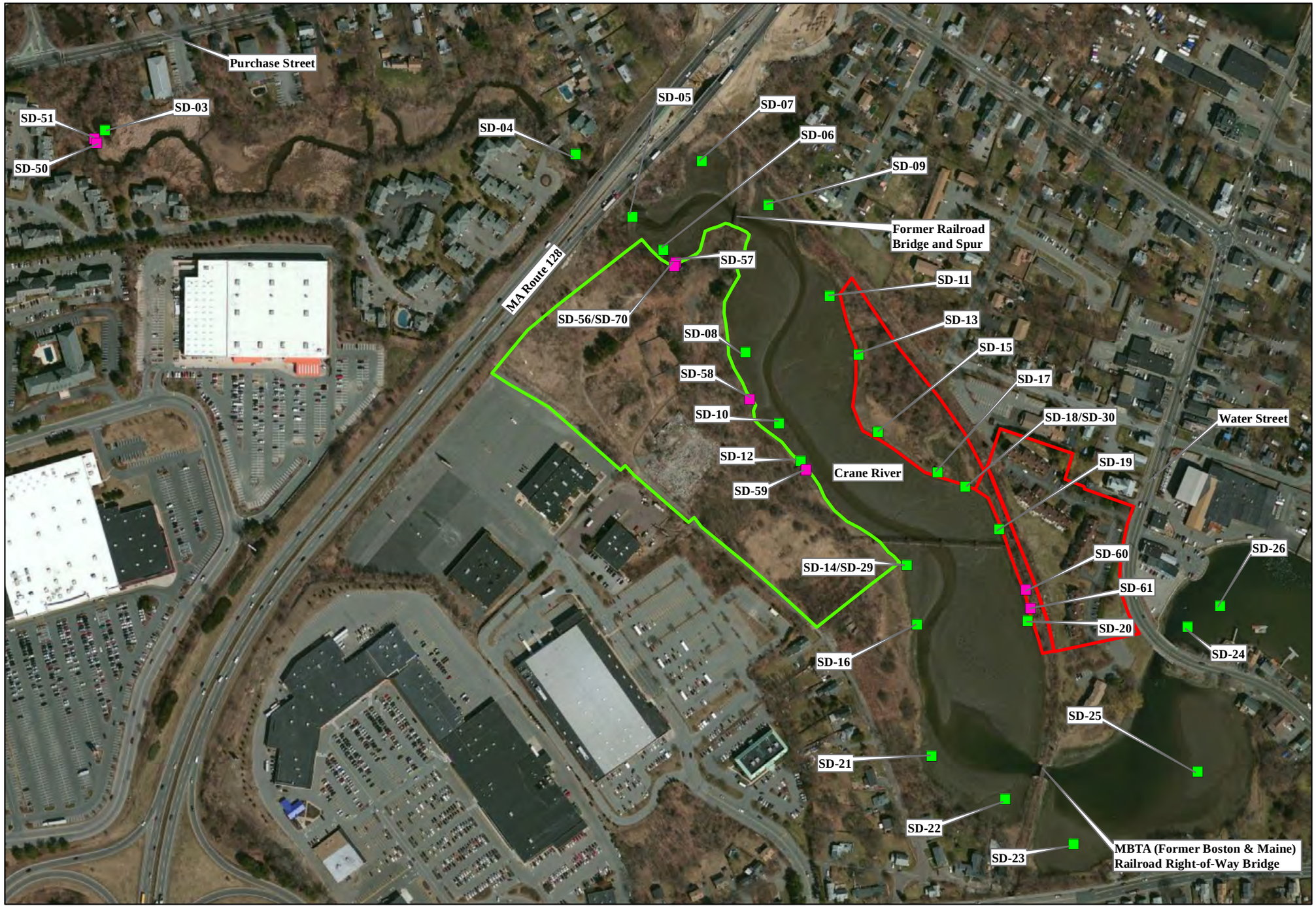

Figure 4
Sediment Sample Location Map

Creese & Cook Co. (Former) 1
55 Clinton Avenue
Danvers, Massachusetts

EPA Region I
Superfund Technical Assessment and Response Team (START) III
Contract No. EP-W-05-042

TDD Number:	09-11-0005
Created by:	G. Hornok
Created on:	17 November 2011
Modified by:	G. Hornok
Modified on:	8 August 2012

Legend

- Creese & Cook Co. (Former) 1
- Creese & Cook Co. (Former) 2
- Dec. 2011 Sediment Sample
- May 2011 Sediment Sample

MBTA = Massachusetts Bay Transportation Authority

0 250 500 Feet

Data Sources:
Imagery: Bing Maps Aerial (Microsoft)
Topos: MicroPath
All other data: START

Sediment sampling of the Crane River, which is bordered on opposite sides by the parcels once operated as a single tannery, are applicable to both the Creese & Cook Co. (Former) 2 SI and the Creese & Cook Co. (Former) 1 SR. Based on analytical results of the sediment samples, a release of contaminants to sediment from sources on the Creese & Cook Co. (Former) 1 has been documented. Analytical results of sediment samples are discussed in greater detail in the Surface Water Pathway section of this report.

Table 1 presents identified structures or areas associated with the Creese & Cook Co. (Former) 1 property that are documented or potential sources of contamination, the containment features associated with each source, and the relative location of each source.

Table 1

Source Evaluation for Creese & Cook Co. (Former) 1

Source Area	Containment Features	Spatial Location
Landfill Area A	None	Central area of the Creese & Cook Co. (Former) 1 property northeast of the former tannery beamhouse and adjacent to wetlands along the Crane River
Landfill Area B	None	Northeastern area of Creese & Cook Co. (Former) 1 property.
Sludge Lagoon Area C	None	Central/eastern area of Creese & Cook Co. (Former) 1 property.
Upland Pile Area	None	Central area of Creese & Cook Co. (Former) 1 property north of Former Tannery Beamhouse.
Former Tannery Beamhouse	None	Central area of the Creese & Cook Co. (Former) 1 property.
Waste Disposal Cell	Halon Linger	Northwestern area of the Creese & Cook Co. (Former) 1 property.

[149]

Table 2 summarizes the types of potentially hazardous substances which have been disposed, used, or stored on the areas associated with the Creese & Cook Co. (Former) 1 property.

Table 2

Hazardous Waste Quantity for Creese & Cook Co. (Former) 1

Substance	Quantity or Volume/Area	Years of Use/Storage	Years of Disposal	Source Area
Dioxin/Furan and Total metals	2,800 yd^3/ 12,400 ft^2	NA	Unknown	Landfill Area A
Dioxin/Furan and Total metals	5,700 yd^3/ 28,000 ft^2	NA	Unknown	Landfill Area B
Dioxin/Furan and Total metals	300 yd^3/ 8,100 ft^2	NA	Unknown	Sludge Lagoons Area C

Table 2

Hazardous Waste Quantity for Creese & Cook Co. (Former) 1 (Concluded)

Substance	Quantity or Volume/Area	Years of Use/Storage	Years of Disposal	Source Area
Dioxin/Furan and Total metals	17,050 ft^2	NA	Unknown	Upland Pile Area
Dioxin/Furan and Total metals	Approximately 34, 000 ft^2	NA	NA	Former Tannery Beamhouse
Unknown	5,000 yd^3/ 14,400 ft^2	1989 - present	Dec. 1989 - May 1990	Waste Disposal Cell

yd^3 = Cubic Yards. ft^2 = Square Feet.
NA = Not Applicable.

[149]

There are only three other sites located in Danvers, MA that are listed in the CERCLIS database, Creese & Cook Co. (Former) 2 (MAN000105956), 33 Water Street (MAN000106081) [a Time Critical Removal Action conducted at a portion of the Creese & Cook Co. (Former) 2 property], and Danversport Explosion (MAN000105236) [6]. In addition, there are 162 sites located in Danvers, MA listed in the Resource Conservation and Recovery Act Information System (RCRIS) [8].

WASTE/SOURCE SAMPLING

Historical Waste/Source Sampling

The following section summarizes the historical hazardous waste materials documented in the various on-site sources areas prior to the EPA SR. The EPA SR waste source sampling activities will be discussed following this summary historical waste/source sampling section

<u>Former Tannery Beamhouse/Beamhouse Demolition Debris</u> (Drums, Tanks, and Non-Drum Containers)

The Creese & Cook Company Tannery Beamhouse was constructed on the 55 Clinton Avenue parcel around 1914. At that time, the majority of the tanning processes were moved to this location from the Creese & Cook Company facility located at 33 Water Street [9, pp. 57, 59-60].

The tanning process required several operations, each of which produced wastewaters, and included the hide wash, dehairing, liming, bating, pickling/deliming, tanning, wringing, and rendering steps. Dehairing and liming included treating the hides with lime (calcium hydroxide) through the addition of reducing agents such as sodium sulfide, cyanides, and amines. Dehairing agents typically used during liming included sodium sulfide, sodium hydroxide, sodium hydrosulfite, arsenic sulfide, calcium hydrosulfide, dimethyl amine, and sodium sulphydrate. Depending on the end use of the leather, hides may have been treated with enzymes to soften them, referred to as bating. Before bating, the pH level of the collagen (hide proteins) was lowered so that enzymes could act on the hides. This is referred to as deliming. Once bating was

complete, the hides and skins were treated with a mixture of salt and sulphuric acid, to lower the pH of collagen which facilitated the penetration of the mineral tanning agent into the hides. This was known as pickling. Before tanning was completed, the skins were dehaired, degreased, desalted and soaked in water over a period of 6 hours to 2 days. To prevent damage of the skin by bacterial growth during the soaking period, biocides, such as pentachlorophenol (from 1930s onward), may have been used [112]. Common impurities in pentachlorophenol are dioxin and furan congeners [51].

In May 1984, after tanning operations had ceased at the property, SP conducted an initial site investigation (engineering report) which included the inspection and sampling of the beamhouse tanning process containers for the Crane River Real Estate Trust [14; 16]. Analytical results of the selected container samples indicated the following: pH ranging from 2.8 and 2.9 in Bucket F and Wood Tank A to 9.2 in Bucket G; conductivity ranging from 4,200 micromhos per centimeter (umhos/cm) in Bucket F to 27,000 umhos/cm in Bucket G; alkalinity of 6,530 milligrams of calcium carbonate per liter (mg $CaCO_3$/L) in Bucket G; acidity ranging from 620 mg $CaCO_3$/L in Wood Tank A to 3,639 mg $CaCO_3$/L in Bucket F; total solids (TS) of 60 milligrams per liter (mg/L) in Wash Tank J, total volatile solids (TVS) of 35 mg/L in Wash Tank J; and density of 0.81grams per milliliter in Drum L [14, Table 6 and Site Figure].

The following table lists the tanks/containers and contents identified during the 1984 SP tank investigation.

Table 3

Summary of SP, Inc. 1984 Tank Investigation

Number	Description	Contents
2	3,000-gallon wood tanks (Tanks A and B)	Grease rendering tanks filled with water
2	55-gallon drums overturned (Drums C and D)	Floor sweepings and sawdust
1	3,000-gallon lead-lined tank, steel valve open (Tank E)	Empty
2	5-gallon plastic buckets (Buckets F and G)	Formic acid (pH 2.5) and Ammonia Bate (pH 49.0)
1	200-gallon wood tank, with formic acid label (Tank H)	Empty
1	1,000-gallon wood tank, sugar syrup label (Tank J)	Reducing sugar (molasses)
2	55-gallon drums (one leaking kerosene odor) (Drums K and L)	One with grease; one with kerosene
1	1,500-gallon steel tank, with chromate label (Tank M)	Empty
1	1,500-gallon steel tank, with sulfuric acid label (Tank N)	Empty

Table 3

Summary of SP, Inc. 1984 Tank Investigation (Concluded)

Number	Description	Contents
3	Paddle pits, each 8 feet x 40 feet x 4 feet (Pits O, P, and Q)	Settling solids, hair, fleshings, sulfides
1	Waste treatment tank, multi-chambered, overall 30 feet x 80 feet x 8 feet (Tank R)	Approximately ½ full of tannery sludge, chrome
1	1,200-gallon steel grease tank (Tank S)	Empty
1	3,000-gallon steel hot water tank (Tank T)	Empty
1	1,500-gallon steel oil tank (Tank U)	Empty
1	55-gallon water softener tank (Tank V)	Approximately ½ full with calcium chloride

[14, Table 7 and Site Figure]

The majority of these containers were reportedly cleaned out and the contents and containers disposed of as part of the 1984 SP investigation; however, no disposal documentation was found in available records.

From 28 May to 4 June 1992, SP conducted sampling investigations of the former beamhouse in preparation for demolition of the building. SP collected nine soil samples (BH A-1 through BH A-3, BH B-1 through BH B-3, and BH C-1 through BH C-3) from filled-in lime pits inside the former beamhouse. Two soil samples (BH T-1 and BH T-2) were collected from drainage trenches in the floor of the beamhouse. Three wall scrapings (W-1 through W-3) were collected from visible chromium stains on the western wall of the former beamhouse. Analytical results of the soil samples indicated the presence of the following (maximum concentration and location in parentheses): total chromium (3,363 mg/Kg in BH A-3), lead (175 mg/Kg in BH A-3); and phenols (0.46 mg/Kg in BH A-3) [33, pp. 24-25]. Analytical results of the wall scrapings samples indicated the presence of lead (79.9 mg/Kg in BH W-2), phenols (3.73 mg/Kg in BH W-3), and high concentrations of total chromium (129,698 mg/Kg in BH W-2). Analytical results of the trench samples indicated the presence of lead (161.2 mg/Kg in BH T-2), phenols (9.43 mg/Kg in BH T-3), and high concentrations of total chromium (17,425 mg/Kg in BH T-2) [33, p. 26]. Samples BH W-1 and BH T-2 were also analyzed for TCLP chromium and lead and results indicated concentrations below the TCLP reporting limits of 5 mg/L [33, p. 27].

Based on the results of the 1992 sampling data from the former beamhouse, SP cleaned out the building pits and trenches in March and April 1994. SP collected composite samples from the debris remaining in the pits (Pit Debris) and trenches (Trench Debris). Analytical results of the Pit and Trench Debris samples indicated the presence of the following (maximum concentration in parentheses): cadmium (3.28 mg/Kg in Pit Debris), chromium (5,858 mg/Kg in Trench Debris), and lead (288.7 mg/Kg in Pit Debris) [33, p. 27A].

In May and June 1996, in preparation for re-development of the property with 58 single family lots, REW advanced 14 borings (B14, B15, B18 through B20, B22, and B79 through B86) via geoprobe (designated with B) in the footprint and vicinity of the former beamhouse [53, p. 7, Table 2, Exhibits A-D]. Field screening results utilizing an XRF indicated the presence of arsenic, chromium, lead, and mercury in each layer. The maximum concentration (in

parentheses) for each layer included the following: for the 1 to 2 foot depth, arsenic (378 ppm in B83), chromium (280 ppm in B19), lead (8.29 ppm in B19), and mercury (0.0256 ppm in B22); for the 4 to 5 foot depth, arsenic (20.6 ppm in B18), chromium (51.6 ppm in B19), and mercury (0.0172 ppm in B20); for the 8 to 9 foot depth, arsenic (7.86 ppm in B19) and chromium (747 ppm in B19); for the 8 to 12 foot depth, arsenic (7.50 ppm in B85), chromium (24.9 ppm in B85); and for the 13 to 14 foot depth arsenic (17.7 ppm in B20) and chromium (3,200 ppm in B20) [53, p. 7 and Table 2].

In November 2004, the remaining standing structures of the former beamhouse were reportedly demolished [3]. The demolition debris piles were staged on top of the intact floor/foundation [149].

On 22 November 2006, a licensed asbestos inspector from Enviro-Safe Engineering contracted by W&C conducted an investigation/inspection of the former beamhouse demolition debris and collected samples of suspected ACM, including black mastic on concrete and transite confirming the presence of ACM in the demolition debris. However, no asbestos analytical data or laboratory report was found for this sampling in available documentation [87, p. 3-1].

On 14 December 2006, W&C made an oral notification to MassDEP regarding the release of ACM in the former beamhouse demolition debris. MassDEP assigned RTN 3-26474 to the property for the release of asbestos in the beamhouse demolition debris meeting the 2-hour provisions of the MCP [88].

On 18 September 2008, MassDEP collected four samples of black mastic from the beamhouse demolition debris to determine the nature and extent of asbestos in the debris. The asbestos samples were analyzed by ProScience Analytical Services, Inc. using visual estimate quantitative method to determine the percentage of asbestos in the samples via EPA/600/R-93/116, Method for the Determination of Asbestos in Bulk Building Materials. Analytical results indicated that one sample (091808AJ) of the black mastic contained 10% chrysotile fibers. The remainder of the samples contained cellulose (10 to 20%) and non-fibrous material (80 to 90%) [105; 106].

START assumes that the entire area of the footprint of the former beamhouse contains contaminated debris. The area of the former building footprint is estimated to be 170 feet (ft) by 200 ft (34,000 ft^2) [98, Figures 3-5].

<u>Landfill Area A</u>

In May 1984, SP excavated five test pits (1, 1A, 2, 2A, and 10) and collected soil samples in the suspected waste burial/disposal area (Landfill Area A) located behind (east of) the former beamhouse and adjacent to the wetlands along the Crane River [14; 16, p. 2]. Layers of tannery waste and sludge were identified in the test pits including black organic waste, black oily waste, and lime with strong ammonia and sulfide odors [14, attached Test Pit Logs]. Selected test pit soil samples were analyzed via EP Toxicity for metals, total VOCs, and petroleum hydrocarbons. Analytical results of the selected soil samples indicated the presence of total VOCs (1,700 µg/L in TP-10) and the following metals (maximum concentration in parentheses): cadmium (0.038 mg/L in Test Pit-2A); chromium (0.11 mg/L in Test Pit-2A and Test Pit-10B); lead (0.4 mg/L in Test Pit-2A); and silver (0.032 mg/L in Test Pit-1B). All soil sample analytical results were below the EP Toxicity regulatory limits [14, attached Laboratory Reports]. Initial estimates of the area and volume of wastes in Landfill Area A were estimated to be approximately 17,500 square feet (ft^2) and approximately 1,300 yd^3, respectively [14, p. 17].

In December 1985, SP conducted a supplemental investigation to the May 1984 sampling to refine the volume of sludge and buried tannery wastes [14, Appendix]. Three additional trenching test pits (T3, T9, and T10) were excavated in Landfill Area A, and a monitoring well (MW3) was installed in Landfill Area A, adjacent to the beamhouse. Analytical results of the soil samples collected during the installation of groundwater monitoring well MW3 indicated the presence of the following metals: arsenic (97.83 mg/Kg); selenium (0.227 mg/Kg); mercury (0.634 mg/Kg); silver (0.877 mg/Kg); chromium (17,940 mg/Kg); cadmium (21.18 mg/Kg); lead (1,282 mg/Kg); barium (6.609 mg/Kg); copper (235.9 mg/Kg); and zinc (155.7 mg/Kg) [14, Appendix Table 3].. Revised estimates of the disposed waste area and volume for Landfill Area A based on the additional test pits were approximately 12,400 ft^2 and 2,800 cy, respectively [33, Appendices p. A-30, Figure 1].

From December 1989 to May 1990, SP excavated tannery wastes and contaminated soils from Landfill Area A, treated and stabilized the soils, and then backfilled the soils into the constructed lined on-site containment cell (Waste Disposal Cell) [37].

In April 1990, SP collected two post-excavation soil samples from selected grids in the excavated portion of Landfill Area A. Analytical results of the samples indicated the presence of total chromium and total lead at maximum concentrations of 52.7 mg/Kg (Landfill A Grid 2) and 36.8 mg/Kg (Landfill A Grid 2), respectively. The average total chromium and lead concentrations for the post-excavation grid samples for Landfill Area A were 39.9 mg/Kg and 27.3 mg/Kg, respectively [33, Appendix p. A-18]. Analytical results for the composited grid soil samples were below EP Toxicity reporting limits [33, Appendix p. A-17].

In June 1995, as part of site characterization, REW advanced two borings (BH-105 and BH-108) and excavated two test pits (TP-1 and TP-4) in the vicinity of the Landfill Area A [38, p. P-8, and Figure 2 - Groundwater Contour Map]. The test pit samples were submitted for total petroleum hydrocarbon (TPH), acid base neutral (ABN), VOC, and metal analysis, while boring samples were submitted for polyaromatic hydrocarbon (PAH), VOC, and metals analysis. Analytical results of the soil samples collected from the excavated test pits indicated the presence of two SVOCs in test pit sample TP-1 (5 feet): bis(2-ethylhexyl)phthalate at 149,000 micrograms per kilogram (ug/Kg) and di-n-butyl phthalate at 452 ug/Kg [38, p. P-23]. Analytical results of the soil samples collected from the excavated test pits indicated the presence of the following metals [with maximum concentrations in sample TP-1 (5 feet) in parentheses]: arsenic (102 mg/Kg); cadmium (6.58 mg/Kg); total chromium (327 mg/Kg); lead (21.6 mg/Kg); and mercury (0.454 mg/Kg) [38, p. P-22]. Analytical results of the two borings indicated the presence of metals above analytical reporting limits.

In May and June 1996, in preparation for re-development of the property with 58 single family lots, REW advanced 10 borings (B21, B54, B58, B72, B73, B74, B75, B76, B77, and B78) via geoprobe (designated with B) in the vicinity of Landfill Area A [53, pp. 7-9, Exhibits A-D]. XRF field screening results indicated the presence of arsenic, chromium, lead, and mercury in each layer. The maximum concentration (in parentheses) for each layer included the following: for the 1 to 2 foot depth, arsenic (93.4 ppm in B21), chromium (605 ppm in B58), lead (16.9 ppm in B58), and mercury (0.331 ppm in B21); for the 4 to 5 foot depth, arsenic (169 ppm in B61), chromium (2,400 ppm in B21), lead (44.0 ppm in B21), and mercury (0.643 ppm in B58); for the 8 to 9 foot depth, arsenic (21.5 ppm in B76), chromium (44.3 ppm in B77), lead (10.2 in B58), mercury (0.120 ppm in B58); for the 8 to 12 depth, arsenic (21.5 ppm in B76) and chromium (44.3 ppm in B77); for the 13 to 14 foot depth arsenic (17.7 ppm in B20), chromium 3,200 ppm

in B20) and lead (23.2 ppm in B16); and for the 12 to 16 foot depth, arsenic (16 ppm in B78) and chromium (27.1 ppm in B76) [53, pp. 7-9, Table 2, Exhibit D].

From 17 December 1997 to 6 January 1998, REW conducted additional soil sampling utilizing a geoprobe throughout the site. Twenty additional borings (B105, B107, B108, B110, B111, B112, and B148 through B161) were advanced in the vicinity of Landfill Area A. Samples were collected from depths of 0-4 feet and 4-8 feet and analyzed for arsenic. Analytical results of the soil samples indicated maximum arsenic concentrations of 158.0 mg/Kg in B105 in the 0-4 foot depth, and 19,000 mg/Kg in B150 in the 5-6 foot depth from a layer identified as hides/tannery waste [54, p. 9, Table 1, pp. 10-11, Exhibits A-D].

On 21 and 22 November 2006, as part of the revised IRA and IHE evaluation, W&C collected 12 surface soil samples (0-1 foot bgs) (WC-1 through WC-12) from Landfill Area A [87, p. 3-1, Figure 2, and Table 1]. The samples collected were analyzed using XRF for arsenic and chromium, with a subset submitted for laboratory confirmatory analysis as well as chlorinated dioxin and hexavalent chromium analyses. Analytical results of the W&C soil samples collected from Landfill Area A indicated the presence of the following analytes (maximum concentration, location, and analytical method in parentheses): arsenic (209 mg/Kg in WC-11 by XRF and 83.5 mg/Kg in WC-9 by laboratory analysis); total chromium (5,889 mg.Kg in WC-10 by XRF and 1,070 mg/Kg in WC-3 by laboratory analysis); hexavalent chromium (333 mg/Kg in WC-10 by laboratory analysis); lead (126 mg/Kg in WC-12 by XRF); and chlorinated dioxins [7,923 picograms per gram (pg/g) as 2,3,7,8 tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) Toxic Equivalent (TEQ) concentration in WC-3 by laboratory analysis]. All congener analytes were detected in variable concentrations in all soil samples with reportable concentrations expressed in equivalents of 2,3,7,8-TCDD [87, pp. 4-2, 4-3, Tables 2-4].

Landfill Area B

The disposal area known as Landfill Area B is located along the Crane River near the former railroad spur, between the former railroad spur and the historic cemetery. In May 1984, SP excavated six test pits (12, 13, and 16 through 19) and collected soil samples in the suspected waste burial/disposal area (Landfill Area B) [14; 16, p. 2]. Layers of tannery waste and sludge were identified in the test pits including black organic waste, black oily waste, and lime with strong ammonia and sulfide odors [14, attached Test Pit Logs]. Selected test pit soil samples were analyzed via EP Toxicity for metals, total VOCs and petroleum hydrocarbons. Analytical results of the soil samples indicated the presence of VOCs (maximum concentration of total VOCs 11,500 µg/L in TP-18), petroleum hydrocarbons (maximum of 8,200 µg/L in Test Pit-18), and the following metals (maximum concentration in parentheses): cadmium (0.036 mg/L in Test Pit-19); chromium (0.13 mg/L in Test Pit-18); lead (0.36 mg/L in Test Pit-18); and silver (0.039 mg/L in Test Pit-18). All soil sample analytical results were below the EP Toxicity regulatory limits [14, attached Laboratory Reports]. Initial estimates of the area and volume of wastes in Landfill Area B were approximately 28,000 ft^2 and approximately 5,700 yd^3, respectively [14, p. 17].

In December 1985, SP conducted a supplemental investigation to the May 1984 sampling to refine the volume of sludge and buried tannery wastes [14, Appendix]. Six additional trenching test pits (T1, T2, and T4 through T7) were excavated in Landfill Area B and two monitoring wells were installed. The wells included one well (MW1) in Landfill Area B, and one well (MW2) outside of Landfill Area B near the cemetery. Analytical results of the selected soil samples collected during test pitting and well installation indicated the presence of the following

metals (maximum concentration in parentheses): arsenic (92.78 mg/Kg in T6/MW2); selenium (0.217 mg/Kg in T2); mercury (2.836 mg/Kg in T6/MW2); silver (2.879 mg/Kg in MW1); chromium (3,927 mg/Kg in T6/MW2); cadmium (2.459 mg/Kg in MW1); lead (119.6 mg/Kg in MW1); barium (29.47 mg/Kg T6/MW2); copper (263.3 mg/Kg in T6/MW2); and zinc (63.44 mg/Kg in T2) [14, Appendix Table 3]. Revised estimate of the disposed waste area and waste volume for Landfill Area B, based on the trenching test pits and monitoring well soil samples, were approximately 25,600 ft^2 and approximately 10,400 yd^3 [14, Appendix Summary of Results].

From December 1989 to May 1990, SP excavated tannery wastes and contaminated soils from Landfill Area B, treated and stabilized the soils, and then backfilled the soils into the constructed lined on-site containment cell (Waste Disposal Cell) [37].

In April 1990, SP collected six post-excavation soil samples from selected grids in the excavated portions of Landfill Area B [33, Appendix p. A-18]. Analytical results of the samples indicated the presence of total chromium and total lead at maximum concentrations of 829 mg/Kg (Landfill B Grid 5) and 105 mg/Kg (Landfill B Grid 6), respectively. The average total chromium and lead concentrations for the post-excavation grid samples for Landfill Area B were 586 mg/Kg and 28.1 mg/Kg, respectively [33, Appendix p. A-18]. Analytical results for the composited grid soil samples were below EP Toxicity reporting limits [33, Appendix p. A-17].

In June 1995, as part of site characterization, REW advanced two borings (BH-110 through BH-113) and excavated two test pits (TP-2 and TP-3) in the vicinity of Landfill Area B [38, p. P-8, Figure 2]. Only two samples, one from boring BH-113 and one from test pit TP-2, were submitted for analysis. Both samples were submitted for TPH, ABN, VOC, and metals analysis. Analytical results of the soil samples indicated the presence of TPH [131 mg/Kg in BH-113 (10-12 feet)] and 14 SVOCs in test pit sample TP-2 (8 feet), including the following: anthracene (327 ug/Kg); benzo(a)anthracene (1,010 ug/Kg); benzo(b)fluoranthene (2,490 ug/Kg); benzo(k)fluoranthene (2,810 ug/Kg); benzo(g,h,i)perylene (1,490 ug/Kg); chrysene (822 ug/Kg); dibenzo(a,h)anthracene (216 ug/Kg); fluoranthene (1,430 ug/Kg); indeno(1,2,3-cd)pyrene (1,460 ug/Kg); 3,4-methylphenol (1,010 ug/Kg); phenanthrene (388 ug/Kg); phenol (198 ug/Kg); and pyrene (1,240 ug/Kg) [38, p. P-23]. Metals analytical results of the soil samples indicated the presence of the following metals [with maximum concentration in sample TP-2 (8 feet) in parentheses]: arsenic (33.5 mg/Kg); cadmium (3.36 mg/Kg); total chromium (327 mg/Kg); lead (25.2 mg/Kg); and mercury (0.085 mg/Kg) [38, p. P-22].

In May and June 1996, in preparation for re-development of the property with 58 single family lots, REW advanced nine borings (B56, B57, B59, and B60 through B66) via geoprobe (designated with B) in the vicinity of Landfill Area B [53, p. 7-9, Table 2, Exhibits A-D]. Field screening results indicated the presence of arsenic, chromium, lead, and mercury in each layer. The maximum concentration (in parentheses) for each layer included: for the 1 to 2 foot depth, arsenic (312 ppm in B56), chromium (1.39 ppm in B56), lead (22.9 ppm in B56), and mercury (0.882 ppm in B56); for the 4 to 5 foot depth, arsenic (169 ppm in B61), chromium (12.7 ppm in B56), lead (8.37 ppm in B56), and mercury (0.265 ppm in B56); and for the 8 to 12 depth, arsenic (1,760 ppm in B63) and chromium (117 ppm in B64) [53, p. 7-9, Table 2, Exhibit D].

From 17 December 1997 to 6 January 1998, REW conducted additional soil sampling by a geoprobe throughout the property. Three additional borings (B102, B104, and B146) were advanced in the vicinity of Landfill Area B. Samples were collected from 0-4 feet and 4-8 feet depths and analyzed for arsenic. Analytical results of the soil samples indicated maximum

arsenic concentrations in the 0-4 feet depth interval of 30.0 mg/Kg in B146 and in the 4-8 foot depth interval of 8.0 mg/Kg in B146 [54, p. 9, Table 1, pp. 10-11, Exhibits A-D].

On 21 and 22 November 2006, as part of the revised IRA and IHE evaluation, W&C collected four surface soil samples (0-1 foot bgs) (WC-13 through WC-16) from Landfill Area B. The samples collected were analyzed using XRF for arsenic and chromium, with a subset submitted for laboratory confirmatory analysis as well as chlorinated dioxin and hexavalent chromium analyses. Analytical results of the W&C soil samples collected from Landfill Area B indicated the presence of the following analytes (maximum concentration, location, and analytical method in parentheses): arsenic (169 mg/Kg in WC-16 by XRF and 41.4 mg/Kg in WC-14 by laboratory analysis); total chromium (1,721 mg.Kg in WC-16 by XRF and 264 mg/Kg in WC-14 by laboratory analysis); hexavalent chromium (27.7 mg/Kg in WC-14 by laboratory analysis); lead (38 mg/Kg in WC-16 by XRF); and chlorinated dioxins (766 pg/g as 2,3,7,8-TCDD TEQ concentration in WC-15 by laboratory analysis). All dioxin congener analytes were detected in variable concentrations in all soil samples with reportable concentrations expressed in equivalents of 2,3,7,8-TCDD [87, pp. 4-2, 4-3, Tables 2-4].

Sludge Lagoon Area C

The two former sludge lagoons are located southeast of the Former Tannery Beamhouse and adjacent to the Crane River. In September 1986, SP advanced seven cores in the sludge lagoons and collected six composite soil samples from the cores [27, Site Plan]. The soil logs indicated primarily sand and gravels with narrow bands of cinder slag (0-9 inches in Core 4) and blue chips (0-3 inches in Core 7) [27, p. 3 attached soil logs]. The soil samples were analyzed for VOCs, pesticides/PCBs, and bulk metals by the SP in-house laboratory. No VOCs, pesticides, or PCBs were detected in the samples. Analytical results indicated the presence of the following metals (maximum concentration in parentheses): arsenic [9.01 mg/Kg in Core 7 (0-3 inches)]; cadmium [1.078 mg/Kg in Core 7 (0-3 inches)]; total chromium [7,650 mg/Kg in Core 7 (0-3 inches)]; lead [104.2 mg/Kg in Core 7 (0-3 inches)]; and mercury (0.012 mg/Kg in Composite 3 (0-6 inches)] [27, attached laboratory reports]. Initial estimates of the area and disposed waste volume of Sludge Lagoon Area C were approximately 8,100 ft^2 and approximately 300 yd^3, respectively [27].

From December 1989 to May 1990, SP excavated tannery wastes/contaminated soils from the Sludge Lagoon Area C, treated and stabilized the soils, and backfilled the soils into the constructed lined on-site containment cell (Waste Disposal Cell) [37].

In April 1990, SP collected four post-excavation soil samples from selected grids in the excavated portions of the Landfill C (here assumed to be the Sludge Lagoon Area C) [33, Appendix p. A-18]. Analytical results of the samples indicated the presence of total chromium and total lead at maximum concentrations of 460 mg/Kg (Landfill C Grid 3) and 18.5 mg/Kg (Landfill C Grid 4), respectively. The average total chromium and lead concentrations for the post-excavation grid samples for Landfill Area C were 125 mg/Kg and 18.0 mg/Kg, respectively [33, Appendix p. A-18]. Analytical results for the composited grid soil samples were below EP Toxicity reporting limits [33, Appendix p. A-17].

In June 1995, as part of site characterization, REW advanced two borings (BH-103 and BH-104) in the vicinity of the Sludge Lagoon Area C [38, p. P-8, Figure 2]. Analytical results of the soil samples indicated the presence of the following metals (maximum concentration in parentheses): arsenic [197 mg/Kg in BH-104 (0-2 feet)]; cadmium [13.8 mg/Kg in BH-103 (10-12 feet)];

chromium [148 mg/Kg in BH-104 (0-2 feet)]; lead [23.6 mg/Kg in BH-103 (10-12 feet)]; and mercury [0.117 mg/Kg in BH-103 (0-2 feet)] [38, p. P-22].

On 21 July 1995, REW collected six additional surface soil samples (SS-1 through SS-6) in a random pattern at a depth of 0-4 inches near the location of the June 1995 sludge lagoon boring sample locations (BH-103 and BH-104) to confirm the presence of arsenic in surface soils. The soil samples were analyzed by Geolabs, Inc. for arsenic. Analytical results of the soil samples indicted that two of the six samples (SS-1 at 46.5 mg/Kg and SS-3 at 57.8 mg/Kg) exceeded the surface soil Imminent Hazard threshold concentration of 40 mg/Kg [42, p. P-2].

On 30 August 1995, REW conducted additional soil sampling of the Sludge Lagoon Area C to delineate the horizontal extent of the arsenic-contaminated surface soils. Twenty-five surface soil (0-4 inches) samples (C-1 through C-25) were collected from a 25-foot grid set up over the former sludge lagoons. In addition, five surface soil samples (BS-1 through BS-5) were collected from random locations upgradient and cross-gradient to the former sludge lagoons [42, p. P-3]. The samples were analyzed for arsenic and selected samples for total chromium by Geolabs, Inc. Analytical results of the soil samples indicted that six of the 25 surface soils collected in the Sludge Lagoon Area C area exceeded the surface soil Imminent Hazard threshold concentration of 40 mg/Kg for arsenic (C-2 at 49.0 mg/Kg; C-6 at 75.9 mg/Kg; C-7 at 47.7 mg/Kg; C-9 at 79.0 mg/Kg; C-11 at 40.7 mg/Kg; and C-19 at 57.9 mg/Kg). Concentrations of chromium in the selected samples ranged from 23.0 mg/Kg (C-5) to 1,220 mg/Kg (C-22) [42].

In May and June 1996, in preparation for re-development of the property with 58 single family lots, REW advanced seven borings (B11, B16, B23, B24, B25, B30, and B31) via geoprobe (designated with B) in the vicinity of the Sludge Lagoon Area C (proposed Lots 31, 32, 38, 39, and 40, roadway, and open space areas B and F) [53, pp. 7-9, Exhibits A-D]. Field screening results indicated the presence of arsenic, chromium, lead, and mercury in each layer. The maximum concentration for the 0 to 2 foot depth is as follows (concentration and location in parentheses): arsenic (932 ppm in B16), chromium (83.3 ppm in B16), lead (24.1 ppm in B16), and mercury (1.05 ppm in B16) [53, pp. 7-9, Exhibits A-D].

In addition, to further delineate the lateral and vertical extent of the potential Imminent Hazard arsenic-contaminated soil in and around the former sludge lagoons, a 15-foot grid was established and 115 borings (HB001 through HB113, P-1 B-16, and P-2 B-16) were advanced within the grid using hand augers. A total of 106 borings were advanced to a depth of 0 to 1 feet and nine selected borings were advanced to 3 to 4 feet. Arsenic field screening results ranged from 1 ppm to 250 ppm and laboratory confirmation results ranged from 7.81 mg/Kg to 198 mg/Kg [55, Appendix A and attached laboratory reports].

From 17 December 1997 to 6 January 1998, REW conducted additional soil sampling utilizing a geoprobe on the property, with eight additional borings (B113, B114, B115, B125, B126, B128, B129, and B155) were advanced in the vicinity of Sludge Lagoon Area C. Samples were collected from 0-4 feet and 4-8 feet depths and analyzed for arsenic. Analytical results of the soil samples indicated maximum arsenic concentration in the 0-4 foot depth interval of 34.0 mg/Kg in B113 and in the 4-8 foot depth interval of 30.4 mg/Kg in B113 [54, p. 9, Table 1, pp. 10-11, Exhibits A-D].

On 21 and 22 November 2006, as part of the revised IRA and IHE evaluation, W&C collected 12 surface soil samples (0-1 foot bgs) (WC-17 through WC-28) from the Sludge Lagoon Area C. The samples collected were submitted to a laboratory for chlorinated dioxin and hexavalent

chromium analyses. Analytical results of the W&C soil samples collected from the Sludge Lagoon Area C indicated the presence of the following analytes (maximum concentration and location parentheses): hexavalent chromium (9.4 mg/Kg in WC-25) and chlorinated dioxins (957 pg/g as 2,3,7,8-TCDD TEQ concentration in WC-25). All dioxin congener analytes were detected in variable concentrations in all soil samples with reportable concentrations are expressed in equivalents of 2,3,7,8-TCDD [87, pp. 4-2, 4-3, Tables 2-4].

Based on the additional soil sampling, updated estimates of the area and disposed waste volume of Sludge Lagoon Area C were approximately 26,500 ft^2 and approximately 2,944 cubic yards, respectively [53, p. 31]. Currently, an area of approximately 130 ft by 130 ft (16,900 ft^2) is fenced off as an area of Imminent Hazard [98, Figures 3-5].

Waste Disposal Cell

The Waste Disposal Cell is located on the northwestern portion of the property adjacent to the parking area and MA Route 128 [149].

From December 1989 to May 1990, SP excavated tannery wastes/contaminated soils from Landfill Areas A and B and the Sludge Lagoon Area C, treated and stabilized the soils, and backfilled the soils into the constructed lined on-site containment cell (Waste Disposal Cell) [37]. The Waste Disposal Cell was constructed as an approximately 26-foot-deep excavation, followed by installation of 12 inches of sand, a 32-mil Hypalon liner, and an additional 12 inches of sand. The stabilized waste was then layered in the excavation in 18-inch lifts, compacted, sloped, and allowed to cure. A gas vent, consisting of a 1/16-inch slotted polyvinyl chloride (PVC) pipe, was installed in a layer of crushed stone on top of the stabilized waste. The cell was then capped with a 12-inch layer of sand, a 32-mil PVC liner, a second 12-inch sand layer, and two feet of fill and topsoil vegetated with grasses [33, p. 7, Figure 4]. Subsequent landfill gas monitoring did not detect landfill gases and the Town of Danvers Board of Health granted permission to seal the vent pipe in fall 1990 [33, p. 5].

Proposed plans of the Waste Disposal Cell estimated the area of the cell to be 120 ft by 120 ft (14,400 ft^2) with a depth of approximately 26 ft (total estimated volume of 13,866 yd^3) [33, p. 7, Figure 4]. The final total estimated areas and volumes of tannery wastes moved to the containment cell and final as-built plans of the containment cell were not found in available documentation. A later estimate by REW calculated a lower total estimated volume of 5,000 yd^3 of excavated tannery waste and sludge had been backfilled into the Waste Disposal Cell [38, p. P-2].

Upland Pile Area

In May and June 1996, in preparation for re-development of the property with 58 single family lots, REW advanced 21 borings (B32 through B45, B47 through B51, B67 and B68) via geoprobe in the vicinity of the upland areas between the former beamhouse and Route 128 [53, pp. 7-9, Table 2, Exhibits A-D]. Samples were collected and analyzed from four depth intervals at each location. Field screening results indicated the presence of arsenic, chromium, lead, and mercury in each layer. The maximum concentration (in parentheses) for each layer included: for the 1 to 2 foot depth, arsenic (102 ppm in B45), chromium (225 ppm in B45), lead (13.5 ppm in B68), and mercury (0.0281 ppm in B36); for the 4 to 5 foot depth, arsenic (9.02 ppm in B40), chromium (206 ppm in B38) and lead (7.03 ppm in B37); for the 8 to 9 foot depth, arsenic (15.3

ppm in B45), chromium (35.9 ppm in B40) and lead (5.75 ppm in B36); for the 13 to 14 foot depth, chromium (8.83 ppm in B34) [53, p. 7 and Table 2].

On 21 and 22 November 2006, as part of the revised IRA and IHE evaluation, W&C collected three surface soil samples (0-1 foot bgs) (WC-41 through WC-43) from the upland area between the historic cemetery and the adjacent retail parking (west of the former beamhouse). The samples collected were analyzed using XRF for arsenic and chromium, with a subset submitted for laboratory confirmatory analysis as well as chlorinated dioxin and hexavalent chromium analyses. Analytical results of the W&C soil samples collected from the Upland Pile Area indicated the presence of the following analytes (maximum concentration, location, and analytical method in parentheses): arsenic (166 mg/Kg in WC-41 by XRF and 12.8 mg/Kg in WC-42 by laboratory analysis); total chromium (3,457 mg/Kg in WC-41 by XRF and 22.2 mg/Kg in WC-42 by laboratory analysis); hexavalent chromium (13.1 mg/Kg in WC-41 by laboratory analysis); and chlorinated dioxins (11,359 pg/g as 2,3,7,8-TCDD TEQ concentration in WC-41 by laboratory analysis). All dioxin congener analytes were detected in variable concentrations in all soil samples with reportable concentrations expressed in equivalents of 2,3,7,8-TCDD [87, pp. 4-2, 4-3, Tables 2-4].

On 18 June 2007, W&C collected 25 additional surface soil (0-1 foot) samples in order to assess contaminant concentrations in the upland areas of the site as required by the MassDEP 24 May 2007 IRA conditional approval [98]. Twelve soil samples (WC-45 through WC-56) were collected in a grid in the area between the former beamhouse and Route 128; and 12 soil samples (WC-58 through WC-69) were collected in a grid in the area between the former beamhouse and Clinton Avenue [98, p. 2-1, Figure 2]. Arsenic concentrations in the surface soil samples ranged from 5.3 mg/Kg in WC-60 to 300 mg/Kg in WC-62 [98, p. 3-1, Tables 1-3]. Dioxin concentrations (expressed as 2,3,7,8-TCDD TEQ concentration) ranged from 1 pg/g in WC-45 to 4,762 pg/g in WC-51 [98, p. 3-2, Tables 1-3 , Figure 5].

The estimated area and volume of the contaminated Upland Pile Area soils was not found in available documentation. Based on previous surface soil sampling data and the extent of the fenced area designated as an Imminent Hazard, START estimates the area of contaminated soil within the Upland Pile Area to be 110 ft by 155 ft (17,050 ft^2) [98, Figures 3-5].

EPA Site Reassessment Waste/Source Sampling

On 23 May 2011, as part of the Creese & Cook Co. (Former) 1 SR, START personnel collected 23 soil/source samples (SO-01 through SO-05, SO-05B, SO-06 through SO-20, SO-25, and SO-26) from potential source areas located on the Creese & Cook Co. (Former) 1 property. In addition, on 5 December 2011, as part of a second phase of soil/source sampling for the Creese & Cook Co. (Former) 1 SR, START personnel collected 15 soil/source samples (SO-50 through SO-61, SO-64, SO-65, and SO-70) from source areas on the Creese & Cook Co. (Former) 1 property, as well as from areas not suspected to be impacted by site associated hazardous substances to document background soil conditions (SO-52, SO-53, SO-64,and SO-65). The soil/source samples were collected from the following areas: SO-01 through SO-05, SO-05B, and field duplicate SO-25 were collected from the Upland Pile Area located northwest of the former beamhouse footprint; SO-06 through SO-10 were collected from Landfill Area A and areas adjacent to the Former Tannery Beamhouse building footprint and debris; SO-11 through SO-15 were collected from the Landfill Area B located north of the Former Tannery Beamhouse building footprint; SO-16 through SO-20, field duplicate SO-26, SO-54, and SO-55 were collected from the Sludge Lagoon Area C located east of the Former Tannery Beamhouse

building footprint; SO-50 and SO-51 from areas adjacent to the northwestern property boundary and MA Route 128; SO-56 through SO-61 and field duplicate SO-70 were collected from a mixed soil/leather scrap pile adjacent to Landfill Area B and extending into the Crane River. Soil/source samples SO-52, SO-53, SO-64, and SO-65 were collected from an area adjacent to (west of) the Endicott and Russell Cemetery, to determine background concentrations of hazardous substances for comparison (see Figure 3) [149].

Soil/source samples SO-01 through SO-05, SO-05B, SO-06 through SO-20, SO-25, and SO-26 were submitted to CLP laboratories for PCB and total metal analyses; a CLP Non-Routine Analytical Services (RAS) laboratory for dioxin analysis; and delivery of analytical services (DAS) laboratory for hexavalent chromium and pH/oxidation reduction potential (ORP) analyses. In addition, soil/source samples SO-03, SO-04, SO-05B, SO-06 through SO-11, SO-14, SO-16, SO-20, and SO-26 were submitted to a CLP laboratory for SVOC analysis. Soil/source samples SO-50 through SO-61, SO-64, SO-65, and SO-70 were submitted to a CLP laboratory for total metals analysis; and SO-50, SO-51, SO-53, SO-56 through SO-61, SO-64, and SO-70 were submitted to a CLP Non-RAS laboratory for dioxin analysis [149].

Table 4 summarizes the soil/source samples collected by START on 23 May 2011 and 5 December 2011.

Table 4

Soil/Source Sample Summary: Creese & Cook Co. (Former) 1
Samples Collected by START on 23 May and 5 December 2011

Sample Location No.	Traffic Report No.	Date/ Time (hours)	Remarks	Sample Depth (feet)	Sample Description/Rationale
MATRIX: Surface Soil/Source					
SO-01 (MS/MSD)	A3X31 MA3X31 D30279	5/23/2011 1415	Grab	0.5 to 2	Soil/source sample collected using a hand auger from the fenced, Upland Pile Area located northwest of the Former Tannery Beamhouse building, to document the presence of any hazardous substances in this area. Material was light brown, fine SAND and SILT, little fine gravel, trace clay. PID = 0.0; FID = NR 42° 33′ 16.1″ North Latitude 70° 55′ 52.1″ West Longitude
SO-02	A3X32 MA3X32 D30280	5/23/2011 1433	Grab	1.5 to 2.5	Soil/source sample collected using a hand auger from the fenced, Upland Pile Area located northwest of the Former Tannery Beamhouse building, to document the presence of any hazardous substances in this area. Material was brown, SILT and fine SAND, trace medium-to-coarse sand, medium-to-coarse gravel, and clay. PID = 0.0; FID = NR 42° 33′ 15.7″ North Latitude 70° 55′ 51.9″ West Longitude
SO-03	A3X33 MA3X33 D30281	5/23/2011 1415	Grab	1 to 1.8	Soil/source sample collected using a hand auger from the fenced Upland Pile Area located northwest of the Former Tannery Beamhouse building footprint, to document the presence of any hazardous substances in this area. Material was dark brown, SILT, little fine sand, trace medium-to-coarse sand, clay, and organics. PID = 0.7; FID = NR 42° 33′ 15.6″ North Latitude 70° 55′ 51.1″ West Longitude

Table 4

Soil/Source Sample Summary: Creese & Cook Co. (Former) 1
Samples Collected by START on 23 May and 5 December 2011 (Continued)

Sample Location No.	Traffic Report No.	Date/ Time (hours)	Remarks	Sample Depth (feet)	Sample Description/Rationale
MATRIX: Surface Soil/Source					
SO-04	A3X34 MA3X34 D30282	5/23/2011 1405	Grab	0.5 to 2	Soil/source sample collected using a hand auger from the fenced Upland Pile Area located northwest of the Former Tannery Beamhouse building footprint, to document the presence of any hazardous substances in this area. Material was dark brown, SILT, some fine gravel, little fine-to-coarse sand, trace clay. PID = 0.0; FID = NR 42° 33′ 14.9″ North Latitude 70° 55′ 51.7″ West Longitude
SO-05	A3X35 MA3X35 D30283	5/23/2011 1350	Grab	7 to 9	Soil/source sample collected using a hand auger from the fenced Upland Pile Area, located northwest of the Former Tannery Beamhouse building footprint, to document the presence of any hazardous substances in this area. Material was dark brown, SILT, trace fine gravel and fine-to-coarse sand. PID = 0.0; FID = NR 42° 33′ 15.3″ North Latitude 70° 55′ 51.8″ West Longitude
SO-05B	A3TS9 MA3TS9 D30266	5/23/2011 1355	Grab	15 to 16	Soil/source sample collected using a hand auger from the fenced Upland Pile Area, located northwest of the Former Tannery Beamhouse building footprint, to document the presence of any hazardous substances in this area. Material was dark brown, SILT, trace fine-to-coarse sand, fine gravel, and organics (rootlets). PID = 0.0; FID = NR 42° 33′ 15.3″ North Latitude 70° 55′ 51.8″ West Longitude

Table 4

Soil/Source Sample Summary: Creese & Cook Co. (Former) 1
Samples Collected by START on 23 May and 5 December 2011 (Continued)

Sample Location No.	Traffic Report No.	Date/ Time (hours)	Remarks	Sample Depth (feet)	Sample Description/Rationale
MATRIX: Surface Soil/Source					
SO-06	A3X36 MA3X36 D30284	5/23/2011 1104	Grab	1 to 2	Soil/source sample collected using a hand auger from the fenced Imminent Hazard area, Landfill Area A, at a location adjacent to the northwest wall of the Former Tannery Beamhouse building footprint, to document the presence of any hazardous substances in this area. Material was brown, SILT and fine-to-coarse SAND, trace fine gravel, clay, and organics. PID = 0.0; FID = NR 42° 33′ 14.6″ North Latitude 70° 55′ 50.9″ West Longitude
SO-07	A3X37 MA3X37 D30285	5/23/2011 1012	Grab	0.5 to 1.5	Soil/source sample collected using a hand auger from the fenced Imminent Hazard area, Landfill Area A, at a location adjacent to and northeast of the Former Tannery Beamhouse building footprint, to document the presence of any hazardous substances in this area. Material was dark brown, SILT, some fine sand, trace fine gravel, medium-to-coarse sand, and clay. PID = NR; FID = NR 42° 33′ 15.3″ North Latitude 70° 55′ 49.3″ West Longitude
SO-08	A3X38 MA3X38 D30286	5/23/2011 1035	Grab	5.5 to 6.5	Soil/source sample collected using a hand auger from the fenced Imminent Hazard area, Landfill Area A, at a location adjacent to and northeast of the Former Tannery Beamhouse building footprint, to document the presence of any hazardous substances in this area. Material was medium-to-light brown, CLAY, little silt, trace fine-to-coarse sand and organics. PID = 0.2; FID = NR 42° 33′ 15.8″ North Latitude 70° 55′ 48.6″ West Longitude
SO-09	A3X39 MA3X39 D30287	5/23/2011 0933	Grab	3.5 to 4	Soil/source sample collected using a hand auger from the fenced Imminent Hazard area, Landfill Area A, at a location adjacent to and northeast of the Former Tannery Beamhouse building footprint, to document the presence of any hazardous substances in this area. Material was medium brown SILT, some fine sand, trace fine-to-medium gravel, clay, debris (white powder/crystalline material, metal, plastic), and shell fragments. PID = 0.0; FID = NR 42° 33′ 14.8″ North Latitude 70° 55′ 48.1″ West Longitude

Table 4

Soil/Source Sample Summary: Creese & Cook Co. (Former) 1
Samples Collected by START on 23 May and 5 December 2011 (Continued)

Sample Location No.	Traffic Report No.	Date/ Time (hours)	Remarks	Sample Depth (feet)	Sample Description/Rationale
MATRIX: Surface Soil/Source					
SO-10	A3X40 MA3X40 D30288	5/23/2011 0930	Grab	4 to 5	Soil/source sample collected using a hand auger from the fenced Imminent Hazard area, Landfill Area A, at a location adjacent to and east of the Former Tannery Beamhouse building footprint, to document the presence of any hazardous substances in this area. Material was light brown-to-brown, SILT and fine SAND, trace medium-to-coarse sand, clay, and organics (rootlets). PID = 0.02; FID = NR 42° 33′ 14.1″ North Latitude 70° 55′ 47.6″ West Longitude
SO-11 (MS/MSD)	A3X41 MA3X41 D30289	5/23/2011 1206	Grab	4.5 to 5.5	Soil/source sample collected using a hand auger from the fenced Imminent Hazard area, Landfill Area B, located along the former railroad spur and north of the Former Tannery Beamhouse building footprint, to document the presence of any hazardous substances in this area. Material was light brown-to-tan, fine SAND, little silt, trace organics (rootlets). PID = 0.2; FID = 0.03 42° 33′ 18.6″ North Latitude 70° 55′ 49.7″ West Longitude
SO-12	A3X42 MA3X42 D30290	5/23/2011 1246	Grab	0.5 to 1.2	Soil/source sample collected using a hand auger from the fenced Imminent Hazard area, Landfill Area B, located along the former railroad spur and north of the Former Tannery Beamhouse building footprint, to document the presence of any hazardous substances in this area. Material was medium-to-light brown, fine-to-coarse SAND, little fine gravel and silt, trace organics. PID = 0.8; FID = NR 42° 33′ 19.0″ North Latitude 70° 55′ 49.3″ West Longitude
SO-13	A3X43 MA3X43 D30291	5/23/2011 1242	Grab	0.8 to 1.5	Soil/source sample collected using a hand auger from the fenced Imminent Hazard area, Landfill Area B, located along the former railroad spur and north of the Former Tannery Beamhouse building footprint, to document the presence of any hazardous substances in this area. Material was dark brown, fine-to-coarse SAND, little silt and fine-to-medium gravel, trace organics (roots). PID = 0.0; FID = 0.0 42° 33′ 19.3″ North Latitude 70° 55′ 48.4″ West Longitude

Table 4

Soil/Source Sample Summary: Creese & Cook Co. (Former) 1
Samples Collected by START on 23 May and 5 December 2011 (Continued)

Sample Location No.	Traffic Report No.	Date/ Time (hours)	Remarks	Sample Depth (feet)	Sample Description/Rationale
MATRIX: Surface Soil/Source					
SO-14	A3X44 MA3X44 D30292	5/23/2011 1214	Grab	1.5 to 2	Soil/source sample collected using a hand auger from the fenced Imminent Hazard area, Landfill Area B, located along the former railroad spur and north of the Former Tannery Beamhouse building footprint, to document the presence of any hazardous substances in this area. Material was brown, fine-to-coarse SAND, some silt, trace fine gravel and clay. PID = 0.0; FID = 0.0 42° 33′ 18.2″ North Latitude 70° 55′ 48.9″ West Longitude
SO-15	A3X45 MA3X45 D30293	5/23/2011 1215	Grab	1.5 to 2.5	Soil/source sample collected using a hand auger from the fenced Imminent Hazard area, Landfill Area B, located along the former railroad spur and north of the Former Tannery Beamhouse building footprint, to document the presence of any hazardous substances in this area. Material was brown, fine-to-coarse SAND, little fine-to-medium gravel, trace silt. Area covered with approx. 0.5 ft crushed gravel. PID = 0.0; FID = NR 42° 33′ 18.7″ North Latitude 70° 55′ 49.1″ West Longitude
SO-16	A3X46 MA3X46 D30294	5/23/2011 1208	Grab	2 to 3	Soil/source sample collected using a hand auger from the fenced Imminent Hazard area, Sludge Lagoon Area C, located east of the Former Tannery Beamhouse building footprint, to document the presence of any hazardous substances in this area. Material was medium-to-dark brown, fine-to-coarse SAND, trace fine gravel, silt, and clay. Decay odor noted. PID = 0.2; FID = 0.0 42° 33′ 13.5″ North Latitude 70° 55′ 45.8″ West Longitude
SO-17	A3X47 MA3X47 D30295	5/23/2011 1210	Grab	2 to 2.5	Soil/source sample collected using a hand auger from the fenced Imminent Hazard area, Sludge Lagoon Area C, located east of the Former Tannery Beamhouse Building footprint, to document the presence of any hazardous substances in this area. Material was dark brown, fine-to-coarse SAND, little silt, trace fine gravel and clay. PID = 0.0; FID = NR 42° 33′ 13.0″ North Latitude 70° 55′ 45.3″ West Longitude

Table 4

Soil/Source Sample Summary: Creese & Cook Co. (Former) 1
Samples Collected by START on 23 May and 5 December 2011 (Continued)

Sample Location No.	Traffic Report No.	Date/ Time (hours)	Remarks	Sample Depth (feet)	Sample Description/Rationale
MATRIX: Surface Soil/Source					
SO-18	A3X48 MA3X48 D30296	5/23/2011 1144	Grab	1 to 2	Soil/source sample collected using a hand auger from the fenced Imminent Hazard area, Sludge Lagoon Area C, located east of the Former Tannery Beamhouse building footprint, to document the presence of any hazardous substances in this area. Material was dark brown, coarse SAND and coarse GRAVEL, trace silt. Decay odor noted. PID = 0.0; FID = NR 42° 33′ 12.4″ North Latitude 70° 55′ 45.9″ West Longitude
SO-19	A3X49 MA3X49 D30297	5/23/2011 1115	Grab	2.5 to 3	Soil/source sample collected using a hand auger from the fenced Imminent Hazard area, Sludge Lagoon Area C, located east of the Former Tannery Beamhouse building footprint, to document the presence of any hazardous substances in this area. Material was brown-to-dark brown, fine-to-coarse SAND, trace clay, silt, and fine gravel. PID = 0.0; FID = NR 42° 33′ 12.9″ North Latitude 70° 55′ 46.7″ West Longitude
SO-20	A3X50 MA3X50 D30298	5/23/2011 1107	Grab	0 to 2	Soil/source sample collected using a hand auger from the fenced Imminent Hazard area, Sludge Lagoon Area C, located east of the Former Tannery Beamhouse building footprint, to document the presence of any hazardous substances in this area. Material was brown-to-dark brown, fine-to-coarse SAND, some fine-to-coarse gravel, little silt, trace clay and organics. PID = 0.0; FID = NR 42° 33′ 12.9″ North Latitude 70° 55′ 46.1″ West Longitude
SO-25	A3X55 MA3X55 D30303	5/23/2011 1350	Grab	7 to 9	Field duplicate of SO-05, collected for quality control.
SO-26	A3X56 MA3X56 D30304	5/23/2011 1107	Grab	0 to 2	Field duplicate of SO-20, collected for quality control.

Table 4

Soil/Source Sample Summary: Creese & Cook Co. (Former) 1
Samples Collected by START on 23 May and 5 December 2011 (Continued)

Sample Location No.	Traffic Report No.	Date/ Time (hours)	Remarks	Sample Depth (feet)	Sample Description/Rationale
MATRIX: Surface Soil/Source					
SO-50	A3XC3 MA3XC3	12/5/2011 1000	Grab	0 to 1	Soil/source sample collected using a hand auger adjacent to the northwestern property boundary, to determine the presence of any hazardous substances that may have been disposed of in this area (total metals and dioxin analyses only). Material was brown-to-yellow-brown, SILT and CLAY, trace fine-to-coarse sand, trace organics, trace debris (brick and concrete fragments), trace fine gravel. PID = 0.0 42° 33′ 18.5″ North Latitude 70° 55′ 53.9″ West Longitude
SO-51	A3XC4 MA3XC4	12/5/2011 1015	Grab	0 to 1.5	Soil/source sample collected using a hand auger adjacent to the northwestern property boundary, to determine the presence of any hazardous substances that may have been disposed of in this area (total metals and dioxin analyses only). Material was brown, fine-to-coarse SAND and SILT, trace organics, trace fine-to-medium gravel. PID = 0.0 42° 33′ 18.0″ North Latitude 70° 55′ 55.4″ West Longitude
SO-52	MA3XC5	12/5/2011 1008	Grab	0.7 to 1.5	Soil/source sample collected using a hand auger adjacent to (west of) the cemetery wall, to establish concentration levels for potential background soil/source sample comparison (total metals analysis only). Material was brown-to-orange-brown, SILT and fine-to-coarse SAND, trace organics, trace fine gravel. PID = 0.0 42° 33′ 17.2″ North Latitude 70° 55′ 51.2″ West Longitude

Table 4

Soil/Source Sample Summary: Creese & Cook Co. (Former) 1
Samples Collected by START on 23 May and 5 December 2011 (Continued)

Sample Location No.	Traffic Report No.	Date/ Time (hours)	Remarks	Sample Depth (feet)	Sample Description/Rationale
MATRIX: Surface Soil/Source					
SO-53	A3XC6 MA3XC6	12/5/2011 1009	Grab	0.7 to 2	Soil/source sample collected using a hand auger adjacent to (west of) the cemetery wall, to establish concentration levels for potential background soil/source sample comparison (total metals and dioxin analyses only). Material was brown, SILT and fine-to-medium SAND, trace organics, trace fine-to-medium gravel, trace clay. PID = 0.0 42° 33′ 17.1″ North Latitude 70° 55′ 51.2″ West Longitude
SO-54	MA3XC7	12/5/2011 1350	Grab	0 to 0.25	Soil/source sample collected using a metal scoop within Sludge Lagoon Area C, to determine the presence of any hazardous substances that may have been disposed of in this area (total metals analysis only). Material was dark brown, fine-to-coarse SAND and SILT, trace organics, trace fine gravel. PID = 0.0 42° 33′ 13.1″ North Latitude 70° 55′ 45.5″ West Longitude
SO-55	MA3XC8	12/5/2011 1355	Grab	0 to 0.25	Soil/source sample collected using a metal scoop within Sludge Lagoon Area C, to determine the presence of any hazardous substances that may have been disposed of in this area (total metals analysis only). Material was dark brown, SILT and CLAY, little fine-to-coarse sand, trace organics (rootlets). PID = 0.0 42° 33′ 12.9″ North Latitude 70° 55′ 46.4″ West Longitude
SO-56	A3XC9 MA3XC9	12/5/2011 1136	Grab	0 to 0.25	Soil/source sample collected using a metal scoop from an erosional riverbank slope within the mixed soil/leather scrap pile located adjacent to Landfill Area B on the northern portion of the property, to determine the presence of any hazardous substances that may have been disposed of in this area (total metals and dioxin analyses only). Material was dark brown, SILT, trace fine-to-coarse sand, trace debris (metal, leather), trace organics (rootlets). PID = 0.0 42° 33′ 19.5″ North Latitude 70° 55′ 49.8″ West Longitude

Table 4

Soil/Source Sample Summary: Creese & Cook Co. (Former) 1
Samples Collected by START on 23 May and 5 December 2011 (Continued)

Sample Location No.	Traffic Report No.	Date/ Time (hours)	Remarks	Sample Depth (feet)	Sample Description/Rationale
MATRIX: Surface Soil/Source					
SO-57	A3XD0 MA3XD0	12/5/2011 1115	Grab	0 to 0.25	Soil/source sample collected using a metal scoop from the mixed soil/leather scrap pile located adjacent to Landfill Area B, on the northern portion of the property, to determine the presence of any hazardous substances that may have been disposed of in this area (total metals and dioxin analyses only). Material was reddish brown, organic-rich (leather and organic fibers) SILT. PID = 0.0 42° 33′ 19.4″ North Latitude 70° 55′ 49.9″ West Longitude
SO-58	A3XD1 MA3XD1	12/5/2011 1110	Grab	0 to 1	Soil/source sample collected using a metal scoop from the mixed soil/leather scrap pile located adjacent to Landfill Area B, on the northern portion of the property, to determine the presence of any hazardous substances that may have been disposed of in this area (total metals and dioxin analyses only). Material was dark brown, organic-rich (organic fibers, rootlets) SILT, trace fine-to-medium sand. PID = 0.0 42° 33′ 19.4″ North Latitude 70° 55′ 49.8″ West Longitude
SO-59	A3XD2 MA3XD2	12/5/2011 1138	Grab	0 to 0.25	Soil/source sample collected using a metal scoop from an erosional riverbank slope within the mixed soil/leather scrap pile located adjacent to Landfill Area B, on the northern portion of the property, to determine the presence of any hazardous substances that may have been disposed of in this area (total metals and dioxin analyses only). Material was dark brown, SILT, some fine-to-coarse sand, little organics, trace clay. PID = 0.0 42° 33′ 19.5″ North Latitude 70° 55′ 49.7″ West Longitude

Table 4

Soil/Source Sample Summary: Creese & Cook Co. (Former) 1
Samples Collected by START on 23 May and 5 December 2011 (Continued)

Sample Location No.	Traffic Report No.	Date/ Time (hours)	Remarks	Sample Depth (feet)	Sample Description/Rationale
MATRIX: Surface Soil/Source					
SO-60	A3XD3 MA3XD3	12/5/2011 1156	Grab	0 to 0.25	Soil/source sample collected using a metal scoop from the mixed soil/leather scrap pile located adjacent to Landfill Area B, on the northern portion of the property, to determine the presence of any hazardous substances that may have been disposed of in this area (total metals and dioxin analyses only). Material was brown, organic-rich SILT, little fine-to-coarse sand, trace debris (leather and a chalk-like substance). PID = 0.0 42° 33′ 19.3″ North Latitude 70° 55′ 49.6″ West Longitude
SO-61	A3XD4 MA3XD4	12/5/2011 1153	Grab	0.25 to 0.8	Soil/source sample collected using a hand auger from an erosional riverbank slope within the mixed soil/leather scrap pile located adjacent to Landfill Area B, on the northern portion of the property, to determine the presence of any hazardous substances that may have been disposed of in this area (total metals and dioxin analyses only). Material was dark brown, SILT and fine-to-coarse SAND, little organics, trace debris (metal), trace fine gravel. PID = 0.0 42° 33′ 19.5″ North Latitude 70° 55′ 49.9″ West Longitude
SO-64	A3XD7 MA3XD7	12/5/2011 1425	Grab	2.5 to 3.25	Soil/source sample collected using a hand auger adjacent to (west of) the cemetery wall, to establish concentration levels for potential background soil/source sample comparison (total metals and dioxin analyses only). Material was light brown, fine-to-coarse SAND, some silt, trace fine-to-medium gravel, trace organics. PID = 0.0 42° 33′ 17.2″ North Latitude 70° 55′ 51.2″ West Longitude

Table 4

Soil/Source Sample Summary: Creese & Cook Co. (Former) 1
Samples Collected by START on 23 May and 5 December 2011 (Concluded)

Sample Location No.	Traffic Report No.	Date/ Time (hours)	Remarks	Sample Depth (feet)	Sample Description/Rationale
MATRIX: Surface Soil/Source					
SO-65	MA3XD8	12/5/2011 1430	Grab	2.5 to 3.25	Soil/source sample collected using a hand auger adjacent to (west of) the cemetery wall, to establish concentration levels for potential background soil/source sample comparison (total metals analysis only). Material was medium-to-light brown, SAND, some silt, trace organics. PID = 0.0 42° 33′ 17.1″ North Latitude 70° 55′ 51.2″ West Longitude
SO-70	A3XD9 MA3XD9	12/5/2011 1110	Grab	0 to 1	Field Duplicate of SO-58, collected for quality control.

MS/MSD	=	Matrix Spike/Matrix Spike Duplicate.	NR	=	Not recorded.
PID	=	Photoionization Detector.	FID	=	Flame Ionization Detector.
°	=	Degrees.	″	=	Seconds.
′	=	Minutes.	No.	=	Number.
bgs	=	Below ground surface.	hrs	=	Hours.
START	=	Superfund Technical Assessment and Response Team III.			

[149; 160-178]

Complete analytical results of START soil/source samples, including quantitation and reporting limits, are presented in *Attachment A* of this report. Sample results qualified with a "J" on analytical tables are considered approximate because of limitations identified during analytical data validation. Sample results qualified with a "U" on analytical tables indicate the substances were analyzed for, but not detected, and the associated numerical value is the sample-adjusted Contract Required Quantitation Limit (CRQL). Sample results qualified with a "UJ" on analytical tables indicate the substances were analyzed for, but not detected, and the associated numerical value is the estimated sample-adjusted CRQL. Sample results qualified with an "EB" on analytical tables indicate that the compound or element was identified in an aqueous equipment blank used to assess field contamination associated with surface soil/source samples. Sample results qualified with an "R" on analytical tables were rejected due to failure of one or more quality control parameters identified during data validation. Sample results qualified with "EMPC" on analytical tables are estimated maximum possible concentrations [149; 160-168].

Complete analytical results of START equipment rinsate, trip, and preservative blank samples, collected by START in accordance with the Site-Specific Quality Assurance Project Plan (QAPP) for the Region I START Contract, are presented in *Attachment B* of this report [149; 160-168].

Table 5 is a summary of organic compounds and inorganic elements detected through laboratory analyses of soil/source samples. For each sample location, a dioxin/furan congener or total metal

is listed if it is detected at a concentration greater than or equal to three times the highest background sample's concentration [SO-52 (total metals analysis only), SO-53, SO-64, and SO-65 (total metals analysis only)]. However, if a substance is not detected in the background samples, the highest background sample-adjusted CRQL is used as the comparison value. These substances are listed if they occurred at a value equal to or greater than the background sample's sample-adjusted CRQL and are designated by their approximate relative concentration above these values. Based on an examination of the two background samples submitted for dixion/furan analysis and the four samples submitted for total metals analysis, the highest concentration for each dioxin/furan congener or total metal is used in comparison in order to be the most conservative. Therefore, in some cases surface soil/source samples are compared against subsurface background soil samples, and vice versa. For substances where the background sample concentration has been rejected, the compound or element is not evaluated further [160-178].

Analytical results of soil/source samples submitted for dioxin and total metals analyses are also compared against their respective MassDEP MCP Method 1 S-1/GW-1 Standard and MassDEP Imminent Hazard Standard (where applicable). Bolded values indicate the compound or element was detected at a concentration equal to or greater than its respective MassDEP MCP Method 1 S-1/GW-1 Standard, and bolded and italicized values indicate the compound or element was detected at a concentration equal to or greater than its respective MassDEP Imminent Hazard Standard [117].

Samples presented in Table 5, which were submitted for SVOC, PCB, hexavalent chromium, and asbestos analyses are compared against their respective MassDEP MCP Method 1 S-1/GW-1 Standard and/or MassDEP Imminent Hazard Standard (where applicable) and are listed if they exceed these standards [117].

Table 5

Summary of Analytical Results
Soil/Source Sample Analysis for Creese & Cook Co. (Former) 1

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	Mass DEP Method 1 S-1/GW-1	Mass DEP Imminent Hazard*
SO-01	**DIOXINS/FURANS**									
	1,2,3,6,7,8-HxCDD	0.903	J	ng/Kg	0.75	U	ng/Kg	1.2 × SQL	NL/NA	NL/NA
	INORGANICS									
	Thallium	3.1	J	mg/Kg	3.0	UJ	mg/Kg	1.0 × SQL	8 mg/Kg	NL/NA
SO-02	**DIOXINS/FURANS**									
	2,3,7,8-TCDD	3.24	J	ng/Kg	0.24	U	ng/Kg	13.4 × SQL	NL/NA	NL/NA
	1,2,3,7,8-PeCDD	4.6	J	ng/Kg	0.88	U	ng/Kg	5.2 × SQL	NL/NA	NL/NA
	1,2,3,4,7,8-HxCDD	19.7	J	ng/Kg	0.73	U	ng/Kg	26.8 × SQL	NL/NA	NL/NA
	1,2,3,6,7,8-HxCDD	274	J	ng/Kg	0.75	U	ng/Kg	364.4 × SQL	NL/NA	NL/NA
	1,2,3,7,8,9-HxCDD	71.2	J	ng/Kg	0.77	U	ng/Kg	92.2 × SQL	NL/NA	NL/NA
	1,2,3,4,6,7,8-HpCDD	9,000	J	ng/Kg	21.2		ng/Kg	424.5 × Ref	NL/NA	NL/NA
	1,2,3,4,6,7,8,9-OCDD	102,000	J	ng/Kg	1,440		ng/Kg	70.8 × Ref	NL/NA	NL/NA
	2,3,7,8-TCDF	0.914	EMPC	ng/Kg	0.26	U	ng/Kg	3.5 × SQL	NL/NA	NL/NA
	1,2,3,7,8-PeCDF	1.4	EMPC	ng/Kg	0.23	U	ng/Kg	6.2 × SQL	NL/NA	NL/NA
	2,3,4,7,8-PeCDF	1.47	J	ng/Kg	0.35	U	ng/Kg	4.2 × SQL	NL/NA	NL/NA
	1,2,3,4,7,8-HxCDF	22.1	J EB	ng/Kg	0.3	U	ng/Kg	72.7 × SQL	NL/NA	NL/NA
	1,2,3,6,7,8-HxCDF	11.3	J EB	ng/Kg	0.31	U	ng/Kg	36.2 × SQL	NL/NA	NL/NA
	2,3,4,6,7,8-HxCDF	25.5	J	ng/Kg	0.35	U	ng/Kg	73.9 × SQL	NL/NA	NL/NA
	1,2,3,4,6,7,8-HpCDF	961	J	ng/Kg	1.77	J	ng/Kg	542.9 × Ref	NL/NA	NL/NA
	1,2,3,4,7,8,9-HpCDF	30.5	J	ng/Kg	0.6	U	ng/Kg	51.1 × SQL	NL/NA	NL/NA
	1,2,3,4,6,7,8,9-OCDF	1,230	J	ng/Kg	3.05	J	ng/Kg	403.3 × Ref	NL/NA	NL/NA
	Toxicity Equivalent Factor	**182**	**J**	ng/Kg	0.663	J	ng/Kg	274.5 × Ref	20 ng/Kg	NL/NA

Table 5

Summary of Analytical Results
Soil/Source Sample Analysis for Creese & Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	Mass DEP Method 1 S-1/GW-1		Mass DEP Imminent Hazard*
SO-02	**INORGANICS**										
	Arsenic	**93.1**	**J**	**mg/Kg**	11.4		mg/Kg	8.2 × Ref	20	mg/Kg	NA
	Calcium	3,700		mg/Kg	867		mg/Kg	4.3 × Ref	NL		NL/NA
	Chromium (Total)	**356**	**EB**	**mg/Kg**	17.3		mg/Kg	20.6 × Ref	30	mg/Kg	NA
	Mercury	0.20		mg/Kg	0.04	J	mg/kg	5.0 × Ref	20	mg/Kg	NA
	Nickel †	**20.4**		**mg/Kg**		NA		NA	20	mg/Kg	NL/NA
SO-03	**DIOXINS/FURANS**										
	2,3,7,8-TCDD	20	J	ng/Kg	0.24	U	ng/Kg	82.6 × SQL	NL/NA		NL/NA
	1,2,3,7,8-PeCDD	24.1	J	ng/Kg	0.88	U	ng/Kg	27.4 × SQL	NL/NA		NL/NA
	1,2,3,4,7,8-HxCDD	111	J	ng/Kg	0.73	U	ng/Kg	151.2 × SQL	NL/NA		NL/NA
	1,2,3,6,7,8-HxCDD	1,570	J EB	ng/Kg	0.75	U	ng/Kg	2,088 × SQL	NL/NA		NL/NA
	1,2,3,7,8,9-HxCDD	380	J	ng/Kg	0.77	U	ng/Kg	492.2 × SQL	NL/NA		NL/NA
	1,2,3,4,6,7,8-HpCDD	51,000	J EB	ng/Kg	21.2		ng/Kg	2,406 × Ref	NL/NA		NL/NA
	1,2,3,4,6,7,8,9-OCDD	540,000	J EB	ng/Kg	1,440		ng/Kg	375 × Ref	NL/NA		NL/NA
	2,3,7,8-TCDF	1.91	J EB	ng/Kg	0.26	U	ng/Kg	7.4 × SQL	NL/NA		NL/NA
	1,2,3,7,8-PeCDF	2.84	J	ng/Kg	0.23	U	ng/Kg	12.6 × SQL	NL/NA		NL/NA
	2,3,4,7,8-PeCDF	4.66	J	ng/Kg	0.35	U	ng/Kg	13.3 × SQL	NL/NA		NL/NA
	1,2,3,4,7,8-HxCDF	75.6	J	ng/Kg	0.3	U	ng/Kg	248.7 × SQL	NL/NA		NL/NA
	1,2,3,6,7,8-HxCDF	31.2	J	ng/Kg	0.31	U	ng/Kg	100 × SQL	NL/NA		NL/NA
	1,2,3,7,8,9-HxCDF	1.03	EMPC	ng/Kg	0.47	U	ng/Kg	2.2 × SQL	NL/NA		NL/NA
	2,3,4,6,7,8-HxCDF	199	J	ng/Kg	0.35	U	ng/Kg	576.8 × SQL	NL/NA		NL/NA

Table 5

Summary of Analytical Results
Soil/Source Sample Analysis for Creese & Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	Mass DEP Method 1 S-1/GW-1		Mass DEP Imminent Hazard*
SO-03	**DIOXINS/FURANS**										
	1,2,3,4,6,7,8-HpCDF	2,810	J EB	ng/Kg	1.77	J	ng/Kg	1,588 × Ref	NL/NA		NL/NA
	1,2,3,4,7,8,9-HpCDF	89.3	J	ng/Kg	0.6	U	ng/Kg	149.6 × SQL	NL/NA		NL/NA
	1,2,3,4,6,7,8,9-OCDF	1,800	J	ng/Kg	3.05	J	ng/Kg	590.2 × Ref	NL/NA		NL/NA
	Toxicity Equivalent Factor	**984**	**J**	**ng/Kg**	0.663	J	ng/Kg	1,484 × Ref	20	ng/Kg	NL/NA
	INORGANICS										
	Arsenic	**160**	**J**	**mg/Kg**	11.4		mg/Kg	14 × Ref	20	mg/Kg	NA
	Calcium	14,200		mg/Kg	867		mg/Kg	16.4 × Ref	NL/NA		NL/NA
	Chromium (Total)	**2,360**		**mg/Kg**	17.3		mg/Kg	136.4 × Ref	30	mg/Kg	NA
	Mercury	0.26		mg/Kg	0.04	J	mg/kg	6.5 × Ref	20	mg/Kg	NA
SO-04	**DIOXINS/FURANS**										
	2,3,7,8-TCDD	10.2	J	ng/Kg	0.24	U	ng/Kg	42.1 × SQL	NL/NA		NL/NA
	1,2,3,7,8-PeCDD	9.95	J	ng/Kg	0.88	U	ng/Kg	11.3 × SQL	NL/NA		NL/NA
	1,2,3,4,7,8-HxCDD	45.7	J	ng/Kg	0.73	U	ng/Kg	62.3 × SQL	NL/NA		NL/NA
	1,2,3,6,7,8-HxCDD	890	J EB	ng/Kg	0.75	U	ng/Kg	1,183 × SQL	NL/NA		NL/NA
	1,2,3,7,8,9-HxCDD	203	J	ng/Kg	0.77	U	ng/Kg	263 × SQL	NL/NA		NL/NA
	1,2,3,4,6,7,8-HpCDD	27,100	J EB	ng/Kg	21.2		ng/Kg	1,278 × Ref	NL/NA		NL/NA
	1,2,3,4,6,7,8,9-OCDD	289,000	J EB	ng/Kg	1,440		ng/Kg	200.7 × Ref	NL/NA		NL/NA
	2,3,7,8-TCDF	1.16	J EB	ng/Kg	0.26	U	ng/Kg	4.5 × SQL	NL/NA		NL/NA
	1,2,3,7,8-PeCDF	1.78	J	ng/Kg	0.23	U	ng/Kg	7.9 × SQL	NL/NA		NL/NA
	2,3,4,7,8-PeCDF	2.52	J	ng/Kg	0.35	U	ng/Kg	7.2 × SQL	NL/NA		NL/NA

Table 5

Summary of Analytical Results
Soil/Source Sample Analysis for Creese & Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	Mass DEP Method 1 S-1/GW-1		Mass DEP Imminent Hazard*
SO-04	**DIOXINS/FURANS**										
	1,2,3,4,7,8-HxCDF	45.3	J	ng/Kg	0.3	U	ng/Kg	149 × SQL	NL/NA		NL/NA
	1,2,3,6,7,8-HxCDF	17.3	J	ng/Kg	0.31	U	ng/Kg	55.4 × SQL	NL/NA		NL/NA
	1,2,3,7,8,9-HxCDF	0.494	EMPC	ng/Kg	0.47	U	ng/Kg	1.1 × SQL	NL/NA		NL/NA
	2,3,4,6,7,8-HxCDF	93.9	J	ng/Kg	0.35	U	ng/Kg	272.2 × SQL	NL/NA		NL/NA
	1,2,3,4,6,7,8-HpCDF	2,130	J EB	ng/Kg	1.77	J	ng/Kg	1,203 × Ref	NL/NA		NL/NA
	1,2,3,4,7,8,9-HpCDF	62.9	J	ng/Kg	0.6	U	ng/Kg	105.4 × SQL	NL/NA		NL/NA
	1,2,3,4,6,7,8,9-OCDF	3,030	J	ng/Kg	3.05	J	ng/Kg	993.4 × Ref	NL/NA		NL/NA
	Toxicity Equivalent Factor	**531**	**J**	ng/Kg	0.663	J	ng/Kg	800.9 × Ref	20	ng/Kg	NL/NA
	INORGANICS										
	Arsenic	**198**	**J**	**mg/Kg**	11.4		mg/Kg	17.4 × Ref	20	mg/Kg	NA
	Calcium	9,160		mg/Kg	867		mg/Kg	10.6 × Ref	NL/NA		NL/NA
	Chromium (Total)	**1,560**		**mg/Kg**	17.3		mg/Kg	90.2 × Ref	30	mg/Kg	NA
	Mercury	0.29		mg/Kg	0.04	J	mg/kg	7.3 × Ref	20	mg/Kg	NA
SO-05	**DIOXINS/FURANS**										
	2,3,7,8-TCDD	2.89	EMPC	ng/Kg	0.24	U	ng/Kg	11.9 × SQL	NL/NA		NL/NA
	1,2,3,7,8-PeCDD	3.66	J	ng/Kg	0.88	U	ng/Kg	4.2 × SQL	NL/NA		NL/NA
	1,2,3,4,7,8-HxCDD	10.2	J	ng/Kg	0.73	U	ng/Kg	13.9 × SQL	NL/NA		NL/NA
	1,2,3,6,7,8-HxCDD	141	J	ng/Kg	0.75	U	ng/Kg	187.5 × SQL	NL/NA		NL/NA
	1,2,3,7,8,9-HxCDD	51.6	J	ng/Kg	0.77	U	ng/Kg	66.8 × SQL	NL/NA		NL/NA

Table 5

Summary of Analytical Results
Soil/Source Sample Analysis for Creese & Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	Mass DEP Method 1 S-1/GW-1	Mass DEP Imminent Hazard*
SO-05	**DIOXINS/FURANS**									
	1,2,3,4,6,7,8-HpCDD	4,350	J	ng/Kg	21.2		ng/Kg	205.2 × Ref	NL/NA	NL/NA
	1,2,3,4,6,7,8,9-OCDD	54,900	J	ng/Kg	1,440		ng/Kg	38.1 × Ref	NL/NA	NL/NA
	2,3,7,8-TCDF	3	J	ng/Kg	0.26	U	ng/Kg	11.6 × SQL	NL/NA	NL/NA
	1,2,3,7,8-PeCDF	1.15	EMPC	ng/Kg	0.23	U	ng/Kg	5.1 × SQL	NL/NA	NL/NA
	2,3,4,7,8-PeCDF	1.73	J	ng/Kg	0.35	U	ng/Kg	4.9 × SQL	NL/NA	NL/NA
	1,2,3,4,7,8-HxCDF	9.49	J EB	ng/Kg	0.3	U	ng/Kg	31.2 × SQL	NL/NA	NL/NA
	1,2,3,6,7,8-HxCDF	3.52	J EB	ng/Kg	0.31	U	ng/Kg	11.3 × SQL	NL/NA	NL/NA
	2,3,4,6,7,8-HxCDF	11.5	J	ng/Kg	0.35	U	ng/Kg	33.3 × SQL	NL/NA	NL/NA
	1,2,3,4,6,7,8-HpCDF	287	J	ng/Kg	1.77	J	ng/Kg	162.1 × Ref	NL/NA	NL/NA
	1,2,3,4,7,8,9-HpCDF	7.41	J	ng/Kg	0.6	U	ng/Kg	12.4 × SQL	NL/NA	NL/NA
	1,2,3,4,6,7,8,9-OCDF	324	J	ng/Kg	3.05	J	ng/Kg	106.2 × Ref	NL/NA	NL/NA
	Toxicity Equivalent Factor	**93.1**	**J**	**ng/Kg**	0.663	J	ng/Kg	140.4 × Ref	20 ng/Kg	NL/NA
	INORGANICS									
	Arsenic	**320**	**J**	**mg/Kg**	11.4		mg/Kg	28.1 × Ref	20 mg/Kg	NA
	Calcium	7,040		mg/Kg	867		mg/Kg	8.1 × Ref	NL/NA	NL/NA
	Chromium (Total)	**325**	**EB**	**mg/Kg**	17.3		mg/Kg	18.8 × Ref	30 mg/Kg	NA
	Mercury	1.1		mg/Kg	0.04	J	mg/kg	27.5 × Ref	20 mg/Kg	NA

Table 5

Summary of Analytical Results
Soil/Source Sample Analysis for Creese & Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	Mass DEP Method 1 S-1/GW-1	Mass DEP Imminent Hazard*
SO-05B	**DIOXINS/FURANS**									
	2,3,7,8-TCDD	0.824	J	ng/Kg	0.24	U	ng/Kg	3.4 × SQL	NL/NA	NL/NA
	1,2,3,4,7,8-HxCDD	2.96	J	ng/Kg	0.73	U	ng/Kg	4 × SQL	NL/NA	NL/NA
	1,2,3,6,7,8-HxCDD	49.7	J EB	ng/Kg	0.75	U	ng/Kg	66.1 × SQL	NL/NA	NL/NA
	1,2,3,7,8,9-HxCDD	12.1	J	ng/Kg	0.77	U	ng/Kg	15.7 × SQL	NL/NA	NL/NA
	1,2,3,4,6,7,8-HpCDD	1,730	J EB	ng/Kg	21.2		ng/Kg	81.6 × Ref	NL/NA	NL/NA
	1,2,3,4,6,7,8,9-OCDD	22,000	J EB	ng/Kg	1,440		ng/Kg	15.3 × Ref	NL/NA	NL/NA
	1,2,3,4,7,8-HxCDF	2.36	J	ng/Kg	0.3	U	ng/Kg	7.8 × SQL	NL/NA	NL/NA
	1,2,3,6,7,8-HxCDF	1.02	J	ng/Kg	0.31	U	ng/Kg	3.3 × SQL	NL/NA	NL/NA
	2,3,4,6,7,8-HxCDF	4.05	J	ng/Kg	0.35	U	ng/Kg	11.7 × SQL	NL/NA	NL/NA
	1,2,3,4,6,7,8-HpCDF	103	J EB	ng/Kg	1.77	J	ng/Kg	58.2 × Ref	NL/NA	NL/NA
	1,2,3,4,7,8,9-HpCDF	2	J	ng/Kg	0.6	U	ng/Kg	3.4 × SQL	NL/NA	NL/NA
	1,2,3,4,6,7,8,9-OCDF	72.6		ng/Kg	3.05	J	ng/Kg	23.8 × Ref	NL/NA	NL/NA
	Toxicity Equivalent Factor	**33.7**	**J**	**ng/Kg**	0.663	J	ng/Kg	50.8 × Ref	20 ng/Kg	NL/NA
	INORGANICS									
	Chromium (Total)	**85.2**		**mg/Kg**	17.3		mg/Kg	4.9 × Ref	30 mg/Kg	NA
SO-06	**DIOXINS/FURANS**									
	2,3,7,8-TCDD	0.279	EMPC	ng/Kg	0.24	U	ng/Kg	1.2 × SQL	NL/NA	NL/NA
	1,2,3,4,7,8-HxCDD	1.06	J	ng/Kg	0.73	U	ng/Kg	1.4 × SQL	NL/NA	NL/NA
	1,2,3,6,7,8-HxCDD	6.72	J EB	ng/Kg	0.75	U	ng/Kg	8.9 × SQL	NL/NA	NL/NA
	1,2,3,7,8,9-HxCDD	3.25	J	ng/Kg	0.77	U	ng/Kg	4.2 × SQL	NL/NA	NL/NA

Table 5

Summary of Analytical Results
Soil/Source Sample Analysis for Creese & Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	Mass DEP Method 1 S-1/GW-1		Mass DEP Imminent Hazard*
SO-06	**DIOXINS/FURANS**										
	1,2,3,4,6,7,8-HpCDD	337	J EB	ng/Kg	21.2		ng/Kg	15.9 × Ref	NL/NA		NL/NA
	1,2,3,4,6,7,8,9-OCDD	5,090	J EB	ng/Kg	1,440		ng/Kg	3.5 × Ref	NL/NA		NL/NA
	2,3,7,8-TCDF	0.268	EB EMPC	ng/Kg	0.26	U	ng/Kg	1 × SQL	NL/NA		NL/NA
	1,2,3,4,7,8-HxCDF	0.853	EMPC	ng/Kg	0.3	U	ng/Kg	2.8 × SQL	NL/NA		NL/NA
	1,2,3,6,7,8-HxCDF	0.542	EMPC	ng/Kg	0.31	U	ng/Kg	1.7 × SQL	NL/NA		NL/NA
	2,3,4,6,7,8-HxCDF	0.92	EMPC	ng/Kg	0.35	U	ng/Kg	2.7 × SQL	NL/NA		NL/NA
	1,2,3,4,6,7,8-HpCDF	26.9	J EB	ng/Kg	1.77	J	ng/Kg	15.2 × Ref	NL/NA		NL/NA
	1,2,3,4,7,8,9-HpCDF	1.34	J	ng/Kg	0.6	U	ng/Kg	2.2 × SQL	NL/NA		NL/NA
	1,2,3,4,6,7,8,9-OCDF	77.5	J	ng/Kg	3.05	J	ng/Kg	25.4 × Ref	NL/NA		NL/NA
	Toxicity Equivalent Factor	7.38	J	ng/Kg	0.663	J	ng/Kg	11.1 × Ref	20	ng/Kg	NL/NA
	INORGANICS										
	Arsenic	**42.1**		**mg/Kg**	11.4		mg/Kg	3.7 × Ref	20	mg/Kg	NA
	Calcium	3,390		mg/Kg	867		mg/Kg	3.9 × Ref	NL		NL/NA
	Chromium (Total) †	**37.5**		**mg/Kg**		NA		NA	30	mg/Kg	NA
	Mercury	0.16		mg/Kg	0.04	J	mg/kg	4.0 × Ref	20	mg/Kg	NA
SO-07	**DIOXINS/FURANS**										
	2,3,7,8-TCDD	0.277	EMPC	ng/Kg	0.24	U	ng/Kg	1.1 × SQL	NL/NA		NL/NA
	1,2,3,7,8-PeCDD	1.02	J EB	ng/Kg	0.88	U	ng/Kg	1.2 × SQL	NL/NA		NL/NA
	1,2,3,4,7,8-HxCDD	1.89	J	ng/Kg	0.73	U	ng/Kg	2.6 × SQL	NL/NA		NL/NA

Table 5

Summary of Analytical Results
Soil/Source Sample Analysis for Creese & Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	Mass DEP Method 1 S-1/GW-1		Mass DEP Imminent Hazard*
SO-07	**DIOXINS/FURANS**										
	1,2,3,6,7,8-HxCDD	20.7	J EB	ng/Kg	0.75	U	ng/Kg	27.5 × SQL	NL/NA		NL/NA
	1,2,3,7,8,9-HxCDD	6.46	J	ng/Kg	0.77	U	ng/Kg	8.4 × SQL	NL/NA		NL/NA
	1,2,3,4,6,7,8-HpCDD	750	J EB	ng/Kg	21.2		ng/Kg	35.4 × Ref	NL/NA		NL/NA
	1,2,3,4,6,7,8,9-OCDD	9,160	J EB	ng/Kg	1,440		ng/Kg	6.4 × Ref	NL/NA		NL/NA
	2,3,7,8-TCDF	0.564	J EB	ng/Kg	0.26	U	ng/Kg	2.2 × SQL	NL/NA		NL/NA
	1,2,3,4,7,8-HxCDF	3.01	J	ng/Kg	0.3	U	ng/Kg	9.9 × SQL	NL/NA		NL/NA
	1,2,3,6,7,8-HxCDF	1.31	J	ng/Kg	0.31	U	ng/Kg	4.2 × SQL	NL/NA		NL/NA
	2,3,4,6,7,8-HxCDF	3.49	J	ng/Kg	0.35	U	ng/Kg	10.1 × SQL	NL/NA		NL/NA
	1,2,3,4,6,7,8-HpCDF	205	J EB	ng/Kg	1.77	J	ng/Kg	115.8 × Ref	NL/NA		NL/NA
	1,2,3,4,7,8,9-HpCDF	8.03	J	ng/Kg	0.6	U	ng/Kg	13.5 × SQL	NL/NA		NL/NA
	1,2,3,4,6,7,8,9-OCDF	578	J	ng/Kg	3.05	J	ng/Kg	189.5 × Ref	NL/NA		NL/NA
	Toxicity Equivalent Factor	17.6	J	ng/Kg	0.663	J	ng/Kg	26.5 × Ref	20	ng/Kg	NL/NA
	INORGANICS										
	Arsenic†	**26.4**		**mg/Kg**	NA			NA	20	mg/Kg	NA
	Mercury	0.20		mg/Kg	0.04	J	mg/kg	5.0 × Ref	20	mg/Kg	NA
	Thallium	3.0	J	mg/Kg	3.0	UJ	mg/Kg	1.0 × SQL	8	mg/Kg	NL/NA
SO-08	**DIOXINS/FURANS**										
	2,3,7,8-TCDD	1.3	J	ng/Kg	0.24	U	ng/Kg	5.4 × SQL	NL/NA		NL/NA
	1,2,3,7,8-PeCDD	3.3	J	ng/Kg	0.88	U	ng/Kg	3.7 × SQL	NL/NA		NL/NA

Table 5

Summary of Analytical Results
Soil/Source Sample Analysis for Creese & Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	Mass DEP Method 1 S-1/GW-1		Mass DEP Imminent Hazard*
SO-08	**DIOXINS/FURANS**										
	1,2,3,4,7,8-HxCDD	6.57	J	ng/Kg	0.73	U	ng/Kg	9 × SQL	NL/NA		NL/NA
	1,2,3,6,7,8-HxCDD	57.7	J EB	ng/Kg	0.75	U	ng/Kg	76.7 × SQL	NL/NA		NL/NA
	1,2,3,7,8,9-HxCDD	29.2	J	ng/Kg	0.77	U	ng/Kg	37.8 × SQL	NL/NA		NL/NA
	1,2,3,4,6,7,8-HpCDD	1,790	J EB	ng/Kg	21.2		ng/Kg	84.4 × Ref	NL/NA		NL/NA
	1,2,3,4,6,7,8,9-OCDD	23,800	J EB	ng/Kg	1,440		ng/Kg	16.5 × Ref	NL/NA		NL/NA
	2,3,7,8-TCDF	0.415	J EB	ng/Kg	0.26	U	ng/Kg	1.6 × SQL	NL/NA		NL/NA
	2,3,4,7,8-PeCDF	0.49	J	ng/Kg	0.35	U	ng/Kg	1.4 × SQL	NL/NA		NL/NA
	1,2,3,4,7,8-HxCDF	4.3	J	ng/Kg	0.3	U	ng/Kg	14.1 × SQL	NL/NA		NL/NA
	1,2,3,6,7,8-HxCDF	2.05	EMPC	ng/Kg	0.31	U	ng/Kg	6.6 × SQL	NL/NA		NL/NA
	2,3,4,6,7,8-HxCDF	7.27	J	ng/Kg	0.35	U	ng/Kg	21.1 × SQL	NL/NA		NL/NA
	1,2,3,4,6,7,8-HpCDF	323	J EB	ng/Kg	1.77	J	ng/Kg	182.5 × Ref	NL/NA		NL/NA
	1,2,3,4,7,8,9-HpCDF	11.1	J	ng/Kg	0.6	U	ng/Kg	18.6 × SQL	NL/NA		NL/NA
	1,2,3,4,6,7,8,9-OCDF	937	J	ng/Kg	3.05	J	ng/Kg	307.2 × Ref	NL/NA		NL/NA
	Toxicity Equivalent Factor	**44.2**	**J**	**ng/Kg**	0.663	J	ng/Kg	66.7 × Ref	20	ng/Kg	NL/NA
	INORGANICS										
	Arsenic	**49.7**		**mg/Kg**	11.4		mg/Kg	4.4 × Ref	20	mg/Kg	NA
	Beryllium	1.2	J	mg/Kg	0.36	J	mg/Kg	3.3 × Ref	100	mg/Kg	NL/NA
	Calcium	9,050		mg/Kg	867		mg/Kg	10.4 × Ref	NL/NA		NL/NA
	Chromium (Total)	**182**		**mg/Kg**	17.3		mg/Kg	10.5 × Ref	30	mg/Kg	NA
	Nickel	**50.4**		**mg/Kg**	13.7		mg/Kg	3.7 × Ref	20	mg/Kg	NL/NA

Table 5

Summary of Analytical Results
Soil/Source Sample Analysis for Creese & Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	Mass DEP Method 1 S-1/GW-1	Mass DEP Imminent Hazard*
SO-08	**INORGANICS**									
	Potassium	1,930		mg/Kg	448	J	mg/Kg	4.3 × Ref	NL/NA	NL/NA
	Thallium	7.3	J	mg/Kg	3.0	UJ	mg/Kg	2.4 × SQL	8 mg/Kg	NL/NA
SO-09	**DIOXINS/FURANS**									
	2,3,7,8-TCDD	13.2	J	ng/Kg	0.24	U	ng/Kg	54.5 × SQL	NL/NA	NL/NA
	1,2,3,7,8-PeCDD	12.1	J	ng/Kg	0.88	U	ng/Kg	13.7 × SQL	NL/NA	NL/NA
	1,2,3,4,7,8-HxCDD	36.6	J	ng/Kg	0.73	U	ng/Kg	49.9 × SQL	NL/NA	NL/NA
	1,2,3,6,7,8-HxCDD	369	J EB	ng/Kg	0.75	U	ng/Kg	490.7 × SQL	NL/NA	NL/NA
	1,2,3,7,8,9-HxCDD	132	J	ng/Kg	0.77	U	ng/Kg	171 × SQL	NL/NA	NL/NA
	1,2,3,4,6,7,8-HpCDD	11,400	J EB	ng/Kg	21.2		ng/Kg	537.7 × Ref	NL/NA	NL/NA
	1,2,3,4,6,7,8,9-OCDD	127,000	J EB	ng/Kg	1,440		ng/Kg	88.2 × Ref	NL/NA	NL/NA
	1,2,3,7,8-PeCDF	1.15	EMPC	ng/Kg	0.23	U	ng/Kg	5.1 × SQL	NL/NA	NL/NA
	2,3,4,7,8-PeCDF	2.45	J	ng/Kg	0.35	U	ng/Kg	7 × SQL	NL/NA	NL/NA
	1,2,3,4,7,8-HxCDF	38.7	J	ng/Kg	0.3	U	ng/Kg	127.3 × SQL	NL/NA	NL/NA
	1,2,3,6,7,8-HxCDF	13.4	J	ng/Kg	0.31	U	ng/Kg	42.9 × SQL	NL/NA	NL/NA
	1,2,3,7,8,9-HxCDF	0.484	EMPC	ng/Kg	0.47	U	ng/Kg	1 × SQL	NL/NA	NL/NA
	2,3,4,6,7,8-HxCDF	71.9	J	ng/Kg	0.35	U	ng/Kg	208.4 × SQL	NL/NA	NL/NA
	1,2,3,4,6,7,8-HpCDF	1,880	J EB	ng/Kg	1.77	J	ng/Kg	1,062 × Ref	NL/NA	NL/NA
	1,2,3,4,7,8,9-HpCDF	83.2	J	ng/Kg	0.6	U	ng/Kg	139.4 × SQL	NL/NA	NL/NA
	1,2,3,4,6,7,8,9-OCDF	3,160	J	ng/Kg	3.05	J	ng/Kg	1,036 × Ref	NL/NA	NL/NA
	Toxicity Equivalent Factor	**265**	**J**	**ng/Kg**	0.663	J	ng/Kg	399.7 × Ref	20 ng/Kg	NL/NA

Table 5

Summary of Analytical Results
Soil/Source Sample Analysis for Creese & Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	Mass DEP Method 1 S-1/GW-1		Mass DEP Imminent Hazard*
SO-09	**INORGANICS**										
	Arsenic†	**31.9**		**mg/Kg**	NA			NA	20	mg/Kg	NA
	Calcium	8,780		mg/Kg	867		mg/Kg	10.1 × Ref	NL/NA		NL/NA
	Chromium (Total)	**609**		**mg/Kg**	17.3		mg/Kg	35.2 × Ref	30	mg/Kg	NA
	Mercury	0.17		mg/Kg	0.04	J	mg/kg	4.3 × Ref	20	mg/Kg	NA
SO-10	**DIOXINS/FURANS**										
	1,2,3,7,8-PeCDD	1.35	EMPC	ng/Kg	0.88	U	ng/Kg	1.5 × SQL	NL/NA		NL/NA
	1,2,3,4,7,8-HxCDD	2.34	J	ng/Kg	0.73	U	ng/Kg	3.2 × SQL	NL/NA		NL/NA
	1,2,3,6,7,8-HxCDD	8.9	J EB	ng/Kg	0.75	U	ng/Kg	11.8 × SQL	NL/NA		NL/NA
	1,2,3,7,8,9-HxCDD	6.31	J	ng/Kg	0.77	U	ng/Kg	8.2 × SQL	NL/NA		NL/NA
	1,2,3,4,6,7,8-HpCDD	325	J EB	ng/Kg	21.2		ng/Kg	15.3 × Ref	NL/NA		NL/NA
	1,2,3,4,6,7,8,9-OCDD	6,740	J EB	ng/Kg	1,440		ng/Kg	4.7 × Ref	NL/NA		NL/NA
	1,2,3,4,7,8-HxCDF	1.93	J	ng/Kg	0.3	U	ng/Kg	6.3 × SQL	NL/NA		NL/NA
	1,2,3,6,7,8-HxCDF	1.7	EMPC	ng/Kg	0.31	U	ng/Kg	5.4 × SQL	NL/NA		NL/NA
	2,3,4,6,7,8-HxCDF	2.11	J	ng/Kg	0.35	U	ng/Kg	6.1 × SQL	NL/NA		NL/NA
	1,2,3,4,6,7,8-HpCDF	78.1	J EB	ng/Kg	1.77	J	ng/Kg	44.1 × Ref	NL/NA		NL/NA
	1,2,3,4,7,8,9-HpCDF	3.39	J	ng/Kg	0.6	U	ng/Kg	5.7 × SQL	NL/NA		NL/NA
	1,2,3,4,6,7,8,9-OCDF	191	J	ng/Kg	3.05	J	ng/Kg	62.6 × Ref	NL/NA		NL/NA
	Toxicity Equivalent Factor	9.82	J	ng/Kg	0.663	J	ng/Kg	14.8 × Ref	20	ng/Kg	NL/NA
	INORGANICS										
	Thallium	5.1	J	mg/Kg	3.0	UJ	mg/Kg	1.7 × SQL	8	mg/Kg	NL/NA

Table 5

Summary of Analytical Results
Soil/Source Sample Analysis for Creese & Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	Mass DEP Method 1 S-1/GW-1	Mass DEP Imminent Hazard*
SO-11	**DIOXINS/FURANS**									
	1,2,3,6,7,8-HxCDD	2.7	J EB	ng/Kg	0.75	U	ng/Kg	3.6 × SQL	NL/NA	NL/NA
	1,2,3,7,8,9-HxCDD	0.94	J	ng/Kg	0.77	U	ng/Kg	1.2 × SQL	NL/NA	NL/NA
	1,2,3,4,6,7,8-HpCDD	140	J EB	ng/Kg	21.2		ng/Kg	6.6 × Ref	NL/NA	NL/NA
	1,2,3,4,6,7,8-HpCDF	5.5	J EB	ng/Kg	1.77	J	ng/Kg	3.1 × Ref	NL/NA	NL/NA
	Toxicity Equivalent Factor	2.47	J	ng/Kg	0.663	J	ng/Kg	3.7 × Ref	20 ng/Kg	NL/NA
SO-12	**DIOXINS/FURANS**									
	1,2,3,6,7,8-HxCDD	1.09	J	ng/Kg	0.75	U	ng/Kg	1.4 × SQL	NL/NA	NL/NA
	INORGANICS									
	Calcium	2,880		mg/Kg	867		mg/Kg	3.3 × Ref	NL/NA	NL/NA
	Chromium (Total)†	**32.1**	**EB**	**mg/Kg**		NA		NA	30 mg/Kg	NA
SO-13	**DIOXINS/FURANS**									
	2,3,7,8-TCDD	0.246	J	ng/Kg	0.24	U	ng/Kg	1 × SQL	NL/NA	NL/NA
	1,2,3,4,7,8-HxCDD	1.59	EMPC	ng/Kg	0.73	U	ng/Kg	2.2 × SQL	NL/NA	NL/NA
	1,2,3,6,7,8-HxCDD	8.94	J	ng/Kg	0.75	U	ng/Kg	11.9 × SQL	NL/NA	NL/NA
	1,2,3,7,8,9-HxCDD	4.68	J	ng/Kg	0.77	U	ng/Kg	6.1 × SQL	NL/NA	NL/NA
	1,2,3,4,6,7,8-HpCDD	404	J	ng/Kg	21.2		ng/Kg	19.1 × Ref	NL/NA	NL/NA
	1,2,3,4,6,7,8,9-OCDD	5,420	J	ng/Kg	1,440		ng/Kg	3.8 × Ref	NL/NA	NL/NA
	1,2,3,4,7,8-HxCDF	0.932	J EB	ng/Kg	0.3	U	ng/Kg	3.1 × SQL	NL/NA	NL/NA
	1,2,3,6,7,8-HxCDF	0.506	J EB	ng/Kg	0.31	U	ng/Kg	1.6 × SQL	NL/NA	NL/NA
	2,3,4,6,7,8-HxCDF	1.41	J	ng/Kg	0.35	U	ng/Kg	4.1 × SQL	NL/NA	NL/NA

Table 5

Summary of Analytical Results
Soil/Source Sample Analysis for Creese & Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	Mass DEP Method 1 S-1/GW-1	Mass DEP Imminent Hazard*
SO-13	**DIOXINS/FURANS**									
	1,2,3,4,6,7,8-HpCDF	25.1	J	ng/Kg	1.77	J	ng/Kg	14.2 × Ref	NL/NA	NL/NA
	1,2,3,4,7,8,9-HpCDF	1.16	J	ng/Kg	0.6	U	ng/Kg	1.9 × SQL	NL/NA	NL/NA
	1,2,3,4,6,7,8,9-OCDF	34.8	J	ng/Kg	3.05	J	ng/Kg	11.4 × Ref	NL/NA	NL/NA
	Toxicity Equivalent Factor	8.62	J	ng/Kg	0.663	J	ng/Kg	13 × Ref	20 ng/Kg	NL/NA
	INORGANICS									
	Arsenic†	**23.4**	**J**	**mg/Kg**	NA			NA	20 mg/Kg	NA
	Chromium (Total)†	**35.5**	**EB**	**mg/Kg**	NA			NA	30 mg/Kg	NA
SO-14	**DIOXINS/FURANS**									
	2,3,7,8-TCDD	0.31	J	ng/Kg	0.24	U	ng/Kg	1.3 × SQL	NL/NA	NL/NA
	1,2,3,4,7,8-HxCDD	1.93	J	ng/Kg	0.73	U	ng/Kg	2.6 × SQL	NL/NA	NL/NA
	1,2,3,6,7,8-HxCDD	21	J EB	ng/Kg	0.75	U	ng/Kg	27.9 × SQL	NL/NA	NL/NA
	1,2,3,7,8,9-HxCDD	5.94	J	ng/Kg	0.77	U	ng/Kg	7.7 × SQL	NL/NA	NL/NA
	1,2,3,4,6,7,8-HpCDD	1,120	J EB	ng/Kg	21.2		ng/Kg	52.8 × Ref	NL/NA	NL/NA
	1,2,3,4,6,7,8,9-OCDD	14,400	J EB	ng/Kg	1,440		ng/Kg	10 × Ref	NL/NA	NL/NA
	1,2,3,4,7,8-HxCDF	1.76	J	ng/Kg	0.3	U	ng/Kg	5.8 × SQL	NL/NA	NL/NA
	1,2,3,6,7,8-HxCDF	0.657	J	ng/Kg	0.31	U	ng/Kg	2.1 × SQL	NL/NA	NL/NA
	2,3,4,6,7,8-HxCDF	3	J	ng/Kg	0.35	U	ng/Kg	8.7 × SQL	NL/NA	NL/NA
	1,2,3,4,6,7,8-HpCDF	75.1	J EB	ng/Kg	1.77	J	ng/Kg	42.4 × Ref	NL/NA	NL/NA
	1,2,3,4,7,8,9-HpCDF	2.36	J	ng/Kg	0.6	U	ng/Kg	4 × SQL	NL/NA	NL/NA
	1,2,3,4,6,7,8,9-OCDF	77	J	ng/Kg	3.05	J	ng/Kg	25.2 × Ref	NL/NA	NL/NA
	Toxicity Equivalent Factor	**20.6**	**J**	**ng/Kg**	0.663	J	ng/Kg	31.1 × Ref	20 ng/Kg	NL/NA

Table 5

Summary of Analytical Results
Soil/Source Sample Analysis for Creese & Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	Mass DEP Method 1 S-1/GW-1		Mass DEP Imminent Hazard*
SO-14	**INORGANICS**										
	Arsenic†	**20.9**		**mg/Kg**	NA			NA	20	mg/Kg	NA
	Chromium (Total)	**53.7**	**J**	**mg/Kg**	17.3		mg/Kg	3.1 × Ref	30	mg/Kg	NA
	Thallium	3.0	J	mg/Kg	3.0	UJ	mg/Kg	1.0 × SQL	8	mg/Kg	NL/NA
SO-15	**DIOXINS/FURANS**										
	1,2,3,6,7,8-HxCDD	3.14	J	ng/Kg	0.75	U	ng/Kg	4.2 × SQL	NL/NA		NL/NA
	1,2,3,7,8,9-HxCDD	1.64	J	ng/Kg	0.77	U	ng/Kg	2.1 × SQL	NL/NA		NL/NA
	1,2,3,4,6,7,8-HpCDD	149	J	ng/Kg	21.2		ng/Kg	7 × Ref	NL/NA		NL/NA
	1,2,3,4,7,8-HxCDF	0.344	J EB	ng/Kg	0.3	U	ng/Kg	1.1 × SQL	NL/NA		NL/NA
	2,3,4,6,7,8-HxCDF	0.572	EMPC	ng/Kg	0.35	U	ng/Kg	1.7 × SQL	NL/NA		NL/NA
	1,2,3,4,6,7,8-HpCDF	8.07	J	ng/Kg	1.77	J	ng/Kg	4.6 × Ref	NL/NA		NL/NA
	1,2,3,4,6,7,8,9-OCDF	9.89	J	ng/Kg	3.05	J	ng/Kg	3.2 × Ref	NL/NA		NL/NA
	Toxicity Equivalent Factor	3.18	J	ng/Kg	0.663	J	ng/Kg	4.8 × Ref	20	ng/Kg	NL/NA
	INORGANICS										
	Calcium	2,810		mg/Kg	867		mg/Kg	3.2 × Ref	NL/NA		NL/NA
SO-16	**DIOXINS/FURANS**										
	1,2,3,7,8-PeCDD	1.27	J	ng/Kg	0.88	U	ng/Kg	1.4 × SQL	NL/NA		NL/NA
	1,2,3,4,7,8-HxCDD	1	J	ng/Kg	0.73	U	ng/Kg	1.4 × SQL	NL/NA		NL/NA
	1,2,3,6,7,8-HxCDD	19.5	J EB	ng/Kg	0.75	U	ng/Kg	25.9 × SQL	NL/NA		NL/NA
	1,2,3,7,8,9-HxCDD	5.22	J	ng/Kg	0.77	U	ng/Kg	6.8 × SQL	NL/NA		NL/NA
	1,2,3,4,6,7,8-HpCDD	588	J EB	ng/Kg	21.2		ng/Kg	27.7 × Ref	NL/NA		NL/NA

Table 5

Summary of Analytical Results
Soil/Source Sample Analysis for Creese & Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	Mass DEP Method 1 S-1/GW-1		Mass DEP Imminent Hazard*
SO-16	**DIOXINS/FURANS**										
	1,2,3,7,8-PeCDD	1.27	J	ng/Kg	0.88	U	ng/Kg	1.4 × SQL	NL/NA		NL/NA
	1,2,3,4,7,8-HxCDD	1	J	ng/Kg	0.73	U	ng/Kg	1.4 × SQL	NL/NA		NL/NA
	1,2,3,6,7,8-HxCDD	19.5	J EB	ng/Kg	0.75	U	ng/Kg	25.9 × SQL	NL/NA		NL/NA
	1,2,3,7,8,9-HxCDD	5.22	J	ng/Kg	0.77	U	ng/Kg	6.8 × SQL	NL/NA		NL/NA
	1,2,3,4,6,7,8-HpCDD	588	J EB	ng/Kg	21.2		ng/Kg	27.7 × Ref	NL/NA		NL/NA
	1,2,3,4,6,7,8,9-OCDD	7,660	J EB	ng/Kg	1,440		ng/Kg	5.3 × Ref	NL/NA		NL/NA
	1,2,3,4,7,8-HxCDF	0.666	J	ng/Kg	0.3	U	ng/Kg	2.2 × SQL	NL/NA		NL/NA
	2,3,4,6,7,8-HxCDF	0.895	J	ng/Kg	0.35	U	ng/Kg	2.6 × SQL	NL/NA		NL/NA
	1,2,3,4,6,7,8-HpCDF	32.5	J EB	ng/Kg	1.77	J	ng/Kg	18.4 × Ref	NL/NA		NL/NA
	1,2,3,4,7,8,9-HpCDF	1.28	J	ng/Kg	0.6	U	ng/Kg	2.1 × SQL	NL/NA		NL/NA
	1,2,3,4,6,7,8,9-OCDF	48.6	J	ng/Kg	3.05	J	ng/Kg	15.9 × Ref	NL/NA		NL/NA
	Toxicity Equivalent Factor	12.7	J	ng/Kg	0.663	J	ng/Kg	19.2 × Ref	20	ng/Kg	NL/NA
	INORGANICS										
	Arsenic	**147**		**mg/Kg**	11.4		mg/Kg	12.9 × Ref	20	mg/Kg	NA
	Calcium	4,720		mg/Kg	867		mg/Kg	5.4 × Ref	NL/NA		NL/NA
	Chromium (Total)	**55.3**		**mg/Kg**	17.3		mg/Kg	3.2 × Ref	30	mg/Kg	NA
	Thallium	3.7	J	mg/Kg	3.0	UJ	mg/Kg	1.2 × SQL	8	mg/Kg	NL/NA
SO-17	**DIOXINS/FURANS**										
	1,2,3,7,8-PeCDD	1.19	J	1.19	0.88	U	ng/Kg	1.4 × SQL	NL/NA		NL/NA

Table 5

Summary of Analytical Results
Soil/Source Sample Analysis for Creese & Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	Mass DEP Method 1 S-1/GW-1	Mass DEP Imminent Hazard*
SO-17	**DIOXINS/FURANS**									
	1,2,3,4,7,8-HxCDD	1.22	J	1.22	0.73	U	ng/Kg	1.7 × SQL	NL/NA	NL/NA
	1,2,3,6,7,8-HxCDD	19.9	J	19.9	0.75	U	ng/Kg	26.5 × SQL	NL/NA	NL/NA
	1,2,3,7,8,9-HxCDD	5.41	J	5.41	0.77	U	ng/Kg	7 × SQL	NL/NA	NL/NA
	1,2,3,4,6,7,8-HpCDD	517	J	517	21.2		ng/Kg	24.4 × Ref	NL/NA	NL/NA
	1,2,3,4,6,7,8,9-OCDD	6,310	J	6,310	1,440		ng/Kg	4.4 × Ref	NL/NA	NL/NA
	1,2,3,4,7,8-HxCDF	0.73	J EB	0.73	0.3	U	ng/Kg	2.4 × SQL	NL/NA	NL/NA
	2,3,4,6,7,8-HxCDF	0.966	J	0.966	0.35	U	ng/Kg	2.8 × SQL	NL/NA	NL/NA
	1,2,3,4,6,7,8-HpCDF	36.5	J	36.5	1.77	J	ng/Kg	20.6 × Ref	NL/NA	NL/NA
	1,2,3,4,7,8,9-HpCDF	1.84	J	1.84	0.6	U	ng/Kg	3.1 × SQL	NL/NA	NL/NA
	1,2,3,4,6,7,8,9-OCDF	58.8	J	58.8	3.05	J	ng/Kg	19.3 × Ref	NL/NA	NL/NA
	Toxicity Equivalent Factor	11.7	J	11.7	0.663	J	ng/Kg	17.6 × Ref	20 ng/Kg	NL/NA
	INORGANICS									
	Arsenic	**103**	**J**	**mg/Kg**	11.4		mg/Kg	9.0 × Ref	20 mg/Kg	NA
	Chromium (Total)	**70**	**EB**	**mg/Kg**	17.3		mg/Kg	4.0 × Ref	30 mg/Kg	NA
	Thallium	3.6	J	mg/Kg	3.0	UJ	mg/Kg	1.2 × SQL	8 mg/Kg	NL/NA
SO-18	**DIOXINS/FURANS**									
	2,3,7,8-TCDD	0.894	J	ng/Kg	0.24	U	ng/Kg	3.7 × SQL	NL/NA	NL/NA
	1,2,3,7,8-PeCDD	16.6	J	ng/Kg	0.88	U	ng/Kg	18.8 × SQL	NL/NA	NL/NA
	1,2,3,4,7,8-HxCDD	7.28	J	ng/Kg	0.73	U	ng/Kg	9.9 × SQL	NL/NA	NL/NA
	1,2,3,6,7,8-HxCDD	124	J	ng/Kg	0.75	U	ng/Kg	164.9 × SQL	NL/NA	NL/NA

Table 5

Summary of Analytical Results
Soil/Source Sample Analysis for Creese & Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	Mass DEP Method 1 S-1/GW-1		Mass DEP Imminent Hazard*
SO-18	**DIOXINS/FURANS**										
	1,2,3,7,8,9-HxCDD	49.8	J	ng/Kg	0.77	U	ng/Kg	64.5 × SQL	NL/NA		NL/NA
	1,2,3,4,6,7,8-HpCDD	1,190	J	ng/Kg	21.2		ng/Kg	56.1 × Ref	NL/NA		NL/NA
	1,2,3,4,6,7,8,9-OCDD	8,010	J	ng/Kg	1,440		ng/Kg	5.6 × Ref	NL/NA		NL/NA
	2,3,7,8-TCDF	0.397	EMPC	ng/Kg	0.26	U	ng/Kg	1.5 × SQL	NL/NA		NL/NA
	1,2,3,4,7,8-HxCDF	0.871	J EB	ng/Kg	0.3	U	ng/Kg	2.9 × SQL	NL/NA		NL/NA
	1,2,3,6,7,8-HxCDF	0.459	J EB	ng/Kg	0.31	U	ng/Kg	1.5 × SQL	NL/NA		NL/NA
	2,3,4,6,7,8-HxCDF	0.797	EMPC	ng/Kg	0.35	U	ng/Kg	2.3 × SQL	NL/NA		NL/NA
	1,2,3,4,6,7,8-HpCDF	31	J	ng/Kg	1.77	J	ng/Kg	17.5 × Ref	NL/NA		NL/NA
	1,2,3,4,7,8,9-HpCDF	1.43	J	ng/Kg	0.6	U	ng/Kg	2.4 × SQL	NL/NA		NL/NA
	1,2,3,4,6,7,8,9-OCDF	66	J	ng/Kg	3.05	J	ng/Kg	21.6 × Ref	NL/NA		NL/NA
	Toxicity Equivalent Factor	**50.6**	**J**	**ng/Kg**	0.663	J	ng/Kg	76.3 × Ref	20	ng/Kg	NL/NA
	INORGANICS										
	Arsenic	**63.4**	**J**	**mg/Kg**	11.4		mg/Kg	5.6 × Ref	20	mg/Kg	NA
	Calcium	2,800		mg/Kg	867		mg/Kg	3.2 × Ref	NL/NA		NL/NA
	Chromium (Total)	**70.3**	**EB**	**mg/Kg**	17.3		mg/Kg	4.1 × Ref	30	mg/Kg	NA
	Mercury	0.23		mg/Kg	0.04	J	mg/kg	5.8 × Ref	20	mg/Kg	NA
	Thallium	3.3	J	mg/Kg	3.0	UJ	mg/Kg	1.1 × SQL	8	mg/Kg	NL/NA

Table 5

Summary of Analytical Results
Soil/Source Sample Analysis for Creese & Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	Mass DEP Method 1 S-1/GW-1	Mass DEP Imminent Hazard*
SO-19	**DIOXINS/FURANS**									
	1,2,3,6,7,8-HxCDD	5.94	J	ng/Kg	0.75	U	ng/Kg	7.9 × SQL	NL/NA	NL/NA
	1,2,3,7,8,9-HxCDD	1.97	J	ng/Kg	0.77	U	ng/Kg	2.6 × SQL	NL/NA	NL/NA
	1,2,3,4,6,7,8-HpCDD	270	J	ng/Kg	21.2		ng/Kg	12.7 × Ref	NL/NA	NL/NA
	1,2,3,4,7,8-HxCDF	0.395	J EB	ng/Kg	0.3	U	ng/Kg	1.3 × SQL	NL/NA	NL/NA
	1,2,3,4,6,7,8-HpCDF	16	J	ng/Kg	1.77	J	ng/Kg	9 × Ref	NL/NA	NL/NA
	1,2,3,4,7,8,9-HpCDF	0.913	J	ng/Kg	0.6	U	ng/Kg	1.5 × SQL	NL/NA	NL/NA
	1,2,3,4,6,7,8,9-OCDF	34.8	J	ng/Kg	3.05	J	ng/Kg	11.4 × Ref	NL/NA	NL/NA
	Toxicity Equivalent Factor	5.21	J	ng/Kg	0.663	J	ng/Kg	7.9 × Ref	20 ng/Kg	NL/NA
	INORGANICS									
	Arsenic	**94.6**	**J**	**mg/Kg**	11.4		mg/Kg	8.3 × Ref	20 mg/Kg	NA
	Chromium (Total)†	**41.9**	**EB**	**mg/Kg**		NA		NA	30 mg/Kg	NA
SO-20	**DIOXINS/FURANS**									
	1,2,3,7,8-PeCDD	1.39	J	ng/Kg	0.88	U	ng/Kg	1.6 × SQL	NL/NA	NL/NA
	1,2,3,4,7,8-HxCDD	1.53	J	ng/Kg	0.73	U	ng/Kg	2.1 × SQL	NL/NA	NL/NA
	1,2,3,6,7,8-HxCDD	24.8	J EB	ng/Kg	0.75	U	ng/Kg	33 × SQL	NL/NA	NL/NA
	1,2,3,7,8,9-HxCDD	7.13	J	ng/Kg	0.77	U	ng/Kg	9.2 × SQL	NL/NA	NL/NA
	1,2,3,4,6,7,8-HpCDD	858	J EB	ng/Kg	21.2		ng/Kg	40.5 × Ref	NL/NA	NL/NA
	1,2,3,4,6,7,8,9-OCDD	10,100	J EB	ng/Kg	1,440		ng/Kg	7 × Ref	NL/NA	NL/NA
	2,3,7,8-TCDF	0.361	EB EMPC	ng/Kg	0.26	U	ng/Kg	1.4 × SQL	NL/NA	NL/NA

Table 5

Summary of Analytical Results
Soil/Source Sample Analysis for Creese & Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	Mass DEP Method 1 S-1/GW-1		Mass DEP Imminent Hazard*
SO-20	**DIOXINS/FURANS**										
	1,2,3,4,7,8-HxCDF	1.23	J	ng/Kg	0.3	U	ng/Kg	4 × SQL	NL/NA		NL/NA
	1,2,3,6,7,8-HxCDF	0.585	EMPC	ng/Kg	0.31	U	ng/Kg	1.9 × SQL	NL/NA		NL/NA
	2,3,4,6,7,8-HxCDF	1.03	EMPC	ng/Kg	0.35	U	ng/Kg	3 × SQL	NL/NA		NL/NA
	1,2,3,4,6,7,8-HpCDF	57.2	J EB	ng/Kg	1.77	J	ng/Kg	32.2 × Ref	NL/NA		NL/NA
	1,2,3,4,7,8,9-HpCDF	2.89	J	ng/Kg	0.6	U	ng/Kg	4.8 × SQL	NL/NA		NL/NA
	1,2,3,4,6,7,8,9-OCDF	116	J	ng/Kg	3.05	J	ng/Kg	38 × Ref	NL/NA		NL/NA
	Toxicity Equivalent Factor	17.4	J	ng/Kg	0.663	J	ng/Kg	26.2 × Ref	20	ng/Kg	NL/NA
	INORGANICS										
	Arsenic	**83.2**		**mg/Kg**	11.4		mg/Kg	7.3 × Ref	20	mg/Kg	NA
	Calcium	2,900		mg/KG	867		mg/Kg	3.3 × Ref	NL/NA		NL/NA
	Chromium (Total)	**173**		**mg/Kg**	17.3		mg/Kg	10 × Ref	30	mg/Kg	NA
	Copper	32.5		mg/Kg	9	J	mg/Kg	3.6 × Ref	NL/NA		NL/NA
	Thallium	3.9	J	mg/Kg	3.0	UJ	mg/Kg	1.3 × SQL	8	mg/Kg	NL/NA
SO-25	**DIOXINS/FURANS**										
	2,3,7,8-TCDD	2.16	J	ng/Kg	0.24	U	ng/Kg	8.9 × SQL	NL/NA		NL/NA
	1,2,3,7,8-PeCDD	2.71	J	ng/Kg	0.88	U	ng/Kg	3.1 × SQL	NL/NA		NL/NA
	1,2,3,4,7,8-HxCDD	11.2	J	ng/Kg	0.73	U	ng/Kg	15.3 × SQL	NL/NA		NL/NA
	1,2,3,6,7,8-HxCDD	134	J	ng/Kg	0.75	U	ng/Kg	178.2 × SQL	NL/NA		NL/NA
	1,2,3,7,8,9-HxCDD	38.2	J	ng/Kg	0.77	U	ng/Kg	49.5 × SQL	NL/NA		NL/NA
	1,2,3,4,6,7,8-HpCDD	4,560	J	ng/Kg	21.2		ng/Kg	215.1 × Ref	NL/NA		NL/NA

Table 5

Summary of Analytical Results
Soil/Source Sample Analysis for Creese & Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	Mass DEP Method 1 S-1/GW-1		Mass DEP Imminent Hazard*
SO-25	**DIOXINS/FURANS**										
	1,2,3,4,6,7,8,9-OCDD	56,800	J	ng/Kg	1,440		ng/Kg	39.4 × Ref	NL/NA		NL/NA
	2,3,7,8-TCDF	1.59	J	ng/Kg	0.26	U	ng/Kg	6.1 × SQL	NL/NA		NL/NA
	1,2,3,7,8-PeCDF	0.639	J	ng/Kg	0.23	U	ng/Kg	2.8 × SQL	NL/NA		NL/NA
	2,3,4,7,8-PeCDF	1.01	J	ng/Kg	0.35	U	ng/Kg	2.9 × SQL	NL/NA		NL/NA
	1,2,3,4,7,8-HxCDF	6.99	J EB	ng/Kg	0.3	U	ng/Kg	23 × SQL	NL/NA		NL/NA
	1,2,3,6,7,8-HxCDF	2.74	J EB	ng/Kg	0.31	U	ng/Kg	8.8 × SQL	NL/NA		NL/NA
	2,3,4,6,7,8-HxCDF	9.29	J	ng/Kg	0.35	U	ng/Kg	26.9 × SQL	NL/NA		NL/NA
	1,2,3,4,6,7,8-HpCDF	255	J	ng/Kg	1.77	J	ng/Kg	144.1 × Ref	NL/NA		NL/NA
	1,2,3,4,7,8,9-HpCDF	5.97	J	ng/Kg	0.6	U	ng/Kg	10 × SQL	NL/NA		NL/NA
	1,2,3,4,6,7,8,9-OCDF	215	J	ng/Kg	3.05	J	ng/Kg	70.5 × Ref	NL/NA		NL/NA
	Toxicity Equivalent Factor	**90.9**	**J**	**ng/Kg**	0.663	J	ng/Kg	137.1 × Ref	20	ng/Kg	NL/NA
	INORGANICS										
	Arsenic	**373**	**J**	**mg/Kg**	11.4		mg/Kg	32.7 × Ref	20	mg/Kg	NA
	Calcium	7,920		mg/Kg	867		mg/Kg	9.1 × Ref	NL/NA		NL/NA
	Chromium (Total)	**301**	**EB**	**mg/Kg**	17.3		mg/Kg	17.4 × Ref	30	mg/Kg	NA
	Mercury	1.3		mg/Kg	0.04	J	mg/kg	32.5 × Ref	20	mg/Kg	NA
	Thallium	3.3	J	mg/Kg	3.0	UJ	mg/Kg	1.1 × SQL	8	mg/Kg	NL/NA

Table 5

Summary of Analytical Results
Soil/Source Sample Analysis for Creese & Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	Mass DEP Method 1 S-1/GW-1		Mass DEP Imminent Hazard*
SO-26	**DIOXINS/FURANS**										
	1,2,3,7,8-PeCDD	1.29	J	ng/Kg	0.88	U	ng/Kg	1.5 × SQL	NL/NA		NL/NA
	1,2,3,4,7,8-HxCDD	1.36	J	ng/Kg	0.73	U	ng/Kg	1.9 × SQL	NL/NA		NL/NA
	1,2,3,6,7,8-HxCDD	22.1	J EB	ng/Kg	0.75	U	ng/Kg	29.4 × SQL	NL/NA		NL/NA
	1,2,3,7,8,9-HxCDD	6.13	J	ng/Kg	0.77	U	ng/Kg	7.9 × SQL	NL/NA		NL/NA
	1,2,3,4,6,7,8-HpCDD	762	J EB	ng/Kg	21.2		ng/Kg	35.9 × Ref	NL/NA		NL/NA
	1,2,3,4,6,7,8,9-OCDD	8,860	J EB	ng/Kg	1,440		ng/Kg	6.2 × Ref	NL/NA		NL/NA
	1,2,3,4,7,8-HxCDF	1.02	J	ng/Kg	0.3	U	ng/Kg	3.4 × SQL	NL/NA		NL/NA
	1,2,3,6,7,8-HxCDF	0.52	J	ng/Kg	0.31	U	ng/Kg	1.7 × SQL	NL/NA		NL/NA
	2,3,4,6,7,8-HxCDF	0.964	J	ng/Kg	0.35	U	ng/Kg	2.8 × SQL	NL/NA		NL/NA
	1,2,3,4,6,7,8-HpCDF	51.2	J EB	ng/Kg	1.77	J	ng/Kg	28.9 × Ref	NL/NA		NL/NA
	1,2,3,4,7,8,9-HpCDF	2.48	J	ng/Kg	0.6	U	ng/Kg	4.2 × SQL	NL/NA		NL/NA
	1,2,3,4,6,7,8,9-OCDF	106	J	ng/Kg	3.05	J	ng/Kg	34.8 × Ref	NL/NA		NL/NA
	Toxicity Equivalent Factor	15.5	J	ng/Kg	0.663	J	ng/Kg	23.4 × Ref	20	ng/Kg	NL/NA
	INORGANICS										
	Arsenic	**72.5**		**mg/Kg**	11.4		mg/Kg	6.4 × Ref	20	mg/Kg	NA
	Chromium (Total)	**160**		**mg/Kg**	17.3		mg/Kg	9.2 × Ref	30	mg/Kg	NA
	Thallium	3.5	J	mg/Kg	3.0	UJ	mg/Kg	1.2 × SQL	8	mg/Kg	NL/NA

Table 5

Summary of Analytical Results
Soil/Source Sample Analysis for Creese & Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	Mass DEP Method 1 S-1/GW-1	Mass DEP Imminent Hazard*
SO-50	**DIOXINS/FURANS**									
	2,3,7,8-TCDD	0.654	J	ng/Kg	0.24	U	ng/Kg	2.7 × SQL	NL/NA	NL/NA
	1,2,3,7,8-PeCDD	3.51	J	ng/Kg	0.88	U	ng/Kg	4 × SQL	NL/NA	NL/NA
	1,2,3,4,7,8-HxCDD	4.1	J	ng/Kg	0.73	U	ng/Kg	5.6 × SQL	NL/NA	NL/NA
	1,2,3,6,7,8-HxCDD	22.4		ng/Kg	0.75	U	ng/Kg	29.8 × SQL	NL/NA	NL/NA
	1,2,3,7,8,9-HxCDD	1.87	J	ng/Kg	0.77	U	ng/Kg	2.4 × SQL	NL/NA	NL/NA
	1,2,3,4,6,7,8-HpCDD	797		ng/Kg	21.2		ng/Kg	37.6 × Ref	NL/NA	NL/NA
	1,2,3,4,6,7,8,9-OCDD	12000	J	ng/Kg	1,440		ng/Kg	8.3 × Ref	NL/NA	NL/NA
	2,3,7,8-TCDF	1.27		ng/Kg	0.26	U	ng/Kg	4.9 × SQL	NL/NA	NL/NA
	1,2,3,7,8-PeCDF	1.02	J	ng/Kg	0.23	U	ng/Kg	4.5 × SQL	NL/NA	NL/NA
	2,3,4,7,8-PeCDF	2.68	J	ng/Kg	0.35	U	ng/Kg	7.7 × SQL	NL/NA	NL/NA
	1,2,3,4,7,8-HxCDF	3.98	J	ng/Kg	0.3	U	ng/Kg	13.1 × SQL	NL/NA	NL/NA
	1,2,3,6,7,8-HxCDF	4.14	J	ng/Kg	0.31	U	ng/Kg	13.3 × SQL	NL/NA	NL/NA
	1,2,3,7,8,9-HxCDF	1.08	J	ng/Kg	0.47	U	ng/Kg	2.3 × SQL	NL/NA	NL/NA
	2,3,4,6,7,8-HxCDF	4.34	J	ng/Kg	0.35	U	ng/Kg	12.6 × SQL	NL/NA	NL/NA
	1,2,3,4,6,7,8-HpCDF	115		ng/Kg	1.77	J	ng/Kg	65 × Ref	NL/NA	NL/NA
	1,2,3,4,7,8,9-HpCDF	7.1		ng/Kg	0.6	U	ng/Kg	11.9 × SQL	NL/NA	NL/NA
	1,2,3,4,6,7,8,9-OCDF	386		ng/Kg	3.05	J	ng/Kg	126.6 × Ref	NL/NA	NL/NA
	Toxicity Equivalent Factor	**22.2**	**J**	**ng/Kg**	0.663	J	ng/Kg	33.5 × Ref	20 ng/Kg	NL/NA

Table 5

Summary of Analytical Results
Soil/Source Sample Analysis for Creese & Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	Mass DEP Method 1 S-1/GW-1		Mass DEP Imminent Hazard*	
SO-50	**INORGANICS**											
	Arsenic	***203***		***mg/Kg***	11.4		mg/Kg	17.8 × Ref	20	mg/Kg	40	mg/Kg
	Barium	102		mg/Kg	21.2	J	mg/Kg	4.8 × Ref	1,000	mg/Kg	NL	
	Cadmium	1.9		mg/Kg	0.6	UJ	mg/Kg	3.2 × SQL	2	mg/Kg	60	mg/Kg
	Calcium	6,450		mg/Kg	867		mg/Kg	7.4 × Ref	NL		NL	
	Chromium (total)	***340***		***mg/Kg***	17.3		mg/Kg	19.7 × Ref	30	mg/Kg	200	mg/Kg
	Mercury	0.97		mg/Kg	0.04	J	mg/kg	24.3 × Ref	20	mg/Kg	300	mg/Kg
	Nickel†	**21.2**		mg/Kg		NA		NA	20	mg/Kg	NL	
	Potassium	1,510	J	mg/Kg	448	J	mg/Kg	3.4 × Ref	NL		NL	
SO-51	**DIOXINS/FURANS**											
	2,3,7,8-TCDD	0.255	J	ng/Kg	0.24	U	ng/Kg	1.1 × SQL	NL/NA		NL/NA	
	1,2,3,4,7,8-HxCDD	2.64	J	ng/Kg	0.73	U	ng/Kg	3.6 × SQL	NL/NA		NL/NA	
	1,2,3,6,7,8-HxCDD	16.4		ng/Kg	0.75	U	ng/Kg	21.8 × SQL	NL/NA		NL/NA	
	1,2,3,7,8,9-HxCDD	6.05		ng/Kg	0.77	U	ng/Kg	7.8 × SQL	NL/NA		NL/NA	
	1,2,3,4,6,7,8-HpCDD	605		ng/Kg	21.2		ng/Kg	28.5 × Ref	NL/NA		NL/NA	
	1,2,3,4,6,7,8,9-OCDD	8200	J	ng/Kg	1,440		ng/Kg	5.7 × Ref	NL/NA		NL/NA	
	1,2,3,4,7,8-HxCDF	1.26	J	ng/Kg	0.3	U	ng/Kg	4.1 × SQL	NL/NA		NL/NA	
	1,2,3,6,7,8-HxCDF	1	J	ng/Kg	0.31	U	ng/Kg	3.2 × SQL	NL/NA		NL/NA	
	2,3,4,6,7,8-HxCDF	2.59	J	ng/Kg	0.35	U	ng/Kg	7.5 × SQL	NL/NA		NL/NA	

Table 5

Summary of Analytical Results
Soil/Source Sample Analysis for Creese & Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	Mass DEP Method 1 S-1/GW-1		Mass DEP Imminent Hazard*	
SO-51	**DIOXINS/FURANS**											
	1,2,3,4,6,7,8-HpCDF	40.1		ng/Kg	1.77	J	ng/Kg	22.7 × Ref	NL/NA		NL/NA	
	1,2,3,4,7,8,9-HpCDF	1.65	J	ng/Kg	0.6	U	ng/Kg	2.8 × SQL	NL/NA		NL/NA	
	1,2,3,4,6,7,8,9-OCDF	76.7		ng/Kg	3.05	J	ng/Kg	25.1 × Ref	NL/NA		NL/NA	
	Toxicity Equivalent Factor	12.2	J	ng/Kg	0.663	J	ng/Kg	18.4 × Ref	20	ng/Kg	NL/NA	
	INORGANICS											
	Arsenic†	**22.2**		**mg/Kg**	NA			NA	20	mg/Kg	NA	
	Chromium (total)	**57.1**		**mg/Kg**	17.3		mg/Kg	3.3 × Ref	30	mg/Kg	NA	
SO-54	**INORGANICS**											
	Arsenic	***56.8***		***mg/Kg***	11.4		mg/Kg	5.0 × Ref	20	mg/Kg	40	mg/Kg
	Calcium	3,610		mg/Kg	867		mg/Kg	4.2 × Ref	NL		NL	
	Chromium (Total)	**71.9**		**mg/Kg**	17.3		mg/Kg	4.2 × Ref	30	mg/Kg	200	mg/Kg
	Mercury	0.16		mg/Kg	0.04	J	mg/kg	4.0 × Ref	20	mg/Kg	300	mg/Kg
	Potassium	2,060	J	mg/Kg	448	J	mg/Kg	4.6 × Ref	NL		NL	
SO-55	**INORGANICS**											
	Arsenic	***82.9***		***mg/Kg***	11.4		mg/Kg	7.3 × Ref	20	mg/Kg	40	mg/Kg
	Cadmium	0.94		mg/Kg	0.6	UJ	mg/Kg	1.6 × SQL	2	mg/Kg	60	mg/Kg
	Calcium	3,190		mg/Kg	867		mg/Kg	3.7 × Ref	NL		NL	
	Chromium (Total)	***218***		***mg/Kg***	17.3		mg/Kg	12.6 × Ref	30	mg/Kg	200	mg/Kg

Table 5

Summary of Analytical Results
Soil/Source Sample Analysis for Creese & Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	Mass DEP Method 1 S-1/GW-1	Mass DEP Imminent Hazard*
SO-56	**DIOXINS/FURANS**									
	2,3,7,8-TCDD	8.74		ng/Kg	0.24	U	ng/Kg	36.1 × SQL	NL/NA	NL/NA
	1,2,3,7,8-PeCDD	74.8		ng/Kg	0.88	U	ng/Kg	84.9 × SQL	NL/NA	NL/NA
	1,2,3,4,7,8-HxCDD	159		ng/Kg	0.73	U	ng/Kg	216.6 × SQL	NL/NA	NL/NA
	1,2,3,6,7,8-HxCDD	1170		ng/Kg	0.75	U	ng/Kg	1,556 × SQL	NL/NA	NL/NA
	1,2,3,7,8,9-HxCDD	288		ng/Kg	0.77	U	ng/Kg	373 × SQL	NL/NA	NL/NA
	1,2,3,4,6,7,8-HpCDD	30,400		ng/Kg	21.2		ng/Kg	1,434 × Ref	NL/NA	NL/NA
	1,2,3,4,6,7,8,9-OCDD	261,000	J	ng/Kg	1,440		ng/Kg	181.3 × Ref	NL/NA	NL/NA
	2,3,7,8-TCDF	4.41		ng/Kg	0.26	U	ng/Kg	17 × SQL	NL/NA	NL/NA
	1,2,3,7,8-PeCDF	9.77		ng/Kg	0.23	U	ng/Kg	43.2 × SQL	NL/NA	NL/NA
	2,3,4,7,8-PeCDF	20.1		ng/Kg	0.35	U	ng/Kg	57.4 × SQL	NL/NA	NL/NA
	1,2,3,4,7,8-HxCDF	121		ng/Kg	0.3	U	ng/Kg	398 × SQL	NL/NA	NL/NA
	1,2,3,6,7,8-HxCDF	119		ng/Kg	0.31	U	ng/Kg	381.4 × SQL	NL/NA	NL/NA
	1,2,3,7,8,9-HxCDF	16.2	J	ng/Kg	0.47	U	ng/Kg	34.5 × SQL	NL/NA	NL/NA
	2,3,4,6,7,8-HxCDF	181		ng/Kg	0.35	U	ng/Kg	524.6 × SQL	NL/NA	NL/NA
	1,2,3,4,6,7,8-HpCDF	5,180		ng/Kg	1.77	J	ng/Kg	2,927 × Ref	NL/NA	NL/NA
	1,2,3,4,7,8,9-HpCDF	342		ng/Kg	0.6	U	ng/Kg	572.9 × SQL	NL/NA	NL/NA
	1,2,3,4,6,7,8,9-OCDF	18,800		ng/Kg	3.05	J	ng/Kg	6,164 × Ref	NL/NA	NL/NA
	Toxicity Equivalent Factor	**739**	**J**	**ng/Kg**	0.663	J	ng/Kg	1,115 × Ref	20 ng/Kg	NL/NA

Table 5

Summary of Analytical Results
Soil/Source Sample Analysis for Creese & Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	Mass DEP Method 1 S-1/GW-1		Mass DEP Imminent Hazard*	
SO-56	**INORGANICS**											
	Arsenic	***100***		***mg/Kg***	11.4		mg/Kg	8.8 × Ref	20	mg/Kg	40	mg/Kg
	Barium	80.2		mg/Kg	21.2	J	mg/Kg	3.8 × Ref	1,000	mg/Kg	NL	
	Cadmium	**3.3**		**mg/Kg**	0.6	UJ	mg/Kg	5.6 × SQL	2	mg/Kg	60	mg/Kg
	Calcium	7,140		mg/Kg	867		mg/Kg	8.2 × Ref	NL		NL	
	Chromium (Total)	***7,330***		***mg/Kg***	17.3		mg/Kg	423.7 × Ref	30	mg/Kg	200	mg/Kg
	Copper	34.0		mg/Kg	9.0	J	mg/Kg	3.8 × Ref	NL		NL	
	Lead	202		mg/Kg	64.5		mg/Kg	3.1 × Ref	300	mg/Kg	NL	
	Mercury	0.40		mg/Kg	0.04	J	mg/Kg	10 × Ref	20	mg/Kg	300	mg/Kg
	Zinc	239		mg/Kg	53.7		mg/Kg	4.5 × Ref	2,500	mg/Kg	NL	
SO-57	**DIOXINS/FURANS**											
	2,3,7,8-TCDD	83.6		ng/Kg	0.24	U	ng/Kg	345.5 × SQL	NL/NA		NL/NA	
	1,2,3,7,8-PeCDD	42.4	J	ng/Kg	0.88	U	ng/Kg	48.1 × SQL	NL/NA		NL/NA	
	1,2,3,4,7,8-HxCDD	253		ng/Kg	0.73	U	ng/Kg	344.7 × SQL	NL/NA		NL/NA	
	1,2,3,6,7,8-HxCDD	3,280		ng/Kg	0.75	U	ng/Kg	4,362 × SQL	NL/NA		NL/NA	
	1,2,3,7,8,9-HxCDD	396		ng/Kg	0.77	U	ng/Kg	513 × SQL	NL/NA		NL/NA	
	1,2,3,4,6,7,8-HpCDD	122,000		ng/Kg	21.2		ng/Kg	5,755 × Ref	NL/NA		NL/NA	
	1,2,3,4,6,7,8,9-OCDD	1,020,000	J	ng/Kg	1,440		ng/Kg	708.3 × Ref	NL/NA		NL/NA	
	1,2,3,7,8-PeCDF	19.4	J	ng/Kg	0.23	U	ng/Kg	85.8 × SQL	NL/NA		NL/NA	
	2,3,4,7,8-PeCDF	35.3	J	ng/Kg	0.35	U	ng/Kg	100.9 × SQL	NL/NA		NL/NA	

Table 5

Summary of Analytical Results
Soil/Source Sample Analysis for Creese & Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	Mass DEP Method 1 S-1/GW-1		Mass DEP Imminent Hazard*	
SO-57	**DIOXINS/FURANS**											
	1,2,3,4,7,8-HxCDF	288		ng/Kg	0.3	U	ng/Kg	947.4 × SQL	NL/NA		NL/NA	
	1,2,3,6,7,8-HxCDF	214		ng/Kg	0.31	U	ng/Kg	685.9 × SQL	NL/NA		NL/NA	
	1,2,3,7,8,9-HxCDF	70.1	J	ng/Kg	0.47	U	ng/Kg	149.1 × SQL	NL/NA		NL/NA	
	2,3,4,6,7,8-HxCDF	386		ng/Kg	0.35	U	ng/Kg	1,119 × SQL	NL/NA		NL/NA	
	1,2,3,4,6,7,8-HpCDF	29,500		ng/Kg	1.77	J	ng/Kg	16,667 × Ref	NL/NA		NL/NA	
	1,2,3,4,7,8,9-HpCDF	1,770		ng/Kg	0.6	U	ng/Kg	2,965 × SQL	NL/NA		NL/NA	
	1,2,3,4,6,7,8,9-OCDF	194,000		ng/Kg	3.05	J	ng/Kg	63,607 × Ref	NL/NA		NL/NA	
	Toxicity Equivalent Factor	**2,520**	**J**	**ng/Kg**	0.663	J	ng/Kg	3,801 × Ref	20	ng/Kg	NL/NA	
	INORGANICS											
	Arsenic	***42.6***		***mg/Kg***	11.4		mg/Kg	3.7 × Ref	20	mg/Kg	40	mg/Kg
	Barium	**1,020**		**mg/Kg**	21.2	J	mg/Kg	48.1× Ref	1,000	mg/Kg	NL	
	Calcium	3,620		mg/Kg	867		mg/Kg	4.2 × Ref	NL		NL	
	Chromium (Total)	***13,900***		***mg/Kg***	17.3		mg/Kg	803.5 × Ref	30	mg/Kg	200	mg/Kg
	Copper	80.0		mg/Kg	9.0	J	mg/Kg	8.9 × Ref	NL		NL	
	Lead	254		mg/Kg	64.5		mg/Kg	3.9 × Ref	300	mg/Kg	NL	
	Mercury	9.3		mg/Kg	0.04	J	mg/Kg	232.5 × Ref	20	mg/Kg	300	mg/Kg
SO-58	**DIOXINS/FURANS**											
	2,3,7,8-TCDD	76		ng/Kg	0.24	U	ng/Kg	314 × SQL	NL/NA		NL/NA	
	1,2,3,7,8-PeCDD	155	J	ng/Kg	0.88	U	ng/Kg	175.9 × SQL	NL/NA		NL/NA	

Table 5

Summary of Analytical Results
Soil/Source Sample Analysis for Creese & Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	Mass DEP Method 1 S-1/GW-1		Mass DEP Imminent Hazard*	
SO-58	**DIOXINS/FURANS**											
	1,2,3,4,7,8-HxCDD	2,340		ng/Kg	0.73	U	ng/Kg	3,188 × SQL	NL/NA		NL/NA	
	1,2,3,6,7,8-HxCDD	16,000		ng/Kg	0.75	U	ng/Kg	21,277 × SQL	NL/NA		NL/NA	
	1,2,3,7,8,9-HxCDD	1,890		ng/Kg	0.77	U	ng/Kg	2,448 × SQL	NL/NA		NL/NA	
	1,2,3,4,6,7,8-HpCDD	607,000		ng/Kg	21.2		ng/Kg	28,632 × Ref	NL/NA		NL/NA	
	1,2,3,4,6,7,8,9-OCDD	3,160,000	J	ng/Kg	1,440		ng/Kg	2,194 × Ref	NL/NA		NL/NA	
	1,2,3,7,8-PeCDF	34	J	ng/Kg	0.23	U	ng/Kg	150.4 × SQL	NL/NA		NL/NA	
	2,3,4,7,8-PeCDF	70.7	J	ng/Kg	0.35	U	ng/Kg	202 × SQL	NL/NA		NL/NA	
	1,2,3,4,7,8-HxCDF	1,710		ng/Kg	0.3	U	ng/Kg	5,625 × SQL	NL/NA		NL/NA	
	1,2,3,6,7,8-HxCDF	787		ng/Kg	0.31	U	ng/Kg	2,522 × SQL	NL/NA		NL/NA	
	1,2,3,7,8,9-HxCDF	255		ng/Kg	0.47	U	ng/Kg	542.6 × SQL	NL/NA		NL/NA	
	2,3,4,6,7,8-HxCDF	1,190		ng/Kg	0.35	U	ng/Kg	3,449 × SQL	NL/NA		NL/NA	
	1,2,3,4,6,7,8-HpCDF	113,000		ng/Kg	1.77	J	ng/Kg	63,842 × SQL	NL/NA		NL/NA	
	1,2,3,4,7,8,9-HpCDF	9,480		ng/Kg	0.6	U	ng/Kg	15,879 × Ref	NL/NA		NL/NA	
	1,2,3,4,6,7,8,9-OCDF	359,000		ng/Kg	3.05	J	ng/Kg	117,705 × Ref	NL/NA		NL/NA	
	Toxicity Equivalent Factor	**11,000**	**J**	**ng/Kg**	0.663	J	ng/Kg	16,591 × Ref	20	ng/Kg	NL/NA	
	INORGANICS											
	Barium	496		mg/Kg	21.2	J	mg/Kg	23.4 × Ref	1,000	mg/Kg	NL	
	Chromium (Total)	***20,500***		***mg/Kg***	17.3		mg/Kg	1,185 × Ref	30	mg/Kg	200	mg/Kg
	Copper	75.3		mg/Kg	9.0	J	mg/Kg	8.4 × Ref	NL		NL	
	Lead	**407**		**mg/Kg**	64.5		mg/Kg	6.3 × Ref	300	mg/Kg	NL	

Table 5

Summary of Analytical Results
Soil/Source Sample Analysis for Creese & Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	Mass DEP Method 1 S-1/GW-1		Mass DEP Imminent Hazard*	
SO-58	**INORGANICS**											
	Mercury	5.4		mg/Kg	0.04	J	mg/Kg	135 × Ref	20	mg/Kg	300	mg/Kg
	Silver	2.4	J		1.2	UJ	mg/Kg	2.0 × SQL	100	mg/Kg	NL	
SO-59	**DIOXINS/FURANS**											
	2,3,7,8-TCDD	8.32		ng/Kg	0.24	U	ng/Kg	34.4 × SQL	NL/NA		NL/NA	
	1,2,3,7,8-PeCDD	47.5		ng/Kg	0.88	U	ng/Kg	53.9 × SQL	NL/NA		NL/NA	
	1,2,3,4,7,8-HxCDD	100		ng/Kg	0.73	U	ng/Kg	136.2 × SQL	NL/NA		NL/NA	
	1,2,3,6,7,8-HxCDD	1,380		ng/Kg	0.75	U	ng/Kg	1,835 × SQL	NL/NA		NL/NA	
	1,2,3,7,8,9-HxCDD	192		ng/Kg	0.77	U	ng/Kg	248.7 × SQL	NL/NA		NL/NA	
	1,2,3,4,6,7,8-HpCDD	29,400		ng/Kg	21.2		ng/Kg	1,387 × Ref	NL/NA		NL/NA	
	1,2,3,4,6,7,8,9-OCDD	230,000	J	ng/Kg	1,440		ng/Kg	159.7 × Ref	NL/NA		NL/NA	
	2,3,7,8-TCDF	6.66		ng/Kg	0.26	U	ng/Kg	25.7 × SQL	NL/NA		NL/NA	
	1,2,3,7,8-PeCDF	10.5		ng/Kg	0.23	U	ng/Kg	46.5 × SQL	NL/NA		NL/NA	
	2,3,4,7,8-PeCDF	29.5		ng/Kg	0.35	U	ng/Kg	84.3 × SQL	NL/NA		NL/NA	
	1,2,3,4,7,8-HxCDF	227		ng/Kg	0.3	U	ng/Kg	746.7 × SQL	NL/NA		NL/NA	
	1,2,3,6,7,8-HxCDF	53.1		ng/Kg	0.31	U	ng/Kg	170.2 × SQL	NL/NA		NL/NA	
	1,2,3,7,8,9-HxCDF	15.5	J	ng/Kg	0.47	U	ng/Kg	33 × SQL	NL/NA		NL/NA	
	2,3,4,6,7,8-HxCDF	149		ng/Kg	0.35	U	ng/Kg	431.9 × SQL	NL/NA		NL/NA	
	1,2,3,4,6,7,8-HpCDF	4,480		ng/Kg	1.77	J	ng/Kg	2,531× Ref	NL/NA		NL/NA	
	1,2,3,4,7,8,9-HpCDF	272		ng/Kg	0.6	U	ng/Kg	455.6 × SQL	NL/NA		NL/NA	
	1,2,3,4,6,7,8,9-OCDF	8,970		ng/Kg	3.05	J	ng/Kg	2,941 × Ref	NL/NA		NL/NA	
	Toxicity Equivalent Factor	**691**	**J**	ng/Kg	0.663	J	ng/Kg	1,042 × Ref	20	ng/Kg	NL/NA	

Table 5

Summary of Analytical Results
Soil/Source Sample Analysis for Creese & Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	Mass DEP Method 1 S-1/GW-1		Mass DEP Imminent Hazard*	
SO-59	**INORGANICS**											
	Arsenic	***93.9***		***mg/Kg***	11.4		mg/Kg	8.2 × Ref	20	mg/Kg	40	mg/Kg
	Barium	274		mg/Kg	21.2	J	mg/Kg	12.9 × Ref	1,000	mg/Kg	NL	
	Cadmium	**23.2**		**mg/Kg**	0.59	UJ	mg/Kg	39.3 × SQL	2	mg/Kg	60	mg/Kg
	Calcium	6,090		mg/Kg	867		mg/Kg	7.0 × Ref	NL		NL	
	Chromium (Total)	***4,020***		***mg/Kg***	17.3		mg/Kg	232.4 × Ref	30	mg/Kg	200	mg/Kg
	Copper	42		mg/Kg	9.0	J	mg/Kg	4.7 × Ref	NL		NL	
	Lead	**919**		**mg/Kg**	64.5		mg/Kg	14.2 × Ref	300	mg/Kg	NL	
	Mercury	0.37		mg/Kg	0.04	J	mg/Kg	9.3 × Ref	20	mg/Kg	300	mg/Kg
	Zinc	333		mg/Kg	53.7		mg/Kg	6.2 × Ref	2,500	mg/Kg	NL	
SO-60	**DIOXINS/FURANS**											
	2,3,7,8-TCDD	22		ng/Kg	0.24	U	ng/Kg	90.9 × SQL	NL/NA		NL/NA	
	1,2,3,7,8-PeCDD	49.8	J	ng/Kg	0.88	U	ng/Kg	56.5 × SQL	NL/NA		NL/NA	
	1,2,3,4,7,8-HxCDD	690		ng/Kg	0.73	U	ng/Kg	940.1 × SQL	NL/NA		NL/NA	
	1,2,3,6,7,8-HxCDD	4,850		ng/Kg	0.75	U	ng/Kg	6,450 × SQL	NL/NA		NL/NA	
	1,2,3,7,8,9-HxCDD	889		ng/Kg	0.77	U	ng/Kg	1,152 × SQL	NL/NA		NL/NA	
	1,2,3,4,6,7,8-HpCDD	191,000		ng/Kg	21.2		ng/Kg	9,009 × Ref	NL/NA		NL/NA	
	1,2,3,4,6,7,8,9-OCDD	1,290,000	J	ng/Kg	1,440		ng/Kg	895.8 × Ref	NL/NA		NL/NA	
	1,2,3,7,8-PeCDF	11.5	J	ng/Kg	0.23	U	ng/Kg	50.9 × SQL	NL/NA		NL/NA	
	2,3,4,7,8-PeCDF	27.5	J	ng/Kg	0.35	U	ng/Kg	78.6 × SQL	NL/NA		NL/NA	

Table 5

Summary of Analytical Results
Soil/Source Sample Analysis for Creese & Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	Mass DEP Method 1 S-1/GW-1		Mass DEP Imminent Hazard*	
SO-60	**DIOXINS/FURANS**											
	1,2,3,4,7,8-HxCDF	537		ng/Kg	0.3	U	ng/Kg	1,766 × SQL	NL/NA		NL/NA	
	1,2,3,6,7,8-HxCDF	352		ng/Kg	0.31	U	ng/Kg	1,128 × SQL	NL/NA		NL/NA	
	1,2,3,7,8,9-HxCDF	76.9		ng/Kg	0.47	U	ng/Kg	163.6 × SQL	NL/NA		NL/NA	
	2,3,4,6,7,8-HxCDF	426		ng/Kg	0.35	U	ng/Kg	1,235 × SQL	NL/NA		NL/NA	
	1,2,3,4,6,7,8-HpCDF	34,200		ng/Kg	1.77	J	ng/Kg	19,322 × Ref	NL/NA		NL/NA	
	1,2,3,4,7,8,9-HpCDF	2,630		ng/Kg	0.6	U	ng/Kg	4,405 × SQL	NL/NA		NL/NA	
	1,2,3,4,6,7,8,9-OCDF	91,900		ng/Kg	3.05	J	ng/Kg	30,131 × Ref	NL/NA		NL/NA	
	Toxicity Equivalent Factor	**3,560**	**J**	**ng/Kg**	0.663	J	ng/Kg	5,370 × Ref	20	ng/Kg	NL/NA	
	INORGANICS											
	Arsenic	***565***		***mg/Kg***	11.4		mg/Kg	49.6 × Ref	20	mg/Kg	40	mg/Kg
	Cadmium	**5.3**		**mg/Kg**	0.59	UJ	mg/Kg	9.0 × SQL	2	mg/Kg	60	mg/Kg
	Calcium	8,980		mg/Kg	867		mg/Kg	10.4 × Ref	NL		NL	
	Chromium (Total)	***1,140***		***mg/Kg***	17.3		mg/Kg	65.9 × Ref	30	mg/Kg	200	mg/Kg
	Mercury	1.9		mg/Kg	0.04	J	mg/Kg	47.5 × Ref	20	mg/Kg	300	mg/Kg
SO-61	**DIOXINS/FURANS**											
	2,3,7,8-TCDD	8.68		ng/Kg	0.24	U	ng/Kg	35.9 × SQL	NL/NA		NL/NA	
	1,2,3,7,8-PeCDD	37	J	ng/Kg	0.88	U	ng/Kg	42 × SQL	NL/NA		NL/NA	
	1,2,3,4,7,8-HxCDD	122		ng/Kg	0.73	U	ng/Kg	166.2 × SQL	NL/NA		NL/NA	
	1,2,3,6,7,8-HxCDD	735		ng/Kg	0.75	U	ng/Kg	977.4 × SQL	NL/NA		NL/NA	
	1,2,3,7,8,9-HxCDD	196		ng/Kg	0.77	U	ng/Kg	253.9 × SQL	NL/NA		NL/NA	

Table 5

Summary of Analytical Results
Soil/Source Sample Analysis for Creese & Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	Mass DEP Method 1 S-1/GW-1		Mass DEP Imminent Hazard*	
SO-61	**DIOXINS/FURANS**											
	1,2,3,4,6,7,8-HpCDD	17,700		ng/Kg	21.2		ng/Kg	834.9 × Ref	NL/NA		NL/NA	
	1,2,3,4,6,7,8,9-OCDD	174,000	J	ng/Kg	1,440		ng/Kg	120.8 × Ref	NL/NA		NL/NA	
	2,3,7,8-TCDF	12.4		ng/Kg	0.26	U	ng/Kg	47.9 × SQL	NL/NA		NL/NA	
	1,2,3,7,8-PeCDF	9.01	J	ng/Kg	0.23	U	ng/Kg	39.9 × SQL	NL/NA		NL/NA	
	2,3,4,7,8-PeCDF	20.2	J	ng/Kg	0.35	U	ng/Kg	57.7 × SQL	NL/NA		NL/NA	
	1,2,3,4,7,8-HxCDF	89.8		ng/Kg	0.3	U	ng/Kg	295.4 × SQL	NL/NA		NL/NA	
	1,2,3,6,7,8-HxCDF	39.6		ng/Kg	0.31	U	ng/Kg	126.9 × SQL	NL/NA		NL/NA	
	1,2,3,7,8,9-HxCDF	13	J	ng/Kg	0.47	U	ng/Kg	27.7 × SQL	NL/NA		NL/NA	
	2,3,4,6,7,8-HxCDF	126		ng/Kg	0.35	U	ng/Kg	365.2 × SQL	NL/NA		NL/NA	
	1,2,3,4,6,7,8-HpCDF	3,930		ng/Kg	1.77	J	ng/Kg	2,220 × Ref	NL/NA		NL/NA	
	1,2,3,4,7,8,9-HpCDF	164		ng/Kg	0.6	U	ng/Kg	274.7 × SQL	NL/NA		NL/NA	
	1,2,3,4,6,7,8,9-OCDF	8,050		ng/Kg	3.05	J	ng/Kg	2,639 × Ref	NL/NA		NL/NA	
	Toxicity Equivalent Factor	**458**	**J**	**ng/Kg**	0.663	J	ng/Kg	690.8 × Ref	20	ng/Kg	NL/NA	
	INORGANICS											
	Arsenic	***93.4***		***mg/Kg***	11.4		mg/Kg	8.2 × Ref	20	mg/Kg	40	mg/Kg
	Barium	127		mg/Kg	21.2	J	mg/Kg	11.1 × Ref	1,000	mg/Kg	NL	
	Cadmium	**14.8**		**mg/Kg**	0.59	UJ	mg/Kg	25.1 × SQL	2	mg/Kg	60	mg/Kg
	Chromium (Total)	***1,230***		***mg/Kg***	17.3		mg/Kg	71.1 × Ref	30	mg/Kg	200	mg/Kg
	Lead	**468**		**mg/Kg**	64.5		mg/Kg	7.3 × Ref	300	mg/Kg	NL	
	Mercury	0.34		mg/Kg	0.04	J	mg/Kg	8.5 × Ref	20	mg/Kg	300	mg/Kg
	Zinc	347		mg/Kg	53.7		mg/Kg	6.5 × Ref	2,500	mg/Kg	NL	

Table 5

Summary of Analytical Results
Soil/Source Sample Analysis for Creese & Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	Mass DEP Method 1 S-1/GW-1		Mass DEP Imminent Hazard*	
SO-70	**DIOXINS/FURANS**											
	2,3,7,8-TCDD	76.6		ng/Kg	0.24	U	ng/Kg	316.5 × SQL	NL/NA		NL/NA	
	1,2,3,7,8-PeCDD	263	J	ng/Kg	0.88	U	ng/Kg	298.5 × SQL	NL/NA		NL/NA	
	1,2,3,4,7,8-HxCDD	3,130		ng/Kg	0.73	U	ng/Kg	4,264 × SQL	NL/NA		NL/NA	
	1,2,3,6,7,8-HxCDD	20,200		ng/Kg	0.75	U	ng/Kg	26,862 × SQL	NL/NA		NL/NA	
	1,2,3,7,8,9-HxCDD	2,650		ng/Kg	0.77	U	ng/Kg	3,433 × SQL	NL/NA		NL/NA	
	1,2,3,4,6,7,8-HpCDD	769,000		ng/Kg	21.2		ng/Kg	36,274 × Ref	NL/NA		NL/NA	
	1,2,3,4,6,7,8,9-OCDD	6,380,000	J	ng/Kg	1,440		ng/Kg	4,431 × Ref	NL/NA		NL/NA	
	1,2,3,7,8-PeCDF	35.7	J	ng/Kg	0.23	U	ng/Kg	158 × SQL	NL/NA		NL/NA	
	2,3,4,7,8-PeCDF	95.6	J	ng/Kg	0.35	U	ng/Kg	273.1 × SQL	NL/NA		NL/NA	
	1,2,3,4,7,8-HxCDF	2,230		ng/Kg	0.3	U	ng/Kg	7,336 × SQL	NL/NA		NL/NA	
	1,2,3,6,7,8-HxCDF	960		ng/Kg	0.31	U	ng/Kg	3,077 × SQL	NL/NA		NL/NA	
	1,2,3,7,8,9-HxCDF	282		ng/Kg	0.47	U	ng/Kg	600 × SQL	NL/NA		NL/NA	
	2,3,4,6,7,8-HxCDF	1,360		ng/Kg	0.35	U	ng/Kg	3,942 × SQL	NL/NA		NL/NA	
	1,2,3,4,6,7,8-HpCDF	136,000		ng/Kg	1.77	J	ng/Kg	76,836 × Ref	NL/NA		NL/NA	
	1,2,3,4,7,8,9-HpCDF	12,200		ng/Kg	0.6	U	ng/Kg	20,436 × SQL	NL/NA		NL/NA	
	1,2,3,4,6,7,8,9-OCDF	457,000		ng/Kg	3.05	J	ng/Kg	149,836 × Ref	NL/NA		NL/NA	
	Toxicity Equivalent Factor	**14,700**	J	ng/Kg	0.663	J	ng/Kg	22,172 × Ref	20	ng/Kg	NL/NA	
	INORGANICS											
	Barium	491		mg/Kg	21.2	J	mg/Kg	23.2 × Ref	1,000	mg/Kg	NL	
	Chromium (Total)	***17,500***		***mg/Kg***	17.3		mg/Kg	1,012 × Ref	30	mg/Kg	200	mg/Kg
	Copper	87.7		mg/Kg	9.0	J	mg/Kg	9.7 × Ref	NL		NL	

Table 5

Summary of Analytical Results
Soil/Source Sample Analysis for Creese & Cook Co. (Former) 1 (Concluded)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	Mass DEP Method 1 S-1/GW-1		Mass DEP Imminent Hazard*	
SO-70	**INORGANICS**											
	Lead	**406**		**mg/Kg**	64.5		mg/Kg	6.3 × Ref	300	mg/Kg	NL	
	Mercury	4.8		mg/Kg	0.04	J	mg/Kg	120 × Ref	20	mg/Kg	300	mg/Kg
	Silver	1.8	J		1.2	UJ	mg/Kg	1.5 × SQL	100	mg/Kg	NL	

Bolded values indicate the organic compound or inorganic element was detected at a concentration equal to or greater than the sample's respective Massachusetts Department and Environmental Protection Method 1 S-1/GW-1 Standard.

Bolded and *italicized* values indicate the organic compound or inorganic element was detected at a concentration equal to or greater than the sample's respective Massachusetts Department and Environmental Protection Imminent Hazard standard (where applicable).

† Indicates that the analyte was detected above its respective Massachusetts Department of Environmental Protection standard, but not above reference criteria.

HxCDD = Hexachlorodibenzodioxin.
OCDF = Octachlorodibenzofuran.
HxCDF = Hexachlorodibenzofuran.
TCDF = Tetrachlorodibenzofuran.
HpCDD = Heptachlorodibenzodioxin.
PeCDF = Pentachlorodibenzofuran.
TCDD = Tetrachlorodibenzo(p)dioxin.
Ref. = Reference Value.
OCDD = Octachlorodibenzodioxin.
PeCDD = Pentachlorodibenzodioxin.
HpCDF = Heptachlorodibenzofuran.
NA = Not Applicable.
NL = Not Listed. An applicable MassDEP standard is not listed.
mg/Kg = Milligrams per kilogram [equivalent to parts per million (ppm)].
µg/Kg = Micrograms per kilogram [equivalent to parts per billion (ppb)].
ng/Kg = Nanograms per kilogram.
SQL = Sample Quantitation Limit [utilized here as the sample-adjusted Contract Required Quantitation Limit (CRQL)].
J = The associated numerical value is an estimated quantity.
U = The compound or element was analyzed for, but not detected. The associated numerical value is the sample adjusted SQL.
UJ = The compound or element was analyzed for, but not detected. The associated numerical value is the estimated sample adjusted SQL.
EB = The compound was identified in an aqueous equipment blank used to assess field contamination associated with soil/source samples.
EMPC = The concentration represents the Estimated Maximum Possible Concentration.

[117; 160-168]

A total of 13 SVOCs were detected in soil/source samples collected from areas on the Creese & Cook Co. (Former) 1 property. None of the SVOCs detected exceeded their respective MassDEP Method 1 S-1/GW-1 Soil Standard [117; 160-161]. The following 13 SVOCs were detected at concentrations above laboratory reporting limits, but either did not exceed their respective MassDEP Method 1 S-1/GW-1 Soil Standard, or a Method 1 comparison value is currently unavailable: anthracene; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; bis(2-ethylhexyl)phthalate; carbazole; chrysene; indeno(1,2,3-cd)pyrene; fluoranthene; phenanthrene; and pyrene [117; 160-161].

One PCB, Aroclor-1254, was detected in one soil/source sample collected from the Creese & Cook Co. (Former) 1 property. Aroclor-1254 was not detected in the soil/source sample at a concentration exceeding its MassDEP Method 1 S-1/GW-1 Soil Standard [117; 160-161].

A total of 17 dioxin and furan congeners were detected in soil/source samples collected from areas on the Creese & Cook Co. (Former) 1 property. In addition, the following 17 dioxin and furan cogeners were detected at concentrations above reference criteria (maximum concentration and location in parentheses): 2,3,7,8-Tetrachlorodibenzo(p)dioxin (TCDD) [83.6 nanograms per kilogram (ng/Kg) in SO-70]; 2,3,7,8-Tetrachlorodibenzofuran (TCDF) (12.4 ng/Kg in SO-61); 1,2,3,7,8-Pentachlorodibenzofuran (PeCDF) (35.7 ng/Kg in SO-70); 1,2,3,7,8-Pentachlorodibenzodioxin (PeCDD) (263 ng/Kg in SO-70); 2,3,4,7,8-PeCDF (95.6 ng/Kg in SO-70); 1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF) (2,230 ng/Kg in SO-70); 1,2,3,6,7,8-HxCDF (960 ng/Kg in SO-70); 1,2,3,4,7,8-Hexachlorodibenzodioxin (HxCDD) (3,130 ng/Kg in SO-70); 1,2,3,6,7,8-HxCDD (20,200 ng/Kg in SO-70); 1,2,3,7,8,9-HxCDD (2,650 ng/Kg in SO-70); 2,3,4,6,7,8-HxCDF (1,360 ng/Kg in SO-70); 1,2,3,7,8,9-HxCDF (282 ng/Kg in SO-70); 1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF) (136,000 ng/Kg in SO-70); 1,2,3,4,6,7,8-Heptachlorodibenzodioxin (HpCDD) (607,000 ng/Kg in SO-58); 1,2,3,4,7,8,9-HpCDF (12,200 ng/Kg in SO-70); 1,2,3,4,6,7,8,9-Octachlorodibenzodioxin (OCDD) (6,380,000 ng/Kg in SO-70); and 1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF) (457,000 ng/Kg in SO-70). In addition, the Toxicity Equivalent Factor (TEF) for the soil/source samples was detected above reference criteria at a maximum value of 14,700 J ng/Kg in soil/source sample SO-70. In addition, the Toxicity Equivalent Factor for the soil/source samples was detected at concentrations greater than the MassDEP Method 1 S-1/GW-1 Soil Standard [117; 162-164].

A total of 22 total metals were detected in soil/source samples collected from areas on the Creese & Cook Co. (Former) 1 property. In addition, the following 14 total metals were detected at concentrations exceeding reference criteria (maximum concentration and sample location in parentheses): arsenic (565 mg/Kg in SO-60); barium (1,020 mg/Kg in SO-57); beryllium (1.2 J mg/Kg in SO-08); cadmium (23.2 mg/Kg in SO-59); calcium (14,200 mg/Kg in SO-03); total chromium (20,500 mg/Kg in SO-58); copper (87.7 mg/Kg in SO-70); lead (919 mg/Kg in SO-59); mercury (9.3 mg/Kg in SO-57); nickel (50.4 mg/Kg in SO-08); potassium (2,060 J mg/Kg in SO-64); silver (2.4 J mg/Kg in SO-58); thallium (7.3 J mg/Kg in SO-08); and zinc (347 mg/Kg in SO-61). Six total metals (arsenic, barium, cadmium, chromium, lead, and nickel) were detected at concentrations exceeding their respective MassDEP Method 1 S-1/GW-1 Soil Standard, and two total metals (arsenic and chromium) were detected above the MassDEP MCP Imminent Hazard Standard [117; 165-167].

Hexavalent chromium was detected at a maximum concentration of 18 J µg/Kg in soil/source sample SO-05B. Hexavalent chromium was not detected at concentrations greater than the MassDEP Method 1 S-1/GW-1 Soil Standard or the MassDEP Imminent Hazard Standard [117; 168].

START conducted soil/source sampling as part of the Creese & Cook Co. (Former) 1 SR throughout six source areas. Only dioxin/furan congeners and metals results were compared against background concentrations. Based on analytical results, a contaminated soil/source area has been documented as containing the following substances: 17 dioxin and furan congeners (2,3,7,8-TCDD; 2,3,7,8-TCDF; 1,2,3,7,8-PeCDF; 1,2,3,7,8-PeCDD; 2,3,4,7,8-PeCDF; 1,2,3,4,7,8-HxCDF; 1,2,3,6,7,8-HxCDF; 1,2,3,4,7,8-HxCDD; 1,2,3,6,7,8-HxCDD; 1,2,3,7,8,9-HxCDD; 2,3,4,6,7,8-HxCDF; 1,2,3,7,8,9-HxCDF; 1,2,3,4,6,7,8-HpCDF; 1,2,3,4,6,7,8-HpCDD; 1,2,3,4,7,8,9-HpCDF; 1,2,3,4,6,7,8,9-OCDD; and 1,2,3,4,6,7,8,9-OCDF) and 14 total metals (arsenic, barium, beryllium, cadmium, calcium, chromium, copper, lead, mercury, nickel, potassium, silver, thallium, and zinc) [149; 162-167]. In addition, the Toxicity Equivalent Factor for dioxin and furan congeners, and six total metals (arsenic, barium, cadmium, chromium, lead, and nickel) were detected above the MCP Method 1 S-1/GW-1 standards. In addition, both arsenic and chromium were detected at concentrations exceeding their respective MCP Imminent Hazard value.

GROUNDWATER PATHWAY

On 21 April 2010, START conducted an on-site reconnaissance of the Creese & Cook Co. (Former) 1 property as part of the EPA SR. The footprint of the former on-site beamhouse and associated paved areas and the Clinton Avenue extension cover approximately 6% of the property. The mean annual precipitation of Peabody, Essex County, MA, which is located approximately 2.5 miles southeast of the Creese & Cook Co. (Former) 1 property, is 47.5 inches [113]. For the purposes of this report, START assumes that 47.5 inches of rain per year is representative of the mean annual precipitation rate at the Creese & Cook Co. (Former) 1 property.

There are six major soil classifications found throughout the Creese & Cook Co. (Former) 1 property including the documented source areas. The southern portions of the property along the Crane River are classified as Boxford silt loam (3-8 % slopes); the central upland area and central portion along the Crane River are classified as Sudbury fine sandy loam (3-8 % slopes); the northern upland area of the property Hinckley gravelly fine sandy loam (3-8 % slopes) and Urban land; and the northern portion of the property along the Crane River is classified as Udorthents (smoothed) and Pits, sand and gravel (adjacent to Route 128) [114]. Previous test pit and boring investigations at the property indicated uncontaminated soils consisting of sand, silt, and gravel to depths ranging from 2 to 20 ft bgs over layers of tan/yellow to grey clay [14; 33, Figure 3A through 6A, 38, Appendix A; 54, Appendix A].

Bedrock beneath the Creese & Cook Co. (Former) 1 property is classified as the Avalon Belt Geologic Province, and consists of mafic rocks consisting of diorite and gabbro [115; 116]. Depth to bedrock at the property has not been confirmed; however, in February 1990, SP advanced a boring along the berm located on the southwest portion of the property, near the Cinema parking lot, and reported encountering “ledge” at 26.5 ft bgs prior to reaching groundwater [39].

Based on past, current (at the time), and potential future use of the property, a previous LSP-opinion indicated the appropriate groundwater classification at the Creese & Cook Co. (Former) 1 property is GW-2/GW-3 [38, p. P-14]. The MCP GW-2 groundwater standards apply to groundwater that is considered both shallow and where there is currently a structure built on the land above the groundwater. These standards are intended to address the potential migration of volatile oil or hazardous material from groundwater into the indoor air. In addition, at a minimum all groundwater in Massachusetts is classified as GW-3 under the MCP. The GW-3

standards are intended to address the adverse ecological effects that could result from discharge of oil or hazardous material to surface water [117]. The Creese & Cook Co. (Former) 1 property is not located within a wellhead protection area (WPA) or surface water supply protection area (SWSPA). Four WPAs are located within a 4-mile radius of the Creese & Cook Co. (Former) 1 property; the Topsfield Wells 01G/02G (approximately 2.6 miles north), the Eastman Geletine/Peabody Well 12A (1.9 miles south), the Peabody Wells 01G/02G (3.5 miles west), and the Danvers Wells 01G/02G (3.5 miles west). In addition, one Interim Wellhead Protection Area (IWPA), the Eagle for Trust wells, is located 4 miles north of the Creese & Cook Co. (Former) 1 property [118]. Depth to groundwater in overburden material on the property is approximately 20 ft bgs and groundwater flow direction is generally east toward the Crane River [14; 33, Figure 3A through 6A, 38, Appendix A and Figure 2; 54, Appendix A].

All or part of the following Massachusetts towns or cities are located within 4 radial miles of the Creese & Cook Co. (Former) 1 property: Beverly (population 39,862), Danvers (population 25,212), Middleton (population 7,744), Peabody (population 48,129), Salem (population 40,407), Topsfield (population 6,141), and Wenham (population 4,440) [119].

Approximately 30,100 people in the Towns of Danvers and Middleton are served potable water by the Danvers Water Department [public water system identification number (PWS ID No.) MA3071000] which utilizes a blended water supply from three surface water sources (Middleton Pond Reservoir, Swan Pond Reservoir, and Emerson Brook Reservoir) and two groundwater wells (Well No. 1 and No. 2) [118; 120; 121]. In 2003, a greensand filtration plant was built at Well No. 2. In 2004, Well No. 1 was rehabilitated with two new replacement wells [121]. The blended water supply system is supplied approximately 88 percent by surface water sources and 12 percent by groundwater sources [122]. For the purposes of this evaluation, a population of 3,612 is apportioned to the groundwater supply wells utilized in the Danvers Water Department system [118].

Approximately 48,129 people in the Town of Peabody are served potable water by the Peabody Water Department (PWS ID No. MA3229000) which utilizes a water supply from four surface water sources (Spring Pond Reservoir, Suntaug Reservoir, Winona Pond Reservoir, and Ipswich River). The Peabody Water department also operates two groundwater wells [Pine Street Well (01G) and Johnson Street Well (02G)] as standby groundwater sources which are not currently utilized as drinking water supply sources [120; 123; 124]. The Eastman Gelatine Well is listed as a community groundwater source in the MassGIS data layer with MassDEP-approved Zone II designation. The well is used primarily for industrial process water supply and not known to supply water to the Peabody Water Department [125; 161]. However, the Eastman Gelatine Well may be utilized to serve the estimated 80 employees at the facility.

Approximately 82,072 people in the Town of Beverly and City of Salem are served potable water by the Salem/Beverly Water Supply Board (PWS ID No. MA3030001) which utilizes a water supply entirely from four surface water sources (Wenham Lake, Longham Reservoir, Putnamville Reservoir, and Ipswich River) [120; 126].

Approximately 5,205 people in the Town of Topsfield are served potable water by the Topsfield Water Department (PWS ID No. MA3298000) which utilizes a water supply from two groundwater wells which are located outside of 4-radial miles from the Creese & Cook Co. (Former) 1 property [120; 127]. Approximately 26 people are served potable water by a small community drinking water system, Eagle for Trust (PWS ID No. MA3298002), consisting of two groundwater supply wells, Sleepy Hollow Tubular Wells (01G) and Bedrock Well (02G), which are located 4 miles north of the Creese & Cook Co. (Former) 1 property [120; 128].

Approximately 3,665 people in the Town of Wenham are served potable water by the Wenham Water Department (PWS ID No. MA3320000) which utilizes groundwater sources that are located outside of 4 radial miles of the Creese & Cook Co. (Former) 1 property [120; 129].

The following table summarizes public groundwater supply sources within 4 radial miles of the Creese & Cook Co. (Former) 1 property.

Table 6

Public Groundwater Supply Sources
Within 4 Radial Miles of Creese & Cook Co. (Former) 1

Distance/ Direction from Site	Source Name	PWS ID No./Type	Location of Source[a]	Estimated Population Served	Source Type[b]
2.2 miles South	Eastman Gelatine, Well No. 12A	MA3229000/Comm.[c]	Peabody	80	Overburden
3.5 miles Northwest	Danvers Water Department, Well No. 1 and 2	MA3071000/Comm.	Danvers	3,612[d]	Overburden
3.5 miles West	Peabody Water Department, Well No. 01G (Pine Street) and 02G (Johnson Street)	MA3229000/Comm.	Peabody	0[e]	Overburden
4 miles North	Eagle for Trust, Well No. 01G (Sleepy Hollow Tubular Well) and 02G (Bedrock Well)	MA3298002/Comm.	Topsfield	26	Overburden/ Bedrock

[a] Indicates Town in which well is located.
[b] Overburden, Bedrock, or Unknown.
[c] Listed as community groundwater source with MassDEP-approved Zone II; however, the well is used primarily for industrial process water supply and is not known to supply water to the Peabody Water Department. The estimated population served is the current approximate number of employees at the Eastman Gelatine facility.
[d] According to the Town of Danvers Water Department, approximately 12% of the drinking water supply is obtained from groundwater sources (estimated 30,100 population served x 12% = 3,612).
[e] Town of Peabody groundwater wells were taken offline in the late 1980s and are not currently utilized as a public drinking water supply source.

Comm. = Community water system.
PWS ID No. = Public Water System Identification Number.
No. = Number.

[118; 120; 122; 124; 125]

The EPA New England Geographic Information System (GIS) Center provided START with the following three maps for the Creese & Cook Co. (Former) 1 property: Population by Radius (1990 U.S. Census) within 4 Radial Miles of the Creese & Cook Co. (Former) 1 property; Population by Radius on Private Wells (1990 U.S. Census) within 4 Radial Miles of the Creese & Cook Co. (Former) 1 Property; and Population by Radius (2000 U.S. Census) within 4 Radial Miles of the Creese & Cook Co. (Former) 1 Property. The EPA GIS Center calculated the population data by using shapefiles of the population block group data from the respective census and overlaying that onto a basemap which contained the site boundary and associated radial rings around the boundary (*i.e.* site boundary to ¼ mile, ¼ mile to ½ mile, ½ to l mile, 1 miles to 2 miles, 2 miles to 3 miles, and 3 miles to 4 miles). For block groups that overlapped radial rings the EPA GIS Center calculated the percentage of the block group which fell within

each of the radial rings which translated to the population within that block group which fell within each of the radial rings [130].

As part of the 1990 U.S. Census, the source of water was presented as part of the questionnaire. This information, which was grouped by the U.S. Census Bureau into block groups, was used to determine the number of people within radial rings of the property who relied on private drinking water wells as their source of drinking water. The 2000 U.S. Census questionnaire did not present the source of water question; therefore, START utilized the information provided by the three EPA GIS Center maps to determine the approximate population currently served by private drinking water wells. START calculated the percentage change in total population for the entire four mile radius *(i.e.* percentage change was not calculated for each individual radial ring). Once the percentage change in total population was calculated, START applied that percentage change to determine the population utilizing private drinking water wells for their drinking water within each radial ring [130].

The public drinking water supply wells located within 4 radial miles of the Creese & Cook Co. (Former) 1 property are between 2 and 4 miles from the property and are supplemental sources for the Danvers Water Department. The nearest off-site private drinking water supply well is reportedly located between 0 and 0.25 miles of the property; however, the exact location was not found in available information and all residents within this radius are reportedly serviced by public water supplies [130]. The total population which relies on groundwater as a drinking water supply source within 4 radial miles of the Creese & Cook Co. (Former) 1 property is estimated to be 4,185 [130]. Table 7 summarizes estimated drinking water populations served by public and private groundwater sources within 4 radial miles of the Creese & Cook Co. (Former) 1 property.

Table 7

Estimated Drinking Water Populations Served by Groundwater Sources Within 4 Radial Miles of Creese & Cook Co. (Former) 1

Radial Distance From Creese & Cook Co. (Former) 1 (miles)	Estimated Population Served by Private Wells	Estimated Population Served by Public Wells	Total Estimated Population Served by Groundwater Sources Within the Ring
0.00 < 0.25	0	0	0
0.25 < 0.50	6	0	6
0.50 < 1.00	33	0	33
1.00 < 2.00	64	0	64
2.00 < 3.00	100	80	180
3.00 < 4.00	264	3,638	3,902
TOTAL	467	3,718	4,185

Notes:
Population served by Danvers Water Department groundwater sources is approximately 12% of total population served (30,100 x 12% = 3,612).
< = Less than

[118; 119; 122; 124; 130]

In December 1985, SP installed three monitoring wells: MW1 within Landfill Area B, MW2 outside of Landfill Area B near the cemetery, and MW3 within Landfill Area A adjacent to the beamhouse. After installation, SP collected samples of groundwater and identified groundwater seeps located along the Crane River [14, Appendix]. The groundwater and groundwater seep samples were submitted to Princeton Testing Laboratories for VOC analysis, and to the SP in-house laboratory for COD, TKN, ammonia, sulfide, and metals analyses. Analytical results of the groundwater and seep samples indicated the presence of the following metals above reporting limits (maximum concentrations and location in parentheses): arsenic (0.310 mg/L in Seep 2); selenium (0.004 mg/L in Seep 3); mercury (0.0243 mg/L in MW1); silver (0.257 mg/L in Seep 2); chromium (0.180 mg/L in MW2); cadmium (0.060 mg/L in Seep 3); lead (0.42 mg/L in MW2); copper (0.066 mg/L in Seep 1); and zinc (0.197 mg/L in Seep 1) [14, Appendix Table 4].

In 1990, SP installed five groundwater monitoring wells (MW-1 through MW-5) around the perimeter of the completed Waste Disposal Cell to monitor potential leaching of metals from the treated waste. Groundwater monitoring well MW-3 was installed as a background well upgradient between the containment cell and Route 128 [33, p. 4 Figure 2 Site Plan; 39].

In February 1990, groundwater samples were collected from the monitoring wells MW-1, MW-3, MW-4, and MW-5, and from one groundwater seep (Seep 2) located along the Crane River, and were submitted to the SP in-house laboratory for VOCs, COD, TKN, ammonia, sulfide, and metals analyses. No VOCs were detected in the samples. Analytical results of the groundwater samples indicted the presence of the following metals above laboratory reporting limits (maximum concentrations in parentheses): calcium (70.4 mg/L in MW-4); chromium (0.010 mg/L in MW-4); and cadmium (0.005 mg/L in MW-1) [33, Appendix pp. A-12 to A-15; 39].

In March 1990, groundwater samples were collected from three groundwater seeps (Seeps 1, 2, and 3) and were submitted to the SP in-house laboratory for COD, TKN, ammonia, sulfide, and metals analysis. Analytical results of the groundwater samples indicted the presence of the following metals above laboratory reporting limits (maximum concentrations and location in parentheses): calcium (21.0 mg/L in Seep 3); chromium (0.039 mg/L in Seep 3); lead (0.033 mg/L in Seep 3); and cadmium (0.011 mg/L in Seep 2 and Seep 3) [33, Appendix p. A-11].

In April 1990, groundwater samples were collected from the monitoring wells MW-1 through MW-5 and from groundwater Seeps 1 and 2 and analyzed by the SP in-house laboratory for VOCs, COD, TKN, ammonia, sulfide, and metals. No VOCs were detected in the samples. Analytical results of the groundwater samples indicted the presence of the following metals (maximum concentrations and location in parentheses): calcium (254 mg/L in Seep 1); chromium (0.008 mg/L in Seep 2); lead (0.03 mg/L in Seep 2); silver (0.016 mg/L in Seep 1); and cadmium (0.016 mg/L in Seep 1) [33, Appendix pp. A-3 – A-10].

In June 1990, SP conducted post-completion Waste Disposal Cell construction sampling. As part of these sampling activities, groundwater samples were collected from monitoring wells MW-1 through MW-5 and from three groundwater seeps (Seep No. 1 through No. 3) located along the Crane River. The groundwater and seep samples were analyzed for VOCs, COD, TKN, chloride, sulfide, pH, and metals. Analytical results of the groundwater and seep samples indicted the presence of the following metals above reporting limits (maximum concentrations and location in parentheses): calcium (210 mg/L in Seep 1); chromium (0.022 mg/L in Seep 1); lead (0.02 mg/L in Seeps 2 and 3); silver (0.016 mg/L in Seep 2); and cadmium (0.031 mg/L in Seep 2) [33, pp. 14-21].

On 4 June 1992, SP collected groundwater samples from monitoring wells MW-1 through MW-4 and from three groundwater seeps (Seep No. 1 through No. 3) located along the Crane River. The groundwater and groundwater seep samples were submitted to the SP in-house laboratory for VOCs, COD, TKN, chloride, sulfide, pH, and metals analyses [33, pp. 22, 23 Figure 5, 24-26]. Analytical results of the groundwater and groundwater seep samples indicated the presence of the following metals above laboratory reporting limits (maximum concentration and location in parentheses): arsenic (0.013 mg/L in MW-1); calcium (72.1 mg/L in MW-1); chromium (0.037 mg/L in MW-1); lead (0.068 mg/L in MW-4); mercury (0.004 mg/L in MW-2); and silver (0.02 mg/L in MW-4) [33, pp. 11-13].

In June 1995, REW installed eight monitoring wells (MW-101 through MW-108) in the vicinity of the former landfill and sludge lagoon areas (Landfill Areas A and B, and Sludge Lagoon Area C) [38, p. P-8]. After installation, 11 groundwater samples were collected from MW-101 through MW-108 and from pre-existing wells MW-1, MW-4, and MW-5 (referred to as SMW-101, SMW-104, and SMW-105 in the report) and submitted for VOCs and metals with two samples (MW-105 and MW-106) submitted for TPH and ABN analyses as well. Analytical results of the groundwater samples indicated the presence of one ABN compound [bis(2-ethylhexyl)phthalate at 10.0 ug/L in MW-106] and the following metals above laboratory reporting limits (maximum concentrations and location in parentheses): arsenic (0.972 mg/L in MW-106); lead (0.110 mg/L in MW-107); and mercury (0.0005 mg/L in MW-108) [38, p. P-25].

A review of available file documentation indicated that no additional groundwater sampling events have been conducted on the property since 1995. START did not perform groundwater sampling as part of the Creese & Cook Co. (Former) 1 SR. Based on analytical results from previous monitoring well sampling events conducted at the property, as well as results of surface and subsurface soil sampling performed previously and as part of the SR which documents the presence of tannery-related wastes onsite, groundwater beneath the property has potentially been impacted by a release of hazardous substances which appear to be partially attributable to on-site sources. These include one BNA [bis(2-ethylhexyl)phthalate] and ten metals (arsenic, cadmium, calcium, chromium, copper, lead, mercury, selenium, silver, and zinc). However, based on the location and proximity of the surrounding drinking water supply sources, no nearby drinking water supply sources are known or suspected to have been impacted by a release from on-site sources.

SURFACE WATER PATHWAY

The Creese & Cook Co. (Former) 1 property is located in the Crane River drainage basin area. The drainage area of the Crane River basin is 5.72 square miles [131, p. 21]. Based on site topography (generally flat and slightly sloping to the north and east) and on-site observations, stormwater runoff/overland flow from the property flows north and northeast toward the Crane River. The majority of the property is not located within a flood plain. The portions of the property along the bank of the Crane River are part of the 100-year flood plain (Zone A), and a small wetland area adjacent to the bank located north of the former beamhouse is in an area between the limits of the 100-year and 500-year flood plain (Zone B) [132].

The segment of Crane River along the Creese & Cook Co. (Former) 1 property is classified by MassDEP as coastal and marine Class SA. Class SA waters are designated as an excellent habitat for fish and other aquatic life and wildlife, including for their reproduction, migration, growth and other critical functions. Class SA waters are also appropriate for primary and secondary contact recreation [133, pp. 77, 78]. Shellfish harvesting in the Danvers River Estuary, which includes the tidal segment of the Crane River, is currently prohibited due to impairment by elevated fecal coliform bacteria [134, p. 77-78]. Anadromous fish runs are present in the Crane River and there have been recent efforts to re-establish and strengthen a rainbow smelt spawning population in the Crane River [134, 135].

Based on observations during the Creese & Cook Co. (Former) 1 SR, a man was interviewed who confirmed the presence of a recreational fishery occurring in the Crane River near the MBTA Bridge [150-151]. According to the interviewed fisherman, stripers (also referred to as striped bass) are taken from the Crane River and consumed if they meet the state regulations on size limit (greater than 24 inches) [150]. In addition, an interview with other local residents indicated that fishing occurs at the upstream side of the Water Street Bridge and that anglers have departed with the fish that were caught [151]. Additionally, studies of rainbow smelt spawning and reintroduction in the Crane River have been conducted and indicate that the upstream portion of the Crane River is a smelt run [134-135].

The Crane River is a freshwater tributary to the Danvers River estuary and is tidally influenced along the reach adjacent to the property [53, Exhibit A]. The tidal range of the Crane River along the property is approximately 9 to 10 feet [148]. The origin of the Crane River is two small tributaries, Crane Brook and Beaver Brook, which discharge to Mill Pond. The Crane River then flows approximately 0.3 miles to the former mill pond, Brown Pond, located at the intersection of Purchase and Ash Streets in Danvers, MA. Brown Pond was formerly used as a source of production water by the Creese & Cook Company. The impoundment/sluiceway that drains Brown Pond is located within 300 feet of the upstream tidal influence of the Danvers River estuary [135].

The probable point of entry (PPE) for potential site contaminants to be transported to the surface water pathway (SWP) is along the banks of the Crane River. For the purposes of this evaluation, START located the PPE for the property at the most upstream portion of the property (PPE No. 1), while the most downstream PPE (PPE No. 2) is located 0.29 miles downstream, along the southeastern property boundary. Based on the multiple PPEs, the SWP extends 15.29 miles from PPE No. 1. In addition, for the purposes of this evaluation, START assumes the upstream tidal influence along the Crane River extends just prior to the impoundment at the outlet of Brown Pond located approximately 0.44 miles upstream of PPE No. 1. Salinity measurements have confirmed the intrusion of tidal waters to this area of the Crane River. From PPE No. 1, the downstream SWP flows southeast in the Crane River for approximately 1.07 miles to the

confluence with the Porter and Danvers Rivers. The Danvers River flows for approximately 0.32 miles to the confluence with the Waters River [140]. The Danvers River continues to flow approximately 1.45 miles to the confluence of the North and Bass Rivers and continues another 0.20 miles to the entrance to Beverly Harbor/Atlantic Ocean. The remainder and terminus of the downstream 15-mile SWP extends over an arc of 12.25 miles into the Massachusetts Bay/Atlantic Ocean [1; 136-140]. The entire tidal upstream and downstream 15-mile SWP is shown on Figure 5.

Table 8 summarizes surface water bodies along the upstream tidal influence and 15-mile downstream SWP from the Creese & Cook Co. (Former) 1 property.

Table 8

Surface Water Bodies Along the 15-Mile Downstream Pathway from Creese & Cook Co. (Former) 1

Surface Water Body	Descriptor[a]	Length of Reach (miles)	Flow Characteristics (cfs)[b]	Length of Wetlands (miles)
Crane River (upstream of PPE)	Coastal tidal waters	0.44	N/A	0.74
Crane River (downstream of PPE)	Coastal tidal waters	1.07	N/A	1.3
Danvers River	Coastal tidal waters	1.97	N/A	3.1
Beverly Harbor/Atlantic Ocean	Shallow Ocean Zone	12.25	N/A	4.99

[a] Coastal tidal waters (flow not applicable). Shallow ocean zone or Great Lake (flow not applicable).

[1; 43; 136-139; 140; 143]

Crane River is the most upstream Clean Water Act (CWA)-protected water body along the upstream tidal influence and the 15-mile downstream surface water pathway. In addition, there are approximately 10.13 miles of wetland frontage located along SWP [143]. There is one State threatened or endangered species habitat along the 15-mile downstream SWP [144-146].

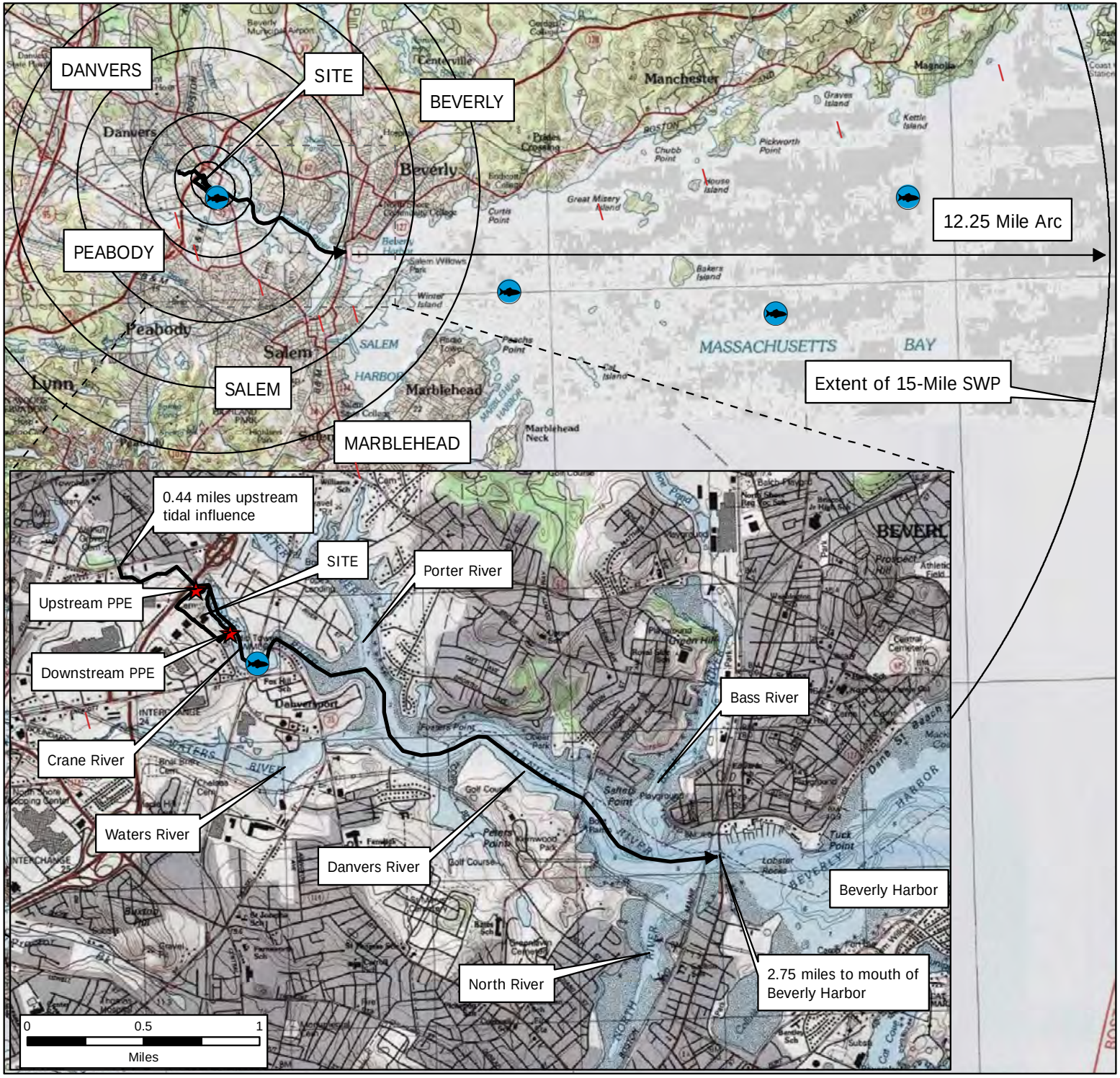

Figure 5

Surface Water Pathway Map

Creese & Cook Co. (Former) 1
55 Clinton Avenue
Danvers, Massachusetts

EPA Region I
Superfund Technical Assessment and Response Team (START) III
Contract No. EP-W-05-042

TDD Number:	09-11-0005
Created by:	D. Brammer
Created on:	20 January 2010
Modified by:	G. Hornok
Modified on:	8 August 2012

Legend

- Site Boundary
- Fisheries
- Wetland
- SWP

0 2 4
Miles

Data Sources:
Topos: MicroPath
Quadrangle Name(s): Salem, MA 1985
Imagery: MASSGIS, 1992; 1997
NWI Data: USGS, 2010
All other data: START

WESTON SOLUTIONS
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Table 9 summarizes sensitive environments along the upstream tidal influence and the 15-mile downstream SWP from the Creese & Cook Co. (Former) 1 property.

Table 9

Sensitive Environments Along the 15-Mile Downstream Pathway from Creese & Cook Co. (Former) 1

Sensitive Environment Name	Sensitive Environment Type	Surface Water Body	Downstream Distance from PPE (miles)	Flow Rate at Environment (cfs)[a]
Crane River – Wetland (tidal upstream)	Crane River - Wetland	Crane River	0 to 0.44	NA
Crane River – Clean Water Act	Crane River – Clean Water Act	Crane River	0 to 1.07	NA
Crane River – Wetland (downstream)	Crane River – Wetland	Crane River	0 to 1.07	NA
Danvers River - Wetland	Danvers River - Wetland	Danvers River	1.08 to 3.04	NA
State-Endangered Species Habitat	State-Endangered Species Habitat	Atlantic Ocean	3.05 to 15.29	NA

[a] Cubic feet per second
[140; 144]

In December 1985, SP conducted a supplemental investigation to the May 1984 sampling event associated with the Creese & Cook Co. (Former) 1 property, to further refine the volume of sludge and buried tannery wastes and to provide additional characterization of soil, soil gases, groundwater, and groundwater seeps and sediment along the Crane River [14]. Sediment samples were collected at the upstream abandoned railroad spur bridge and the downstream former steam/process water pipe/footbridge and analyzed for grain size, PCBs, petroleum hydrocarbons, metals, % volatile solids, and % oil and grease. Analytical results of the sediment samples indicated the presence of the following metals (maximum concentration are in parentheses and were detected in the upstream abandoned railroad spur bridge sample): arsenic (16.05 mg/kg); mercury (5.405 mg/kg); chromium (164.2 mg/kg); cadmium (1.186 mg/kg); lead (119.4 mg/kg); nickel (12.75 mg/kg); copper (33.59 mg/kg); and zinc (140.4 mg/kg) [14].

From 28 May to 4 June 1992, and in March and April 1994, SP conducted sampling as part of a Chapter 21E Site Assessment [33]. As part of the 1992 investigation, SP collected one surface water sample from the Crane River, near the railroad bridge. The sample was submitted to an in-house laboratory for metals analysis. Analytical results of the surface water sample indicated the following metals above laboratory reporting limits (concentration in parentheses): arsenic (0.038 mg/L); lead (0.031 mg/L); mercury (0.003 mg/L); and silver (0.01 mg/L) [33, p. 15].

In December 1995, Stone & Webster conducted sampling in support of an EPA SIP Report for the Creese & Cook Co. (Former) 1 property [50]. As part of the SIP, Stone & Webster collected six surface water (SW-1 through SW-6) and seven sediment (SD-1 through SD-7) samples from along the Crane River, including one designated background sample (SW-1/SD-1/SD-2) immediately upstream of the railroad bridge [50]. The surface water and sediment samples were analyzed for VOCs, SVOCs, pesticides, PCBs, and metals by a CLP laboratory. No VOCs,

SVOCs, or pesticides/PCBs were detected in the surface water samples significantly above background concentrations. Analytical results of the surface water samples indicated the presence of the following 12 total metals at concentrations significantly above background including (maximum concentration and location in parentheses): aluminum (1,860 J ppm in SW-2); arsenic (7.8 ppm in SW-2); calcium (242,000 ppm in SW-6); chromium (76.9 ppm in SW-2); copper (12.3 ppm in SW-2); iron (3,450 J ppm in SW-2); lead (22.4 J ppm in SW-2); magnesium (893,000 ppm in SW-6); mercury (0.17 J ppm in SW-2); potassium (322,000 ppm in SW-6); sodium (7,500,000 ppm in SW-6); and vanadium (7.5 ppm in SW-2) [50].

The December 1995 EPA SIP further indicated that no VOCs were detected in the sediment samples above background concentrations. Analytical results of the sediment samples indicated the presence of one pesticide (methoxychlor at 32 ppb in SD-5) and the following 12 SVOCs (in SD-7) at concentrations significantly above background (concentration in parentheses): athracene (650 J ppb); benz(a)anthracene (1,900 ppb); benzo(a)pyrene (1,900 J ppb); benzo(b)fluoranthene (1,900 J ppb); benzo(k)fluoranthene (3,300 J ppb); carbazole (190 J ppb); chrysene (2,100 ppb); dibenzofuran (57 J ppb); fluoranthene (3,900 ppb); fluorene (170 J ppb); phenanthrene (1,700 ppb); and pyrene (3,600 ppb). Analytical results of the sediment samples indicated the presence of 21 metals above laboratory reporting limits. The maximum concentrations of 20 of the 21 metals detected were located in the background samples SD-1 or SD-2 and includes the following (maximum concentration and location in parentheses): aluminum (17,800 mg/kg in SD-2); arsenic (64.9 J mg/kg in SD-2); barium (51.7 mg/kg in SD-1); beryllium (0.95 mg/kg in SD-2); cadmium (1.9 mg/kg in SD-1); calcium (3,600 mg/kg in SD-2); chromium (1,110 mg/kg in SD-1); cobalt (9.6 mg/kg in SD-2); copper (99.6 mg/kg in SD-1); cyanide (0.36 mg/kg in SD-1); iron (32,600 mg/kg in SD-2); lead (541 mg/kg in SD-2); magnesium (8,760 mg/kg in SD-2); manganese (358 mg/kg in SD-2); mercury (2.7 mg/kg in SD-2); nickel (32.3 mg/kg in SD-2); potassium (3,490 mg/kg in SD-2); silver (2.2 J mg/kg in SD-1); sodium (11,800 mg/kg in SD-7); vanadium (71.5 mg/kg in SD-2); and zinc (293 mg/kg in SD-1) [50].

In 1998, in preparation for re-development of the Creese & Cook Co. (Former) 1 property, REW advanced six borings (HBTF #1 through HBTF #6) along the Crane River, to collect sediment samples at the one and three foot intervals. Analytical results of the sediment samples indicated the presence of arsenic and chromium in all samples, with maximum concentrations of 150 ppm for arsenic detected in HBTF-5 and HBTF-6 and 5,390 ppm for chromium detected in HBTF-5 [79, Table 1].

In September 2001, REW conducted sediment sampling of the Crane, Porter, Waters, and Danvers Rivers for the Danvers Board of Health. The sampling was conducted to determine the management requirements for stockpiling dredged material. A total of 13 sediment samples were collected including three sediment samples (CR1, CR2, and CR3) from the Crane River at locations downstream of the former Creese & Cook Company properties, between the Water Street Bridge and up to and including the confluence of the Crane River with the Porter River (DP7). The samples were hand driven approximately four feet into the sediment. The samples were analyzed by R.I. Analytical Laboratories, Inc. for RCRA metals, TPH, PCBs, SVOCs, VOCs, pH, and reactive sulfides. Analytical results of the Crane River sediment samples indicated the presence of six metals above laboratory reporting limits including the following (maximum concentrations and location in parentheses): arsenic (33.3 mg/kg in CR1), barium (69.4 mg/kg in CR2), cadmium (3.33 mg/kg in CR1), chromium (1,000 mg/kg in CR2), lead (160 mg/kg in CR2), and mercury (0.48 mg/kg in CR2) [69, Table 1].

In April 2005, GFS collected 24 sediment samples including a duplicated, from along the Crane River (from locations M-1 through M-12 in salt marsh areas and locations F-1 through F-7 in salt flat areas near the low water line) [35]. The samples were collected from 19 locations at depths of 0 to 18 inches and from four of these selected locations at depths of 18 to 36 inches. The sediment samples were analyzed by Toxikon Corporation for arsenic. Analytical results indicated the presence of arsenic in 22 of the 24 samples with concentrations ranging from non-detect [M-1 (18-38 inches) and F-2 (0 to 18 inches)] to 553 mg/kg in M-2 (0-18 inches) [79, pp. 2-3 and Table 3].

On 21 and 22 November 2006, as part of the revised IRA and IHE, W&C collected 20 sediment samples (WC-SED-1 through WC-SED-20) from locations along the Crane River [38]. The sediment samples were field screened with an XRF analyzer for arsenic, chromium, and lead. Selected sediment samples were also analyzed by a fixed laboratory for cyanide, physiological available cyanide, dioxins, arsenic, total and hexavalent chromium, and total organic carbon [87]. Dioxin congener analytes were detected in variable concentrations in all sediment samples with reportable concentrations expressed in equivalents of 2,3,7,8-TCDD [87]. Analytical results of sediment samples indicated the presence of the following (maximum concentrations, location, and analytical method in parentheses): arsenic (99 mg/kg in WC-SED-1 by XRF); total chromium (637 mg/Kg in WC-SED-9 by XRF and 1,710 mg/kg in WC-SED-9 by laboratory analysis); hexavalent chromium (114 mg/kg in WC-SED-16 by laboratory analysis); lead (107 mg/kg in WC-SED-9 by XRF analysis); and dioxins (762 ng/Kg 2,3,7,8-TCDD TEQ in WC-SED-16 by laboratory analysis) [87, pp. 4-2, 4-3, Tables 2-4].

From 16 through 18 May 2011, as part of the Creese & Cook Co. (Former) 1 SR, START personnel collected 26 sediment samples (SD-03 through SD-26, SD-29, and SD-30) from locations on the Crane River south of Purchase Street to immediately east (downstream) of the Water Street bridge. In addition, on 6 December 2011, during a second phase of sediment sampling as part of the Creese & Cook Co. (Former) 1 SR, START personnel collected nine sediment samples (SD-50, SD-51, SD-56 through SD-61, and SD-70) from the Crane River south of Purchase Street and in areas directly adjacent to the Creese & Cook Co. (Former) 1 and Creese & Cook Co. (Former) 2 properties. Sediment samples SD-03, SD-50, and SD-51 were collected from south of Purchase Street, along the Crane River, in an area documented to be influenced by tidal waters but presumably outside the influence of contaminants from the former Creese & Cook Company properties, to establish background concentrations for comparison. Sediment sample SD-04 was collected north of the MA Route 128 overpass, upstream of the former Creese & Cook Company properties. Sediment samples SD-07 and SD-09 were collected south of the MA Route 128 overpass and upstream of the former Creese & Cook Company properties. Sediment samples SD-05, SD-06, SD-08, SD-10, SD-12, SD-14, SD-29, SD-56 through SD-59, and SD-70 were collected from the Crane River, adjacent to the Creese & Cook Co. (Former) 1 property. Sediment samples SD-11, SD-13, SD-15, SD-17 through SD-20, SD-30, SD-60, and SD-61 were collected from the Crane River, directly adjacent to the Creese & Cook Co (Former) 2 property. Sediment samples SD-16 and SD-21 through SD-26 were collected from the Crane River, south and southeast of the Creese & Cook Company properties. Refer to Figure 4 for the locations of sediment samples collected by START as part of the Creese & Cook Co. (Former) 1 SR and presented as part of this report [149].

Sediment samples SD-03 through SD-26, SD-29, and SD-30 were submitted to CLP laboratories for SVOC, PCB, and total metals analyses, to a CLP Non-RAS laboratory for dioxin/furan analysis, and to a DAS laboratory for hexavalent chromium analysis. Sediment samples SD-56 through SD-61 and SD-70 were submitted to a CLP Non-RAS laboratory for dioxin/furan

analysis and to a CLP laboratory for total metals analyses, and sediment samples SD-50 and SD-51 were submitted to a CLP laboratory for total metals analysis only [149].

On 2 November 2011, as part of the EPA SR of the Creese & Cook Co. (Former) 1 property, a wetland delineation was performed by an EPA Senior Wetland Scientist [43]. Wetland frontage was mapped and classified both upstream and downstream of the Creese & Cook Co. (Former) 1 property on both the eastern and western banks of the Crane River, with estuarine intertidal emergent wetlands mapped along the Creese & Cook Co. (Former) 1 property [43].

Table 10 summarizes the sediment samples collected by START on 16 through 18 May 2011, and 6 December 2011.

Table 10

Sediment Sample Summary: Creese & Cook Co. (Former) 1
Samples Collected by START on 16 through 18 May 2011 and 6 December 2011

Sample Location No.	Traffic Report No.	Date/ Time (hours)	Remarks	Sample Depth (feet)	Sample Description/Rationale
SD-03	A3WN4 MA3WN4 D30058	5/18/2011 0916	Grab	0 to 1.0	Sediment sample collected using a hand auger from an upstream location on the Crane River, downstream of the impoundment at the Purchase Street bridge, to determine if sediments have been impacted by a release from on-site source areas. Material was black, SILT and ORGANICS, trace clay and fine-to-coarse sand, wet. Sp. Cond. (µS/cm) = 837; Temp. (°C) = 11.6; Turbidity (NTU) = 2.36; pH (meter) = 7.72; PID (units) = 0.5; CGI/O_2 = 0/20.9; Salinity (ppt) = 0.6; Color (water) = Clear; Water Depth (ft) = 0.5-0.6; Other = NR 43° 30′ 43.6″ North Latitude 71° 26′ 53.2″ West Longitude
SD-04	A3WP3 MA3WP3 D30067	5/17/2011 1350	Grab	0 to 0.5	Sediment sample collected using a hand auger from the eastern bank immediately upstream of the Route 128 bridge, to determine if sediments have been impacted by a release from on-site source areas. Material was dark brown, SILT and ORGANICS (rootlets), trace fine-to-coarse sand and clay, wet. Sp. Cond. (µS/cm) = 1190; Temp. (°C) = 11.2; Turbidity (NTU) = 3.46; pH (meter) = 8.54; PID (units) = 0; CGI/O_2 = 0/20.9; Salinity (ppt) = 0.8; Color (water) = NR; Water Depth (ft) = 0.5-1; Other = NR 42° 33′ 23.1″ North Latitude 70° 55′ 53.8″ West Longitude
SD-05	A3WR6 MA3WR6 D30090	5/17/2011 1333	Grab	0 to 0.5	Sediment sample collected using a hand auger from a Jon Boat from the western riverbank along the property, in a depositional environment upstream of the abandoned railroad spur bridge, to determine if sediments have been impacted by a release from on-site source areas. Material was dark gray, CLAY and SILT, trace fine sand and organics (rootlets), wet. Sp. Cond. (µS/cm) = 8.64; Temp. (°C) = 11.3; Turbidity (NTU) = 4.69; pH (meter) = 8.37; PID (units) = 0; CGI/O_2 = 0/20.9; Salinity (ppt) = 6.0; Color (water) = NR; Water Depth (ft) = 1-2; Other = NR 42° 33′ 21.5″ North Latitude 70° 55′ 51.8″ West Longitude

Table 10

Sediment Sample Summary: Creese & Cook Co. (Former) 1
Samples Collected by START on 16 through 18 May 2011 and 6 December 2011 (Continued)

Sample Location No.	Traffic Report No.	Date/ Time (hours)	Remarks	Sample Depth (feet)	Sample Description/Rationale
SD-06	A3WR9 MA3WR9 D30093	5/17/2011 1316	Grab	0 to 1.0	Sediment sample collected using a hand auger from a Jon Boat from the western riverbank along the property, in a depositional environment upstream of the abandoned railroad spur bridge, to determine if sediments have been impacted by a release from on-site source areas. Material was black, SILT and CLAY, little organics (rootlets), wet. Sp. Cond. (µS/cm) = 8.4; Temp. (°C) = 11.3; Turbidity (NTU) = 4.1; pH (meter) = 8.24; PID (units) = 0; CGI/O_2 = 0/20.9; Salinity (ppt) = 6.8; Color (water) = NR; Water Depth (ft) 1-2; Other = Organic odor 42° 33′ 20.2″ North Latitude 70° 55′ 50.3″ West Longitude
SD-07	A3WS0 MA3WS0 D30094	5/17/2011 1258	Grab	0 to 1.0	Sediment sample collected using a hand auger from a Jon Boat from the eastern bank of the Crane River and northeast of the property, in a depositional environment, upstream of the abandoned railroad spur bridge, to determine if sediments have been impacted by a release from on-site source areas. Material was dark gray, CLAY, some silt, trace organics (rootlets), wet. Sp. Cond. (µS/cm) = 17.94; Temp. (°C) = 11.4; Turbidity (NTU) = 8.06; pH (meter) = 8.52; PID (units) = 0; CGI/O_2 = 0/20.9; Salinity (ppt) = 15.1; Color (water) = NR; Water Depth (ft) = 3; Other = No odor 42° 33′ 22.9″ North Latitude 70° 55′ 48.7″ West Longitude
SD-08	A3WS5 MA3WS5 D30099	5/17/2011 1033	Grab	0 to 1.0	Sediment sample collected using a hand auger from a Jon Boat from the west bank of the Crane River, in a depositional environment, to determine if sediments have been impacted by a release from on-site source areas. Material was dark gray, SILT and CLAY, trace fine sand and organics (rootlets), wet. Sp. Cond. (µS/cm) = 25.3; Temp. (°C) = 11.3; Turbidity (NTU) = 6.04; pH (meter) = 8.58; PID (units) = 0; CGI/O_2 = 0/20.9; Salinity (ppt) = 20.4; Color (water) = Clear; Water Depth (ft) = 3-4; Other = Organic decay odor 42° 33′ 17.1″ North Latitude 70° 55′ 46.9″ West Longitude

Table 10

Sediment Sample Summary: Creese & Cook Co. (Former) 1
Samples Collected by START on 16 through 18 May 2011 and 6 December 2011 (Continued)

Sample Location No.	Traffic Report No.	Date/ Time (hours)	Remarks	Sample Depth (feet)	Sample Description/Rationale
SD-09	A3WS6 MA3WS6 D30100	5/17/2011 1114	Grab	0 to 1.0	Sediment sample collected using a hand auger from a Jon Boat from the eastern bank of the Crane River and northeast of the property, in a depositional environment, to determine if sediments have been impacted by a release from on-site source areas. Material was dark gray, SILT, some clay, trace fine sand and organics (rootlets, clams), wet. Sp. Cond. (µS/cm) = 27.79; Temp. (°C) = 11.6; Turbidity (NTU) = 4.82; pH (meter) = 8.05; PID (units) = 0; CGI/O_2 = 0/20.9; Salinity (ppt) = 23.6; Color (water) = Clear; Water Depth (ft) = 3-4; Other = No odor 42° 33′ 21.5″ North Latitude 70° 55′ 45.9″ West Longitude
SD-10	A3WT1 MA3WT1 D30105	5/17/2011 1014	Grab	0 to 1.0	Sediment sample collected using a hand auger from a Jon Boat from the western bank of the Crane River, in a depositional environment, to determine if sediments have been impacted by a release from on-site source areas. Material was dark gray, CLAY and SILT, trace fine-to-coarse sand and organics (rootlets), wet. Sp. Cond. (µS/cm) = 25.13; Temp. (°C) = 11.5; Turbidity (NTU) = 6.77; pH (meter) = 8.4; PID (units) = 0; CGI/O_2 = 0/20.9; Salinity (ppt) = 21.2; Color (water) = Clear; Water Depth (ft) = 3-4; Other = Slight organic decay odor 42° 33′ 14.9″ North Latitude 70° 55′ 45.6″ West Longitude
SD-11	A3WT2 MA3WT2 D30106	5/17/2011 1053	Grab	0 to 1.0	Sediment sample collected using a hand auger from a Jon Boat from the eastern bank of the Crane River, in a depositional environment adjacent to the former Manufactured Gas Plant (MGP) site, to determine if sediments have been impacted by a release from on-site source areas. Material was dark gray-to-black, SILT, little clay, trace fine-to-coarse sand and fine gravel, wet. Sp. Cond. (µS/cm) = 27.63; Temp. (°C) = 11.6; Turbidity (NTU) = 3.77; pH (meter) = 8.17; PID (units) = 0; CGI/O_2 = 0/20.9; Salinity (ppt) = 23.5; Color (water) = Clear; Water Depth (ft) = 3-4; Other = Slight petroleum odor 42° 33′ 18.8″ North Latitude 70° 55′ 43.5″ West Longitude

Table 10

Sediment Sample Summary: Creese & Cook Co. (Former) 1
Samples Collected by START on 16 through 18 May 2011 and 6 December 2011 (Continued)

Sample Location No.	Traffic Report No.	Date/ Time (hours)	Remarks	Sample Depth (feet)	Sample Description/Rationale
SD-12	A3WT7 MA3WT7 D30111	5/17/2011 0904	Grab	0.3 to 1.0	Sediment sample collected using a hand auger from the western riverbank along the property, in a depositional environment near the outfall of the drainage pipe running through Sludge Lagoon Area C, to determine if sediments have been impacted by a release from on-site source areas. Material was dark gray, SILT and CLAY, little fine sand, trace medium-to-coarse sand and organics (rootlets, shells), wet. No standing water at the time of sampling (low tide). Sp. Cond. (µS/cm) = NR; Temp. (°C) = NR; Turbidity (NTU) = NR; pH (meter) = NR; PID (units) = 0; CGI/O_2 = 0/20.9; Salinity (ppt) = NR; Color (water) = NR; Water Depth (ft) = 0; Other = Organic decay odor 42° 33′ 13.8″ North Latitude 70° 55′ 44.7″ West Longitude
SD-13	A3WT8 MA3WT8 D30112	5/16/2011 1123	Grab	0.5 to 1.0	Sediment sample collected using a hand auger from the eastern bank of the Crane River and east of the property, in a depositional environment adjacent to the Creese & Cook Co. (Former) 2 property located at 20 Cheever Street, to determine if sediments have been impacted by a release from on-site source areas. No description provided. Sp. Cond. (µS/cm) = 24.09; Temp. (°C) = 12.5; Turbidity (NTU) = 4.56; pH (meter) = 8.65; PID (units) = NR; CGI/O_2 = NR; Salinity (ppt) = 19.9; Color (water) = Clear; Water Depth (ft) = 1; Other = Organic decay odor, floating trash 42° 33′ 17.0″ North Latitude 70° 55′ 42.3″ West Longitude
SD-14	A3WW3 MA3WW3 D30117	5/17/2011 0825	Grab	0.3 to 1.0	Sediment sample collected using a hand auger from the western riverbank along the property, in a depositional environment, to determine if sediments have been impacted by a release from on-site source areas. Material was dark brown, SILT and ORGANICS (roots, shells), some clay, trace fine-to-coarse sand and fine-to-coarse gravel, wet. No standing water at the time of sampling (low tide). Sp. Cond. (µS/cm) = NR; Temp. (°C) = NR; Turbidity (NTU) = NR; pH (meter) = NR; PID (units) = 0; CGI/O_2 = 0/20.9; Salinity (ppt) = NR; Color (water) = NR; Water Depth (ft) = 0; Other = Organic decay odor 42° 33′ 10.7″ North Latitude 70° 55′ 40.4″ West Longitude

Table 10

Sediment Sample Summary: Creese & Cook Co. (Former) 1
Samples Collected by START on 16 through 18 May 2011 and 6 December 2011 (Continued)

Sample Location No.	Traffic Report No.	Date/ Time (hours)	Remarks	Sample Depth (feet)	Sample Description/Rationale
SD-15 (MS/MSD)	A3WW4 MA3WW4 D30118	5/16/2011 1054	Grab	0.8 to 1.2	Sediment sample collected using a hand auger from the eastern bank of the Crane River and east of the property, in a depositional environment adjacent to the Creese & Cook Co. (Former) 2 property located at 20 Cheever Street, to determine if sediments have been impacted by a release from on-site source areas. Material was dark brown, SILT and ORGANICS, little clay, trace fine-to-coarse sand and fine-to-medium gravel, wet. Sp. Cond. (µS/cm) = 27.3; Temp. (°C) = 12.5; Turbidity (NTU) = 6.22; pH (meter) = 8.62; PID (units) = NR; CGI/O_2 = NR; Salinity (ppt) = 22.6; Color (water) = Clear; Water Depth (ft) = 1; Other = None 42° 33′ 14.7″ North Latitude 70° 55′ 41.6″ West Longitude
SD-16	A3WX3 MA3WX3 D30127	5/16/2011 1304	Grab	0 to 1.0	Sediment sample collected using a hand auger from a Jon Boat downstream of the property, in a depositional environment, to determine if sediments have been impacted by a release from on-site source areas. Material was dark brown, SILT and ORGANICS, little clay, trace fine sand, wet. Sp. Cond. (µS/cm) = 30.89; Temp. (°C) = 12.5; Turbidity (NTU) = 4.69; pH (meter) = 8.85; PID (units) = 0; CGI/O_2 = 0/20.9; Salinity (ppt) = 25.8; Color (water) = NR; Water Depth (ft) = 4; Other = Slight organic decay odor 42° 33′ 08.9″ North Latitude 70 55′ 40.0″ West Longitude
SD-17	A3WX4 MA3WX4 D30128	5/16/2011 1027	Grab	1.0 to 1.5	Sediment sample collected using a hand auger from the eastern bank of the Crane River and east of the property, in a depositional environment adjacent to the Creese & Cook Co. (Former) 2 property located at 20 Cheever Street, to determine if sediments have been impacted by a release from on-site source areas. Material was dark brown-to-dark gray, SILT and ORGANICS, little clay, trace fine-to-coarse sand and fine-to-medium gravel, wet. Sp. Cond. (µS/cm) = 29.9; Temp. (°C) = 12.3; Turbidity (NTU) = 3.86; pH (meter) = 8.59; PID (units) = NR; CGI/O_2 = NR; Salinity (ppt) = 25.0; Color (water) = Greenish-brown; Water Depth (ft) = 1.5; Other = Organic decay odor 42° 33′ 13.5″ North Latitude 70° 55′ 39.1″ West Longitude

Table 10

Sediment Sample Summary: Creese & Cook Co. (Former) 1
Samples Collected by START on 16 through 18 May 2011 and 6 December 2011 (Continued)

Sample Location No.	Traffic Report No.	Date/ Time (hours)	Remarks	Sample Depth (feet)	Sample Description/Rationale
SD-18	A3WX6 MA3WX6 D30130	5/16/2011 1524	Grab	0 to 1.0	Sediment sample collected using a hand auger from the eastern bank of the Crane River and east of the property, in a depositional environment adjacent to the former MBTA right-of-way and the Creese & Cook Co. (Former) 2 property, to determine if sediments have been impacted by a release from on-site source areas. Material was dark gray-to-brown, CLAY and SILT, little organics (peat, shells), trace fine-to-coarse sand, wet. No standing water at the time of sampling (low tide). Sp. Cond. (µS/cm) = NR; Temp. (°C) = NR; Turbidity (NTU) = NR; pH (meter) = NR; PID (units) = NR; CGI/O_2 = NR; Salinity (ppt) = NR; Color (water) = NA; Water Depth (ft) = 0; Other = NR 42° 33′ 13.0″ North Latitude 70° 55′ 38.0″ West Longitude
SD-19	A3WY3 MA3WY3 D30137	5/16/2011 1511	Grab	0 to 1.0	Sediment sample collected using a hand auger from the eastern bank of the Crane River and east of the property, in a depositional environment adjacent to the former MBTA right-of-way and the Creese & Cook Co. (Former) 2 property, to determine if sediments have been impacted by a release from on-site source areas. Material was dark gray-to-black, CLAY and SILT, trace fine-to-coarse sand, fine gravel, and organics, wet. No standing water at the time of sampling (low tide). Sp. Cond. (µS/cm) = NR; Temp. (°C) = NR; Turbidity (NTU) = NR; pH (meter) = NR; PID (units) = NR; CGI/O_2 = NR; Salinity (ppt) = NR; Color (water) = NA; Water Depth (ft) = 0; Other = Slight organic decay and petroleum odor 42° 33′ 11.7″ North Latitude 70° 55′ 36.7″ West Longitude
SD-20	A3WY4 MA3WY4 D30138	5/16/2011 1438	Grab	0 to 1.0	Sediment sample collected using a hand auger from the eastern bank of the Crane River and east of the property, in a depositional environment adjacent to the former MBTA right-of-way parcel and the Creese & Cook Co. (Former) 2 property, to determine if sediments have been impacted by a release from on-site source areas. Material was dark grayish-black, SILT and CLAY, trace fine-to-coarse sand, fine gravel, and organics, wet. No standing water at the time of sampling (low tide). Sp. Cond. (µS/cm) = NR; Temp. (°C) = NR; Turbidity (NTU) = NR; pH (meter) = NR; PID (units) = NR; CGI/O_2 = NR; Salinity (ppt) = NR; Color (water) = NA; Water Depth (ft) = 0; Other = Organic decay odor 42° 33′ 08.9″ North Latitude 70° 55′ 35.5″ West Longitude

Table 10

Sediment Sample Summary: Creese & Cook Co. (Former) 1
Samples Collected by START on 16 through 18 May 2011 and 6 December 2011 (Continued)

Sample Location No.	Traffic Report No.	Date/ Time (hours)	Remarks	Sample Depth (feet)	Sample Description/Rationale
SD-21	A3WY5 MA3WY5 D30139	5/16/2011 1231	Grab	0 to 1.0	Sediment sample collected using a hand auger from a Jon Boat downstream of the property, in a depositional environment in the Crane River west of the MBTA right-of-way bridge crossing the Crane River, to determine if sediments have been impacted by a release from on-site source areas. Material was dark gray-to-olive gray, SILT, some clay, trace fine-to-coarse sand, wet. Sp. Cond. (µS/cm) = 26.7; Temp. (°C) = 12.0; Turbidity (NTU) = 4.73; pH (meter) = 8.82; PID (units) = 0; CGI/O_2 = 0/20.9; Salinity (ppt) = 22.3; Color (water) = Clear; Water Depth (ft) = 4-6; Other = Organic decay odor 42° 33′ 04.9″ North Latitude 70° 55′ 39.5″ West Longitude
SD-22	A3WY6 MA3WY6 D30140	5/16/2011 1222	Grab	0 to 1.0	Sediment sample collected using a hand auger from a Jon Boat downstream of the property, in a depositional environment in the Crane River west of the MBTA right-of-way bridge crossing the Crane River, to determine if sediments have been impacted by a release from on-site source areas. Material was dark gray-to-olive gray, SILT, some clay, trace fine-to-coarse sand and organics (rootlets), wet. Sp. Cond. (µS/cm) = 26.7; Temp. (°C) = 12.0; Turbidity (NTU) = 4.73; pH (meter) = 8.82; PID (units) = 0; CGI/O_2 = 0/20.9; Salinity (ppt) = 22.3; Color (water) = Clear; Water Depth (ft) = 4-6; Other = NR 42° 33′ 03.6″ North Latitude 70° 55′ 36.5″ West Longitude
SD-23	A3WY7 MA3WY7 D30141	5/16/2011 1125	Grab	0 to 1.0	Sediment sample collected using a hand auger from a Jon Boat downstream of the property, in a depositional environment in the Crane River east of the MBTA right-of-way bridge crossing the Crane River, to determine if sediments have been impacted by a release from on-site source areas. Material was dark gray-to-dark olive gray, SILT, little clay, trace fine-to-coarse sand and organics (rootlets, shells), wet. Sp. Cond. (µS/cm) = 30.24; Temp. (°C) = 12.3; Turbidity (NTU) = 4.40; pH (meter) = 8.83; PID (units) = 0; CGI/O_2 = 0/20.9; Salinity (ppt) = 25.9; Color (water) = Greenish-brown; Water Depth (ft) = 6-8; Other = Slight organic decay odor 42° 33′ 02.2″ North Latitude 70° 55′ 33.7″ West Longitude

Table 10

Sediment Sample Summary: Creese & Cook Co. (Former) 1
Samples Collected by START on 16 through 18 May 2011 and 6 December 2011 (Continued)

Sample Location No.	Traffic Report No.	Date/ Time (hours)	Remarks	Sample Depth (feet)	Sample Description/Rationale
SD-24	A3WY8 MA3WY8 D30142	5/16/2011 1040	Grab	0 to 1.0	Sediment sample collected using a hand auger from a Jon Boat from a downstream location along the Crane River, downstream of the Water Street bridge, to determine if sediments have been impacted by a release from on-site source areas. Material was dark gray-to-olive gray, SILT, little clay, trace organics (rootlets, shells), wet. Sp. Cond. (µS/cm) = 31.5; Temp. (°C) = 12.2; Turbidity (NTU) = 3.37; pH (meter) = 8.69; PID (units) = 0; CGI/O_2 = 0/20.9; Salinity (ppt) = 26.7; Color (water) = Greenish-brown; Water Depth (ft) = 10-12; Clear; Other = NR 43° 30′ 42.2″ North Latitude 71° 26′ 48.7″ West Longitude
SD-25 (MS/MSD)	A3WY9 MA3WY9 D30143	5/16/2011 1108	Grab	0 to 1.0	Sediment sample collected using a hand auger from a Jon Boat downstream of the property, in a depositional environment in the Crane River east of the MBTA right-of-way bridge and south of the Water Street bridge crossing the Crane River, to determine if sediments have been impacted by a release from on-site source areas. Material was dark gray-to-olive gray, SILT, little clay, trace organics (shells), wet. Sp. Cond. (µS/cm) = 30.24; Temp. (°C) = 12.3; Turbidity (NTU) = 4.40; pH (meter) = 8.83; PID (units) = 0; CGI/O_2 = 0/20.9; Salinity (ppt) = 25.9; Color (water) = Greenish-brown; Water Depth (ft) = 6-8; Other = NR 42° 33′ 04.4″ North Latitude 70° 55′ 28.6″ West Longitude
SD-26	A3WZ0 MA3WZ0 D30144	5/16/2011 0951	Grab	0 to 1.0	Sediment sample collected using a hand auger from a downstream location along the Crane River, downstream of the Water Street bridge, to determine if sediments have been impacted by a release from on-site source areas. Material was dark gray-to-olive brown, CLAY and SILT, trace fine-to-coarse sand and organics (rootlets and shell fragments), wet. Sp. Cond. (µS/cm) = 31.5; Temp. (°C) = 12.2; Turbidity (NTU) = 3.27; pH (meter) = 8.69; PID (units) = 0; CGI/O_2 = 0/20.9; Salinity (ppt) = 26.7; Color (water) = Greenish-brown; Water Depth (ft) = 10 to 12; Other = Slight organic decay odor 43° 30′ 42.2″ North Latitude 71° 26′ 48.7″ West Longitude

Table 10

Sediment Sample Summary: Creese & Cook Co. (Former) 1
Samples Collected by START on 16 through 18 May 2011 and 6 December 2011 (Continued)

Sample Location No.	Traffic Report No.	Date/ Time (hours)	Remarks	Sample Depth (feet)	Sample Description/Rationale
SD-29	A3WZ3 MA3WZ3 D30147	5/17/2011 0825	Grab	0.3 to 1.0	Field duplicate of SD-14, collected for quality control.
SD-30	A3WZ4 MA3WZ4 D30148	5/16/2011 1524	Grab	0 to 1.0	Field duplicate of SD-18, collected for quality control.
SD-50	MA3XE0	12/6/2011 1145	Grab	0 to 0.75	Sediment sample collected using a hand auger from an upstream location along the Crane River, within the influence of tidal carry, to establish background concentrations for sediment sample comparisons (total metals analysis only). Material was dark brown, SILT and CLAY, trace fine-to-medium sand, little organics, wet. Sp. Cond. (µS/cm) = 606; Temp. (°C) = 9.4; Turbidity (NTU) = 5.72; pH (meter) = 6.57; PID (units) = 0; CGI/O_2 = 0/21.0; H_2S = 2.4 ppm; Salinity (ppt) = 0.4; Color (water) = NR; Water Depth (ft) = 1.5; Other = Organic decay odor 42° 33′ 23.6″ North Latitude 70° 56′ 13.4″ West Longitude
SD-51	MA3XE1	12/6/2011 1158	Grab	0 to 0.75	Sediment sample collected using a hand auger from an upstream location along the Crane River, within the influence of tidal carry, to establish background concentrations for sediment sample comparisons (total metals analysis only). Material was dark brown, SILT and CLAY, little organics, trace fine-to-medium sand, wet. Sp. Cond. (µS/cm) = 606; Temp. (°C) = 9.4; Turbidity (NTU) = 5.72; pH (meter) = 6.57; PID (units) = 0; CGI/O_2 = 0/21.0; Salinity (ppt) = 0.4; Color (water) = NR; Water Depth (ft) = 1.5; Other = NR 42° 33′ 23.5″ North Latitude 70° 56′ 13.3″ West Longitude
SD-56	A3XE2 MA3XE2	12/6/2011 1042	Grab	0 to 1.0	Sediment sample collected using a hand auger adjacent to the on-site mixed soil/leather scrap pile, to determine if sediments have been impacted by a release from on-site source areas (dioxin and total metals analyses only). Material was dark brown, organic-rich CLAY and SILT, trace fine-to-coarse sand, trace debris (glass, wood, leather scraps, tile), wet. PID (units) = 0; CGI/O_2 = NR; Water Depth (ft) = 0. Note that no water quality parameters were recorded as the sample location was not underwater at the time of sample collection (low tide). 42° 33′ 19.7″ North Latitude 70° 55′ 49.8″ West Longitude

Table 10

Sediment Sample Summary: Creese & Cook Co. (Former) 1
Samples Collected by START on 16 through 18 May 2011 and 6 December 2011 (Continued)

Sample Location No.	Traffic Report No.	Date/ Time (hours)	Remarks	Sample Depth (feet)	Sample Description/Rationale
SD-57	A3XE3 MA3XE3	12/6/2011 1039	Grab	0.2 to 1.0	Sediment sample collected using a hand auger adjacent to the on-site mixed soil/leather scrap pile, to determine if sediments have been impacted by a release from on-site source areas (dioxin and total metals analyses only). Material was dark brown, organic-rich SILT, little fine-to-medium sand, trace clay, trace coarse sand, wet. PID (units) = 0; CGI/O_2 = 0/20.9; Water Depth (ft) = 0. Note that no water quality parameters were recorded as the sample location was not underwater at the time of sample collection (low tide). 42° 33′ 19.8″ North Latitude 70° 55′ 49.7″ West Longitude
SD-58	A3XE4 MA3XE4	12/6/2011 0950	Grab	0.1 to 0.75	Sediment sample collected using a hand auger from the riverbank adjacent to the eastern-central portion of the property, east of Landfill Area A, to determine if sediments have been impacted by a release from on-site source areas (dioxin and total metals analyses only). Material was gray CLAY and SILT, trace organics, trace fine-to-coarse sand, trace fine gravel, wet. Tide receding during sampling. Sp. Cond. (µS/cm) = 22.74; Temp. (°C) = 9.1; Turbidity (NTU) = 2.46; pH (meter) = 6.53; PID (units) = 0; CGI/O_2 = 0/20.9; Salinity (ppt) = 20.2; Color (water) = clear; Water Depth (ft) = 0.5; Other = NR 42° 33′ 15.6″ North Latitude 70° 55′ 46.7″ West Longitude
SD-59	A3XE5 MA3XE5	12/6/2011 0942	Grab	0 to 0.75	Sediment sample collected using a hand auger from the riverbank adjacent to the eastern-central portion of the property, east of Sludge Lagoon Area C, to determine if sediments have been impacted by a release from on-site source areas (dioxin and total metals analyses only). Material was dark brown, CLAY and SILT, little organics (rootlets, plant debris), trace fine-to-coarse sand, wet. Tide receding during sampling. Sp. Cond. (µS/cm) = 27.54; Temp. (°C) = 9.3; Turbidity (NTU) = 3.41; pH (meter) = 8.69; PID (units) = 0; CGI/O_2 = NR; Salinity (ppt) = 24.8; Color (water) = clear; Water Depth (ft) = 0; Other = NR 42° 33′ 13.5″ North Latitude 70° 55′ 44.5″ West Longitude

Table 10

Sediment Sample Summary: Creese & Cook Co. (Former) 1
Samples Collected by START on 16 through 18 May 2011 and 6 December 2011 (Concluded)

Sample Location No.	Traffic Report No.	Date/ Time (hours)	Remarks	Sample Depth (feet)	Sample Description/Rationale
SD-60	A3XE6 MA3XE6	12/6/2011 0842	Grab	0 to 1.0	Sediment sample collected using a hand auger from the Crane River directly adjacent to the MBTA Right-of-Way, adjacent to exposed leather scraps eroding from the riverbank, to determine if sediments have been impacted by a release from on-site source areas (dioxin and total metals analyses only). Material was dark brown, organic-rich SILT, trace fine-to-medium sand, wet. Tide receding during sampling. Sp. Cond. (µS/cm) = 28.72; Temp. (°C) = 9.2; Turbidity (NTU) = 5.36; pH (meter) = 8.48; PID (units) = 0; CGI/O_2 = NR; Salinity (ppt) = 26.3; Color (water) = clear; Water Depth (ft) = NR; Other = NR 42° 33′ 09.8″ North Latitude 70° 55′ 35.5″ West Longitude
SD-61	A3XE7 MA3XE7	12/6/2011 0840	Grab	0 to 0.75	Sediment sample collected using a hand auger from the Crane River directly adjacent to the MBTA Right-of-Way, adjacent to exposed leather scraps eroding from the riverbank, to determine if sediments have been impacted by a release from on-site source areas (dioxin and total metals analyses only). Material was dark brown, SILT and CLAY, little fine-to-coarse sand, little debris (glass, tile, plastic), little fine-to-medium gravel, little organics (roots, plant material), wet. Tide receding during sampling. Sp. Cond. (µS/cm) = 29.12; Temp. (°C) = 9.2; Turbidity (NTU) = 6.95; pH (meter) = 8.45; PID (units) = 0; CGI/O_2 = 0/20.9; Salinity (ppt) = 26.4; Color (water) = Green-to-clear; Water Depth (ft) = 0; Other = NR 42° 33′ 09.3″ North Latitude 70° 55′ 35.4″ West Longitude
SD-70	A3XE8 MA3XE8	12/6/2011 1042	Grab	0 to 1.0	Field Duplicate of SD-56, collected for quality control.

PID	=	Photoionization Detector.	NR	=	Not Recorded.
No.	=	Number.	°C	=	Degrees Celcius.
″	=	Seconds.	′	=	Minutes.
ft	=	Feet.	ppt	=	Parts per thousand.
bgs	=	Below Ground Surface.	Sp. Cond.	=	Specific conductance.
µg/cm	=	Micro Siemens per centimeter.	CGI/O2	=	Combustible Gas Indicator/Oxygen.
START	=	Superfund Technical Assessment and Response Team III.			

[149]

Complete analytical results of START sediment samples, including quantitation and reporting limits, are presented in *Attachment C* of this report. Sample results qualified with a "J" on analytical tables are considered approximate because of limitations identified during analytical data validation. Sample results qualified with a "U" on analytical tables indicate the substances

were analyzed for, but not detected, and the associated numerical value is the sample-adjusted CRQL. Sample results qualified with a "UJ" on analytical tables indicate the substances were analyzed for, but not detected, and the associated numerical value is the estimated sample-adjusted CRQL. Sample results qualified with an "EB" on analytical tables indicate that the compound or element was identified in an aqueous equipment blank used to assess field contamination associated with sediment samples. Sample results qualified with an "EMPC" indicate the Estimated Maximum Possible Concentration [149; 169-178].

Complete analytical results of START equipment rinsate, trip, and preservative blank samples, collected by START in accordance with the Site-Specific QAPP for the Region I START Contract, are presented in *Attachment B* of this report [149; 169-178].

Table 11 is a summary of organic compounds and inorganic elements detected through laboratory analyses of START sediment samples. For each sample location, a dioxin/furan congener or total metal is listed if it is detected at a concentration greater than or equal to three times the highest background sample's concentration [SD-03, SD-50 (total metals only), and SD-51 (total metals only)]. However, if a substance is not detected in the background samples, the highest reference sample-adjusted CRQL is used as the reference value. These substances are listed if they occurred at a value equal to or greater than the background sample's sample-adjusted CRQL and are designated by their approximate relative concentration above these values. For substances where the background sample concentration has been rejected, the compound or element is not evaluated [149; 169-178]. Sediment samples collected from the Crane River and analyzed for dioxin/furan congeners and total metals were evaluated for their significance above background; however, other hazardous substances that were not compared against representative background samples may require further examination/investigation.

The State of MA does not currently have established state sediment standards. Therefore, for comparison purposes only, analytical results of START sediment samples are compared to National Oceanic and Atmospheric Administration (NOAA) Screening Quick Reference Tables (SQuiRTs) Threshold Effects Level (TEL) and/or Probable Effects Level (PEL) values for marine sediment. NOAA SQuiRTs have two values for comparison (TELs and PELs), which represent the level at which adverse effects to benthic organisms are expected. TELs represent the concentration below which adverse effects are expected to occur only rarely. PELs represent the level above which adverse effects are frequently expected to occur. Screening with conservative, lower-threshold values (*e.g.* TELs) ensures, with a high degree of confidence, that any contamination sources eliminated from future consideration pose no potential threat. Conversely, it does not predict toxicity. Upper threshold values (*e.g.* PELs) identify compounds which are more probably elevated to toxic levels. NOAA SQuiRTs TELs and PELs were developed for screening purposes only. The NOAA SQuiRT TELs and PELs are not enforceable by law, nor do they constitute criteria or clean-up levels, and are intended for comparison purposes only [152].

Samples analyzed for SVOC, PCB, and hexavalent chromium are compared against their respective NOAA SQuiRTs TEL and PEL for marine sediments and are presented on Table 11. Since there are no NOAA SQuiRTs TEL and PEL values for the hexavalent chromium analysis, NOAA SQuiRTs chromium (total) values were used for comparison purposes

Analytical results of sediment samples submitted for dioxin/furan and total metals analyses are also compared against their respective NOAA SQuiRTs TEL and/or PEL for marine sediments. Bolded values in Table 11 indicate the compound or element was detected at a concentration equal to or greater than its respective NOAA SQuiRTs TEL, and bolded and italicized values

indicate the compound or element was detected at a concentration equal to or greater than its respective NOAA SQuiRTs PEL.

Table 11

Summary of Analytical Results
Sediment Sample Analysis for Creese &Cook Co. (Former) 1

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration	Comments	NOAA SQuiRTs TEL		NOAA SQuiRTs PEL	
SD-03	**SVOCs**									
	Acenaphthene†	**78**	**J**	**µg/Kg**	NA	NA	6.71	µg/Kg	88.9	µg/Kg
	Acenaphthylene†	***390***		***µg/Kg***	NA	NA	5.87	µg/Kg	128	µg/Kg
	Anthracene†	***410***		***µg/Kg***	NA	NA	46.9	µg/Kg	245	µg/Kg
	Benzo(a)anthracene†	***1,200***		***µg/Kg***	NA	NA	74.8	µg/Kg	693	µg/Kg
	Benzo(a)pyrene†	***1,300***		***µg/Kg***	NA	NA	88.8	µg/Kg	763	µg/Kg
	Chrysene†	***1,700***		***µg/Kg***	NA	NA	108	µg/Kg	846	µg/Kg
	Dibenzo(a,h)anthracene†	***200***	***J***	***µg/Kg***	NA	NA	6.22	µg/Kg	135	µg/Kg
	Fluoranthene†	***2,400***		***µg/Kg***	NA	NA	113	µg/Kg	1,494	µg/Kg
	Fluorene†	***180***	***J***	***µg/Kg***	NA	NA	21.2	µg/Kg	144	µg/Kg
	Phenanthrene†	***1,700***		***µg/Kg***	NA	NA	86.7	µg/Kg	544	µg/Kg
	Pyrene†	***2,800***		***µg/Kg***	NA	NA	153	µg/Kg	1,398	µg/Kg
	PCBs									
	Aroclor-1254†	**110**	**J**	**µg/Kg**	NA	NA	63.3	µg/Kg	709	µg/Kg
	DIOXIN									
	Toxicity Equivalent Factor†	**15.8**	**J**	**ng/Kg**	NA	NA	0.85	ng/Kg	21.5	ng/Kg
	INORGANICS									
	Arsenic†	***51.6***		***mg/Kg***	NA	NA	7.24	mg/Kg	41.6	mg/Kg
	Cadmium†	**3**		**mg/Kg**	NA	NA	0.68	mg/Kg	4.21	mg/Kg
	Chromium (total) †	**82.4**		**mg/Kg**	NA	NA	52.3	mg/Kg	160	mg/Kg
	Copper†	**69.6**		**mg/Kg**	NA	NA	18.7	mg/Kg	108	mg/Kg
	Lead†	***188***		***mg/Kg***	NA	NA	30.24	mg/Kg	112	mg/Kg

Table 11

Summary of Analytical Results
Sediment Sample Analysis for Creese &Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration	Comments	NOAA SQuiRTs TEL		NOAA SQuiRTs PEL	
SD-03	**INORGANICS**									
	Mercury†	**0.69**		**mg/Kg**	NA	NA	0.13	mg/Kg	0.7	mg/Kg
	Nickel†	**22.7**		**mg/Kg**	NA	NA	15.9	mg/Kg	42.8	mg/Kg
	Zinc†	***273***		***mg/Kg***	NA	NA	124	mg/Kg	271	mg/Kg
SD-04	**SVOCs**									
	Acenaphthylene†	**110**	**J**	**µg/Kg**	NA	NA	5.87	µg/Kg	128	µg/Kg
	Anthracene†	**100**	**J**	**µg/Kg**	NA	NA	46.9	µg/Kg	245	µg/Kg
	Benzo(a)anthracene†	**490**		**µg/Kg**	NA	NA	74.8	µg/Kg	693	µg/Kg
	Benzo(a)pyrene†	**510**		**µg/Kg**	NA	NA	88.8	µg/Kg	763	µg/Kg
	Chrysene†	**570**		**µg/Kg**	NA	NA	108	µg/Kg	846	µg/Kg
	Dibenzo(a,h)anthracene†	**84**	**J**	**µg/Kg**	NA	NA	6.22	µg/Kg	135	µg/Kg
	Fluoranthene†	**790**		**µg/Kg**	NA	NA	113	µg/Kg	1,494	µg/Kg
	Phenanthrene†	**430**		**µg/Kg**	NA	NA	86.7	µg/Kg	544	µg/Kg
	Pyrene†	**950**		**µg/Kg**	NA	NA	153	µg/Kg	1,398	µg/Kg
	PCBs									
	Aroclor-1242	***31,000***		***µg/Kg***	NA	NA	21.6[1]	µg/Kg	189[1]	µg/Kg
	Aroclor-1254	***14,000***		***µg/Kg***	NA	NA	63.3	µg/Kg	709	µg/Kg
	DIOXIN									
	Toxicity Equivalent Factor†	**17.7**	**J**	**ng/Kg**	NA	NA	0.85	ng/Kg	21.5	ng/Kg
	INORGANICS									
	Arsenic†	***62.9***		***mg/Kg***	NA	NA	7.24	mg/Kg	41.6	mg/Kg
	Cadmium†	**1.3**		**mg/Kg**	NA	NA	0.68	mg/Kg	4.21	mg/Kg

Table 11

Summary of Analytical Results
Sediment Sample Analysis for Creese &Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	NOAA SQuiRTs TEL		NOAA SQuiRTs PEL	
SD-04	**INORGANICS**											
	Chromium (total)	***763***		***mg/Kg***	82.4		mg/Kg	9.3 × Ref	52.3	mg/Kg	160	mg/Kg
	Copper†	**69.5**		**mg/Kg**	NA			NA	18.7	mg/Kg	108	mg/Kg
	Lead†	***249***		***mg/Kg***	NA			NA	30.24	mg/Kg	112	mg/Kg
	Mercury†	***1.6***		***mg/Kg***	NA			NA	0.13	mg/Kg	0.7	mg/Kg
	Nickel†	**21.7**		**mg/Kg**	NA			NA	15.9	mg/Kg	42.8	mg/Kg
	Sodium	3,690		mg/Kg	1,210	J	mg/Kg	3 × Ref	NL		NL	
	Zinc†	**144**		**mg/Kg**	NA			NA	124	mg/Kg	271	mg/Kg
SD-05	**DIOXIN**											
	Toxicity Equivalent Factor†	**3.79**	**J**	**ng/Kg**	NA			NA	0.85	ng/Kg	21.5	ng/Kg
	INORGANICS											
	Arsenic†	**12.4**		**mg/Kg**	NA			NA	7.24	mg/Kg	41.6	mg/Kg
	Chromium (total)†	**78.2**		**mg/Kg**	NA			NA	52.3	mg/Kg	160	mg/Kg
	Nickel†	**23.4**		**mg/Kg**	NA			NA	15.9	mg/Kg	42.8	mg/Kg
	Thallium	7.3	J	mg/Kg	4.7	UJ	mg/Kg	1.6 × SQL	NL		NL	
SD-06	**SVOCs**											
	Acenaphthylene†	***350***		***µg/Kg***	NA			NA	5.87	µg/Kg	128	µg/Kg
	Anthracene†	***300***	***J***	***µg/Kg***	NA			NA	46.9	µg/Kg	245	µg/Kg
	Benzo(a)anthracene†	***1,200***		***µg/Kg***	NA			NA	74.8	µg/Kg	693	µg/Kg
	Benzo(a)pyrene†	***1,200***		***µg/Kg***	NA			NA	88.8	µg/Kg	763	µg/Kg
	Chrysene†	***1,200***		***µg/Kg***	NA			NA	108	µg/Kg	846	µg/Kg

Table 11

Summary of Analytical Results
Sediment Sample Analysis for Creese &Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	NOAA SQuiRTs TEL		NOAA SQuiRTs PEL	
SD-06	**SVOCs**											
	Dibenzo(a,h)anthracene†	***210***	***J***	***µg/Kg***	NA			NA	6.22	µg/Kg	135	µg/Kg
	Fluoranthene†	***2,100***		***µg/Kg***	NA			NA	113	µg/Kg	1,494	µg/Kg
	Fluorene†	**100**	**J**	**µg/Kg**	NA			NA	21.2	µg/Kg	144	µg/Kg
	Napthalene†	**76**	**J**	**µg/Kg**	NA			NA	34.6	µg/Kg	391	µg/Kg
	Phenanthrene†	***1,000***		***µg/Kg***	NA			NA	86.7	µg/Kg	544	µg/Kg
	Pyrene†	***2,500***		***µg/Kg***	NA			NA	153	µg/Kg	1,398	µg/Kg
	DIOXIN											
	1,2,3,6,7,8-HxCDD	28.4	EB	ng/Kg	8.39		ng/Kg	3.38 × Ref	NL		NL	
	1,2,3,4,6,7,8-HpCDD	749	EB	ng/Kg	237	EB	ng/Kg	3.16 × Ref	NL		NL	
	1,2,3,4,6,7,8,9-OCDD	7,730	J	ng/Kg	2,010		ng/Kg	3.85 × Ref	NL		NL	
	Toxicity Equivalent Factor†	***25.6***	***J***	***ng/Kg***	NA			NA	0.85	ng/Kg	21.5	ng/Kg
	INORGANICS											
	Arsenic†	***81***	***J***	***mg/Kg***	NA			NA	7.24	mg/Kg	41.6	mg/Kg
	Cadmium†	**1.6**		**mg/Kg**	NA			NA	0.68	mg/Kg	4.21	mg/Kg
	Chromium (total)	***1,670***		***mg/Kg***	82.4		mg/Kg	20.3 × Ref	52.3	mg/Kg	160	mg/Kg
	Copper†	**89.6**	**J**	**mg/Kg**	NA			NA	18.7	mg/Kg	108	mg/Kg
	Lead†	***162***		***mg/Kg***	NA			NA	30.24	mg/Kg	112	mg/Kg
	Mercury	***3***		***mg/Kg***	0.69		mg/Kg	4.3 × Ref	0.13	mg/Kg	0.7	mg/Kg
	Nickel†	**25.4**		**mg/Kg**	NA			NA	15.9	mg/Kg	42.8	mg/Kg
	Thallium	7.6	J	mg/Kg	4.7	UJ	mg/Kg	1.6 × SQL	NL		NL	
	Zinc†	***298***	***J***	***mg/Kg***	NA			NA	124	mg/Kg	271	mg/Kg

Table 11

Summary of Analytical Results
Sediment Sample Analysis for Creese &Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	NOAA SQuiRTs TEL		NOAA SQuiRTs PEL	
SD-07	**SVOCs**											
	Anthracene†	**87**	**J**	**µg/Kg**	NA			NA	46.9	µg/Kg	245	µg/Kg
	Benzo(a)anthracene†	**380**		**µg/Kg**	NA			NA	74.8	µg/Kg	693	µg/Kg
	Benzo(a)pyrene†	**290**	**J**	**µg/Kg**	NA			NA	88.8	µg/Kg	763	µg/Kg
	Chrysene†	**310**	**J**	**µg/Kg**	NA			NA	108	µg/Kg	846	µg/Kg
	Fluoranthene†	**520**		**µg/Kg**	NA			NA	113	µg/Kg	1,494	µg/Kg
	Phenanthrene†	**120**	**J**	**µg/Kg**	NA			NA	86.7	µg/Kg	544	µg/Kg
	Pyrene†	**520**		**µg/Kg**	NA			NA	153	µg/Kg	1,398	µg/Kg
	PCBs											
	Aroclor-1254†	**100**		**µg/Kg**	NA			NA	63.3	µg/Kg	709	µg/Kg
	DIOXIN											
	Toxicity Equivalent Factor†	**2.47**	**J**	**ng/Kg**	NA			NA	0.85	ng/Kg	21.5	ng/Kg
	INORGANICS											
	Arsenic†	**20.4**		**mg/Kg**	NA			NA	7.24	mg/Kg	41.6	mg/Kg
	Chromium (total)†	**89.6**		**mg/Kg**	NA			NA	52.3	mg/Kg	160	mg/Kg
	Copper†	**29.5**		**mg/Kg**	NA			NA	18.7	mg/Kg	108	mg/Kg
	Lead†	**39.5**		**mg/Kg**	NA			NA	30.24	mg/Kg	112	mg/Kg
	Nickel†	**26.1**		**mg/Kg**	NA			NA	15.9	mg/Kg	42.8	mg/Kg
	Potassium	4,250		mg/Kg	1,350	J	mg/Kg	3.1 × Ref	NL		NL	
	Sodium	3,820		mg/Kg	1,210	J	mg/Kg	3.2 × Ref	NL		NL	
	Thallium	8.1	J	mg/Kg	4.7	UJ	mg/Kg	1.7 × SQL	NL		NL	

Table 11

Summary of Analytical Results
Sediment Sample Analysis for Creese &Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	NOAA SQuiRTs TEL		NOAA SQuiRTs PEL	
SD-08	**SVOCs**											
	Acenaphthylene†	***160***	***J***	***µg/Kg***	NA			NA	5.87	µg/Kg	128	µg/Kg
	Anthracene†	**180**	**J**	**µg/Kg**	NA			NA	46.9	µg/Kg	245	µg/Kg
	Benzo(a)anthracene†	**580**		**µg/Kg**	NA			NA	74.8	µg/Kg	693	µg/Kg
	Benzo(a)pyrene†	***770***		***µg/Kg***	NA			NA	88.8	µg/Kg	763	µg/Kg
	Chrysene†	**840**		**µg/Kg**	NA			NA	108	µg/Kg	846	µg/Kg
	Dibenzo(a,h)anthracene†	***140***	***J***	***µg/Kg***	NA			NA	6.22	µg/Kg	135	µg/Kg
	Fluoranthene†	**1,000**		**µg/Kg**	NA			NA	113	µg/Kg	1,494	µg/Kg
	Phenanthrene†	**460**		**µg/Kg**	NA			NA	86.7	µg/Kg	544	µg/Kg
	Pyrene†	***1,400***		***µg/Kg***	NA			NA	153	µg/Kg	1,398	µg/Kg
	PCBs											
	Aroclor-1254†	**290**	**J**	**µg/Kg**	NA			NA	63.3	µg/Kg	709	µg/Kg
	DIOXIN											
	1,2,3,7,8-PeCDD	4.88	J EB	ng/Kg	1.61	J	ng/Kg	3 × Ref	NL		NL	
	1,2,3,4,7,8-HxCDD	9.46	EB	ng/Kg	2.7	J	ng/Kg	3.5 × Ref	NL		NL	
	1,2,3,6,7,8-HxCDD	67.6	EB	ng/Kg	8.39		ng/Kg	8.1 × Ref	NL		NL	
	1,2,3,7,8,9-HxCDD	36.6	EB	ng/Kg	7.46		ng/Kg	4.9 × Ref	NL		NL	
	1,2,3,4,6,7,8-HpCDD	1920	EB	ng/Kg	237	EB	ng/Kg	8.1 × Ref	NL		NL	
	1,2,3,4,6,7,8,9-OCDD	16,500	J	ng/Kg	2,010		ng/Kg	8.2 × Ref	NL		NL	

Table 11

Summary of Analytical Results
Sediment Sample Analysis for Creese &Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	NOAA SQuiRTs TEL		NOAA SQuiRTs PEL	
SD-08	**DIOXIN**											
	1,2,3,4,7,8-HxCDF	18.8	EB	ng/Kg	5.96	EB	ng/Kg	3.2 × Ref	NL		NL	
	2,3,4,6,7,8-HxCDF	9.24	EB	ng/Kg	2.97	J	ng/Kg	3.1 × Ref	NL		NL	
	1,2,3,4,6,7,8-HpCDF	389	EB	ng/Kg	62.8		ng/Kg	6.2 × Ref	NL		NL	
	1,2,3,4,7,8,9-HpCDF	14.4	EB	ng/Kg	3.59	J EB	ng/Kg	4 × Ref	NL		NL	
	1,2,3,4,6,7,8,9-OCDF	630	EB	ng/Kg	149		ng/Kg	4.2 × Ref	NL		NL	
	Toxicity Equivalent Factor	***53.5***	***J***	***ng/Kg***	15.8	J	ng/Kg	3.4 × Ref	0.85	ng/Kg	21.5	ng/Kg
	INORGANICS											
	Arsenic†	***62.5***		***mg/Kg***		NA		NA	7.24	mg/Kg	41.6	mg/Kg
	Cadmium†	**2.3**		**mg/Kg**		NA		NA	0.68	mg/Kg	4.21	mg/Kg
	Chromium (total)	***2,140***		***mg/Kg***	82.4		mg/Kg	26 × Ref	52.3	mg/Kg	160	mg/Kg
	Copper†	**115**		**mg/Kg**		NA		NA	18.7	mg/Kg	108	mg/Kg
	Lead†	***248***		***mg/Kg***		NA		NA	30.24	mg/Kg	112	mg/Kg
	Mercury	***3.4***		***mg/Kg***	0.69		mg/Kg	4.9 × Ref	0.13	mg/Kg	0.7	mg/Kg
	Nickel†	**33**		**mg/Kg**		NA		NA	15.9	mg/Kg	42.8	mg/Kg
	Potassium	4,940		mg/Kg	1,350	J	mg/Kg	3.7 × Ref	NL		NL	
	Sodium	13,200		mg/Kg	1,210	J	mg/Kg	10.9 × Ref	NL		NL	
	Thallium	8.2	J	mg/Kg	4.7	UJ	mg/Kg	1.7 × SQL	NL		NL	
	Zinc†	***317***		***mg/Kg***		NA		NA	124	mg/Kg	271	mg/Kg

Table 11

Summary of Analytical Results
Sediment Sample Analysis for Creese &Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	NOAA SQuiRTs TEL		NOAA SQuiRTs PEL	
SD-09	**SVOCs**											
	Anthracene†	**65**	**J**	**µg/Kg**	NA			NA	46.9	µg/Kg	245	µg/Kg
	Benzo(a)anthracene†	**440**		**µg/Kg**	NA			NA	74.8	µg/Kg	693	µg/Kg
	Benzo(a)pyrene†	**350**		**µg/Kg**	NA			NA	88.8	µg/Kg	763	µg/Kg
	Chrysene†	**380**		**µg/Kg**	NA			NA	108	µg/Kg	846	µg/Kg
	Fluoranthene†	**540**		**µg/Kg**	NA			NA	113	µg/Kg	1,494	µg/Kg
	Phenanthrene†	**150**	**J**	**µg/Kg**	NA			NA	86.7	µg/Kg	544	µg/Kg
	Pyrene†	**660**	**J**	**µg/Kg**	NA			NA	153	µg/Kg	1,398	µg/Kg
	DIOXIN											
	Toxicity Equivalent Factor†	**6.67**	**J**	**ng/Kg**	NA			NA	0.85	ng/Kg	21.5	ng/Kg
	INORGANICS											
	Arsenic†	**15.5**		**mg/Kg**	NA			NA	7.24	mg/Kg	41.6	mg/Kg
	Chromium (total)†	***222***		***mg/Kg***	NA			NA	52.3	mg/Kg	160	mg/Kg
	Copper †	**32.2**		**mg/Kg**	NA			NA	18.7	mg/Kg	108	mg/Kg
	Lead†	**56.1**		**mg/Kg**	NA			NA	30.24	mg/Kg	112	mg/Kg
	Mercury†	**0.35**		**mg/Kg**	NA			NA	0.13	mg/Kg	0.7	mg/Kg
	Nickel†	**18.7**		**mg/Kg**	NA			NA	15.9	mg/Kg	42.8	mg/Kg
	Sodium	5,780		mg/Kg	1,210	J	mg/Kg	4.8 × Ref	NL		NL	
	Thallium	5.5	J	mg/Kg	4.7	UJ	mg/Kg	1.2 × SQL	NL		NL	

Table 11

Summary of Analytical Results
Sediment Sample Analysis for Creese &Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	NOAA SQuiRTs TEL		NOAA SQuiRTs PEL	
SD-10	**SVOCs**											
	Anthracene†	**85**	**J**	**µg/Kg**	NA			NA	46.9	µg/Kg	245	µg/Kg
	Benzo(a)anthracene†	**300**	**J**	**µg/Kg**	NA			NA	74.8	µg/Kg	693	µg/Kg
	Benzo(a)pyrene†	**300**	**J**	**µg/Kg**	NA			NA	88.8	µg/Kg	763	µg/Kg
	Chrysene†	**370**		**µg/Kg**	NA			NA	108	µg/Kg	846	µg/Kg
	Fluoranthene†	**460**		**µg/Kg**	NA			NA	113	µg/Kg	1,494	µg/Kg
	Phenanthrene†	**240**	**J**	**µg/Kg**	NA			NA	86.7	µg/Kg	544	µg/Kg
	Pyrene†	**560**		**µg/Kg**	NA			NA	153	µg/Kg	1,398	µg/Kg
	DIOXIN											
	Toxicity Equivalent Factor†	**8.17**	**J**	**ng/Kg**	NA			NA	0.85	ng/Kg	21.5	ng/Kg
	INORGANICS											
	Arsenic†	**25.9**		**mg/Kg**	NA			NA	7.24	mg/Kg	41.6	mg/Kg
	Cadmium†	**0.71**	**J**	**mg/Kg**	NA			NA	0.68	mg/Kg	4.21	mg/Kg
	Chromium (total)	***592***		***mg/Kg***	82.4		mg/Kg	7.2 × Ref	52.3	mg/Kg	160	mg/Kg
	Copper†	**48.3**		**mg/Kg**	NA			NA	18.7	mg/Kg	108	mg/Kg
	Lead†	**85.2**		**mg/Kg**	NA			NA	30.24	mg/Kg	112	mg/Kg
	Mercury†	***0.92***		***mg/Kg***	NA			NA	0.13	mg/Kg	0.7	mg/Kg
	Nickel†	**22.8**		**mg/Kg**	NA			NA	15.9	mg/Kg	42.8	mg/Kg
	Sodium	6,060		mg/Kg	1,210	J	mg/Kg	5 × Ref	NL		NL	
	Thallium	7.3	J	mg/Kg	4.7	UJ	mg/Kg	1.6 × SQL	NL		NL	
	Zinc†	**126**		**mg/Kg**	NA			NA	124	mg/Kg	271	mg/Kg

Table 11

Summary of Analytical Results
Sediment Sample Analysis for Creese &Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration	Comments	NOAA SQuiRTs TEL		NOAA SQuiRTs PEL	
SD-11	**SVOCs**									
	Acenaphthylene†	***270***	***J***	***µg/Kg***	NA	NA	5.87	µg/Kg	128	µg/Kg
	Anthracene†	***360***		***µg/Kg***	NA	NA	46.9	µg/Kg	245	µg/Kg
	Benzo(a)anthracene†	***1,500***		***µg/Kg***	NA	NA	74.8	µg/Kg	693	µg/Kg
	Benzo(a)pyrene†	***1,400***		***µg/Kg***	NA	NA	88.8	µg/Kg	763	µg/Kg
	Chrysene†	***1,200***		***µg/Kg***	NA	NA	108	µg/Kg	846	µg/Kg
	Dibenzo(a,h)anthracene†	***220***	***J***	***µg/Kg***	NA	NA	6.22	µg/Kg	135	µg/Kg
	Fluoranthene†	***1,900***		***µg/Kg***	NA	NA	113	µg/Kg	1,494	µg/Kg
	Fluorene†	**80**	**J**	**µg/Kg**	NA	NA	21.2	µg/Kg	144	µg/Kg
	Napthalene†	**110**	**J**	**µg/Kg**	NA	NA	34.6	µg/Kg	391	µg/Kg
	Phenanthrene†	***740***		***µg/Kg***	NA	NA	86.7	µg/Kg	544	µg/Kg
	Pyrene†	***2,800***		***µg/Kg***	NA	NA	153	µg/Kg	1,398	µg/Kg
	PCBs									
	Aroclor-1242	***2,200***		***µg/Kg***	NA	NA	21.6[1]	µg/Kg	189[1]	µg/Kg
	Aroclor-1254	***1,300***		***µg/Kg***	NA	NA	63.3	µg/Kg	709	µg/Kg
	DIOXIN									
	Toxicity Equivalent Factor†	**13.1**	**J**	**ng/Kg**	NA	NA	0.85	ng/Kg	21.5	ng/Kg

Table 11

Summary of Analytical Results
Sediment Sample Analysis for Creese &Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	NOAA SQuiRTs TEL		NOAA SQuiRTs PEL	
SD-11	**INORGANICS**											
	Arsenic†	**21.8**		**mg/Kg**		NA		NA	7.24	mg/Kg	41.6	mg/Kg
	Chromium (total)	***562***		***mg/Kg***	82.4		mg/Kg	6.8 × Ref	52.3	mg/Kg	160	mg/Kg
	Copper†	**56.9**		**mg/Kg**		NA		NA	18.7	mg/Kg	108	mg/Kg
	Lead†	**77.1**		**mg/Kg**		NA		NA	30.24	mg/Kg	112	mg/Kg
	Mercury†	***1.1***		***mg/Kg***		NA		NA	0.13	mg/Kg	0.7	mg/Kg
	Sodium	6,130		mg/Kg	1,210	J	mg/Kg	5.1 × Ref	NL		NL	
	Zinc†	**136**		**mg/Kg**		NA		NA	124	mg/Kg	271	mg/Kg
SD-12	**SVOCs**											
	Anthracene†	***280***	***J***	***µg/Kg***		NA		NA	46.9	µg/Kg	245	µg/Kg
	Benzo(a)anthracene†	***700***	***J***	***µg/Kg***		NA		NA	74.8	µg/Kg	693	µg/Kg
	Benzo(a)pyrene†	**540**		**µg/Kg**		NA		NA	88.8	µg/Kg	763	µg/Kg
	Chrysene†	**580**	**J**	**µg/Kg**		NA		NA	108	µg/Kg	846	µg/Kg
	Dibenzo(a,h)anthracene†	**62**	**J**	**µg/Kg**		NA		NA	6.22	µg/Kg	135	µg/Kg
	Fluoranthene†	**1,200**	**J**	**µg/Kg**		NA		NA	113	µg/Kg	1,494	µg/Kg
	Fluorene†	**53**	**J**	**µg/Kg**		NA		NA	21.2	µg/Kg	144	µg/Kg
	Phenanthrene†	***560***	***J***	***µg/Kg***		NA		NA	86.7	µg/Kg	544	µg/Kg
	Pyrene†	**1,300**	**J**	**µg/Kg**		NA		NA	153	µg/Kg	1,398	µg/Kg
	DIOXIN											
	Toxicity Equivalent Factor†	**3.00**	**J**	**ng/Kg**		NA		NA	0.85	ng/Kg	21.5	ng/Kg

Table 11

Summary of Analytical Results
Sediment Sample Analysis for Creese &Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	NOAA SQuiRTs TEL		NOAA SQuiRTs PEL	
SD-12	**INORGANICS**											
	Arsenic†	**22.9**		**mg/Kg**	NA			NA	7.24	mg/Kg	41.6	mg/Kg
	Chromium (total)†	***180***		***mg/Kg***	NA			NA	52.3	mg/Kg	160	mg/Kg
	Lead†	**33**		**mg/Kg**	NA			NA	30.24	mg/Kg	112	mg/Kg
	Mercury†	**0.16**		**mg/Kg**	NA			NA	0.13	mg/Kg	0.7	mg/Kg
SD-13	**SVOCs**											
	Acenaphthylene†	***410***		***µg/Kg***	NA			NA	5.87	µg/Kg	128	µg/Kg
	Anthracene†	***440***	***J***	***µg/Kg***	NA			NA	46.9	µg/Kg	245	µg/Kg
	Benzo(a)anthracene†	***1,900***		***µg/Kg***	NA			NA	74.8	µg/Kg	693	µg/Kg
	Benzo(a)pyrene†	***1,900***		***µg/Kg***	NA			NA	88.8	µg/Kg	763	µg/Kg
	Chrysene†	***2,000***		***µg/Kg***	NA			NA	108	µg/Kg	846	µg/Kg
	Dibenzo(a,h)anthracene†	***310***	***J***	***µg/Kg***	NA			NA	6.22	µg/Kg	135	µg/Kg
	Fluoranthene†	***3,800***		***µg/Kg***	NA			NA	113	µg/Kg	1,494	µg/Kg
	Fluorene†	**140**	**J**	**µg/Kg**	NA			NA	21.2	µg/Kg	144	µg/Kg
	Phenanthrene†	***1,500***	***J***	***µg/Kg***	NA			NA	86.7	µg/Kg	544	µg/Kg
	Pyrene†	***3,000***		***µg/Kg***	NA			NA	153	µg/Kg	1,398	µg/Kg
	DIOXIN											
	1,2,3,7,8-PeCDD	9.63	EB	ng/Kg	1.61	J	ng/Kg	6 × Ref	NL		NL	
	1,2,3,4,7,8-HxCDD	18.3		ng/Kg	2.7	J	ng/Kg	6.8 × Ref	NL		NL	

Table 11

Summary of Analytical Results
Sediment Sample Analysis for Creese &Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	NOAA SQuiRTs TEL	NOAA SQuiRTs PEL
SD-13	**DIOXIN**									
	1,2,3,6,7,8-HxCDD	76.5		ng/Kg	8.39		ng/Kg	9.1 × Ref	NL	NL
	1,2,3,7,8,9-HxCDD	61.2		ng/Kg	7.46		ng/Kg	8.2 × Ref	NL	NL
	1,2,3,4,6,7,8-HpCDD	2,000	J EB	ng/Kg	237	EB	ng/Kg	8.4 × Ref	NL	NL
	1,2,3,4,6,7,8,9-OCDD	17,300	J	ng/Kg	2,010		ng/Kg	8.6 × Ref	NL	NL
	1,2,3,7,8-PeCDF	5.28	EB	ng/Kg	1.49	J	ng/Kg	3.5 × Ref	NL	NL
	1,2,3,4,7,8-HxCDF	28	EB	ng/Kg	5.96	EB	ng/Kg	4.7 × Ref	NL	NL
	1,2,3,6,7,8-HxCDF	15.4	EB	ng/Kg	4.02	J EB	ng/Kg	3.8 × Ref	NL	NL
	1,2,3,7,8,9-HxCDF	0.67	J EB	ng/Kg	0.184	J	ng/Kg	3.6 × Ref	NL	NL
	2,3,4,6,7,8-HxCDF	14.5		ng/Kg	2.97	J	ng/Kg	4.9 × Ref	NL	NL
	1,2,3,4,6,7,8-HpCDF	451	J EB	ng/Kg	62.8		ng/Kg	7.2 × Ref	NL	NL
	1,2,3,4,7,8,9-HpCDF	17.7	EB	ng/Kg	3.59	J EB	ng/Kg	4.9 × Ref	NL	NL
	1,2,3,4,6,7,8,9-OCDF	602	J	ng/Kg	149		ng/Kg	4 × Ref	NL	NL
	Toxicity Equivalent Factor	***69.2***	***J***	***ng/Kg***	15.8	J	ng/Kg	4.4 × Ref	0.85 ng/Kg	21.5 ng/Kg
	INORGANICS									
	Arsenic†	***83.1***	***J***	***mg/Kg***	NA			NA	7.24 mg/Kg	41.6 mg/Kg
	Cadmium†	**1.4**	**J**	**mg/Kg**	NA			NA	0.68 mg/Kg	4.21 mg/Kg
	Chromium (total)	***1,110***	***J***	***mg/Kg***	82.4		mg/Kg	13.5 × Ref	52.3 mg/Kg	160 mg/Kg
	Copper†	**77.2**		**mg/Kg**	NA			NA	18.7 mg/Kg	108 mg/Kg
	Lead†	***260***		***mg/Kg***	NA			NA	30.24 mg/Kg	112 mg/Kg

Table 11

Summary of Analytical Results
Sediment Sample Analysis for Creese &Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	NOAA SQuiRTs TEL		NOAA SQuiRTs PEL	
SD-13	**INORGANICS**											
	Mercury	***2.5***		***mg/Kg***	0.69		mg/Kg	3.6 × Ref	0.13	mg/Kg	0.7	mg/Kg
	Nickel†	**28.4**		**mg/Kg**		NA		NA	15.9	mg/Kg	42.8	mg/Kg
	Potassium	4,250		mg/Kg	1,350	J	mg/Kg	3.1 × Ref	NL		NL	
	Sodium	12,500		mg/Kg	1,210	J	mg/Kg	10.3 × Ref	NL		NL	
	Thallium	6.4	J	mg/Kg	4.7	UJ	mg/Kg	1.4 × SQL	NL		NL	
	Zinc†	**130**	**J**	**mg/Kg**		NA		NA	124	mg/Kg	271	mg/Kg
SD-14	**SVOCs**											
	Anthracene†	**130**	**J**	**µg/Kg**		NA		NA	46.9	µg/Kg	245	µg/Kg
	Benzo(a)anthracene†	**470**	**J**	**µg/Kg**		NA		NA	74.8	µg/Kg	693	µg/Kg
	Benzo(a)pyrene†	**380**	**J**	**µg/Kg**		NA		NA	88.8	µg/Kg	763	µg/Kg
	Chrysene†	**410**	**J**	**µg/Kg**		NA		NA	108	µg/Kg	846	µg/Kg
	Fluoranthene†	**630**	**J**	**µg/Kg**		NA		NA	113	µg/Kg	1,494	µg/Kg
	Phenanthrene†	**270**	**J**	**µg/Kg**		NA		NA	86.7	µg/Kg	544	µg/Kg
	Pyrene†	**710**	**J**	**µg/Kg**		NA		NA	153	µg/Kg	1,398	µg/Kg
	DIOXIN											
	Toxicity Equivalent Factor†	**5.06**	**J**	**ng/Kg**		NA		NA	0.85	ng/Kg	21.5	ng/Kg

Table 11

Summary of Analytical Results
Sediment Sample Analysis for Creese &Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	NOAA SQuiRTs TEL		NOAA SQuiRTs PEL	
SD-14	**INORGANICS**											
	Arsenic†	**18**		**mg/Kg**	NA			NA	7.24	mg/Kg	41.6	mg/Kg
	Chromium (total)†	***213***		***mg/Kg***	NA			NA	52.3	mg/Kg	160	mg/Kg
	Copper†	**25.8**		**mg/Kg**	NA			NA	18.7	mg/Kg	108	mg/Kg
	Lead†	**40.9**		**mg/Kg**	NA			NA	30.24	mg/Kg	112	mg/Kg
	Mercury†	**0.44**		**mg/Kg**	NA			NA	0.13	mg/Kg	0.7	mg/Kg
	Nickel†	**18.7**		**mg/Kg**	NA			NA	15.9	mg/Kg	42.8	mg/Kg
	Sodium	12,400		mg/Kg	1,210	J	mg/Kg	10.2 × Ref	NL		NL	
	Thallium	4.8	J	mg/Kg	4.7	UJ	mg/Kg	1.0 × SQL	NL		NL	
SD-15	**SVOCs**											
	Acenaphthylene†	***170***	***J***	***µg/Kg***	NA			NA	5.87	µg/Kg	128	µg/Kg
	Anthracene†	***340***	***J***	***µg/Kg***	NA			NA	46.9	µg/Kg	245	µg/Kg
	Benzo(a)anthracene†	***950***	***J***	***µg/Kg***	NA			NA	74.8	µg/Kg	693	µg/Kg
	Benzo(a)pyrene†	**760**		**µg/Kg**	NA			NA	88.8	µg/Kg	763	µg/Kg
	Chrysene†	***930***	***J***	***µg/Kg***	NA			NA	108	µg/Kg	846	µg/Kg
	Dibenzo(a,h)anthracene†	**96**	**J**	**µg/Kg**	NA			NA	6.22	µg/Kg	135	µg/Kg
	Fluoranthene†	***1,600***	***J***	***µg/Kg***	NA			NA	113	µg/Kg	1,494	µg/Kg
	Fluorene†	**120**	**J**	**µg/Kg**	NA			NA	21.2	µg/Kg	144	µg/Kg
	Phenanthrene†	***1,200***	***J***	***µg/Kg***	NA			NA	86.7	µg/Kg	544	µg/Kg
	Pyrene†	***1,900***	***J***	***µg/Kg***	NA			NA	153	µg/Kg	1,398	µg/Kg

Table 11

Summary of Analytical Results
Sediment Sample Analysis for Creese &Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	NOAA SQuiRTs TEL	NOAA SQuiRTs PEL
SD-15	**DIOXIN**									
	1,2,3,6,7,8-HxCDD	31.4		ng/Kg	8.39		ng/Kg	3.7 × Ref	NL	NL
	1,2,3,4,6,7,8-HpCDD	779	J EB	ng/Kg	237	EB	ng/Kg	3.3 × Ref	NL	NL
	1,2,3,4,6,7,8,9-OCDD	8,580	J	ng/Kg	2,010		ng/Kg	4.3 × Ref	NL	NL
	Toxicity Equivalent Factor†	***28.9***	***J***	***ng/Kg***		NA		NA	0.85 ng/Kg	21.5 ng/Kg
	INORGANICS									
	Arsenic†	***126***		***mg/Kg***		NA		NA	7.24 mg/Kg	41.6 mg/Kg
	Chromium (total)	***766***		***mg/Kg***	82.4		mg/Kg	9.3 × Ref	52.3 mg/Kg	160 mg/Kg
	Copper†	**45**		**mg/Kg**		NA		NA	18.7 mg/Kg	108 mg/Kg
	Lead†	***167***		***mg/Kg***		NA		NA	30.24 mg/Kg	112 mg/Kg
	Mercury	***9.3***		***mg/Kg***	0.69		mg/Kg	13.5 × Ref	0.13 mg/Kg	0.7 mg/Kg
	Nickel†	**16.5**		**mg/Kg**		NA		NA	15.9 mg/Kg	42.8 mg/Kg
	Sodium	5,580		mg/Kg	1,210	J	mg/Kg	4.6 × Ref	NL	NL
SD-16	**SVOCs**									
	Benzo(a)anthracene†	**120**	**J**	**µg/Kg**		NA		NA	74.8 µg/Kg	693 µg/Kg
	Benzo(a)pyrene†	**120**	**J**	**µg/Kg**		NA		NA	88.8 µg/Kg	763 µg/Kg
	Chrysene†	**120**	**J**	**µg/Kg**		NA		NA	108 µg/Kg	846 µg/Kg
	Fluoranthene†	**220**	**J**	**µg/Kg**		NA		NA	113 µg/Kg	1,494 µg/Kg
	Pyrene†	**180**	**J**	**µg/Kg**		NA		NA	153 µg/Kg	1,398 µg/Kg
	DIOXIN									
	1,2,3,4,6,7,8,9-OCDD	23,200	J	ng/Kg	2,010		ng/Kg	11.5 × Ref	NL	NL
	Toxicity Equivalent Factor†	**12.8**	**J**	**ng/Kg**		NA		NA	0.85 ng/Kg	21.5 ng/Kg

Table 11

Summary of Analytical Results
Sediment Sample Analysis for Creese &Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	NOAA SQuiRTs TEL		NOAA SQuiRTs PEL	
SD-16	**INORGANICS**											
	Arsenic†	**13.1**	**J**	**mg/Kg**		NA		NA	7.24	mg/Kg	41.6	mg/Kg
	Chromium (total)†	**79.6**	**J**	**mg/Kg**		NA		NA	52.3	mg/Kg	160	mg/Kg
	Nickel†	**30.6**		**mg/Kg**		NA		NA	15.9	mg/Kg	42.8	mg/Kg
	Potassium	4,810		mg/Kg	1,350	J	mg/Kg	3.6 × Ref	NL		NL	
	Sodium	11,100		mg/Kg	1,210	J	mg/Kg	9.2 × Ref	NL		NL	
	Thallium	9.5	J	mg/Kg	4.7	UJ	mg/Kg	2.0 × SQL	NL		NL	
SD-17	**SVOCs**											
	Acenaphthylene†	**71**	**J**	**µg/Kg**		NA		NA	5.87	µg/Kg	128	µg/Kg
	Anthracene†	**68**	**J**	**µg/Kg**		NA		NA	46.9	µg/Kg	245	µg/Kg
	Benzo(a)anthracene†	**320**	**J**	**µg/Kg**		NA		NA	74.8	µg/Kg	693	µg/Kg
	Benzo(a)pyrene†	**260**		**µg/Kg**		NA		NA	88.8	µg/Kg	763	µg/Kg
	Chrysene†	**310**	**J**	**µg/Kg**		NA		NA	108	µg/Kg	846	µg/Kg
	Fluoranthene†	**430**	**J**	**µg/Kg**		NA		NA	113	µg/Kg	1,494	µg/Kg
	Phenanthrene†	**180**	**J**	**µg/Kg**		NA		NA	86.7	µg/Kg	544	µg/Kg
	Pyrene†	**560**	**J**	**µg/Kg**		NA		NA	153	µg/Kg	1,398	µg/Kg
	DIOXIN											
	1,2,3,7,8-PeCDD	5.41	EB	ng/Kg	1.61	J	ng/Kg	3.4 × Ref	NL		NL	
	1,2,3,4,7,8-HxCDD	11.2		ng/Kg	2.7	J	ng/Kg	4.2 × Ref	NL		NL	

Table 11

Summary of Analytical Results
Sediment Sample Analysis for Creese &Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	NOAA SQuiRTs TEL		NOAA SQuiRTs PEL	
SD-17	**DIOXIN**											
	1,2,3,6,7,8-HxCDD	56.9		ng/Kg	8.39		ng/Kg	3.8 × Ref	NL		NL	
	1,2,3,7,8,9-HxCDD	35.8		ng/Kg	7.46		ng/Kg	4.8 × Ref	NL		NL	
	1,2,3,4,6,7,8-HpCDD	1,500	EB	ng/Kg	237	EB	ng/Kg	6.3 × Ref	NL		NL	
	1,2,3,4,6,7,8,9-OCDD	18,200	J	ng/Kg	2,010		ng/Kg	9.1 × Ref	NL		NL	
	1,2,3,4,7,8-HxCDF	23.3	EB	ng/Kg	5.96	EB	ng/Kg	3.9 × Ref	NL		NL	
	2,3,4,6,7,8-HxCDF	9.97		ng/Kg	2.97	J	ng/Kg	3.4 × Ref	NL		NL	
	1,2,3,4,6,7,8-HpCDF	366	EB	ng/Kg	62.8		ng/Kg	5.8 × Ref	NL		NL	
	1,2,3,4,7,8,9-HpCDF	14.9	EB	ng/Kg	3.59	J EB	ng/Kg	4.2 × Ref	NL		NL	
	1,2,3,4,6,7,8,9-OCDF	493		ng/Kg	149		ng/Kg	3.3 × Ref	NL		NL	
	Toxicity Equivalent Factor	***49.8***	***J***	***ng/Kg***	15.8	J	ng/Kg	3.2 × Ref	0.85	ng/Kg	21.5	ng/Kg
	INORGANICS											
	Arsenic†	***45.6***	***J***	***mg/Kg***		NA		NA	7.24	mg/Kg	41.6	mg/Kg
	Cadmium†	**0.78**	**J**	**mg/Kg**		NA		NA	0.68	mg/Kg	4.21	mg/Kg
	Chromium (total)	***561***	***J***	***mg/Kg***	82.4		mg/Kg	6.8 × Ref	52.3	mg/Kg	160	mg/Kg
	Copper†	**37.5**		**mg/Kg**		NA		NA	18.7	mg/Kg	108	mg/Kg
	Lead†	***127***		***mg/Kg***		NA		NA	30.24	mg/Kg	112	mg/Kg
	Mercury	***2.3***		***mg/Kg***	0.69		mg/Kg	3.3 × Ref	0.13	mg/Kg	0.7	mg/Kg
	Nickel†	**22.3**		**mg/Kg**		NA		NA	15.9	mg/Kg	42.8	mg/Kg
	Sodium	4,970		mg/Kg	1,210	J	mg/Kg	4.1 × Ref	NL		NL	
	Thallium	6	J	mg/Kg	4.7	UJ	mg/Kg	1.3 × SQL	NL		NL	

Table 11

Summary of Analytical Results
Sediment Sample Analysis for Creese &Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	NOAA SQuiRTs TEL		NOAA SQuiRTs PEL	
SD-18	**SVOCs**											
	Benzo(a)anthracene†	**130**	**J**	**µg/Kg**	NA			NA	74.8	µg/Kg	693	µg/Kg
	Benzo(a)pyrene†	**110**	**J**	**µg/Kg**	NA			NA	88.8	µg/Kg	763	µg/Kg
	Chrysene†	**120**	**J**	**µg/Kg**	NA			NA	108	µg/Kg	846	µg/Kg
	Fluoranthene†	**170**	**J**	**µg/Kg**	NA			NA	113	µg/Kg	1,494	µg/Kg
	Pyrene†	**250**	**J**	**µg/Kg**	NA			NA	153	µg/Kg	1,398	µg/Kg
	DIOXIN											
	1,2,3,4,6,7,8,9-OCDD	8,250	J	ng/Kg	2,010		ng/Kg	4.1 × Ref	NL		NL	
	Toxicity Equivalent Factor†	**12**	**J**	**ng/Kg**	NA			NA	0.85	ng/Kg	21.5	ng/Kg
	INORGANICS											
	Arsenic†	**27.4**	**J**	**mg/Kg**	NA			NA	7.24	mg/Kg	41.6	mg/Kg
	Cadmium†	**0.8**	**J**	**mg/Kg**	NA			NA	0.68	mg/Kg	4.21	mg/Kg
	Chromium (total)	***340***	***J***	***mg/Kg***	82.4		mg/Kg	4.1 × Ref	52.3	mg/Kg	160	mg/Kg
	Copper†	**34.5**		**mg/Kg**	NA			NA	18.7	mg/Kg	108	mg/Kg
	Lead†	**65.2**		**mg/Kg**	NA			NA	30.24	mg/Kg	112	mg/Kg
	Mercury†	**0.28**		**mg/Kg**	NA			NA	0.13	mg/Kg	0.7	mg/Kg
	Nickel†	**18.7**		**mg/Kg**	NA			NA	15.9	mg/Kg	42.8	mg/Kg
	Sodium	6,750		mg/Kg	1,210	J	mg/Kg	5.6 × Ref	NL		NL	
	Thallium	5.1	J	mg/Kg	4.7	UJ	mg/Kg	1.1 × SQL	NL		NL	

Table 11

Summary of Analytical Results
Sediment Sample Analysis for Creese &Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	NOAA SQuiRTs TEL		NOAA SQuiRTs PEL	
SD-19	**SVOCs**											
	Acenaphthene†	***92***	***J***	***µg/Kg***	NA			NA	6.71	µg/Kg	88.9	µg/Kg
	Acenaphthylene†	***240***	***J***	***µg/Kg***	NA			NA	5.87	µg/Kg	128	µg/Kg
	Anthracene†	***290***	***J***	***µg/Kg***	NA			NA	46.9	µg/Kg	245	µg/Kg
	Benzo(a)anthracene†	***1,200***		***µg/Kg***	NA			NA	74.8	µg/Kg	693	µg/Kg
	Benzo(a)pyrene†	***1,200***		***µg/Kg***	NA			NA	88.8	µg/Kg	763	µg/Kg
	Chrysene†	***1,500***		***µg/Kg***	NA			NA	108	µg/Kg	846	µg/Kg
	Dibenzo(a,h)anthracene†	***210***	***J***	***µg/Kg***	NA			NA	6.22	µg/Kg	135	µg/Kg
	Fluoranthene†	***2,500***		***µg/Kg***	NA			NA	113	µg/Kg	1,494	µg/Kg
	Fluorene†	**120**	**J**	**µg/Kg**	NA			NA	21.2	µg/Kg	144	µg/Kg
	Napthalene†	**77**	**J**	**µg/Kg**	NA			NA	34.6	µg/Kg	391	µg/Kg
	Phenanthrene†	***1,100***		***µg/Kg***	NA			NA	86.7	µg/Kg	544	µg/Kg
	Pyrene†	***2,500***		***µg/Kg***	NA			NA	153	µg/Kg	1,398	µg/Kg
	PCBs											
	Aroclor-1254†	**130**	**J**	**µg/Kg**	NA			NA	63.3	µg/Kg	709	µg/Kg
	DIOXIN											
	1,2,3,7,8-PeCDD	10.6	EB	ng/Kg	1.61	J	ng/Kg	6.6 × Ref	NL		NL	
	1,2,3,4,7,8-HxCDD	17.4		ng/Kg	2.7	J	ng/Kg	6.4 × Ref	NL		NL	
	1,2,3,6,7,8-HxCDD	176		ng/Kg	8.39		ng/Kg	21 × Ref	NL		NL	
	1,2,3,7,8,9-HxCDD	63.4		ng/Kg	7.46		ng/Kg	8.5 × Ref	NL		NL	

Table 11

Summary of Analytical Results
Sediment Sample Analysis for Creese &Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	NOAA SQuiRTs TEL		NOAA SQuiRTs PEL	
SD-19	**DIOXIN**											
	1,2,3,4,6,7,8-HpCDD	2760	EB	ng/Kg	237	EB	ng/Kg	11.7 × Ref	NL		NL	
	1,2,3,4,6,7,8,9-OCDD	21900	J	ng/Kg	2,010		ng/Kg	10.9 × Ref	NL		NL	
	1,2,3,7,8-PeCDF	5.7	EB	ng/Kg	1.49	J	ng/Kg	3.8 × Ref	NL		NL	
	2,3,4,7,8-PeCDF	10.6	EB	ng/Kg	3	J	ng/Kg	3.5 × Ref	NL		NL	
	1,2,3,4,7,8-HxCDF	58.2	EB	ng/Kg	5.96	EB	ng/Kg	9.8 × Ref	NL		NL	
	1,2,3,6,7,8-HxCDF	25	EB	ng/Kg	4.02	J EB	ng/Kg	6.2 × Ref	NL		NL	
	1,2,3,7,8,9-HxCDF	0.969	J EB	ng/Kg	0.184	J	ng/Kg	5.3 × Ref	NL		NL	
	2,3,4,6,7,8-HxCDF	21.2		ng/Kg	2.97	J	ng/Kg	7.1 × Ref	NL		NL	
	1,2,3,4,6,7,8-HpCDF	1090	EB	ng/Kg	62.8		ng/Kg	17.4 × Ref	NL		NL	
	1,2,3,4,7,8,9-HpCDF	44.6	J	ng/Kg	3.59	J EB	ng/Kg	12.4 × Ref	NL		NL	
	1,2,3,4,6,7,8,9-OCDF	1580		ng/Kg	149		ng/Kg	10.6 × Ref	NL		NL	
	Toxicity Equivalent Factor	***103***	***J***	***ng/Kg***	15.8	J	ng/Kg	6.5 × Ref	0.85	ng/Kg	21.5	ng/Kg
	INORGANICS											
	Arsenic†	***66.4***	***J***	***mg/Kg***		NA		NA	7.24	mg/Kg	41.6	mg/Kg
	Cadmium†	**3**	**J**	**mg/Kg**		NA		NA	0.68	mg/Kg	4.21	mg/Kg
	Chromium (total)	***1,890***	***J***	***mg/Kg***	82.4		mg/Kg	22.9 × Ref	52.3	mg/Kg	160	mg/Kg
	Copper†	***123***		***mg/Kg***		NA		NA	18.7	mg/Kg	108	mg/Kg
	Lead†	***276***		***mg/Kg***		NA		NA	30.24	mg/Kg	112	mg/Kg
	Mercury	***3***		***mg/Kg***	0.69		mg/Kg	4.3 × Ref	0.13	mg/Kg	0.7	mg/Kg
	Nickel†	**26.1**		**mg/Kg**		NA		NA	15.9	mg/Kg	42.8	mg/Kg

Table 11

Summary of Analytical Results
Sediment Sample Analysis for Creese &Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	NOAA SQuiRTs TEL		NOAA SQuiRTs PEL	
SD-19	**INORGANICS**											
	Sodium	6,650		mg/Kg	1,210	J	mg/Kg	5.5 × Ref	NL		NL	
	Thallium	6.3	J	mg/Kg	4.7	UJ	mg/Kg	1.3 × SQL	NL		NL	
	Zinc†	***411***	***J***	***mg/Kg***		NA		NA	124	mg/Kg	271	mg/Kg
SD-20	**SVOCs**											
	Acenaphthylene†	***260***	***J***	***µg/Kg***		NA		NA	5.87	µg/Kg	128	µg/Kg
	Anthracene†	***410***	***J***	***µg/Kg***		NA		NA	46.9	µg/Kg	245	µg/Kg
	Benzo(a)anthracene†	***1,600***		***µg/Kg***		NA		NA	74.8	µg/Kg	693	µg/Kg
	Benzo(a)pyrene†	***1,300***		***µg/Kg***		NA		NA	88.8	µg/Kg	763	µg/Kg
	Chrysene†	***1,500***		***µg/Kg***		NA		NA	108	µg/Kg	846	µg/Kg
	Dibenzo(a,h)anthracene†	***220***	***J***	***µg/Kg***		NA		NA	6.22	µg/Kg	135	µg/Kg
	Fluoranthene†	***2,600***		***µg/Kg***		NA		NA	113	µg/Kg	1,494	µg/Kg
	Fluorene†	**120**	**J**	**µg/Kg**		NA		NA	21.2	µg/Kg	144	µg/Kg
	Napthalene†	**78**	**J**	**µg/Kg**		NA		NA	34.6	µg/Kg	391	µg/Kg
	Phenanthrene†	***1,200***	***J***	***µg/Kg***		NA		NA	86.7	µg/Kg	544	µg/Kg
	Pyrene†	***2,700***		***µg/Kg***		NA		NA	153	µg/Kg	1,398	µg/Kg
	DIOXIN											
	1,2,3,7,8-PeCDD	5.39	EB	ng/Kg	1.61	J	ng/Kg	3.4 × Ref	NL		NL	
	1,2,3,4,7,8-HxCDD	8.5		ng/Kg	2.7	J	ng/Kg	3.2 × Ref	NL		NL	
	1,2,3,6,7,8-HxCDD	71.9		ng/Kg	8.39		ng/Kg	8.6 × Ref	NL		NL	
	1,2,3,7,8,9-HxCDD	32.9		ng/Kg	7.46		ng/Kg	4.4 × Ref	NL		NL	

Table 11

Summary of Analytical Results
Sediment Sample Analysis for Creese &Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	NOAA SQuiRTs TEL		NOAA SQuiRTs PEL	
SD-20	**DIOXIN**											
	1,2,3,4,6,7,8-HpCDD	1,580	EB	ng/Kg	237	EB	ng/Kg	6.7 × Ref	NL		NL	
	1,2,3,4,6,7,8,9-OCDD	13,900	J	ng/Kg	2,010		ng/Kg	6.9 × Ref	NL		NL	
	1,2,3,4,7,8-HxCDF	33.5	EB	ng/Kg	5.96	EB	ng/Kg	5.6 × Ref	NL		NL	
	1,2,3,6,7,8-HxCDF	13.5	EB	ng/Kg	4.02	J EB	ng/Kg	3.4 × Ref	NL		NL	
	2,3,4,6,7,8-HxCDF	11.5		ng/Kg	2.97	J	ng/Kg	3.9 × Ref	NL		NL	
	1,2,3,4,6,7,8-HpCDF	539	EB	ng/Kg	62.8		ng/Kg	8.6 × Ref	NL		NL	
	1,2,3,4,7,8,9-HpCDF	16.5	EB	ng/Kg	3.59	J EB	ng/Kg	4.6 × Ref	NL		NL	
	1,2,3,4,6,7,8,9-OCDF	579		ng/Kg	149		ng/Kg	3.9 × Ref	NL		NL	
	Toxicity Equivalent Factor	***53.9***	***J***	ng/Kg	15.8	J	ng/Kg	3.4 × Ref	0.85	ng/Kg	21.5	ng/Kg
	INORGANICS											
	Arsenic†	***56.8***	***J***	***mg/Kg***		NA		NA	7.24	mg/Kg	41.6	mg/Kg
	Cadmium†	**1.7**	**J**	**mg/Kg**		NA		NA	0.68	mg/Kg	4.21	mg/Kg
	Chromium (total)	***1,560***	***J***	***mg/Kg***	82.4		mg/Kg	18.9 × Ref	52.3	mg/Kg	160	mg/Kg
	Copper†	**88.4**		**mg/Kg**		NA		NA	18.7	mg/Kg	108	mg/Kg
	Lead†	***182***		***mg/Kg***		NA		NA	30.24	mg/Kg	112	mg/Kg
	Mercury	***3.4***		***mg/Kg***	0.69		mg/Kg	4.9 × Ref	0.13	mg/Kg	0.7	mg/Kg
	Nickel†	**20.6**		**mg/Kg**		NA		NA	15.9	mg/Kg	42.8	mg/Kg
	Sodium	8,920		mg/Kg	1,210	J	mg/Kg	7.4 × Ref	NL		NL	
	Thallium	6	J	mg/Kg	4.7	UJ	mg/Kg	1.3 × SQL	NL		NL	
	Zinc†	***289***		***mg/Kg***		NA		NA	124	mg/Kg	271	mg/Kg

Table 11

Summary of Analytical Results
Sediment Sample Analysis for Creese &Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	NOAA SQuiRTs TEL		NOAA SQuiRTs PEL	
SD-21	**SVOCs**											
	Benzo(a)anthracene†	**120**	**J**	**µg/Kg**	NA			NA	74.8	µg/Kg	693	µg/Kg
	Benzo(a)pyrene†	**140**	**J**	**µg/Kg**	NA			NA	88.8	µg/Kg	763	µg/Kg
	Chrysene†	**150**	**J**	**µg/Kg**	NA			NA	108	µg/Kg	846	µg/Kg
	Fluoranthene†	**230**	**J**	**µg/Kg**	NA			NA	113	µg/Kg	1,494	µg/Kg
	Pyrene†	**240**	**J**	**µg/Kg**	NA			NA	153	µg/Kg	1,398	µg/Kg
	DIOXIN											
	Toxicity Equivalent Factor†	**3.27**	**J**	**ng/Kg**	NA			NA	0.85	ng/Kg	21.5	ng/Kg
	INORGANICS											
	Arsenic†	**18**	**J**	**mg/Kg**	NA			NA	7.24	mg/Kg	41.6	mg/Kg
	Cadmium†	**0.8**	**J**	**mg/Kg**	NA			NA	0.68	mg/Kg	4.21	mg/Kg
	Chromium (total)†	***186***	***J***	***mg/Kg***	NA			NA	52.3	mg/Kg	160	mg/Kg
	Copper†	**21.5**		**mg/Kg**	NA			NA	18.7	mg/Kg	108	mg/Kg
	Mercury†	**0.46**		**mg/Kg**	NA			NA	0.13	mg/Kg	0.7	mg/Kg
	Nickel†	**27.3**		**mg/Kg**	NA			NA	15.9	mg/Kg	42.8	mg/Kg
	Potassium	5,850		mg/Kg	1,350	J	mg/Kg	4.3 × Ref	NL		NL	
	Sodium	10,300		mg/Kg	1,210	J	mg/Kg	8.5 × Ref	NL		NL	
	Thallium	8.6	J	mg/Kg	4.7	UJ	mg/Kg	1.8 × SQL	NL		NL	

Table 11

Summary of Analytical Results
Sediment Sample Analysis for Creese &Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration		Comments	NOAA SQuiRTs TEL		NOAA SQuiRTs PEL	
SD-22	**SVOCs**										
	Acenaphthylene†	***240***	***J***	***µg/Kg***	NA		NA	5.87	µg/Kg	128	µg/Kg
	Anthracene†	**200**	**J**	**µg/Kg**	NA		NA	46.9	µg/Kg	245	µg/Kg
	Benzo(a)anthracene†	***730***		***µg/Kg***	NA		NA	74.8	µg/Kg	693	µg/Kg
	Benzo(a)pyrene†	***860***		***µg/Kg***	NA		NA	88.8	µg/Kg	763	µg/Kg
	Chrysene†	***920***		***µg/Kg***	NA		NA	108	µg/Kg	846	µg/Kg
	Dibenzo(a,h)anthracene†	**120**	**J**	**µg/Kg**	NA		NA	6.22	µg/Kg	135	µg/Kg
	Fluoranthene†	**1,300**		**µg/Kg**	NA		NA	113	µg/Kg	1,494	µg/Kg
	Fluorene†	**89**	**J**	**µg/Kg**	NA		NA	21.2	µg/Kg	144	µg/Kg
	Napthalene†	**67**	**J**	**µg/Kg**	NA		NA	34.6	µg/Kg	391	µg/Kg
	Phenanthrene†	***590***		***µg/Kg***	NA		NA	86.7	µg/Kg	544	µg/Kg
	Pyrene†	***1,600***	***J***	***µg/Kg***	NA		NA	153	µg/Kg	1,398	µg/Kg
	DIOXIN										
	Toxicity Equivalent Factor†	**18.2**	**J**	**ng/Kg**	NA		NA	0.85	ng/Kg	21.5	ng/Kg
	INORGANICS										
	Arsenic†	**38.4**	**J**	**mg/Kg**	NA		NA	7.24	mg/Kg	41.6	mg/Kg
	Cadmium†	**1.3**	**J**	**mg/Kg**	NA		NA	0.68	mg/Kg	4.21	mg/Kg
	Chromium (total)	***929***	***J***	***mg/Kg***	82.4	mg/Kg	11.3 × Ref	52.3	mg/Kg	160	mg/Kg
	Copper†	**60.4**		**mg/Kg**	NA		NA	18.7	mg/Kg	108	mg/Kg
	Lead†	***135***		***mg/Kg***	NA		NA	30.24	mg/Kg	112	mg/Kg
	Mercury	***2.1***		***mg/Kg***	0.69	mg/Kg	3.0 × Ref	0.13	mg/Kg	0.7	mg/Kg

Table 11

Summary of Analytical Results
Sediment Sample Analysis for Creese &Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	NOAA SQuiRTs TEL		NOAA SQuiRTs PEL	
SD-22	**INORGANICS**											
	Mercury	***2.1***		***mg/Kg***	0.69		mg/Kg	3.0 × Ref	0.13	mg/Kg	0.7	mg/Kg
	Nickel†	**17.8**		**mg/Kg**		NA		NA	15.9	mg/Kg	42.8	mg/Kg
	Sodium	9,500		mg/Kg	1,210	J	mg/Kg	7.9 × Ref	NL		NL	
	Thallium	4.9	J	mg/Kg	4.7	UJ	mg/Kg	1.0 × SQL	NL		NL	
	Zinc†	**225**		**mg/Kg**		NA		NA	124	mg/Kg	271	mg/Kg
SD-23	**SVOCs**											
	Anthracene†	**89**	**J**	**µg/Kg**		NA		NA	46.9	µg/Kg	245	µg/Kg
	Benzo(a)anthracene†	**360**		**µg/Kg**		NA		NA	74.8	µg/Kg	693	µg/Kg
	Benzo(a)pyrene†	**410**		**µg/Kg**		NA		NA	88.8	µg/Kg	763	µg/Kg
	Chrysene†	**410**		**µg/Kg**		NA		NA	108	µg/Kg	846	µg/Kg
	Dibenzo(a,h)anthracene†	**68**	**J**	**µg/Kg**		NA		NA	6.22	µg/Kg	135	µg/Kg
	Fluoranthene†	**550**		**µg/Kg**		NA		NA	113	µg/Kg	1,494	µg/Kg
	Phenanthrene†	**210**	**J**	**µg/Kg**		NA		NA	86.7	µg/Kg	544	µg/Kg
	Pyrene†	**610**		**µg/Kg**		NA		NA	153	µg/Kg	1,398	µg/Kg
	DIOXIN											
	Toxicity Equivalent Factor†	**4.5**	**J**	**ng/Kg**		NA		NA	0.85	ng/Kg	21.5	ng/Kg
	INORGANICS											
	Arsenic†	**37.1**	**J**	**mg/Kg**		NA		NA	7.24	mg/Kg	41.6	mg/Kg
	Cadmium†	**0.87**	**J**	**mg/Kg**		NA		NA	0.68	mg/Kg	4.21	mg/Kg

Table 11

Summary of Analytical Results
Sediment Sample Analysis for Creese &Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	NOAA SQuiRTs TEL		NOAA SQuiRTs PEL	
SD-23	**INORGANICS**											
	Chromium (total)	***948***	***J***	***mg/Kg***	82.4		mg/Kg	11.5 × Ref	52.3	mg/Kg	160	mg/Kg
	Copper†	**56**		**mg/Kg**		NA		NA	18.7	mg/Kg	108	mg/Kg
	Lead†	***121***		***mg/Kg***		NA		NA	30.24	mg/Kg	112	mg/Kg
	Mercury†	**0.51**		**mg/Kg**		NA		NA	0.13	mg/Kg	0.7	mg/Kg
	Nickel†	**23.7**		**mg/Kg**		NA		NA	15.9	mg/Kg	42.8	mg/Kg
	Potassium	4,770		mg/Kg	1,350	J	mg/Kg	3.5 × Ref	NL		NL	
	Sodium	13,300		mg/Kg	1,210	J	mg/Kg	11.0 × Ref	NL		NL	
	Thallium	7.4	J	mg/Kg	4.7	UJ	mg/Kg	1.6 × SQL	NL		NL	
	Zinc†	**161**		**mg/Kg**		NA		NA	124	mg/Kg	271	mg/Kg
SD-24	**SVOCs**											
	Acenaphthylene†	**110**	**J**	**µg/Kg**		NA		NA	5.87	µg/Kg	128	µg/Kg
	Anthracene†	**96**	**J**	**µg/Kg**		NA		NA	46.9	µg/Kg	245	µg/Kg
	Benzo(a)anthracene†	**340**	**J**	**µg/Kg**		NA		NA	74.8	µg/Kg	693	µg/Kg
	Benzo(a)pyrene†	**450**		**µg/Kg**		NA		NA	88.8	µg/Kg	763	µg/Kg
	Chrysene†	**530**		**µg/Kg**		NA		NA	108	µg/Kg	846	µg/Kg
	Dibenzo(a,h)anthracene†	**75**	**J**	**µg/Kg**		NA		NA	6.22	µg/Kg	135	µg/Kg
	Fluoranthene†	**690**		**µg/Kg**		NA		NA	113	µg/Kg	1,494	µg/Kg
	Phenanthrene†	**380**		**µg/Kg**		NA		NA	86.7	µg/Kg	544	µg/Kg
	Pyrene†	**830**		**µg/Kg**		NA		NA	153	µg/Kg	1,398	µg/Kg
	PCBs											
	Aroclor-1254†	**120**		**µg/Kg**		NA		NA	63.3	µg/Kg	709	µg/Kg

Table 11

Summary of Analytical Results
Sediment Sample Analysis for Creese &Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	NOAA SQuiRTs TEL		NOAA SQuiRTs PEL	
SD-24	**DIOXIN**											
	1,2,3,7,8-PeCDD	8.2	EB	ng/Kg	1.61	J	ng/Kg	6.1 × Ref	NL		NL	
	1,2,3,4,7,8-HxCDD	15.5		ng/Kg	2.7	J	ng/Kg	5.7 × Ref	NL		NL	
	1,2,3,6,7,8-HxCDD	244		ng/Kg	8.39		ng/Kg	29.1 × Ref	NL		NL	
	1,2,3,7,8,9-HxCDD	62.7		ng/Kg	7.46		ng/Kg	8.4 × Ref	NL		NL	
	1,2,3,4,6,7,8-HpCDD	4,760	J EB	ng/Kg	237	EB	ng/Kg	20.1 × Ref	NL		NL	
	1,2,3,4,6,7,8,9-OCDD	36,800	J	ng/Kg	2,010		ng/Kg	18.3 × Ref	NL		NL	
	2,3,7,8-TCDF	21.5		ng/Kg	7.1		ng/Kg	3 × Ref	NL		NL	
	1,2,3,7,8-PeCDF	6.8	EB	ng/Kg	1.49	J	ng/Kg	4.6 × Ref	NL		NL	
	2,3,4,7,8-PeCDF	14	EB	ng/Kg	3	J	ng/Kg	4.7 × Ref	NL		NL	
	1,2,3,4,7,8-HxCDF	120	EB	ng/Kg	5.96	EB	ng/Kg	20.1 × Ref	NL		NL	
	1,2,3,6,7,8-HxCDF	34.1	EB	ng/Kg	4.02	J EB	ng/Kg	8.5 × Ref	NL		NL	
	1,2,3,7,8,9-HxCDF	1.1	J EB	ng/Kg	0.184	J	ng/Kg	6 × Ref	NL		NL	
	2,3,4,6,7,8-HxCDF	23.6		ng/Kg	2.97	J	ng/Kg	8 × Ref	NL		NL	
	1,2,3,4,6,7,8-HpCDF	1,730	EB	ng/Kg	62.8		ng/Kg	27.6 × Ref	NL		NL	
	1,2,3,4,7,8,9-HpCDF	59.6	EB	ng/Kg	3.59	J EB	ng/Kg	16.6 × Ref	NL		NL	
	1,2,3,4,6,7,8,9-OCDF	1,580		ng/Kg	149		ng/Kg	10.6 × Ref	NL		NL	
	Toxicity Equivalent Factor	***145***	***J***	ng/Kg	15.8	J	ng/Kg	9.2 × Ref	0.85	ng/Kg	21.5	ng/Kg
	INORGANICS											
	Arsenic†	**24.6**	**J**	**mg/Kg**	NA			NA	7.24	mg/Kg	41.6	mg/Kg
	Cadmium†	**3**	**J**	**mg/Kg**	NA			NA	0.68	mg/Kg	4.21	mg/Kg

Table 11

Summary of Analytical Results
Sediment Sample Analysis for Creese &Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	NOAA SQuiRTs TEL		NOAA SQuiRTs PEL	
SD-24	**INORGANICS**											
	Calcium	19,900		mg/Kg	4,330	EB	mg/Kg	4.6 × Ref	NL		NL	
	Chromium (total)	***1,740***	***J***	***mg/Kg***	82.4		mg/Kg	21.1 × Ref	52.3	mg/Kg	160	mg/Kg
	Copper†	**79.8**		**mg/Kg**		NA		NA	18.7	mg/Kg	108	mg/Kg
	Lead†	***242***		***mg/Kg***		NA		NA	30.24	mg/Kg	112	mg/Kg
	Mercury	***3.1***		***mg/Kg***	0.69		mg/Kg	4.5 × Ref	0.13	mg/Kg	0.7	mg/Kg
	Nickel†	**21.7**		**mg/Kg**		NA		NA	15.9	mg/Kg	42.8	mg/Kg
	Sodium	16,200		mg/Kg	1,210	J	mg/Kg	13.4 × Ref	NL		NL	
	Thallium	5.6	J	mg/Kg	4.7	UJ	mg/Kg	1.2 × SQL	NL		NL	
	Zinc†	***317***		***mg/Kg***		NA		NA	124	mg/Kg	271	mg/Kg
SD-25	**SVOCs**											
	Acenaphthylene†	**77**	**J**	**µg/Kg**		NA		NA	5.87	µg/Kg	128	µg/Kg
	Anthracene†	**91**	**J**	**µg/Kg**		NA		NA	46.9	µg/Kg	245	µg/Kg
	Benzo(a)anthracene†	**440**		**µg/Kg**		NA		NA	74.8	µg/Kg	693	µg/Kg
	Benzo(a)pyrene†	**430**		**µg/Kg**		NA		NA	88.8	µg/Kg	763	µg/Kg
	Chrysene†	**440**		**µg/Kg**		NA		NA	108	µg/Kg	846	µg/Kg
	Dibenzo(a,h)anthracene†	**75**	**J**	**µg/Kg**		NA		NA	6.22	µg/Kg	135	µg/Kg
	Fluoranthene†	**760**		**µg/Kg**		NA		NA	113	µg/Kg	1,494	µg/Kg
	Phenanthrene†	**290**	**J**	**µg/Kg**		NA		NA	86.7	µg/Kg	544	µg/Kg
	Pyrene†	**790**		**µg/Kg**		NA		NA	153	µg/Kg	1,398	µg/Kg

Table 11

Summary of Analytical Results
Sediment Sample Analysis for Creese &Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	NOAA SQuiRTs TEL		NOAA SQuiRTs PEL	
SD-25	**DIOXIN**											
	1,2,3,4,6,7,8,9-OCDD	7,050	J	ng/Kg	2,010		ng/Kg	3.5 × Ref	NL		NL	
	Toxicity Equivalent Factor†	**13.3**	**J**	**ng/Kg**	NA			NA	0.85	ng/Kg	21.5	ng/Kg
	INORGANICS											
	Arsenic†	**20.7**	**J**	**mg/Kg**	NA			NA	7.24	mg/Kg	41.6	mg/Kg
	Cadmium†	**1**	**J**	**mg/Kg**	NA			NA	0.68	mg/Kg	4.21	mg/Kg
	Chromium (total)	***302***	***J***	***mg/Kg***	82.4		mg/Kg	3.7 × Ref	52.3	mg/Kg	160	mg/Kg
	Copper†	**46.4**		**mg/Kg**	NA			NA	18.7	mg/Kg	108	mg/Kg
	Lead†	**73.4**		**mg/Kg**	NA			NA	30.24	mg/Kg	112	mg/Kg
	Mercury†	**0.43**		**mg/Kg**	NA			NA	0.13	mg/Kg	0.7	mg/Kg
	Nickel†	**23.5**		**mg/Kg**	NA			NA	15.9	mg/Kg	42.8	mg/Kg
	Potassium	4,660		mg/Kg	1,350	J	mg/Kg	3.5 × Ref	NL		NL	
	Sodium	12,100		mg/Kg	1,210	J	mg/Kg	10.0 × Ref	NL		NL	
	Thallium	7.6	J	mg/Kg	4.7	UJ	mg/Kg	1.6 × SQL	NL		NL	
	Zinc†	**139**		**mg/Kg**	NA			NA	124	mg/Kg	271	mg/Kg
SD-26	**SVOCs**											
	Benzo(a)anthracene†	**110**	**J**	**µg/Kg**	NA			NA	74.8	µg/Kg	693	µg/Kg
	Benzo(a)pyrene†	**100**	**J**	**µg/Kg**	NA			NA	88.8	µg/Kg	763	µg/Kg
	Chrysene†	**110**	**J**	**µg/Kg**	NA			NA	108	µg/Kg	846	µg/Kg
	Fluoranthene†	**150**	**J**	**µg/Kg**	NA			NA	113	µg/Kg	1,494	µg/Kg
	Pyrene†	**190**	**J**	**µg/Kg**	NA			NA	153	µg/Kg	1,398	µg/Kg

Table 11

Summary of Analytical Results
Sediment Sample Analysis for Creese &Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	NOAA SQuiRTs TEL		NOAA SQuiRTs PEL	
SD-26	**DIOXIN**											
	Toxicity Equivalent Factor†	**7.88**	**J**	**ng/Kg**	NA			NA	0.85	ng/Kg	21.5	ng/Kg
	INORGANICS											
	Arsenic†	**13.5**	**J**	**mg/Kg**	NA			NA	7.24	mg/Kg	41.6	mg/Kg
	Chromium (total) †	**123**	**J**	**mg/Kg**	NA			NA	52.3	mg/Kg	160	mg/Kg
	Nickel†	**18**		**mg/Kg**	NA			NA	15.9	mg/Kg	42.8	mg/Kg
	Sodium	8,070		mg/Kg	1,210	J	mg/Kg	6.7 × Ref	NL		NL	
	Thallium	6.1	J	mg/Kg	4.7	UJ	mg/Kg	1.3 × SQL	NL		NL	
SD-29	**SVOCs**											
	Acenaphthene†	***270***	***J***	***µg/Kg***	NA			NA	6.71	µg/Kg	88.9	µg/Kg
	Acenaphthylene†	***470***		***µg/Kg***	NA			NA	5.87	µg/Kg	128	µg/Kg
	Anthracene	***8,500***	***J***	***µg/Kg***	NA			NA	46.9	µg/Kg	245	µg/Kg
	Benzo(a)anthracene	***8,500***	***J***	***µg/Kg***	NA			NA	74.8	µg/Kg	693	µg/Kg
	Benzo(a)pyrene	***4,300***	***J***	***µg/Kg***	NA			NA	88.8	µg/Kg	763	µg/Kg
	Chrysene	***6,500***	***J***	***µg/Kg***	NA			NA	108	µg/Kg	846	µg/Kg
	Dibenzo(a,h)anthracene†	***590***		***µg/Kg***	NA			NA	6.22	µg/Kg	135	µg/Kg
	Fluoranthene	***15,000***	***J***	***µg/Kg***	NA			NA	113	µg/Kg	1,494	µg/Kg
	Fluorene	***1,500***	***J***	***µg/Kg***	NA			NA	21.2	µg/Kg	144	µg/Kg
	Phenanthrene	***7,800***	***J***	***µg/Kg***	NA			NA	86.7	µg/Kg	544	µg/Kg
	Pyrene	***12,000***	***J***	***µg/Kg***	NA			NA	153	µg/Kg	1,398	µg/Kg

Table 11

Summary of Analytical Results
Sediment Sample Analysis for Creese &Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	NOAA SQuiRTs TEL		NOAA SQuiRTs PEL	
SD-29	**DIOXIN**											
	Toxicity Equivalent Factor†	**5.47**	**J**	**ng/Kg**	NA			NA	0.85	ng/Kg	21.5	ng/Kg
	INORGANICS											
	Arsenic†	**20.5**		**mg/Kg**	NA			NA	7.24	mg/Kg	41.6	mg/Kg
	Chromium (total)†	***210***		***mg/Kg***	NA			NA	52.3	mg/Kg	160	mg/Kg
	Copper†	**25.6**		**mg/Kg**	NA			NA	18.7	mg/Kg	108	mg/Kg
	Lead†	**42.4**		**mg/Kg**	NA			NA	30.24	mg/Kg	112	mg/Kg
	Mercury†	**0.36**		**mg/Kg**	NA			NA	0.13	mg/Kg	0.7	mg/Kg
	Nickel†	**20**		**mg/Kg**	NA			NA	15.9	mg/Kg	42.8	mg/Kg
	Sodium	12,800		mg/Kg	1,210	J	mg/Kg	10.6 × Ref	NL		NL	
SD-30	**SVOCs**											
	Acenaphthylene†	**89**	**J**	**µg/Kg**	NA			NA	5.87	µg/Kg	128	µg/Kg
	Anthracene†	***300***	***J***	***µg/Kg***	NA			NA	46.9	µg/Kg	245	µg/Kg
	Benzo(a)anthracene†	***730***	***J***	***µg/Kg***	NA			NA	74.8	µg/Kg	693	µg/Kg
	Benzo(a)pyrene†	**570**	**J**	**µg/Kg**	NA			NA	88.8	µg/Kg	763	µg/Kg
	Chrysene†	**640**	**J**	**µg/Kg**	NA			NA	108	µg/Kg	846	µg/Kg
	Dibenzo(a,h)anthracene†	**69**	**J**	**µg/Kg**	NA			NA	6.22	µg/Kg	135	µg/Kg
	Fluoranthene†	**1,100**	**J**	**µg/Kg**	NA			NA	113	µg/Kg	1,494	µg/Kg
	Fluorene†	**55**	**J**	**µg/Kg**	NA			NA	21.2	µg/Kg	144	µg/Kg
	Phenanthrene†	**460**	**J**	**µg/Kg**	NA			NA	86.7	µg/Kg	544	µg/Kg
	Pyrene†	***1,400***	***J***	***µg/Kg***	NA			NA	153	µg/Kg	1,398	µg/Kg

Table 11

Summary of Analytical Results
Sediment Sample Analysis for Creese &Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	NOAA SQuiRTs TEL		NOAA SQuiRTs PEL	
SD-30	**DIOXIN**											
	1,2,3,4,6,7,8,9-OCDD	10,500	J	ng/Kg	2,010		ng/Kg	5.2 × Ref	NL		NL	
	Toxicity Equivalent Factor†	**16.9**	**J**	**ng/Kg**		NA		NA	0.85	ng/Kg	21.5	ng/Kg
	INORGANICS											
	Arsenic†	**23.9**	**J**	**mg/Kg**		NA		NA	7.24	mg/Kg	41.6	mg/Kg
	Chromium (total)†	***189***	***J***	***mg/Kg***		NA		NA	52.3	mg/Kg	160	mg/Kg
	Copper†	**23**		**mg/Kg**		NA		NA	18.7	mg/Kg	108	mg/Kg
	Lead†	**39.9**		**mg/Kg**		NA		NA	30.24	mg/Kg	112	mg/Kg
	Mercury†	**0.32**		**mg/Kg**		NA		NA	0.13	mg/Kg	0.7	mg/Kg
	Nickel†	**18**		**mg/Kg**		NA		NA	15.9	mg/Kg	42.8	mg/Kg
	Sodium	6,590		mg/Kg	1,210	J	mg/Kg	5.4 × Ref	NL		NL	
	Thallium	5.4	J	mg/Kg	4.7	UJ	mg/Kg	1.1 × SQL	NL		NL	
SD-51	**INORGANICS**											
	Arsenic†	**26.9**	**J**	**mg/Kg**		NA		NA	7.24	mg/Kg	41.6	mg/Kg
	Lead†	**39.9**		**mg/Kg**		NA		NA	30.24	mg/Kg	112	mg/Kg
SD-56	**DIOXIN**											
	1,2,3,4,7,8-HxCDD	10.2		ng/Kg	2.7	J	ng/Kg	3.8 × Ref	NL		NL	
	1,2,3,6,7,8-HxCDD	66.3		ng/Kg	8.39		ng/Kg	7.9 × Ref	NL		NL	
	1,2,3,4,6,7,8-HpCDD	1140		ng/Kg	237	EB	ng/Kg	4.8 × Ref	NL		NL	
	1,2,3,4,6,7,8,9-OCDD	10500		ng/Kg	2,010		ng/Kg	5.2 × Ref	NL		NL	

Table 11

Summary of Analytical Results
Sediment Sample Analysis for Creese &Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	NOAA SQuiRTs TEL		NOAA SQuiRTs PEL	
SD-56	**DIOXIN**											
	1,2,3,7,8,9-HxCDF	1.34		ng/Kg	0.184	J	ng/Kg	7.3 × Ref	NL		NL	
	1,2,3,4,6,7,8-HpCDF	195		ng/Kg	62.8		ng/Kg	3.1 × Ref	NL		NL	
	1,2,3,4,7,8,9-HpCDF	13.9		ng/Kg	3.59	J EB	ng/Kg	3.9 × Ref	NL		NL	
	Toxicity Equivalent Factor†	***31.6***	***J***	***ng/Kg***		NA		NA	0.85	ng/Kg	21.5	ng/Kg
	INORGANICS											
	Arsenic	***510***		***mg/Kg***	51.6		mg/Kg	9.9 × Ref	7.24	mg/Kg	41.6	mg/Kg
	Cadmium	***236***		***mg/Kg***	3		mg/Kg	78.7 × Ref	0.68	mg/Kg	4.21	mg/Kg
	Chromium	***9,240***	***J EB***	***mg/Kg***	82.4		mg/Kg	112.1 × Ref	52.3	mg/Kg	160	mg/Kg
	Copper	***229***	***J***	***mg/Kg***	69.6		mg/Kg	3.3 × Ref	18.7	mg/Kg	108	mg/Kg
	Lead†	***517***		***mg/Kg***		NA		NA	30.24	mg/Kg	112	mg/Kg
	Mercury†	***1.8***	***J***	***mg/Kg***		NA		NA	0.13	mg/Kg	0.7	mg/Kg
	Nickel†	**30.3**		**mg/Kg**		NA		NA	15.9	mg/Kg	42.8	mg/Kg
	Selenium	7.8	J	mg/Kg	6.6	UJ	mg/Kg	1.2 × SQL	NL		NL	
	Sodium	3,800		mg/Kg	1,210	J	mg/Kg	3.1 × Ref	NL		NL	
	Zinc	***1,470***		***mg/Kg***	273		mg/Kg	1.2 × Ref	124	mg/Kg	271	mg/Kg
SD-57	**DIOXIN**											
	Toxicity Equivalent Factor†	**9.52**	**J**	**ng/Kg**		NA		NA	0.85	ng/Kg	21.5	ng/Kg

Table 11

Summary of Analytical Results
Sediment Sample Analysis for Creese &Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	NOAA SQuiRTs TEL		NOAA SQuiRTs PEL	
SD-57	**INORGANICS**											
	Arsenic†	***99.7***		***mg/Kg***	NA			NA	7.24	mg/Kg	41.6	mg/Kg
	Cadmium	***20.2***		***mg/Kg***	3		mg/Kg	6.7 × Ref	0.68	mg/Kg	4.21	mg/Kg
	Chromium	***466***	***J EB***	***mg/Kg***	82.4		mg/Kg	5.7 × Ref	52.3	mg/Kg	160	mg/Kg
	Copper†	**36.1**	**J**	**mg/Kg**	NA			NA	18.7	mg/Kg	108	mg/Kg
	Lead†	**88.2**		**mg/Kg**	NA			NA	30.24	mg/Kg	112	mg/Kg
	Mercury†	***0.8***	***J***	***mg/Kg***	NA			NA	0.13	mg/Kg	0.7	mg/Kg
	Zinc†	**253**		**mg/Kg**	NA			NA	124	mg/Kg	271	mg/Kg
SD-58	**DIOXIN**											
	Toxicity Equivalent Factor†	**0.904**	**J**	**ng/Kg**	NA			NA	0.85	ng/Kg	21.5	ng/Kg
	INORGANICS											
	Arsenic†	**36.3**		**mg/Kg**	NA			NA	7.24	mg/Kg	41.6	mg/Kg
	Chromium†	**138**	**J EB**	**mg/Kg**	NA			NA	52.3	mg/Kg	160	mg/Kg
	Mercury†	**0.20**	**J**	**mg/Kg**	NA			NA	0.13	mg/Kg	0.7	mg/Kg
	Nickel†	**24.8**		**mg/Kg**	NA			NA	15.9	mg/Kg	42.8	mg/Kg
SD-59	**DIOXIN**											
	1,2,3,6,7,8-HxCDD	28.2		ng/Kg	8.39		ng/Kg	3.4 × Ref	NL		NL	
	1,2,3,7,8,9-HxCDF	1.32	EMPC	ng/Kg	0.184	J	ng/Kg	7.2 × Ref	NL		NL	
	1,2,3,4,6,7,8-HpCDF	191		ng/Kg	62.8		ng/Kg	3 × Ref	NL		NL	
	Toxicity Equivalent Factor†	***24.0***	***J***	***ng/Kg***	NA			NA	0.85	ng/Kg	21.5	ng/Kg

Table 11

Summary of Analytical Results
Sediment Sample Analysis for Creese &Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	NOAA SQuiRTs TEL		NOAA SQuiRTs PEL	
SD-59	**INORGANICS**											
	Arsenic†	***46.2***		***mg/Kg***		NA		NA	7.24	mg/Kg	41.6	mg/Kg
	Cadmium†	**0.88**	**J**	**mg/Kg**		NA		NA	0.68	mg/Kg	4.21	mg/Kg
	Chromium	***1,320***	***J EB***	***mg/Kg***	82.4		mg/Kg	16 × Ref	52.3	mg/Kg	160	mg/Kg
	Copper†	**79.0**	**J**	**mg/Kg**		NA		NA	18.7	mg/Kg	108	mg/Kg
	Lead†	***212***		***mg/Kg***		NA		NA	30.24	mg/Kg	112	mg/Kg
	Mercury	***2.9***	***J***	***mg/Kg***	0.69		mg/Kg	4.2 × Ref	0.13	mg/Kg	0.7	mg/Kg
	Nickel†	**28.1**		**mg/Kg**		NA		NA	15.9	mg/Kg	42.8	mg/Kg
	Sodium	7,440		mg/Kg	1,210	J	mg/Kg	6.1 × Ref	NL		NL	
	Zinc†	**168**		**mg/Kg**		NA		NA	124	mg/Kg	271	mg/Kg
SD-60	**DIOXIN**											
	1,2,3,7,8-PeCDD	17	J	ng/Kg	1.61	J	ng/Kg	10.6 × Ref	NL		NL	
	1,2,3,4,7,8-HxCDD	56.4	J	ng/Kg	2.7	J	ng/Kg	20.9 × Ref	NL		NL	
	1,2,3,6,7,8-HxCDD	255		ng/Kg	8.39		ng/Kg	30.4 × Ref	NL		NL	
	1,2,3,7,8,9-HxCDD	103		ng/Kg	7.46		ng/Kg	13.8 × Ref	NL		NL	
	1,2,3,4,6,7,8-HpCDD	6400		ng/Kg	237	EB	ng/Kg	27 × Ref	NL		NL	
	1,2,3,4,6,7,8,9-OCDD	44200		ng/Kg	2,010		ng/Kg	22 × Ref	NL		NL	
	2,3,7,8-TCDF	45.3		ng/Kg	7.1		ng/Kg	6.4 × Ref	NL		NL	
	1,2,3,7,8-PeCDF	198		ng/Kg	1.49	J	ng/Kg	132.9 × Ref	NL		NL	
	2,3,4,7,8-PeCDF	271		ng/Kg	3	J	ng/Kg	90.3 × Ref	NL		NL	

Table 11

Summary of Analytical Results
Sediment Sample Analysis for Creese &Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	NOAA SQuiRTs TEL		NOAA SQuiRTs PEL	
SD-60	**DIOXIN**											
	1,2,3,4,7,8-HxCDF	981		ng/Kg	5.96	EB	ng/Kg	164.6 × Ref	NL		NL	
	1,2,3,6,7,8-HxCDF	715		ng/Kg	4.02	J EB	ng/Kg	177.9 × Ref	NL		NL	
	1,2,3,7,8,9-HxCDF	438		ng/Kg	0.184	J	ng/Kg	2,380 × Ref	NL		NL	
	2,3,4,6,7,8-HxCDF	494		ng/Kg	2.97	J	ng/Kg	166.3 × Ref	NL		NL	
	1,2,3,4,6,7,8-HpCDF	4850		ng/Kg	62.8		ng/Kg	77.2 × Ref	NL		NL	
	1,2,3,4,7,8,9-HpCDF	1,420		ng/Kg	3.59	J EB	ng/Kg	395.5 × Ref	NL		NL	
	1,2,3,4,6,7,8,9-OCDF	10200		ng/Kg	149		ng/Kg	68.5 × Ref	NL		NL	
	Toxicity Equivalent Factor	***566***	***J***	***ng/Kg***	15.8	J	ng/Kg	35.8 × Ref	0.85	ng/Kg	21.5	ng/Kg
	INORGANICS											
	Arsenic†	**36.4**		**mg/Kg**	NA			NA	7.24	mg/Kg	41.6	mg/Kg
	Cadmium†	**0.85**	**J**	**mg/Kg**	NA			NA	0.68	mg/Kg	4.21	mg/Kg
	Chromium	***2,810***	***J EB***	***mg/Kg***	82.4		mg/Kg	34.1 × Ref	52.3	mg/Kg	160	mg/Kg
	Copper†	***169***	***J***	***mg/Kg***	NA			NA	18.7	mg/Kg	108	mg/Kg
	Lead†	***305***		***mg/Kg***	NA			NA	30.24	mg/Kg	112	mg/Kg
	Mercury†	***1.6***	***J***	***mg/Kg***	NA			NA	0.13	mg/Kg	0.7	mg/Kg
	Nickel†	**21.5**		**mg/Kg**	NA			NA	15.9	mg/Kg	42.8	mg/Kg
	Zinc†	**189**		**mg/Kg**	NA			NA	124	mg/Kg	271	mg/Kg
SD-61	**DIOXIN**											
	Toxicity Equivalent Factor†	**5.39**	**J**	**ng/Kg**	NA			NA	0.85	ng/Kg	21.5	ng/Kg

Table 11

Summary of Analytical Results
Sediment Sample Analysis for Creese &Cook Co. (Former) 1 (Continued)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	NOAA SQuiRTs TEL		NOAA SQuiRTs PEL	
SD-61	**INORGANICS**											
	Arsenic†	***46.3***		***mg/Kg***	NA			NA	7.24	mg/Kg	41.6	mg/Kg
	Chromium	***449***	***J EB***	***mg/Kg***	82.4		mg/Kg	5.4 × Ref	52.3	mg/Kg	160	mg/Kg
	Copper†	**88.6**	**J**	**mg/Kg**	NA			NA	18.7	mg/Kg	108	mg/Kg
	Lead†	***166***		***mg/Kg***	NA			NA	30.24	mg/Kg	112	mg/Kg
	Mercury†	***1.4***	***J***	***mg/Kg***	NA			NA	0.13	mg/Kg	0.7	mg/Kg
	Nickel†	**18.8**		**mg/Kg**	NA			NA	15.9	mg/Kg	42.8	mg/Kg
SD-70	**DIOXIN**											
	1,2,3,4,7,8-HxCDD	9.52		ng/Kg	2.7	J	ng/Kg	3.5 × Ref	NL		NL	
	1,2,3,6,7,8-HxCDD	98.2		ng/Kg	8.39		ng/Kg	11.7 × Ref	NL		NL	
	1,2,3,7,8,9-HxCDD	30.2	J	ng/Kg	7.46		ng/Kg	4.1 × Ref	NL		NL	
	1,2,3,4,6,7,8-HpCDD	2100	J	ng/Kg	237	EB	ng/Kg	8.9 × Ref	NL		NL	
	1,2,3,4,6,7,8,9-OCDD	20400	J	ng/Kg	2,010		ng/Kg	10.2 × Ref	NL		NL	
	1,2,3,7,8,9-HxCDF	1.49	J	ng/Kg	0.184	J	ng/Kg	8.1 × Ref	NL		NL	
	2,3,4,6,7,8-HxCDF	9.51		ng/Kg	2.97	J	ng/Kg	3.2 × Ref	NL		NL	
	1,2,3,4,6,7,8-HpCDF	298		ng/Kg	62.8		ng/Kg	4.8 × Ref	NL		NL	
	1,2,3,4,7,8,9-HpCDF	23		ng/Kg	3.59	J EB	ng/Kg	6.4 × Ref	NL		NL	
	1,2,3,4,6,7,8,9-OCDF	598	J	ng/Kg	149		ng/Kg	4 × Ref	NL		NL	
	Toxicity Equivalent Factor	***50.8***	***J***	***ng/Kg***	15.8	J	ng/Kg	3.2 × Ref	0.85	ng/Kg	21.5	ng/Kg
	INORGANICS											
	Arsenic	***482***		***mg/Kg***	51.6		mg/Kg	9.3 × Ref	7.24	mg/Kg	41.6	mg/Kg
	Cadmium	***298***		***mg/Kg***	3		mg/Kg	99.3 × Ref	0.68	mg/Kg	4.21	mg/Kg
	Chromium	***9,110***	***J EB***	***mg/Kg***	82.4		mg/Kg	110.6 × Ref	52.3	mg/Kg	160	mg/Kg

Table 11

Summary of Analytical Results
Sediment Sample Analysis for Creese &Cook Co. (Former) 1 (Concluded)

Sample Location	Compound/ Element	Sample Concentration			Reference Concentration			Comments	NOAA SQuiRTs TEL		NOAA SQuiRTs PEL	
SD-70	**INORGANICS**											
	***Copper*†**	***174***	***J***	***mg/Kg***		NA		NA	18.7	mg/Kg	108	mg/Kg
	Lead	***622***		***mg/Kg***	188		mg/Kg	3.3 × Ref	30.24	mg/Kg	112	mg/Kg
	***Mercury*†**	***1.9***	***J***	***mg/Kg***		NA		NA	0.13	mg/Kg	0.7	mg/Kg
	Nickel†	**29.7**		**mg/Kg**		NA		NA	15.9	mg/Kg	42.8	mg/Kg
	Selenium	9.6	J	mg/Kg	6.6	UJ	mg/Kg	1.5 × SQL	NL		NL	
	Sodium	3,860		mg/Kg	1,210	J	mg/Kg	3.2 × Ref	NL		NL	
	Zinc	***2,050***		***mg/Kg***	273		mg/Kg	7.5 × Ref	124	mg/Kg	271	mg/Kg

Note: **Bolded values** indicate the organic compound or inorganic element was detected at a concentration equal to or greater than its respective NOAA SQuiRTs TEL and/or PEL values for marine sediment. **Bolded** and ***italicized* values** indicate the organic compound or inorganic element was detected at a concentration equal to or greater than its respective NOAA SQuiRTs PEL values for mraine sediment.

† Indicates an organic compound or inorganic element that was detected at concentrations exceeding NOAA SQuiRTs TEL and/or PEL values in marine sediment, but not at concentrations exceeding reference criteria.

HxCDD = Hexachlorodibenzodioxin.
OCDF = Octachlorodibenzofuran.
HxCDF = Hexachlorodibenzofuran.
TCDF = Tetrachlorodibenzofuran.
NOAA = National Oceanic and Atmospheric Administration.
PEL = Probable Effects Level.
NL = Not Listed. An applicable NOAA SQuiRTs standard is not listed.
mg/Kg = Milligrams per kilogram [equivalent to parts per million (ppm)].
SQL = Sample Quantitation Limit [utilized here as the sample-adjusted Contract Required Quantitation Limit (CRQL)].
J = The associated numerical value is an estimated quantity.
U = The compound or element was analyzed for, but not detected. The associated numerical value is the sample-adjusted CRQL.
UJ = The compound or element was analyzed for, but not detected. The associated numerical value is the estimated sample-adjusted CRQL.
EB = The compound was identified in an aqueous equipment blank used to assess field contamination associated with soil/source samples.
EMPC = The concentration represents the Estimated Maximum Possible Concentration.

HpCDD = Heptachlorodibenzodioxin.
PeCDF = Pentachlorodibenzofuran.
TCDD = Tetrachlorodibenzo(p)dioxin.
Ref. = Reference Value.
SQuiRTs = Screening Quick Reference Tables.
µg/Kg = Micrograms per kilogram [equivalent to parts per billion (ppb)].
ng/Kg = Nanograms per kilogram.

OCDD = Octachlorodibenzodioxin.
PeCDD = Pentachlorodibenzodioxin.
HpCDF = Heptachlorodibenzofuran.
SVOCs = Semivolatile organic compounds.
TEL = Threshold Effects Level.

[149; 152; 169-178]

A total of 24 SVOCs were detected in sediment samples collected from the Crane River, both upstream and downstream of the Creese & Cook Co. (Former) 1 property. Of these, the following 12 SVOCs were detected at concentrations above their respective NOAA SQuiRTs TEL and/or PEL for marine sediments (maximum concentration and location in parentheses): acenaphthene (270 J µg/Kg in SD-29); acenaphthylene (470 µg/Kg in SD-29); anthracene (8,500 J µg/Kg in SD-29); benzo(a)anthracene (8,500 J µg/Kg in SD-29); benzo(a)pyrene (4,300 J µg/KG in SD-29); chrysene (6,500 J µg/Kg in SD-29); dibenzo(a,h)anthracene (590 µg/Kg in SD-29); fluoranthene (15,000 J µg/Kg in SD-29); fluorene (1,500 J µg/Kg in SD-29); naphthalene (110 J µg/Kg in SD-11); phenanthrene (7,800 J µg/Kg in SD-29); and pyrene (12,000 J µg/Kg in SD-29) [152; 169-170]. The remaining 12 SVOCs [benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, bis(2-ethylhexyl)phthalate, butylbenzylphthalate, carbazole, dibenzofuran, dimethylphthalate, di-n-butylphthalate, indeno(1,2,3-cd)pyrene, 4-methylphenol, and phenol] were detected at concentrations above laboratory reporting limits, but at concentrations less than their respective NOAA SQuiRTs TEL and/or PEL values, or a NOAA SQuiRTs comparison value is currently unavailable [152]. Since source samples collected from the Creese & Cook Co. (Former) 1 property for SVOC analysis were not compared against representative background samples, attribution of the SVOC compounds detected in sediment samples requires further investigation.

A total of two PCB aroclors were detected in sediment samples collected from the Crane River, both upstream and downstream of the Creese & Cook Co. (Former) 1 property. These two PCB aroclors were detected at concentrations above their respective NOAA SQuiRTs TEL and/or PEL for marine sediments (maximum concentration and location in parentheses): Aroclor-1242 (31,000 µg/Kg in SD-04); and Aroclor-1254 (14,000 µg/Kg in SD-04) [152; 169-170]. Since source samples collected from the Creese & Cook Co. (Former) 1 property for PCB analysis were not compared against representative background samples, attribution of the PCB compounds detected in sediment samples requires further investigation.

A total of 17 dioxin and furan congeners were detected in sediment samples collected from the Crane River, both upstream and downstream of the Creese & Cook Co. (Former) 1 property. Of these, the following 16 were detected at concentrations significantly above reference criteria (maximum concentration and location in parentheses): 1,2,3,7,8-PeCDD (17 J ng/Kg in SD-60); 1,2,3,4,7,8-HxCDD (56.4 J ng/Kg in SD-60); 1,2,3,6,7,8-HxCDD (255 ng/Kg in SD-60); 1,2,3,7,8,9-HxCDD (103 ng/Kg in SD-60); 1,2,3,4,6,7,8-HpCDD (6,400 ng/Kg in SD-60); 1,2,3,4,6,7,8,9-OCDD (44,200 ng/Kg in SD-60); 2,3,7,8-TCDF (45.3 ng/Kg in SD-60); 1,2,3,7,8-PeCDF (198 ng/Kg in SD-60); 2,3,4,7,8-PeCDF (271 ng/Kg in SD-60); 1,2,3,4,7,8-HxCDF (981 ng/Kg in SD-60); 1,2,3,6,7,8-HxCDF (715 ng/Kg in SD-60); 1,2,3,7,8,9-HxCDF (438 ng/Kg in SD-60); 2,3,4,6,7,8-HxCDF (494 ng/Kg in SD-60); 1,2,3,4,6,7,8-HpCDF (4,850 ng/Kg in SD-60); 1,2,3,4,7,8,9-HpCDF (1,420 ng/Kg in SD-60); and 1,2,3,4,6,7,8,9-OCDF (10,200 ng/Kg in SD-60) [172-174]. In addition, the TEF values for the sediment samples were detected above reference criteria at a maximum concentration of 566 J ng/Kg in sediment sample SD-60 [172-174]. TEF values were detected at concentrations greater than the NOAA SQuiRTs TEL and/or PEL for marine sediment in all of the sediment samples [152]. The 16 dioxin/furan congeners detected at concentrations significantly above background were also detected in source samples collected from the Creese & Cook Co. (Former) 1 property [162-164].Therefore, a release of 16 dioxin/furan congeners that are at least partially attributable to source areas on the property has been documented.

A total of 22 total metals were detected in sediment samples collected from the Crane River, both upstream and downstream of the Creese & Cook Co. (Former) 1 property. Of these, the

following 11 total metals were detected above reference criteria (maximum concentration and location in parentheses): arsenic (510 mg/Kg in SD-56); cadmium (298 mg/Kg in SD-70); chromium (9,240 J EB mg/Kg in SD-56); copper (229 J mg/Kg in SD-56); lead (622 mg/Kg in SD-70); mercury (9.3 mg/Kg in SD-15); potassium (5,850 mg/Kg in SD-21); selenium (9.6 J mg/Kg in SD-70); sodium (16,200 mg/Kg in SD-24); thallium (9.5 J mg/Kg in SD-16); and zinc (2,050 mg/Kg in SD-70) [175-177]. Furthermore, arsenic, cadmium, chromium, copper, lead, mercury, and zinc were detected at concentrations significantly above reference criteria and above their respective NOAA SQuiRTs TEL and/or PEL for marine sediments. In addition, eight total metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, and zinc) were detected below reference criteria but above their respective NOAA SQuiRTs TEL and/or PEL for marine sediments [152; 175-177]. Of the 11 total metals detected at concentrations significantly above background in sediment samples collected as part of the Creese & Cook Co. (Former) 1 SR, nine total metals (arsenic, cadmium, chromium, copper, lead, mercury, potassium, thallium, and zinc) were detected in soil/source samples collected from the Creese & Cook Co. (Former) 1 property [165-167]. Therefore, a release of nine total metals that are at least partially attributable to source areas on the property has been documented.

Hexavalent chromium was detected in sediment samples at a maximum concentration of 3.7 mg/Kg in sediment sample SD-17 [152; 178]. This concentration does not exceed the NOAA SQuiRTs TEL and PEL values for chromium (total) in marine sediments used for comparison since there are no NOAA SQuiRTs TEL and PEL values for hexavalent chromium [152; 178]. Source samples collected from the Creese & Cook Co. (Former) 1 property for hexavalent chromium analysis were not compared against representative background samples; therefore attribution of the hexavalent chromium detected in sediment samples requires further investigation.

In summary, a review of previous sampling events indicate that several substances detected in source areas on Creese & Cook Co. (Former) 1 property have historically been detected in sediment and surface water samples from the Crane River adjacent the Creese & Cook Co. (Former) 1 property. Recent sampling conducted as part of the EPA SR in 2011 has documented that nine total metals and 16 dioxin/furan congeners were detected in sediments at concentrations significantly above background and are at least partially attributable to source areas on the property. In addition, several SVOCs, PCBs and metals were detected at concentrations above their respective NOAA SQuiRTs TEL and/or PEL for marine sediments. Furthermore, the TEF values for dioxin and furan congeners were detected at concentrations greater than the NOAA SQuiRTs TEL and/or PEL for marine sediment in all of the EPA SR sediment samples.

START personnel observed on several occasions that soil and leather scrap materials (soil source material) were eroding from the river bank along the Creese & Cook Co. (Former) 1 parcel, falling directly into the Crane River, and mixing with sediment deposits. START personnel also noted leather scraps and soil material which had fallen into the sediments were submerged during high tide periods. Furthermore, START personnel noted that the lower portion of the river bank along the Creese & Cook Co. (Former) 1 property had direct contact with rising and flowing Crane River water during high tides. As a result, the freshly exposed soil and leather scrap materials along the edge of the eroding river bank came into direct contact with tidal waters from the Crane River. Analytical results of samples collected from the contaminated soil source material eroding from the river bank (SO-56, SO-59, SO-60, and SO-61), as well as sediment samples collected from the river (SD-06, SD-56, SD-57, and SD-70) in the immediate vicinity were determined through chemical analyses to contain hazardous substances (including dioxin/furan congeners, arsenic, barium, chromium, and mercury) [149; 165-167; 172-177].

START performed sediment sampling along both banks of the Crane River as part of the Creese & Cook Co. (Former) 1 SR. Based on analytical results of soil/source and sediment samples collected as part of the Creese & Cook Co. (Former) 1 SR, observations of stormwater runoff and tannery materials containing hazardous substances within the Crane River, a release of contaminants to sediment from on-site sources has been documented [149; 165-167; 172-177].

SOIL EXPOSURE PATHWAY

The Creese & Cook Co. (Former) 1 property is a vacant parcel which is the location of the former Creese & Cook Company Former Tannery Beamhouse. The property included the demolished Former Tannery Beamhouse building (debris and foundation remain in place); four fenced Imminent Hazard areas referred to in this report as Landfill Area A, Landfill Area B, Sludge Lagoon Area C, and the Upland Pile Area (which includes an Upland Soil Pile); a Waste Disposal Cell; an abandoned railroad spur; a former steam/process water pipe/footbridge which extends across the Crane River; several soil piles, including a mixed soil/leather scrap pile; several areas of scrub brush, grassland, and forested vegetation; the former Clinton Avenue extension; and wetlands along the Crane River (see Figure 2) [4; 5]. The property surrounds a small historic cemetery, the Endicott and Russell Cemetery, which predates the leather tannery operations. The property has been inactive since tannery operations at the property ceased in 1984. Several attempts have been made to re-develop the property and numerous investigations/actions have been conducted, including demolition of the former beamhouse and installation of fencing around identified imminent hazard areas.

There are currently no workers or residents on the property. However, homeless camps/shelters were observed on-site at locations west of Landfill Area B and north of the historic Endicott and Russell Cemetery. The nearest residence is located adjacent to the entrance to the Creese & Cook Co. (Former) 1 property (southwest corner) at 26 Clinton Avenue and is approximately 360 feet from the nearest source area (Sludge Lagoon Area C) [4; 98, Figure 2]. An estimated 8,684 and 134,100 people reside within 1 radial mile and 4 radial miles of the Creese & Cook Co. (Former) 1 property, respectively [130]. There are no known federal- or state-threatened or endangered species habitats located on the Creese & Cook Co. (Former) 1 property [145-146]. In addition, there are no known terrestrial sensitive environments located on the property [146].

There are no schools or day-care facilities located within 200 feet of source areas located on the Creese & Cook Co. (Former) 1 property. Two pre-school facilities, Great Beginnings Learning School and Fox Hill School, are located approximately 0.25 miles east and 0.45 miles southeast of the property, respectively [141; 142]. The nearest school, Riverside Elementary School, is located approximately 0.6 miles northeast of the property [141; 142].

Vehicle access to the property via Clinton Avenue and access points along the western property border are currently blocked with concrete Jersey barriers and boulders. Pedestrian access to the property is partially restricted by fencing and natural barriers, but pedestrian access to the property remains generally unrestricted. Evidence of trespassing has been noted including paths to and along the Crane River and holes cut in the fencing surrounding the Imminent Hazard areas, and trespassers have been observed during on-site activities [104, p. 2; 149]. START personnel also observed pedestrian trespassers using the on-site paths to cut through the property to get to adjacent commercial properties [149]. START personnel also observed a grassy area which shows evidence of several foot paths and according to the MassDEP Representative is used by local residents as a dog walking area [149].

In May 1984, SP conducted an initial site investigation (engineering report) for the Crane River Real Estate Trust for potential redevelopment of the property [14; 16, p. 2]. The investigation consisted of excavating 21 test pits in known or suspected waste burial/disposal areas and included sampling of soils and/or waste encountered. Layers of tannery waste and sludge were identified in the test pits including black organic waste, black oily waste, and lime with strong ammonia and sulfide odors [14, attached Test Pit Logs]. Available file information indicates that one test pit sample was collected from within two feet of the ground surface and therefore represented surface soil conditions (MW 2 – 512030) and submitted for metals analysis [14, Figure 6]. Analytical results indicated the following elements above laboratory reporting limits (maximum concentration in parentheses): arsenic (92.78 mg/Kg); chromium (3,927 mg/Kg); lead (137.6 mg/Kg); and mercury (2.863 mg/Kg) [14, Table 3].

In September 1986, SP advanced seven cores in the two sludge lagoons (Sludge Lagoon Area C) northeast of the former beamhouse, and collected six composite soil samples from the cores [27, Site Plan]. The soil logs indicated primarily sand and gravels with narrow bands of cinder slag (0-9 inches in Core 4) and blue chips (0-3 inches in Core 7) [27, p. 3 attached soil logs]. The soil samples were analyzed for VOCs, pesticides/PCBs, and bulk metals by the SP in-house laboratory. No VOCs, pesticides, or PCBs were detected in the samples. Analytical results indicated the presence of the following metals (maximum concentration in parentheses): arsenic [9.01 mg/kg in Core 7 (0-3 inches)]; cadmium [1.078 mg/kg in Core 7 (0-3 inches)]; total chromium [7,650 mg/kg in Core 7 (0-3 inches)]; lead [104.2 mg/kg in Core 7 (0-3 inches)]; and mercury (0.012 mg/kg in Composite 3 (0-6 inches)] [27, attached laboratory reports].

In April 1990, SP collected 12 post-excavation soil samples from selected grids in the excavated landfill and lagoon areas (two samples from Landfill Area A, six samples from Landfill Area B, and four samples from Sludge Lagoon Area C) to confirm clean-up goals were met [33, Appendix p. A-18]. Selected grid soil samples were analyzed for total chromium and total lead, and three composite grid soil samples were also analyzed for EP Toxicity metals, by the SP in-house laboratory. File information indicates that the excavation areas were backfilled once construction of the Waste Disposal Cell was completed. It is unclear from available file information if the composite grid samples were within two feet of the ground surface and therefore represented surface soil conditions. Analytical results of the samples indicated the presence of total chromium ranging from 2.59 mg/kg (Landfill C Grid 4) to 829 mg/kg (Landfill B Grid 5) and total lead ranging from 9.58 mg/kg (Landfill C Grid 1) to 105 mg/kg (Landfill B Grid 6). The average total chromium and lead concentrations for the post-excavation grid samples collected from these three areas respectively were 39.9 mg/kg and 27.3 mg/kg for Landfill Area A, 586 mg/kg and 28.1 mg/kg for Landfill Area B, and 125 mg/kg and 18.0 mg/kg for Landfill Area C. Analytical results for the composited grid soil samples were below EP Toxicity limits [33, Appendix p. A-17].

In June 1995, as part of an Initial Site Characterization completed in 1995 for Riverside Realty trust, REW advanced 13 borings (BH-101 through BH-113) in the vicinity of the former landfill and sludge lagoon areas, and excavated six test pits (TP-1 through TP-6) [38, p. P-8]. Two surface soil samples were collected from borings, BH-103 and BH-104, as part of the site characterization. Both samples were analyzed for metals, with surface soil sample BH-104 also analyzed for VOCs [38, P-20]. Analytical results of the surface soil sample BH-104 was non-detect for VOCs, and analytical results of the two samples indicated the presence of the following metals (maximum concentration and location in parentheses): arsenic [197 mg/kg in BH-103 (0-2 feet)]; cadmium [6.29 mg/kg in BH-103 (0-2 feet)]; total chromium [148 mg/kg in

BH-104 (0-2 feet)]; lead [9.48 mg/kg in BH-104 (0-2 feet)]; and mercury [0.117 mg/kg in BH-103 (0-2 feet)] [38, p. P-22].

On 20 July 1995, as a result of two surface soil (0-2 feet) samples with arsenic concentrations in excess of 40 mg/kg, REW notified MassDEP of a potential Imminent Hazard at the property related to the former tannery waste sludge lagoons (Sludge Lagoon Area C). MassDEP assigned RTN 3-12711 to the property for the release of arsenic in surface soils meeting the 2-hour notification provisions of the MCP [42, p. P-2; 43].

On 21 July 1995, REW collected six additional surface soil samples (SS-1 through SS-6) in a random pattern at a depth of 0-4 inches near the location of the June 1995 sludge lagoon boring sample locations (BH-103 and BH-104) to confirm the presence of arsenic in surface soils. The soil samples were analyzed by Geolabs, Inc. for arsenic. Analytical results of the soil samples indicted that two of the six samples exceeded the surface soil Imminent Hazard threshold concentration of 40 mg/kg for arsenic (SS-1 at 46.5 mg/kg and SS-3 at 57.8 mg/kg) [42, p. P-2].

On 30 August 1995, REW conducted additional soil sampling of the former Sludge Lagoon Area C to delineate the horizontal extent of the arsenic-contaminated surface soils. Twenty-five surface soil (0-4 inches) samples (C-1 through C-25) were collected from a 25-foot grid set up over the former sludge lagoons. In addition, five surface soil samples (BS-1 through BS-5) were collected from random locations upgradient and cross-gradient to the former sludge lagoons [42, p. P-3]. The 25 samples were analyzed by Geolabs, Inc. for arsenic, with five selected samples analyzed for total chromium. Analytical results of the soil samples indicted that six of the 25 surface soil samples collected from within the Sludge Lagoon Area C exceeded the surface soil Imminent Hazard threshold concentration of 40 mg/kg for arsenic (C-2 at 49.0 mg/kg; C-6 at 75.9 mg/kg; C-7 at 47.7 mg/kg; C-9 at 79.0 mg/kg; C-11 at 40.7 mg/kg; and C-19 at 57.9 mg/kg). Total chromium concentrations in the five selected samples ranged from 23.0 mg/kg (C-5) to 1,220 mg/kg (C-22). Analytical results of the samples collected randomly outside the lagoon area all indicated arsenic levels below 40 mg/kg and ranging from 3.92 mg/kg (BS-2) to 36.9 mg/kg (BS-1). The two random locations with higher arsenic concentrations were collected from a wetland area (BS-1 at 36.9 mg/kg) and adjacent to Clinton Avenue (BS-4 at 33.8 mg/kg) [42, attached laboratory reports].

In May and June 1996, in preparation for re-development of the property with 58 single family lots, REW advanced 88 borings (B1 through B88) via geoprobe throughout the property [53, p. 7, Table 2, Exhibits A-D]. The sampling included advancing 10 borings (B21, B54, B58, B72, B73, B74, B75, B76, B77, and B78) in the vicinity of Landfill Area A; seven borings (B11, B16, B23, B24, B25, B30, and B31) in the vicinity of Sludge Lagoon Area C; 14 borings (B14, B15, B18 through B20, B22, and B79 through B86) in the footprint and vicinity of the former beamhouse; 21 borings (B32 through B45, B47 through B51, B67 and B68) in the vicinity of the upland areas between the former beamhouse and Route 128; and nine borings (B56, B57, B59, B60 through B66) at other locations throughout the property [53, p. 7-9, Table 2, Exhibits A-D]. Soil samples were collected from the following depth intervals: 1 to 2 feet; 4 to 5 feet; 8 to 9 feet; 8 to 12 feet; 13 to 14 feet; and 12 to 16 feet. The 1 to 2 foot interval collected represented the surface soil conditions. The surface soil samples were field-screened by NES, Inc. for arsenic, with selected samples also field-screened for chromium, lead, and mercury, using an XRF analyzer (portable Metorex, Inc. Model 920). Field screening results indicated the presence of arsenic, chromium, lead, and mercury in surface soils [53, pp. 7-9, Exhibits A-D]. The maximum concentration (in parentheses) for surface soils included the following: arsenic (932

ppm in B16), chromium (605 ppm in B58), lead (24.1 ppm in B16), and mercury (1.05 ppm in B16) [53, p. 7 and Table 2].

In June 1996, to further delineate the lateral and vertical extent of the potential Imminent Hazard conditions of arsenic-contaminated soil in and around the former sludge lagoons (Sludge Lagoon Area C), a 15-foot grid was established over the area. A total of 115 borings (HB001 through HB113, P-1 B-16, and P-2 B-16) were advanced using hand augers (hand borings designated with HB). Of these, 106 borings were advanced to a depth of 0 to 1 feet and nine selected borings advanced to 3 to 4 feet. Soil samples were collected from the borings and field-screened for arsenic by NES, Inc. using an XRF instrument. Eleven samples were selected and submitted to Geolabs, Inc. for arsenic laboratory confirmation analysis. Arsenic field screening results of the surface soil samples (0 to 1 foot) ranged from 1 ppm to a maximum concentration of 250 ppm in boring HB002. Laboratory confirmation of the surface soil sample results ranged from 7.81 mg/kg to a maximum concentration of 198 mg/kg in boring HB098 [55, Appendix A and attached laboratory reports].

On 21 and 22 November 2006, as part of the revised IRA and IHE evaluation, W&C collected 32 surface soil samples (0-1 foot bgs) from the following locations/source areas: 12 surface soil samples (WC-1 through WC-12) from Landfill Area A; four surface soil samples (WC-13 through WC-16) from Landfill Area B; 12 surface soil samples (WC-17 through WC-28) from the Sludge Lagoon Area C; three surface soil samples (WC-41 through WC-43) from the upland area between the historic cemetery and the adjacent retail parking area (west of the former beamhouse); and one surface soil sample (WC-44) from the southeastern corner of the property as a potential background sample. The soil samples were field screened with an XRF for arsenic, chromium, and lead. In addition, soil samples were analyzed by Accutest Laboratories for cyanide, physiological available cyanide, dioxins, arsenic, and total and hexavalent chromium. Analytical results of the soil samples indicated the presence of the following analytes (maximum concentration, location, and analytical method in parentheses): arsenic (209 mg/Kg in WC-11 by XRF and 83.5 mg/Kg in WC-9 by laboratory analysis); total chromium (5,889 mg/Kg in WC-10 by XRF and 1,070 mg/Kg in WC-3 by laboratory analysis); hexavalent chromium (333 mg/Kg in WC-10 by laboratory analysis); cyanide (0.84 mg/Kg in WC-41 by laboratory analysis); lead (126 mg/Kg in WC-12 by XRF); and chlorinated dioxins (11,359 pg/g as 2,3,7,8-TCDD TEQ concentration in WC-41 by laboratory analysis). All dioxin congener analytes were detected in variable concentrations in all soil samples with reportable concentrations expressed in equivalents of 2,3,7,8-TCDD [87, pp. 4-2, 4-3, Tables 2-4].

On 18 June 2007, W&C collected 25 additional surface soil (0-1 foot) samples to assess contaminant concentrations in the upland areas of the property as required by the MassDEP 24 May 2007 IRA conditional approval [98]. Twelve soil samples (WC-45 through WC-56) were collected from a grid established in the area between the former beamhouse and Route 128; 12 soil samples (WC-58 through WC-69) were collected from a grid established in the area between the former beamhouse and Clinton Avenue; and one soil sample (WC-57) was collected from the Russell and Endicott Cemetery for use as a background sample [98, p. 2-1, Figure 2]. The surface soil samples were field-screened for arsenic using an XRF, and submitted to Alpha Woods Hole Laboratory for arsenic confirmation analysis. Arsenic concentrations in the surface soil samples ranged from 5.3 mg/Kg in WC-60 to 300 mg/Kg in WC-62 [98, p. 3-1, Tables 1-3]. Dioxin concentrations (expressed as 2,3,7,8-TCDD TEQ concentration) ranged from 1 pg/g in WC-45 to 11,359 pg/g in WC-41, with a concentration of 8 pg/g TEQ in the background sample (WC-57) collected from the Russell and Endicott Cemetery [98, p. 3-2, Tables 1-3 , Figure 5].

As part of the EPA SR, between May and December 2011, 25 surface soil/source samples were collected from the 0-2 foot interval to document source areas on the Creese & Cook Co. (Former) 1 property (SO-01, SO-03, SO-04, SO-07, SO-12 through SO-14, SO-18, SO-20, SO-26, SO-50 through SO-63, and SO-70). In addition, two samples collected from the 0-2 foot interval to document background surface soil conditions (SO-52 and SO-53). The samples were submitted to a CLP Non-RAS laboratory for dioxin/furan analysis and to a CLP laboratory for total metals analysis. Other analytes were analyzed for and are summarized in the Waste/Source Sampling section of this report. As part of the SR, only dioxin/furan congeners and metals results were compared against background concentrations. Based on analytical results, a contaminated surface soil/source area has been documented as containing the following 17 dioxin/furan congeners and 13 total metals (maximum concentration and location in parentheses): 2,3,7,8-TCDD (83.6 ng/Kg in SO-70); 2,3,7,8-TCDF (12.4 ng/Kg in SO-61); 1,2,3,7,8-PeCDF (35.7 ng/Kg in SO-70); 1,2,3,7,8-PeCDD (263 ng/Kg in SO-70); 2,3,4,7,8-PeCDF (95.6 ng/Kg in SO-70); 1,2,3,4,7,8-HxCDF (2,230 ng/Kg in SO-70); 1,2,3,6,7,8-HxCDF (960 ng/Kg in SO-70); 1,2,3,4,7,8-HxCDD (3,130 ng/Kg in SO-70); 1,2,3,6,7,8-HxCDD (20,200 ng/Kg in SO-70); 1,2,3,7,8,9-HxCDD (2,650 ng/Kg in SO-70); 2,3,4,6,7,8-HxCDF (1,360 ng/Kg in SO-70); 1,2,3,7,8,9-HxCDF (282 ng/Kg in SO-70); 1,2,3,4,6,7,8-HpCDF (136,000 ng/Kg in SO-70); 1,2,3,4,6,7,8-HpCDD (607,000 ng/Kg in SO-58); 1,2,3,4,7,8,9-HpCDF (12,200 ng/Kg in SO-70); 1,2,3,4,6,7,8,9-OCDD (6,380,000 ng/Kg in SO-70); 1,2,3,4,6,7,8,9-OCDF (457,000 ng/Kg in SO-70; arsenic (565 mg/Kg in SO-60); barium (1,020 mg/Kg in SO-57); beryllium (1.2 J mg/Kg in SO-08); cadmium (23.2 mg/Kg in SO-59); calcium (14,200 mg/Kg in SO-03); total chromium (20,500 mg/Kg in SO-58); copper (87.7 mg/Kg in SO-70); lead (919 mg/Kg in SO-59); mercury (9.3 mg/Kg in SO-57); potassium (2,060 J mg/Kg in SO-64); silver (2.4 J mg/Kg in SO-58); thallium (3.9 J mg/Kg in SO-08); and zinc (347 mg/Kg in SO-61 [149; 162-167]. In addition, the TEF for dioxin and furan congeners, and six total metals (arsenic, barium, cadmium, chromium, lead, and nickel) were detected above the MCP Method 1 S-1/GW-1 standards. Furthermore, both arsenic and chromium were detected at concentrations exceeding their respective MCP Imminent Hazard value [See Source Evaluation Section of this report].

Surficial soil sampling conducted on the Creese & Cook Co. (Former) 1 during previous investigations and this EPA SR has indicated that on-site surface soil (depth intervals of 0 to 2 feet) has been impacted by a release of hazardous substances (dioxin/furan congeners and metals) attributable to on-site sources, including documentation of arsenic and dioxin Imminent Hazard areas. Based on site observations and conditions, property restrictions (including fenced off Imminent Hazard areas), and distance to nearest residence, no impacts to nearby residential populations or sensitive environments are known or suspected. However, public/nearby populations/trespassers use of the property indicates that continued monitoring is required until the surface soil arsenic and dioxin Imminent Hazard areas are addressed.

AIR PATHWAY

The site is currently inactive and there are no on-site workers or residents on the Creese & Cook Co. (Former) 1 property [98; 149]. The nearest residence is located adjacent to the entrance to the Creese & Cook Co. (Former) 1 property at 26 Clinton Avenue and is approximately 360 feet south of the nearest source area (Sludge Lagoon Area C) [4; 98, Figure 2]. There are no schools or day-care facilities located within 200 feet of source areas located on the Creese & Cook Co. (Former) 1 property. Two day-care facilities, Great Beginnings Learning School and Fox Hill School, are located approximately 0.25 miles east and 0.45 miles southeast of the property, respectively [141; 142]. The nearest school, Riverside Elementary School, is located approximately 0.6 miles northeast of the property [141; 142]. Vehicular access to the Creese &

Cook Co. (Former) 1 property is restricted by concrete jersey barriers installed across Clinton Avenue; boulders, fencing and a trench along the adjacent commercial properties; and natural barriers along the remaining portions of the borders. Pedestrian access to the property is partially restricted by fencing and natural barriers, but pedestrian access to the property along Clinton Avenue and other areas remains unrestricted. Evidence of trespassing has been noted including paths to and along the Crane River and holes cut in the fencing surrounding the Imminent Hazard areas [104, p. 2]. In addition, during on-site activities, numerous pedestrians were observed using the property as a 'cut-through' to other public properties [149].

An estimated 134,100 people reside within 4 radial miles of the Creese & Cook Co. (Former) 1 property [130]. Table 12 summarizes the estimated population within 4 radial miles of the Creese & Cook Co. (Former) 1 property.

Table 12

Estimated Population Within 4 Radial Miles of Creese & Cook Co. (Former) 1

Radial Distance From Creese & Cook Co. (Former) 1 property (miles)	Estimated Population
On a Source	0
> 0.00 to < 0.25	343
> 0.25 to < 0.50	1,592
> 0.50 to < 1.00	6,749
> 1.00 to < 2.00	34,000
> 2.00 to < 3.00	50,046
> 3.00 to < 4.00	41,370
TOTAL	134,100

< = Less than. > = Greater than.

[130]

Approximately 2,322 acres of wetlands, CWA-protected water bodies, one state-listed endangered species habitat, and two state-listed species habitats of concern are located within 4 radial miles of the Creese & Cook Co. (Former) 1 property [144-146].

The following table summarizes sensitive environments located within 4 radial miles of the Creese & Cook Co. (Former) 1 property.

Table 13

Sensitive Environments Located Within 4 Radial Miles of Creese & Cook Co. (Former) 1

Radial Distance From Creese & Cook Co. (Former) 1 property (miles)	Sensitive Environments/Species (status)
On a Source	0.4 acres of wetlands
> 0.00 to < 0.25	Clean Water Act-protected water body
	7.3 acres of wetlands
> 0.25 to < 0.50	26.9 acres of wetlands
> 0.50 to < 1.00	65.8 acres of wetlands
> 1.00 to < 2.00	293.8 acres of wetlands
> 2.00 to < 3.00	528.8 acres of wetlands
	State-Endangered Species Habitat/ State Concerned Species Habitat
> 3.00 to < 4.00	1,399.3 acres of wetlands
	State Concerned Species Habitat

< = Less than. > = Greater than.

[144 -146]

The site was initially referred to EPA and MADEQE based on odor complaints from nearby residents. On 9 February 1984, MADEQE conducted a site visit with the Danvers Board of Health and conducted air monitoring with an HNU flame ionization detector (FID); no readings above background were detected [10].

In December 1985, SP conducted a supplemental investigation to the May 1984 sampling. Headspace air monitoring of groundwater monitoring wells with Draeger tubes indicated the presence of hydrogen sulfide at 400 ppm at MW-2 [14, Appendix Table 5].

The on-site former beamhouse was demolished in November 2004. The building was suspected of containing asbestos materials. On 22 November 2006, as part of the revised IRA and IHE evaluation, a licensed asbestos inspector from Enviro-Safe Engineering conducted an investigation/inspection of the former beamhouse demolition debris. Enviro-Safe Engineering personnel collected samples of suspected ACM, including black mastic on concrete and transite, and confirmed the presence of ACM in the demolition debris. However, no asbestos analytical data or laboratory report was found for this sampling in available documentation [87, p. 3-1].

On 14 December 2006, W&C orally notified MassDEP regarding the release of ACM in the former beamhouse demolition debris. MassDEP assigned RTN 3-26474 to the property for the release of asbestos in the beamhouse demolition debris meeting the 2-hour reporting provisions of the MCP [88].

On 18 September 2008, MassDEP collected four samples of black mastic from the beamhouse demolition debris to determine the nature and extent of asbestos in the debris. The asbestos samples were analyzed by ProScience Analytical Services, Inc. using a visual estimate quantitative method to determine the percentage of asbestos in the samples via EPA/600/R-93/116, Method for the Determination of Asbestos in Bulk Building Materials. Analytical results indicated that one sample (091808AJ) of the black mastic contained 10% chrysotile fibers. The remainder of the samples contained cellulose (10 to 20%) and non-fibrous material (80 to 90%) [105; 106].

No quantitative laboratory-analyzed air samples are known to have been collected from the Creese & Cook Co. (Former) 1 property. START did not conduct Air Pathway sampling as part of this SR. During the 21 April 2010 on-site reconnaissance conducted at the Creese & Cook Co. (Former) 1 property and subsequent reconnaissance and sampling events, START personnel conducted periodic ambient air monitoring using a MultiRAE Plus [Lower Explosive Limit (LEL), oxygen (O_2), hydrogen sulfide (H_2S), carbon monoxide (CO), and photoionization detector (PID)] meter and a Micro R radiation meter. No readings above background levels were detected [149].

Based on the lack of quantitative data, no release of hazardous substances to the ambient air from on-site sources has been documented. No impacts to nearby residential populations or sensitive environments are known.

SUMMARY

The Creese & Cook Co. (Former) 1 property is located at 55 Clinton Avenue in Danvers, Essex County, Massachusetts (MA). The geographic coordinates of the property, as measured from its approximate center, are 42° 33′ 14″ north latitude and 70° 55′ 50″ west longitude. The 55 Clinton Avenue parcel is approximately 12.65 acres and is identified on the Town of Danvers Tax Assessor's Map Number (No.) 59 as Lot No. 002B.

The property is bordered to the north, northeast and east by wetlands and the Crane River; to the southeast by private residences (the immediately adjacent parcel is occupied by a burned-out building); to the southwest and west by Clinton Avenue, Clinton Avenue Extension, and commercial properties; and to the northwest by MA Route 128. A railroad bridge and a former steam/process water pipeline bridge extend over the Crane River from the northeastern and southeastern portions of the property, respectively. The municipal sewer line extends onto the property along the railroad bridge crossing, along the former railroad spur, west of the on-site Former Tannery Beamhouse building footprint. The 0.33-acre historic Endicott and Russell Cemetery is located at 25 Clinton Avenue, within the northwest portion of the 55 Clinton Avenue property, and is identified on the Town of Danvers Tax Assessor's Map No. 59 as Lot No. 002A. The historic Endicott and Russell Cemetery is not considered to be part of the site, as it predates the former tannery operations on the Creese & Cook Co. (Former) 1 property.

In 1911, the Creese & Cook Company purchased the Clinton Avenue property to expand their Water Street operations and in 1914 completed construction of the new Clinton Avenue brick beamhouse. From 1914 to 1981, the Creese & Cook Company operated a leather tannery on the property. In 1981, Creese & Cook Company went out of business and leased the property and equipment to the Danversport Tanning Company. The Danversport Tanning Company ceased tanning operations at the property in spring 1983. The property is listed under Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) Identification (ID) Number (No.) MAD001031574. The property is also listed under Massachusetts Department of Environmental Protection (MassDEP) Release Tracking Nos. (RTNs) 3-0000303, 3-0012711, and 3-0026474.

The property includes the demolished Former Tannery Beamhouse building (debris and foundation remain in place); four fenced Imminent Hazard areas referred to in this report as Landfill Area A, Landfill Area B, Sludge Lagoon Area C, and the Upland Pile Area (which includes an Upland Soil Pile); a Waste Disposal Cell; an abandoned railroad spur; a former steam/process water pipe/footbridge which extends across the Crane River; several soil piles, including a mixed soil/leather scrap pile; several areas of scrub brush, grassland, and forested vegetation; the former Clinton Avenue extension; and wetlands along the Crane River.

In 2009, Based on the previous investigation that established the extent and contents of the former disposal areas, the Environmental Protection Agency (EPA) initiated the Site Reassessment (SR) of the Creese & Cook Co. (Former) 1 property to confirm potential source areas associated with the property and to identify and investigate potential impacts to sediments within the adjacent Crane River.

As part of the Creese & Cook Co. (Former) 1 SR, Weston Solutions, Inc. Superfund Technical Assessment and Response Team III (START) performed soil/source sampling. Based on analytical result of soil/source samples collected, submitted for dioxin/furan and total metals analysis, and compared against background concentrations, sources containing 17 dioxin and

furan congeners [2,3,7,8-Tetrachlorodibenzo(p)dioxin (TCDD); 2,3,7,8-Tetrachlorodibenzofuran (TCDF); 1,2,3,7,8-Pentachlorodibenzofuran (PeCDF); 1,2,3,7,8-Pentachlorodibenzodioxin (PeCDD); 2,3,4,7,8-PeCDF; 1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF); 1,2,3,6,7,8-HxCDF; 1,2,3,4,7,8-Hexachlorodibenzodioxin (HxCDD); 1,2,3,6,7,8-HxCDD; 1,2,3,7,8,9-HxCDD; 2,3,4,6,7,8-HxCDF; 1,2,3,7,8,9-HxCDF; 1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF); 1,2,3,4,6,7,8-Heptachlorodibenzodioxin (HpCDD); 1,2,3,4,7,8,9-HpCDF; 1,2,3,4,6,7,8,9-Octachlorodibenzodioxin (OCDD); and 1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)] and 14 total metals (arsenic, barium, beryllium, cadmium, calcium, chromium, copper, lead, mercury, nickel, potassium, silver, thallium, and zinc) have been documented.

The estimated number of residents utilizing public groundwater sources within 4 radial miles of the Creese & Cook Co. (Former) 1 property is 4,185. The nearest public drinking water supply well is a well, referred to as the Eastman Gelatine Well No. 12A, located 2.2 miles south of the property in the town of Peabody, MA. The estimated number of residents utilizing private groundwater sources within 4 radial miles of the property is 467. The location of the nearest active private drinking water supply well was not determined as part of the investigation of the Creese & Cook Co. (Former) 1 property. The direction of groundwater flow beneath the property is unknown; however, based on topography, START assumes groundwater to generally flow northeast and east toward the Crane River. Groundwater was not sampled as part of the EPA SR and therefore a release to groundwater from on-site sources has not been documented.

Based on site topography and on-site observations, stormwater runoff/overland flow from the Creese & Cook Co. (Former) 1 property is northeast and east toward the Crane River. The most upstream probable point of entry (PPE) to the 15-mile downstream surface water pathway (SWP) is located along the northern property boundary and the Crane river. The SWP extends through the Crane River, the Porter River, the Danvers River, Beverly Harbor, and the Atlantic Ocean. The 15-mile downstream pathway terminus is located along an arc extending from the Beverly Harbor 12.25 miles into the Atlantic Ocean.

There are no known drinking water intakes located along the 15-mile downstream SWP from the Creese & Cook Co. (Former) 1 property. START personnel documented a recreational fishery in an area directly downstream of source areas on the property. In addition, a Clean Water Act (CWA)-protected water body, and 10.13 miles of wetland frontage are located along the SWP. Based on analytical results of sediment samples collected as part of the Creese & Cook Co. (Former) 1 SR, a release of contaminants (dioxin/furan congeners and total metals) to sediment from on-site sources has been documented.

The nearest residence to the Creese & Cook Co. (Former) 1 property is located southeast along Clinton Avenue. An estimated 8,684 people residing within 1 radial mile of the Creese & Cook Co. (Former) 1 property. There are no schools or day-care facilities located within 200 feet of source areas located on the Creese & Cook Co. (Former) 1 property. Two day-care facilities, Great Beginnings Learning School and Fox Hill School, are located approximately 0.25 miles east and 0.45 miles southeast of the property, respectively. The nearest school, Riverside Elementary School, is located approximately 0.6 miles northeast of the property. Pedestrian access to parts of the Creese & Cook Co. (Former) 1 property is partially restricted by fencing, however, much of the property remains unrestricted. Evidence of trespassing has been noted including paths to and along the Crane River and holes cut in the fencing surrounding the Imminent Hazard areas, and trespassers observed during on-site activities. Based on analytical results, a contaminated surface soil/source area has been documented as containing the following substances: 17 dioxin and furan congeners (2,3,7,8-TCDD; 2,3,7,8-TCDF; 1,2,3,7,8-PeCDF;

1,2,3,7,8-PeCDD; 2,3,4,7,8-PeCDF; 1,2,3,4,7,8-HxCDF; 1,2,3,6,7,8-HxCDF; 1,2,3,4,7,8-HxCDD; 1,2,3,6,7,8-HxCDD; 1,2,3,7,8,9-HxCDD; 2,3,4,6,7,8-HxCDF; 1,2,3,7,8,9-HxCDF; 1,2,3,4,6,7,8-HpCDF; 1,2,3,4,6,7,8-HpCDD; 1,2,3,4,7,8,9-HpCDF; 1,2,3,4,6,7,8,9-OCDD; and 1,2,3,4,6,7,8,9-OCDF) and 14 total metals (arsenic, barium, beryllium, cadmium, calcium, chromium, copper, lead, mercury, nickel, potassium, silver, thallium, and zinc). Of these contaminants, the Toxicity Equivalent Factor (TEF) for dioxin/furan congeners, and six total metals (arsenic, barium, cadmium, chromium, lead, and nickel) were detected above the Massachusetts Contingency Plan (MCP) Method 1 S-1/GW-1 standards. Furthermore, both arsenic and chromium were detected at concentrations exceeding their respective MCP Imminent hazard values.

An estimated 134,100 people reside within 4 radial miles of the Creese & Cook Co. (Former) 1 property. In addition, approximately 2,322.3 acres of wetlands, a CWA-protected water body, one State-listed endangered species habitats, and two State-listed concerned species habitat are located within 4 radial miles of the Creese & Cook Co. (Former) 1 property. No quantitative or qualitative laboratory air samples are known to have been collected in association with the Creese & Cook Co. (Former) 1 property to date. As a result, a release of hazardous substances to the ambient air from on-site sources has not been documented. Additionally, no impacts to nearby residential populations, on-site workers, or sensitive environments via the Air Pathway are known or suspected.

The last known action associated with the Creese & Cook Co. (Former) 1 property is this SR.

CREESE & COOK CO. (FORMER) 1
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ATTACHMENT A

CREESE & COOK CO. (FORMER) 1
SOIL/SOURCE SAMPLE ANALYTICAL RESULTS
START
Samples Collected on 23 May and 5 December 2011

SITE: CREESE & COOK CO. (FORMER) 1
CASE: 41341
SDG: A3TS9
LABORATORY: MITKEM

DATA SUMMARY TABLE 1
SEMIVOLATILE ORGANIC ANALYSIS - SOIL
µg/Kg

SAMPLE NUMBER		A3X33	A3X34	A3TS9	A3X36	A3X37	A3X38	A3X39
SAMPLE LOCATION		D30281	D30282	D30266	D30284	D30285	D30286	D30287
STATION LOCATION		SO-03	SO-04	SO-05B	SO-06	SO-07	SO-08	SO-09
SAMPLE DEPTH (FT)		0.0 - 1.8	0.5 - 2.0	15.0 - 16.0	1.0 - 2.0	0.5 - 1.5	5.5 - 6.5	3.5 - 4.0
LABORATORY NUMBER		K0902-04A	K0902-05A	K0902-01A	K0902-06A	K0902-07A	K0902-08A	K0902-09A
COMPOUND	CRQL							
Benzaldehyde	170	200 UJ	200 UJ	180 UJ	180 UJ	190 UJ	200 UJ	190 UJ
Phenol	170	200 U	200 U	180 U	180 U	190 U	200 U	190 U
Bis(2-chloroethyl)ether	170	200 U	200 U	180 U	180 U	190 U	200 U	190 U
2-Chlorophenol	170	200 U	200 U	180 U	180 U	190 U	200 U	190 U
2-Methylphenol	170	200 U	200 U	180 U	180 U	190 U	200 U	190 U
2,2'-Oxybis(1-chloropropane)	170	200 U	200 U	180 U	180 U	190 U	200 U	190 U
Acetophenone	170	200 U	200 U	180 U	180 U	190 U	200 U	190 U
4-Methylphenol	170	200 U	200 U	180 U	180 U	190 U	200 U	190 U
N-Nitroso-di-n-propylamine	170	200 U	200 U	180 U	180 U	190 U	200 U	190 U
Hexachloroethane	170	200 U	200 U	180 U	180 U	190 U	200 U	190 U
Nitrobenzene	170	200 U	200 U	180 U	180 U	190 U	200 U	190 U
Isophorone	170	200 U	200 U	180 U	180 U	190 U	200 U	190 U
2-Nitrophenol	170	200 U	200 U	180 U	180 U	190 U	200 U	190 U
2,4-Dimethylphenol	170	200 U	200 U	180 U	180 U	190 U	200 U	190 U
Bis(2-chloroethoxy)methane	170	200 U	200 U	180 U	180 U	190 U	200 U	190 U
2,4-Dichlorophenol	170	200 U	200 U	180 U	180 U	190 U	200 U	190 U
Naphthalene	170	200 U	200 U	180 U	180 U	190 U	200 U	190 U
4-Chloroaniline	170	200 U	200 U	180 U	180 U	190 U	200 U	190 U
Hexachlorobutadiene	170	200 U	200 U	180 U	180 U	190 U	200 U	190 U
Caprolactam	170	200 U	200 U	180 U	180 U	190 U	200 U	190 U
4-Chloro-3-methylphenol	170	200 U	200 U	180 U	180 U	190 U	200 U	190 U
2-Methylnaphthalene	170	200 U	200 U	180 U	180 U	190 U	200 U	190 U
Hexachlorocyclopentadiene	170	200 U	200 U	180 U	180 U	190 U	200 U	190 U
2,4,6-Trichlorophenol	170	200 U	200 U	180 U	180 U	190 U	200 U	190 U
2,4,5-Trichlorophenol	170	200 U	200 U	180 U	180 U	190 U	200 U	190 U
1,1'-Biphenyl	170	200 U	200 U	180 U	180 U	190 U	200 U	190 U
2-Chloronaphthalene	170	200 U	200 U	180 U	180 U	190 U	200 U	190 U
2-Nitroaniline	330	400 U	390 U	340 U	350 U	370 U	400 U	360 U
Dimethylphthalate	170	200 U	200 U	180 U	180 U	190 U	200 U	190 U
2,6-Dinitrotoluene	170	200 U	200 U	180 U	180 U	190 U	200 U	190 U
Acenaphthylene	170	200 U	200 U	180 U	180 U	190 U	200 U	190 U
3-Nitroaniline	330	400 U	390 U	340 U	350 U	370 U	400 U	360 U
Acenaphthene	170	200 U	200 U	180 U	180 U	190 U	200 U	**37 J**
2,4-Dinitrophenol	330	400 UJ	390 UJ	340 UJ	350 UJ	370 UJ	400 UJ	360 UJ
4-Nitrophenol	330	400 U	390 U	340 U	350 U	370 U	400 U	360 U
Dibenzofuran	170	200 U	200 U	180 U	180 U	190 U	200 U	190 U
2,4-Dinitrotoluene	170	200 U	200 U	180 U	180 U	190 U	200 U	190 U
Diethylphthalate	170	200 U	200 U	180 U	180 U	190 U	200 U	190 U
Fluorene	170	200 U	200 U	180 U	180 U	190 U	200 U	190 U
4-Chlorophenyl-phenylether	170	200 U	200 U	180 U	180 U	190 U	200 U	190 U
4-Nitroaniline	330	400 U	390 U	340 U	350 U	370 U	400 U	360 U
4,6-Dinitro-2-methylphenol	330	400 U	390 U	340 U	350 U	370 U	400 U	360 U
N-Nitrosodiphenylamine	170	200 U	200 U	180 U	180 U	190 U	200 U	190 U
1,2,4,5-Tetrachlorobenzene	170	200 U	200 U	180 U	180 U	190 U	200 U	190 U
4-Bromophenyl-phenylether	170	200 U	200 U	180 U	180 U	190 U	200 U	190 U
Hexachlorobenzene	170	200 U	200 U	180 U	180 U	190 U	200 U	190 U
Atrazine	170	200 U	200 U	180 U	180 U	190 U	200 U	190 U
Pentachlorophenol	330	400 U	390 U	340 U	350 U	370 U	400 U	360 U
Phenanthrene	170	**48 J**	200 U	180 U	180 U	**300**	200 U	**400**
Anthracene	170	200 U	200 U	180 U	180 U	**66 J**	200 U	**90 J**
Carbazole	170	200 U	200 U	180 U	180 U	190 U	200 U	**42 J**
Di-n-butylphthalate	170	200 U	200 U	180 U	180 U	190 U	200 U	190 U
Fluoranthene	170	**71 J**	**54 J**	180 U	**40 J**	**480 J**	200 U	**430**
Pyrene	170	**94 J**	**68 J**	180 U	**48 J**	**650 J**	200 U	**600**
Butylbenzylphthalate	170	200 U	200 U	180 U	180 U	190 U	200 U	190 U
3,3'-Dichlorobenzidine	170	200 U	200 U	180 U	180 U	190 U	200 U	190 U
Benzo(a)anthracene	170	**42 J**	200 U	180 U	180 U	**220 J**	200 U	**200**
Chrysene	170	**52 J**	200 U	180 U	180 U	**240 J**	200 U	**240**
Bis(2-ethylhexyl)phthalate	170	**63 J**	200 U	180 U	180 U	190 U	200 U	290
Di-n-octylphthalate	170	200 U	200 U	180 U	180 U	190 U	200 U	190 U
Benzo(b)fluoranthene	170	200 U	200 U	180 U	180 U	**220**	200 U	**170 J**
Benzo(k)fluoranthene	170	200 U	200 U	180 U	180 U	**150 J**	200 U	**130 J**
Benzo(a)pyrene	170	200 U	200 U	180 U	180 U	**200**	200 U	**160 J**
Indeno(1,2,3-cd)pyrene	170	200 U	200 U	180 U	180 U	**100 J**	200 U	**74 J**
Dibenzo(a,h)anthracene	170	200 U	200 U	180 U	180 U	190 U	200 U	190 U
Benzo(g,h,i)perylene	170	200 U	200 U	180 U	180 U	**110 J**	200 U	**72 J**
2,3,4,6-Tetrachlorophenol	170	200 U	200 U	180 U	180 U	190 U	200 U	190 U
DILUTION FACTOR		1.0	1.0	1.0	1.0	1.0	1.0	1.0
DATE SAMPLED		5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011
DATE EXTRACTED		5/26/2011	5/26/2011	5/26/2011	5/26/2011	5/26/2011	5/26/2011	5/26/2011
DATE ANALYZED		6/6/2011	6/6/2011	6/6/2011	6/6/2011	6/6/2011	6/6/2011	6/6/2011
SAMPLE WEIGHT (GRAMS)		30.5	30.1	30.0	30.3	30.6	30.3	30.0
% SOLIDS		81.8	84.2	96.0	92.2	87.5	82.7	91.1

NOTES: µg/Kg = micrograms per Kilogram
All results are reported on a Dry Weight Basis.
CRQL = Contract Required Quantitation Limit
U = Value is Non-Detected.
UJ = Value is Non-Detected and Detection Limit is Estimated.
J = Value is Estimated.
R = Value is Rejected.
* = Reported value is from diluted analysis.

SITE: CREESE & COOK CO. (FORMER) 1
CASE: 41341
SDG: A3TS9
LABORATORY: MITKEM

DATA SUMMARY TABLE 1
SEMIVOLATILE ORGANIC ANALYSIS - SOIL
µg/Kg

SAMPLE NUMBER		A3X40	A3X41	A3X44	A3X46	A3X50	A3X56	MCP Method 1
SAMPLE LOCATION		D30288	D30289	D30292	D30294	D30298	D30304	S-1/GW-1
STATION LOCATION		SO-10	SO-11	SO-14	SO-16	SO-20	SO-26	Standard
SAMPLE DEPTH (FT)		4.0 - 5.0	4.5 - 5.5	1.5 - 2.0	2.0 - 3.0	0.0 - 2.0	0.0 - 2.0	
LABORATORY NUMBER		K0902-10A	K0902-11A	K0902-12A	K0902-13A	K0902-14A	K0902-17A	
COMPOUND	CRQL							
Benzaldehyde	170	190 UJ	180 UJ	180 UJ	180 UJ	180 UJ	180 UJ	NL
Phenol	170	190 U	180 U	180 U	180 U	180 U	180 U	1,000
Bis(2-chloroethyl)ether	170	190 U	180 U	180 U	180 U	180 U	180 U	700
2-Chlorophenol	170	190 U	180 U	180 U	180 U	180 U	180 U	700
2-Methylphenol	170	190 U	180 U	180 U	180 U	180 U	180 U	NL
2,2'-Oxybis(1-chloropropane)	170	190 U	180 U	180 U	180 U	180 U	180 U	NL
Acetophenone	170	190 U	180 U	180 U	180 U	180 U	180 U	NL
4-Methylphenol	170	190 U	180 U	180 U	180 U	180 U	180 U	NL
N-Nitroso-di-n-propylamine	170	190 U	180 U	180 U	180 U	180 U	180 U	NL
Hexachloroethane	170	190 U	180 U	180 U	180 U	180 U	180 U	700
Nitrobenzene	170	190 U	180 U	180 U	180 U	180 U	180 U	NL
Isophorone	170	190 U	180 U	180 U	180 U	180 U	180 U	NL
2-Nitrophenol	170	190 U	180 U	180 U	180 U	180 U	180 U	NL
2,4-Dimethylphenol	170	190 U	180 U	180 U	180 U	180 U	180 U	700
Bis(2-chloroethoxy)methane	170	190 U	180 U	180 U	180 U	180 U	180 U	NL
2,4-Dichlorophenol	170	190 U	180 U	180 U	180 U	180 U	180 U	700
Naphthalene	170	190 U	180 U	180 U	180 U	180 U	180 U	4,000
4-Chloroaniline	170	190 U	180 U	180 U	180 U	180 U	180 U	1,000
Hexachlorobutadiene	170	190 U	180 U	180 U	180 U	180 U	180 U	6,000
Caprolactam	170	190 U	180 U	180 U	180 U	180 U	180 U	NL
4-Chloro-3-methylphenol	170	190 U	180 U	180 U	180 U	180 U	180 U	NL
2-Methylnaphthalene	170	190 U	180 U	180 U	180 U	180 U	180 U	700
Hexachlorocyclopentadiene	170	190 U	180 U	180 U	180 U	180 U	180 U	NL
2,4,6-Trichlorophenol	170	190 U	180 U	180 U	180 U	180 U	180 U	700
2,4,5-Trichlorophenol	170	190 U	180 U	180 U	180 U	180 U	180 U	4,000
1,1'-Biphenyl	170	190 U	180 U	180 U	180 U	180 U	180 U	50
2-Chloronaphthalene	170	190 U	180 U	180 U	180 U	180 U	180 U	NL
2-Nitroaniline	330	380 U	350 U	350 U	350 U	350 U	350 U	NL
Dimethylphthalate	170	190 U	180 U	180 U	180 U	180 U	180 U	30,000
2,6-Dinitrotoluene	170	190 U	180 U	180 U	180 U	180 U	180 U	700[1]
Acenaphthylene	170	190 U	180 U	180 U	180 U	180 U	180 U	1,000
3-Nitroaniline	330	380 U	350 U	350 U	350 U	350 U	350 U	NL
Acenaphthene	170	190 U	180 U	180 U	180 U	180 U	180 U	4,000
2,4-Dinitrophenol	330	380 UJ	350 UJ	350 UJ	350 UJ	350 UJ	350 UJ	3,000
4-Nitrophenol	330	380 U	350 U	350 U	350 U	350 U	350 U	NL
Dibenzofuran	170	190 U	180 U	180 U	180 U	180 U	180 U	NL
2,4-Dinitrotoluene	170	190 U	180 U	180 U	180 U	180 U	180 U	700
Diethylphthalate	170	190 U	180 U	180 U	180 U	180 U	180 U	10,000
Fluorene	170	190 U	180 U	180 U	180 U	180 U	180 U	1,000,000
4-Chlorophenyl-phenylether	170	190 U	180 U	180 U	180 U	180 U	180 U	NL
4-Nitroaniline	330	380 U	350 U	350 U	350 U	350 U	350 U	NL
4,6-Dinitro-2-methylphenol	330	380 U	350 U	350 U	350 U	350 U	350 U	NL
N-Nitrosodiphenylamine	170	190 U	180 U	180 U	180 U	180 U	180 U	NL
1,2,4,5-Tetrachlorobenzene	170	190 U	180 U	180 U	180 U	180 U	180 U	NL
4-Bromophenyl-phenylether	170	190 U	180 U	180 U	180 U	180 U	180 U	NL
Hexachlorobenzene	170	190 U	180 U	180 U	180 U	180 U	180 U	700
Atrazine	170	190 U	180 U	180 U	180 U	180 U	180 U	NL
Pentachlorophenol	330	380 U	350 U	350 U	350 U	350 U	350 U	3,000
Phenanthrene	170	190 U	180 U	**43 J**	180 U	**40 J**	180 U	10,000
Anthracene	170	190 U	180 U	180 U	180 U	180 U	180 U	1,000,000
Carbazole	170	190 U	180 U	180 U	180 U	180 U	180 U	NL
Di-n-butylphthalate	170	190 U	180 U	180 U	180 U	180 U	180 U	NL
Fluoranthene	170	190 U	180 U	**59 J**	180 U	**66 J**	**42 J**	1,000,000
Pyrene	170	190 U	180 U	**59 J**	180 U	**72 J**	**48 J**	1,000,000
Butylbenzylphthalate	170	190 U	180 U	180 U	180 U	180 U	180 U	NL
3,3'-Dichlorobenzidine	170	190 U	180 U	180 U	180 U	180 U	180 U	1,000
Benzo(a)anthracene	170	190 U	180 U	180 U	180 U	180 U	180 U	7,000
Chrysene	170	190 U	180 U	180 U	180 U	180 U	180 U	70,000
Bis(2-ethylhexyl)phthalate	170	190 U	180 U	180 U	180 U	180 U	180 U	200,000
Di-n-octylphthalate	170	190 U	180 U	180 U	180 U	180 U	180 U	NL
Benzo(b)fluoranthene	170	190 U	180 U	180 U	180 U	180 U	180 U	7,000
Benzo(k)fluoranthene	170	190 U	180 U	180 U	180 U	180 U	180 U	70,000
Benzo(a)pyrene	170	190 U	180 U	180 U	180 U	180 U	180 U	2,000
Indeno(1,2,3-cd)pyrene	170	190 U	180 U	180 U	180 U	180 U	180 U	7,000
Dibenzo(a,h)anthracene	170	190 U	180 U	180 U	180 U	180 U	180 U	700
Benzo(g,h,i)perylene	170	190 U	180 U	180 U	180 U	180 U	180 U	1,000,000
2,3,4,6-Tetrachlorophenol	170	190 U	180 U	180 U	180 U	180 U	180 U	700[2]
DILUTION FACTOR		1.0	1.0	1.0	1.0	1.0	1.0	
DATE SAMPLED		5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011	
DATE EXTRACTED		5/26/2011	5/26/2011	5/26/2011	5/26/2011	5/26/2011	5/26/2011	
DATE ANALYZED		6/6/2011	6/6/2011	6/6/2011	6/6/2011	6/6/2011	6/6/2011	
SAMPLE WEIGHT (GRAMS)		30.0	30.0	30.5	30.0	30.4	30.3	
% SOLIDS		87.7	93.7	93.6	93.4	92.1	93.5	

NOTES: µg/Kg = micrograms per Kilogram
All results are reported on a Dry Weight Basis.
CRQL = Contract Required Quantitation Limit
U = Value is Non-Detected.
UJ = Value is Non-Detected and Detection Limit is Estimated.
J = Value is Estimated.
R = Value is Rejected.
* = Reported value is from diluted analysis.

SITE: CREESE & COOK CO. (FORMER) 1
CASE: 41341
SDGs: A3TS9; A3X22
LABORATORY: MITKEM

DATA SUMMARY TABLE 2
POLYCHLORINATED BIPHENYLS (PCB) - SOIL ANALYSIS
µg/Kg

	SAMPLE NUMBER	A3X31	A3X32	A3X33	A3X34	A3X35	A3TS9	A3X36	A3X37
	SAMPLE LOCATION	D30279	D30280	D30281	D30282	D30283	D30266	D30284	D30285
	STATION LOCATION	SO-01	SO-02	SO-03	SO-04	SO-05	SO-05B	SO-06	SO-07
	SAMPLE DEPTH (FT)	0.5 - 2.0	1.5 - 2.5	1.0 - 1.8	0.5 - 2.0	7.0 - 9.0	15.0 - 16.0	1.0 - 2.0	0.0 - 1.5
	LABORATORY NUMBER	K0903-02A	K0903-03A	K0902-04A	K0902-05A	K0903-04A	K0902-01A	K0902-06A	K0902-07A
COMPOUND	CRQL								
Aroclor-1016	33	36 U	37 U	40 U	39 U	39 U	34 U	35 U	37 U
Aroclor-1221	33	36 U	37 U	40 U	39 U	39 U	34 U	35 U	37 U
Aroclor-1232	33	36 U	37 U	40 U	39 U	39 U	34 U	35 U	37 U
Aroclor-1242	33	36 U	37 U	40 U	39 U	39 U	34 U	35 U	37 U
Aroclor-1248	33	36 U	37 U	40 U	39 U	39 U	34 U	35 U	37 U
Aroclor-1254	33	36 U	37 U	40 U	39 U	39 U	**92**	35 U	37 U
Aroclor-1260	33	36 U	37 U	40 U	39 U	39 U	34 U	35 U	37 U
Aroclor-1262	33	36 U	37 U	40 U	39 U	39 U	34 U	35 U	37 U
Aroclor-1268	33	36 U	37 U	40 U	39 U	39 U	34 U	35 U	37 U
	DILUTION FACTOR	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	DATE SAMPLED	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011
	DATE EXTRACTED	5/27/2011	5/27/2011	5/26/2011	5/26/2011	5/27/2011	5/26/2011	5/26/2011	5/26/2011
	DATE ANALYZED	6/2/2011	6/2/2011	6/7/2011	6/7/2011	6/2/2011	6/7/2011	6/7/2011	6/7/2011
	SAMPLE WEIGHT (GRAMS)	30.5	30.1	30	30.2	30.2	30	30.4	30.2
	% SOLID	90.9	88.9	81.8	84.2	83.3	30.2	92.2	87.4

NOTES: µg/Kg = micrograms per Kilogram
All results are reported on a Dry Weight Basis.
CRQL = Contract Required Quantitation Limit
RL = Reporting Limit
U = Value is Non-Detected.
UJ = Value is Non-Detected, and Detection Limit is Estimated.
J = Value is Estimated.
R = Value is Rejected.
* = Reported value is from diluted analysis.

SITE: CREESE & COOK CO. (FORMER) 1
CASE: 41341
SDGs: A3TS9; A3X22
LABORATORY: MITKEM

DATA SUMMARY TABLE 2
POLYCHLORINATED BIPHENYLS (PCB) - SOIL ANALYSIS
µg/Kg

	SAMPLE NUMBER	A3X38	A3X39	A3X40	A3X41	A3X42	A3X43	A3X44	A3X45
	SAMPLE LOCATION	D30286	D30287	D30288	D30289	D30290	D30291	D30292	D30293
	STATION LOCATION	SO-08	SO-09	SO-10	SO-11	SO-12	SO-13	SO-14	SO-15
	SAMPLE DEPTH (FT)	5.5 - 6.5	3.5 - 4.0	4.0 - 5.0	4.5 - 5.5	0.5 - 1.2	0.8 - 1.5	1.5 - 2.0	1.5 - 2.5
	LABORATORY NUMBER	K0902-08A	K0902-09A	K0902-10A	K0902-11A	K0903-05A	K0903-06A	K0902-12A	K0903-07A
COMPOUND	CRQL								
Aroclor-1016	33	40 U	36 U	37 U	35 U	35 U	35 U	35 U	34 U
Aroclor-1221	33	40 U	36 U	37 U	35 U	35 U	35 U	35 U	34 U
Aroclor-1232	33	40 U	36 U	37 U	35 U	35 U	35 U	35 U	34 U
Aroclor-1242	33	40 U	36 U	37 U	35 U	35 U	35 U	35 U	34 U
Aroclor-1248	33	40 U	36 U	37 U	35 U	35 U	35 U	35 U	34 U
Aroclor-1254	33	40 U	36 U	37 U	35 U	35 U	35 U	35 U	34 U
Aroclor-1260	33	40 U	36 U	37 U	35 U	35 U	35 U	35 U	34 U
Aroclor-1262	33	40 U	36 U	37 U	35 U	35 U	35 U	35 U	34 U
Aroclor-1268	33	40 U	36 U	37 U	35 U	35 U	35 U	35 U	34 U
	DILUTION FACTOR	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	DATE SAMPLED	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011
	DATE EXTRACTED	5/26/2011	5/26/2011	5/26/2011	5/26/2011	5/27/2011	5/27/2011	5/26/2011	5/27/2011
	DATE ANALYZED	6/7/2011	6/7/2011	6/7/2011	6/7/2011	6/2/2011	6/2/2011	6/7/2011	6/2/2011
	SAMPLE WEIGHT (GRAMS)	30.1	30	30.3	30.2	30.1	30.1	30.3	30.3
	% SOLID	82.6	91.0	87.6	93.7	94.0	93.4	91.6	95.6

NOTES: µg/Kg = micrograms per Kilogram
All results are reported on a Dry Weight Basis.
CRQL = Contract Required Quantitation Limit
RL = Reporting Limit
U = Value is Non-Detected.
UJ = Value is Non-Detected, and Detection Limit is Estimated.
J = Value is Estimated.
R = Value is Rejected.
* = Reported value is from diluted analysis.

SITE: CREESE & COOK CO. (FORMER) 1
CASE: 41341
SDGs: A3TS9; A3X22
LABORATORY: MITKEM

DATA SUMMARY TABLE 2
POLYCHLORINATED BIPHENYLS (PCB) - SOIL ANALYSIS
µg/Kg

	SAMPLE NUMBER	A3X46	A3X47	A3X48	A3X49	A3X50	A3X55	A3X56	MCP Method 1
	SAMPLE LOCATION	D30294	D30295	D30296	D30297	D30298	D30303	D30304	S-1/GW-1
	STATION LOCATION	SO-16	SO-17	SO-18	SO-19	SO-20	SO-25	SO-26	Standard
	SAMPLE DEPTH (FT)	2.0 - 3.0	2.0 - 2.5	1.0 - 2.0	2.5 - 3.0	0.0 - 2.0	7.0 - 9.0	0.0 - 2.0	(mg/Kg)
	LABORATORY NUMBER	K0902-13A	K0903-08A	K0903-09A	K0903-10A	K0902-14A	K0903-11A	K0902-17A	
COMPOUND	CRQL								
Aroclor-1016	33	35 U	34 U	36 U	36 U	35 U	39 U	35 U	2,000
Aroclor-1221	33	35 U	34 U	36 U	36 U	35 U	39 U	35 U	2,000
Aroclor-1232	33	35 U	34 U	36 U	36 U	35 U	39 U	35 U	2,000
Aroclor-1242	33	35 U	34 U	36 U	36 U	35 U	39 U	35 U	2,000
Aroclor-1248	33	35 U	34 U	36 U	36 U	35 U	39 U	35 U	2,000
Aroclor-1254	33	35 U	34 U	36 U	36 U	35 U	39 U	35 U	2,000
Aroclor-1260	33	35 U	34 U	36 U	36 U	35 U	39 U	35 U	2,000
Aroclor-1262	33	35 U	34 U	36 U	36 U	35 U	39 U	35 U	2,000
Aroclor-1268	33	35 U	34 U	36 U	36 U	35 U	39 U	35 U	2,000
	DILUTION FACTOR	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
	DATE SAMPLED	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011	
	DATE EXTRACTED	5/26/2011	5/27/2011	5/27/2011	5/27/2011	5/26/2011	5/27/2011	6/8/2011	
	DATE ANALYZED	6/7/2011	6/2/2011	6/2/2011	6/2/2011	6/7/2011	6/2/2011	6/8/2011	
	SAMPLE WEIGHT (GRAMS)	30.0	30.5	30.2	30.3	30.5	30.2	30.4	
	% SOLID	93.4	94.7	90.2	91.6	92.1	84.4	93.5	

NOTES: µg/Kg = micrograms per Kilogram
All results are reported on a Dry Weight Basis.
CRQL = Contract Required Quantitation Limit
RL = Reporting Limit
U = Value is Non-Detected.
UJ = Value is Non-Detected, and Detection Limit is Estimated.
J = Value is Estimated.
R = Value is Rejected.
* = Reported value is from diluted analysis.

SITE: CREESE & COOK CO. (FORMER) 1
CASE: 41343
SDGs: A3TS9; A3X25
LABORATORY: AGAT Laboratories Ltd.

DATA SUMMARY TABLE 3
DIOXIN ORGANIC ANALYSIS - SOIL
pg/g

SAMPLE NUMBER		A3X31	A3X32	A3X33	A3X34	A3X35	A3TS9
SAMPLE LOCATION		D30279	D30280	D30281	D30282	D30283	D30266
STATION LOCATION		SO-01	SO-02	SO-03	SO-04	SO-05	SO-05B
SAMPLE DEPTH		0.5 - 2	1.5 - 2.5	1.0 - 1.8	0.5 - 2.0	7.0 - 9.0	15.0 - 16.0
LABORATORY NUMBER		K0903-02A	K0903-03A	K0902-04A	K0902-05A	K0903-04A	K0902-01A
COMPOUND	CRQL						
2,3,7,8-TCDD		0.09 UJ	3.24 J	20 J	10.2 J	2.89 EMPC	0.824 J
1,2,3,7,8-PeCDD		0.636 UJ	4.6 J	24.1 J	9.95 J	3.66 J	0.679 J
1,2,3,4,7,8-HxCDD		0.219 EMPC	19.7 J	111 J	45.7 J	10.2 J	2.96 J
1,2,3,6,7,8-HxCDD		0.903 J	274 J	1,570 J EB	890 J EB	141 J	49.7 J EB
1,2,3,7,8,9-HxCDD		0.645 J	71.2 J	380 J	203 J	51.6 J	12.1 J
1,2,3,4,6,7,8-HpCDD		31.6 J	9,000 J*	51,000 J EB*	27,100 J EB*	4,350 J*	1,730 J EB*
1,2,3,4,6,7,8,9-OCDD		484 J	102,000 J*	540,000 J EB*	289,000 J EB*	54,900 J*	22,000 J EB*
2,3,7,8-TCDF		0.0591 UJ	0.914 EMPC	1.91 J EB	1.16 J EB	3 J	0.0561 UJ
1,2,3,7,8-PeCDF		0.0627 UJ	1.4 EMPC	2.84 J	1.78 J	1.15 EMPC	0.223 UJ
2,3,4,7,8-PeCDF		0.0516 UJ	1.47 J	4.66 J	2.52 J	1.73 J	0.307 UJ
1,2,3,4,7,8-HxCDF		0.104 EB EMPC	22.1 J EB	75.6 J	45.3 J	9.49 J EB	2.36 J
1,2,3,6,7,8-HxCDF		0.0845 EB EMPC	11.3 J EB	31.2 J	17.3 J	3.52 J EB	1.02 J
1,2,3,7,8,9-HxCDF		0.0565 UJ	0.311 EMPC	1.03 EMPC	0.494 EMPC	0.218 UJ	0.105 UJ
2,3,4,6,7,8-HxCDF		0.212 J	25.5 J	199 J	93.9 J	11.5 J	4.05 J
1,2,3,4,6,7,8-HpCDF		3.05 J	961 J	2,810 J EB*	2,130 J EB	287 J	103 J EB
1,2,3,4,7,8,9-HpCDF		0.124 EMPC	30.5 J	89.3 J	62.9 J	7.41 J	2 J
1,2,3,4,6,7,8,9-OCDF		4.38 J	1,230 J	1,800 J*	3,030 J	324 J	72.6
TEF (Total)		0.711 J	**182 J**	**984 J**	**531 J**	**93.1 J**	**33.7 J**
DILUTION FACTOR		1.0	1.0/6.0*	1.0/25.0*	1.0/15.0*	1.0/3.0*	1.0/2.0*
DATE SAMPLED		5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011
DATE EXTRACTED		6/27/2011	6/27/2011	6/11/2011	6/11/2011	6/27/2011	6/11/2011
DATE ANALYZED		6/26/2011	6/26/2011	6/22/2011	6/22/2011	6/26/2011	6/22/2011
SAMPLE WEIGHT (GRAMS)		10.3	10.9	8.6	9.2	9.5	10.7
% SOLIDS		91.2	89.1	82.2	84.8	84.7	96.3

NOTES: pg/g = picrograms per gram
All results are reported on a Dry Weight Basis.
CRQL = Contract Required Quantitation Limit
U = Value is Non-Detected.
UJ = Value is Non-Detected and Detection Limit is Estimated.
J = Value is Estimated.
R = Value is Rejected.
* = Reported value is from diluted analysis.
TEF = Toxicity Equivalent Factor (World Health Organization, 2005).

SITE: CREESE & COOK CO. (FORMER) 1
CASE: 41343
SDGs: A3TS9; A3X25
LABORATORY: AGAT Laboratories Ltd.

DATA SUMMARY TABLE 3
DIOXIN ORGANIC ANALYSIS - SOIL
pg/g

	SAMPLE NUMBER	A3X36	A3X37	A3X38	A3X39	A3X40	A3X41
	SAMPLE LOCATION	D30284	D30285	D30286	D30287	D30288	D30289
	STATION LOCATION	SO-06	SO-07	SO-08	SO-09	SO-10	SO-11
	SAMPLE DEPTH	1.0 - 2.0	0.0 - 1.5	5.5 - 6.5	3.5 - 4.0	4.0 - 5.0	4.5 - 5.5
	LABORATORY NUMBER	K0902-06A	K0902-07A	K0902-08A	K0902-09A	K0902-10A	K0902-11A
COMPOUND	CRQL						
2,3,7,8-TCDD		0.279 EMPC	0.277 EMPC	1.3 J	13.2 J	0.164 UJ	0.0689 UJ
1,2,3,7,8-PeCDD		0.533 J	1.02 J EB	3.3 J	12.1 J	1.35 EMPC	0.0713 UJ
1,2,3,4,7,8-HxCDD		1.06 J	1.89 J	6.57 J	36.6 J	2.34 J	0.231 EMPC
1,2,3,6,7,8-HxCDD		6.72 J EB	20.7 J EB	57.7 J EB	369 J EB	8.9 J EB	2.7 J EB
1,2,3,7,8,9-HxCDD		3.25 J	6.46 J	29.2 J	132 J	6.31 J	0.94 J
1,2,3,4,6,7,8-HpCDD		337 J EB	750 J EB	1,790 J EB*	11,400 J EB*	325 J EB	140 J EB
1,2,3,4,6,7,8,9-OCDD		5,090 J EB	9,160 J EB	23,800 J EB*	127,000 J EB*	6,740 J EB	1,990 J EB
2,3,7,8-TCDF		0.268 EB EMPC	0.564 J EB	0.415 J EB	0.037 UJ	0.088 UJ	0.045 UJ
1,2,3,7,8-PeCDF		0.105 UJ EMPC	0.223 UJ EMPC	0.262 UJ	1.15 EMPC	0.148 UJ	0.0424 UJ
2,3,4,7,8-PeCDF		0.256 UJ EMPC	0.409 UJ	0.49 J	2.45 J	0.129 UJ	0.0372 UJ
1,2,3,4,7,8-HxCDF		0.853 EMPC	3.01 J	4.3 J	38.7 J	1.93 J	0.176 UJ
1,2,3,6,7,8-HxCDF		0.542 EMPC	1.31 J	2.05 EMPC	13.4 J	1.7 EMPC	0.168 UJ
1,2,3,7,8,9-HxCDF		0.0956 UJ	0.0999 UJ	0.177 UJ	0.484 EMPC	0.194 UJ	0.0741 UJ
2,3,4,6,7,8-HxCDF		0.92 EMPC	3.49 J	7.27 J	71.9 J	2.11 J	0.294 EMPC
1,2,3,4,6,7,8-HpCDF		26.9 J EB	205 J EB	323 J EB	1,880 J EB*	78.1 J EB	5.5 J EB
1,2,3,4,7,8,9-HpCDF		1.34 J	8.03 J	11.1 J	83.2 J	3.39 J	0.161 EMPC
1,2,3,4,6,7,8,9-OCDF		77.5 J	578 J	937 J	3,160 J*	191 J	4.65 J
	TEF (Total)	7.38 J	17.6 J	**44.2 J**	**265 J**	9.82 J	2.47 J
	DILUTION FACTOR	1.0	1.0	1.0/2.0*	1.0/7.0*	1.0	1.0
	DATE SAMPLED	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011
	DATE EXTRACTED	6/11/2011	6/11/2011	6/11/2011	6/11/2011	6/11/2011	6/11/2011
	DATE ANALYZED	6/23/2011	6/23/2011	6/23/2011	6/23/2011	6/23/2011	6/23/2011
	SAMPLE WEIGHT (GRAMS)	10.2	9.8	10.9	9.9	9.9	10.6
	% SOLIDS	92.1	88.2	84.7	87.7	88.5	93.9

NOTES: pg/g = picrograms per gram
All results are reported on a Dry Weight Basis.
CRQL = Contract Required Quantitation Limit
U = Value is Non-Detected.
UJ = Value is Non-Detected and Detection Limit is Estimated.
J = Value is Estimated.
R = Value is Rejected.
* = Reported value is from diluted analysis.
TEF = Toxicity Equivalent Factor (World Health Organization, 2005).

SITE: CREESE & COOK CO. (FORMER) 1
CASE: 41343
SDGs: A3TS9; A3X25
LABORATORY: AGAT Laboratories Ltd.

DATA SUMMARY TABLE 3
DIOXIN ORGANIC ANALYSIS - SOIL
pg/g

	SAMPLE NUMBER	A3X42	A3X43	A3X44	A3X45	A3X46	A3X47
	SAMPLE LOCATION	D30290	D30291	D30292	D30293	D30294	D30295
	STATION LOCATION	SO-12	SO-13	SO-14	SO-15	SO-16	SO-17
	SAMPLE DEPTH	0.5 - 1.2	0.8 - 1.5	1.5 - 2.0	1.5 - 2.5	2.0 - 3.0	2.0 - 2.5
	LABORATORY NUMBER	K0903-05A	K0903-06A	K0902-12A	K0903-07A	K0902-13A	K0903-08A
COMPOUND	CRQL						
2,3,7,8-TCDD		0.0483 UJ	0.246 J	0.31 J	0.0446 UJ	0.12 J	0.189 EMPC
1,2,3,7,8-PeCDD		0.0327 UJ	0.559 J	0.483 EMPC	0.237 EMPC	1.27 J	1.19 J
1,2,3,4,7,8-HxCDD		0.302 EMPC	1.59 EMPC	1.93 J	0.588 J	1 J	1.22 J
1,2,3,6,7,8-HxCDD		1.09 J	8.94 J	21 J EB	3.14 J	19.5 J EB	19.9 J
1,2,3,7,8,9-HxCDD		0.403 J	4.68 J	5.94 J	1.64 J	5.22 J	5.41 J
1,2,3,4,6,7,8-HpCDD		39.6 J	404 J	1,120 J EB	149 J	588 J EB	517 J
1,2,3,4,6,7,8,9-OCDD		918 J	5,420 J	14,400 J EB	2,290 J	7,660 J EB	6,310 J
2,3,7,8-TCDF		0.157 J	0.162 EMPC	0.17 EB EMPC	0.0659 EMPC	0.0966 EB EMPC	0.139 EMPC
1,2,3,7,8-PeCDF		0.106 EMPC	0.0616 UJ	0.117 UJ	0.0591 J	0.0331 UJ	0.0507 UJ
2,3,4,7,8-PeCDF		0.17 EMPC	0.188 J	0.17 UJ	0.0822 J	0.0895 UJ EMPC	0.125 J
1,2,3,4,7,8-HxCDF		0.282 J EB	0.932 J EB	1.76 J	0.344 J EB	0.666 J	0.73 J EB
1,2,3,6,7,8-HxCDF		0.157 J EB	0.506 J EB	0.657 J	0.165 J EB	0.285 UJ	0.305 EB EMPC
1,2,3,7,8,9-HxCDF		0.0402 EMPC	0.0541 UJ	0.0476 EMPC	0.0352 UJ	0.082 UJ	0.0628 UJ
2,3,4,6,7,8-HxCDF		0.231 EMPC	1.41 J	3 J	0.572 EMPC	0.895 J	0.966 J
1,2,3,4,6,7,8-HpCDF		3.34 J	25.1 J	75.1 J EB	8.07 J	32.5 J EB	36.5 J
1,2,3,4,7,8,9-HpCDF		0.293 J	1.16 J	2.36 J	0.384 EMPC	1.28 J	1.84 J
1,2,3,4,6,7,8,9-OCDF		5.77 J	34.8 J	77 J	9.89 J	48.6 J	58.8 J
	TEF (Total)	1.03 J	8.62 J	**20.6 J**	3.18 J	12.7 J	11.7 J
	DILUTION FACTOR	1.0	1.0	1.0	1.0	1.0	1.0
	DATE SAMPLED	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011
	DATE EXTRACTED	6/27/2011	6/27/2011	6/11/2011	6/27/2011	6/11/2011	6/27/2011
	DATE ANALYZED	6/28/2011	6/28/2011	6/24/2011	6/28/2011	6/24/2011	6/29/2011
	SAMPLE WEIGHT (GRAMS)	10.5	10.3	10.6	10.6	10.2	10.3
	% SOLIDS	92.8	92.4	92.7	94.6	94.2	92.2

NOTES: pg/g = picrograms per gram
All results are reported on a Dry Weight Basis.
CRQL = Contract Required Quantitation Limit
U = Value is Non-Detected.
UJ = Value is Non-Detected and Detection Limit is Estimated.
J = Value is Estimated.
R = Value is Rejected.
* = Reported value is from diluted analysis.
TEF = Toxicity Equivalent Factor (World Health Organization, 2005).

SITE: CREESE & COOK CO. (FORMER) 1
CASE: 41343
SDGs: A3TS9; A3X25
LABORATORY: AGAT Laboratories Ltd.

DATA SUMMARY TABLE 3
DIOXIN ORGANIC ANALYSIS - SOIL
pg/g

SAMPLE NUMBER		A3X48	A3X49	A3X50	A3X55	A3X56	A3XC3
SAMPLE LOCATION		D30296	D30297	D30298	D30303	D30304	C&C1-151
STATION LOCATION		SO-18	SO-19	SO-20	SO-25	SO-26	SO-50
SAMPLE DEPTH		1.0 - 2.0	2.5 - 3.0	0.0 - 2.0	7.0 - 9.0	0.0 - 2.0	0.0 - 1.0
LABORATORY NUMBER		K0903-09A	K0903-10A	K0902-14A	K0903-11A	K0902-17A	
COMPOUND	CRQL						
2,3,7,8-TCDD		0.894 J	0.0646 UJ	0.146 EMPC	2.16 J	0.109 J	0.654 J
1,2,3,7,8-PeCDD		16.6 J	0.369 EMPC	1.39 J	2.71 J	1.29 J	3.51 J
1,2,3,4,7,8-HxCDD		7.28 J	0.433 EMPC	1.53 J	11.2 J	1.36 J	4.1 J
1,2,3,6,7,8-HxCDD		124 J	5.94 J	24.8 J EB	134 J	22.1 J EB	22.4
1,2,3,7,8,9-HxCDD		49.8 J	1.97 J	7.13 J	38.2 J	6.13 J	1.87 J
1,2,3,4,6,7,8-HpCDD		1,190 J	270 J	858 J EB	4,560 J*	762 J EB	797
1,2,3,4,6,7,8,9-OCDD		8,010 J	3,360 J	10,100 J EB	56,800 J*	8,860 J EB	12000 J3
2,3,7,8-TCDF		0.397 EMPC	0.0481 UJ	0.361 EB EMPC	1.59 J	0.251 EB EMPC	1.27
1,2,3,7,8-PeCDF		0.157 J	0.0605 UJ	0.098 UJ	0.639 J	0.109 UJ	1.02 J
2,3,4,7,8-PeCDF		0.221 J	0.11 J	0.196 UJ	1.01 J	0.159 UJ	2.68 J
1,2,3,4,7,8-HxCDF		0.871 J EB	0.395 J EB	1.23 J	6.99 J EB	1.02 J	3.98 J
1,2,3,6,7,8-HxCDF		0.459 J EB	0.204 EB EMPC	0.585 EMPC	2.74 J EB	0.52 J	4.14 J
1,2,3,7,8,9-HxCDF		0.0529 UJ	0.0552 UJ	0.148 UJ	0.133 UJ	0.0396 UJ	1.08 J4
2,3,4,6,7,8-HxCDF		0.797 EMPC	0.296 EMPC	1.03 EMPC	9.29 J	0.964 J	4.34 J
1,2,3,4,6,7,8-HpCDF		31 J	16 J	57.2 J EB	255 J	51.2 J EB	115
1,2,3,4,7,8,9-HpCDF		1.43 J	0.913 J	2.89 J	5.97 J	2.48 J	7.1
1,2,3,4,6,7,8,9-OCDF		66 J	34.8 J	116 J	215 J	106 J	386
TEF (Total)		**50.6 J**	5.21 J	17.4 J	**90.9 J**	15.5 J	**22.2 J**
DILUTION FACTOR		1.0	1.0	1.0	1.0/3.0*	1.0	1.0
DATE SAMPLED		5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011	12/5/2011
DATE EXTRACTED		6/27/2011	6/27/2011	6/11/2011	6/27/2011	6/11/2011	12/29/2011
DATE ANALYZED		6/29/2011	6/29/2011	6/24/2011	6/29/2011	6/25/2011	1/9/2012
SAMPLE WEIGHT (GRAMS)		10.1	9.9	10.3	9.5	10.2	12.5
% SOLIDS		88.8	90.6	92.8	84.5	92.4	82.9

NOTES: pg/g = picrograms per gram
All results are reported on a Dry Weight Basis.
CRQL = Contract Required Quantitation Limit
U = Value is Non-Detected.
UJ = Value is Non-Detected and Detection Limit is Estimated.
J = Value is Estimated.
R = Value is Rejected.
* = Reported value is from diluted analysis.
TEF = Toxicity Equivalent Factor (World Health Organization, 2005).

SITE: CREESE & COOK CO. (FORMER) 1
CASE: 41343
SDGs: A3TS9; A3X25
LABORATORY: AGAT Laboratories Ltd.

DATA SUMMARY TABLE 3
DIOXIN ORGANIC ANALYSIS - SOIL
pg/g

SAMPLE NUMBER		A3XC4	A3XC6	A3XC9	A3XD0	A3XD1	A3XD2
SAMPLE LOCATION		C&C1-152	C&C1-154	C&C1-157	C&C1-158	C&C1-159	C&C1-160
STATION LOCATION		SO-51	SO-53	SO-56	SO-57	SO-58	SO-59
SAMPLE DEPTH		0.0 - 1.5	0.75 - 2.0	0.0 - 0.25	0.0 - 0.25	0.0 - 1.0	0.0 - 0.25
LABORATORY NUMBER							
COMPOUND	CRQL						
2,3,7,8-TCDD		0.255 J	0.0847 U	8.74	83.6	76	8.32
1,2,3,7,8-PeCDD		0.623 U1	0.204 U1	74.8	42.4 J	155 J2	47.5
1,2,3,4,7,8-HxCDD		2.64 J	0.317 U1	159	253	2340	100
1,2,3,6,7,8-HxCDD		16.4	0.371 U1	1170	3280	16000	1380
1,2,3,7,8,9-HxCDD		6.05	0.425 U1	288	396	1890	192
1,2,3,4,6,7,8-HpCDD		605	21.2	30400 *	122000 *	607000 *	29400 *
1,2,3,4,6,7,8,9-OCDD		8200 J3	1440	261000 J3 *	1020000 J3 *	3160000 J2, 3 *	230000 J3 *
2,3,7,8-TCDF		0.343 U1	0.259 U1	4.41	12.1 U1	16.2 U1	6.66
1,2,3,7,8-PeCDF		0.237 U1	0.183 U1	9.77	19.4 J	34 J	10.5
2,3,4,7,8-PeCDF		0.81 U1	0.35 U1	20.1	35.3 J	70.7 J	29.5
1,2,3,4,7,8-HxCDF		1.26 J	0.265 U1	121	288	1710	227
1,2,3,6,7,8-HxCDF		1 J	0.209 U1	119	214	787	53.1
1,2,3,7,8,9-HxCDF		0.202 U1	0.098 U	16.2 J4	70.1 J	255	15.5 J4
2,3,4,6,7,8-HxCDF		2.59 J	0.338 U1	181	386	1,190	149
1,2,3,4,6,7,8-HpCDF		40.1	1.77 J	5180 *	29500	113000 *	4480 *
1,2,3,4,7,8,9-HpCDF		1.65 J	0.140 U1	342 *	1,770	9,480 *	272 *
1,2,3,4,6,7,8,9-OCDF		76.7	2.83 J	18,800 *	194000 *	359000 *	8970 *
TEF (Total)		12.2 J	0.663 J	**739 J**	**2520 J**	**11000 J**	**691 J**
DILUTION FACTOR		1.0	1.0	1.0/ 50.0	1.0/5.0	1.0/20.0	1.0/50.0
DATE SAMPLED		12/5/2011	12/5/2011	12/5/2011	12/5/2011	12/5/2011	12/5/2011
DATE EXTRACTED		12/29/2011	12/29/2011	12/29/2011	1/11/2012	1/11/2012	12/29/2011
DATE ANALYZED		1/9/2012	1/9/2012	1/9/2012	1/12/2012	1/12/2012	1/9/2012
SAMPLE WEIGHT (GRAMS)		11.12	11.52	14.4	1.06	1.05	15.56
% SOLIDS		90.1	90.3	67.4	46.3	35.9	65.1

NOTES: pg/g = picrograms per gram
All results are reported on a Dry Weight Basis.
CRQL = Contract Required Quantitation Limit
U = Value is Non-Detected.
UJ = Value is Non-Detected and Detection Limit is Estimated.
J = Value is Estimated.
R = Value is Rejected.
* = Reported value is from diluted analysis.
TEF = Toxicity Equivalent Factor (World Health Organization, 2005).

SITE: CREESE & COOK CO. (FORMER) 1
CASE: 41343
SDGs: A3TS9; A3X25
LABORATORY: AGAT Laboratories Ltd.

DATA SUMMARY TABLE 3
DIOXIN ORGANIC ANALYSIS - SOIL
pg/g

SAMPLE NUMBER		A3XD3	A3XD6	A3XD7	A3XD9	MCP Method 1 S-1/GW-1 Standard (pg/g)
SAMPLE LOCATION		C&C1-161	C&C1-164	C&C1-165	C&C1-167	
STATION LOCATION		SO-60	SO-63	SO-64	SO-70	
SAMPLE DEPTH		0.0 - 0.25	0.0 - 1.0	2.5 - 3.3	0.0 - 1.0	
LABORATORY NUMBER						
COMPOUND	CRQL					
2,3,7,8-TCDD		22	11.1	0.242 U	76.6	NL
1,2,3,7,8-PeCDD		49.8 J	9.08	0.881 U	263 J2	NL
1,2,3,4,7,8-HxCDD		690	47.4	0.734 U	3130	NL
1,2,3,6,7,8-HxCDD		4850	167	0.752 U	20200	NL
1,2,3,7,8,9-HxCDD		889	34.8	0.772 U	2650	NL
1,2,3,4,6,7,8-HpCDD		191000 *	3260 *	9.66	769000 *	NL
1,2,3,4,6,7,8,9-OCDD		1290000 J3 *	27900 J3 *	592	6380000 J2, 3 *	NL
2,3,7,8-TCDF		6.75 U1	3.59	0.169 U1	14.8 U1	NL
1,2,3,7,8-PeCDF		11.5 J	4.86 J	0.226 U	35.7 J	NL
2,3,4,7,8-PeCDF		27.5 J	86.8 J4	0.252 U	95.6 J	NL
1,2,3,4,7,8-HxCDF		537	26.4	0.304 U	2230	NL
1,2,3,6,7,8-HxCDF		352	33.5	0.312 U	960	NL
1,2,3,7,8,9-HxCDF		76.9	6.51 J4	0.47 U	282	NL
2,3,4,6,7,8-HxCDF		426	53.8	0.345 U	1,360.0	NL
1,2,3,4,6,7,8-HpCDF		34200 *	829	1.15 J	136000 *	NL
1,2,3,4,7,8,9-HpCDF		2,630 *	50	0.597 U	12,200 *	NL
1,2,3,4,6,7,8,9-OCDF		91900 *	2360	3.05 J	457000 *	NL
TEF (Total)		**3560 J**	**134 J**	0.287 J	**14700 J**	20
DILUTION FACTOR		1.0/20.0	1.0/5.0	1.0	1.0/50.0	
DATE SAMPLED		12/5/2011	12/5/2011	12/5/2011	12/5/2011	
DATE EXTRACTED		1/11/2012	1/11/2012	12/29/2011	1/11/2012	
DATE ANALYZED		1/12/2012	1/12/2012	1/10/2012	1/12/2012	
SAMPLE WEIGHT (GRAMS)		1.15	1.81	10.78	1.12	
% SOLIDS		71.9	66.2	92.0	36.7	

NOTES: pg/g = picrograms per gram
All results are reported on a Dry Weight Basis.
CRQL = Contract Required Quantitation Limit
U = Value is Non-Detected.
UJ = Value is Non-Detected and Detection Limit is Estimated.
J = Value is Estimated.
R = Value is Rejected.
* = Reported value is from diluted analysis.
TEF = Toxicity Equivalent Factor (World Health Organization, 2005).

ATTACHMENT A
SOIL/SOURCE ANALYTICAL DATA

DATA SUMMARY TABLE 4
METALS ANALYSIS - SOIL
mg/Kg

SITE: CREESE & COOK CO. (FORMER) 1
CASE: 41341
SDGs: MA3TS9, MA3X28
LABORATORY: MITKEM LABORATORIES

		SAMPLE NUMBER	MA3X31	MA3X32	MA3X33	MA3X34	MA3X35	MA3TS9	MA3X36	MA3X37
		SAMPLE LOCATION	SO-01	SO-02	SO-03	SO-04	SO-05	SO-05B	SO-06	SO-07
		STATION LOCATION	D30279	D30280	D30281	D30282	D30283	D30266	D30284	D30285
		LABORATORY NUMBER								
		SAMPLE DEPTH (FT)	0.5 - 2.0	1.5 - 2.5	0.0 - 1.8	0.5 - 2.0	7.0 - 9.0	15.0 - 16.0	1.0 - 2.0	0.5 - 1.5
ANALYTES	**METHOD**	**CRQL**								
Aluminum	**ICP**	**20**	9700	10000	9610	11400	12900	5830	8660	11000
Antimony	**ICP**	**6**	5.5 UJ	5.3 UJ	R	6.2 UJ	4.9 UJ	4.5 UJ	5.4 UJ	4.7 UJ
Arsenic	**ICP**	**1**	11.7 J	93.1 J	160 J	198 J	320 * J	18.9	42.1	26.4
Barium	**ICP**	**20**	17.3 J	24.6 J	31.0	33.1	38.9 J	12.2 J	18.3	20.7
Beryllium	**ICP**	**0.5**	0.55 J	0.54 J	0.51 J	0.63 J	0.62 J	0.35 J	0.49 J	0.53 J
Cadmium	**ICP**	**0.5**	0.077 J	0.13 J	0.22 J	0.21 J	0.53	0.12 J	0.095 J	0.22 J
Calcium	**ICP**	**500**	1270	3700	14200	9160	7040	2270	3390	2390
Chromium (total)	**ICP**	**1**	16.3 EB	356 EB	2360 *	1560 *	325 EB	85.2	37.5	25.6
Cobalt	**ICP**	**5**	5.2	5.7	4.4 J	5.8 J	4.5	3.5 J	5.7	5.4
Copper	**ICP**	**2.5**	6.6	10.7	19.2	17.2	14.1	8.0	11.2	10.9
Iron	**ICP**	**10**	10100 EB	12100 EB	11200 EB	14100 EB	13000 EB	8220 EB	11900 EB	12800 EB
Lead	**ICP**	**1**	8.4 J	31.7 J	42.2	37.1	64.6 J	7.2 J	12.9	31.0
Magnesium	**ICP**	**500**	2640	3410	2670	2960	2950	2390	3530	3010
Manganese	**ICP**	**1.5**	147 J	224 J	184	223	240 J	152	220	181
Mercury	**CV**	**0.1**	0.012 J	0.20	0.26	0.29	1.1	0.019 J	0.16	0.20
Nickel	**ICP**	**4**	9.4	20.4	9.6	13.2	11.9	7.7	12.9	11.7
Potassium	**ICP**	**500**	638	601 J	632	824	622 J	465	581 J	610 J
Selenium	**ICP**	**3.5**	3.2 U	1.2 J	2.9 UJ	3.6 UJ	0.93 J	2.6 U	3.1 U	2.7 U
Silver	**ICP**	**1**	0.91 UJ	0.88 UJ	0.83 U	1.0 U	0.81 UJ	0.76 U	0.90 U	0.78 U
Sodium	**ICP**	**500**	R	R	R	R	R	R	R	R
Thallium	**ICP**	**2.5**	3.1 J	2.7 J	R	R	2.9 J	1.6 J	2.7 J	3.0 J
Vanadium	**ICP**	**5**	17.9	25.1	19.8 J	24.3 J	27.1	12.7	22.0	21.1
Zinc	**ICP**	**6**	20.6	42.5	60.5 J EB	61.3 J EB	115	23.0 EB	28.0 EB	95.6 EB
		DILUTION FACTOR	1.0	1.0	1.0/10.0*	1.0/5.0*	1.0/3.0*	1.0	1.0	1.0
		DATE SAMPLED	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011
		% SOLID	90.8	90.1	81.6	84.7	83.2	95.3	91.4	90.6

ANALYTICAL METHOD:
ICP - INDUCTIVELY COUPLED PLASMA
CV - COLD VAPOR ATOMIC ABSORPTION

NOTES:
Results are reported in milligrams per Kilogram (mg/Kg).
CRQL = Contract Required Quantitation Limit
U = Value is Non-Detected.
UJ = Value is Non-Detected and Detection Limit is Estimated.
J = Value is Estimated.
R = Value is Rejected.
EB = Analyte was also found in the associated Equipment Blank.
*/** = Reported value is from diluted analysis.
All results are reported on a Dry Weight Basis.
Bolded values exceed laboratory detection limits.

ATTACHMENT A
SOIL/SOURCE ANALYTICAL DATA

DATA SUMMARY TABLE 4
METALS ANALYSIS - SOIL
mg/Kg

SITE: CREESE & COOK CO. (FORMER) 1
CASE: 41341
SDGs: MA3TS9, MA3X28
LABORATORY: MITKEM LABORATORIES

		SAMPLE NUMBER	MA3X38	MA3X39	MA3X40	MA3X41	MA3X42	MA3X43	MA3X44	MA3X45
		SAMPLE LOCATION	SO-08	SO-09	SO-10	SO-11	SO-12	SO-13	SO-14	SO-15
		STATION LOCATION	D30286	D30287	D30288	D30289	D30290	D30291	D30292	D30293
		LABORATORY NUMBER								
		SAMPLE DEPTH (FT)	5.5 - 6.5	3.5 - 4.0	4.0 - 5.0	4.5 - 5.5	0.5 - 1.2	0.8 - 1.5	1.5 - 2.0	1.5 - 2.5
ANALYTES	**METHOD**	**CRQL**								
Aluminum	**ICP**	**20**	21400	7700	13800	4940	8250	7430	9740	8200
Antimony	**ICP**	**6**	5.6 UJ	5.0 UJ	5.6 UJ	4.6 UJ	5.4 UJ	4.8 UJ	4.8 UJ	4.5 UJ
Arsenic	**ICP**	**1**	49.7	31.9	8.5	9.7	10.4 J	23.4 J	20.9	13.7 J
Barium	**ICP**	**20**	53.4	28.8	26.4	9.4 J	21.9 J	30.9 J	22.0 J	21.7 J
Beryllium	**ICP**	**0.5**	1.2 J	0.45 J	0.82	0.32 J	0.4 J	0.46 J	0.55 J	0.48 J
Cadmium	**ICP**	**0.5**	0.17 J	0.36 J	0.067 J	0.056 J	0.039 J	0.059 J	0.15 J	0.086 J
Calcium	**ICP**	**500**	9050	8780	1980	1480	2800	2400	2320	2810
Chromium (total)	**ICP**	**1**	182	609 *	29.5	15.6	32.1 EB	35.5 EB	53.7	28.1 EB
Cobalt	**ICP**	**5**	12.4	4.4	6.6	4.0	6.1	6.4	5.9	7.3
Copper	**ICP**	**2.5**	20.2	17.0	9.5	6.4	11.3	14.5	10.9	12.8
Iron	**ICP**	**10**	23300 * EB	10300 EB	14500 EB	8000 EB	11300 EB	12000 EB	12300 EB	16400 * EB
Lead	**ICP**	**1**	24.5	57.5	11.6 J	4.1 J	10.6 J	10.2 J	11.2 J	9.0 J
Magnesium	**ICP**	**500**	5900	2410	3730	1890	3690	3420	3630	4600
Manganese	**ICP**	**1.5**	291	162	197	87.7	202 J	261 J	291	266 J
Mercury	**CV**	**0.1**	0.086 J	0.17	0.014 J	0.10 U	0.032 J	0.031 J	0.033 J	0.011 J
Nickel	**ICP**	**4**	50.4	10.1	14.2	6.5	13.2	13.9	11.8	14.3
Potassium	**ICP**	**500**	1930	621	1040 J	477	716	824	831	734 J
Selenium	**ICP**	**3.5**	3.2 U	2.9 U	3.2 U	2.7 U	3.2 U	0.65 J	2.8 U	0.65 J
Silver	**ICP**	**1**	0.93 U	0.83 U	0.93 U	0.76 U	0.90 UJ	0.79 UJ	0.80 U	0.75 UJ
Sodium	**ICP**	**500**	R	124 J	R	R	243 J	R	R	R
Thallium	**ICP**	**2.5**	7.3 J	2.7 J	5.1 J	1.9 J	2.3 J	2.9 J	3.0 J	2.1 J
Vanadium	**ICP**	**5**	42.7	26.5	31.2	12.9	19.8	23.4	20.8	22.8
Zinc	**ICP**	**6**	55.3 EB	73.0 EB	30.4 EB	16.1 EB	30.5	27.3	28.8 EB	32.6
		DILUTION FACTOR	1.0/2.0*	1.0/2.0*	1.0	1.0	1.0	1.0	1.0	1.0/2.0*
		DATE SAMPLED	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011
		% SOLID	82.4	87.3	87.6	93.9	93.1	93.2	92.7	94.6

ANALYTICAL METHOD:
ICP - INDUCTIVELY COUPLED PLASMA
CV - COLD VAPOR ATOMIC ABSORPTION

NOTES:
Results are reported in milligrams per Kilogram (mg/Kg).
CRQL = Contract Required Quantitation Limit
U = Value is Non-Detected.
UJ = Value is Non-Detected and Detection Limit is Estimated.
J = Value is Estimated.
R = Value is Rejected.
EB = Analyte was also found in the associated Equipment Blank.
*/** = Reported value is from diluted analysis.
All results are reported on a Dry Weight Basis.
Bolded values exceed laboratory detection limits.

ATTACHMENT A
SOIL/SOURCE ANALYTICAL DATA

DATA SUMMARY TABLE 4
METALS ANALYSIS - SOIL
mg/Kg

SITE: CREESE & COOK CO. (FORMER) 1
CASE: 41341
SDGs: MA3TS9, MA3X28
LABORATORY: MITKEM LABORATORIES

		SAMPLE NUMBER	MA3X46	MA3X47	MA3X48	MA3X49	MA3X50	MA3X55	MA3X56	MA3XC3
		SAMPLE LOCATION	SO-16	SO-17	SO-18	SO-19	SO-20	SO-25	SO-26	SO-50
		STATION LOCATION	D30294	D30295	D30296	D30297	D30298	D30303	D30304	C&C1-151
		LABORATORY NUMBER								18080
		SAMPLE DEPTH (FT)	2.0 - 3.0	2.0 - 2.5	1.0 - 2.0	2.5 - 3.0	0.0 - 2.0	7.0 - 9.0	0.0 - 2.0	0.0 - 1.0
ANALYTES	**METHOD**	**CRQL**								
Aluminum	**ICP**	**20**	10900	9380	8210	8320	9800	13500	8850	14500
Antimony	**ICP**	**6**	4.5 UJ	4.3 UJ	5.2 UJ	4.6 UJ	4.5 UJ	5.1 UJ	4.4 UJ	R
Arsenic	**ICP**	**1**	147	103 J	63.4 J	94.6 J	83.2	373 * J	72.5	203
Barium	**ICP**	**20**	27.2	20.8 J	25.0 J	19.5 J	28.7	40.2 J	25.4	102
Beryllium	**ICP**	**0.5**	0.59 J	0.57 J	0.52 J	0.49 J	0.59 J	0.71 J	0.54 J	0.55 J
Cadmium	**ICP**	**0.5**	0.13 J	0.055 J	0.072 J	0.086 J	0.16 J	0.53	0.12 J	1.9
Calcium	**ICP**	**500**	4720	2130	2800	2080	2900	7920	2240	6450
Chromium (total)	**ICP**	**1**	55.3	70 EB	70.3 EB	41.9 EB	173	301 EB	160	340
Cobalt	**ICP**	**5**	8.0	7.1	6.1	7.0	8.0	4.3	6.9	9.0
Copper	**ICP**	**2.5**	18.8	18.7	14.4	15.4	32.5	14.3	24.8	18.0 J
Iron	**ICP**	**10**	17100 * EB	13800 EB	13600 EB	13300 EB	16600 * EB	13300 EB	15000 EB	19500
Lead	**ICP**	**1**	8.9 J	9.4 J	13.1 J	8.4 J	15.3	61.8 J	13.7 J	68.2
Magnesium	**ICP**	**500**	4790	4230	4250	3950	4380	2400	4140	5530
Manganese	**ICP**	**1.5**	238	225 J	282 J	199 J	265	252 J	256	337
Mercury	**CV**	**0.1**	0.046 J	0.088 J	0.23	0.070 J	0.079 J	1.3	0.085 J	0.97
Nickel	**ICP**	**4**	15.7	18.6	12.2	13.8	15.8	11.8	12.6	21.2
Potassium	**ICP**	**500**	1050	819	984	804	1080	606 J	977	1510 J
Selenium	**ICP**	**3.5**	2.6 U	0.8 J	3 U	2.7 U	2.6 U	1.8 J	2.5 U	4.2 U
Silver	**ICP**	**1**	0.76 U	0.72 UJ	0.86 UJ	0.76 UJ	0.75 U	0.85 UJ	0.73 U	1.2 UJ
Sodium	**ICP**	**500**	R	R	153 J	R	R	R	R	R
Thallium	**ICP**	**2.5**	3.7 J	3.6 J	3.3 J	2.8 J	3.9 J	3.3 J	3.5 J	3.0 UJ
Vanadium	**ICP**	**5**	30.5	24.6	23.8	21.4	29.3	27.4	27.5	36.9
Zinc	**ICP**	**6**	36.1 EB	39.6	53.1	31.4	43.6 EB	97.8	36.8 EB	112
		DILUTION FACTOR	1.0/2.0*	1.0	1.0	1.0	1.0/2.0*	1.0/3.0*	1.0	1
		DATE SAMPLED	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011	12/5/2011
		% SOLID	94.3	93.0	89.0	91.5	91.9	83.0	91.4	83.6

ANALYTICAL METHOD:
ICP - INDUCTIVELY COUPLED PLASMA
CV - COLD VAPOR ATOMIC ABSORPTION

NOTES:
Results are reported in milligrams per Kilogram (mg/Kg).
CRQL = Contract Required Quantitation Limit
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Bolded values exceed laboratory detection limits.

DATA SUMMARY TABLE 4
METALS ANALYSIS - SOIL
mg/Kg

SITE: CREESE & COOK CO. (FORMER) 1
CASE: 41341
SDGs: MA3TS9, MA3X28
LABORATORY: MITKEM LABORATORIES

		SAMPLE NUMBER	MA3XC4	MA3XC5	MA3XC6	MA3XC7	MA3XC8	MA3XC9	MA3XD0	MA3XD1
		SAMPLE LOCATION	SO-51	SO-52	SO-53	SO-54	SO-55	SO-56	SO-57	SO-58
		STATION LOCATION	C&C1-152	C&C1-153	C&C1-154	C&C1-155	C&C1-156	C&C1-157	C&C1-158	C&C1-159
		LABORATORY NUMBER	18081	18082	18083	18084	18085	18086	18087	18088
		SAMPLE DEPTH (FT)	0.0 - 1.5	0.75 - 1.5	0.75 - 2.0	0.0 - 0.25	0.0 - 0.25	0.0 - 0.25	0.0 - 0.25	0.0 - 1.0
ANALYTES	**METHOD**	**CRQL**								
Aluminum	**ICP**	**20**	7750	13900	13400	10300	12200	9260	5840	949
Antimony	**ICP**	**6**	R	R	R	R	R	R	R	R
Arsenic	**ICP**	**1**	22.2	11.4	9.6	56.8	82.9	100	42.6	2.7 U
Barium	**ICP**	**20**	22.7	19.3 J	21.2 J	45.5	41.5	80.2	1020	496
Beryllium	**ICP**	**0.5**	0.23 J	0.36 J	0.36 J	R	0.50 J	0.28 J	1.0 U	1.4 U
Cadmium	**ICP**	**0.5**	0.54 UJ	0.59 UJ	0.59 UJ	0.55 J	0.94	3.3	1.0 UJ	1.4 UJ
Calcium	**ICP**	**500**	1990	506 J	435 J	3610	3190	7140	3620	792 J
Chromium (total)	**ICP**	**1**	57.1	17.3	16.5	71.9	218	7330 *	13900 *	20500 *
Cobalt	**ICP**	**5**	7.2	6.2	5.7 J	10.4	9.2	4.2 J	4.0 J	13.5 U
Copper	**ICP**	**2.5**	10.6 J	4.6 J	5.0 J	17.6 J	19.3	34.0	80.0	75.3
Iron	**ICP**	**10**	13100	12500	12000	19600	16900	12300	12900	8750
Lead	**ICP**	**1**	12.8	55.0	64.5	9.2	33.3	202	254	407
Magnesium	**ICP**	**500**	3910	2780	2700	5970	4400	2140	2010	147 J
Manganese	**ICP**	**1.5**	249	133	157	373	367	224	102	22.5
Mercury	**CV**	**0.1**	0.0054 J	0.0083 J	0.040 J	0.16	0.097 J	0.40	9.3 **	5.4 **
Nickel	**ICP**	**4**	14.9	11.4	11.2	16.7	18.1	11.1	7.3 J	10.8 U
Potassium	**ICP**	**500**	832 J	355 J	396 J	2060 J	1330 J	549 J	361 J	1350 U
Selenium	**ICP**	**3.5**	3.8 U	4.1 U	4.1 U	4.2 U	0.53 U	0.64 J	0.83 J	9.5 U
Silver	**ICP**	**1**	1.1 UJ	1.2 UJ	1.2 UJ	1.2 UJ	1.5 UJ	1.4 UJ	2.0 UJ	2.4 J
Sodium	**ICP**	**500**	R	R	R	R	R	R	R	138 J
Thallium	**ICP**	**2.5**	2.7 UJ	3.0 UJ	3.0 UJ	3.0 UJ	3.8 UJ	3.4 UJ	5.0 UJ	6.8 UJ
Vanadium	**ICP**	**5**	22.0	22.4	22.0	36.1	35.0	28.7	31.0	16.8
Zinc	**ICP**	**6**	35.1	34.2	53.7	65.3	65.6	239	42.2	31.4
		DILUTION FACTOR	1	1	1	1	1	1/*5	1/*10/**3	1/*10/**2
		DATE SAMPLED	12/5/2011	12/5/2011	12/5/2011	12/5/2011	12/5/2011	12/5/2011	12/5/2011	12/5/2011
		% SOLID	92.0	84.6	84.6	83.2	65.0	72.5	49.7	37.0

ANALYTICAL METHOD:
ICP - INDUCTIVELY COUPLED PLASMA
CV - COLD VAPOR ATOMIC ABSORPTION

NOTES:
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ATTACHMENT A
SOIL/SOURCE ANALYTICAL DATA

DATA SUMMARY TABLE 4
METALS ANALYSIS - SOIL
mg/Kg

SITE: CREESE & COOK CO. (FORMER) 1
CASE: 41341
SDGs: MA3TS9, MA3X28
LABORATORY: MITKEM LABORATORIES

		SAMPLE NUMBER	MA3XD2	MA3XD3	MA3XD4	MA3XD7	MA3XD8	MA3XD9	MCP Method 1 S-1/GW-1 Standard	MCP Imminent Hazard Standard (0 to 1 foot)
		SAMPLE LOCATION	SO-59	SO-60	SO-61	SO-64	SO-65	SO-70		
		STATION LOCATION	C&C1-160	C&C1-161	C&C1-162	C&C1-165	C&C1-166	C&C1-167		
		LABORATORY NUMBER	18089	18090	18091	18094	18095	18096		
		SAMPLE DEPTH (FT)	0.0 - 0.25	0.0 - 0.25	0.25 - 0.83	2.5 - 3.3	2.5 - 3.3	0.0 - 1.0	mg/Kg	mg/Kg
ANALYTES	**METHOD**	**CRQL**								
Aluminum	**ICP**	**20**	10900	5550	11400	8880	6530	1210	NL	NL
Antimony	**ICP**	**6**	R	R	R	R	R	R	20	NL
Arsenic	**ICP**	**1**	93.9	565	93.4	7.1 J	7.0	2.8 UJ	20	40
Barium	**ICP**	**20**	274	36.8	127	14.0 J	9.6 J	491	1,000	NL
Beryllium	**ICP**	**0.5**	0.33 J	0.17 J	0.36 J	0.29 J	0.25 J	1.4 U	100	NL
Cadmium	**ICP**	**0.5**	23.2	5.3	14.8	0.54 UJ	0.53 UJ	1.4 U	2	60
Calcium	**ICP**	**500**	6090	8980	2010	867	729	744 J	NL	NL
Chromium (total)	**ICP**	**1**	4020 *	1140	1230	16.9	10.2	17500 *	30	200
Cobalt	**ICP**	**5**	4.9 J	2.8 J	5.0 J	6.0	4.8 J	1.7 J	NL	NL
Copper	**ICP**	**2.5**	42.0	11.4	23.9 J	9.0 J	6.5 J	87.7	NL	NL
Iron	**ICP**	**10**	16000	6230	21400	10800	9410	8340	NL	NL
Lead	**ICP**	**1**	919	61.3	468	28.5	19.2	406	300	NL
Magnesium	**ICP**	**500**	2670	1270	2840	3170	2450	113 J	NL	NL
Manganese	**ICP**	**1.5**	267	96.1	295	159	170	15.0	NL	NL
Mercury	**CV**	**0.1**	0.37	1.9	0.34	0.11 UJ	0.11 UJ	4.8	20	300
Nickel	**ICP**	**4**	14.0	6.1	12.7	13.7	8.4	0.93 J	20	NL
Potassium	**ICP**	**500**	755 J	271 J	515 J	448 J	327 J	1400 U	NL	NL
Selenium	**ICP**	**3.5**	0.74 J	4.9 U	4.8 U	3.8 U	3.7 U	9.8 U	400	NL
Silver	**ICP**	**1**	0.18 J	1.4 UJ	1.4 UJ	1.1 UJ	1.1 UJ	1.8 J	100	NL
Sodium	**ICP**	**500**	R	702 U	778 J	R	R	105 J	NL	NL
Thallium	**ICP**	**2.5**	4.0 UJ	3.5 UJ	3.4 UJ	2.7 UJ	2.7 UJ	2.1 J	8	NL
Vanadium	**ICP**	**5**	27.4	11.7	27.6	18.8	14.5	19.8 J	600	NL
Zinc	**ICP**	**6**	333	72.7	347	32.1	21.1	24.6 J	2,500	NL
		DILUTION FACTOR	1/*10	1	1	1	1	1/*10		
		DATE SAMPLED	12/5/2011	12/5/2011	12/5/2011	12/5/2011	12/5/2011	12/5/2011		
		% SOLID	62.8	71.2	72.6	92.4	94.2	35.7		

ANALYTICAL METHOD:
ICP - INDUCTIVELY COUPLED PLASMA
CV - COLD VAPOR ATOMIC ABSORPTION

NOTES:

SITE: CREESE AND COOK CO. (FORMER) 1
CASE: 0825F
SDG: D30266
LABORATORY: CON-TEST

ATTACHMENT A - SOIL/SOURCE ANALYTICAL DATA

DATA SUMMARY TABLE 5
HEXAVALENT CHROMIUM ANALYSIS - SOIL
mg/Kg

		SAMPLE NUMBER	D30266	D30279	D30280	D30281	D30282	D30283	D30284
		SAMPLE LOCATION	SO-05B	SO-01	SO-02	SO-03	SO-04	SO-05	SO-06
		LABORATORY NUMBER	11E0679-01	11E0679-02	11E0679-03	11E0679-04	11E0679-05	11E0679-06	11E0679-07
ANALYTES	METHOD	RL							
Hexavalent Chromium	CM	0.16	18 J	1.2 J	14.0 J	17.0 J	6.1 J	3.9 J	1.7 J
		DILUTION FACTOR	5	5	5	10	5	10	5
		DATE SAMPLED	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011
		DATE DIGESTED	5/26/2011	5/26/2011	5/26/2011	5/26/2011	5/26/2011	5/26/2011	5/26/2011
		DATE ANALYZED	5/31/2011	5/31/2011	5/31/2011	5/31/2011	5/31/2011	5/31/2011	5/31/2011
		% SOLID	96.7	91.4	89.2	81.3	87.8	83.2	92.2

ANALYTICAL METHOD:
CM - EPA SW-846/7196A
HEXAVALENT CHROMIUM
COLORIMETRIC METHOD

NOTES: All results are reported in milligrams per Kilogram (mg/Kg).
All results are reported on a Dry Weight Basis.
RL = Reporting Limit.
U = Value is Non-Detected.
UJ = Value is Non-Detected and Detection Limit is Estimated.
J = Value is Estimated.
R = Value is Rejected.
* = Reported value is from diluted analysis.
EB = This analyte was also found in the associated Equipment Blank.

SITE: CREESE AND COOK CO. (FORMER) 1
CASE: 0825F
SDG: D30266
LABORATORY: CON-TEST

ATTACHMENT A - SOIL/SOURCE ANALYTICAL DATA

DATA SUMMARY TABLE 5
HEXAVALENT CHROMIUM ANALYSIS - SOIL
mg/Kg

		SAMPLE NUMBER	D30285	D30286	D30287	D30288	D30289	D30290	D30291
		SAMPLE LOCATION	SO-07	SO-08	SO-09	SO-10	SO-11	SO-12	SO-13
		LABORATORY NUMBER	11E0679-08	11E0679-09	11E0679-10	11E0679-11	11E0679-12	11E0679-13	11E0679-14
ANALYTES	METHOD	RL							
Hexavalent Chromium	CM	0.16	0.95 J	1.3 J	15.0 J	0.51 J	0.47	1.9	2.0
		DILUTION FACTOR	5	5	5	2	2	5	5
		DATE SAMPLED	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011
		DATE DIGESTED	5/26/2011	5/26/2011	5/26/2011	5/26/2011	5/31/2011	5/31/2011	5/31/2011
		DATE ANALYZED	5/31/2011	5/31/2011	5/31/2011	5/31/2011	6/2/2011	6/2/2011	6/2/2011
		% SOLID	88.3	84.8	87.6	88.1	94.4	96.3	94.9

ANALYTICAL METHOD:
CM - EPA SW-846/7196A
HEXAVALENT CHROMIUM
COLORIMETRIC METHOD

NOTES: All results are reported in milligrams per Kilogram (mg/Kg).
All results are reported on a Dry Weight Basis.
RL = Reporting Limit.
U = Value is Non-Detected.
UJ = Value is Non-Detected and Detection Limit is Estimated.
J = Value is Estimated.
R = Value is Rejected.
* = Reported value is from diluted analysis.
EB = This analyte was also found in the associated Equipment Blank.

SITE: CREESE AND COOK CO. (FORMER) 1
CASE: 0825F
SDG: D30266
LABORATORY: CON-TEST

ATTACHMENT A - SOIL/SOURCE ANALYTICAL DATA

DATA SUMMARY TABLE 5
HEXAVALENT CHROMIUM ANALYSIS - SOIL
mg/Kg

		SAMPLE NUMBER	D30292	D30293	D30294	D30295	D30296	D30297	D30298
		SAMPLE LOCATION	SO-14	SO-15	SO-16	SO-17	SO-18	SO-19	SO-20
		LABORATORY NUMBER	11E0679-15	11E0679-16	11E0679-17	11E0679-18	11E0679-19	11E0679-20	11E0679-21
ANALYTES	METHOD	RL							
Hexavalent Chromium	CM	0.16	0.89	0.89	0.34 U	1.2	4.8	0.84 U	4.3
		DILUTION FACTOR	5	2	2	5	10	5	5
		DATE SAMPLED	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011
		DATE DIGESTED	5/31/2011	5/31/2011	5/31/2011	5/31/2011	5/31/2011	5/31/2011	5/31/2011
		DATE ANALYZED	6/2/2011	6/2/2011	6/2/2011	6/2/2011	6/2/2011	6/2/2011	6/2/2011
		% SOLID	95.1	95.4	94.4	93.4	90.2	92.6	94.4

ANALYTICAL METHOD:
CM - EPA SW-846/7196A
HEXAVALENT CHROMIUM
COLORIMETRIC METHOD

NOTES: All results are reported in milligrams per Kilogram (mg/Kg).
All results are reported on a Dry Weight Basis.
RL = Reporting Limit.
U = Value is Non-Detected.
UJ = Value is Non-Detected and Detection Limit is Estimated.
J = Value is Estimated.
R = Value is Rejected.
* = Reported value is from diluted analysis.
EB = This analyte was also found in the associated Equipment Blank.

SITE: CREESE AND COOK CO. (FORMER) 1
CASE: 0825F
SDG: D30266
LABORATORY: CON-TEST

ATTACHMENT A - SOIL/SOURCE ANALYTICAL DATA

DATA SUMMARY TABLE 5
HEXAVALENT CHROMIUM ANALYSIS - SOIL
mg/Kg

		SAMPLE NUMBER	D30303	D30304					
		SAMPLE LOCATION	SO-25	SO-26					
		LABORATORY NUMBER	11E0679-24	11E0679-25					
ANALYTES	METHOD	RL							
Hexavalent Chromium	CM	0.16	9.6	5.6					
		DILUTION FACTOR	25	5					
		DATE SAMPLED	5/23/2011	5/23/2011					
		DATE DIGESTED	5/31/2011	5/31/2011					
		DATE ANALYZED	6/2/2011	6/2/2011					
		% SOLID	84.0	87.0					

ANALYTICAL METHOD:
CM - EPA SW-846/7196A
HEXAVALENT CHROMIUM
COLORIMETRIC METHOD

NOTES: All results are reported in milligrams per Kilogram (mg/Kg).
All results are reported on a Dry Weight Basis.
RL = Reporting Limit.
U = Value is Non-Detected.
UJ = Value is Non-Detected and Detection Limit is Estimated.
J = Value is Estimated.
R = Value is Rejected.
* = Reported value is from diluted analysis.
EB = This analyte was also found in the associated Equipment Blank.

ATTACHMENT B

CREESE & COOK CO. (FROMER) 1
EQUIPMENT BLANK, TRIP BLANKS, AND PRESERVATIVE BLANKS
SAMPLE ANALYTICAL RESULTS
START
Samples Collected on 16 through 18 and 23 May and 5 through 6 December 2011

ATTACHMENT B
EQUIPMENT RINSATE SAMPLE ANALYTICAL RESULTS

SITE: CREESE & COOK CO. (FORMER) 1
CASE: 41202, 41342 SDG: A3WP5, A3WZ5
LABORATORY: MITKEM

TABLE 1
SEMIVOLATILE ORGANIC AQUEOUS ANALYSIS
µg/L

SAMPLE NUMBER		**A3WZ5**	**A3WZ6**	**A3WZ7**	**A3X57**			
SAMPLE LOCATION		**D30149**	**D30150**	**D30151**	**D30305**			
STATION LOCATION		**RB-01**	**RB-02**	**RB-03**	**RB-06**			
LABORATORY NUMBER		**K0913-03A**	**K0913-01A**	**K0913-02A**	**K0902-18A**			
COMPOUND	**CRQL**							
Benzaldehyde	5.0	5 U	5 U	5 U	5 U			
Phenol	5.0	5 U	5 U	5 U	5 U			
Bis(2-chloroethyl)ether	5.0	5 U	5 U	5 U	5 U			
2-Chlorophenol	5.0	5 U	5 U	5 U	5 U			
2-Methylphenol	5.0	5 U	5 U	5 U	5 U			
2,2'-Oxybis(1-chloropropane)	5.0	5 U	5 U	5 U	5 U			
Acetophenone	5.0	5 U	5 U	5 U	5 U			
4-Methylphenol	5.0	5 U	5 U	5 U	5 U			
N-Nitroso-di-n-propylamine	5.0	5 U	5 U	5 U	5 U			
Hexachloroethane	5.0	5 U	5 U	5 U	5 U			
Nitrobenzene	5.0	5 U	5 U	5 U	5 U			
Isophorone	5.0	5 U	5 U	5 U	5 U			
2-Nitrophenol	5.0	5 U	5 U	5 U	5 U			
2,4-Dimethylphenol	5.0	5 U	5 U	5 U	5 UJ			
Bis(2-chloroethoxy)methane	5.0	5 U	5 U	5 U	5 U			
2,4-Dichlorophenol	5.0	5 U	5 U	5 U	5 U			
Naphthalene	5.0	5 U	5 U	5 U	5 U			
4-Chloroaniline	5.0	5 U	5 U	5 U	5 U			
Hexachlorobutadiene	5.0	5 U	5 U	5 U	5 U			
Caprolactam	5.0	5 U	5 U	5 U	5 U			
4-Chloro-3-methylphenol	5.0	2.5 J	2.4 J	2.2 J	3.5 J			
2-Methylnaphthalene	5.0	5 U	5 U	5 U	5 U			
Hexachlorocyclopentadiene	5.0	5 U	5 U	5 U	5 UJ			
2,4,6-Trichlorophenol	5.0	5 U	5 U	5 U	5 U			
2,4,5-Trichlorophenol	5.0	5 U	5 U	5 U	5 U			
1,1'-Biphenyl	5.0	5 U	5 U	5 U	5 U			
2-Chloronaphthalene	5.0	5 U	5 U	5 U	5 U			
2-Nitroaniline	10	10 U	10 U	10 U	10 U			
Dimethylphthalate	5.0	5 U	5 U	5 U	5 U			
2,6-Dinitrotoluene	5.0	5 U	5 U	5 U	5 U			
Acenaphthylene	5.0	5 U	5 U	5 U	5 U			
3-Nitroaniline	10	10 U	10 U	10 U	10 U			
Acenaphthene	5.0	5 U	5 U	5 U	5 U			
2,4-Dinitrophenol	10	10 UJ	10 UJ	10 UJ	10 U			
4-Nitrophenol	10	10 UJ	10 UJ	10 UJ	10 U			
Dibenzofuran	5.0	5 U	5 U	5 U	5 U			
2,4-Dinitrotoluene	5.0	5 U	5 U	5 U	5 U			
Diethylphthalate	5.0	5 U	5 U	5 U	5 U			
Fluorene	5.0	5 U	5 U	5 U	5 U			
4-Chlorophenyl-phenylether	5.0	5 U	5 U	5 U	5 U			
4-Nitroaniline	10	10 U	10 U	10 U	10 U			
4,6-Dinitro-2-methylphenol	10	10 UJ	10 UJ	10 UJ	10 U			
N-Nitrosodiphenylamine	5.0	5 U	5 U	5 U	5 U			
1,2,4,5-Tetrachlorobenzene	5.0	5 U	5 U	5 U	5 U			
4-Bromophenyl-phenylether	5.0	5 U	5 U	5 U	5 U			
Hexachlorobenzene	5.0	5 U	5 U	5 U	5 U			
Atrazine	5.0	5 U	5 U	5 U	5 U			
Pentachlorophenol	10	10 U	10 U	10 U	10 U			
Phenanthrene	5.0	5 U	5 U	5 U	5 U			
Anthracene	5.0	5 U	5 U	5 U	5 U			
Carbazole	5.0	5 U	5 U	5 U	5 U			
Di-n-butylphthalate	5.0	5 U	5 U	5 U	5 U			
Fluoranthene	5.0	5 U	5 U	5 U	5 U			
Pyrene	5.0	5 U	5 U	5 U	5 U			
Butylbenzylphthalate	5.0	5 U	5 U	5 U	5 U			
3,3'-Dichlorobenzidine	5.0	5 U	5 U	5 U	5 U			
Benzo(a)anthracene	5.0	5 U	5 U	5 U	5 U			
Chrysene	5.0	5 U	5 U	5 U	5 U			
Bis(2-ethylhexyl)phthalate	5.0	5 U	5 U	5 U	5 U			
Di-n-octylphthalate	5.0	5 U	5 U	5 U	5 U			
Benzo(b)fluoranthene	5.0	5 U	5 U	5 U	5 U			
Benzo(k)fluoranthene	5.0	5 U	5 U	5 U	5 U			
Benzo(a)pyrene	5.0	5 U	5 U	5 U	5 U			
Indeno(1,2,3-cd)pyrene	5.0	5 U	5 U	5 U	5 U			
Dibenzo(a,h)anthracene	5.0	5 U	5 U	5 U	5 U			
Benzo(g,h,i)perylene	5.0	5 U	5 U	5 U	5 U			
2,3,4,6-Tetrachlorophenol	5.0	5 U	5 U	5 U	5 U			
DILUTION FACTOR		1.0	1.0	1.0	1.0			
DATE SAMPLED		5/16/2011	5/17/2011	5/18/2011	5/23/2011			
DATE EXTRACTED		5/20/2011	5/20/2011	5/20/2011	5/26/2011			
DATE ANALYZED		5/27/2011	5/27/2011	5/27/2011	6/1/2011			
VOLUME EXTRACTED (mL)		1000	1000	1000	1000			

NOTES: µg/L = micrograms per Liter
CRQL = Contract Required Quantitation Limit
U = Value is Non-Detected.
UJ = Value is Non-Detected and Detection Limit is Estimated.
J = Value is Estimated.

ATTACHMENT B
RINSATE BLANK START ANALYTICAL DATA SUMMARY

TABLE 2
DIOXIN ORGANIC ANALYSIS - RINSATE BLANK WATER
ALL RESULTS IN pg/L

SITE: CREESE & COOK CO. (FORMER) 1
CASE: 42048, 41343
SDGs: A3XC3, A3TS9, A3TT5, A3TT7, A3X25, A3XC3, A3XE6
LABORATORY: CAPE FEAR ANALYTICAL

SAMPLE NUMBER		A3X57	A3WZ5	A3WZ6	A3WZ7	A3X58	A3XF5	A3XE6
SAMPLE LOCATION		D30305	D30149	D30150	D30151	D30306	C&C1-307	C&C1-308
STATION LOCATION		RB-06	RB-01	RB-02	RB-03	RB-07	RB-01	RB-02
COMPOUND	CRQL							
2,3,7,8-TCDD	1	0.422 U	0.676 U	0.492 U	0.505 U	0.414 U	0.332 U	0.368 U
1,2,3,7,8-PeCDD	5	0.465 EMPC	0.371 U	0.615 EMPC	0.385 U	0.263 U	0.385 U	0.18 U
1,2,3,4,7,8-HxCDD	5	0.211 U	0.896 EMPC	1.61 J	0.336 U	0.261 U	0.401 EMPC, U[1]	0.442 U
1,2,3,6,7,8-HxCDD	5	0.23 U	0.862 J	1.41 J	0.286 U	0.231 U	0.401 EMPC, U[1]	0.342 EMPC, U[1]
1,2,3,7,8,9-HxCDD	5	0.595 U[1]	1.09 J	1.64 J	0.513 U[1]	0.589 UJ[1]	0.477 U[1]	0.466 U
1,2,3,4,6,7,8-HpCDD	5	0.674	0.661 EMPC	1.67 J	0.411	0.486 J	1.51 U[1]	1.65 U[1]
1,2,3,4,6,7,8,9-OCDD	10	0.474	0.519 EMPC	1.73 J	0.426 J	0.347 EMPC	10 U[1]	14.6 U[1]
2,3,7,8-TCDF	1	0.671 U[1]	0.278 U	1.51 J	0.406 U[1]	0.487 UJ[1]	0.336 U	0.328 U
1,2,3,7,8-PeCDF	5	0.765 J	0.557 U[1]	1.68 J	0.376 U[1]	0.423 UJ[1]	0.338 U	0.255 U
2,3,4,7,8-PeCDF	5	0.237 U	0.563 U[1]	2.41 J	0.324 U[1]	0.648 UJ[1]	0.611 EMPC, U[1]	0.563 EMPC, U[1]
1,2,3,4,7,8-HxCDF	5	0.636 U[1]	0.617 U[1]	1.6 J	0.443 U[1]	0.474 UJ[1]	0.572 EMPC, U[1]	0.462 U[1]
1,2,3,6,7,8-HxCDF	5	0.548 U[1]	0.849	2.27	0.431 U[1]	0.276 UJ[1]	0.496 EMPC, U[1]	0.442 EMPC, U[1]
1,2,3,7,8,9-HxCDF	5	1.74 EMPC	1.58 EMPC	2.46	1.13 EMPC, U[1]	1.03 UJ[1]	0.534 EMPC, U[1]	0.221 EMPC, U[1]
2,3,4,6,7,8-HxCDF	5	12.7 J	1.44 J	2.6 J	1.31 EMPC	1.2	0.286 EMPC, U[1]	0.402 EMPC, U[1]
1,2,3,4,6,7,8-HpCDF	5	0.645 U[1]	0.983	2.38 J	0.934	0.445 UJ[1]	0.649 EMPC, U[1]	0.663 EMPC, U[1]
1,2,3,4,7,8,9-HpCDF	5	153	4.25 U[1]	6.62 J	3.15 U[1]	3.56 UJ[1]	0.496 U[1]	0.966 U
1,2,3,4,6,7,8,9-OCDF	10	1.89 U[1]	2.13 U[1]	4.7 EMPC	1.17 U[1]	0.918 UJ[1]	1.76 U[1]	2.79 U
TEF (Total)		**0.428 J**	**1.46 J**	**3.38**	**0.106 J**	**0.953 J**	**0 U**	**0 U**
DILUTION FACTOR		1.0	1.0	1.0	1.0	1.0	1.0	1.0
DATE SAMPLED		5/23/2011	5/16/2011	5/17/2011	5/18/2011	5/23/2011	12/5/2011	12/6/2011
% SOLIDS		NA	NA	NA	NA	NA	NA	NA

NOTES: pg/L = picrograms per liter
CRQL = Contract Required Quantitation Limit.
U = Value is Non-Detected.
J = Value is Estimated.
EMPC = Estimated Maximum Possible Concentration.
* = = The values in this column are either the Estimated Detection Limits (EDL) or the Estimated Maximum Possible Concentration □ (EMPC). The EMPC results are flagged as “EMPC” in the Final Results column. The EMPC values are not qualified with a "J", since they are already estimated.
TEF = Toxicity Equivalent Factor (World Health Organization, 2005).
UJ = Value is Non-Detected and Detection Limit is Estimated.

ATTACHMENT B
EQUIPMENT RINSATE SAMPLE ANALYTICAL RESULTS

SITE: CREESE & COOK CO. (FORMER) 1
CASE: 41341, 41342 SDG: A3TS9, A3X22, A3WZ5
LABORATORY: MITKEM

TABLE 3
AROCLOR AQUEOUS ANALYSIS
µg/L

SAMPLE NUMBER		**A3WZ5**	**A3WZ6**	**A3WZ7**	**A3X57**	**A3X58**			
SAMPLE LOCATION		**D30149**	**D30150**	**D30151**	**D30305**	**D30306**			
STATION LOCATION		**RB-01**	**RB-02**	**RB-03**	**RB-06**	**RB-07**			
LABORATORY NUMBER		**K0913-03A**	**K0913-01A**	**K0913-02A**	**K0902-18A**	**K0903-12A**			
COMPOUND	**CRQL**								
Aroclor-1016	**1.0**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U			
Aroclor-1221	**1.0**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U			
Aroclor-1232	**1.0**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U			
Aroclor-1242	**1.0**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U			
Aroclor-1248	**1.0**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U			
Aroclor-1254	**1.0**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U			
Aroclor-1260	**1.0**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U			
Aroclor-1262	**1.0**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U			
Aroclor-1268	**1.0**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U			
DILUTION FACTOR		1.0	1.0	1.0	1.0	1.0			
DATE SAMPLED		5/16/2011	5/17/2011	5/18/2011	5/23/2011	5/23/2011			
DATE EXTRACTED		5/21/2011	5/21/2011	5/21/2011	5/27/2011	5/27/2011			
DATE ANALYZED		6/2/2011	6/2/2011	6/2/2011	6/7/2011	6/7/2011			
SAMPLE WEIGHT (mL)		1000	1000	1000	1000	1000			

NOTES: µg/L = micrograms per Liter
mL = milliLiters
CRQL = Contract Required Quantitation Limit
U = Value is Non-Detected.

ATTACHMENT B
EQUIPMENT RINSATE AND PRESERVATIVE BLANK SAMPLE ANALYTICAL RESULTS

SITE: CREESE & COOK CO. (FORMER) 1
CASE: 41341, 41342 **SDG: MA3TS9, MA3X28, MA3WM1, MA3WT8**
LABORATORY: MITKEM LABORATORIES

TABLE 4
METALS IN AQUEOUS ANALYSIS
µg/L

		SAMPLE NUMBER	MA3WZ5	MA3WZ6	MA3WZ7	MA3X57	MA3X58				
		SAMPLE LOCATION	RB-01	RB-02	RB-03	RB-06	RB-07				
		STATION LOCATION	D30149	D30150	D30151	D30305	D30306				
		LABORATORY NUMBER	K0858-15	K0862-18A	K0862-19A	K0904-17	K0905-14				
ANALYTES	METHOD	CRQL									
Aluminum	P	200	200 U	200 U	200 U	200 U	200 U				
Antimony	P	60	60.0 U	60.0 U	60.0 U	60.0 U	60.0 U				
Arsenic	P	10	10.0 U	10.0 U	10.0 U	10.0 UJ	10.0 UJ				
Barium	P	200	200 U	200 U	200 U	200 U	200 U				
Beryllium	P	5.0	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U				
Cadmium	P	5.0	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U				
Calcium	P	5000	5000 U	5000 U	352 J	5000 U	5000 U				
Chromium	P	10	10.0 U	10.0 U	10.0 U	10.0 U	2.1 J				
Cobalt	P	50	50.0 U	50.0 U	50.0 U	50.0 U	50.00 U				
Copper	P	25	25.0 U	25.0 U	25.0 U	25.0 U	25.00 U				
Iron	P	100	100 U	100 U	100 U	60.9 J	29.1 J				
Lead	P	10	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U				
Magnesium	P	5000	5000 U	5000 U	5000 U	5000 UJ	5000 UJ				
Manganese	P	15	15.0 UJ	15.0 U	15.0 U	15.0 UJ	15.0 UJ				
Mercury	CV	0.2	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U				
Nickel	P	40	40.0 U	40.0 U	40.0 U	40.0 U	40.0 U				
Potassium	P	5000	5000 U	5000 U	5000 U	5000 U	5000 U				
Selenium	P	35	35.0 U	35.0 U	35.0 U	35.0 U	35.0 U				
Silver	P	10	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U				
Sodium	P	5000	5000 U	5000 U	5000 U	5000 U	5000 U				
Thallium	P	25	25.0 UJ	25.0 U	25.0 U	25.0 UJ	25.0 UJ				
Vanadium	P	50	50.0 U	50.0 U	50.0 U	50.0 U	50.0 U				
Zinc	P	60	60.0 U	60.0 U	60.0 U	9.0 J	60.0 U				
	DILUTION FACTOR		1	1	1	1.0	1.0				
	DATE SAMPLED		5/16/2011	5/17/2011	5/18/2011	5/23/2011	5/23/2011				

ANALYTICAL METHOD:
P - INDUCTIVELY COUPLED PLASMA
CV - COLD VAPOR ATOMIC ABSORPTION

NOTES:
All results are reported in micrograms per Liter (µg/L).
CRQL = Contract Required Quantitation Limit.
U = Value is Non-Detected.
UJ = Value is Non-Detected and Detection Limit is Estimated.
J = Value is Estimated.
* = Reported value is from diluted analysis.

ATTACHMENT B
EQUIPMENT RINSATE SAMPLE ANALYTICAL RESULTS

SITE: CREESE AND COOK CO. (FORMER) 1
CASE: 0824F, 0825F **SDG: D30045, D30266**
LABORATORY: CON-TEST

TABLE 5
HEXAVALENT CHROMIUM IN WATER ANALYSIS
mg/L

		SAMPLE NUMBER	**D30149**	**D30150**	**D30151**	**D30305**			
		SAMPLE LOCATION	**RB-01**	**RB-02**	**RB-03**	**RB-06**			
		LABORATORY NUMBER	**11E0484-01**	**11E0517-01**	**11E0557-01**	**11E0677-01**			
ANALYTES	**METHOD**	**RL**							
Hexavalent Chromium	CM	0.0040	0.0040 U	0.0040 U	0.0040 U	0.0040 U			
		DILUTION FACTOR	1	1	1	1			
		DATE SAMPLED	5/16/2011	5/17/2011	5/18/2011	5/23/2011			
		DATE DIGESTED	5/17/2011	5/18/2011	5/19/2011	5/24/2011			
		DATE ANALYZED	5/17/2011	5/18/2011	5/19/2011	5/24/2011			

ANALYTICAL METHOD:
CM - EPA SW-846/7196A
HEXAVALENT CHROMIUM
COLORIMETRIC METHOD

NOTES: All results are reported in milligrams per Liter (mg/L).
RL = Reporting Limit.
U = Value is Non-Detected.

ATTACHMENT C

CREESE & COOK CO. (FORMER) 1
SEDIMENT SAMPLE ANALYTICAL RESULTS
START
Samples Collected on 16 through 18 May and 6 December 2011

ATTACHMENT F
SEDIMENT SAMPLE ANALYTICAL RESULTS

SITE: CREESE & COOK CO. (FORMER) 1
CASE: 41342
SDGs: A3TT1; A3TT2
LABORATORY: MITKEM

DATA SUMMARY TABLE 1
SEMIVOLATILE ORGANIC ANALYSIS
µg/Kg

SAMPLE NUMBER		A3WN4	A3WP3	A3WR6	A3WR9	A3WS0	A3WS5	A3WS6
SAMPLE LOCATION		D30058	D30067	D30090	D30093	D30094	D30099	D30100
STATION LOCATION		SD-03	SD-04	SD-05	SD-06	SD-07	SD-08	SD-09
LABORATORY NUMBER		K0859-05A	K0859-06A	K0859-07A	K0859-08A	K0859-09A	K0859-10A	K0859-11A
COMPOUND	CRQL							
Benzaldehyde	170	340 U	330 U	330 U	340 U	340 U	340 U	310 U
Phenol	170	340 U	330 U	330 U	340 U	340 U	340 U	310 U
Bis(2-chloroethyl)ether	170	340 U	330 U	330 U	340 U	340 U	340 U	310 U
2-Chlorophenol	170	340 U	330 U	330 U	340 U	340 U	340 U	310 U
2-Methylphenol	170	340 U	330 U	330 U	340 U	340 U	340 U	310 U
2,2'-Oxybis(1-chloropropane)	170	340 UJ	330 UJ	330 U	340 UJ	340 UJ	340 UJ	310 U
Acetophenone	170	340 U	330 U	330 U	340 U	340 U	340 U	310 U
4-Methylphenol	170	340 U	330 U	330 U	340 U	340 U	340 U	310 U
N-Nitroso-di-n-propylamine	170	340 U	330 U	330 U	340 U	340 U	340 U	310 U
Hexachloroethane	170	340 UJ	330 UJ	330 U	340 UJ	340 UJ	340 UJ	310 U
Nitrobenzene	170	340 U	330 U	330 U	340 U	340 U	340 U	310 U
Isophorone	170	340 U	330 U	330 U	340 U	340 U	340 U	310 U
2-Nitrophenol	170	340 U	330 U	330 U	340 U	340 U	340 U	310 U
2,4-Dimethylphenol	170	340 UJ	330 UJ	330 UJ	340 UJ	340 UJ	340 UJ	310 UJ
Bis(2-chloroethoxy)methane	170	340 U	330 U	330 U	340 U	340 U	340 U	310 U
2,4-Dichlorophenol	170	340 U	330 U	330 U	340 U	340 U	340 U	310 U
Naphthalene	170	340 U	330 U	330 U	**76 J**	340 U	340 U	310 U
4-Chloroaniline	170	340 U	330 U	330 U	340 U	340 U	340 U	310 U
Hexachlorobutadiene	170	340 U	330 U	330 U	340 U	340 U	340 U	310 U
Caprolactam	170	340 U	330 U	330 U	340 U	340 U	340 U	310 U
4-Chloro-3-methylphenol	170	340 U	330 U	330 U	340 U	340 U	340 U	310 U
2-Methylnaphthalene	170	340 U	330 U	330 U	340 U	340 U	340 U	310 U
Hexachlorocyclopentadiene	170	340 UJ	330 UJ	330 UJ	340 UJ	340 UJ	340 UJ	310 UJ
2,4,6-Trichlorophenol	170	340 U	330 U	330 U	340 U	340 U	340 U	310 U
2,4,5-Trichlorophenol	170	340 U	330 U	330 U	340 U	340 U	340 U	310 U
1,1'-Biphenyl	170	340 U	330 U	330 U	340 U	340 U	340 U	310 U
2-Chloronaphthalene	170	340 U	330 U	330 U	340 U	340 U	340 U	310 U
2-Nitroaniline	330	660 U	650 U	640 U	660 U	660 U	670 U	590 U
Dimethylphthalate	170	**120 J**	**170 J**	330 U	**220 J**	**140 J**	**110 J**	310 U
2,6-Dinitrotoluene	170	340 U	330 U	330 U	340 U	340 U	340 U	310 U
Acenaphthylene	170	**390**	**110 J**	330 U	**350**	340 U	**160 J**	310 U
3-Nitroaniline	330	660 U	650 U	640 U	660 U	660 U	670 U	590 U
Acenaphthene	170	**78 J**	330 U	330 U	340 U	340 U	340 U	310 U
2,4-Dinitrophenol	330	660 UJ	650 UJ	640 U	660 UJ	660 UJ	670 UJ	590 U
4-Nitrophenol	330	660 UJ	650 UJ	640 U	660 UJ	660 UJ	670 UJ	590 U
Dibenzofuran	170	340 U	330 U	330 U	340 U	340 U	340 U	310 U
2,4-Dinitrotoluene	170	340 U	330 U	330 U	340 U	340 U	340 U	310 U
Diethylphthalate	170	340 U	330 U	330 U	340 U	340 U	340 U	310 U
Fluorene	170	**180 J**	330 U	330 U	**100 J**	340 U	340 U	310 U
4-Chlorophenyl-phenylether	170	340 U	330 U	330 U	340 U	340 U	340 U	310 U
4-Nitroaniline	330	660 U	650 U	640 U	660 U	660 U	670 U	590 U
4,6-Dinitro-2-methylphenol	330	660 U	650 U	640 U	660 U	660 U	670 U	590 U
N-Nitrosodiphenylamine	170	340 U	330 U	330 U	340 U	340 U	340 U	310 U
1,2,4,5-Tetrachlorobenzene	170	340 U	330 U	330 U	340 U	340 U	340 U	310 U
4-Bromophenyl-phenylether	170	340 U	330 U	330 U	340 U	340 U	340 U	310 U
Hexachlorobenzene	170	340 U	330 U	330 U	340 U	340 U	340 U	310 U
Atrazine	170	340 U	330 U	330 U	340 U	340 U	340 U	310 U
Pentachlorophenol	330	660 U	650 U	640 U	660 U	660 U	670 U	590 U
Phenanthrene	170	**1700**	**430**	330 U	**1000**	**120 J**	**460**	**150 J**
Anthracene	170	**410**	**100 J**	330 U	**300 J**	**87 J**	**180 J**	**65 J**
Carbazole	170	**85 J**	330 U	330 U	**72 J**	**340 U**	340 U	310 U
Di-n-butylphthalate	170	340 U	330 U	330 U	340 U	340 U	**80 J**	310 U
Fluoranthene	170	**2400**	**790**	330 U	**2100**	**520**	**1000**	**540**
Pyrene	170	**2800**	**950**	330 UJ	**2500**	**520**	**1400**	**660 J**
Butylbenzylphthalate	170	340 UJ	330 UJ	330 U	340 UJ	340 UJ	340 UJ	310 U
3,3'-Dichlorobenzidine	170	340 U	330 U	330 U	340 U	340 U	340 U	310 U
Benzo(a)anthracene	170	**1200**	**490**	330 U	**1200**	**380**	**580**	**440**
Chrysene	170	**1700**	**570**	330 U	**1200**	**310 J**	**840**	**380**
Bis(2-ethylhexyl)phthalate	170	1000 UJ	700 UJ	330 U	650 UJ	630 UJ	680 UJ	310 U
Di-n-octylphthalate	170	340 UJ	330 UJ	330 UJ	340 UJ	340 UJ	340 UJ	310 UJ
Benzo(b)fluoranthene	170	**1600**	**660**	330 U	**1300**	**350**	**1100**	**430**
Benzo(k)fluoranthene	170	**900**	**360**	330 UJ	**1200**	**210 J**	**620**	**250 J**
Benzo(a)pyrene	170	**1300**	**510**	330 U	**1200**	**290 J**	**770**	**350**
Indeno(1,2,3-cd)pyrene	170	**810**	**350**	330 U	**810**	**140 J**	**540**	**160 J**
Dibenzo(a,h)anthracene	170	**200 J**	**84 J**	330 U	**210 J**	**340 U**	**140 J**	310 U
Benzo(g,h,i)perylene	170	**810**	**350**	330 U	800	**120 J**	**540**	**130 J**
2,3,4,6-Tetrachlorophenol	170	340 U	330 U	330 U	340 U	340 U	340 U	310 U
DILUTION FACTOR		1.0	1.0	1.0	1.0	1.0	1.0	1.0
DATE SAMPLED		5/18/2011	5/17/2011	5/17/2011	5/17/2011	5/17/2011	5/17/2011	5/17/2011
DATE EXTRACTED		5/20/2011	5/20/2011	5/28/2011	5/20/2011	5/20/2011	5/20/2011	5/28/2011
DATE ANALYZED		5/31/2011	5/31/2011	6/2/2011	5/31/2011	5/31/2011	5/31/2011	6/2/2011
SAMPLE WEIGHT (GRAMS)		31.3	53.6	30.2	44.1	30.6	36.6	30.2
% SOLIDS		47.9	28.5	51.4	33.8	48.7	40.6	55.3

NOTES: µg/Kg = micrograms per Kilogram
All results are reported on a Dry Weight Basis.
CRQL = Contract Required Quantitation Limit
U = Value is Non-Detected.
UJ = Value is Non-Detected and Detection Limit is Estimated.
J = Value is Estimated.
* = Reported value is from diluted analysis.
SQuiRTs = National Oceanographic and Atmospheric Administration Screening Quick Reference Tables.
TEL = Threshold Effects Level.
PEL = Probable Effects Level.

ATTACHMENT F
SEDIMENT SAMPLE ANALYTICAL RESULTS

SITE: CREESE & COOK CO. (FORMER) 1
CASE: 41342
SDGs: A3TT1; A3TT2
LABORATORY: MITKEM

DATA SUMMARY TABLE 1
SEMIVOLATILE ORGANIC ANALYSIS
µg/Kg

SAMPLE NUMBER		A3WT1	A3WT2	A3WT7	A3WT8	A3WW3	A3WW4	A3WX3
SAMPLE LOCATION		D30105	D30106	D30111	D30112	D30117	D30118	D30127
STATION LOCATION		SD-10	SD-11	SD-12	SD-13	SD-14	SD-15	SD-16
LABORATORY NUMBER		K0859-12A	K0859-13A	K0859-14A	K0864-03A	K0859-15A	K0859-16A	K0864-04A
COMPOUND	CRQL							
Benzaldehyde	170	340 U	340 U	260 U	340 U	340 U	320 U	350 U
Phenol	170	340 U	340 U	260 U	340 U	340 U	320 U	350 U
Bis(2-chloroethyl)ether	170	340 U	340 U	260 U	340 U	340 U	320 U	350 U
2-Chlorophenol	170	340 U	340 U	260 U	340 U	340 U	320 U	350 U
2-Methylphenol	170	340 U	340 U	260 U	340 U	340 U	320 U	350 U
2,2'-Oxybis(1-chloropropane)	170	340 UJ	340 UJ	260 U	340 U	340 UJ	320 U	350 U
Acetophenone	170	340 U	340 U	260 U	340 U	340 U	320 U	350 U
4-Methylphenol	170	340 U	340 U	260 U	340 U	340 U	320 U	350 U
N-Nitroso-di-n-propylamine	170	340 U	340 U	260 U	340 U	340 U	320 U	350 U
Hexachloroethane	170	340 UJ	340 UJ	260 U	340 U	340 UJ	320 U	350 U
Nitrobenzene	170	340 U	340 U	260 U	340 U	340 U	320 U	350 U
Isophorone	170	340 U	340 U	260 U	340 U	340 U	320 U	350 U
2-Nitrophenol	170	340 U	340 U	260 U	340 U	340 U	320 U	350 U
2,4-Dimethylphenol	170	340 UJ	340 UJ	260 UJ	340 U	340 UJ	320 UJ	350 U
Bis(2-chloroethoxy)methane	170	340 U	340 U	260 U	340 U	340 U	320 U	350 U
2,4-Dichlorophenol	170	340 U	340 U	260 U	340 U	340 U	320 U	350 U
Naphthalene	170	340 U	**110 J**	260 U	340 U	340 U	320 U	350 U
4-Chloroaniline	170	340 U	340 U	260 U	340 U	340 U	320 U	350 U
Hexachlorobutadiene	170	340 U	340 U	260 U	340 U	340 U	320 U	350 U
Caprolactam	170	340 U	340 U	260 U	340 U	340 U	320 U	350 U
4-Chloro-3-methylphenol	170	340 U	340 U	260 U	340 UJ	340 U	320 U	350 UJ
2-Methylnaphthalene	170	340 U	340 U	260 U	340 U	340 U	320 U	350 U
Hexachlorocyclopentadiene	170	340 UJ	340 UJ	260 UJ	340 UJ	340 UJ	320 UJ	350 UJ
2,4,6-Trichlorophenol	170	340 U	340 U	260 U	340 U	340 U	320 U	350 U
2,4,5-Trichlorophenol	170	340 U	340 U	260 U	340 U	340 U	320 U	350 U
1,1'-Biphenyl	170	340 U	340 U	260 U	340 U	340 U	320 U	350 U
2-Chloronaphthalene	170	340 U	340 U	260 U	340 U	340 U	320 U	350 U
2-Nitroaniline	330	660 U	670 U	510 U	660 U	660 U	630 U	670 U
Dimethylphthalate	170	**150 J**	**210 J**	260 U	340 U	**170 J**	320 U	350 U
2,6-Dinitrotoluene	170	340 U	340 U	260 U	340 U	340 U	320 U	350 U
Acenaphthylene	170	340 U	**270 J**	260 U	**410**	340 U	**170 J**	350 U
3-Nitroaniline	330	660 U	670 U	510 U	660 U	660 U	630 U	670 U
Acenaphthene	170	340 U	340 U	260 U	340 U	340 U	320 U	350 U
2,4-Dinitrophenol	330	660 UJ	670 UJ	510 U	660 UJ	660 UJ	630 U	670 UJ
4-Nitrophenol	330	660 UJ	670 UJ	510 U	660 U	660 UJ	630 U	670 U
Dibenzofuran	170	340 U	340 U	260 U	340 U	340 U	320 U	350 U
2,4-Dinitrotoluene	170	340 U	340 U	260 U	340 U	340 U	320 U	350 U
Diethylphthalate	170	340 U	340 U	260 U	340 U	340 U	320 U	350 U
Fluorene	170	340 U	**80 J**	**53 J**	**140 J**	340 UJ	**120 J**	350 U
4-Chlorophenyl-phenylether	170	340 U	340 U	260 U	340 U	340 U	320 U	350 U
4-Nitroaniline	330	660 U	670 U	510 U	660 U	660 U	630 U	670 U
4,6-Dinitro-2-methylphenol	330	660 U	670 U	510 U	660 U	660 U	630 U	670 U
N-Nitrosodiphenylamine	170	340 U	340 U	260 U	340 U	340 U	320 U	350 U
1,2,4,5-Tetrachlorobenzene	170	340 U	340 U	260 U	340 U	340 U	320 U	350 U
4-Bromophenyl-phenylether	170	340 U	340 U	260 U	340 U	340 U	320 U	350 U
Hexachlorobenzene	170	340 U	340 U	260 U	340 U	340 U	320 U	350 U
Atrazine	170	340 U	340 U	260 U	340 U	340 U	320 U	350 U
Pentachlorophenol	330	660 U	670 U	510 U	660 U	660 U	630 U	670 U
Phenanthrene	170	**240 J**	**740**	**560 J**	**1500 J**	**270 J**	**1200 J**	**76 J**
Anthracene	170	**85 J**	**360**	**280 J**	**440 J**	**130 J**	**340 J**	350 U
Carbazole	170	340 U	340 U	260 U	**100 J**	340 U	320 U	350 U
Di-n-butylphthalate	170	340 U	340 U	260 U	**99 J**	340 U	320 U	350 U
Fluoranthene	170	**460**	**1900**	**1200 J**	**3800**	**630 J**	**1600 J**	**220 J**
Pyrene	170	**560**	**2800**	**1300 J**	**3000**	**710 J**	**1900 J**	**180 J**
Butylbenzylphthalate	170	340 UJ	340 UJ	260 U	**100 J**	340 UJ	320 U	350 U
3,3'-Dichlorobenzidine	170	340 U	340 U	260 U	340 U	340 U	320 U	350 U
Benzo(a)anthracene	170	**300 J**	**1500**	**700 J**	**1900**	**470 J**	**950 J**	**120 J**
Chrysene	170	**370**	**1200**	**580 J**	**2000**	**410 J**	**930 J**	**120 J**
Bis(2-ethylhexyl)phthalate	170	620 UJ	810 UJ	260 U	**2000**	710 UJ	380 U	**1300 U**
Di-n-octylphthalate	170	340 UJ	340 UJ	260 UJ	340 U	340 UJ	320 UJ	350 U
Benzo(b)fluoranthene	170	**410**	**1500**	**570**	**2700**	**460 J**	**820**	**120 J**
Benzo(k)fluoranthene	170	**220 J**	**1200**	**360 J**	**950**	**250 J**	**830 J**	**84 J**
Benzo(a)pyrene	170	**300 J**	**1400**	**540**	**1900**	**380 J**	**760**	**120 J**
Indeno(1,2,3-cd)pyrene	170	**210 J**	**820**	**230 J**	**1200**	**210 J**	**350**	350 U
Dibenzo(a,h)anthracene	170	340 U	**220 J**	**62 J**	**310 J**	340 U	**96 J**	350 U
Benzo(g,h,i)perylene	170	**200 J**	**740**	**200 J**	**1100**	**180 J**	**330**	350 U
2,3,4,6-Tetrachlorophenol	170	340 U	340 U	260 U	340 U	340 U	320 U	350 U
DILUTION FACTOR		1.0	1.0	1.0	1.0	1.0	1.0	1.0
DATE SAMPLED		5/17/2011	5/17/2011	5/17/2011	5/16/2011	5/17/2011	5/16/2011	5/16/2011
DATE EXTRACTED		5/20/2011	5/20/2011	5/28/2011	5/23/2011	5/20/2011	5/28/2011	5/23/2011
DATE ANALYZED		5/31/2011	5/31/2011	6/2/2011	5/26/2011	5/31/2011	6/2/2011	5/26/2011
SAMPLE WEIGHT (GRAMS)		32.6	34.1	30.0	53.6	32.6	30.1	53.6
% SOLIDS		45.8	43.6	64.9	27.9	46.2	52.3	27.6

NOTES: µg/Kg = micrograms per Kilogram
All results are reported on a Dry Weight Basis.
CRQL = Contract Required Quantitation Limit
U = Value is Non-Detected.
UJ = Value is Non-Detected and Detection Limit is Estimated.
J = Value is Estimated.
* = Reported value is from diluted analysis.
SQuiRTs = National Oceanographic and Atmospheric Administration Screening Quick Reference Tables.
TEL = Threshold Effects Level.
PEL = Probable Effects Level.

ATTACHMENT F
SEDIMENT SAMPLE ANALYTICAL RESULTS

SITE: CREESE & COOK CO. (FORMER) 1
CASE: 41342
SDGs: A3TT1; A3TT2
LABORATORY: MITKEM

DATA SUMMARY TABLE 1
SEMIVOLATILE ORGANIC ANALYSIS
µg/Kg

SAMPLE NUMBER		A3WX4	A3WX6	A3WY3	A3WY4	A3WY5	A3WY6	A3WY7
SAMPLE LOCATION		D30128	D30130	D30137	D30138	D30139	D30140	D30141
STATION LOCATION		SD-17	SD-18	SD-19	SD-20	SD-21	SD-22	SD-23
LABORATORY NUMBER		K0864-05A	K0864-06A	K0864-07A	K0864-08A	K0864-09A	K0864-10A	K0864-11A
COMPOUND	CRQL							
Benzaldehyde	170	240 U	260 U	340 U	340 U	340 U	320 U	340 U
Phenol	170	240 U	260 U	340 U	340 U	340 U	320 U	**88 J**
Bis(2-chloroethyl)ether	170	240 U	260 U	340 U	340 U	340 U	320 U	340 U
2-Chlorophenol	170	240 U	260 U	340 U	340 U	340 U	320 U	340 U
2-Methylphenol	170	240 U	260 U	340 U	340 U	340 U	320 U	340 U
2,2'-Oxybis(1-chloropropane)	170	240 U	260 U	340 U	340 U	340 U	320 U	340 U
Acetophenone	170	240 U	260 U	340 U	340 U	340 U	320 U	340 U
4-Methylphenol	170	240 U	260 U	340 U	340 U	340 U	320 U	**73 J**
N-Nitroso-di-n-propylamine	170	240 U	260 U	340 U	340 U	340 U	320 U	340 U
Hexachloroethane	170	240 U	260 U	340 U	340 U	340 U	320 U	340 U
Nitrobenzene	170	240 U	260 U	340 U	340 U	340 U	320 U	340 U
Isophorone	170	240 U	260 U	340 U	340 U	340 U	320 U	340 U
2-Nitrophenol	170	240 U	260 U	340 U	340 U	340 U	320 U	340 U
2,4-Dimethylphenol	170	240 UJ	260 UJ	340 U	340 U	340 U	320 UJ	340 UJ
Bis(2-chloroethoxy)methane	170	240 U	260 U	340 U	340 U	340 U	320 U	340 U
2,4-Dichlorophenol	170	240 U	260 U	340 U	340 U	340 U	320 U	340 U
Naphthalene	170	240 U	260 U	**77 J**	**78 J**	340 U	**67 J**	340 U
4-Chloroaniline	170	240 U	260 U	340 U	340 U	340 U	320 U	340 U
Hexachlorobutadiene	170	240 U	260 U	340 U	340 U	340 U	320 U	340 U
Caprolactam	170	240 U	260 U	340 U	340 U	340 U	320 U	340 U
4-Chloro-3-methylphenol	170	240 U	260 U	340 UJ	340 UJ	340 UJ	320 U	340 U
2-Methylnaphthalene	170	240 U	260 U	340 U	340 U	340 U	320 U	340 U
Hexachlorocyclopentadiene	170	240 UJ	260 UJ	340 UJ	340 UJ	340 UJ	320 UJ	340 UJ
2,4,6-Trichlorophenol	170	240 U	260 U	340 U	340 U	340 U	320 U	340 U
2,4,5-Trichlorophenol	170	240 U	260 U	340 U	340 U	340 U	320 U	340 U
1,1'-Biphenyl	170	240 U	260 U	340 U	340 U	340 U	320 U	340 U
2-Chloronaphthalene	170	240 U	260 U	340 U	340 U	340 U	320 U	340 U
2-Nitroaniline	330	470 U	510 U	660 U	670 U	660 U	630 U	670 U
Dimethylphthalate	170	240 U	260 U	340 U	340 U	340 U	320 U	340 U
2,6-Dinitrotoluene	170	240 U	260 U	340 U	340 U	340 U	320 U	340 U
Acenaphthylene	170	**71 J**	260 U	**240 J**	**260 J**	340 U	**240 J**	340 U
3-Nitroaniline	330	470 U	510 U	660 U	670 U	660 U	630 U	670 U
Acenaphthene	170	240 U	260 U	**92 J**	340 U	340 U	320 U	340 U
2,4-Dinitrophenol	330	470 U	510 U	660 UJ	670 UJ	660 UJ	630 U	670 UJ
4-Nitrophenol	330	470 U	510 U	660 U	670 U	660 U	630 U	670 UJ
Dibenzofuran	170	240 U	260 U	340 U	340 U	340 U	320 U	340 U
2,4-Dinitrotoluene	170	240 U	260 U	340 U	340 U	340 U	320 U	340 U
Diethylphthalate	170	240 U	260 U	340 U	340 U	340 U	320 U	340 U
Fluorene	170	240 U	260 U	**120 J**	**120 J**	340 U	**89 J**	340 U
4-Chlorophenyl-phenylether	170	240 U	260 U	340 U	340 U	340 U	320 U	340 U
4-Nitroaniline	330	470 U	510 U	660 U	670 U	660 U	630 U	670 U
4,6-Dinitro-2-methylphenol	330	470 U	510 U	660 U	670 U	660 U	630 U	670 U
N-Nitrosodiphenylamine	170	240 U	260 U	340 U	340 U	340 U	320 U	340 U
1,2,4,5-Tetrachlorobenzene	170	240 U	260 U	340 U	340 U	340 U	320 U	340 U
4-Bromophenyl-phenylether	170	240 U	260 U	340 U	340 U	340 U	320 U	340 U
Hexachlorobenzene	170	240 U	260 U	340 U	340 U	340 U	320 U	340 U
Atrazine	170	240 U	260 U	340 U	340 U	340 U	320 U	340 U
Pentachlorophenol	330	470 U	510 U	660 U	670 U	660 U	630 U	670 U
Phenanthrene	170	**180 J**	**61 J**	**1100**	**1200 J**	**82 J**	**590**	**210 J**
Anthracene	170	**68 J**	260 U	**290 J**	**410 J**	340 U	**200 J**	**89 J**
Carbazole	170	240 U	260 U	**91 J**	**71 J**	340 U	320 U	340 U
Di-n-butylphthalate	170	240 U	260 U	340 U	**75 J**	340 U	320 U	340 U
Fluoranthene	170	**430 J**	**170 J**	**2500**	**2600**	**230 J**	**1300**	**550**
Pyrene	170	**560 J**	**250 J**	**2500**	**2700**	**240 J**	**1600 J**	**610**
Butylbenzylphthalate	170	240 U	260 U	340 U	340 U	340 U	320 U	340 U
3,3'-Dichlorobenzidine	170	240 U	260 U	340 U	340 U	340 U	320 U	340 U
Benzo(a)anthracene	170	**320 J**	**130 J**	**1200**	**1600**	**120 J**	**730**	**360**
Chrysene	170	**310 J**	**120 J**	**1500**	**1500**	**150 J**	**920**	**410**
Bis(2-ethylhexyl)phthalate	170	240 U	260 U	**2000**	**2300**	**1200 U**	320 U	**1300 U**
Di-n-octylphthalate	170	240 UJ	260 UJ	340 U	340 U	340 U	320 UJ	340 UJ
Benzo(b)fluoranthene	170	**290**	**130 J**	**1600**	**1600**	**170 J**	**1100**	**490**
Benzo(k)fluoranthene	170	**240 J**	**62 J**	**810**	**910**	**110 J**	**830 J**	**340 J**
Benzo(a)pyrene	170	**260**	**110 J**	**1200**	**1300**	**140 J**	**860**	**410**
Indeno(1,2,3-cd)pyrene	170	**130 J**	260 U	**790**	**790**	**91 J**	**430**	**240 J**
Dibenzo(a,h)anthracene	170	240 U	260 U	**210 J**	**220 J**	**340 U**	**120 J**	**68 J**
Benzo(g,h,i)perylene	170	**130 J**	260 U	**770**	**760**	**93 J**	**430**	**240 J**
2,3,4,6-Tetrachlorophenol	170	240 U	260 U	340 U	340 U	340 U	320 U	340 U
DILUTION FACTOR		1.0	1.0	1.0	1.0	1.0	1.0	1.0
DATE SAMPLED		5/16/2011	5/16/2011	5/16/2011	5/16/2011	5/16/2011	5/16/2011	5/16/2011
DATE EXTRACTED		5/28/2011	5/28/2011	5/23/2011	5/23/2011	5/23/2011	5/28/2011	5/23/2011
DATE ANALYZED		6/2/2011	6/2/2011	5/26/2011	5/26/2011	5/26/2011	6/2/2011	5/31/2011
SAMPLE WEIGHT (GRAMS)		30.0	30.6	33.3	30.0	31.9	30.6	31.9
% SOLIDS		69.9	63.6	45.1	49.5	47.1	51.6	46.5

NOTES: µg/Kg = micrograms per Kilogram
All results are reported on a Dry Weight Basis.
CRQL = Contract Required Quantitation Limit
U = Value is Non-Detected.
UJ = Value is Non-Detected and Detection Limit is Estimated.
J = Value is Estimated.
* = Reported value is from diluted analysis.
SQuiRTs = National Oceanographic and Atmospheric Administration Screening Quick Reference Tables.
TEL = Threshold Effects Level.
PEL = Probable Effects Level.

ATTACHMENT F
SEDIMENT SAMPLE ANALYTICAL RESULTS

SITE: CREESE & COOK CO. (FORMER) 1
CASE: 41342
SDGs: A3TT1; A3TT2
LABORATORY: MITKEM

DATA SUMMARY TABLE 1
SEMIVOLATILE ORGANIC ANALYSIS
µg/Kg

SAMPLE NUMBER		A3WY8	A3WY9	A3WZ0	A3WZ3	A3WZ4	SQuiRTs TEL (ppb)	SQuiRTs PEL (ppb)
SAMPLE LOCATION		D30142	D30143	D30144	D30147	D30148		
STATION LOCATION		SD-24	SD-25	SD-26	SD-29	SD-30		
LABORATORY NUMBER		K0864-12A	K0864-13A	K0864-14A	K0859-17A	K0864-15A		
COMPOUND	CRQL							
Benzaldehyde	170	340 U	340 U	310 U	340 U	280 U	NL	NL
Phenol	170	340 U	340 U	310 U	340 U	280 U	NL	NL
Bis(2-chloroethyl)ether	170	340 U	340 U	310 U	340 U	280 U	NL	NL
2-Chlorophenol	170	340 U	340 U	310 U	340 U	280 U	NL	NL
2-Methylphenol	170	340 U	340 U	310 U	340 U	280 U	NL	NL
2,2'-Oxybis(1-chloropropane)	170	340 U	340 U	310 U	340 UJ	280 U	NL	NL
Acetophenone	170	340 U	340 U	310 U	340 U	280 U	NL	NL
4-Methylphenol	170	**140 J**	340 U	310 U	340 U	280 U	NL	NL
N-Nitroso-di-n-propylamine	170	340 U	340 U	310 U	340 U	280 U	NL	NL
Hexachloroethane	170	340 U	340 U	310 U	340 UJ	280 U	NL	NL
Nitrobenzene	170	340 U	340 U	310 U	340 U	280 U	NL	NL
Isophorone	170	340 U	340 U	310 U	340 U	280 U	NL	NL
2-Nitrophenol	170	340 U	340 U	310 U	340 U	280 U	NL	NL
2,4-Dimethylphenol	170	340 UJ	340 U	310 UJ	340 UJ	280 UJ	NL	NL
Bis(2-chloroethoxy)methane	170	340 U	340 U	310 U	340 U	280 U	NL	NL
2,4-Dichlorophenol	170	340 U	340 U	310 U	340 U	280 U	NL	NL
Naphthalene	170	340 U	340 U	310 U	340 U	280 U	34.6	391
4-Chloroaniline	170	340 U	340 U	310 U	340 U	280 U	NL	NL
Hexachlorobutadiene	170	340 U	340 U	310 U	340 U	280 U	NL	NL
Caprolactam	170	340 U	340 U	310 U	340 U	280 U	NL	NL
4-Chloro-3-methylphenol	170	340 U	340 UJ	310 U	340 U	280 U	NL	NL
2-Methylnaphthalene	170	340 U	340 U	310 U	340 U	280 U	NL	NL
Hexachlorocyclopentadiene	170	340 UJ	340 UJ	310 UJ	340 UJ	280 UJ	NL	NL
2,4,6-Trichlorophenol	170	340 U	340 U	310 U	340 U	280 U	NL	NL
2,4,5-Trichlorophenol	170	340 U	340 U	310 U	340 U	280 U	NL	NL
1,1'-Biphenyl	170	340 U	340 U	310 U	340 U	280 U	NL	NL
2-Chloronaphthalene	170	340 U	340 U	310 U	340 U	280 U	NL	NL
2-Nitroaniline	330	660 U	650 U	600 U	660 U	540 U	NL	NL
Dimethylphthalate	170	340 U	340 U	310 U	**160 J**	280 U	NL	NL
2,6-Dinitrotoluene	170	340 U	340 U	310 U	340 U	280 U	NL	NL
Acenaphthylene	170	**110 J**	**77 J**	310 U	**470**	**89 J**	5.87	128
3-Nitroaniline	330	660 U	650 U	600 U	660 U	540 U	NL	NL
Acenaphthene	170	340 U	340 U	310 U	**270 J**	280 U	6.71	88.9
2,4-Dinitrophenol	330	660 UJ	650 UJ	600 U	660 UJ	540 U	NL	NL
4-Nitrophenol	330	660 UJ	650 U	600 U	660 UJ	540 U	NL	NL
Dibenzofuran	170	340 U	340 U	310 U	**260 J**	280 U	NL	NL
2,4-Dinitrotoluene	170	340 U	340 U	310 U	340 U	280 U	NL	NL
Diethylphthalate	170	340 U	340 U	310 U	340 U	280 U	NL	NL
Fluorene	170	340 U	340 U	310 U	**1500 J**	**55 J**	21.2	144
4-Chlorophenyl-phenylether	170	340 U	340 U	310 U	340 U	280 U	NL	NL
4-Nitroaniline	330	660 U	650 U	600 U	660 U	540 U	NL	NL
4,6-Dinitro-2-methylphenol	330	660 U	650 U	600 U	660 U	540 U	NL	NL
N-Nitrosodiphenylamine	170	340 U	340 U	310 U	340 U	280 U	NL	NL
1,2,4,5-Tetrachlorobenzene	170	340 U	340 U	310 U	340 U	280 U	NL	NL
4-Bromophenyl-phenylether	170	340 U	340 U	310 U	340 U	280 U	NL	NL
Hexachlorobenzene	170	340 U	340 U	310 U	340 U	280 U	NL	NL
Atrazine	170	340 U	340 U	310 U	340 U	280 U	NL	NL
Pentachlorophenol	330	660 U	650 U	600 U	660 U	540 U	NL	NL
Phenanthrene	170	**380**	**290 J**	310 U	***7800 J**	**460 J**	86.7	544
Anthracene	170	**96 J**	**91 J**	310 U	***8500 J**	**300 J**	46.9	245
Carbazole	170	340 U	340 U	310 U	340 U	280 U	NL	NL
Di-n-butylphthalate	170	340 U	340 U	310 U	340 U	280 U	NL	NL
Fluoranthene	170	**690**	**760**	**150 J**	***15000 J**	**1100 J**	113	1494
Pyrene	170	**830**	**790**	**190 J**	***12000 J**	**1400 J**	153	1398
Butylbenzylphthalate	170	340 U	340 U	310 U	340 UJ	280 U	NL	NL
3,3'-Dichlorobenzidine	170	340 U	340 U	310 U	340 U	280 U	NL	NL
Benzo(a)anthracene	170	**340 J**	**440**	**110 J**	***8500 J**	**730 J**	74.8	693
Chrysene	170	**530**	**440**	**110 J**	***6500 J**	**640 J**	108.0	846
Bis(2-ethylhexyl)phthalate	170	**1400 U**	**1500 U**	310 U	830 UJ	280 U	NL	NL
Di-n-octylphthalate	170	340 UJ	340 U	310 UJ	340 UJ	280 UJ	NL	NL
Benzo(b)fluoranthene	170	**520**	**460**	**120 J**	**5100 J**	**560 J**	NL	NL
Benzo(k)fluoranthene	170	**460**	**430**	**70 J**	**2600 J**	**610 J**	NL	NL
Benzo(a)pyrene	170	**450**	**430**	**100 J**	**4300 J**	**570 J**	88.8	763
Indeno(1,2,3-cd)pyrene	170	**290 J**	**280 J**	310 U	**1500 J**	**230 J**	NL	NL
Dibenzo(a,h)anthracene	170	**75 J**	**75 J**	310 U	**590**	**69 J**	6.22	135
Benzo(g,h,i)perylene	170	**310 J**	**290 J**	310 U	**1100 J**	**210 J**	NL	NL
2,3,4,6-Tetrachlorophenol	170	340 U	340 U	310 U	340 U	280 U	NL	NL
DILUTION FACTOR		1.0	1.0	1.0	1.0/4.0*	1.0		
DATE SAMPLED		5/16/2011	5/16/2011	5/16/2011	5/17/2011	5/16/2011		
DATE EXTRACTED		5/23/2011	5/23/2011	5/28/2011	5/20/2011	5/28/2011		
DATE ANALYZED		5/31/2011	5/26/2011	6/2/2011	5/31/2011	6/2/2011		
SAMPLE WEIGHT (GRAMS)		38.5	34.9	30.1	34.9	30.1		
% SOLIDS		39.2	43.5	54.9	42.9	60.6		

NOTES: µg/Kg = micrograms per Kilogram
All results are reported on a Dry Weight Basis.
CRQL = Contract Required Quantitation Limit
U = Value is Non-Detected.
UJ = Value is Non-Detected and Detection Limit is Estimated.
J = Value is Estimated.
* = Reported value is from diluted analysis.
SQuiRTs = National Oceanographic and Atmospheric Administration Screening Quick Reference Tables.
TEL = Threshold Effects Level.
PEL = Probable Effects Level.

ATTACHMENT F
SEDIMENT SAMPLE ANALYTICAL RESULTS

SITE: CREESE & COOK CO. (FORMER) 1
CASE: 41342
SDG: A3TT1; A3TT2
LABORATORY: MITKEM

DATA SUMMARY TABLE 2
POLYCHLORINATED BIPHENYLS (PCB)
µg/Kg

	SAMPLE NUMBER	**A3WN4**	**A3WP3**	**A3WR6**	**A3WR9**	**A3WS0**	**A3WS5**	**A3WS6**	**A3WT1**
	SAMPLE LOCATION	**D30058**	**D30067**	**D30090**	**D30093**	**D30094**	**D30099**	**D30100**	**D30105**
	STATION LOCATION	**SD-03**	**SD-04**	**SD-05**	**SD-06**	**SD-07**	**SD-08**	**SD-09**	**SD-10**
	LABORATORY NUMBER	**K0859-05A**	**K0859-06A**	**K0859-07A**	**K0859-08A**	**K0859-09A**	**K0859-10A**	**K0859-11A**	**K0859-12A**
COMPOUND	**CRQL**								
Aroclor-1016	**33**	66 U	320 U	63 U	66 U	66 U	67 U	59 U	66 U
Aroclor-1221	**33**	66 U	320 U	63 U	66 U	66 U	67 U	59 U	66 U
Aroclor-1232	**33**	66 U	320 U	63 U	66 U	66 U	67 U	59 U	66 U
Aroclor-1242	**33**	66 U	***31000**	63 U	66 U	66 U	67 U	59 U	66 U
Aroclor-1248	**33**	66 U	320 U	63 U	66 U	66 U	67 U	59 U	66 U
Aroclor-1254	**33**	**110 J**	***14000**	63 U	**58 J**	**100**	**290 J**	59 U	**57 J**
Aroclor-1260	**33**	66 U	320 U	63 U	66 U	66 U	67 U	59 U	66 U
Aroclor-1262	**33**	66 U	320 U	63 U	66 U	66 U	67 U	59 U	66 U
Aroclor-1268	**33**	66 U	320 U	63 U	66 U	66 U	67 U	59 U	66 U
	DILUTION FACTOR	1.0	5.0/*50.0	1.0	1.0	1.0	1.0	1.0	1.0
	DATE SAMPLED	5/18/2011	5/17/2011	5/17/2011	5/17/2011	5/17/2011	5/17/2011	5/17/2011	5/17/2011
	DATE EXTRACTED	5/20/2011	5/20/2011	5/28/2011	5/20/2011	5/20/2011	5/20/2011	5/28/2011	5/20/2011
	DATE ANALYZED	5/26/2011	6/1/2011	6/1/2011	5/26/2011	5/26/2011	5/26/2011	6/1/2011	5/26/2011
	SAMPLE WEIGHT (GRAMS)	31.3	53.6	30.6	44.1	30.6	36.6	30.6	32.6
	% SOLID	47.9	28.5	51.4	33.8	48.7	40.6	55.3	45.8

NOTES: µg/Kg = micrograms per Kilogram.
All results are reported on a Dry Weight Basis.
CRQL = Contract Required Quantitation Limit.
SQuiRTs = National Oceanographic and Atmospheric Administration (NOAA) Screening Quick Reference Tables.
PEL = Probable Effects Level.
TEL = Threshold Effects Level.
ppb = parts per billion (equivalent to µg/kg).
NL = Not Listed- NOAA SQuiRTs list no PEL or TEL.
** = value listed is for total PCBs; Compound-specific values are not listed.
U = Value is Non-Detected.
J = Value is Estimated.

ATTACHMENT F
SEDIMENT SAMPLE ANALYTICAL RESULTS

SITE: CREESE & COOK CO. (FORMER) 1
CASE: 41342
SDG: A3TT1; A3TT2
LABORATORY: MITKEM

DATA SUMMARY TABLE 2
POLYCHLORINATED BIPHENYLS (PCB)
µg/Kg

SAMPLE NUMBER		**A3WT2**	**A3WT7**	**A3WT8**	**A3WW3**	**A3WW4**	**A3WX3**	**A3WX4**	**A3WX6**
SAMPLE LOCATION		**D30106**	**D30111**	**D30112**	**D30117**	**D30118**	**D30127**	**D30128**	**D30130**
STATION LOCATION		**SD-11**	**SD-12**	**SD-13**	**SD-14**	**SD-15**	**SD-16**	**SD-17**	**SD-18**
LABORATORY NUMBER		**K0859-13A**	**K0859-14A**	**K0864-03A**	**K0859-15A**	**K0859-16A**	**K0864-04A**	**K0864-05A**	**K0864-06A**
COMPOUND	**CRQL**								
Aroclor-1016	**33**	67 U	51 U	66 U	66 U	63 U	67 U	47 U	51 U
Aroclor-1221	**33**	67 U	51 U	66 U	66 U	63 U	67 U	47 U	51 U
Aroclor-1232	**33**	67 U	51 U	66 U	66 U	63 U	67 U	47 U	51 U
Aroclor-1242	**33**	***2200**	51 U	66 U	66 U	63 U	67 U	47 U	51 U
Aroclor-1248	**33**	67 U	51 U	66 U	66 U	63 U	67 U	47 U	51 U
Aroclor-1254	**33**	***1300**	51 U	66 U	66 U	63 U	67 U	47 U	51 U
Aroclor-1260	**33**	67 U	51 U	66 U	66 U	63 U	67 U	47 U	51 U
Aroclor-1262	**33**	67 U	51 U	66 U	66 U	63 U	67 U	47 U	51 U
Aroclor-1268	**33**	67 U	51 U	66 U	66 U	63 U	67 U	47 U	51 U
DILUTION FACTOR		1.0/*5.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
DATE SAMPLED		5/17/2011	5/17/2011	5/16/2011	5/17/2011	5/16/2011	5/16/2011	5/16/2011	5/16/2011
DATE EXTRACTED		5/20/2011	5/20/2011	5/22/2011	5/20/2011	5/28/2011	5/22/2011	5/28/2011	5/28/2011
DATE ANALYZED		6/1/2011	6/1/2011	6/2/2011	5/26/2011	6/1/2011	6/2/2011	6/1/2011	6/1/2011
SAMPLE WEIGHT (GRAMS)		34.1	30.1	53.6	32.6	30.2	53.6	30.0	30.3
% SOLID		43.6	64.9	27.9	46.2	52.3	27.6	69.9	63.6

NOTES: µg/Kg = micrograms per Kilogram.
All results are reported on a Dry Weight Basis.
CRQL = Contract Required Quantitation Limit.
SQuiRTs = National Oceanographic and Atmospheric Administration (NOAA) Screening Quick Reference Tables.
PEL = Probable Effects Level.
TEL = Threshold Effects Level.
ppb = parts per billion (equivalent to µg/kg).
NL = Not Listed- NOAA SQuiRTs list no PEL or TEL.
** = value listed is for total PCBs; Compound-specific values are not listed.
U = Value is Non-Detected.
J = Value is Estimated.

ATTACHMENT F
SEDIMENT SAMPLE ANALYTICAL RESULTS

SITE: CREESE & COOK CO. (FORMER) 1
CASE: 41342
SDG: A3TT1; A3TT2
LABORATORY: MITKEM

DATA SUMMARY TABLE 2
POLYCHLORINATED BIPHENYLS (PCB)
µg/Kg

SAMPLE NUMBER		**A3WY3**	**A3WY4**	**A3WY5**	**A3WY6**	**A3WY7**	**A3WY8**	**A3WY9**	**A3WZ0**
SAMPLE LOCATION		**D30137**	**D30138**	**D30139**	**D30140**	**D30141**	**D30142**	**D30143**	**D30144**
STATION LOCATION		**SD-19**	**SD-20**	**SD-21**	**SD-22**	**SD-23**	**SD-24**	**SD-25**	**SD-26**
LABORATORY NUMBER		**K0864-07A**	**K0864-08A**	**K0864-09A**	**K0864-10A**	**K0864-11A**	**K0864-12A**	**K0864-13A**	**K0864-14A**
COMPOUND	**CRQL**								
Aroclor-1016	**33**	66 U	67 U	66 U	63 U	67 U	66 U	65 U	59 U
Aroclor-1221	**33**	66 U	67 U	66 U	63 U	67 U	66 U	65 U	59 U
Aroclor-1232	**33**	66 U	67 U	66 U	63 U	67 U	66 U	65 U	59 U
Aroclor-1242	**33**	66 U	67 U	66 U	63 U	67 U	66 U	65 U	59 U
Aroclor-1248	**33**	66 U	67 U	66 U	63 U	67 U	66 U	65 U	59 U
Aroclor-1254	**33**	**130 J**	67 U	66 U	63 U	67 U	**120**	65 U	59 U
Aroclor-1260	**33**	66 U	67 U	66 U	63 U	67 U	66 U	65 U	59 U
Aroclor-1262	**33**	66 U	67 U	66 U	63 U	67 U	66 U	65 U	59 U
Aroclor-1268	**33**	66 U	67 U	66 U	63 U	67 U	66 U	65 U	59 U
DILUTION FACTOR		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
DATE SAMPLED		5/16/2011	5/16/2011	5/16/2011	5/16/2011	5/16/2011	5/16/2011	5/16/2011	5/16/2011
DATE EXTRACTED		5/22/2011	5/22/2011	5/22/2011	5/28/2011	5/22/2011	5/22/2011	5/22/2011	5/28/2011
DATE ANALYZED		6/2/2011	6/2/2011	6/2/2011	6/1/2011	6/2/2011	6/2/2011	6/2/2011	6/1/2011
SAMPLE WEIGHT (GRAMS)		33.2	30.0	31.9	30.4	31.9	38.5	35.9	30.6
% SOLID		45.1	49.5	47.1	51.6	46.5	39.2	43.5	54.9

NOTES: µg/Kg = micrograms per Kilogram.
All results are reported on a Dry Weight Basis.
CRQL = Contract Required Quantitation Limit.
SQuiRTs = National Oceanographic and Atmospheric Administration (NOAA) Screening Quick Reference Tables.
PEL = Probable Effects Level.
TEL = Threshold Effects Level.
ppb = parts per billion (equivalent to µg/kg).
NL = Not Listed- NOAA SQuiRTs list no PEL or TEL.
** = value listed is for total PCBs; Compound-specific values are not listed.
U = Value is Non-Detected.
J = Value is Estimated.

ATTACHMENT F
SEDIMENT SAMPLE ANALYTICAL RESULTS

SITE: CREESE & COOK CO. (FORMER) 1
CASE: 41342
SDG: A3TT1; A3TT2
LABORATORY: MITKEM

DATA SUMMARY TABLE 2
POLYCHLORINATED BIPHENYLS (PCB)
µg/Kg

								SQuiRTs PEL (ppb)	SQuiRTs TEL (ppb)
SAMPLE NUMBER		**A3WZ3**	**A3WZ4**						
SAMPLE LOCATION		**D30147**	**D30148**						
STATION LOCATION		**SD-29**	**SD-30**						
LABORATORY NUMBER		**K0859-17A**	**K0864-15A**						
COMPOUND	**CRQL**								
Aroclor-1016	**33**	66 U	54 U					21.6**	189**
Aroclor-1221	**33**	66 U	54 U					21.6**	189**
Aroclor-1232	**33**	66 U	54 U					21.6**	189**
Aroclor-1242	**33**	66 U	54 U					21.6**	189**
Aroclor-1248	**33**	66 U	54 U					21.6**	189**
Aroclor-1254	**33**	66 U	54 U					63.3	709
Aroclor-1260	**33**	66 U	54 U					21.6**	189**
Aroclor-1262	**33**	66 U	54 U					21.6**	189**
Aroclor-1268	**33**	66 U	54 U					21.6**	189**
DILUTION FACTOR		1.0	1.0						
DATE SAMPLED		5/17/2011	5/16/2011						
DATE EXTRACTED		5/20/2011	5/28/2011						
DATE ANALYZED		5/26/2011	6/1/2011						
SAMPLE WEIGHT (GRAMS)		34.9	30.5						
% SOLID		42.9	60.6						

NOTES: µg/Kg = micrograms per Kilogram.
All results are reported on a Dry Weight Basis.
CRQL = Contract Required Quantitation Limit.
SQuiRTs = National Oceanographic and Atmospheric Administration (NOAA) Screening Quick Reference Tables.
PEL = Probable Effects Level.
TEL = Threshold Effects Level.
ppb = parts per billion (equivalent to µg/kg).
NL = Not Listed- NOAA SQuiRTs list no PEL or TEL.
** = value listed is for total PCBs; Compound-specific values are not listed.
U = Value is Non-Detected.
J = Value is Estimated.

ATTACHMENT F
SEDIMENT SAMPLE ANALYTICAL RESULTS

SITE: CREESE & COOK CO. (FORMER) 1
CASE: 41343, 42048
SDGs: A3TT5; A3TT7, A3XC3, A3XE6
LABORATORY: AGAT LABORATORIES LTD.,
CAPE FEAR ANALYTICAL LLC.

DATA SUMMARY TABLE 3
DIOXIN ORGANIC ANALYSIS
ng/Kg

SAMPLE NUMBER		**A3WN4**	**A3WP3**	**A3WR6**	**A3WR9**	**A3WS0**	**A3WS5**	**A3WS6**
SAMPLE LOCATION		**D30058**	**D30067**	**D30090**	**D30093**	**D30094**	**D30099**	**D30100**
STATION LOCATION		**SD-03**	**SD-04**	**SD-05**	**SD-06**	**SD-07**	**SD-08**	**SD-09**
LABORATORY NUMBER		**K0859-05A**	**K0859-06A**	**K0859-07A**	**K0859-08A**	**K0859-09A**	**K0859-10A**	**K0859-11A**
COMPOUND	**CRQL**							
2,3,7,8-TCDD	1	**5.72**	**1.5**	0.156 U	**1.64**	0.122 U	**2.33**	**0.336 J**
1,2,3,7,8-PeCDD	5	**1.61 J**	**2.13 J EB**	**0.518 J EB**	**3.34 J EB**	0.0944 U	**4.88 J EB**	**0.765 J EB**
1,2,3,4,7,8-HxCDD	5	**2.7 J**	**4.57 J EB**	**0.934 EB EMPC**	**4.49 J EB**	**0.335 J EB**	**9.46 EB**	**1.36 J EB**
1,2,3,6,7,8-HxCDD	5	**8.39**	**17.3 EB**	**2.29 J EB**	**28.4 EB**	**12.7 EB**	**67.6 EB**	**7.35 EB**
1,2,3,7,8,9-HxCDD	5	**7.46**	**17.6 EB**	**4.19 J EB**	**13.7 EB**	**1.26 EB EMPC**	**36.6 EB**	**5.4 EB**
1,2,3,4,6,7,8-HpCDD	5	**237 EB**	**482 EB**	**98.8 EB**	**749 EB**	**38 EB**	**1920 EB**	**194 EB**
1,2,3,4,6,7,8,9-OCDD	10	**2,010**	**3,680**	**3,990**	**7,730 J**	**1,430**	**16,500 J**	**2,420**
2,3,7,8-TCDF	1	**7.1**	**8.01 EB**	**0.55 J EB**	**7.14 EB**	**0.408 J EB**	**11.4 EB**	**1.81 J EB**
1,2,3,7,8-PeCDF	5	**1.49 J**	**1.97 J EB**	0.126 U	**1.98 J EB**	0.081 U	**3.19 J EB**	**0.489 J EB**
2,3,4,7,8-PeCDF	5	**3 J**	**2.75 J EB**	**0.223 EB EMPC**	**3.53 J EB**	**0.197 J EB**	**5.2 EB**	**0.816 J EB**
1,2,3,4,7,8-HxCDF	5	**5.96 EB**	**7.6 EB**	**0.736 J EB**	**11.7 EB**	**0.372 EB EMPC**	**18.8 EB**	**2.7 J EB**
1,2,3,6,7,8-HxCDF	5	**4.02 J EB**	**3.9 J EB**	**0.358 EB EMPC**	**6.1 EB**	**0.169 J EB**	**9.87 EB**	**1.48 J EB**
1,2,3,7,8,9-HxCDF	5	**0.184 J**	0.196 U	0.128 U	**0.211 J EB**	0.0771 U	0.16 U	**0.0705 EB EMPC**
2,3,4,6,7,8-HxCDF	5	**2.97 J**	**3.56 J EB**	**0.318 J EB**	**5.74 EB**	**0.239 EB EMPC**	**9.24 EB**	**1.34 J EB**
1,2,3,4,6,7,8-HpCDF	5	**62.8**	**90.6 EB**	**8.06 EB**	**178 EB**	**5.05 EB**	**389 EB**	**46.1 EB**
1,2,3,4,7,8,9-HpCDF	5	**3.59 J EB**	**4.06 EB EMPC**	**0.377 J EB**	**7.17 EB**	**0.241 EB EMPC**	**14.4 EB**	**1.82 EB EMPC**
1,2,3,4,6,7,8,9-OCDF	10	**149**	**141 EB**	**9.82 J EB**	**249 EB**	**5.93 J EB**	**630 EB**	**58.8 EB**
TEF (Total)		**15.8 J**	**17.7 J**	**3.79 J**	**25.6 J**	**2.47 J**	**53.5 J**	**6.67 J**
DILUTION FACTOR		1.0	1.0	1.0	1.0	1.0	1.0	1.0
DATE SAMPLED		5/18/2011	5/17/2011	5/17/2011	5/17/2011	5/17/2011	5/17/2011	5/17/2011
DATE EXTRACTED		6/4/2011	6/4/2011	6/4/2011	6/4/2011	6/4/2011	6/4/2011	6/4/2011
DATE ANALYZED		6/13/2011	6/14/2011	6/14/2011	6/14/2011	6/14/2011	6/14/2011	6/14/2011
SAMPLE WEIGHT (GRAMS)		12.5	8.3	8.4	10.8	7.2	5.9	13.04
% SOLIDS		50.9	33.5	52.7	42.5	49.5	41.3	57.2

NOTES: ng/Kg = nanograms per kilogram.
All results are reported on a Dry Weight Basis.
CRQL = Contract Required Quantitation Limit
U = Value is Non-Detected.
J = Value is Estimated.
EB = Unknown amount of sampling error due equipment blank contamination.
EMPC = Estimated Maximum Possible Concentration.
* = Reported value is from diluted analysis.
TEF = Toxicity Equivalent Factor (World Health Organization, 2005).
Bolded values exceed laboratory detection limits.

ATTACHMENT F
SEDIMENT SAMPLE ANALYTICAL RESULTS

SITE: CREESE & COOK CO. (FORMER) 1
CASE: 41343, 42048
SDGs: A3TT5; A3TT7, A3XC3, A3XE6
LABORATORY: AGAT LABORATORIES LTD.,
CAPE FEAR ANALYTICAL LLC.

DATA SUMMARY TABLE 3
DIOXIN ORGANIC ANALYSIS
ng/Kg

SAMPLE NUMBER		A3WT1	A3WT2	A3WT7	A3WT8	A3WW3	A3WW4	A3WX3
SAMPLE LOCATION		D30105	D30106	D30111	D30112	D30117	D30118	D30127
STATION LOCATION		SD-10	SD-11	SD-12	SD-13	SD-14	SD-15	SD-16
LABORATORY NUMBER		K0859-12A	K0859-13A	K0859-14A	K0864-03A	K0859-15A	K0859-16A	K0864-04A
COMPOUND	CRQL							
2,3,7,8-TCDD	1	**0.405 J**	**0.761 J**	0.0662 U	**3.77**	**0.232 EMPC**	**1.55**	0.152 U
1,2,3,7,8-PeCDD	5	**0.913 J EB**	**1.81 J EB**	**0.332 J EB**	**9.63 EB**	**0.742 J EB**	**3.7 J EB**	**0.329 EB EMPC**
1,2,3,4,7,8-HxCDD	5	**1.72 J EB**	**3.1 J EB**	**0.57 J EB**	**18.3**	**1.26 EB EMPC**	**4.59 J**	**0.939 J**
1,2,3,6,7,8-HxCDD	5	**8.51 EB**	**15 EB**	**2.02 J EB**	**76.5**	**5.36 EB**	**31.4**	**5.02**
1,2,3,7,8,9-HxCDD	5	**5.99 EB**	**8.92 EB**	**1.76 J EB**	**61.2**	**4.11 J EB**	**17.9**	**7.5**
1,2,3,4,6,7,8-HpCDD	5	**261 EB**	**365 EB**	**76.5 EB**	**2,000 J EB**	**139 EB**	**779 J EB**	**405 J EB**
1,2,3,4,6,7,8,9-OCDD	10	**3,190**	**3,460**	**3,570**	**17,300 J**	**1690**	**8,580 J**	**23,200 J**
2,3,7,8-TCDF	1	**1.8 EB EMPC**	**4.21 EB**	**0.566 J EB**	**16.8**	**1.45 EB**	**12**	0.0913 U
1,2,3,7,8-PeCDF	5	**0.523 EB EMPC**	**1.17 J EB**	**0.164 EB EMPC**	**5.28 EB**	**0.309 J EB**	**3.75 J EB**	**0.166 EB EMPC**
2,3,4,7,8-PeCDF	5	**0.856 J EB**	**1.86 J EB**	**0.244 J EB**	**8.31 EB**	**0.77 EB EMPC**	**5.26 EB**	0.0802 U
1,2,3,4,7,8-HxCDF	5	**2.97 J EB**	**5.55 EB**	**0.662 J EB**	**28 EB**	**2 J EB**	**15.3 EB**	**0.425 EB EMPC**
1,2,3,6,7,8-HxCDF	5	**1.45 J EB**	**3.17 J EB**	**0.364 J EB**	**15.4 EB**	**1.14 J EB**	**7.77 EB**	**0.209 J EB**
1,2,3,7,8,9-HxCDF	5	0.656 U	**0.14 J EB**	0.0358 U	**0.67 J EB**	0.06 U	**0.322 J EB**	**0.112 EB EMPC**
2,3,4,6,7,8-HxCDF	5	**1.64 J EB**	**2.77 J EB**	**0.373 J EB**	**14.5**	**1.04 J EB**	**6.54**	**0.125 EMPC**
1,2,3,4,6,7,8-HpCDF	5	**55.4 EB**	**92 EB**	**11.4 EB**	**451 J EB**	**29.4 EB**	**183 J EB**	**3.43 J EB**
1,2,3,4,7,8,9-HpCDF	5	**2.11 J EB**	**3.68 J EB**	**0.479 J EB**	**17.7 EB**	**1.13 J EB**	**7.66 EB**	**0.31 EB EMPC**
1,2,3,4,6,7,8,9-OCDF	10	**91.9 EB**	**109 EB**	**16 EB**	**602 J**	**32.6 EB**	**234 J**	**4.16 J**
TEF (Total)		**8.17 J**	**13.1 J**	**3.00 J**	**69.2 J**	**5.06 J**	**28.9 J**	**12.8 J**
DILUTION FACTOR		1.0	1.0	1.0	1.0	1.0	1.0	1.0
DATE SAMPLED		5/17/2011	5/17/2011	5/17/2011	5/16/2011	5/17/2011	5/16/2011	5/16/2011
DATE EXTRACTED		6/4/2011	6/4/2011	6/4/2011	5/28/2011	6/4/2011	5/28/2011	5/28/2011
DATE ANALYZED		6/14/2011	6/16/2011	6/16/2011	6/8/2011	6/16/2011	6/8/2011	6/8/2011
SAMPLE WEIGHT (GRAMS)		11.9	10.9	10.9	3.9	6.5	6.6	6.9
% SOLIDS		47.6	42.8	72.6	30.2	45.2	46.9	47.8

NOTES: ng/Kg = nanograms per kilogram.
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EB = Unknown amount of sampling error due equipment blank contamination.
EMPC = Estimated Maximum Possible Concentration.
* = Reported value is from diluted analysis.
TEF = Toxicity Equivalent Factor (World Health Organization, 2005).
Bolded values exceed laboratory detection limits.

ATTACHMENT F
SEDIMENT SAMPLE ANALYTICAL RESULTS

SITE: CREESE & COOK CO. (FORMER) 1
CASE: 41343, 42048
SDGs: A3TT5; A3TT7, A3XC3, A3XE6
LABORATORY: AGAT LABORATORIES LTD.,
CAPE FEAR ANALYTICAL LLC.

DATA SUMMARY TABLE 3
DIOXIN ORGANIC ANALYSIS
ng/Kg

SAMPLE NUMBER		**A3WX4**	**A3WX6**	**A3WY3**	**A3WY4**	**A3WY5**	**A3WY6**	**A3WY7**
SAMPLE LOCATION		**D30128**	**D30130**	**D30137**	**D30138**	**D30139**	**D30140**	**D30141**
STATION LOCATION		**SD-17**	**SD-18**	**SD-19**	**SD-20**	**SD-21**	**SD-22**	**SD-23**
LABORATORY NUMBER		**K0864-05A**	**K0864-06A**	**K0864-07A**	**K0864-08A**	**K0864-09A**	**K0864-10A**	**K0864-11A**
COMPOUND	**CRQL**							
2,3,7,8-TCDD	1	**2.05**	**0.607 J**	**4.59**	**1.94**	**0.162 EMPC**	**0.958 EMPC**	0.18 U
1,2,3,7,8-PeCDD	5	**5.41 EB**	**1.38 EB EMPC**	**10.6 EB**	**5.39 EB**	**0.465 EB EMPC**	**2.3 J EB**	**0.7 EB EMPC**
1,2,3,4,7,8-HxCDD	5	**11.2**	**2.31 J**	**17.4**	**8.5**	**0.865 EMPC**	**4.08 J**	**1.16 EMPC**
1,2,3,6,7,8-HxCDD	5	**56.9**	**11.4**	**176**	**71.9**	**1.34 J**	**18.6**	**2.69 J**
1,2,3,7,8,9-HxCDD	5	**35.8**	**7.55 J**	**63.4**	**32.9**	**2.11 EMPC**	**14.1**	**4.65 J**
1,2,3,4,6,7,8-HpCDD	5	**1,500 EB**	**338 EB**	**2760 EB***	**1,580 EB**	**62.4 EB**	**485 EB**	**93.5 EB**
1,2,3,4,6,7,8,9-OCDD	10	**18,200 J**	**8,250 J**	**21900 J***	**13,900 J**	**4,210**	**5,900 J**	**4,660**
2,3,7,8-TCDF	1	**11.8**	**2.72**	**18.3**	**13.9**	**0.686 J**	**5.58**	**1.13**
1,2,3,7,8-PeCDF	5	**3.72 J EB**	**0.568 J EB**	**5.7 EB**	**4.31 J EB**	**0.318 EB EMPC**	**1.54 J EB**	**0.342 J EB**
2,3,4,7,8-PeCDF	5	**5.98 EB**	**0.99 J EB**	**10.6 EB**	**7.15 EB**	**0.331 J EB**	**3.06 J EB**	**0.565 J EB**
1,2,3,4,7,8-HxCDF	5	**23.3 EB**	**3.5 J EB**	**58.2 EB**	**33.5 EB**	**0.667 J EB**	**8.26 EB**	**1.12 J EB**
1,2,3,6,7,8-HxCDF	5	**11.1 EB**	**2.05 J EB**	**25 EB**	**13.5 EB**	**0.271 EB EMPC**	**4.29 J EB**	**0.61 EB EMPC**
1,2,3,7,8,9-HxCDF	5	**0.428 J EB**	0.175 U	**0.969 J EB**	**0.461 EB EMPC**	0.0512 U	0.189 U	0.0919 U
2,3,4,6,7,8-HxCDF	5	**9.97**	**1.73 J**	**21.2**	**11.5**	**0.201 J**	**3.9 J**	**0.483 J**
1,2,3,4,6,7,8-HpCDF	5	**366 EB**	**63.3 EB**	**1090 EB**	**539 EB**	**2.96 J EB**	**135 EB**	**9.81 EB**
1,2,3,4,7,8,9-HpCDF	5	**14.9 EB**	**2.11 EB EMPC**	**44.6 J**	**16.5 EB**	**0.179 EB EMPC**	**4.27 J EB**	**0.571 EB EMPC**
1,2,3,4,6,7,8,9-OCDF	10	**493**	**68.1**	**1580**	**579**	**1.61 J**	**130**	**9.44 J**
TEF (Total)		**49.8 J**	**12 J**	**103 J**	**53.9 J**	**3.27 J**	**18.2 J**	**4.5 J**
DILUTION FACTOR		1.0	1.0	1.0/2.0*	1.0	1.0	1.0	1.0
DATE SAMPLED		5/16/2011	5/16/2011	5/16/2011	5/16/2011	5/16/2011	5/16/2011	5/16/2011
DATE EXTRACTED		5/28/2011	5/28/2011	5/28/2011	5/28/2011	5/28/2011	5/28/2011	5/28/2011
DATE ANALYZED		6/9/2011	6/9/2011	6/9/2011	6/9/2011	6/10/2011	6/9/2011	6/9/2011
SAMPLE WEIGHT (GRAMS)		5.7	7.3	6.2	6.2	6.1	7.1	5.7
% SOLIDS		46.2	61.2	46.9	51.5	51.1	57.7	43.8

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EB = Unknown amount of sampling error due equipment blank contamination.
EMPC = Estimated Maximum Possible Concentration.
* = Reported value is from diluted analysis.
TEF = Toxicity Equivalent Factor (World Health Organization, 2005).
Bolded values exceed laboratory detection limits.

ATTACHMENT F
SEDIMENT SAMPLE ANALYTICAL RESULTS

SITE: CREESE & COOK CO. (FORMER) 1
CASE: 41343, 42048
SDGs: A3TT5; A3TT7, A3XC3, A3XE6
LABORATORY: AGAT LABORATORIES LTD.,
CAPE FEAR ANALYTICAL LLC.

DATA SUMMARY TABLE 3
DIOXIN ORGANIC ANALYSIS
ng/Kg

SAMPLE NUMBER		**A3WY8**	**A3WY9**	**A3WZ0**	**A3WZ3**	**A3WZ4**	**A3XE2**	**A3XE3**
SAMPLE LOCATION		**D30142**	**D30143**	**D30144**	**D30147**	**D30148**	**C&C1-170**	**C&C1-171**
STATION LOCATION		**SD-24**	**SD-25**	**SD-26**	**SD-29**	**SD-30**	**SD-56**	**SD-57**
LABORATORY NUMBER		**K0864-12A**	**K0864-13A**	**K0864-14A**	**K0859-17A**	**K0864-15A**		
COMPOUND	**CRQL**							
2,3,7,8-TCDD	1	**3.6**	**0.724 J**	**0.38 EMPC**	**0.321 EMPC**	**0.9 EMPC**	**0.911**	**0.663 J**
1,2,3,7,8-PeCDD	5	**8.2 EB**	**1.7 J EB**	**1.07 J EB**	**0.705 J EB**	**1.84 J EB**	**2.34**	1.23 U
1,2,3,4,7,8-HxCDD	5	**15.5**	**2.98 J**	**1.7 J**	**1.51 J EB**	**3.49 J**	**10.2**	**2.81 J**
1,2,3,6,7,8-HxCDD	5	**244**	**12.1**	**7.26**	**5.29 EB**	**16.4**	**66.3**	**16.4**
1,2,3,7,8,9-HxCDD	5	**62.7**	**10.5**	**5.13**	**4.67 J EB**	**12.7 J**	**11.4**	**6.23**
1,2,3,4,6,7,8-HpCDD	5	**4,760 J EB**	**357 EB**	**239 EB**	**151 EB**	**468 EB**	**1140**	**337**
1,2,3,4,6,7,8,9-OCDD	10	**36,800 J**	**7,050 J**	**3,830**	**1,920**	**10,500 J**	**10500**	**2380**
2,3,7,8-TCDF	1	**21.5**	**3.67**	**2.01**	**1.52 EB**	**3.59**	**1.01**	**0.675 J**
1,2,3,7,8-PeCDF	5	**6.8 EB**	**1.12 J EB**	**0.499 J EB**	**0.331 J EB**	**0.949 EB EMPC**	**0.934**	**0.555 J**
2,3,4,7,8-PeCDF	5	**14 EB**	**1.64 J EB**	**0.832 J EB**	**0.792 J EB**	**1.65 J EB**	**2.22**	**1.52 J**
1,2,3,4,7,8-HxCDF	5	**120 EB**	**4.91 J EB**	**2.55 J EB**	**2.01 J EB**	**5.38 EB**	**7.98**	**2.36 J**
1,2,3,6,7,8-HxCDF	5	**34.1 EB**	**2.82 J EB**	**1.31 EB EMPC**	**1.2 J EB**	**3.21 J EB**	**3.4**	**2.18 J**
1,2,3,7,8,9-HxCDF	5	**1.1 J EB**	**0.194 J EB**	**0.0897 EB EMPC**	0.1 U	**0.144 EB EMPC**	**1.34**	0.652 U
2,3,4,6,7,8-HxCDF	5	**23.6**	**2.33 J**	**1.2 EMPC**	**1.24 J EB**	**2.75 J**	**7.49**	**4.07 J**
1,2,3,4,6,7,8-HpCDF	5	**1,730 EB**	**70.4 EB**	**46.3 EB**	**34.9 EB**	**93.6 EB**	**195**	**75.1**
1,2,3,4,7,8,9-HpCDF	5	**59.6 EB**	**2.69 J EB**	**1.59 J EB**	**1.26 J EB**	**3.6 J EB**	**13.9**	**3.85 J**
1,2,3,4,6,7,8,9-OCDF	10	**1,580**	**82.8**	**73**	**32.7 EB**	**106**	**339**	**131.0**
TEF (Total)		**145 J**	**13.3 J**	**7.88 J**	**5.47 J**	**16.9 J**	**31.6 J**	**9.52 J**
DILUTION FACTOR		1.0	1.0	1.0	1.0	1.0	1.0	1.0
DATE SAMPLED		5/16/2011	5/16/2011	5/16/2011	5/17/2011	5/16/2011	12/6/2011	12/6/2011
DATE EXTRACTED		5/28/2011	5/28/2011	5/28/2011	6/4/2011	5/28/2011	12/29/2011	12/29/2011
DATE ANALYZED		6/10/2011	6/10/2011	6/10/2011	6/16/2011	6/10/2011	1/10/2012	1/10/2012
SAMPLE WEIGHT (GRAMS)		5.9	6.6	7.1	5.9	7.0	22.47	17.14
% SOLIDS		41.5	46.5	57.2	47.2	62.5	34.9	60.3

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EMPC = Estimated Maximum Possible Concentration.
* = Reported value is from diluted analysis.
TEF = Toxicity Equivalent Factor (World Health Organization, 2005).
Bolded values exceed laboratory detection limits.

ATTACHMENT F
SEDIMENT SAMPLE ANALYTICAL RESULTS

SITE: CREESE & COOK CO. (FORMER) 1
CASE: 41343, 42048
SDGs: A3TT5; A3TT7, A3XC3, A3XE6
LABORATORY: AGAT LABORATORIES LTD.,
CAPE FEAR ANALYTICAL LLC.

DATA SUMMARY TABLE 3
DIOXIN ORGANIC ANALYSIS
ng/Kg

SAMPLE NUMBER		A3XE4	A3XE5	A3XE6	A3XE7	A3XE8	SQuiRTs PEL (ng/Kg)	SQuiRTs TEL (ng/Kg)
SAMPLE LOCATION		C&C1-172	C&C1-173	C&C1-174	C&C1-175	C&C1-176		
STATION LOCATION		SD-58	SD-59	SD-60	SD-61	SD-70		
LABORATORY NUMBER								
COMPOUND	CRQL							
2,3,7,8-TCDD	1	**0.117 EMPC**	**1.18**	**9.68 J**	**0.248 J**	**0.984 J**	NL	NL
1,2,3,7,8-PeCDD	5	0.246 U	**2.94 J**	**17 J**	0.461 U	**1.81 J**	NL	NL
1,2,3,4,7,8-HxCDD	5	0.398 U	**6.95**	**56.4 J**	1.82 U	**9.52**	NL	NL
1,2,3,6,7,8-HxCDD	5	**1.73 J**	**28.2**	**255**	**4.96**	**98.2**	NL	NL
1,2,3,7,8,9-HxCDD	5	**0.694 J**	**15.7**	**103**	**4.01 J**	**30.2 J**	NL	NL
1,2,3,4,6,7,8-HpCDD	5	**36.2**	**656**	**6400**	**190**	**2100 J**	NL	NL
1,2,3,4,6,7,8,9-OCDD	10	**307**	**5600 J**	**44200**	**1740**	**20400 J**	NL	NL
2,3,7,8-TCDF	1	0.3 U	**4.04**	**45.3**	**0.545 J**	**0.953 J**	NL	NL
1,2,3,7,8-PeCDF	5	0.162 U	**1.7 J**	**198**	0.313 U	**0.793 J**	NL	NL
2,3,4,7,8-PeCDF	5	0.253 U	**5.89**	**271**	**2.64 J**	**2.13 J**	NL	NL
1,2,3,4,7,8-HxCDF	5	0.429 U	**8.14**	**981**	**1.39 J**	**14.3 J**	NL	NL
1,2,3,6,7,8-HxCDF	5	0.269 U	**4.83 J**	**715**	**1.4 J**	**4.12 J**	NL	NL
1,2,3,7,8,9-HxCDF	5	0.236 U	**1.32 EMPC**	**438**	0.339 U	**1.49 J**	NL	NL
2,3,4,6,7,8-HxCDF	5	0.440 U	**7.93**	**494**	**2 J**	**9.51**	NL	NL
1,2,3,4,6,7,8-HpCDF	5	**8.72**	**191**	**4850**	**37.3**	**298**	NL	NL
1,2,3,4,7,8,9-HpCDF	5	0.374 U	**8.12**	**1,420**	**3 J**	**23**	NL	NL
1,2,3,4,6,7,8,9-OCDF	10	**11.40**	**300**	**10200**	**178**	**598 J**	NL	NL
TEF (Total)		**0.904 J**	**24.0 J**	**566 J**	**5.39 J**	**50.8 J**	21.5	0.85
DILUTION FACTOR		1.0	1.0	1.0	1.0	1.0		
DATE SAMPLED		12/6/2011	12/6/2011	12/6/2011	12/6/2011	12/6/2011		
DATE EXTRACTED		12/29/2011	12/29/2011	12/29/2011	12/14/2011	12/14/2011		
DATE ANALYZED		1/11/2012	1/10/2012	1/10/2012	12/17/2011	12/17/2011		
SAMPLE WEIGHT (GRAMS)		14.43	21.56	1.24	18.03	23.29		
% SOLIDS		67.5	42.8	43.2	58.2	33.7		

NOTES: ng/Kg = nanograms per kilogram.
All results are reported on a Dry Weight Basis.
CRQL = Contract Required Quantitation Limit
U = Value is Non-Detected.
J = Value is Estimated.
EB = Unknown amount of sampling error due equipment blank contamination.
EMPC = Estimated Maximum Possible Concentration.
* = Reported value is from diluted analysis.
TEF = Toxicity Equivalent Factor (World Health Organization, 2005).
Bolded values exceed laboratory detection limits.

ATTACHMENT F
SEDIMENT SAMPLE ANALYTICAL RESULTS

SITE: CREESE & COOK CO. (FORMER) 1
CASES: 41342, 42047
SDGs: MA3WM1, MA3WT8, MA3XE0
LABORATORIES: MITKEM LABORATORIES
SENTINEL INC.

TABLE 4
TOTAL METALS ANALYSIS
mg/Kg

		SAMPLE NUMBER	MA3WN4	MA3WP3	MA3WR6	MA3WR9	MA3WS0	MA3WS5	MA3WS6	MA3WT1
		SAMPLE LOCATION	SD-03	SD-04	SD-05	SD-06	SD-07	SD-08	SD-09	SD-10
		STATION LOCATION	D30058	D30067	D30090	D30093	D30094	D30099	D30100	D30105
		LABORATORY NUMBER	K0862-03	K0862-04	K0862-05	K0862-06	K0862-07	K0862-08	K0862-09	K0862-10
ANALYTES	METHOD	CRQL								
Aluminum	ICP	20	13000 J	16600 J	20300 J	23900 J	24100	24100 J	17100 J	18900 J
Antimony	ICP	6	R	R	R	R	R	R	R	R
Arsenic	ICP	1	51.6	62.9	12.4	81 J	20.4	62.5	15.5	25.9
Barium	ICP	20	65.2 J	38.9 J	36.1 J	42.7 J	37.9 J	66.7 J	27 J	40.9 J
Beryllium	ICP	0.5	0.87 J	0.93 J	1.3 J	1.5 J	1.6 J	1.7 J	1.1 J	1.3 J
Cadmium	ICP	0.5	3	1.3	0.43 J	1.6	0.41 J	2.3	0.47 J	0.71 J
Calcium	ICP	500	4330 EB	4720	4810	5400	4960	5980	4200	4760
Chromium (total)	ICP	1	82.4	763	78.2	1670 *	89.6	2140 *	222	592
Cobalt	ICP	5	10.6	7.2 J	9.5	11.5 J	10.7	12.2	8.2	9.1 J
Copper	ICP	2.5	69.6	69.5	17.9	89.6 J	29.5	115	32.2	48.3
Iron	ICP	10	23900	26700	26600	29800	31900	37700	22500	26300
Lead	ICP	1	188	249	25.9	162	39.5	248	56.1	85.2
Magnesium	ICP	500	5180	6590	7490	7660	8790	10500	6760	7640
Manganese	ICP	1.5	342	268	264	307	311	358	226	261
Mercury	CV	0.1	0.69	1.6	0.058 J	3	0.061 J	3.4	0.35	0.92
Nickel	ICP	4	22.7	21.7	23.4	25.4	26.1	33	18.7	22.8
Potassium	ICP	500	1350 J	2520	3700	3050	4250	4940	2900	3680
Selenium	ICP	3.5	6.6 UJ	8.1 UJ	5.3 UJ	5.3 UJ	6.7 UJ	2.2 U	1.3 J	6.7 UJ
Silver	ICP	1	1.9 U	2.3 U	1.5 U	1.5 U	1.9 U	0.48 J	1.6 U	1.9 U
Sodium	ICP	500	1210 J	3690	2600	2520 J	3820	13200	5780	6060
Thallium	ICP	2.5	4.7 UJ	5.8 UJ	7.3 J	7.6 J	8.1 J	8.2 J	5.5 J	7.3 J
Vanadium	ICP	5	50	65.6	47.3	51.1 J	51.9	78.5	40.6	51
Zinc	ICP	6	273	144	73.3	298 J	77.5	317	81.3	126
		DILUTION FACTOR	1	1	1	1/3*	1	1/3*	1	1
		DATE SAMPLED	5/18/2011	5/17/2011	5/17/2011	5/17/2011	5/17/2011	5/17/2011	5/17/2011	5/17/2011
		% SOLID	44.1	32.4	51.1	44.1	49.2	39.0	53.0	46.1

ANALYTICAL METHOD:
ICP - INDUCTIVELY COUPLED PLASMA
CV - COLD VAPOR ATOMIC ABSORPTION

NOTES:
Results are reported in milligrams per Kilogram (mg/Kg).
CRQL = Contract Required Quantitation Limit
U = Value is Non-Detected.
UJ = Value is Non-Detected and Detection Limit is Estimated.
J = Value is Estimated.
R = Value is Rejected.
EB = Analyte was also found in the associated Equipment Blank.
*/** = Reported value is from diluted analysis.
All results are reported on a Dry Weight Basis.
Bolded values exceed laboratory detection limits.

ATTACHMENT F
SEDIMENT SAMPLE ANALYTICAL RESULTS

SITE: CREESE & COOK CO. (FORMER) 1
CASES: 41342, 42047
SDGs: MA3WM1, MA3WT8, MA3XE0
LABORATORIES: MITKEM LABORATORIES
SENTINEL INC.

TABLE 4
TOTAL METALS ANALYSIS
mg/Kg

		SAMPLE NUMBER	MA3WT2	MA3WT7	MA3WT8	MA3WW3	MA3WW4	MA3WX3	MA3WX4	MA3WX6
		SAMPLE LOCATION	SD-11	SD-12	SD-13	SD-14	SD-15	SD-16	SD-17	SD-18
		STATION LOCATION	D30106	D30111	D30112	D30117	D30118	D30127	D30128	D30130
		LABORATORY NUMBER	K0862-11	K0862-12	K0858-01	K0862-13	K0862-14	K0858-02	K0858-03	K0858-04
ANALYTES	METHOD	CRQL								
Aluminum	ICP	20	11900 J	15100 J	21900	17600 J	14400 J	32300	18700	16300
Antimony	ICP	6	R	R	R	R	R	R	R	R
Arsenic	ICP	1	21.8	22.9	83.1 J	18	126	13.1 J	45.6 J	27.4 J
Barium	ICP	20	28.3 J	22.2 J	50.1	29.2 J	24.2 J	52.8	42.5	44.9
Beryllium	ICP	0.5	0.79 J	0.95 J	1.7 J	1.1 J	0.87 J	2.1 J	1.2 J	1.3 J
Cadmium	ICP	0.5	0.66 J	0.28 J	1.4 J	0.43 J	0.19 J	R	0.78 J	0.8 J
Calcium	ICP	500	3200	3370	5570	5480	3000	4370	2730	7760
Chromium (total)	ICP	1	562	180	1110 * J	213	766 *	79.6 J	561 J	340 J
Cobalt	ICP	5	6.6 J	7.3	10.6	8.9	5.5 J	15.2	8.9	8.2
Copper	ICP	2.5	56.9	16.9	77.2	25.8	45	15.9	37.5	34.5
Iron	ICP	10	20300	18100	34100 *	21600	17300	35100	20200	25500 *
Lead	ICP	1	77.1	33	260	40.9	167	22.3	127	65.2
Magnesium	ICP	500	5720	4920	9560	6950	5210	12900	6700	7040
Manganese	ICP	1.5	204	202	730 J	186	165	580 J	217 J	220 J
Mercury	CV	0.1	1.1	0.16	2.5 **	0.44	9.3 **	0.06 J	2.3	0.28
Nickel	ICP	4	14.8	15.6	28.4	18.7	16.5	30.6	22.3	18.7
Potassium	ICP	500	1970	1980	4250	3230	2050	4810	2600	3290
Selenium	ICP	3.5	5.1 UJ	3.5 UJ	1.8 J	5.3 UJ	5.7 UJ	7.1 U	4.6 U	4.2 U
Silver	ICP	1	1.5 U	1 U	0.21 J	1.5 U	1.6 U	2 U	0.056 J	1.2 U
Sodium	ICP	500	6130	1270 J	12500	12400	5580	11100	4970	6750
Thallium	ICP	2.5	4.3 J	4.4 J	6.4 J	4.8 J	4.5 J	9.5 J	6 J	5.1 J
Vanadium	ICP	5	36.3	33	84.0 J	44.3	43.4	62.7	49	45
Zinc	ICP	6	136	53.8	130 J	79.2	69.6	101	119	117
		DILUTION FACTOR	1	1	1/3*/2**	1	1/2*/5**	1	1	1/2*
		DATE SAMPLED	5/17/2011	5/17/2011	5/16/2011	5/17/2011	5/16/2011	5/16/2011	5/16/2011	5/16/2011
		% SOLID	59.2	66.9	28.3	44.4	49.5	41.5	55.7	60.1

ANALYTICAL METHOD:
ICP - INDUCTIVELY COUPLED PLASMA
CV - COLD VAPOR ATOMIC ABSORPTION

NOTES:
Results are reported in milligrams per Kilogram (mg/Kg).
CRQL = Contract Required Quantitation Limit
U = Value is Non-Detected.
UJ = Value is Non-Detected and Detection Limit is Estimated.
J = Value is Estimated.
R = Value is Rejected.
EB = Analyte was also found in the associated Equipment Blank.
*/** = Reported value is from diluted analysis.
All results are reported on a Dry Weight Basis.
Bolded values exceed laboratory detection limits.

ATTACHMENT F
SEDIMENT SAMPLE ANALYTICAL RESULTS

SITE: CREESE & COOK CO. (FORMER) 1
CASES: 41342, 42047
SDGs: MA3WM1, MA3WT8, MA3XE0
LABORATORIES: MITKEM LABORATORIES
SENTINEL INC.

TABLE 4
TOTAL METALS ANALYSIS
mg/Kg

		SAMPLE NUMBER	MA3WY3	MA3WY4	MA3WY5	MA3WY6	MA3WY7	MA3WY8	MA3WY9	MA3WZ0
		SAMPLE LOCATION	SD-19	SD-20	SD-21	SD-22	SD-23	SD-24	SD-25	SD-26
		STATION LOCATION	D30137	D30138	D30139	D30140	D30141	D30142	D30143	D30144
		LABORATORY NUMBER	K0858-05	K0858-06	K0858-07	K0858-08	K0858-09	K0858-10	K0858-11	K0858-12
ANALYTES	METHOD	CRQL								
Aluminum	ICP	20	20300	16800	24700	15300	21400	16800	20500	16400
Antimony	ICP	6	R	R	R	R	R	R	R	R
Arsenic	ICP	1	66.4 J	56.8 J	18 J	38.4 J	37.1 J	24.6 J	20.7 J	13.5 J
Barium	ICP	20	67.9	57.2	52.3	51.1	52.2	99.5	54.4	35.8
Beryllium	ICP	0.5	1.5 J	1.3 J	1.8 J	1.2 J	1.6 J	1.4 J	1.5 J	1.2 J
Cadmium	ICP	0.5	3 J	1.7 J	0.8 J	1.3 J	0.87 J	3 J	1 J	0.67 J
Calcium	ICP	500	6810	5100	6350	4330	5260	19900	4730	8060
Chromium (total)	ICP	1	1890 * J	1560 * J	186 J	929 * J	948 J	1740 * J	302 J	123 J
Cobalt	ICP	5	9.4 J	8 J	10 J	7	9.4 J	7.5 J	9.1	6.9
Copper	ICP	2.5	123	88.4	21.5	60.4	56	79.8	46.4	19.8
Iron	ICP	10	39300 *	27600	35200	32600 *	31100	27900	29900	23600
Lead	ICP	1	276	182	29.9	135	121	242	73.4	26.9
Magnesium	ICP	500	8490	7550	10700	7120	9930	8700	9370	7480
Manganese	ICP	1.5	308 J	227 J	310 J	209 J	275 J	229 J	270 J	225 J
Mercury	CV	0.1	3	3.4 *	0.46	2.1	0.51	3.1	0.43	0.12 J
Nickel	ICP	4	26.1	20.6	27.3	17.8	23.7	21.7	23.5	18
Potassium	ICP	500	3900	3280	5850	3160	4770	3940	4660	3750
Selenium	ICP	3.5	2.1 J	6.3 U	1.7 J	1.4 J	7 U	3.9 J	5.5 U	4.7 U
Silver	ICP	1	0.59 J	0.24 J	2.1 U	0.12 J	2 U	0.49 J	1.6 U	1.3 U
Sodium	ICP	500	6650	8920	10300	9500	13300	16200	12100	8070
Thallium	ICP	2.5	6.3 J	6 J	8.6 J	4.9 J	7.4 J	5.6 J	7.6 J	6.1 J
Vanadium	ICP	5	61.2 J	47.4	55.6	44.1	52.1	51.7	52.9	37.9
Zinc	ICP	6	411 J	289	95.2	225	161	317	139	73
		DILUTION FACTOR	1/3*	1/2*	1	1/2*	1	1/2*	1	1
		DATE SAMPLED	5/16/2011	5/16/2011	5/16/2011	5/16/2011	5/16/2011	5/16/2011	5/16/2011	5/16/2011
		% SOLID	46.1	51.3	44.1	49.8	42.1	40.9	45.0	54.3

ANALYTICAL METHOD:
ICP - INDUCTIVELY COUPLED PLASMA
CV - COLD VAPOR ATOMIC ABSORPTION

NOTES:
Results are reported in milligrams per Kilogram (mg/Kg).
CRQL = Contract Required Quantitation Limit
U = Value is Non-Detected.
UJ = Value is Non-Detected and Detection Limit is Estimated.
J = Value is Estimated.
R = Value is Rejected.
EB = Analyte was also found in the associated Equipment Blank.
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All results are reported on a Dry Weight Basis.
Bolded values exceed laboratory detection limits.

ATTACHMENT F
SEDIMENT SAMPLE ANALYTICAL RESULTS

SITE: CREESE & COOK CO. (FORMER) 1
CASES: 41342, 42047
SDGs: MA3WM1, MA3WT8, MA3XE0
LABORATORIES: MITKEM LABORATORIES
SENTINEL INC.

TABLE 4
TOTAL METALS ANALYSIS
mg/Kg

		SAMPLE NUMBER	MA3WZ3	MA3WZ4	MA3XE0	MA3XE1	MA3XE2	MA3XE3	MA3XE4	MA3XE5
		SAMPLE LOCATION	SD-29	SD-30	SD-50	SD-51	SD-56	SD-57	SD-58	SD-59
		STATION LOCATION	D30147	D30148	C&C1-168	C&C1-169	C&C1-170	C&C1-171	C&C1-172	C&C1-173
		LABORATORY NUMBER	K0862-17	K0858-13	0858-1	18062	18063	18064	18065	18066	18067
ANALYTES	**METHOD**	**CRQL**								
Aluminum	**ICP**	**20**	**18200 J**	**16100**	**10900**	**8400**	**13200**	**9570**	**14400**	**19200**
Antimony	**ICP**	**6**	R	R	R	R	R	R	R	R
Arsenic	**ICP**	**1**	**20.5**	**23.9 J**	**4.8 J**	**26.9**	**510**	**99.7**	**36.3**	**46.2**
Barium	**ICP**	**20**	**31.1 J**	**44.5**	**13.3 J**	**21.4 J**	**57.3 J**	**14.4 J**	**32.0**	**43.5 J**
Beryllium	**ICP**	**0.5**	**1.1 J**	**1.3 J**	**0.44 J**	**0.28 J**	**0.45 J**	**0.32 J**	**0.53 J**	**0.74 J**
Cadmium	**ICP**	**0.5**	**0.41 J**	**0.55 J**	**0.11 J**	**0.57 J**	**236**	**20.2**	**0.51 J**	**0.88 J**
Calcium	**ICP**	**500**	**4660 EB**	**9710**	**2490**	**1790**	**5460**	**2110**	**2630**	**3510**
Chromium (total)	**ICP**	**1**	**210**	**189 J**	**21.3 J EB**	**33.5 J EB**	**9240 J EB ***	**466 J EB**	**138 J EB**	**1320 J EB**
Cobalt	**ICP**	**5**	**9.1 J**	**8**	**6.2 J**	**6.2 J**	**8.1 J**	**5.9 J**	**10.3**	**10.9 J**
Copper	**ICP**	**2.5**	**25.6**	**23**	**6.1 J**	**11.8 J**	**229 J**	**36.1 J**	**18.2 J**	**79.0 J**
Iron	**ICP**	**10**	**23200**	**24100 ***	**15000**	**13100**	**27100**	**22300**	**22600**	**32100**
Lead	**ICP**	**1**	**42.4**	**39.9**	**7.4**	**31.0**	**517**	**88.2**	**23.5**	**212**
Magnesium	**ICP**	**500**	**7330**	**6780**	**4440**	**3350**	**6230**	**3730**	**6770**	**8540**
Manganese	**ICP**	**1.5**	**202**	**214 J**	**146 J**	**302 J**	**186 J**	**143 J**	**285 J**	**707 J**
Mercury	**CV**	**0.1**	**0.36**	**0.32**	**0.16 UJ**	**0.077 J**	**1.8 J**	**0.80 J**	**0.20 J**	**2.9 J**
Nickel	**ICP**	**4**	**20**	**18**	**12.8**	**11.4**	**30.3**	**13.9**	**24.8**	**28.1**
Potassium	**ICP**	**500**	**3400**	**3330**	**1170 J**	**793 J**	**1890 J**	**1080 J**	**3140 J**	**3720 J**
Selenium	**ICP**	**3.5**	7.8 UJ	4.2 U	5.7 U	5.2 U	7.8 J	5.9 U	4.8 U	7.9 U
Silver	**ICP**	**1**	2.2 U	1.2 U	1.6 U	1.5 U	2.9 U	1.7 U	1.4 U	**0.31 J**
Sodium	**ICP**	**500**	**12800**	**6590**	**938 J**	**534 J**	**3800**	**889 J**	**3480 J**	**7440**
Thallium	**ICP**	**2.5**	5.6 UJ	5.4 J	4.0 UJ	3.7 UJ	7.2 UJ	4.2 UJ	3.5 UJ	5.7 UJ
Vanadium	**ICP**	**5**	**48.4**	**42.3**	**26.2 J**	**22.0 J**	**46.9 J**	**25.8 J**	**38.8 J**	**72.8 J**
Zinc	**ICP**	**6**	**84.6**	**81.7**	**32.0**	**58.7**	**1470**	**253**	**72.1**	**168**
		DILUTION FACTOR	1	1/2*	1	1	1 / 5*	1	1	1
		DATE SAMPLED	5/17/2011	5/16/2011	12/6/2011	12/6/2011	12/6/2011	12/6/2011	12/6/2011	12/6/2011
		% SOLID	42.4	57.2	61.8	66.9	34.8	59.3	72.4	44.2

ANALYTICAL METHOD:
ICP - INDUCTIVELY COUPLED PLASMA
CV - COLD VAPOR ATOMIC ABSORPTION

NOTES:
Results are reported in milligrams per Kilogram (mg/Kg).
CRQL = Contract Required Quantitation Limit
U = Value is Non-Detected.
UJ = Value is Non-Detected and Detection Limit is Estimated.
J = Value is Estimated.
R = Value is Rejected.
EB = Analyte was also found in the associated Equipment Blank.
*/** = Reported value is from diluted analysis.
All results are reported on a Dry Weight Basis.
Bolded values exceed laboratory detection limits.

ATTACHMENT F
SEDIMENT SAMPLE ANALYTICAL RESULTS

SITE: CREESE & COOK CO. (FORMER) 1
CASES: 41342, 42047
SDGs: MA3WM1, MA3WT8, MA3XE0
LABORATORIES: MITKEM LABORATORIES
SENTINEL INC.

TABLE 4
TOTAL METALS ANALYSIS
mg/Kg

		SAMPLE NUMBER	MA3XE6	MA3XE7	MA3XE8				NOAA SQuiRTs TEL for marine Sediments (mg/Kg)	NOAA SQuiRTs PEL for marine Sediments (mg/Kg)
		SAMPLE LOCATION	SD-60	SD-61	SD-70					
		STATION LOCATION	C&C1-174	C&C1-175	C&C1-176					
		LABORATORY NUMBER	18068	18069	18070					
ANALYTES	METHOD	CRQL								
Aluminum	ICP	20	10300	12000	12900				NL	NL
Antimony	ICP	6	R	R	R				NL	NL
Arsenic	ICP	1	36.4	46.3	482				7.2	41.6
Barium	ICP	20	34.9 J	41.1	151				NL	NL
Beryllium	ICP	0.5	0.49 J	0.61 J	0.46 J				NL	NL
Cadmium	ICP	0.5	0.85 J	0.55 J	298				0.68	4.21
Calcium	ICP	500	3090	3160	5370				NL	NL
Chromium (total)	ICP	1	2810 J EB *	449 J EB	9110 J EB *				52.3	160
Cobalt	ICP	5	7.2 J	6.1 J	8.0 J				NL	NL
Copper	ICP	2.5	169 J	88.6 J	174 J				18.7	108
Iron	ICP	10	22600	23500	24800				NL	NL
Lead	ICP	1	305	166	622				30.24	112
Magnesium	ICP	500	4960	7080	6320				NL	NL
Manganese	ICP	1.5	179 J	323 J	170 J				NL	NL
Mercury	CV	0.1	1.6 J	1.4 J	1.9 J				0.13	0.7
Nickel	ICP	4	21.5	18.8	29.7				15.9	42.8
Potassium	ICP	500	1590 J	1210 J	1930 J				NL	NL
Selenium	ICP	3.5	8.1 U	5.7 U	9.6 J				NL	NL
Silver	ICP	1	2.3 U	1.6 U	3.0 U				0.73	1.77
Sodium	ICP	500	2140 J	2270 J	3860				NL	NL
Thallium	ICP	2.5	5.8 UJ	4.1 UJ	7.5 UJ				NL	NL
Vanadium	ICP	5	54.3 J	38.2 J	44.5 J				NL	NL
Zinc	ICP	6	189	118	2050				124	271
		DILUTION FACTOR	1 / 2*	1	1 / 5*					
		DATE SAMPLED	12/6/2011	12/6/2011	12/6/2011					
		% SOLID	43.3	61.5	33.2					

ANALYTICAL METHOD:
ICP - INDUCTIVELY COUPLED PLASMA
CV - COLD VAPOR ATOMIC ABSORPTION

NOTES:
Results are reported in milligrams per Kilogram (mg/Kg).
CRQL = Contract Required Quantitation Limit
U = Value is Non-Detected.
UJ = Value is Non-Detected and Detection Limit is Estimated.
J = Value is Estimated.
R = Value is Rejected.
EB = Analyte was also found in the associated Equipment Blank.
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ATTACHMENT F
SEDIMENT SAMPLE ANALYTICAL RESULTS

TABLE 5
HEXAVALENT CHROMIUM ANALYSIS
mg/Kg

SITE: CREESE AND COOK CO. (FORMER) 1
CASE: 0824F **SDG: D30045**
LABORATORY: CON-TEST

		SAMPLE NUMBER	D30058	D30067	D30090	D30093	D30094	D30099	D30100
		SAMPLE LOCATION	SD-03	SD-04	SD-05	SD-06	SD-07	SD-08	SD-09
		LABORATORY NUMBER	11E0559-03	11E0518-01	11E0518-02	11E0518-03	11E0518-04	11E0518-05	11E0518-06
ANALYTES	**METHOD**	**RL**							
Hexavalent Chromium	CM	0.16	1.6 U	**2.6**	1.5 U	2.1 U	**1.7**	0.78 U	**1.5**
		DILUTION FACTOR	5	5	5	5	5	2	5
		DATE SAMPLED	5/18/2011	5/17/2011	5/17/2011	5/17/2011	5/17/2011	5/17/2011	5/17/2011
		DATE DIGESTED	5/24/2011	5/24/2011	5/24/2011	5/24/2011	5/24/2011	5/24/2011	5/24/2011
		DATE ANALYZED	5/26/2011	5/26/2011	5/26/2011	5/26/2011	5/26/2011	5/26/2011	5/26/2011
		% SOLID	50.9	32.4	50.8	37.5	49.2	40.5	54.0

ANALYTICAL METHOD:
CM - EPA SW-846/7196A
HEXAVALENT CHROMIUM
COLORIMETRIC METHOD

NOTES: All results are reported in milligrams per Kilogram (mg/Kg).
All results are reported on a Dry Weight Basis.
RL = Reporting Limit.
U = Value is Non-Detected.
Bolded values exceed laboratory detection limits.
SQuiRTs = National Oceanographic and Atmospheric Association Screening Quick Reference Tables.
PEL = Proable Effects Level.
TEL = Threshold Effects Level.
* = TEL and PEL values for Chromium are listed.

ATTACHMENT F
SEDIMENT SAMPLE ANALYTICAL RESULTS

TABLE 5
HEXAVALENT CHROMIUM ANALYSIS
mg/Kg

SITE: CREESE AND COOK CO. (FORMER) 1
CASE: 0824F **SDG: D30045**
LABORATORY: CON-TEST

		SAMPLE NUMBER	D300105	D30106	D30111	D30117	D30147	D30112	D30118
		SAMPLE LOCATION	SD-10	SD-11	SD-12	SD-14	SD-29	SD-13	SD-15
		LABORATORY NUMBER	11E0518-07	11E0518-08	11E0518-09	11E0518-10	11E0518-11	11E0486-01	11E0486-02
ANALYTES	**METHOD**	**RL**							
Hexavalent Chromium	CM	0.16	1.7 U	**1.7**	**1.6**	2.9 U	3.5 U	2.6 U	**2.4**
		DILUTION FACTOR	5	5	5	10	10	5	5
		DATE SAMPLED	5/17/2011	5/17/2011	5/17/2011	5/17/2011	5/17/2011	5/16/2011	5/16/2011
		DATE DIGESTED	5/24/2011	5/24/2011	5/24/2011	5/24/2011	5/24/2011	5/23/2011	5/23/2011
		DATE ANALYZED	5/26/2011	5/26/2011	5/26/2011	5/26/2011	5/26/2011	5/242011	5/242011
		% SOLID	46.2	51.1	66.9	53.9	45.3	30.2	68.2

ANALYTICAL METHOD:
CM - EPA SW-846/7196A
HEXAVALENT CHROMIUM
COLORIMETRIC METHOD

NOTES: All results are reported in milligrams per Kilogram (mg/Kg).
All results are reported on a Dry Weight Basis.
RL = Reporting Limit.
U = Value is Non-Detected.
Bolded values exceed laboratory detection limits.
SQuiRTs = National Oceanographic and Atmospheric Association Screening Quick Reference Tables.
PEL = Proable Effects Level.
TEL = Threshold Effects Level.
* = TEL and PEL values for Chromium are listed.

ATTACHMENT F
SEDIMENT SAMPLE ANALYTICAL RESULTS

TABLE 5
HEXAVALENT CHROMIUM ANALYSIS
mg/Kg

SITE: CREESE AND COOK CO. (FORMER) 1
CASE: 0824F **SDG: D30045**
LABORATORY: CON-TEST

		SAMPLE NUMBER	D30127	D30128	D30130	D30137	D30138	D30139	D30140
		SAMPLE LOCATION	SD-16	SD-17	SD-18	SD-19	SD-20	SD-21	SD-22
		LABORATORY NUMBER	11E0486-03	11E0486-04	11E0486-05	11E0486-06	11E0486-07	11E0486-08	11E0486-09
ANALYTES	**METHOD**	**RL**							
Hexavalent Chromium	CM	0.16	4.4 U	**3.7**	**0.54**	0.69 U	**1.6**	0.76 U	**1.1**
		DILUTION FACTOR	10	5	2	5	5	2	2
		DATE SAMPLED	5/16/2011	5/16/2011	5/16/2011	5/16/2011	5/16/2011	5/16/2011	5/16/2011
		DATE DIGESTED	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011
		DATE ANALYZED	5/242011	5/242011	5/242011	5/242011	5/242011	5/242011	5/242011
		% SOLID	35.8	58.9	61.1	45.7	52.0	41.4	51.7

ANALYTICAL METHOD:
CM - EPA SW-846/7196A
HEXAVALENT CHROMIUM
COLORIMETRIC METHOD

NOTES: All results are reported in milligrams per Kilogram (mg/Kg).
All results are reported on a Dry Weight Basis.
RL = Reporting Limit.
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Bolded values exceed laboratory detection limits.
SQuiRTs = National Oceanographic and Atmospheric Association Screening Quick Reference Tables.
PEL = Proable Effects Level.
TEL = Threshold Effects Level.
* = TEL and PEL values for Chromium are listed.

ATTACHMENT F
SEDIMENT SAMPLE ANALYTICAL RESULTS

TABLE 5
HEXAVALENT CHROMIUM ANALYSIS
mg/Kg

SITE: CREESE AND COOK CO. (FORMER) 1
CASE: 0824F **SDG: D30045**
LABORATORY: CON-TEST

		SAMPLE NUMBER	D30141	D30142	D30143	D30144	D30148	SQuiRTs TEL* (mg/Kg)	SQuiRTs PEL* (mg/Kg)
		SAMPLE LOCATION	SD-23	SD-24	SD-25	SD-26	SD-30		
		LABORATORY NUMBER	11E0486-10	11E0486-11	11E0486-12	11E0486-13	11E0486-14		
ANALYTES	METHOD	RL							
Hexavalent Chromium	CM	0.16	**2.1**	0.72 U	0.77 U	0.56 U	0.47 U	52.30	160.00
		DILUTION FACTOR	2	2	2	2	2		
		DATE SAMPLED	5/16/2011	5/16/2011	5/16/2011	5/16/2011	5/16/2011		
		DATE DIGESTED	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011		
		DATE ANALYZED	5/242011	5/242011	5/242011	5/242011	5/242011		
		% SOLID	44.3	44.1	41.1	56.3	66.0		

ANALYTICAL METHOD:
CM - EPA SW-846/7196A
HEXAVALENT CHROMIUM
COLORIMETRIC METHOD

NOTES: All results are reported in milligrams per Kilogram (mg/Kg).
All results are reported on a Dry Weight Basis.
RL = Reporting Limit.
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PEL = Proable Effects Level.
TEL = Threshold Effects Level.
* = TEL and PEL values for Chromium are listed.