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FOURTH QUARTER/ANNUAL MONITORING REPORT

OCTOBER TO DECEMBER 1998

KIN-BUC LANDFILL OPERABLE UNITS 1 AND 2

Prepared for

SCA Services, Inc.
c/o Waste Management, Inc.
Edison Township, Middlesex County, New Jersey

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Prepared by

EMCON/OWT
Crossroads Corporate Center
One International Boulevard, Suite 700
Mahwah, New Jersey 07495

OWT Project 15023-500.000

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EXECUTIVE SUMMARY

The Kin-Buc Landfill Site is a closed 200-acre industrial/commercial landfill located in Edison, New Jersey, which operated under a New Jersey Department of Environmental Protection (NJDEP) permit until 1976. The United States Environmental Protection Agency (USEPA) placed the Kin-Buc Landfill on the National Priorities List (NPL) in 1981. Between 1983 and 1988, the Respondents conducted a Remedial Investigation/Feasibility Study (RI/FS) which resulted in a Record of Decision (ROD) by USEPA in 1990 which called for source control of Operable Unit 1 (OU1), and a second RI/FS to determine the nature and extent of contamination outside the source area, thus defining Operable Unit 2 (OU2). Following the completion of this RI/FS, a second ROD was issued for OU2 in 1992.

Operable Unit 1 includes both Kin-Buc I and II Mounds, the former Pool C Area and a portion of the Low-Lying Area between Kin-Buc I and the Edison Landfill. The remedial action specified in the ROD for OU1 included the construction of a slurry wall around OU1, the collection and treatment of leachate and groundwater from within the containment area, and the capping of the area within the slurry wall. Operable Unit 2 includes Mound B, Edmonds Creek and adjacent wetlands, the remaining Low-Lying Area between OU1 and the Edison Landfill, Martin's Creek, and the Raritan River. The OU2 ROD called for the excavation and disposal of PCB-contaminated sediments from within the Edmonds Creek Marsh Area (ECMA), the restoration of disturbed wetland areas, and groundwater/surface water monitoring. Remedial construction activities for both OU1 and OU2 were completed by the end of August 1995. In accordance with the RODs, water quality, hydraulic, landfill gas and wetlands restoration monitoring is required to evaluate the effectiveness of the remedial actions.

This report documents the results of the 1998 Fourth Quarter and Annual monitoring activities for the existing monitoring program tasks of hydraulic, landfill gas and wetlands restoration monitoring, in addition to the annual groundwater monitoring event for the modified monitoring program. The modified annual monitoring program has been in place since the Fourth Quarter of 1997 and is detailed in the November 1997 Final Field Sampling Plan (FSP) for the Kin-Buc Landfill Superfund Site.

The key 1998 findings according to the annual modified program are summarized as follows:

- Dissolved metals analysis in the OU1 refuse wells indicates that detection of the select metals were limited to arsenic, barium, manganese and zinc. The highest concentrations were observed in well W-4G while the lowest were observed in well W-6G. Nickel, observed in well W-15G (inside the slurry wall), was not observed in any of the refuse wells located outside the slurry wall. Generally the highest concentrations were observed at Transect Location (TL) No. 1. In the sand & gravel and bedrock wells in OU1, metals concentrations varied across the wall, with some detections greater outside the wall than inside.

- General chemistry analysis in the OU1 rock wells indicates that concentrations of the indicator parameters were generally higher inside the slurry wall than outside. In the sand & gravel unit, the concentrations of indicator parameters were greater inside the wall than outside the wall at TL No. 2. In the refuse wells at TL Nos. 2, 4 and 5, most of the indicator parameters detected were greater inside the wall than outside.

- Overall water quality in the three hydrogeologic units (refuse, sand & gravel, bedrock) of OU2 was generally observed to be better than the water quality in the respective units of OU1 during the fourth quarter of 1998. The frequency of detections and concentrations of the specified analytes were less for the OU2 wells than OU1 wells, with some select elevated analytical results in OU2.

- In the OU2 refuse wells, the concentrations of dissolved metals were similar to the levels evidenced by OU1 wells situated outside the wall. Additional metals concentrations noted in OU2 wells include cadmium and lead at GEI-5G and lead and nickel at GEI-6G. Metal concentrations were generally similar between the OU1 and OU2 sand & gravel wells. One observation noted was that barium and manganese were not detected in well WE-10S. Metal concentrations detected in the OU2 bedrock wells were similar when compared to the OU1 bedrock wells. The presence of arsenic in OU2 bedrock wells was limited to well WE-10R only.

- General chemistry analysis in the OU2 refuse and sand & gravel wells indicates similar concentrations to the OU1 wells in hydrogeologic units outside the slurry wall with the exception of elevated chloride levels in wells GEI-5G and WE-10S. In the OU2 bedrock wells, fewer detections and lower concentrations of indicator parameters were evidenced relative to other OU2 wells, with the exception of chloride and TDS.

- In the OU1 monitoring wells, the common detections were benzene, toluene, chlorobenzene and ethylbenzene. The detections were common at TL Nos. 1 and 2 within the OU1 bedrock unit, and OU2 sand & gravel wells. The compounds methylene chloride, benzene, and chlorobenzene were more common at TL No. 3 (both in the bedrock and sand & gravel units) and at TL No. 4 (bedrock only). Less common volatile organic compounds (VOCs) detections were also present in the remaining units.

- The highest semi-volatile organic compounds (SVOCs) detected (phenol) were observed in the bedrock wells at TL No. 1. SVOCs observed in the sand & gravel wells include phenol and 2,4-dimethylphenol at TL No. 2 and naphthalene at TL No. 3. Remaining SVOC detections were sporadic throughout the monitoring units.

- In the OU2 monitoring wells, VOC detections were generally limited to benzene and chlorobenzene (refuse and sand & gravel wells) and toluene and ethylbenzene (sand & gravel wells only). VOCs were not detected in the OU2 bedrock monitoring wells.

- SVOC detections common to the OU2 refuse wells are limited to phenol, 1,4-dichlorobenzene, naphthalene and N-nitrosodiphenylamine. Common SVOC detections in the sand & gravel wells are limited to 2,4-dimethylphenol and naphthalene. SVOCs in the bedrock wells were limited to di-n-butylphthalate and bis(2-ethylhexyl) phthalate in wells WE-6R and WE-7R only.

- Three months of continuous water level monitoring data indicates that intragradient conditions are generally being maintained at TL Nos. 2, 3, 4 and 5 within the refuse unit of OU1 and the Oil Seeps Area during the Fourth Quarter of 1998. Based on the three synoptic rounds of water level measurements, an upward vertical gradient between the bedrock and the overlying sand & gravel is not being uniformly maintained. Groundwater withdrawal rates were lower, according to treatment plant operations in October, November and December, compared to 1997.

- The replacement OU2 upgradient bedrock monitoring location, WE-114DR, was sampled for the Fourth Quarter of 1998. With the exception of manganese, metals were generally similar between the background well and the OU2 bedrock wells. Background chloride and TDS levels were not elevated when compared to the other OU2 refuse and sand & gravel wells.

- Pesticides and PCBs were not detected in any of the OU1 or OU2 monitoring wells sampled.

- No observable impact to the Raritan River water quality from the site was evidenced based on the Fourth Quarter/Annual 1998 monitoring results.

- Low level combustible gas was detected in only one (GMW-01) of the six gas monitoring wells located on the north side of OU1. Monitoring at the operation flare port inlet indicated that the landfill gas collection system was delivering 67.3 percent combustible gas (methane) to promote proper combustion at the flare at the time of monitoring.

ONE

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1 INTRODUCTION

1.1 Purpose of Modified Monitoring

A modified monitoring program has been initiated at the Kin-Buc Landfill. The modified monitoring program resulted from an evaluation of the existing monitoring program and a determination that the existing program did not adequately monitor changes in water quality attributable to the remedy (source control in OU1 and natural attenuation in OU2). Subsequently, a Field Sampling Plan (FSP) was developed by EMCON/OWT on behalf of the Respondents, with input from USEPA. Annual collection of groundwater samples via low-flow techniques was adopted to replace the conventional purge and sample techniques used previously.

The purpose of the modified annual monitoring is to examine the effectiveness of the OU1/OU2 and Oil Seeps Area Remedial Design/Remedial Action (RD/RA) by evaluating changes in water quality attributable to the remedy of source control in OU1 and natural attenuation in OU2. The modified monitoring program has been in effect at the Kin-Buc Landfill since the Fourth Quarter of 1997 and, so far, includes the collection, analysis, and report for the 1997 and 1998 annual monitoring events. The third monitoring event is scheduled for the Fourth Quarter of 1999.

Monitoring and sampling for program tasks of hydraulic, landfill gas and wetlands restoration monitoring for the Fourth Quarter of 1998 (October to December) took place according to the procedures and methods outlined in the Draft Operations and Maintenance (O&M) Manual for the Kin-Buc Landfill. This manual was prepared on behalf of the Respondents by Wheelabrator EOS in September 1995 as modified by letter to EPA dated February 28, 1996. The modified hydraulic monitoring program will be approved by the USEPA upon final approval of the Draft O&M Manual.

Monitoring and sampling for the annual groundwater monitoring modified program for October to December 1998 took place according to the procedures and methods outlined in the Final Field Sampling Plan (FSP) for the Kin-Buc Landfill prepared on behalf of the Respondents by EMCON/OWT in November 1997.

The modified groundwater and surface water monitoring program in the Final FSP was developed based on the perspective that the typical NJAC parameters (basis for the

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original existing program) for post closure monitoring did not adequately monitor changes in water quality attributable to the remedy (source control in OU1 and natural attenuation in OU2), proposed for the site.

1.2 Purpose of the Report

The purpose of this report is to present the OU1 and OU2 monitoring program findings for the Fourth Quarter of 1998, including comment on the annual modified 1998 program findings. The data obtained during this monitoring period will be used to supplement a database that documents analytical results, landfill gas, wetlands restoration and hydraulic monitoring. The report comments on OU1 annual groundwater quality and natural attenuation factors for the modified monitoring program inside and outside of the slurry wall which will be used to evaluate the performance of the slurry wall as a hydraulic barrier. Operable Unit 2 groundwater quality monitoring documents water quality in the Low-Lying Area and Mound B after containment of OU1. Surface water quality of the Raritan River is also examined relative to site groundwater quality.

The report also presents the hydraulic, landfill gas and wetlands restoration monitoring results for the existing OU1 and OU2 monitoring program for the Fourth Quarter of 1998. Hydraulic monitoring data generated will be used to evaluate the performance of the slurry wall as a hydraulic barrier. Landfill gas migration monitoring results are examined relative to operational flare performance and soil gas evidence outside the slurry wall. Wetlands restoration monitoring documents the ECMA/OU2 remediated Zones 1 through 5 wetland structure and function.

1.3 Site Background

The Kin-Buc Landfill Site is a 200-acre closed industrial/commercial landfill located at the end of Meadow Road in Edison, New Jersey. The site is bordered by the ECMA to the east, the Edison Landfill to the south, the Raritan River to the west, and industrial use to the north. The Kin-Buc Landfill was used for the disposal of municipal, industrial, and hazardous waste as early as 1947. The largest volumes of waste apparently consisted of industrial waste material, wastewater/liquid and sludge. It was a New Jersey state-approved (NJDEP) landfill between 1971 and 1976. In 1976, the NJDEP revoked Kin-Buc's operating permit upon USEPA investigation. In 1981, Kin-Buc was placed on the CERCLA Superfund National Priorities List (NPL).

A ROD issued in September 1990 by the USEPA to the Respondents, mandated a Remedial Design/Remedial Action (RD/RA) for Operable Unit 1. The Remedial Action construction was implemented between March 1994 and August 1995, and included the construction of a circumferential slurry wall, collection and treatment of leachate and

groundwater from within the slurry wall containment area and construction of a low permeability final cover system (Blasland, Bouck & Lee, September 1995, Revised February 1997).

A separate ROD was issued by the USEPA to the Respondents in November 1992 for Operable Unit 2. The Remedial Action for OU2 included the excavation of PCB-contaminated sediment from within the ECMA, disposal of the excavated material within the OU1 slurry wall, and restoration of excavated wetlands. Operable Unit 2 Remedial Action was substantially completed in July 1995 (Blasland, Bouck & Lee, September 1995, Revised February 1997).

1.4 Monitoring Activities

1.4.1 Existing Monitoring Activities

Three manual water level monitoring events were performed for the Fourth Quarter of 1998 on October 30, November 17, and December 21 in all the OU1 and OU2 monitoring wells. The continuous hydraulic monitoring test period extends from September 24, 1998 to December 31, 1998. Landfill gas migration monitoring was performed on November 17, 1998 at the operational flare port inlet and the six gas migration monitoring wells located along the northern edge of the landfill boundary. The sixth semi-annual wetlands restoration monitoring event was conducted on December 29, 1998. Plot sampling and general observations of wetland structure and function were performed.

1.4.2 Modified Monitoring Activities

Groundwater and surface water samples were analyzed by EMCON/OWT's subcontract laboratory, Columbia Analytical Services, Inc. (NJ Certification No. 73004) for the analytes listed in Table 1-1 in accordance with the methods specified. A total of 35 groundwater monitoring wells and 4 surface water locations were sampled during field efforts of November/December 1998. Monitoring and sampling was performed by EMCON/OWT's field services operating division, OWT Operations. Any purge water or development water associated with sampling efforts was containerized in a mobile tanker and disposed of at the treatment plant.

For OU1, samples were collected from 20 new monitoring wells installed during Operable Unit 1 and the Oil Seeps Area remedial construction activities. The two new replacement groundwater monitoring wells W-3RR and W-8RR were also sampled. Monitoring wells W-15G and W-13G (inside and outside, respectively, of the Oil Seeps Area extended slurry wall), have replaced W-7G and W-8G (inside and outside,

respectively, of the portion of the OU1 slurry wall surrounded by the Oil Seeps Area extended slurry wall). The 22 wells are located at five transects across the slurry wall as shown on Drawing 1, and listed in Table 1-2.

The groundwater monitoring system for OU2 consists of 5 monitoring well triplets in the Low-Lying Area and Mound B, as shown on Figure 1-1, and an upgradient location north of OU1, as shown on Drawing 1. Of the total 16 monitoring wells, 15 were sampled for the Fourth Quarter of 1998. Four surface water monitoring locations sampled during low tide in the Raritan River adjacent to Mound B are indicated on Figure 1-2. The groundwater and surface water monitoring network for OU2 is listed in Table 1-3.

TWO

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2 DESCRIPTION OF MONITORING PROGRAM

2.1 OU1 Modified Monitoring

Twenty-two (22) OU1 and Oil Seeps Area monitoring wells are located along five transect locations in the landfill component areas of:

- Kin-Buc I Mound
- Kin-Buc II Mound
- Pool C Area
- Low-Lying Area contained by circumferential slurry wall
- Oil Seeps Area extended slurry wall

The monitoring well transects are indicated on Table 1-2. The modified groundwater monitoring well network consists of 6 wells screened in the refuse/fill, 6 wells screened in the sand & gravel and 10 wells screened in the bedrock. The OU1 monitoring network is intended to monitor groundwater quality and natural attenuation in the refuse and sand & gravel wells outside the slurry wall and all the bedrock wells inside and outside the slurry wall. Monitoring in the sand & gravel unit includes monitoring in W-3S inside the OU1 slurry wall and contingent modified monitoring in W-15G/W-15S inside the Oil Seeps Area extended slurry wall. The TLs include:

- Transect Location No. 1: W-2G, W-1R, W-2R
- Transect Location No. 2: W-3S, W-3RR, W-4G, W-4S, W-4R
- Transect Location No. 3: W-5R, W-6G, W-6S, W-6R
- Transect Location No. 4: W-7R, W-8S, W-8RR, W-13G, W-13S, W-15G, W-15S
- Transect Location No. 5: W-9R, W-10G, W-10R

A discussion of groundwater quality observations for the OU1 annual monitoring program follows in Sections 5.1 through 5.3 for each hydrogeologic unit. A discussion of hydraulic monitoring observations for OU1 and OU2 is provided in Section 6.0.

2.2 OU2 Modified Monitoring

The annual groundwater and surface water monitoring network for Operable Unit 2 monitors groundwater quality in the Low-Lying Area and Mound B, following containment of OU1, as well as the water quality of the Raritan River that may be attributable to site influence. The groundwater monitoring well network is listed in Table 1-3 and consists of 5 wells screened in the refuse, 5 wells in the sand & gravel, and 6 wells in the bedrock. The locations of the wells were chosen based on prior groundwater quality data and anticipated groundwater flow direction, following installation of the OU1 slurry wall. Figure 1-1 depicts the monitoring well locations. Monitoring well WE-114DR, an upgradient well, is depicted on Drawing 1.

The annual surface water monitoring network, which is also listed on Table 1-3, consists of four locations in the Raritan River adjacent to Mound B. The upstream sampling point (RR-01) is located downstream of the confluence with Martin's Creek. Two other sampling points are adjacent to Mound B (RR-02 and 03). The fourth monitoring location (RR-04), is located downstream of the OU1 leachate treatment plant discharge. Figure 1-2 depicts the surface water monitoring locations.

A discussion of groundwater quality observations for the OU2 annual program is provided in Sections 5.4 through 5.6 for each hydrogeologic unit. Surface water results are discussed in Section 5.7.

The results of the monitoring in the ECMA can be found in the Wetlands Restoration Monitoring Progress Report provided as Appendix G. The belt transect locations are indicated on Drawing 2 provided with Appendix G.

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3 HYDRAULIC MONITORING

The hydraulic monitoring program for OU1 has been designed to assess the hydraulic performance of the slurry wall. Specifically, the maintenance of lower hydraulic heads inside relative to outside of the slurry wall will represent intragradient flow conditions. This condition would minimize the potential for contaminant migration beyond the limits of the wall. Also, the monitoring program will assess the ability of the groundwater pumping inside the wall to achieve and maintain an upward gradient between the bedrock and the overlying sand & gravel deposits. The attainment and maintenance of upward vertical gradients will minimize the potential for vertical migration of contamination constituents into the bedrock groundwater regime.

3.1 Operable Unit 1

Hydraulic monitoring has been conducted at select transect locations pursuant to the Hydraulic Performance Monitoring Plan as revised in February 1996. Components of the hydraulic monitoring program consist of continuous and manual water level measurements in the refuse and sand & gravel wells and manual measurements in the bedrock wells, immediately inside and outside of the slurry wall. Continuous water level measurements were obtained at one-hour intervals using an In-Situ "Troll" Model SP4000 data logger and transducer. Manual measurements were obtained with an electronic water level indicator. The five transect locations are shown on Drawing 1.

Hydraulic monitoring took place from September 25 through December 31, 1998 in 18 OU1 and Oil Seeps Area refuse and sand & gravel wells for this Fourth Quarter of 1998. Three months of continuous water level data have been obtained for analysis. Manual measurements were obtained on October 30, November 17 and December 21, 1998. The manual water level monitoring results can be found on Table 6-1.

The continuous water level monitoring information and Troll operation were checked by examining the data set and comparing the Troll's water elevation results with manual water level elevation results.

3.2 Operable Unit 2

Manual measurements were also obtained quarterly from the Operable Unit 2 wells, which includes the Low-Lying Area and Mound B. Manual measurements were obtained on October 30, November 17 and December 21, 1998, concurrent with the hydraulic monitoring in OU1. The manual water level monitoring results can be found on Table 6-1.

3.3 Leachate Withdrawal/Groundwater Pumping

The performance of the site hydraulic controls is largely dependent upon groundwater pumping and leachate withdrawal rates. Current aqueous collection system leachate (LCH) and groundwater (GW) withdrawal rates differ somewhat from the rate used for design of 3:1 groundwater to leachate (30,000 gpd GW:10,000 gpd LCH). The variation in collection rates is due to changing site and operational conditions.

In order to understand any correlation between withdrawal rates and hydraulic control, treatment plant operation records for the monitoring period were reviewed. The operation records contain estimated daily averages for leachate and groundwater withdrawal, as provided by the treatment plant operator.

According to the information provided, groundwater withdrawal was greatest in October. Leachate withdrawal this quarter averaged 1,820 gpd and is reportedly nearly equal to the previous quarter. The monthly estimate of daily average flows were:

- October - 15,064 gpd GW: 1,751 gpd LCH
- November - 10,379 gpd GW: 2,763 gpd LCH
- December - 10,728 gpd GW: 1,097 gpd LCH

Withdrawal totals are estimated and actual withdrawal volumes may differ. The withdrawal rates are examined relative to the hydrographs supplied in Appendices E and F, as well as vertical gradients provided in Table 6-2. Section 6 of this report presents the observations based on this information.

3.4 Annual Monitoring Period

The hydraulic monitoring has been performed concurrently with the existing and modified monitoring during 1998. For this 1998 Fourth Quarter/Annual Monitoring Report, the comment and discussion in Section 6.4 includes 12 months of continuous water level monitoring data. During the 12 months of continuous water level monitoring,

leachate and groundwater withdrawals have varied as a result of variations in treatment plant operations.

FOUR

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4 LANDFILL GAS MIGRATION MONITORING

All areas of OU1 exterior to the slurry wall contain waste materials except along the northern edge of the landfill boundary. Gas monitoring in the areas containing waste materials will likely reveal combustible gas. Since no on-site OU1 buildings are present, except the leachate treatment facility, which has its own engineered gas monitoring and control system, gas migration monitoring in the waste areas is not required by the monitoring plan.

The purpose of the gas migration monitoring program is to monitor for off-site gas migration in those areas where gas migration or accumulation could cause an explosive condition. Six gas migration monitoring wells are located outside of the circumferential slurry wall along the northern edge of the landfill boundary. The gas well locations are depicted on Drawing 1 and are spaced in 200-foot increments. Gas is not expected to be present because the slurry wall will act as an effective barrier and an active gas extraction system is in operation. Also, a high water table would inhibit gas migration.

4.1 Gas Monitoring Well Results

Measurements of percent combustible gas (% GAS) and percent lower explosive limit (% LEL) were performed on November 17, 1998 in the six gas migration monitoring wells and the findings are presented in Table 4-1. The wells were monitored according to Attachment 1, Section 3.0 Routine Operations and Maintenance, of the Kin-Buc Landfill Draft O&M Manual (Wheelabrator, 1995). A Landtec GEM 500 was used to measure the concentration of combustible gas at each well by attaching the meter's sample tubing to the well head petcock and drawing the sample through the meter.

4.2 Operational Flare Monitoring Results

The percent combustible gas by volume (% GAS) at the landfill's operational flare port inlet was recorded on November 17, 1998. Monitoring revealed combustible gas at the flare port inlet at 67.3 percent.

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5 WATER QUALITY RESULTS OVERVIEW-ANNUAL MODIFIED MONITORING

Groundwater quality results for the OU1 and OU2 annual monitoring program are presented in Table 5-1 and Table 5-2, respectively. Surface water quality data is presented in Table 5-3. The tables include VOCs, SVOCs, metals, general chemistry parameters and pesticides and PCBs. The analytical report is provided in Appendix A. Table 5-4 identifies the monitoring well low-flow summary. Field data sheets are provided in Appendix B. Equipment blanks and duplicate sample results are provided in Appendices C and D.

5.1 OU1 Refuse/Fill Wells

During sampling of the OU1 refuse/fill wells, well W-2G was dry and select metals and general chemistry results are not available for W-10G because of insufficient well recovery during sample efforts.

A review of the metals data obtained from Transect Location (TL) Nos. 2, 3 and 4, showed that only low levels of arsenic, barium, manganese and zinc were detected. All other metal analysis were reported as non-detect.

A review of the general chemistry parameters reveals that parameter concentrations varied across the transects with the greatest concentrations being observed at TL No. 2.

For VOCs, similar VOC constituents were detected in each of the transects. At TL Nos. 2, 3 and 4, benzene and ethylbenzene were common in each well. Additional detections of toluene and chlorobenzene were detected at TL No. 2. Detections of SVOCs were limited in the OU1 refuse wells. The maximum concentration reported was 21 ug/l of 2,4-Dimethyl phenol in well W-4G (TL No. 2). SVOCs were not detected at TL No. 4.

No pesticides or PCBs were detected in any of the OU1 refuse/fill wells.

5.2 OU1 Sand & gravel Wells

Inorganic constituent concentrations in the sand & gravel wells varied across the slurry wall. At TL No. 2 only the dissolved metals manganese and zinc were identified at higher concentrations outside the wall than inside. It was noted that a majority of the metals were reported as non-detect in the monitoring wells.

Additionally, at TL No. 2, all of the general chemistry parameters detected were greater inside the wall than outside and compounds detected at TL No. 3 were also detected in TL No. 4.

In the OU1 sand & gravel wells, VOCs were evidenced in TL Nos. 2, 3 and 4. At TL No. 2, the VOC constituents, benzene, chlorobenzene and ethylbenzene were detected at lower concentrations outside the wall. Common VOC detections in TL Nos. 3 and 4 included benzene and chlorobenzene. Low levels of methylene chloride and vinyl chloride were also detected at TL No. 3.

Semi-volatile organic compounds present in the sand & gravel wells were sporadic. The maximum concentration reported was 60 ug/l for 2,4-Dimethyl phenol inside the wall at TL No. 2. Only naphthalene (3.1 ug/l) was detected at TL No. 3. Naphthalene and several other SVOCs were also observed at TL No. 4.

No pesticides or PCBs were detected in any of the OU1 sand & gravel wells.

5.3 OU1 Rock Wells

Inorganic constituent concentrations in the bedrock wells varied across the slurry wall, with most concentrations being reported as non-detect. With the exception of two low level detections of arsenic in wells W-6R and W-9R, only barium, manganese and zinc were detected in the OU1 rock wells. Reported concentrations were generally similar, with some slightly higher concentrations being reported outside the slurry wall.

With the exception of total organic halides (TL Nos. 1 and 5) and total dissolved solids (TDS) (TL No. 1 only), general chemistry parameters were greater inside the wall than outside the wall for these two transects. At TL Nos. 2 and 4, most of the general chemistry parameters were greater inside than outside the wall, with the notable exceptions of chloride and TDS. At TL No. 3, only chemical oxygen demand (COD), phenols and total organic carbon (TOC) were detected at greater concentration outside the wall.

At TL No. 1, both the inside and outside bedrock wells revealed elevated levels of VOCs including chlorinated solvents and toluene. Certain VOCs were present at

part-per-million (ppm) levels in the two bedrock wells. TL Nos. 2, 3 and 4 were less impacted, and the VOCs detected were generally different than those detected in TL No. 1. Common VOCs detected in transects 2, 3 and 4 include benzene, chlorobenzene, ethylbenzene and methylene chloride. VOC concentrations for these compounds were generally less in wells W-4R and W-6R, both of which are outside the slurry wall. For TL No. 5, VOCs identified include low level chlorinated solvents. Several additional low level VOCs were also observed outside the wall in well W-10R.

A review of the SVOC fraction identified that the compound phenol was elevated at TL No. 1, with a slightly higher concentration being observed outside the wall in well W-2R. No other SVOCs were detected in this transect. With the exception of several low level detections, SVOCs were generally not detected in any of the remaining wells. Additionally, pesticides and PCBs were not detected in the OU1 bedrock wells.

5.4 OU2 Refuse Wells

Among the OU2 refuse wells, concentrations of dissolved metals were similar to levels observed in the OU1 wells situated outside the slurry wall. The metals barium, manganese and zinc were detected in all refuse wells at similar concentrations. Some additional detections include arsenic, cadmium and lead in well GEI-5G, arsenic in well GEI-10G and nickel in well GEI-6G.

The general chemistry parameters in GEI-5G including chloride and nitrate-nitrogen, as well as COD and TOC in GEI-6G were elevated relative to other OU2 refuse wells. At well GEI-5G, the chloride level was 6,290 mg/l. It was noted that the concentrations of the general chemistry parameters in well GEI-3G were less than those exhibited in the other refuse wells.

Some common VOCs detected in the OU2 refuse wells include benzene and chlorobenzene. The highest reported concentration was for benzene in well GEI-5G at 1.2 mg/l. Other than benzene and chlorobenzene, the only other detected VOC in the OU2 refuse wells includes chloroethane (12 ug/l) in well GEI-5G.

The SVOC N-nitrosodiphenylamine was detected in each of the refuse wells, while 1,4-dichlorobenzene and naphthalene were detected in 3 of 4 wells. The highest reported SVOC concentration was for phenol (19 ug/l) in well GEI-5G.

5.5 OU2 Sand & gravel Wells

Among the OU2 sand & gravel wells, only arsenic, barium, manganese and zinc were detected, and levels of detection were similar between the wells. Two exceptions were for arsenic and zinc, which were not detected in well WE-10S.

General chemistry analysis revealed elevated COD and TOC levels in WE-3S and TDS in well WE-10S. Concentrations reported for the remaining general chemistry parameters were generally similar.

In the sand & gravel wells, common VOC detections include benzene, chlorobenzene and ethylbenzene. The highest detection was for chlorobenzene (860 ug/l) in well WE-7S. None of these compounds were detected in WE-10S. However, trichloroethene was detected at 23 ug/l in well WE-10S. For SVOCs, 2,4-dimethylphenol was detected in 3 of the 5 sand & gravel wells. The highest concentration reported was 390 ug/l. Other miscellaneous SVOCs were detected with most of the reported detections found in well WE-5S. No SVOCs were detected in well WE-10S.

No pesticides or PCBs were detected in the OU2 sand & gravel wells.

5.6 OU2 Rock Wells

Common detections within the OU2 bedrock wells include the dissolved metals barium, manganese and zinc. With the exception of slightly elevated manganese levels, these same parameters were observed in background bedrock well WE-114DR at similar concentrations. Some additional detections observed include arsenic in well WE-10R and nickel in WE-10R and WE-7R.

General chemistry parameters in the bedrock wells evidenced fewer overall detections and lower concentrations compared to other OU2 wells. An elevated level of total halogens was observed in WE-5R when compared to the other OU2 bedrock wells. With the exception of BOD, TOC and total halogens, concentrations of general chemistry parameters detected in the bedrock wells were generally higher than those reported in background well WE-114DR.

In the bedrock wells the only detected VOC was a low level detection of chlorobenzene at 1.6 ug/l. No other VOCs were detected. For SVOCs, the only detected compounds were low levels of di-n-butyphthalate and bis(2-ethylhexyl) phthalate in wells WE-6R and WE-7R.

No pesticides or PCBs were detected in the OU2 bedrock wells.

5.7 Surface Water

Inorganic constituents were analyzed in the total metals fraction for surface waters. The only detected metals were barium, manganese and zinc and reported concentrations were similar at each sampling location. Additionally, with the exception of a slightly higher chloride level at location RR-04, concentrations of general chemistry parameters reported from the upstream sampling locations are similar to concentrations reported for the downstream sampling locations.

With the exception of a low level concentration of bis(2-ethylhexyl) phthalate (2.0 ug/l), a common laboratory contaminant, no VOCs or SVOCs were detected in the Raritan River surface water samples. Additionally, no pesticides or PCBs were detected.

6 HYDRAULIC MONITORING RESULTS

The hydraulic monitoring program calls for the preparation of tables and hydrographs summarizing groundwater flow conditions at the site. Table 6-1 summarizes the manual water level measurements obtained from the OU1 and OU2 monitoring wells. Table 6-2 provides a summary of the vertical gradients (upward or downward) at the different well cluster locations during the Fourth Quarter of 1998. Appendix E provides hydrographs of continuous water level measurements of the refuse wells inside and outside the slurry wall. Each hydrograph consists of an interior and exterior refuse well at each individual transect location for visual assessment of intragradient conditions. The hydrograph for the outside paired well is bolded for illustration. Appendix F contains the individual hydrographs for each well where continuous monitoring was conducted, including the sand & gravel wells. The following sections, 6.1-6.4, include a discussion of the results of the hydraulic monitoring program. Section 6.5 provides the summary observations for the hydraulic monitoring program including comment on the annual monitoring period.

6.1 Assessment of Intragradient Conditions Within the Refuse - OU1

In assessing intragradient conditions, two periods of troll data gaps were observed. The first instance was at TL No. 1 for well W-2G. The presence of the data gap was a result of well W-2G going dry. The second instance was at well W-6G, where a troll malfunction had occurred. Additionally, the "spikes" observed on the hydrographs represent periods of well sampling, and brief periods of extragradient conditions may be present during well recovery.

A review of Appendix E, which represents hydrographs of refuse wells inside and outside the slurry wall shows the following:

- At TL No. 1 for well W-2G, the continuously monitored troll information is not complete for the quarter because the well went dry. However, at TL No. 1 (W-1G/W-2G) extragradient conditions were evident during the first part of the quarter when data was available.
- At TL No. 2 (W-3G/W-4G), intragradient conditions were evident.

- At TL No. 3 (W-5G/W-6G), intragradient conditions were monitored through the period when both trolls were operational. Manual measurements obtained in December (when the recorder in W-6G was not operational) indicated intragradient conditions.

- At TL No. 4 (W-15G/W-13G), across the Oil Seeps Area extended slurry wall, intragradient conditions were evidenced throughout the quarter.

- At TL No. 5 (W-9G/W-10G), intragradient conditions were maintained except after purging and sampling when, for an approximate 2-week period, extragradient conditions were evident.

It should be noted that manual measurements can only indicate instantaneous conditions and are not reflective of conditions throughout the quarter.

6.2 Continuous Hydraulic Monitoring Results vs. Manual Elevation Measurements

With the exception of the troll located in well W-6G (after November 21), troll transducer and data logger operation during the Fourth Quarter of 1998 were found to be satisfactory. For all three water level monitoring events, the manual water level elevation measurements and Troll recordings for the same day and closest hour were found to be in general agreement with the following exceptions noted.

- November 17, 1998 - At well W-8S, a difference of approximately 0.4 tenths measurement was observed between the troll measurement and manual measurement.

- December 21, 1998 - At well W-13G, a difference of approximately 3 feet was measured between the troll measurement and manual measurement. This reading difference is believed to be a field error in documenting the manual measurement into a field log.

- December 21, 1998 - At well W-6S, a difference of 0.5 tenths was observed between the troll measurement and manual measurement.

6.3 Assessment of Vertical Hydraulic Gradients - OU1

Table 6-2 summarizes the vertical gradients between the monitoring well clusters along the transect locations based on synoptic measurements made on October 30, November

17 and December 21, 1998. For the original OU1 containment, vertical gradients are examined between the sand & gravel and bedrock wells to assess the effects of groundwater pumping on the hydraulic gradient between the bedrock and sand & gravel units. These synoptic measurements represent a snap shot picture of conditions at the site.

For this quarter, generally the pumping in the sand & gravel has not provided upward gradient conditions from the bedrock to the sand & gravel inside the slurry wall, except at W-5S/W-5R on December 21 and at W-6S/W-6R on October 30 and November 17.

For the supplemental containment in the Oil Seeps Area, vertical gradients were examined between the sand & gravel and refuse wells to assess the effects of leachate removal on the hydraulic gradient between the monitored geologic units. An upward vertical gradient was evident from the sand & gravel and refuse at W-15G/W-15S on October 30, November 17 and December 21. A downward gradient was evidenced from the sand & gravel and refuse at W-13G/W-13S during each of the three manual monitoring measurement periods in the quarter.

6.4 OU2 Hydraulic Monitoring

The groundwater elevations obtained during the Fourth Quarter of 1998 synoptic measurements indicate both upward and downward hydraulic gradients in OU2.

Downward hydraulic gradients prevail between the refuse and the underlying sand & gravel. Upward hydraulic gradients were noted between the bedrock and overlying sand & gravel at WE-3S/WE-3R on November 17 and December 21, and at WE-7S/WE-7R on November 17. "Even" gradients were evidenced from the sand & gravel and refuse at wells WE-10S/WE-10R on October 30 and December 21 and at WE-5S/WE-5R on October 30, November 17 and December 21. "Even" gradients were also evidenced from the sand & gravel and refuse at GEI-6S/WE-6R on November 17 and at WE-7S/WE-7R on October 30 and December 21.

6.5 Summary Observations

6.5.1 Fourth Quarter 1998

The results of the hydraulic monitoring program conducted from October to December 1998 indicate that intragradient conditions were generally maintained at TL Nos. 2, 3, 4 and 5.

According to estimated withdrawal totals, groundwater withdrawal was greatest in October when compared to November and December. The daily average leachate volumes pumped was nearly equal to the volume pumped during the third quarter of 1998, but was generally more consistent each month during the Fourth Quarter of 1998. Upward vertical gradients from the bedrock to the overlying sand & gravel, although not consistently maintained, were noted at W-5S/W-5R on December 21 and at W-6S/W-6R on October 30 and November 17.

6.5.2 Annual 1998

During all quarters in 1998, four of the five transect locations generally maintained intragradient conditions across the site slurry wall. At TL No. 1 extragradient conditions were evidenced each quarter in 1998.

According to information provided by treatment plant personnel and a review of facility pumping schedules, withdrawal was greatest during the First and Second Quarters when compared to the Third and Fourth Quarters of 1998. Individually, groundwater withdrawal was greatest during the Third Quarter and leachate withdrawal was lowest during the Fourth Quarter. Generally, leachate withdrawal decreased from January through December 1998. An examination of vertical gradients in OU1 between the bedrock and overlying sand & gravel unit indicates that upward vertical gradients are generally not being provided except during certain quarters at a select number of wells.

The 1998 annual monitoring period represents the third year of recorded hydraulic monitoring data.

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7 NATURAL ATTENUATION MONITORING

As part of the annual modified program and low-flow sampling technique, select groundwater parameters related to natural attenuation were monitored to assess the potential for biodegradation of organic compounds in the groundwater system. The following sections, 7.1, and 7.2, present a preliminary evaluation of the potential for biodegradation processes. The results overview can be found in Section 8.1.

7.1 Introduction

Biodegradation of organic constituents is an important destructive attenuation mechanism. During field sampling efforts, natural attenuation parameters were monitored by means of direct reading instrumentation, laboratory technique or HACH field test kits. The parameters monitored and the methods utilized are indicated on Table 7-1 and Table 7-2. The parameters and analytical procedures to assess biodegradation potential were based on USEPA Region 4 draft document entitled "Approach to Natural Attenuation of Chlorinated Solvents."

7.2 Biodegradation Potential

Over the last 20 years, there has been a mounting body of evidence that indicates that microorganisms in groundwater systems can degrade a variety of hydrocarbon compounds. Chlorinated solvents such as perchloroethene and trichloroethene are degraded through a process known as reductive dechlorination. This process is generally sequential with degradation proceeding as follows: perchloroethene (PCE) - trichloroethene (TCE) - dichloroethene (DCE) - vinyl chloride - ethene. The biodegradation of chlorinated solvents is most prevalent under anaerobic conditions.

Within the context of the above, the potential for biodegradation was assessed utilizing USEPA's multi-step screening process to determine if biodegradation is occurring. The initial step includes an evaluation of geochemical data. Subsequent steps include a determination of groundwater flow and solute transport parameters, the estimation of biodegradation rate constants, and the use of computer models. For the purpose of this report, the potential for biodegradation is assessed in the initial step using geochemical

data. The geochemical data provide an indication if conditions in the aquifer are conducive to biodegradation.

A review of these analytical parameters suggests that there is a potential for biodegradation of chlorinated solvents in select areas of OU1 and OU2. Generally, low oxidation-reduction potentials, the presence of methane and elevated ferrous iron concentrations indicate that a reducing environment for dechlorination likely prevails.. In a number of wells there are also elevated levels of benzene, toluene and ethylbenzene which may serve as electron donors in the dechlorination process.

It is worth noting that generally, daughter products of TCE, namely Cis-1,2-DCE and vinyl chloride, have not been detected. Also, ethylene, the end product in the microbially-mediated dechlorination of chlorinated compounds was non-detect. The absence of daughter products could indicate that biodegradation may not be occurring completely although the laboratory detection limits of the daughter products may be masking the actual presence of those constituents. Additional data collection and evaluation associated with future annual monitoring events will be required to further determine the potential that biodegradation is a viable attenuative mechanism at the site.

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8 ANNUAL MODIFIED MONITORING - WATER QUALITY RESULTS OVERVIEW

The following sections, 8.1 and 8.2, present the natural attenuation and analytical chemistry results overview according to a baseline perspective. The baseline comment is based on the completion of the modified monitoring for one sampling event. In-depth comparison or specific comment will be reserved until future annual modified events are complete and a more thorough, comparable low-flow database exists.

8.1 Natural Attenuation

The presence of chlorinated solvents at the site is generally limited. The potential for biodegradation exists based on anaerobic conditions evidenced at wells and certain indicator parameters (e.g., methane). Other VOCs, notably BTEX compounds, are present in some OU1 and OU2 wells, and the potential for biodegradation of those compounds as well as the chlorinated compounds, will be evaluated as a more thorough database becomes available in future monitoring events. Laboratory detection limits will be reviewed for future monitoring events so that the presence of daughter products can be verified. Evaluation of future annual monitoring events will be required to further determine the potential that biodegradation is a viable attenuative mechanism within the refuse, sand & gravel and bedrock units.

8.2 Analytical Chemistry

The annual modified analytical parameters for OU1 and OU2 are generally within the range and frequency of previous sampling efforts. This is not unexpected in view of the difference between conventional purge and sample protocols and low-flow sampling techniques. Future monitoring events will be completed via the low-flow sample technique to establish a database to assess groundwater quality characteristics at the site.

REFERENCES

Proposed Groundwater Monitoring Plan for the Kin-Buc Landfill Operable Unit 1 RD/RA, Wehran Engineering Corporation, Middletown, New York, December 1992.

Final Addendum 1 to the Proposed Groundwater Monitoring Plan for the Kin-Buc Landfill Operable Unit 1 Closure Plan Re: OU2 Groundwater and Surface Water Monitoring, Wehran Engineering Corporation, Middletown, New York, August 1994.

Draft Operations and Maintenance Manual for the Kin-Buc Landfill, Wheelabrator EOS, Inc., Pittsburgh, PA, August 1995.

Remedial Action Report for Operable Unit 2 for the Kin-Buc Landfill Superfund Site, Blasland, Bouck & Lee, Inc., January 1997.

Appendix C Groundwater, Surface Water, Wetlands and Biota Monitoring Plans for the Kin-Buc Landfill Operable Units 1 and 2, Wheelabrator EOS, Inc., Pittsburgh, PA, August 1995 Revised August 1996.

Remedial Action Report Volume I Remedial Action Report, Tables, Appendices A1-A5 for the Kin-Buc Landfill Operable Unit 1, Blasland, Bouck & Lee, Inc., September 1995, Revised February 1997.

Draft Remedial Investigation Report for Kin-Buc Landfill Operable Unit 2, Wehran Engineering Corporation, Middletown, New York, October 1990.

Draft Wetland Restoration Monitoring Report, Kin-Buc Landfill, Operable Unit 2, International Technology Corporation, 1995.

Biota Monitoring Study (Year 3), Kin-Buc Landfill, Operable Unit 2, 1997, Normandeau Associates, RMC Environmental Services Division, March 1998.

Laboratory Results, Lancaster Laboratories, submitted by Normandeau Associates for Year 4 Biota Monitoring, Kin-Buc Landfill.

TABLES

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TABLES

Table 1-1

Kin-Buc Landfill
Operable Units 1 and 2
Modified Groundwater Quality
Monitoring Plan Parameters[1]

Parameters	Method
Alkalinity	Field
Antimony	EPA 200.7
Arsenic (As)	EPA 206.2
Barium (Ba)	EPA 200.7
Beryllium	EPA 200.7
Biochemical Oxygen Demand (BOD)	EPA 405.1
Cadmium (Cd)	EPA 200.7
Chloride (Cl)	EPA 325.3
Chemical Oxygen Demand (COD)	EPA 410.1
Cyanide (CN)	EPA 335.2
Dissolved oxygen	Field
Iron II (Fe^{+2})	Field
Lead (Pb)	EPA 239.2
Manganese (Mn)	EPA 200.7
Mercury (Hg)[3]	EPA 245.1
Methane/Ethane/Ethene	EPA 8015 (Modified)
Nickel	EPA 200.7
Nitrate Nitrogen (NO_3-N)	EPA 352.1
Oxidation reduction potential (ORP)	Field
pH	Field
Phenolic Compounds	EPA 420.1
PP Acid/Base Neutrals	EPA 625
PP Pesticides/PCBs, including Lindane, DDT and metabolites and methoxychlor	EPA 608
PP Volatile Organics (including dichlorobenzene isomers)	EPA 624
Specific Conductivity	Field
Sulfate (SO_4)	Field
Sulfide	Field
Temperature	Field
Total Dissolved Solids (TDS)	EPA 160.1
Total Organic Carbon (TOC)	EPA 415.1
Total Organic Halides (TOX)	EPA 9020
Turbidity	Field
Vanadium	EPA 200.7
Zinc (Zn)	EPA 200.7

(1) Sampling and analysis on an annual basis only.

Table 1-2

Kin-Buc Landfill
Operable Unit 1
Modified Program
Groundwater Monitoring Well Network/Transects

Transect Location No.	Screened Hydrogeologic Unit	Well Location Inside Slurry Wall	Well Location Outside Slurry Wall
1	Refuse/Fill		W-2G
	Bedrock	W-1R	W-2R
2	Refuse/Fill		W-4G
	Sand and Gravel	W-3S	W-4S
	Bedrock	W-3RR	W-4R
3	Refuse/Fill		W-6G
	Sand and Gravel		W-6S
	Bedrock	W-5R	W-6R
4	Refuse/Fill	W-15G(2)	W-13G
	Sand and Gravel	W-15S(2)	W-13S/W-8S
	Bedrock	W-7R	W-8RR
5	Refuse/Fill		W-10G
	Bedrock	W-9R	W-10R

Notes: (1) Wells located across the Oil Seeps area extended slurry wall.
(2) Wells to be eliminated from sampling in 1999.

Table 1-3

Kin-Buc Landfill
Operable Unit 2
Modified Program
Groundwater and Surface Water Monitoring Locations

Well Location	Screened Hydrogeologic Unit
Low-Lying Area	
GEI-10G	Fill/Refuse
WE-10S	Sand & Gravel
WE-10R	Bedrock
GEI-3G	Fill/Refuse
WE-3S	Sand & Gravel
WE-3R	Bedrock
Mound B	
GEI-5G	Fill/Refuse
WE-5S	Sand a Gravel
WE-5R	Bedrock
GEI-6G	Fill/Refuse
GEI-6S	Sand & Gravel
WE-6R	Bedrock
GEI-7G	Fill/Refuse
WE-7S	Sand & Gravel
WE-7R	Bedrock
Upgradient	
WE-114DR	Bedrock
Surface Water	
RR-01	Raritan River
RR-02	Raritan River
RR-03	Raritan River
RR-04	Raritan River

Table 4-1

Kin-Buc Landfill
Operable Unit 1
Fourth Quarter 1997
Gas Monitoring Well Network/Results

Well (Network) Location	Monitoring Result	
	% LEL	% GAS
GMW-01	8%	0.4
GMW-02	0	0
GMW-03	0	0
GMW-04	0	0
GMW-05	0	0
GMW-06	0	0
Operational Flare Inlet	NA	67.3

Table 5-1
Kin-Buc Landfill Operable Unit 1
1998 Groundwater Monitoring Results
Transect Location No. 1

	W-1R	W-2G	W-2R
Volatiles (ug/l) *Dilution Factor*	500	DRY	1000
Acrolein	<14000		<28000
Acrylonitrile	<16000		<31000
Chloromethane	<900		<1800
Bromomethane	<1100		<2100
Vinyl Chloride	<800		<1600
Chloroethane	<750		<1500
Methylene Chloride	420000		500000
1,1-Dichloroethene	3400		9100
1,1-Dichloroethane	1800		2400
Chloroform	900		1600
1,2-Dichloroethane	770		<920
1,1,1-Trichloroethane	<900		4500
Carbon tetrachloride	<1000		<2000
Bromodichloromethane	<550		<1100
1,2-Dichloropropane	<470		<930
cis-1,3-Dichloropropene	<650		<1300
Trichloroethene	6800		17000
Dibromochloromethane	<700		<1400
1,1,2-Trichloroethane	<700		<1400
Benzene	<700		<1400
trans-1,3-Dichloropropene	<650		<1300
Bromoform	<1300		<2600
Tetrachloroethene	6800		17000
1,1,2,2-Tetrachloroethane	<1200		<2300
Toluene	6100		14000
Chlorobenzene	<600		<1200
Ethylbenzene	<750		<1500
Trichlorofluoromethane	<700		<1400
2-Chloroethylvinyl Ether	<2600		<5200
Trans-1,2-Dichloroethene	<1100		<2100

B - Compound detected in associated blank.
E - Estimated value, exceeds calibration curve range.
J - Estimated value, less than detection limit.

Table 5-1
Kin-Buc Landfill Operable Unit 1
1998 Groundwater Monitoring Results
Transect Location No. 1

	W-1R	W-2G	W-2R
Semi-Volatiles (ug/l) *Dilution Factor*	1000		1000
Phenol	91000		100000
bis(2-Chloroethyl) Ether	<1200		<1200
2-Chlorophenol	<1200		<1200
1,3-Dichlorobenzene	<820		<820
1,4-Dichlorobenzene	<920		<920
1,2-Dichlorobenzene	<1100		<1100
2,2'- oxybis(1-Chloropropane)	<950		<950
N-Nitroso-di-n-propylamine	<1200		<1200
Hexachloroethane	<900		<900
Nitrobenzene	<1300		<1300
Isophorone	<1400		<1400
2-Nitrophenol	<1400		<1400
2,4-Dimethylphenol	<3000		<3000
2,4-Dichlorophenol	<3000		<3000
1,2,4-Trichlorobenzene	<790		<790
Naphthalene	<740		<740
Hexachlorobutadiene	<1100		<1100
bis-(2-Chloroethoxy)methane	<1800		<1800
4-Chloro-3-Methylphenol	<2000		<2000
Hexachlorocyclopentadiene	<1100		<1100
2,4,6-Trichlorophenol	<1300		<1300
2-Chloronaphthalene	<1100		<1100
Dimethylphthalate	<4100		<4100
Acenaphthylene	<1200		<1200
2,6-Dinitrotoluene	<1500		<1500
Acenaphthene	<1200		<1200
2,4-Dinitrophenol	<2600		<2600
4-Nitrophenol	<1000		<1000
2,4-Dinitrotoluene	<1200		<1200
Diethylphthalate	<2800		<2800
4-Chlorophenyl-phenylether	<1100		<1100
Fluorene	<1300		<1300
4,6-Dinitro-2-methylphenol	<3300		<3300
N-Nitrosodiphenylamine	<1500		<1500
4-Bromophenyl-phenylether	<830		<830

B - Compound detected in associated blank.
E - Estimated value, exceeds calibration curve range.
J - Estimated value, less than detection limit.

Table 5-1
Kin-Buc Landfill Operable Unit 1
1998 Groundwater Monitoring Results
Transect Location No. 1

	W-1R	W-2G	W-2R
Hexachlorobenzene	<1300		<1300
Pentachlorophenol	<2500		<2500
Phenanthrene	<1200		<1200
Anthracene	<1400		<1400
Di-n-butylphthalate	<2500		<2500
Fluoranthene	<1400		<1400
Pyrene	<1400		<1400
Butylbenzylphthalate	<4100		<4100
3,3'-Dichlorobenzidine	<2300		<2300
Benzo(a)anthrance	<1300		<1300
Chrysene	<1600		<1600
bis(2-Ethylhexyl)phthalate	<2200		<2200
Di-n-octylphalate	<2400		<2400
Benzo(b)fluoranthene	<1400		<1400
Benzo(k)fluoranthene	<2300		<2300
Benzo(a)pyrene	<1400		<1400
Indeno(1,2,3-cd)pyrene	<1100		<1100
Dibenzo(a,h)anthracene	<1200		<1200
Benzo(g,h,i)perylene	<1200		<1200
N-Nitrosodimethylamine	<690		<690
Benzidine	<3400		<3400
1,2-Diphenylhydrazine	<1400		<1400

B - Compound detected in associated blank.
E - Estimated value, exceeds calibration curve range.
J - Estimated value, less than detection limit.

Table 5-1
Kin-Buc Landfill Operable Unit 1
1998 Groundwater Monitoring Results
Transect Location No. 1

	W-1R	W-2G	W-2R
Pesticide/PCB (ug/l) *Dilution Factor*	102		102.0
alpha-BHC	<5.1		<5.1
beta-BHC	<5.1		<5.1
delta-BHC	<5.1		<5.1
gamma-BHC (Lindane)	<5.1		<5.1
Heptachlor	<5.1		<5.1
Aldrin	<5.1		<5.1
Heptachlor Epoxide	<5.1		<5.1
Alpha-Endosulfan	<5.1		<5.1
Dieldrin	<5.1		<5.1
4,4'-DDE	<5.1		<5.1
Endrin	<5.1		<5.1
Beta-Endosulfan	<10		<10
4,4'-DDD	<5.1		<5.1
Endosulfan Sulfate	<10		<10
4,4'-DDT	<10		<10
Endrin Aldehyde	<10		<10
Toxaphene	<100		<100
Chlordane	<20		<20
Aroclor-1016	<51		<51
Aroclor-1221	<51		<51
Aroclor-1232	<51		<51
Aroclor-1242	<51		<51
Aroclor-1248	<51		<51
Aroclor-1254	<51		<51
Aroclor-1260	<51		<51

B - Compound detected in associated blank.
E - Estimated value, exceeds calibration curve range.
J - Estimated value, less than detection limit.

Table 5-1
Kin-Buc Landfill Operable Unit 1
1998 Groundwater Monitoring Results
Transect Location No. 1

	W-1R	W-2G	W-2R
Dissolved Metals (ug/l)			
Antimony	<60		<60
Arsenic	<50		<50
Beryllium	30.5		70.5
Barium	426		378
Cadmium	63.9		126
Lead	34		39.8
Manganese	59900		51300
Mercury	<0.3		<0.3
Nickel	2430		3970
Vanadium	<50		<50
Zinc	3790		36900
General Chemistry (mg/l)			
BOD	18200		14100
COD	28200		26900
Chloride	4980		4050
Nitrate, Nitrogen	<0.5		<0.5
Phenols	195		162
Total Cyanide	<0.01		<0.01
Total Dissolved Solids	18000		18800
Total Organic Carbon	7410 B		7240 B
Total Organic Halides	6100 B		16000 B

B - Compound detected in associated blank.
E - Estimated value, exceeds calibration curve range.
J - Estimated value, less than detection limit.

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Table 5-1
Kin-Buc Landfill Operable Unit 1
1998 Groundwater Monitoring Results
Transect Location No. 2

	W-3S	W-3RR	W-4G	W-4S	W-4R
Volatiles (ug/l) *Dilution Factor*	10	1	5	2.5	1
Acrolein	<280	<28	<140	<70	<28
Acrylonitrile	<310	<31	<160	<78	<31
Chloromethane	<18	<1.8	<9	<4.5	<1.8
Bromomethane	<21	<2.1	<11	<5.3	<2.1
Vinyl Chloride	<16	<1.6	<8	<4.0	<1.6
Chloroethane	40	<1.5	<7.5	<3.8	<1.5
Methylene Chloride	<14	<1.4	<7	<3.5	<1.4
1,1-Dichloroethene	<20	<2	<10	<5.0	<2.0
1,1-Dichloroethane	<24	<2.4	<12	<6.0	<2.4
Chloroform	<13	<1.3	<6.5	<3.3	<1.3
1,2-Dichloroethane	<9.2	<0.92	<4.6	<2.3	<0.92
1,1,1-Trichloroethane	<18	<1.8	<9	<4.5	<1.8
Carbon tetrachloride	<20	<2	<10	<5.0	<2.0
Bromodichloromethane	<11	<1.1	<5.5	<2.8	<1.1
1,2-Dichloropropane	<9.3	<0.93	<4.7	<2.3	<0.93
cis-1,3-Dichloropropene	<13	<1.3	<6.5	<3.3	<1.3
Trichloroethene	<24	<2.4	<12	<6.0	<2.4
Dibromochloromethane	<14	<1.4	<7	<3.5	<1.4
1,1,2-Trichloroethane	<14	<1.4	<7	<3.5	<1.4
Benzene	200	35	170	33	12
trans-1,3-Dichloropropene	<13	<1.3	<6.5	<3.3	<1.3
Bromoform	<26	<2.6	<13	<6.5	<2.6
Tetrachloroethene	<23	<2.3	<12	<5.8	<2.3
1,1,2,2-Tetrachloroethane	<23	<2.3	<12	<5.8	<2.3
Toluene	420	21	13	99	<2.0
Chlorobenzene	1900	88	200	1100	24
Ethylbenzene	53	15	49	44	3.5
Trichlorofluoromethane	<14	<1.4	<7	<3.5	<1.4
2-Chloroethylvinyl Ether	<52	<5.2	<26	<13	<5.2
Trans-1,2-Dichloroethene	<21	<2.1	<11	<5.3	<2.1

B- Compound detected in associated blank.
E- Estimated value, exceeds calibration curve range.
J- Estimated value, less than detection limit.

Table 5-1
Kin-Buc Landfill Operable Unit 1
1998 Groundwater Monitoring Results
Transect Location No. 2

	W-3S	W-3RR	W-4G	W-4S	W-4R
Semi-Volatiles (ug/l) *Dilution Factor*	10	1	1	3	1
Phenol	42	<0.93	<0.93	<2.8	<0.93
bis(2-Chloroethyl) Ether	<12	<1.2	<1.2	<3.6	<1.2
2-Chlorophenol	<12	<1.2	<1.2	<3.6	<1.2
1,3-Dichlorobenzene	<8.2	<0.82	<0.82	<2.5	<0.82
1,4-Dichlorobenzene	<9.2	<0.92	<0.92	<2.8	<0.92
1,2-Dichlorobenzene	<11	<1.1	<1.1	<3.3	<1.1
2,2'- oxybis(1-Chloropropane)	<9.5	<0.95	<0.95	<2.9	<0.95
N-Nitroso-di-n-propylamine	<12	<1.2	<1.2	<3.6	<1.2
Hexachloroethane	<9	<0.9	<0.9	<2.7	<0.9
Nitrobenzene	<13	<1.3	<1.3	<3.9	<1.3
Isophorone	<14	<1.4	<1.4	<4.2	<1.4
2-Nitrophenol	<14	<1.4	<1.4	<4.2	<1.4
2,4-Dimethylphenol	60	<3	21	20	<3
2,4-Dichlorophenol	<30	<3	<3	<9	<3
1,2,4-Trichlorobenzene	<7.9	<0.79	<0.79	<2.4	<0.79
Naphthalene	<7.4	3.3	19	<2.2	<0.74
Hexachlorobutadiene	<11	<1.1	<1.1	<3.3	<1.1
bis-(2-Chloroethoxy)methane	<18	<1.8	<1.8	<5.4	<1.8
4-Chloro-3-Methylphenol	<20	<2.0	<2.0	<6	<2.0
Hexachlorocyclopentadiene	<11	<1.1	<1.1	<3.3	<1.1
2,4,6-Trichlorophenol	<13	<1.3	<1.3	<3.9	<1.3
2-Chloronaphthalene	<11	<1.1	<1.1	<3.3	<1.1
Dimethylphthalate	<41	<4.1	<4.1	<12	<4.1
Acenaphthylene	<12	<1.2	<1.2	<3.6	<1.2
2,6-Dinitrotoluene	<15	<1.5	<1.5	<4.5	<1.5
Acenaphthene	<12	<1.2	<1.2	<3.6	<1.2
2,4-Dinitrophenol	<26	<2.6	<2.6	<7.8	<2.6
4-Nitrophenol	<10	<1	<1	<3	<1
2,4-Dinitrotoluene	<12	<1.2	<1.2	<3.6	<1.2
Diethylphthalate	<28	<2.8	<2.8	<8.4	<2.8
4-Chlorophenyl-phenylether	<11	<1.1	<1.1	<3.3	<1.1
Fluorene	<13	<1.3	<1.3	<3.9	<1.3
4,6-Dinitro-2-methylphenol	<33	<3.3	<3.3	<9.9	<3.3
N-Nitrosodiphenylamine	<15	<1.5	<1.5	<4.5	<1.5
4-Bromophenyl-phenylether	<8.3	<0.83	<0.83	<2.5	<0.83

B- Compound detected in associated blank.
E- Estimated value, exceeds calibration curve range.
J- Estimated value, less than detection limit.

Table 5-1
Kin-Buc Landfill Operable Unit 1
1998 Groundwater Monitoring Results
Transect Location No. 2

	W-3S	W-3RR	W-4G	W-4S	W-4R
Hexachlorobenzene	<13	<1.3	<1.3	<3.9	<1.3
Pentachlorophenol	<25	<2.5	<2.5	<7.5	<2.5
Phenanthrene	<12	<1.2	<1.2	<3.6	<1.2
Anthracene	<14	<1.4	<1.4	<4.2	<1.4
Di-n-butylphthalate	<25	<2.5	3.5	<7.5	<2.5
Fluoranthene	<14	<1.4	<1.4	<4.2	<1.4
Pyrene	<14	<1.4	<1.4	<4.2	<1.4
Butylbenzylphthalate	<41	<4.1	<4.1	<12	<4.1
3,3'-Dichlorobenzidine	<23	<2.3	<2.3	<6.9	<2.3
Benzo(a)anthrance	<13	<1.3	<1.3	<3.9	<1.3
Chrysene	<16	<1.6	<1.6	<4.8	<1.6
bis(2-Ethylhexyl)phthalate	<22	5.3	5.3	<6.6	<2.2
Di-n-octylphalate	<24	<2.4	<2.4	<7.2	<2.4
Benzo(b)fluoranthene	<14	<1.4	<1.4	<4.2	<1.4
Benzo(k)fluoranthene	<23	<2.3	<2.3	<6.9	<2.3
Benzo(a)pyrene	<14	<1.4	<1.4	<4.2	<1.4
Indeno(1,2,3-cd)pyrene	<11	<1.1	<1.1	<3.3	<1.1
Dibenzo(a,h)anthracene	<12	<1.2	<1.2	<3.6	<1.2
Benzo(g,h,i)perylene	<12	<1.2	<1.2	<3.6	<1.2
N-Nitrosodimethylamine	<6.9	<0.69	<0.69	<2.1	<0.69
Benzidine	<34	3.4	3.4	<10	<3.4
1,2-Diphenylhydrazine	<14	<1.4	<1.4	<4.2	<1.4

B- Compound detected in associated blank.
E- Estimated value, exceeds calibration curve range.
J- Estimated value, less than detection limit.

Table 5-1
Kin-Buc Landfill Operable Unit 1
1998 Groundwater Monitoring Results
Transect Location No. 2

	W-3S	W-3RR	W-4G	W-4S	W-4R
Pesticide/PCB (ug/l) *Dilution Factor*	1.0	1.0	1.0	1.0	1.0
alpha-BHC	<0.05	<0.05	<0.051	<0.05	<0.05
beta-BHC	<0.05	<0.05	<0.051	<0.05	<0.05
delta-BHC	<0.05	<0.05	<0.051	<0.05	<0.05
gamma-BHC (Lindane)	<0.05	<0.05	<0.051	<0.05	<0.05
Heptachlor	<0.05	<0.05	<0.051	<0.05	<0.05
Aldrin	<0.05	<0.05	<0.051	<0.05	<0.05
Heptachlor Epoxide	<0.05	<0.05	<0.051	<0.05	<0.05
Alpha-Endosulfan	<0.05	<0.05	<0.051	<0.05	<0.05
Dieldrin	<0.05	<0.05	<0.051	<0.05	<0.05
4,4'-DDE	<0.05	<0.05	<0.051	<0.05	<0.05
Endrin	<0.05	<0.05	<0.051	<0.05	<0.05
Beta-Endosulfan	<0.05	<0.05	<0.051	<0.05	<0.05
4,4'-DDD	<0.05	<0.05	<0.051	<0.05	<0.05
Endosulfan Sulfate	<0.1	<0.1	<0.1	<0.1	<0.1
4,4'-DDT	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	<0.1	<0.1	<0.1	<0.1	<0.1
Toxaphene	<1.0	<1.0	<1.0	<1.0	<1.0
Chlordane	<0.2	<0.2	<0.2	<0.2	<0.2
Aroclor-1016	<0.5	<0.5	<0.5	<0.5	<0.5
Aroclor-1221	<0.5	<0.5	<0.5	<0.5	<0.5
Aroclor-1232	<0.5	<0.5	<0.5	<0.5	<0.5
Aroclor-1242	<0.5	<0.5	<0.5	<0.5	<0.5
Aroclor-1248	<0.5	<0.5	<0.5	<0.5	<0.5
Aroclor-1254	<0.5	<0.5	<0.5	<0.5	<0.5
Aroclor-1260	<0.5	<0.5	<0.5	<0.5	<0.5

B- Compound detected in associated blank.
E- Estimated value, exceeds calibration curve range.
J- Estimated value, less than detection limit.

Table 5-1
Kin-Buc Landfill Operable Unit 1
1998 Groundwater Monitoring Results
Transect Location No. 2

	W-3S	W-3RR	W-4G	W-4S	W-4R
Dissolved Metals (ug/l)					
Antimony	<60	<60	<60	<60	<60
Arsenic	118	<10	33.4	46.1	<10
Beryllium	<5	<5	<5.0	<5	<5
Barium	706	1320	1120	619	4640
Cadmium	<5	5.38	<5	<5	<5
Lead	<5	<5	<5	<5	<5
Manganese	4060	2770	631	4480	1920
Mercury	<0.3	<0.3	<0.3	<0.3	<0.3
Nickel	54.4	<40	<40	<40	<40
Vanadium	<50	<50	<50	<50	<50
Zinc	28.6	16	213	37.9	149
General Chemistry (mg/l)					
BOD	141	36.6	51.2	68.1	5.68
COD	1240	79.5	974.0	532	40.1
Chloride	4460	2480	1080	2280	2930
Nitrate, Nitrogen	<0.5	<0.5	<0.5	<0.5	<0.5
Phenols	0.33	0.053	0.022	0.057	0.006
Total Cyanide	<0.01	<0.01	<0.01	<0.01	<0.01
Total Dissolved Solids	5020 B	5110 B	2410	4920 B	5570 B
Total Organic Carbon	348	8.86	104 B	124	4.19
Total Organic Halides ***(ppm)***	5800 B	1200 B	1500 B	5700 B	350 B

B- Compound detected in associated blank.
E- Estimated value, exceeds calibration curve range.
J- Estimated value, less than detection limit.

Table 5-1
Kin-Buc Landfill Operable Unit 1
1998 Groundwater Monitoring Results
Transect Location No. 3

	W-5R	W-6G	W-6S	W-6R
Volatiles (ug/l) *Dilution Factor*	1	1	1	1
Acrolein	<28	<28	<28	<28
Acrylonitrile	<31	<31	<31	<31
Chloromethane	<1.8	<1.8	<1.8	<1.8
Bromomethane	<2.1	<2.1	<2.1	<2.1
Vinyl Chloride	2.9	<1.6	1.6	1.8
Chloroethane	<1.5	<1.5	<1.5	<1.5
Methylene Chloride	1.5	<1.4	2.8	17
1,1-Dichloroethene	<2	<2	<2	<2
1,1-Dichloroethane	<2.4	<2.4	<2.4	<2.4
Chloroform	<1.3	<1.3	<1.3	<1.3
1,2-Dichloroethane	<0.92	<0.92	<0.92	<0.92
1,1,1-Trichloroethane	<1.8	<1.8	<1.8	<1.8
Carbon tetrachloride	<2	<2	<2	<2
Bromodichloromethane	<1.1	<1.1	<1.1	<1.1
1,2-Dichloropropane	<0.93	<0.93	<0.93	<0.93
cis-1,3-Dichloropropene	<1.3	<1.3	<1.3	<1.3
Trichloroethene	<2.4	<2.4	<2.4	<2.4
Dibromochloromethane	<1.4	<1.4	<1.4	<1.4
1,1,2-Trichloroethane	<1.4	<1.4	<1.4	<1.4
Benzene	4	58	38	1.7
trans-1,3-Dichloropropene	<1.3	<1.3	<1.3	<1.3
Bromoform	<2.6	<2.6	<2.6	<2.6
Tetrachloroethene	<2.3	<2.3	<2.3	<2.3
1,1,2,2-Tetrachloroethane	<2.3	<2.3	<2.3	<2.3
Toluene	<2.0	<2.0	<2.0	<2.0
Chlorobenzene	7.6	280	72	2.1
Ethylbenzene	<1.5	<1.5	<1.5	<1.5
Trichlorofluoromethane	<1.4	<1.4	<1.4	<1.4
2-Chloroethylvinyl Ether	<5.2	<5.2	<5.2	<5.2
Trans-1,2-Dichloroethene	<2.1	<2.1	<2.1	<2.1

B- Compound detected in associated blank.
E- Estimated value, exceeds calibration curve range.
J- Estimated value, less than detection limit.

Table 5-1
Kin-Buc Landfill Operable Unit 1
1998 Groundwater Monitoring Results
Transect Location No. 3

	W-5R	W-6G	W-6S	W-6R
Semi-Volatiles (ug/l) *Dilution Factor*	1.05	1.05	1.05	1.18
Phenol	<0.98	<0.98	<0.98	1.1
bis(2-Chloroethyl) Ether	<1.3	<1.3	<1.3	1.4
2-Chlorophenol	<1.3	<1.3	<1.3	1.4
1,3-Dichlorobenzene	<0.86	<0.86	<0.86	<0.97
1,4-Dichlorobenzene	<0.97	3	<0.97	<1.1
1,2-Dichlorobenzene	<1.2	<1.2	<1.2	<1.3
2,2'- oxybis(1-Chloropropane)	<1	<1	<1	<1.1
N-Nitroso-di-n-propylamine	<1.3	<1.3	<1.3	<1.4
Hexachloroethane	<0.95	<0.95	<0.95	<1.1
Nitrobenzene	<1.4	<1.4	<1.4	<1.5
Isophorone	<1.5	<1.5	<1.5	<1.7
2-Nitrophenol	<1.5	<1.5	<1.5	<1.2
2,4-Dimethylphenol	<3.2	<3.2	<3.2	<3.5
2,4-Dichlorophenol	<3.2	<3.2	<3.2	<3.5
1,2,4-Trichlorobenzene	<0.83	<0.83	<0.83	<0.93
Naphthalene	<0.78	12	3.1	<0.87
Hexachlorobutadiene	<1.2	<1.2	<1.2	<1.3
bis-(2-Chloroethoxy)methane	<1.9	<1.9	<1.9	<2.1
4-Chloro-3-Methylphenol	<2.1	<2.1	<2.1	<2.4
Hexachlorocyclopentadiene	<1.2	<1.2	<1.2	<1.3
2,4,6-Trichlorophenol	<1.4	<1.4	<1.4	<1.5
2-Chloronaphthalene	<1.2	<1.2	<1.2	<1.3
Dimethylphthalate	<4.3	<4.3	<4.3	<4.8
Acenaphthylene	<1.3	<1.3	<1.3	<1.4
2,6-Dinitrotoluene	<1.6	<1.6	<1.6	<1.8
Acenaphthene	<1.3	<1.3	<1.3	<1.4
2,4-Dinitrophenol	<2.7	<2.7	<2.7	<3.1
4-Nitrophenol	<1.1	<1.1	<1.1	<1.2
2,4-Dinitrotoluene	<1.6	<1.6	<1.6	<1.8
Diethylphthalate	<2.9	<2.9	<2.9	<3.3
4-Chlorophenyl-phenylether	<1.2	<1.2	<1.2	<1.3
Fluorene	<1.4	<1.4	<1.4	<1.5
4,6-Dinitro-2-methylphenol	<3.5	<3.5	<3.5	<3.9
N-Nitrosodiphenylamine	<1.6	<1.6	<1.6	<1.8
4-Bromophenyl-phenylether	<8.7	<8.7	<8.7	<0.98

B- Compound detected in associated blank.
E- Estimated value, exceeds calibration curve range.
J- Estimated value, less than detection limit.

Table 5-1
Kin-Buc Landfill Operable Unit 1
1998 Groundwater Monitoring Results
Transect Location No. 3

	W-5R	W-6G	W-6S	W-6R
Hexachlorobenzene	<0.87	<0.87	<0.87	<1.5
Pentachlorophenol	<2.6	<2.6	<2.6	<3.0
Phenanthrene	<1.3	<1.3	<1.3	<1.4
Anthracene	<1.5	<1.5	<1.5	<1.7
Di-n-butylphthalate	<1.6	<1.6	<1.6	<3.0
Fluoranthene	<1.5	<1.5	<1.5	<1.7
Pyrene	<1.5	<1.5	<1.5	<1.7
Butylbenzylphthalate	<4.3	<4.3	<4.3	<4.8
3,3'-Dichlorobenzidine	<2.4	<2.4	<2.4	<2.7
Benzo(a)anthrance	<1.4	<1.4	<1.4	<1.5
Chrysene	<1.7	<1.7	<1.7	<1.9
bis(2-Ethylhexyl)phthalate	<2.3	12	<2.3	<2.6
Di-n-octylphalate	<2.5	<2.5	<2.5	<2.8
Benzo(b)fluoranthene	<1.5	<1.5	<1.5	<1.7
Benzo(k)fluoranthene	<2.4	<2.4	<2.4	<2.7
Benzo(a)pyrene	<1.5	<1.5	<1.5	<1.7
Indeno(1,2,3-cd)pyrene	<1.2	<1.2	<1.2	<1.3
Dibenz(a,h)anthracene	<1.3	<1.3	<1.3	<1.4
Benzo(g,h,i)perylene	<1.3	<1.3	<1.3	<1.4
N-Nitrosodimethylamine	<0.72	3.1	<0.72	<0.81
Benzidine	<3.6	<3.6	<3.6	<4
1,2-Diphenylhydrazine	<1.5	<1.5	<1.5	<1.7

B- Compound detected in associated blank.
E- Estimated value, exceeds calibration curve range.
J- Estimated value, less than detection limit.

Table 5-1
Kin-Buc Landfill Operable Unit 1
1998 Groundwater Monitoring Results
Transect Location No. 3

	W-5R	W-6G	W-6S	W-6R
Pesticide/PCB (ug/l) *Dilution Factor*	1.06	1	1	1.11
alpha-BHC	<0.053	<0.05	<0.05	<0.056
beta-BHC	<0.053	<0.05	<0.05	<0.056
delta-BHC	<0.053	<0.05	<0.05	<0.056
gamma-BHC (Lindane)	<0.053	<0.05	<0.05	<0.056
Heptachlor	<0.053	<0.05	<0.05	<0.056
Aldrin	<0.053	<0.05	<0.05	<0.056
Heptachlor Epoxide	<0.053	<0.05	<0.05	<0.056
Alpha-Endosulfan	<0.053	<0.05	<0.05	<0.056
Dieldrin	<0.053	<0.05	<0.05	<0.056
4,4'-DDE	<0.053	<0.05	<0.05	<0.056
Endrin	<0.053	<0.05	<0.05	<0.056
Beta-Endosulfan	<0.053	<0.1	<0.1	<0.11
4,4'-DDD	<0.053	<0.05	<0.05	<0.056
Endosulfan Sulfate	<0.11	<0.1	<0.1	<0.11
4,4'-DDT	<0.11	<0.1	<0.1	<0.11
Endrin Aldehyde	<0.11	<0.1	<0.1	<0.11
Toxaphene	<1.1	<1	<1	<1.1
Chlordane	<0.21	<0.2	<0.2	<0.22
Aroclor-1016	<0.5	<0.5	<0.5	<0.56
Aroclor-1221	<0.5	<0.5	<0.5	<0.56
Aroclor-1232	<0.5	<0.5	<0.5	<0.56
Aroclor-1242	<0.5	<0.5	<0.5	<0.56
Aroclor-1248	<0.5	<0.5	<0.5	<0.56
Aroclor-1254	<0.5	<0.5	<0.5	<0.56
Aroclor-1260	<0.5	<0.5	<0.5	<0.56

B- Compound detected in associated blank.
E- Estimated value, exceeds calibration curve range.
J- Estimated value, less than detection limit.

Table 5-1
Kin-Buc Landfill Operable Unit 1
1998 Groundwater Monitoring Results
Transect Location No. 3

	W-5R	W-6G	W-6S	W-6R
Dissolved Metals (ug/l)				
Antimony	<60	<60	<60	<60
Arsenic	<10	13.1	11.8	11.5
Beryllium	<5	<5	<5	<5
Barium	956	930	1730	947
Cadmium	<5	<5	<5	<5
Lead	<5	<5	<5	<5
Manganese	1420	299	1070	1260
Mercury	<0.3	<0.3	<0.3	<0.3
Nickel	<40	<40	<40	<40
Vanadium	<50	<50	<50	<50
Zinc	1160	70.1	186	228
General Chemistry (mg/l)				
BOD	10.2	29.7	9.18	<2
COD	272	175	280	293
Chloride	5130	1070	4600	5100
Nitrate, Nitrogen	<0.5	<0.5	<0.5	<0.5
Phenols	<0.005	<0.005	<0.005	0.117
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Total Dissolved Solids	8880	2140	8350	8840
Total Organic Carbon	16.3	24.5	17.7	17
Total Organic Halides ***(ppm)***	6600 B	2900 B	1300 B	320 B

B- Compound detected in associated blank.
E- Estimated value, exceeds calibration curve range.
J- Estimated value, less than detection limit.

Table 5-1

Kin-Buc Landfill Operable Unit 1
1998 Groundwater Monitoring Results
Transect Location No. 4

	W-7R	W-8S	W-8RR	W-13G	W-13S	W-15G
Volatiles (ug/l) *Dilution Factor*	1	1	1	1	1	2.5
Acrolein	<28	<28	<28	<28	<28	<70
Acrylonitrile	<31	<31	<31	<31	<31	<78
Chloromethane	<1.8	<1.8	<1.8	<1.8	<1.8	<4.5
Bromomethane	<2.1	<2.1	<2.1	<2.1	<2.1	<5.3
Vinyl Chloride	<1.6	<1.6	<1.6	<1.6	2.9	<4
Chloroethane	<1.5	<1.5	<1.5	<1.5	<1.5	<3.8
Methylene Chloride	4.6	<1.4	1.7	<1.4	<1.4	<3.5
1,1-Dichloroethene	<2	<2	<2	<2	<2	<5
1,1-Dichloroethane	<2.4	<2.4	<2.4	<2.4	<2.4	<6
Chloroform	<1.3	<1.3	<1.3	<1.3	<1.3	<3.3
1,2-Dichloroethane	<0.92	<0.92	<0.92	<0.92	<0.92	<2.3
1,1,1-Trichloroethane	<1.8	<1.8	<1.8	<1.8	<1.8	<4.5
Carbon tetrachloride	<2	<2	<2	<2	<2	<5
Bromodichloromethane	<1.1	<1.1	<1.1	<1.1	<1.1	<2.8
1,2-Dichloropropane	<0.93	<0.93	<0.93	<0.93	<0.93	<2.3
cis-1,3-Dichloropropene	<1.3	<1.3	<1.3	<1.3	<1.3	<3.3
Trichloroethene	<2.4	<2.4	<2.4	<2.4	7	<6
Dibromochloromethane	<1.4	<1.4	<1.4	<1.4	<1.4	<3.5
1,1,2-Trichloroethane	<1.4	<1.4	<1.4	<1.4	<1.4	<3.5
Benzene	2.1	6	<1.4	390	4.2	250
trans-1,3-Dichloropropene	<1.3	<1.3	<1.3	<1.3	<1.3	<3.3
Bromoform	<2.6	<2.6	<2.6	<2.6	<2.6	<6.5
Tetrachloroethene	<2.3	<2.3	<2.3	<2.3	<2.3	<5.8
1,1,2,2-Tetrachloroethane	<2.3	<2.3	<2.3	<2.3	<2.3	<5.8
Toluene	<2.0	<2.0	<2.0	<2.0	<2.0	<5
Chlorobenzene	2	17	2.2	230	1.4	770
Ethylbenzene	<1.5	<1.5	<1.5	4.3	<1.5	46
Trichlorofluoromethane	<1.4	<1.4	<1.4	<1.4	<1.4	<3.5
2-Chloroethylvinyl Ether	<5.2	<5.2	<5.2	<5.2	<5.2	<13
Trans-1,2-Dichloroethene	<2.1	<2.1	<2.1	<2.1	<2.1	<5.3

B- Compound detected in associated blank.
E- Estimated value, exceeds calibration curve range.
J- Estimated value, less than detection limit.

Table 5-1

Kin-Buc Landfill Operable Unit 1
1998 Groundwater Monitoring Results
Transect Location No. 4

	W-7R	W-8S	W-8RR	W-13G	W-13S	W-15G
Semi-Volatiles (ug/l) *Dilution Factor*	1.09	1.06	1.21	1	1	1.67
Phenol	<1	8.2	<1.1	<1	<0.93	9.9
bis(2-Chloroethyl) Ether	<1.3	<1.3	<1.5	<1.3	<1.2	<2
2-Chlorophenol	<1.3	2.1	<1.5	<1.3	<1.2	3
1,3-Dichlorobenzene	<0.89	<0.87	<0.99	<0.89	<0.82	<1.4
1,4-Dichlorobenzene	<1	6.5	<1.1	<1	<0.92	4
1,2-Dichlorobenzene	<1.2	<1.2	<1.3	<1.2	1.6	4.1
2,2'- oxybis(1-Chloropropane)	<0.95	<1.0	<1.1	<0.95	<0.95	<1.6
N-Nitroso-di-n-propylamine	<1.3	<1.3	<1.5	<1.3	<1.2	<2
Hexachloroethane	<0.98	<0.95	<1.1	<0.98	<0.9	<1.5
Nitrobenzene	<1.4	<1.4	<1.6	<1.4	<1.3	<2.2
Isophorone	<1.5	<1.5	<1.7	<1.5	<1.4	<2.3
2-Nitrophenol	<1.5	<1.5	<1.7	<1.5	<1.4	<2.3
2,4-Dimethylphenol	<3.3	<3.2	<3.6	<3.3	<3	<5
2,4-Dichlorophenol	<3.3	<3.2	<3.6	<3.3	<3	<5
1,2,4-Trichlorobenzene	<0.86	<0.84	<0.96	<0.86	<0.79	<1.3
Naphthalene	<0.81	7.5	3.4	<0.81	<0.074	8.6
Hexachlorobutadiene	<1.2	<1.2	<1.3	<1.2	<1.1	<1.8
bis-(2-Chloroethoxy)methane	<2	<1.9	<2.2	<2	<1.8	<3
4-Chloro-3-Methylphenol	<2.2	<2.1	<2.4	<2.2	<2	<3.3
Hexachlorocyclopentadiene	<1.2	<1.2	<1.3	<1.2	<1.1	<1.8
2,4,6-Trichlorophenol	<1.4	<1.4	<1.6	<1.4	<1.3	<2.2
2-Chloronaphthalene	<1.2	<1.2	<1.3	<1.2	<1.1	<1.8
Dimethylphthalate	<4.5	<4.3	<5	<4.5	<2.8	<6.8
Acenaphthylene	<1.3	<1.3	<1.5	<1.3	<1.2	<2
2,6-Dinitrotoluene	<1.6	<1.6	<1.8	<1.6	<1.5	<2.5
Acenaphthene	<1.3	<1.3	<1.5	<1.3	<1.2	<2
2,4-Dinitrophenol	<2.8	<2.8	<3.1	<2.8	<2.6	<4.3
4-Nitrophenol	<1.1	<1.1	<1.2	<1.1	<1	<1.7
2,4-Dinitrotoluene	<1.3	<1.3	<1.5	<1.3	<.12	<2
Diethylphthalate	<3.1	<3	<3.4	<3.1	<2.8	<4.7
4-Chlorophenyl-phenylether	<1.2	<1.2	<1.3	<1.2	<1.1	<.18
Fluorene	<1.4	<1.4	<1.6	<1.4	<1.3	<2.2
4,6-Dinitro-2-methylphenol	<3.6	<3.5	<4	<3.6	<3.3	<5.5
N-Nitrosodiphenylamine	<1.6	11	<1.8	<1.6	<1.5	<2.5
4-Bromophenyl-phenylether	<0.9	<0.88	<1	<0.9	<0.83	<1.4

B- Compound detected in associated blank.
E- Estimated value, exceeds calibration curve range.
J- Estimated value, less than detection limit.

Table 5-1

Kin-Buc Landfill Operable Unit 1
1998 Groundwater Monitoring Results
Transect Location No. 4

	W-7R	W-8S	W-8RR	W-13G	W-13S	W-15G
Hexachlorobenzene	<1.4	<1.4	<1.6	<1.4	<1.3	<2.2
Pentachlorophenol	<2.7	<2.7	<3	<2.7	<2.5	<4.2
Phenanthrene	<1.3	<1.3	<1.5	<1.3	<1.2	<2
Anthracene	<1.5	<1.5	<1.7	<1.5	<1.4	<2.3
Di-n-butylphthalate	5.4	<2.7	<3	<2.7	<2.5	<4.2
Fluoranthene	<1.5	<1.5	<1.7	<1.5	<1.4	<2.3
Pyrene	<1.5	<1.5	<1.7	<1.5	<1.4	<2.3
Butylbenzylphthalate	<4.5	<4.3	<5	<4.5	<4.1	<6.8
3,3'-Dichlorobenzidine	<2.5	<2.4	<2.8	<2.5	<2.3	<3.8
Benzo(a)anthrance	<1.4	<1.4	<1.6	<1.4	<1.3	<2.2
Chrysene	<1.7	<1.7	<1.9	<1.7	<1.6	<2.7
bis(2-Ethylhexyl)phthalate	4.4	2.8	3	<2.4	2.4	4.6
Di-n-octylphalate	<2.6	<2.5	<2.9	<2.6	<2.4	<4
Benzo(b)fluoranthene	<1.5	<1.5	<1.7	<1.5	<1.4	<2.3
Benzo(k)fluoranthene	<2.5	<2.4	<2.8	<2.5	<2.3	<3.8
Benzo(a)pyrene	<1.5	<1.5	<1.7	<1.5	<1.4	<2.3
Indeno(1,2,3-cd)pyrene	<1.2	<1.2	<1.3	<1.2	<1.1	<1.8
Dibenz(a,h)anthracene	<1.3	<1.3	<1.5	<1.3	<1.2	<2
Benzo(g,h,i)perylene	<1.3	<1.3	<1.5	<1.3	<1.2	<2
N-Nitrosodimethylamine	<0.75	<0.73	<0.83	<0.75	<0.69	<1.2
Benzidine	<3.7	<3.6	<4.1	<3.7	<3.4	<5.7
1,2-Diphenylhydrazine	<1.5	<1.5	<1.7	<1.5	<1.4	<2.3

B- Compound detected in associated blank.
E- Estimated value, exceeds calibration curve range.
J- Estimated value, less than detection limit.

Table 5-1

Kin-Buc Landfill Operable Unit 1
1998 Groundwater Monitoring Results
Transect Location No. 4

	W-7R	W-8S	W-8RR	W-13G	W-13S	W-15G
Pesticide/PCB (ug/l) *Dilution Factor*	1.09	1.06	1.11	1.03	1	1.22
alpha-BHC	<0.055	<0.053	<0.056	<0.052	<0.05	<0.061
beta-BHC	<0.055	<0.053	<0.056	<0.052	<0.05	<0.061
delta-BHC	<0.055	<0.053	<0.056	<0.052	<0.05	<0.061
gamma-BHC (Lindane)	<0.055	<0.053	<0.056	<0.052	<0.05	<0.061
Heptachlor	<0.055	<0.053	<0.056	<0.052	<0.05	<0.061
Aldrin	<0.055	<0.053	<0.056	<0.052	<0.05	<0.061
Heptachlor Epoxide	<0.055	<0.053	<0.056	<0.052	<0.05	<0.061
Alpha-Endosulfan	<0.055	<0.053	<0.056	<0.052	<0.05	<0.061
Dieldrin	<0.055	<0.053	<0.056	<0.052	<0.05	<0.061
4,4'-DDE	<0.055	<0.053	<0.056	<0.052	<0.05	<0.061
Endrin	<0.055	<0.053	<0.056	<0.052	<0.05	<0.061
Beta-Endosulfan	<0.11	<0.11	<0.11	<0.1	<0.1	<0.12
4,4'-DDD	<0.055	<0.053	<0.056	<0.052	<0.05	<0.12
Endosulfan Sulfate	<0.11	<0.11	<0.11	<0.1	<0.1	<0.12
4,4'-DDT	<0.11	<0.11	<0.11	<0.1	<0.1	<0.12
Endrin Aldehyde	<0.11	<0.11	<0.11	<0.10	<0.10	<0.12
Toxaphene	<1.1	<1.1	<1.1	<1	<1	<1.2
Chlordane	<0.22	<0.21	<0.22	<0.21	<0.2	<0.24
Aroclor-1016	<0.55	<0.53	<0.56	<0.52	<0.5	<0.61
Aroclor-1221	<0.55	<0.53	<0.56	<0.52	<0.5	<0.61
Aroclor-1232	<0.55	<0.53	<0.56	<0.52	<0.5	<0.61
Aroclor-1242	<0.55	<0.53	<0.56	<0.52	<0.5	<0.61
Aroclor-1248	<0.55	<0.53	<0.56	<0.52	<0.5	<0.61
Aroclor-1254	<0.55	<0.53	<0.56	<0.52	<0.5	<0.61
Aroclor-1260	<0.55	<0.53	<0.56	<0.52	<0.5	<0.61

B- Compound detected in associated blank.
E- Estimated value, exceeds calibration curve range.
J- Estimated value, less than detection limit.

Table 5-1

Kin-Buc Landfill Operable Unit 1
1998 Groundwater Monitoring Results
Transect Location No. 4

	W-7R	W-8S	W-8RR	W-13G	W-13S	W-15G
Dissolved Metals (ug/l)						
Antimony	<60	<60	<60	<60	<60	<60
Arsenic	<10	<10	<10	19.6	<10	30.1
Beryllium	<5	<5	<5	<5	<5	<5
Barium	533	1170	1060	954 B	720 B	450
Cadmium	<5	<5	<5	<5	<5	<5
Lead	<5	<5	<5	<5	<5	<5
Manganese	486	1600	1390	203	1990	281
Mercury	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Nickel	<40	<40	<40	<40	<40	99.4
Vanadium	<50	<50	<50	<50	<50	<50
Zinc	36	182	219	135	160	129
General Chemistry (mg/l)						
BOD	31.1	2.31	<2	32	4.22	28.8
COD	87.3	341	75.8	214	280	424.0
Chloride	2480	6350	5600	241	5540	708
Nitrate, Nitrogen	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenols	0.013	<0.005	<0.005	0.006	<0.005	0.016
Total Cyanide	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Total Dissolved Solids	6110	10600	9980	1040	9670	1880
Total Organic Carbon	13.7 B	10.8 B	3.55 B	53.3	15.5	122
Total Organic Halides ***(ppm)***	1300 B	<20	990 B	790 B	2220 B	950 B

B- Compound detected in associated blank.
E- Estimated value, exceeds calibration curve range.
J- Estimated value, less than detection limit.

Table 5-1

Kin-Buc Landfill Operable Unit 1
1998 Groundwater Monitoring Results
Transect Location No. 5

	W-9R	W-10G	W-10R
Volatiles (ug/l) *Dilution Factor*	1	1	1
Acrolein	<28	<28	<28
Acrylonitrile	<31	<31	<31
Chloromethane	<1.8	<1.8	<1.8
Bromomethane	<2.1	<2.1	<2.1
Vinyl Chloride	<1.6	<1.6	<1.6
Chloroethane	<1.5	<1.5	<1.5
Methylene Chloride	1.7	33	200
1,1-Dichloroethene	<2	2.4	8.3
1,1-Dichloroethane	2.4	<2.4	4.3
Chloroform	<1.3	<1.3	2.4
1,2-Dichloroethane	<0.92	<0.92	1.5
1,1,1-Trichloroethane	<1.8	<1.8	4.2
Carbon tetrachloride	<2	<2	<2
Bromodichloromethane	<1.1	<1.1	<1.1
1,2-Dichloropropane	<0.93	<0.93	<0.93
cis-1,3-Dichloropropene	<1.3	<1.3	<1.3
Trichloroethene	<2.4	2.7	15
Dibromochloromethane	<1.4	<1.4	<1.4
1,1,2-Trichloroethane	<1.4	<1.4	<1.4
Benzene	1.8	<1.4	<1.4
trans-1,3-Dichloropropene	<1.3	<1.3	<1.3
Bromoform	<2.6	<2.6	<2.6
Tetrachloroethene	<2.3	<2.3	5.7
1,1,2,2-Tetrachloroethane	<2.3	<2.3	<2.3
Toluene	<2	<2	12
Chlorobenzene	<1.2	<1.2	<1.2
Ethylbenzene	<1.5	<1.5	<1.5
Trichlorofluoromethane	<1.4	<1.4	<1.4
2-Chloroethylvinyl Ether	<5.2	<5.2	<5.2
Trans-1,2-Dichloroethene	<2.1	<2.1	<2.1

B- Compound detected in associated blank.
E- Estimated value, exceeds calibration curve range.
J- Estimated value, less than detection limit.

Table 5-1

Kin-Buc Landfill Operable Unit 1
1998 Groundwater Monitoring Results
Transect Location No. 5

	W-9R	W-10G	W-10R
Semi-Volatiles (ug/l) *Dilution Factor*	1.18	1.28	1
Phenol	<1.1	<1.2	17
bis(2-Chloroethyl) Ether	<1.4	<1.5	<1.2
2-Chlorophenol	<1.4	<1.5	<1.2
1,3-Dichlorobenzene	<0.97	<1	<0.82
1,4-Dichlorobenzene	<1.1	<1.2	<0.92
1,2-Dichlorobenzene	<1.3	<1.4	<1.1
2,2'- oxybis(1-Chloropropane)	<1.1	<1.2	<0.95
N-Nitroso-di-n-propylamine	<1.4	<1.5	<1.2
Hexachloroethane	<1.1	<1.2	<0.9
Nitrobenzene	<1.5	<1.7	<1.3
Isophorone	<1.7	<1.8	<1.4
2-Nitrophenol	<1.2	<1.8	<1.4
2,4-Dimethylphenol	<3.5	<3.8	<3
2,4-Dichlorophenol	<3.5	<3.8	<3
1,2,4-Trichlorobenzene	<0.93	<1	<0.79
Naphthalene	<0.87	<0.95	<0.74
Hexachlorobutadiene	<1.3	<1.4	<1.1
bis-(2-Chloroethoxy)methane	<2.1	2.3	<1.8
4-Chloro-3-Methylphenol	<2.4	<2.6	<2.0
Hexachlorocyclopentadiene	<1.3	<1.4	<1.1
2,4,6-Trichlorophenol	<1.5	<1.7	<1.3
2-Chloronaphthalene	<1.3	<1.4	<1.1
Dimethylphthalate	<4.8	<5.2	<4.1
Acenaphthylene	<1.4	<1.5	<1.2
2,6-Dinitrotoluene	<1.8	<1.9	<1.5
Acenaphthene	<1.4	<1.5	<1.2
2,4-Dinitrophenol	<3.1	<3.3	<2.6
4-Nitrophenol	<1.2	<1.3	<1
2,4-Dinitrotoluene	<1.8	<1.5	<1.2
Diethylphthalate	<3.3	<3.6	<2.8
4-Chlorophenyl-phenylether	<1.3	<1.4	<1.1
Fluorene	<1.5	<1.7	<1.3
4,6-Dinitro-2-methylphenol	<3.9	<4.2	<3.3
N-Nitrosodiphenylamine	<1.8	<1.9	<1.5
4-Bromophenyl-phenylether	<0.98	<1.1	<0.83

B- Compound detected in associated blank.
E- Estimated value, exceeds calibration curve range.
J- Estimated value, less than detection limit.

Table 5-1

Kin-Buc Landfill Operable Unit 1
1998 Groundwater Monitoring Results
Transect Location No. 5

	W-9R	W-10G	W-10R
Hexachlorobenzene	<1.5	<1.7	<1.3
Pentachlorophenol	<3.0	<3.2	<2.5
Phenanthrene	<1.4	<1.5	<1.2
Anthracene	<1.7	<1.8	<1.4
Di-n-butylphthalate	<3.0	<3.2	<2.5
Fluoranthene	<1.7	<1.8	<1.4
Pyrene	<1.7	<1.8	<1.4
Butylbenzylphthalate	<4.8	<5.2	<4.1
3,3'-Dichlorobenzidine	<2.7	<2.9	<2.3
Benzo(a)anthrance	<1.5	<1.7	<1.3
Chrysene	<1.9	<2	<1.6
bis(2-Ethylhexyl)phthalate	<2.6	<2.8	2.9
Di-n-octylphalate	<2.8	<3.1	<2.4
Benzo(b)fluoranthene	<1.7	<1.8	<1.4
Benzo(k)fluoranthene	<2.7	<1.8	<2.3
Benzo(a)pyrene	<1.7	<1.8	<1.4
Indeno(1,2,3-cd)pyrene	<1.3	<1.4	<1.1
Dibenz(a,h)anthracene	<1.4	<1.5	<1.2
Benzo(g,h,i)perylene	<1.4	<1.5	<1.2
N-Nitrosodimethylamine	<0.81	<0.88	<0.69
Benzidine	<4	<4.4	<3.4
1,2-Diphenylhydrazine	<1.7	<1.8	<1.4

B- Compound detected in associated blank.
E- Estimated value, exceeds calibration curve range.
J- Estimated value, less than detection limit.

Table 5-1

Kin-Buc Landfill Operable Unit 1
1998 Groundwater Monitoring Results
Transect Location No. 5

	W-9R	W-10G	W-10R
Pesticide/PCB (ug/l) *Dilution Factor*	1.05	1.39	1.02
alpha-BHC	<0.053	<0.069	<0.051
beta-BHC	<0.053	<0.069	<0.051
delta-BHC	<0.053	<0.069	<0.051
gamma-BHC (Lindane)	<0.053	<0.069	<0.051
Heptachlor	<0.053	<0.069	<0.051
Aldrin	<0.053	<0.069	<0.051
Heptachlor Epoxide	<0.053	<0.069	<0.051
Alpha-Endosulfan	<0.053	<0.069	<0.051
Dieldrin	<0.053	<0.069	<0.051
4,4'-DDE	<0.053	<0.069	<0.051
Endrin	<0.053	<0.069	<0.051
Beta-Endosulfan	<0.11	<0.14	<0.1
4,4'-DDD	<0.053	<0.069	<0.051
Endosulfan Sulfate	<0.11	<0.14	<0.1
4,4'-DDT	<0.11	<0.14	<0.1
Endrin Aldehyde	<0.11	<0.14	<0.1
Toxaphene	<1.1	<1.4	<1
Chlordane	<0.21	<0.28	<0.2
Aroclor-1016	<0.53	<0.7	<0.51
Aroclor-1221	<0.53	<0.7	<0.51
Aroclor-1232	<0.53	<0.7	<0.51
Aroclor-1242	<0.53	<0.7	<0.51
Aroclor-1248	<0.53	<0.7	<0.51
Aroclor-1254	<0.53	<0.7	<0.51
Aroclor-1260	<0.53	<0.7	<0.51

B- Compound detected in associated blank.
E- Estimated value, exceeds calibration curve range.
J- Estimated value, less than detection limit.

Table 5-1

Kin-Buc Landfill Operable Unit 1
1998 Groundwater Monitoring Results
Transect Location No. 5

	W-9R	W-10G	W-10R
Dissolved Metals (ug/l)			
Antimony	<60		<60
Arsenic	12.4		<10
Beryllium	<5		<5
Barium	529		445.0
Cadmium	<5		<5
Lead	<5		<5
Manganese	1600		247
Mercury	<0.3		<0.3
Nickel	<40		<40
Vanadium	<50		<50
Zinc	239		105
General Chemistry (mg/l)			
BOD	<2	<2	<2
COD	16.7	<5	<5
Chloride	114	54.4	12.5
Nitrate, Nitrogen	<0.5	<0.5	<0.5
Phenols	<0.005		0.006
Total Cyanide	<0.01		<0.01
Total Dissolved Solids	546	250	152
Total Organic Carbon	5.31	1.11	2.12 B
Total Organic Halides ***(ppm)***	100 B	310 B	220 B

B- Compound detected in associated blank.
E- Estimated value, exceeds calibration curve range.
J- Estimated value, less than detection limit.

Table 5-2
Kin-Buc Landfill Operable Unit 2
1998 Groundwater Monitoring Results
Refuse Wells

	GEI-3G	GEI-5G	GEI-6G	GEI-10G
Volatiles (ug/l) *Dilution Factor*	2	5	2	1
Acrolein	<56	<140	<56	<28
Acrylonitrile	<62	<160	<62	<31
Chloromethane	<3.6	<9	<3.6	<1.8
Bromomethane	<4.2	<11	<4.2	<2.1
Vinyl Chloride	<3.2	<8	<3.2	<1.6
Chloroethane	<3	12	<3	<1.5
Methylene Chloride	<2.8	<7	<2.8	<1.4
1,1-Dichloroethene	<4	<10	<4	<2
1,1-Dichloroethane	<4.8	<12	<4.8	<2.4
Chloroform	<4	<6.5	<4	<1.3
1,2-Dichloroethane	<1.8	<4.6	<1.8	<0.92
1,1,1-Trichloroethane	<3.6	<9	<3.6	<1.8
Carbon tetrachloride	<4	<10	<4	<2
Bromodichloromethane	<2.2	<5.5	<2.2	<1.1
1,2-Dichloropropane	<1.9	<4.7	<1.9	<0.93
cis-1,3-Dichloropropene	<2.6	<6.5	<2.6	<1.3
Trichloroethene	<4.8	<12	<4.8	<2.4
Dibromochloromethane	<2.8	<7	<2.8	<1.4
1,1,2-Trichloroethane	<2.8	<7	<2.8	<1.4
Benzene	250	1200	32	240
trans-1,3-Dichloropropene	<2.6	<6.5	<2.6	<1.3
Bromoform	<5.2	<13	<5.2	<2.6
Tetrachloroethene	<4.6	<12	<4.6	<2.3
1,1,2,2-Tetrachloroethane	<4.6	<12	<4.6	<2.3
Toluene	<4	<10	<4	<2.0
Chlorobenzene	52	63	3.9	240
Ethylbenzene	<3	<7.5	<3	<1.5
Trichlorofluoromethane	<2.8	<7	<2.8	<1.4
2-Chloroethylvinyl Ether	<10	<26	<10	<5.2
Trans-1,2-Dichloroethene	<4.2	<11	<4.2	<2.1

B- Compound detected in associated blank.
E- Estimated value, exceeds calibration curve range.
J- Estimated value, less than detection limit.

Table 5-2
Kin-Buc Landfill Operable Unit 2
1998 Groundwater Monitoring Results
Refuse Wells

	GEI-3G	GEI-5G	GEI-6G	GEI-10G
Semi-Volatiles (ug/l) *Dilution Factor*	1.11	1	1	1
Phenol	6.4	19	<0.93	<0.93
bis(2-Chloroethyl) Ether	<1.3	<1.2	<1.2	<1.2
2-Chlorophenol	<1.3	<1.2	<1.2	<1.2
1,3-Dichlorobenzene	<0.91	<0.82	<0.82	<0.82
1,4-Dichlorobenzene	4.1	5.9	<0.92	8.9
1,2-Dichlorobenzene	<1.2	3.2	<1.1	2.2
2,2'- oxybis(1-Chloropropane)	<1.1	<0.95	<0.95	<0.95
N-Nitroso-di-n-propylamine	<1.3	<1.2	<1.2	<1.2
Hexachloroethane	<1	<0.9	<0.9	<0.9
Nitrobenzene	<1.4	<1.3	<1.3	<1.3
Isophorone	<1.6	<1.4	<1.4	<1.4
2-Nitrophenol	<1.6	<1.4	<1.4	<1.4
2,4-Dimethylphenol	<3.3	<3	<3	<3
2,4-Dichlorophenol	<3.3	<3	<3	<3
1,2,4-Trichlorobenzene	<0.88	<0.79	<0.79	<0.79
Naphthalene	1.4	4.5	<0.74	12
Hexachlorobutadiene	<1.2	<1.1	<1.1	<1.1
bis-(2-Chloroethoxy)methane	<2	<1.8	<1.8	<1.8
4-Chloro-3-Methylphenol	<2.2	<2.0	<2.0	<2.0
Hexachlorocyclopentadiene	<1.2	<1.1	<1.1	<1.1
2,4,6-Trichlorophenol	<1.4	<1.3	<1.3	<1.3
2-Chloronaphthalene	<1.2	<1.1	<1.1	<1.1
Dimethylphthalate	<4.6	<4.1	<4.1	<4.1
Acenaphthylene	<1.3	<1.2	<1.2	<1.2
2,6-Dinitrotoluene	<1.7	<1.5	<1.5	<1.5
Acenaphthene	1.4	<1.2	<1.2	1.6
2,4-Dinitrophenol	<2.9	<2.6	<2.6	<2.6
4-Nitrophenol	<1.1	<1	<1	<1
2,4-Dinitrotoluene	<1.3	<1.2	<1.2	<1.2
Diethylphthalate	<3.1	<2.8	<2.8	<2.8
4-Chlorophenyl-phenylether	<1.2	<1.1	<1.1	<1.1
Fluorene	<1.4	<1.3	<1.3	1.3
4,6-Dinitro-2-methylphenol	<3.7	<3.3	<3.3	<3.3
N-Nitrosodiphenylamine	6	3.1	1.8	9.8
4-Bromophenyl-phenylether	<0.92	<0.83	<0.83	<0.83

B- Compound detected in associated blank.
E- Estimated value, exceeds calibration curve range.
J- Estimated value, less than detection limit.

Table 5-2
Kin-Buc Landfill Operable Unit 2
1998 Groundwater Monitoring Results
Refuse Wells

	GEI-3G	GEI-5G	GEI-6G	GEI-10G
Hexachlorobenzene	<1.4	<1.3	<1.3	<1.3
Pentachlorophenol	<2.8	<2.5	<2.5	<2.5
Phenanthrene	<1.3	<1.2	<1.2	<1.2
Anthracene	<1.6	<1.4	<1.4	<1.4
Di-n-butylphthalate	<2.8	<2.5	<2.5	<2.5
Fluoranthene	<1.6	<1.4	<1.4	<1.4
Pyrene	<1.6	<1.4	<1.4	<1.4
Butylbenzylphthalate	<4.6	<4.1	<4.1	<4.1
3,3'-Dichlorobenzidine	<2.6	<2.3	<2.3	<2.3
Benzo(a)anthrance	<1.4	<1.3	<1.3	<1.3
Chrysene	<1.8	<1.6	<1.6	<1.6
bis(2-Ethylhexyl)phthalate	<2.4	3.5	5.5	<2.2
Di-n-octylphalate	<2.7	<2.4	<2.4	<2.4
Benzo(b)fluoranthene	<1.6	<1.4	<1.4	<1.4
Benzo(k)fluoranthene	<2.6	<2.3	<2.3	<2.3
Benzo(a)pyrene	<1.6	<1.4	<1.4	<1.4
Indeno(1,2,3-cd)pyrene	<1.2	<1.1	<1.1	<1.1
Dibenoz(a,h)anthracene	<1.3	<1.2	<1.2	<1.2
Benzo(g,h,i)perylene	<1.3	<1.2	<1.2	<1.2
N-Nitrosodimethylamine	<0.77	<0.69	<0.69	<0.69
Benzidine	<3.8	<3.4	<3.4	<3.4
1,2-Diphenylhydrazine	<1.6	<1.4	<1.4	<1.4

B- Compound detected in associated blank.
E- Estimated value, exceeds calibration curve range.
J- Estimated value, less than detection limit.

Table 5-2
Kin-Buc Landfill Operable Unit 2
1998 Groundwater Monitoring Results
Refuse Wells

	GEI-3G	GEI-5G	GEI-6G	GEI-10G
Pesticide/PCB (ug/l) *Dilution Factor*	1.3	1.05	1	1
alpha-BHC	<0.065	<0.053	<0.05	<0.05
beta-BHC	<0.065	<0.053	<0.05	<0.05
delta-BHC	<0.065	<0.053	<0.05	<0.05
gamma-BHC (Lindane)	<0.065	<0.053	<0.05	<0.05
Heptachlor	<0.065	<0.053	<0.05	<0.05
Aldrin	<0.065	<0.053	<0.05	<0.05
Heptachlor Epoxide	<0.065	<0.053	<0.05	<0.05
Alpha-Endosulfan	<0.065	<0.053	<0.05	<0.05
Dieldrin	<0.065	<0.053	<0.05	<0.05
4,4'-DDE	<0.065	<0.053	<0.05	<0.05
Endrin	<0.065	<0.053	<0.05	<0.05
Beta-Endosulfan	<0.13	<0.11	<0.1	<0.1
4,4'-DDD	<0.065	<0.053	<0.05	<0.05
Endosulfan Sulfate	<0.13	<0.11	<0.1	<0.1
4,4'-DDT	<0.13	<0.11	<0.1	<0.1
Endrin Aldehyde	<0.13	<0.11	<0.1	<0.1
Toxaphene	<1.3	<1.1	<1	<1
Chlordane	<0.26	<0.21	<0.2	<0.2
Aroclor-1016	<0.65	<0.53	<0.5	<0.5
Aroclor-1221	<0.65	<0.53	<0.5	<0.5
Aroclor-1232	<0.65	<0.53	<0.5	<0.5
Aroclor-1242	<0.65	<0.53	<0.5	<0.5
Aroclor-1248	<0.65	<0.53	<0.5	<0.5
Aroclor-1254	<0.65	<0.53	<0.5	<0.5
Aroclor-1260	<0.65	<0.53	<0.5	<0.5

B- Compound detected in associated blank.
E- Estimated value, exceeds calibration curve range.
J- Estimated value, less than detection limit.

Table 5-2
Kin-Buc Landfill Operable Unit 2
1998 Groundwater Monitoring Results
Refuse Wells

	GEI-3G	GEI-5G	GEI-6G	GEI-10G
Dissolved Metals (ug/l)				
Antimony	<60	<60	<60	<60
Arsenic	<10	12.5	<10	11.3
Beryllium	<5	<5	<5	<5
Barium	960	1050	612	784
Cadmium	<5	5.99	<5	<5
Lead	<5	5.29	9.74	<5
Manganese	838	106	126	408
Mercury	<0.3	<0.3	<0.3	<0.3
Nickel	<40	<40	161	<40
Vanadium	<50	<50	<50	<50
Zinc	127	194	160	271
General Chemistry (mg/l)				
BOD	30.2 B	35.8 B	60.6	65.4
COD	66.5 B	328 B	966 B	194
Chloride	36.9	6290	1410	1820
Nitrate, Nitrogen	<0.5	1.6	<0.5	<0.5
Phenols	0.028	0.046	0.061	0.022
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Total Dissolved Solids	528 B	1220 B	4770	3820
Total Organic Carbon	19.1 B	66.1 B	234 B	20.2
Total Organic Halides ***(ppm)***	220 B	560 B	750 B	1400 B

B- Compound detected in associated blank.
E- Estimated value, exceeds calibration curve range.
J- Estimated value, less than detection limit.

Table 5-2
Kin-Buc Landfill Operable Unit 2
1998 Groundwater Monitoring Results
Sand and Gravel Wells

	WE-3S	WE-5S	GEI-6S	WE-7S	WE-10S
Volatiles (ug/l) *Dilution Factor*	10	5	2	10	1
Acrolein	<280	<140	<56	<280	<28
Acrylonitrile	<310	<160	<62	<310	<31
Chloromethane	<18	<9	<3.6	<18	<1.8
Bromomethane	<21	<11	<4.2	<21	<2.1
Vinyl Chloride	<16	<8	<3.2	<16	<1.6
Chloroethane	<15	<7.5	<3	36	<1.5
Methylene Chloride	<14	<7	<2.8	<14	<1.4
1,1-Dichloroethene	<20	<10	<4	<20	<2
1,1-Dichloroethane	<24	<12	<4.8	<24	<2.4
Chloroform	<13	<6.5	<4	<13	<1.3
1,2-Dichloroethane	<9.2	<4.6	<1.8	<9.2	<0.92
1,1,1-Trichloroethane	<18	<9	<3.6	<18	<1.8
Carbon tetrachloride	<20	<10	<4	<20	<2
Bromodichloromethane	<11	<5.5	<2.2	<11	<1.1
1,2-Dichloropropane	<9.3	<4.7	<1.9	<9.3	<0.93
cis-1,3-Dichloropropene	<13	<6.5	<2.6	<13	<1.3
Trichloroethene	<24	<12	<4.8	<24	23
Dibromochloromethane	<14	<7	<2.8	<14	<1.4
1,1,2-Trichloroethane	<14	<7	<2.8	<14	<1.4
Benzene	20	350	50	75	<1.4
trans-1,3-Dichloropropene	<13	<6.5	<2.6	<13	<1.3
Bromoform	<26	<13	<5.2	<26	<2.6
Tetrachloroethene	<23	<12	<4.6	<23	<2.3
1,1,2,2-Tetrachloroethane	<23	<12	<4.6	<23	<2.3
Toluene	230	15	<4	<20	<2.0
Chlorobenzene	<12	7.7	12	860	<1.2
Ethylbenzene	52	78	<3	15	<1.5
Trichlorofluoromethane	<14	<7	<2.8	<14	<1.4
2-Chloroethylvinyl Ether	<52	<26	<10	<52	<5.2
Trans-1,2-Dichloroethene	<21	<11	<4.2	<21	<2.1

B- Compound detected in associated blank.
E- Estimated value, exceeds calibration curve range.
J- Estimated value, less than detection limit.

Table 5-2
Kin-Buc Landfill Operable Unit 2
1998 Groundwater Monitoring Results
Sand and Gravel Wells

	WE-3S	WE-5S	GEI-6S	WE-7S	WE-10S
Semi-Volatiles (ug/l) *Dilution Factor*	10	1	1	1	1.03
Phenol	<9.3	<0.93	<0.93	<0.93	<0.96
bis(2-Chloroethyl) Ether	<12	<1.2	<1.2	<1.2	<1.2
2-Chlorophenol	<12	<1.2	<1.2	<1.2	<1.2
1,3-Dichlorobenzene	<8.2	<0.82	<0.82	<0.82	<0.84
1,4-Dichlorobenzene	<9.2	<0.92	<0.92	6	<0.95
1,2-Dichlorobenzene	<11	<1.1	<1.1	1.1	<1.1
2,2'- oxybis(1-Chloropropane)	<9.5	<0.95	<0.95	<0.95	<0.98
N-Nitroso-di-n-propylamine	<12	<1.2	<1.2	<1.2	<1.2
Hexachloroethane	<9	<0.9	<0.9	<0.9	<0.93
Nitrobenzene	<13	<1.3	<1.3	<1.3	<1.3
Isophorone	<14	<1.4	<1.4	<1.4	<1.4
2-Nitrophenol	<14	<1.4	<1.4	<1.4	<1.4
2,4-Dimethylphenol	390	15	<3	8.2	<3.1
2,4-Dichlorophenol	<30	<3	<3	<3	<3.1
1,2,4-Trichlorobenzene	<7.9	<0.79	<0.79	<0.79	<0.81
Naphthalene	<7.4	66	1.2	3.9	<0.76
Hexachlorobutadiene	<11	<1.1	<1.1	<1.1	<1.1
bis-(2-Chloroethoxy)methane	<18	<1.8	<1.8	<1.8	<1.9
4-Chloro-3-Methylphenol	140	<2.0	<2.0	<2.0	<2.1
Hexachlorocyclopentadiene	<11	<1.1	<1.1	<1.1	<1.1
2,4,6-Trichlorophenol	<13	<1.3	<1.3	<1.3	<1.3
2-Chloronaphthalene	<11	<1.1	<1.1	<1.1	<1.1
Dimethylphthalate	<41	<4.1	<4.1	<4.1	<4.2
Acenaphthylene	<12	<1.2	<1.2	<1.2	<1.2
2,6-Dinitrotoluene	<15	<1.5	<1.5	<1.5	<1.5
Acenaphthene	<12	13	<1.2	<1.2	<1.2
2,4-Dinitrophenol	<26	<2.6	<2.6	<2.6	<2.7
4-Nitrophenol	<10	<1	<1	<1	<1
2,4-Dinitrotoluene	<12	<1.2	<1.2	<1.2	<1.2
Diethylphthalate	<28	<2.8	<2.8	<2.8	<2.9
4-Chlorophenyl-phenylether	<11	<1.1	<1.1	<1.1	<1.1
Fluorene	<13	6.5	<1.3	<1.3	<1.3
4,6-Dinitro-2-methylphenol	<33	<3.3	<3.3	<3.3	<3.4
N-Nitrosodiphenylamine	<15	<1.5	8.4	<1.5	<1.5
4-Bromophenyl-phenylether	<8.3	<0.83	<0.83	<0.83	<8.5

B- Compound detected in associated blank.
E- Estimated value, exceeds calibration curve range.
J- Estimated value, less than detection limit.

Table 5-2
Kin-Buc Landfill Operable Unit 2
1998 Groundwater Monitoring Results
Sand and Gravel Wells

	WE-3S	WE-5S	GEI-6S	WE-7S	WE-10S
Hexachlorobenzene	<13	<1.3	<1.3	<1.3	<1.3
Pentachlorophenol	<25	<2.5	<2.5	<2.5	<2.6
Phenanthrene	<12	2.7	<1.2	<1.2	<1.2
Anthracene	<14	<1.4	<1.4	<1.4	<1.4
Di-n-butylphthalate	<25	2.7	<2.5	<2.5	<2.6
Fluoranthene	<14	<1.4	<1.4	<1.4	<1.4
Pyrene	<14	<1.4	<1.4	<1.4	<1.4
Butylbenzylphthalate	<41	<4.1	<4.1	<4.1	<4.2
3,3'-Dichlorobenzidine	<23	<2.3	<2.3	<2.3	<2.4
Benzo(a)anthrance	<13	<1.3	<1.3	<1.3	<1.3
Chrysene	<16	<1.6	<1.6	<1.6	<1.6
bis(2-Ethylhexyl)phthalate	<22	<2.2	<2.2	<2.2	<2.3
Di-n-octylphalate	<24	<2.4	<2.4	<2.4	<2.5
Benzo(b)fluoranthene	<14	<1.4	<1.4	<1.4	<1.4
Benzo(k)fluoranthene	<23	<2.3	<2.3	<2.3	<2.4
Benzo(a)pyrene	<14	<1.4	<1.4	<1.4	<1.4
Indeno(1,2,3-cd)pyrene	<11	<1.1	<1.1	<1.1	<1.1
Dibenzo(a,h)anthracene	<12	<1.2	<1.2	<1.2	<1.2
Benzo(g,h,i)perylene	<12	<1.2	<1.2	<1.2	<1.2
N-Nitrosodimethylamine	<6.9	<0.69	<0.69	<0.69	<0.71
Benzidine	<34	<3.4	<3.4	<3.4	<3.5
1,2-Diphenylhydrazine	<14	<1.4	<1.4	<1.4	<1.4

B- Compound detected in associated blank.
E- Estimated value, exceeds calibration curve range.
J- Estimated value, less than detection limit.

Table 5-2
Kin-Buc Landfill Operable Unit 2
1998 Groundwater Monitoring Results
Sand and Gravel Wells

	WE-3S	WE-5S	GEI-6S	WE-7S	WE-10S
Pesticide/PCB (ug/l) *Dilution Factor*	1	1.05	1	1.05	1
alpha-BHC	<0.05	<0.05	<0.05	<0.053	<0.05
beta-BHC	<0.05	<0.05	<0.05	<0.053	<0.05
delta-BHC	<0.05	<0.05	<0.05	<0.053	<0.05
gamma-BHC (Lindane)	<0.05	<0.05	<0.05	<0.053	<0.05
Heptachlor	<0.05	<0.05	<0.05	<0.053	<0.05
Aldrin	<0.05	<0.05	<0.05	<0.053	<0.05
Heptachlor Epoxide	<0.05	<0.05	<0.05	<0.053	<0.05
Alpha-Endosulfan	<0.05	<0.05	<0.05	<0.053	<0.05
Dieldrin	<0.05	<0.05	<0.05	<0.053	<0.05
4,4'-DDE	<0.05	<0.05	<0.05	<0.053	<0.05
Endrin	<0.05	<0.05	<0.05	<0.053	<0.05
Beta-Endosulfan	<0.1	<0.1	<0.1	<0.11	<0.1
4,4'-DDD	<0.05	<0.05	<0.05	<0.053	<0.05
Endosulfan Sulfate	<0.1	<0.1	<0.1	<0.11	<0.1
4,4'-DDT	<0.1	<0.1	<0.1	<0.11	<0.1
Endrin Aldehyde	<0.1	<0.1	<0.1	<0.11	<0.1
Toxaphene	<1	<1	<1	<1.1	<1
Chlordane	<0.2	<0.2	<0.2	<0.21	<0.2
Aroclor-1016	<0.5	<0.5	<0.5	<0.53	<0.5
Aroclor-1221	<0.5	<0.5	<0.5	<0.53	<0.5
Aroclor-1232	<0.5	<0.5	<0.5	<0.53	<0.5
Aroclor-1242	<0.5	<0.5	<0.5	<0.53	<0.5
Aroclor-1248	<0.5	<0.5	<0.5	<0.53	<0.5
Aroclor-1254	<0.5	<0.5	<0.5	<0.53	<0.5
Aroclor-1260	<0.5	<0.5	<0.5	<0.53	<0.5

B- Compound detected in associated blank.
E- Estimated value, exceeds calibration curve range.
J- Estimated value, less than detection limit.

Table 5-2
Kin-Buc Landfill Operable Unit 2
1998 Groundwater Monitoring Results
Sand and Gravel Wells

	WE-3S	WE-5S	GEI-6S	WE-7S	WE-10S
Dissolved Metals (ug/l)					
Antimony	<60	<60	<60	<60	<60
Arsenic	23.6	26.3	19.3	22.9	<10
Beryllium	<5	<5	<5	<5	<5
Barium	762	1320	493	628	503
Cadmium	<5	<5	<5	<5	<5
Lead	<5	<5	<5	<5	<5
Manganese	1900	3200	362	1610	1610
Mercury	<0.3	<0.3	<0.3	<0.3	<0.3
Nickel	<40	<40	<40	<40	<40
Vanadium	90	<50	<50	<50	<50
Zinc	141	164	37.3	118	<10
General Chemistry (mg/l)					
BOD	32.3 B	13.9 B	30.2	35.3	2.96
COD	1470 B	443 B	317 B	488 B	296
Chloride	3730	2790	499	1420	5830
Nitrate, Nitrogen	<0.5	<0.5	<0.5	<0.5	<0.5
Phenols	0.442	0.044	0.061	0.035	0.02
Total Cyanide	<0.01	<0.01	<0.01	<0.01	<0.01
Total Dissolved Solids	8190 B	5940 B	1560	3680	11200
Total Organic Carbon	479 B	98.4 B	69.5 B	89.8 B	9.46
Total Organic Halides ***(ppm)***	1300 B	2200 B	200 B	820 B	3200 B

B- Compound detected in associated blank.
E- Estimated value, exceeds calibration curve range.
J- Estimated value, less than detection limit.

Table 5-2
Kin-Buc Landfill Operable Unit 2
1998 Groundwater Monitoring Results
Bedrock Wells

	WE-3R	WE-5R	WE-6R	WE-7R	WE-10R	WE-114DR
Volatiles (ug/l) *Dilution Factor*	1	1	2	1	1	1
Acrolein	<28	<28	<28	<28	<28	<28
Acrylonitrile	<31	<31	<31	<31	<31	<31
Chloromethane	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
Bromomethane	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1
Vinyl Chloride	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6
Chloroethane	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
Methylene Chloride	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4
1,1-Dichloroethene	<2	<2	<2	<2	<2	<2
1,1-Dichloroethane	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4
Chloroform	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3
1,2-Dichloroethane	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92
1,1,1-Trichloroethane	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
Carbon tetrachloride	<2	<2	<2	<2	<2	<2
Bromodichloromethane	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
1,2-Dichloropropane	<0.93	<0.93	<0.93	<0.93	<0.93	<0.93
cis-1,3-Dichloropropene	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3
Trichloroethene	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4
Dibromochloromethane	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4
1,1,2-Trichloroethane	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4
Benzene	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4
trans-1,3-Dichloropropene	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3
Bromoform	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6
Tetrachloroethene	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3
1,1,2,2-Tetrachloroethane	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3
Toluene	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Chlorobenzene	<1.2	<1.2	<1.2	<1.2	1.6	<1.2
Ethylbenzene	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
Trichlorofluoromethane	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4
2-Chloroethylvinyl Ether	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2
Trans-1,2-Dichloroethene	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1

B- Compound detected in associated blank.
E- Estimated value, exceeds calibration curve range.
J- Estimated value, less than detection limit.

Table 5-2
Kin-Buc Landfill Operable Unit 2
1998 Groundwater Monitoring Results
Bedrock Wells

	WE-3R	WE-5R	WE-6R	WE-7R	WE-10R	WE-114DR
Semi-Volatiles (ug/l) *Dilution Factor*	1.05	1.02	1.02	1.07	1	1.05
Phenol	<0.98	<0.95	<0.95	<1	<0.93	<0.98
bis(2-Chloroethyl) Ether	<1.3	<1.2	<1.2	<1.3	<1.2	<1.3
2-Chlorophenol	<1.3	<1.2	<1.2	<1.3	<1.2	<1.3
1,3-Dichlorobenzene	<0.86	<0.84	<0.84	<0.88	<0.82	<0.86
1,4-Dichlorobenzene	<0.97	<0.94	<0.94	<0.98	<0.92	<0.97
1,2-Dichlorobenzene	<1.2	<1.1	<1.1	<1.2	<1.1	<1.2
2,2'- oxybis(1-Chloropropane)	<1	<0.97	<0.97	<1.0	<0.95	<1
N-Nitroso-di-n-propylamine	<1.3	<1.2	<1.2	<1.3	<1.2	<1.3
Hexachloroethane	<0.95	<0.92	<0.92	<0.96	<0.9	<0.95
Nitrobenzene	<1.4	<1.3	<1.3	<1.4	<1.3	<1.4
Isophorone	<1.5	<1.4	<1.4	<1.5	<1.4	<1.5
2-Nitrophenol	<1.5	<1.4	<1.4	<1.5	<1.4	<1.5
2,4-Dimethylphenol	<3.2	<3.1	<3.1	<3.2	<3	<3.2
2,4-Dichlorophenol	<3.2	<3.1	<3.1	<3.2	<3	<3.2
1,2,4-Trichlorobenzene	<0.83	<0.81	<0.81	<0.85	<0.79	<0.83
Naphthalene	<0.78	<0.75	<0.75	<0.79	<0.74	<0.78
Hexachlorobutadiene	<1.2	<1.1	<1.1	<1.2	<1.1	<1.2
bis-(2-Chloroethoxy)methane	<1.9	<1.8	<1.8	<1.9	<1.8	<1.9
4-Chloro-3-Methylphenol	<2.1	<2.0	<2.0	<2.1	<2.0	<2.1
Hexachlorocyclopentadiene	<1.2	<1.1	<1.1	<1.2	<1.1	<1.2
2,4,6-Trichlorophenol	<1.4	<1.3	<1.3	<1.4	<1.3	<1.4
2-Chloronaphthalene	<1.2	<1.1	<1.1	<1.2	<1.1	<1.2
Dimethylphthalate	<4.3	<4.2	<4.2	<4.4	<4.1	<4.3
Acenaphthylene	<1.3	<1.2	<1.2	<1.3	<1.2	<1.3
2,6-Dinitrotoluene	<1.6	<1.5	<1.5	<1.6	<1.5	<1.6
Acenaphthene	<1.3	<1.2	<1.2	<1.3	<1.2	<1.3
2,4-Dinitrophenol	<2.7	<2.7	<2.7	<2.8	<2.6	<2.7
4-Nitrophenol	<1.1	<1	<1	<1.1	<1	<1.1
2,4-Dinitrotoluene	<1.6	<1.2	<1.2	<1.3	<1.2	<1.6
Diethylphthalate	<2.9	<2.9	<2.9	<3	<2.8	<2.9
4-Chlorophenyl-phenylether	<1.2	<1.1	<1.1	<1.2	<1.1	<1.2
Fluorene	<1.4	<1.3	<1.3	<1.4	<1.3	<1.4
4,6-Dinitro-2-methylphenol	<3.5	<3.4	<3.4	<3.5	<3.3	<3.5
N-Nitrosodiphenylamine	<1.6	<1.5	<1.5	<1.6	<1.5	<1.6
4-Bromophenyl-phenylether	<0.87	<0.85	<0.85	<0.89	<0.83	<0.87

B- Compound detected in associated blank.
E- Estimated value, exceeds calibration curve range.
J- Estimated value, less than detection limit.

Table 5-2
Kin-Buc Landfill Operable Unit 2
1998 Groundwater Monitoring Results
Bedrock Wells

	WE-3R	WE-5R	WE-6R	WE-7R	WE-10R	WE-114DR
Hexachlorobenzene	<1.4	<1.3	<1.3	<1.4	<1.3	<1.4
Pentachlorophenol	<2.6	<2.6	<2.6	<2.7	<2.5	<2.6
Phenanthrene	<1.3	<1.2	<1.2	<1.3	<1.2	<1.3
Anthracene	<1.5	<1.4	<1.4	<1.5	<1.4	<1.5
Di-n-butylphthalate	<1.6	<2.6	4.5	2.8	<2.5	<1.6
Fluoranthene	<1.5	<1.4	<1.4	<1.5	<1.4	<1.5
Pyrene	<1.5	<1.4	<1.4	<1.5	<1.4	<1.5
Butylbenzylphthalate	<4.3	<4.2	<4.2	<4.4	<4.1	<4.3
3,3'-Dichlorobenzidine	<2.4	<2.4	<2.4	<2.5	<2.3	<2.4
Benzo(a)anthrance	<1.4	<1.3	<1.3	<1.4	<1.3	<1.4
Chrysene	<1.7	<1.6	<1.6	<1.7	<1.6	<1.7
bis(2-Ethylhexyl)phthalate	<2.3	<2.2	2.5	3.1	<2.2	<2.3
Di-n-octylphalate	<2.5	<2.5	<2.5	<2.6	<2.4	<2.5
Benzo(b)fluoranthene	<1.5	<1.4	<1.4	<1.5	<1.4	<1.5
Benzo(k)fluoranthene	<2.4	<2.4	<2.4	<2.5	<2.3	<2.4
Benzo(a)pyrene	<1.5	<1.4	<1.4	<1.5	<1.4	<1.5
Indeno(1,2,3-cd)pyrene	<1.2	<1.1	<1.1	<1.2	<1.1	<1.2
Dibenzo(a,h)anthracene	<1.3	<1.2	<1.2	<1.3	<1.2	<1.3
Benzo(g,h,i)perylene	<1.3	<1.2	<1.2	<1.3	<1.2	<1.3
N-Nitrosodimethylamine	<0.72	<0.7	<0.7	<0.74	<0.69	<0.72
Benzidine	<3.6	<3.5	<3.5	<3.6	<3.4	<3.6
1,2-Diphenylhydrazine	<1.5	<1.4	<1.4	<1.5	<1.4	<1.5

B- Compound detected in associated blank.
E- Estimated value, exceeds calibration curve range.
J- Estimated value, less than detection limit.

Table 5-2
Kin-Buc Landfill Operable Unit 2
1998 Groundwater Monitoring Results
Bedrock Wells

	WE-3R	WE-5R	WE-6R	WE-7R	WE-10R	WE-114DR
Pesticide/PCB (ug/l) *Dilution Factor*	1.11	1	1.05	1.05	1	1
alpha-BHC	<0.056	<0.05	<0.053	<0.053	<0.05	<0.05
beta-BHC	<0.056	<0.05	<0.053	<0.053	<0.05	<0.05
delta-BHC	<0.056	<0.05	<0.053	<0.053	<0.05	<0.05
gamma-BHC (Lindane)	<0.056	<0.05	<0.053	<0.053	<0.05	<0.05
Heptachlor	<0.056	<0.05	<0.053	<0.053	<0.05	<0.05
Aldrin	<0.056	<0.05	<0.053	<0.053	<0.05	<0.05
Heptachlor Epoxide	<0.056	<0.05	<0.053	<0.053	<0.05	<0.05
Alpha-Endosulfan	<0.056	<0.05	<0.053	<0.053	<0.05	<0.05
Dieldrin	<0.056	<0.05	<0.053	<0.053	<0.05	<0.05
4,4'-DDE	<0.056	<0.05	<0.053	<0.053	<0.05	<0.05
Endrin	<0.056	<0.05	<0.053	<0.053	<0.05	<0.05
Beta-Endosulfan	<0.11	<0.1	<0.11	<0.11	<0.1	<0.1
4,4'-DDD	<0.056	<0.05	<0.053	<0.053	<0.05	<0.05
Endosulfan Sulfate	<0.11	<0.1	<0.11	<0.11	<0.1	<0.1
4,4'-DDT	<0.11	<0.1	<0.11	<0.11	<0.1	<0.1
Endrin Aldehyde	<0.11	<0.1	<0.11	<0.11	<0.1	<0.1
Toxaphene	<1.1	<1	<1.1	<1.1	<1	<1
Chlordane	<0.22	<0.2	<0.21	<0.21	<0.2	<0.2
Aroclor-1016	<0.56	<0.5	<0.53	<0.53	<0.5	<0.5
Aroclor-1221	<0.56	<0.5	<0.53	<0.53	<0.5	<0.5
Aroclor-1232	<0.56	<0.5	<0.53	<0.53	<0.5	<0.5
Aroclor-1242	<0.56	<0.5	<0.53	<0.53	<0.5	<0.5
Aroclor-1248	<0.56	<0.5	<0.53	<0.53	<0.5	<0.5
Aroclor-1254	<0.56	<0.5	<0.53	<0.53	<0.5	<0.5
Aroclor-1260	<0.56	<0.5	<0.53	<0.53	<0.5	<0.5

B- Compound detected in associated blank.
E- Estimated value, exceeds calibration curve range.
J- Estimated value, less than detection limit.

Table 5-2
Kin-Buc Landfill Operable Unit 2
1998 Groundwater Monitoring Results
Bedrock Wells

	WE-3R	WE-5R	WE-6R	WE-7R	WE-10R	WE-114DR
Dissolved Metals (ug/l)						
Antimony	<60	<60	<60	<60	<60	<60
Arsenic	<10	<10	<10	<10	31.1	<10
Beryllium	<5	<5	<5	<5	<5	<5
Barium	594	492	1020	529	491	376
Cadmium	<5	<5	<5	<5	<5	<5
Lead	<5	<5	<5	<5	<5	<5
Manganese	801	1060	1070	2030	2220	402
Mercury	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Nickel	<40	<40	<40	1750	327	<40
Vanadium	<50	<50	<50	<50	<50	<50
Zinc	147	129	92.6	140	158	127
General Chemistry (mg/l)						
BOD	<2	<2	4.24	<2	<2	5.07
COD	87.6	67.4 B	82.8 B	25.9 B	65.4	6.77
Chloride	5380	5010	4000	2840	5620	63.3
Nitrate, Nitrogen	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenols	0.017	0.012	0.036	0.011	0.019	<0.005
Total Cyanide	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Total Dissolved Solids	9850	9630 B	7200	5270	10800	433
Total Organic Carbon	8.19	5.71 B	10.1 B	1.44 B	2.9	2.33
Total Organic Halides ***(ppm)***	240 B	3300 B	260 B	250 B	810 B	540 B

B- Compound detected in associated blank.
E- Estimated value, exceeds calibration curve range.
J- Estimated value, less than detection limit.

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Table 5-3
Kin-Buc Landfill Operable Unit 2
1998 Groundwater Monitoring Results
Surface Water Samples

	RR-1	RR-2	RR-3	RR-4
Volatiles (ug/l) *Dilution Factor*	1	1	1	1
Acrolein	<28	<28	<28	<28
Acrylonitrile	<31	<31	<31	<31
Chloromethane	<1.8	<1.8	<1.8	<1.8
Bromomethane	<2.1	<2.1	<2.1	<2.1
Vinyl Chloride	<1.6	<1.6	<1.6	<1.6
Chloroethane	<1.5	<1.5	<1.5	<1.5
Methylene Chloride	<1.4	<1.4	<1.4	<1.4
1,1-Dichloroethene	<2	<2	<2	<2
1,1-Dichloroethane	<2.4	<2.4	<2.4	<2.4
Chloroform	<1.3	<1.3	<1.3	<1.3
1,2-Dichloroethane	<0.92	<0.92	<0.92	<0.92
1,1,1-Trichloroethane	<1.8	<1.8	<1.8	<1.8
Carbon tetrachloride	<2	<2	<2	<2
Bromodichloromethane	<1.1	<1.1	<1.1	<1.1
1,2-Dichloropropane	<0.93	<0.93	<0.93	<0.93
cis-1,3-Dichloropropene	<1.3	<1.3	<1.3	<1.3
Trichloroethene	<2.4	<2.4	<2.4	<2.4
Dibromochloromethane	<1.4	<1.4	<1.4	<1.4
1,1,2-Trichloroethane	<1.4	<1.4	<1.4	<1.4
Benzene	<1.4	<1.4	<1.4	<1.4
trans-1,3-Dichloropropene	<1.3	<1.3	<1.3	<1.3
Bromoform	<2.6	<2.6	<2.6	<2.6
Tetrachloroethene	<2.3	<2.3	<2.3	<2.3
1,1,2,2-Tetrachloroethane	<2.3	<2.3	<2.3	<2.3
Toluene	<2.0	<2.0	<2.0	<2.0
Chlorobenzene	<1.2	<1.2	<1.2	<1.2
Ethylbenzene	<1.5	<1.5	<1.5	<1.5
Trichlorofluoromethane	<1.4	<1.4	<1.4	<1.4
2-Chloroethylvinyl Ether	<5.2	<5.2	<5.2	<5.2
Trans-1,2-Dichloroethene	<2.1	<2.1	<2.1	<2.1

B- Compound detected in associated blank.
E- Estimated value, exceeds calibration curve range.
J- Estimated value, less than detection limit.

Table 5-3
Kin-Buc Landfill Operable Unit 2
1998 Groundwater Monitoring Results
Surface Water Samples

	RR-1	RR-2	RR-3	RR-4
Semi-Volatiles (ug/l) *Dilution Factor*	1	1	1	1
Phenol	<0.93	<0.93	<0.93	<0.93
bis(2-Chloroethyl) Ether	<1.2	<1.2	<1.2	<1.2
2-Chlorophenol	<1.2	<1.2	<1.2	<1.2
1,3-Dichlorobenzene	<0.82	<0.82	<0.82	<0.82
1,4-Dichlorobenzene	<0.92	<0.92	<0.92	<0.92
1,2-Dichlorobenzene	<1.1	<1.1	<1.1	<1.1
2,2'- oxybis(1-Chloropropane)	<0.95	<0.95	<0.95	<0.95
N-Nitroso-di-n-propylamine	<1.2	<1.2	<1.2	<1.2
Hexachloroethane	<0.9	<0.9	<0.9	<0.9
Nitrobenzene	<1.3	<1.3	<1.3	<1.3
Isophorone	<1.4	<1.4	<1.4	<1.4
2-Nitrophenol	<1.4	<1.4	<1.4	<1.4
2,4-Dimethylphenol	<3	<3	<3	<3
2,4-Dichlorophenol	<3	<3	<3	<3
1,2,4-Trichlorobenzene	<0.79	<0.79	<0.79	<0.79
Naphthalene	<0.74	<0.74	<0.74	<0.74
Hexachlorobutadiene	<1.1	<1.1	<1.1	<1.1
bis-(2-Chloroethoxy)methane	<1.8	<1.8	<1.8	<1.8
4-Chloro-3-Methylphenol	<2.0	<2.0	<2.0	<2.0
Hexachlorocyclopentadiene	<1.1	<1.1	<1.1	<1.1
2,4,6-Trichlorophenol	<1.3	<1.3	<1.3	<1.3
2-Chloronaphthalene	<1.1	<1.1	<1.1	<1.1
Dimethylphthalate	<4.1	<4.1	<4.1	<4.1
Acenaphthylene	<1.2	<1.2	<1.2	<1.2
2,6-Dinitrotoluene	<1.5	<1.5	<1.5	<1.5
Acenaphthene	<1.2	<1.2	<1.2	<1.2
2,4-Dinitrophenol	<2.6	<2.6	<2.6	<2.6
4-Nitrophenol	<1	<1	<1	<1
2,4-Dinitrotoluene	<1.2	<1.2	<1.2	<1.2
Diethylphthalate	<2.8	<2.8	<2.8	<2.8
4-Chlorophenyl-phenylether	<1.1	<1.1	<1.1	<1.1
Fluorene	<1.3	<1.3	<1.3	<1.3
4,6-Dinitro-2-methylphenol	<3.3	<3.3	<3.3	<3.3
N-Nitrosodiphenylamine	<1.5	<1.5	<1.5	<1.5
4-Bromophenyl-phenylether	<0.83	<0.83	<0.83	<0.83

B- Compound detected in associated blank.
E- Estimated value, exceeds calibration curve range.
J- Estimated value, less than detection limit.

Table 5-3
Kin-Buc Landfill Operable Unit 2
1998 Groundwater Monitoring Results
Surface Water Samples

	RR-1	RR-2	RR-3	RR-4
Hexachlorobenzene	<1.3	<1.3	<1.3	<1.3
Pentachlorophenol	<2.5	<2.5	<2.5	<2.5
Phenanthrene	<1.2	<1.2	<1.2	<1.2
Anthracene	<1.4	<1.4	<1.4	<1.4
Di-n-butylphthalate	<2.5	<2.5	<2.5	<2.5
Fluoranthene	<1.4	<1.4	<1.4	<1.4
Pyrene	<1.4	<1.4	<1.4	<1.4
Butylbenzylphthalate	<4.1	<4.1	<4.1	<4.1
3,3'-Dichlorobenzidine	<2.3	<2.3	<2.3	<2.3
Benzo(a)anthrance	<1.3	<1.3	<1.3	<1.3
Chrysene	<1.6	<1.6	<1.6	<1.6
bis(2-Ethylhexyl)phthalate	<2.2	<2.2	<2.2	<2.2
Di-n-octylphalate	<2.4	<2.4	<2.4	<2.4
Benzo(b)fluoranthene	<1.4	<1.4	<1.4	<1.4
Benzo(k)fluoranthene	<2.3	<2.3	<2.3	<2.3
Benzo(a)pyrene	<1.4	<1.4	<1.4	<1.4
Indeno(1,2,3-cd)pyrene	<1.1	<1.1	<1.1	<1.1
Dibenzo(a,h)anthracene	<1.2	<1.2	<1.2	<1.2
Benzo(g,h,i)perylene	<1.2	<1.2	<1.2	<1.2
N-Nitrosodimethylamine	<0.69	<0.69	<0.69	<0.69
Benzidine	<3.4	<3.4	<3.4	<3.4
1,2-Diphenylhydrazine	<1.4	<1.4	<1.4	<1.4

B- Compound detected in associated blank.
E- Estimated value, exceeds calibration curve range.
J- Estimated value, less than detection limit.

Table 5-3
Kin-Buc Landfill Operable Unit 2
1998 Groundwater Monitoring Results
Surface Water Samples

	RR-1	RR-2	RR-3	RR-4
Pesticide/PCB (ug/l) *Dilution Factor*	1	1	1	1
alpha-BHC	<0.05	<0.05	<0.05	<0.05
beta-BHC	<0.05	<0.05	<0.05	<0.05
delta-BHC	<0.05	<0.05	<0.05	<0.05
gamma-BHC (Lindane)	<0.05	<0.05	<0.05	<0.05
Heptachlor	<0.05	<0.05	<0.05	<0.05
Aldrin	<0.05	<0.05	<0.05	<0.05
Heptachlor Epoxide	<0.05	<0.05	<0.05	<0.05
Alpha-Endosulfan	<0.05	<0.05	<0.05	<0.05
Dieldrin	<0.05	<0.05	<0.05	<0.05
4,4'-DDE	<0.05	<0.05	<0.05	<0.05
Endrin	<0.05	<0.05	<0.05	<0.05
Beta-Endosulfan	<0.1	<0.1	<0.1	<0.1
4,4'-DDD	<0.05	<0.05	<0.05	<0.05
Endosulfan Sulfate	<0.1	<0.1	<0.1	<0.1
4,4'-DDT	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	<0.1	<0.1	<0.1	<0.1
Toxaphene	<1	<1	<1	<1
Chlordane	<0.2	<0.2	<0.2	<0.2
Aroclor-1016	<0.5	<0.5	<0.5	<0.5
Aroclor-1221	<0.5	<0.5	<0.5	<0.5
Aroclor-1232	<0.5	<0.5	<0.5	<0.5
Aroclor-1242	<0.5	<0.5	<0.5	<0.5
Aroclor-1248	<0.5	<0.5	<0.5	<0.5
Aroclor-1254	<0.5	<0.5	<0.5	<0.5
Aroclor-1260	<0.5	<0.5	<0.5	<0.5

B- Compound detected in associated blank.
E- Estimated value, exceeds calibration curve range.
J- Estimated value, less than detection limit.

Table 5-3
Kin-Buc Landfill Operable Unit 2
1998 Groundwater Monitoring Results
Surface Water Samples

	RR-1	RR-2	RR-3	RR-4
Dissolved Metals (ug/l)				
Antimony	<60	<60		<60
Arsenic	<10	<10		<10
Beryllium	<5	<5		<5
Barium	37.9	38		34
Cadmium	<5	<5		<5
Lead	<5	<5		<5
Manganese	96.5	95.2		73.6
Mercury	<0.3	<0.3		<0.3
Nickel	<40	<40		<40
Vanadium	<50	<50		<50
Zinc	24.1	27.9		14.4
General Chemistry (mg/l)				
BOD	2.09	2.52		2.24
COD	24.7	26.5		75.6
Chloride	2470	2890		5550
Nitrate, Nitrogen	2.43	2.86		1.95
Phenols	0.007	0.008		0.019
Total Cyanide	<0.01	<0.01		<0.01
Total Dissolved Solids	4660	5470		10300
Total Organic Carbon	2.59	2.32		1.51
Total Organic Halides ***(ppm)***	570 B	250 B		800 B

B- Compound detected in associated blank.
E- Estimated value, exceeds calibration curve range.
J- Estimated value, less than detection limit.

Table 5-4
KinBuc Landfill Operable Unit 1
1998 Groundwater Monitoring
Monitoring Well Low-Flow Sampling Summary

Well ID	Purge/Sample Pump Method	Purge Rate <0.50L / min. w/o Evacuation	Water Level Stabilized <0.30 foot	Field Parameter Stabilization	Comments
OU1					
W-1R	Redi-Flo	yes	yes	yes	
W-2G	Dry	-	-	-	Dry
W-2R	Redi-Flo	yes	yes	yes	
W-3S	Redi-Flo	yes	yes	yes	
W-3RR	Redi-Flo	yes	yes	yes	
W-4G	Peristaltic	evacuated	no	yes	5 days for adequate recharge, Sampled Dry
W-4S	Redi-Flo	yes	yes	yes	
W-4R	Redi-Flo	yes	yes	yes	
W-5R	Redi-Flo	yes	yes	yes	
W-6G	Redi-Flo	yes	yes	yes	
W-6S	Peristaltic	yes	yes	yes	
W-6R	Peristaltic	yes	no	yes	Possible Blockage
W-7R	Redi-Flo	yes	yes	yes	
W-8RR	Redi-Flo	yes	yes	yes	Good dup. well
W-8S	peristaltic	yes	yes	yes	deflection at 0.0 BGS disallows bladder or submersible
W-9R	peristaltic	yes	yes	yes	drawdown below top of pump
W-10G	peristaltic	evacuated	no	yes	sampled incompletely, little or no recharge
W-10R	Redi-Flo	evacuated	no	no	
W-13G	Redi-Flo	yes	yes	yes	
W-13S	Redi-Flo	yes	yes	yes	
W-15G	peristaltic	evacuated	no	no	Purged/Sampled dry
W-15S	Dry	-	-	-	Dry

Note: The Low-Flow Purge and Sample protocol is contained in Section 3.0 of the Final Field Sampling Plan (FSP), November 1997, EMCON/OWT, including Section 3.2.3 Alternative Low-Flow Purging.

502307

Table 5-4

KinBuc Landfill Operable Unit 2
1998 Groundwater Monitoring
Monitoring Well Low-Flow Sampling Summary

Well ID	Purge/Sample Pump Method	Purge Rate <0.50L / min. w/o Evacuation	Water Level Stabilized <0.30 foot	Field Parameter Stabilization	Comments
OU2					
GEI-3G	Redi-Flo	yes	yes	yes	
WE-3S	Redi-Flo	yes	na	yes	foaming prevents water level monitoring
WE-3R	Redi-Flo	yes	yes	yes	
GEI-5G	peristaltic	yes	yes	yes	Slow Well
WE-5S	Redi-Flo	yes	yes	yes	
WE-5R	Redi-Flo	yes	yes	yes	
GEI-6G	peristaltic	yes	yes	yes	
GEI-6S	peristaltic	yes	yes	yes	well riser size disallows submersible pump
WE-6R	Redi-Flo	yes	yes	yes	
WE-7G	DRY				DRY
WE-7S	Redi-Flo	yes	yes	yes	
WE-7R	Redi-Flo	yes	no	yes	
GEI-10G	Redi-Flo	yes	yes	yes	
WE-10S	Redi-Flo	yes	yes	yes	
WE-10R	Redi-Flo	yes	yes	yes	
WE-114DR	bladder	yes	yes	yes	

Note: The Low-Flow Purge and Sample protocol is contained in Section 3.0 of the Final Field Sampling Plan (FSP), November 1997, EMCON/OWT, including Section 3.2.3 Alternative Low-Flow Purging.

502308

Table 6-1

Kin-Buc Landfill Operable Units 1 and 2
Modified Monitoring Program
Fourth Quarter October 30, 1998
Manually Recorded Water Level Elevations

Well ID	TOC Bottom	TOC Static	Time	TOC Ref Elevation	Elevation
OU1					
W-1G	20.50	15.98	10:14	30.78	14.80
W-1R	35.34	19.12	10:05	30.79	11.67
W-2G	20.83	20.07	10:10	30.77	10.70
W-2R	35.33	22.27	10:07	30.64	8.37
W-3G oil	19.07	11.60	14:21	20.73	9.13
W-3G water		14.94	14:21	20.73	5.79
W-3S	31.48	19.64	13:51	20.79	1.15
W-3RR	54.40	20.13	13:43	21.16	1.03
W-4G	17.57	9.68	13:48	20.23	10.55
W-4S	31.58	18.82	13:50	19.71	0.89
W-4R	54.92	19.70	13:42	20.61	0.91
W-5G	24.36	14.33	13:07	23.94	9.61
W-5S	30.33	23.51	13:05	24.33	0.82
W-5R	41.64	23.65	13:02	24.11	0.46
W-6G	23.99	11.50	13:08	23.69	12.19
W-6S	38.49	22.96	13:31	24.00	1.04
W-6R	50.43	22.92	13:03	23.99	1.07
W-7G	19.91	8.57	12:04	18.30	9.73
W-7S	29.34	10.02	11:53	11.61	1.59
W-7R	45.13	9.39	11:37	11.05	1.66
W-8S	28.86	9.17	11:41	10.92	1.75
W-8RR	41.60	7.54	11:39	9.51	1.97
W-9G	21.93	19.83	11:04	27.34	7.51
W-9R	39.05	20.98	11:01	27.68	6.70
W-10G	22.56	19.27	11:02	27.43	8.16
W-10R	34.01	19.45	11:00	27.43	7.98
W-13S	29.32	8.30	12:38	10.10	1.80
W-13G	10.30	3.77	12:45	10.17	6.40
W-15S	33.36	14.33	12:09	16.05	1.72
W-15G*	16.99	15.32	12:22	15.81	0.49
OU2					
GEI-10G	13.91	1.59	9:44	13.65	12.06
WE-10S	29.57	13.64	9:40	14.99	1.35
WE-10R	41.74	12.58	9:41	13.96	1.38
GEI-3G	13.54	4.94	9:54	16.73	11.79
WE-3S	25.67	14.16	9:50	15.12	0.96
WE-3R	46.51	14.24	9:57	14.99	0.75
GEI-5G	14.60	9.39	9:33	16.08	6.69
WE-5S	25.84	14.28	9:30	15.04	0.76
WE-5R	49.64	14.64	9:31	15.31	0.67
GEI-6G	14.97	11.77	9:20	19.76	7.99
GEI-6S	43.67	20.69	9:17	20.99	0.30
WE-6R	47.12	19.46	9:12	19.62	0.16
GEI-7G	13.74	DRY	9:07	17.23	3.49
WE-7S	30.07	15.67	9:04	15.86	0.19
WE-7R	72.88	15.77	9:02	15.93	0.16
WE-114DR	44.84	16.71	10:56	23.76	7.05

NOTE: TOC Ref Elevations has been updated based on survey conducted December 1998

*** TOC is top of PVC thrust above protective steel casing.**

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502309

Table 6-1

Kin-Buc Landfill Operable Units 1 and 2
Modified Monitoring Program
Fourth Quarter November 17, 1998
Manually Recorded Water Level Elevations

Well ID	TOC Bottom	TOC Static	Time	TOC Ref Elevation	Elevation
OU1					
W-1G	20.50	16.36	12:10	30.78	14.42
W-1R	35.34	19.60	12:05	30.79	11.19
W-2G	20.83	DRY	12:09	30.77	9.94
W-2R	35.33	22.54	12:08	30.64	8.10
W-3G oil	19.07	11.62	14:04	20.73	9.11
W-3G water		14.62	14:04	20.73	6.11
W-3S	31.48	19.97	13:51	20.79	0.82
W-3RR	54.40	20.35	13:50	21.16	0.81
W-4G	17.57	10.10	13:48	20.23	10.13
W-4S	31.58	18.91	13:47	19.71	0.80
W-4R	54.92	19.98	13:48	20.61	0.63
W-5G	24.36	14.61	13:43	23.94	9.33
W-5S	30.33	23.51	13:41	24.33	0.82
W-5R	41.64	23.59	13:45	24.11	0.52
W-6G	23.99	11.95	13:37	23.69	11.74
W-6S	38.49	22.86	13:35	24.00	1.14
W-6R	50.43	22.81	13:39	23.99	1.18
W-7G	19.91	8.85	12:59	18.30	9.45
W-7S	29.34	9.91	12:48	11.61	1.70
W-7R	45.13	9.28	12:48	11.05	1.77
W-8S	28.86	8.52	12:45	10.92	2.40
W-8RR	41.60	7.31	12:47	9.51	2.20
W-9G	21.93	19.91	12:38	27.34	7.43
W-9R	39.05	21.27	12:33	27.68	6.41
W-10G	22.56	19.41	12:34	27.43	8.02
W-10R	34.01	19.83	12:35	27.43	7.60
W-13S	29.32	8.26	13:14	10.10	1.84
W-13G	10.30	3.89	13:15	10.17	6.28
W-15S	33.36	14.20	13:03	16.05	1.85
W-15G*	16.99	15.35	13:06	15.81	0.46
OU2					
GEI-10G	13.91	1.84	11:19	13.65	11.81
WE-10S	29.57	13.52	11:18	14.99	1.47
WE-10R	41.74	13.06	11:15	13.96	0.90
GEI-3G	13.54	5.55	11:35	16.73	11.18
WE-3S	25.67	13.94	11:37	15.12	1.18
WE-3R	46.51	12.26	11:34	14.99	2.73
GEI-5G	14.60	9.63	11:01	16.08	6.45
WE-5S	25.84	13.66	10:59	15.04	1.38
WE-5R	49.64	13.98	10:57	15.31	1.33
GEI-6G	14.97	11.89	10:45	19.76	7.87
GEI-6S	43.67	19.64	10:48	20.99	1.35
WE-6R	47.12	18.31	10:35	19.62	1.31
GEI-7G	13.74	DRY	10:23	17.23	3.49
WE-7S	30.07	13.88	10:07	15.86	1.98
WE-7R	72.88	13.46	9:57	15.93	2.47
WE-114DR	44.84	17.42	12:23	23.76	6.34

NOTE: TOC Ref Elevations has been updated based on survey conducted December 1998

*** TOC is top of PVC thrust above protective steel casing.**

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502310

Table 6-1

Kin-Buc Landfill Operable Units 1 and 2
Modified Monitoring Program
Fourth Quarter December 21, 1998
Manually Recorded Water Level Elevations

Well ID	TOC Bottom	TOC Static	Time	TOC Ref Elevation	Elevation
OU1					
W-1G	20.50	19.26	9:46	30.78	11.52
W-1R	35.34	18.86	9:44	30.79	11.93
W-2G	20.83	DRY	9:40	30.77	9.94
W-2R	35.33	22.49	9:40	30.64	8.15
W-3G oil	19.07	11.70	11:04	20.73	9.03
W-3G water		13.24	11:05	20.73	7.49
W-3S	31.48	19.55	10:55	20.79	1.24
W-3RR	54.40	19.74	10:56	21.16	1.42
W-4G	17.57	10.48	10:52	20.23	9.75
W-4S	31.58	18.18	10:51	19.71	1.53
W-4R	54.92	18.92	10:53	20.61	1.69
W-5G	24.36	14.50	10:40	23.94	9.44
W-5S	30.33	22.69	10:41	24.33	1.64
W-5R	41.64	22.56	10:39	24.11	1.55
W-6G	23.99	12.24	10:44	23.69	11.45
W-6S	38.49	22.21	10:45	24.00	1.79
W-6R	50.43	22.23	10:43	23.99	1.76
W-7G	19.91	8.80	10:23	18.30	9.50
W-7S	29.34	9.62	10:21	11.61	1.99
W-7R	45.13	9.00	10:17	11.05	2.05
W-8S	28.86	8.39	10:20	10.92	2.53
W-8RR	41.60	6.73	10:18	9.51	2.78
W-9G	21.93	20.26	10:11	27.34	7.08
W-9R	39.05	21.06	10:09	27.68	6.62
W-10G	22.56	20.37	10:06	27.43	7.06
W-10R	34.01	19.99	10:08	27.43	7.44
W-13S	29.32	7.75	10:31	10.10	2.35
W-13G	10.30	6.89	10:32	10.17	3.28
W-15S	33.36	13.81	10:28	16.05	2.24
W-15G*	16.99	14.72	10:26	15.81	1.09
OU2					
GEI-10G	13.91	2.06	8:42	13.65	11.59
WE-10S	29.57	13.15	8:46	14.99	1.84
WE-10R	41.74	12.10	8:45	13.96	1.86
GEI-3G	13.54	5.68	9:27	16.73	11.05
WE-3S	25.67	13.72	9:29	15.12	1.40
WE-3R	46.51	13.23	9:29	14.99	1.76
GEI-5G	14.60	9.85	9:03	16.08	6.23
WE-5S	25.84	13.58	9:02	15.04	1.46
WE-5R	49.64	13.87	9:00	15.31	1.44
GEI-6G	14.97	11.99	9:07	19.76	7.77
GEI-6S	43.67	18.91	9:08	20.99	2.08
WE-6R	47.12	17.72	9:10	19.62	1.90
GEI-7G	13.74	DRY	9:14	17.23	3.49
WE-7S	30.07	14.06	9:15	15.86	1.80
WE-7R	72.88	14.04	9:16	15.93	1.89
WE-114DR	44.84	17.06	9:52	23.76	6.70

NOTE: TOC Ref Elevations has been updated based on survey conducted December 1998

*** TOC is top of PVC thrust above protective steel casing.**

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502311

Table 6-2
KinBuc Landfill Operable Units 1 and 2
Vertical Gradients Based on Fourth Quarter 1998
Groundwater Elevation Measurements

Well Designation	Inside/Outside Slurry Wall	October 30 Gradient	November17 Gradient	December 21 Gradient
OU1				
W-1G / W-1R	Inside	Down	Down	Up
W-3G / W-3S	Inside	Down	Down	Down
W-3S / W-3RR	Inside	Na	Na	Na
W-5G / W-5S	Inside	Down	Down	Down
W-5S / W-5R	Inside	Down	Even (2)	Up
W-7G / W-7S	Inside	Down	Down	Down
W-7S / W-7R	Inside	Even (2)	Even (2)	Even (2)
W-9G / W-9R	Inside	Down	Down	Down
W-15G / W-15S	Inside (1)	Up	Up	Up
W-6G / W-6S	Outside	Down	Down	Down
W-6S / W-6R	Outside	Up	Up	Even (2)
W-2G / W-2R	Outside	Down	Down	Down
W-4G / W-4S	Outside	Down	Down	Down
W-4S / W-4R	Outside	Down	Down	Down
W-8S / W-8RR	Outside	NA	NA	NA
W-10G / W-10R	Outside	Down	Down	Down
W-13G / W-13S	Outside (2)	Down	Down	Down
OU2				
GEI-10G / WE-10S		Down	Down	Down
WE-10S / WE-10R		Even (2)	Down	Down
GEI-3G / WE-3S		Down	Down	Down
WE-3S / WE-3R		Down	Up	Up
GEI-5G / WE-5S		Down	Down	Down
WE-5S / WE-5R		Even (2)	Even (2)	Even (2)
GEI-6G / GEI-6S		Down	Down	Down
GEI-6S / WE-6R		Down	Even (2)	Down
GEI-7G / WE-7S		Na	Down	Down
WE-7S / WE-7R		Even (2)	Up	Even (2)

(1) Refers to alignment Along Oil Seeps Area extended slurry wall.
(2) Vertical gradient is less than 0.1 foor difference up or down.
Designation is even due to manual accuracy considerations.
(3) Reference Survey data not available.

502312

Table 7-1

Kin-Buc Landfill Operable Unit 1
1998 Groundwater Monitoring Results
Natural Attenuation Parameters
Transect Location No. 1

		W-1R	W-2G	W-2R
Parameter	***Method***			
Alkalinity (mg/l)	field kit	4320	DRY	3600
Dissolved Oxygen(mg/l)	in-line purge	0.71		0.51
Ferrous iron (mg/l)	field kit	>Limit		>Limit
Methane(ug/l)	laboratory	2600		3800
Ethane(ug/l)	laboratory	<100		<200
Ethylene(ug/l)	laboratory	<100		<200
Oxidation reduction potential(mV)	in-line purge	-26.2		-24.6
pH(SU)	in-line purge	5.33		5.12
Specific conductivity(umhos)	in-line purge	21620		19189
Sulfate (mg/l)	field kit	>Limit		>Limit
Sulfide (mg/l)	field kit	0.13		0.04
Temperature(degrees Celsius)	in-line purge	19.02		18.9
Turbidity(NTU)	purge	16.0	DRY	12.0

* Sampled dry, no HACH test performed.

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Table 7-1

Kin-Buc Landfill Operable Unit 1
1998 Groundwater Monitoring Results
Natural Attenuation Parameters
Transect Location No. 2

		W-3S	W-3RR	W-4G	W-4S	W-4R
Parameter	***Method***					
Alkalinity (mg/l)	field kit	1440	480	1440	1320	480
Dissolved Oxygen(mg/l)	in-line purge	1.02	1.09	2.94	0.92	0.82
Ferrous iron (mg/l)	field kit	83.5	36	14	80	13.9
Methane(ug/l)	laboratory	7200	4500	5700	5000	1300
Ethane(ug/l)	laboratory	460	<200	<200	<200	<50
Ethylene(ug/l)	laboratory	<250	<200	<200	<200	<50
Oxidation reduction potential(mV)	in-line purge	-130.0	-93.7	-137.3	-134.6	-73.6
pH(SU)	in-line purge	6.29	6.38	6.87	6.36	6.33
(umhos)	in-line purge	8928	9310	5148	8680	9610
Sulfate (mg/l)	field kit	<4.9**	49	<4.9**	<4.9**	<4.9**
Sulfide (mg/l)	field kit	0.07	0.05	0.14	0.13	0.11
Temperature(degrees Celsius)	in-line purge	19.42	19.68	17.51	20.11	18.82
Turbidity(NTU)	purge	33.7	23.0	58.3	66.3	19.3

^ No parameters taken due to oil level in well.
** Estimated value, less than detection limit.

Table 7-1

Kin-Buc Landfill Operable Unit 1
1998 Groundwater Monitoring Results
Natural Attenuation Parameters
Transect Location No. 3

		W-5R	W-6G	W-6S	W-6R
Parameter	***Method***				
Alkalinity (mg/l)	field kit	1320	720	1200	1200
Dissolved Oxygen(mg/l)	in-line purge	0.64	0.71	1.04	8.15
Ferrous iron (mg/l)	field kit	15.5	59.25	10.5	12.5
Methane(ug/l)	laboratory	1200	10000	1700	42
Ethane(ug/l)	laboratory	<50	<250	<100	<2.0
Ethylene(ug/l)	laboratory	<50	<250	<100	<2.0
Oxidation reduction potential(mV)	in-line purge	-94.6	-96.7	-87.1	-88.4
pH(SU)	in-line purge	6.21	6.00	6.19	6.40
Specific conductivity(umhos)	in-line purge	17001	4618	14729	16750
Sulfate (mg/l)	field kit	120	<4.9**	112	130
Sulfide (mg/l)	field kit	0.05	0.09	0.02	0.07
Temperature(degrees Celsius)	in-line purge	19.37	19.88	15.79	16.81
Turbidity(NTU)	purge	11.0	24.4	6.8	6.4

** Estimated value, less than detection limit.

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Table 7-1

Kin-Buc Landfill Operable Unit 1
1998 Groundwater Monitoring Results
Natural Attenuation Parameters
Transect Location No. 4

		W-7R	W-8S	W-8RR
Parameter	***Method***			
Alkalinity (mg/l)	field kit	2040	720	680
Dissolved Oxygen(mg/l)	in-line purge	0.79	1.68	1.06
Ferrous iron (mg/l)	field kit	0.29	19.75	3.1
Methane(ug/l)	laboratory	5500	37	34
Ethane(ug/l)	laboratory	<200	<1.0	<1.0
Ethylene(ug/l)	laboratory	<200	<1.0	<1.0
Oxidation reduction potential(mV)	in-line purge	-233.7	-58.3	-104.4
pH(SU)	in-line purge	7.07	5.97	6.46
Specific conductivity(umhos)	in-line purge	9745	19866	18351
Sulfate (mg/l)	feild kit	<4.9**	590	148
Sulfide (mg/l)	field kit	1.25	0.03	0.04
Temperature(degrees Celsius)	in-line purge	18.28	13.48	15.64
Turbidity(NTU)	purge	27.8	4.0	9.4

** Estimated value, less than detection limit.

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Table 7-1

Kin-Buc Landfill Operable Unit 1
1998 Groundwater Monitoring Results
Natural Attenuation Parameters
Transect Location No. 4

		W-13G	W-13S	W-15G
Parameter	***Method***			
Alkalinity (mg/l)	field kit	1320	1200	*
Dissolved Oxygen(mg/l)	in-line purge	1.29	2.53	3.07
Ferrous iron (mg/l)	field kit	34.25	17.5	*
Methane(ug/l)	laboratory	9900	1000	2700
Ethane(ug/l)	laboratory	<500	<50	<100
Ethylene(ug/l)	laboratory	<500	<50	<100
Oxidation reduction potential(mV)	in-line purge	-111.0	-78.5	-89.9
pH(SU)	in-line purge	6.14	6.12	6.59
Specific conductivity(umhos)	in-line purge	2700	17821	5630
Sulfate (mg/l)	field kit	<4.9**	280	*
Sulfide (mg/l)	field kit	0.07	0.03	*
Temperature(degrees Celsius)	in-line purge	15.04	15.81	16.68
Turbidity(NTU)	purge	12.9	5.8	NA

* Sampled dry, no HACH test performed.
** Estimated value, less than detection limit.

Table 7-1

Kin-Buc Landfill Operable Unit 1
1998 Groundwater Monitoring Results
Natural Attenuation Parameters
Transect Location No. 5

		W-9R	W-10G	W-10R
Parameter	***Method***			
Alkalinity (mg/l)	field kit	260	*	*
Dissolved Oxygen(mg/l)	in-line purge	0.94	2.58	0.84
Ferrous iron (mg/l)	field kit	51.25	*	*
Methane(ug/l)	laboratory	2100	12	290
Ethane(ug/l)	laboratory	<100	<1.0	<10
Ethylene(ug/l)	laboratory	<100	<1.0	<10
Oxidation reduction potential(mV)	in-line purge	-67.5	128.0	-76.8
pH(SU)	in-line purge	6.07	4.63	6.51
Specific conductivity(umhos)	in-line purge	1108	437	202
Sulfate (mg/l)	field kit	150	*	*
Sulfide (mg/l)	field kit	0.01	*	*
Temperature(degrees Celsius)	in-line purge	13.58	15.51	20.24
Turbidity(NTU)	purge	7.2	4.8	18.3

Sampled dry, no HACH test performed.

Table 7-2

Kin-Buc Landfill Operable Unit 2
1998 Groundwater Monitoring Results
Natural Attenuation Parameters
Refuse Wells

		GEI-3G	GEI-5G	GEI-6G	GEI-10G
Parameter	***Method***				
Alkalinity (mg/l)	field kit	680	1200	4320	760
Dissolved Oxygen(mg/l)	in-line purge	0.27	0.40	0.54	1.77
Ferrous iron (mg/l)	field kit	30.7	24.6	3.7	51.75
Methane(ug/l)	laboratory	7700	4500	3000	12000
Ethane(ug/l)	laboratory	<250	<200	<100	<500
Ethylene(ug/l)	laboratory	<250	<200	<100	<500
Oxidation reduction potential(mV)	in-line purge	-57.0	-52.2	-77.2	-148.6
pH(SU)	in-line purge	6.64	6.34	6.92	6.48
Specific conductivity(umhos)	in-line purge	1178	966	3157	7287
Sulfate (mg/l)	field kit	1	<4.9	<4.9	<4.9
Sulfide (mg/l)	field kit	0.08	0.06	0.14	0.04
Temperature(degrees Celsius)	in-line purge	16.56	16.54	16.37	16.24
Turbidity(NTU)	purge	24.0	27.0	66.7	5.6

Table 7-2

Kin-Buc Landfill Operable Unit 2
1998 Groundwater Monitoring Results
Natural Attenuation Parameters
Sand and Gravel Wells

		WE-3S	WE-5S	GEI-6S	WE-7S	WE-10S
Parameter	***Method***					
Alkalinity (mg/l)	field kit	1200	1920	1440	600	560
Dissolved Oxygen(mg/l)	in-line purge	0.45	0.55	0.27	0.94	0.84
Ferrous iron (mg/l)	field kit	63.75	70.00	29.70	37.00	8.45
Methane(ug/l)	laboratory	4800	4200	4100	4000	93
Ethane(ug/l)	laboratory	<200	<200	<200	790	<5.0
Ethylene(ug/l)	laboratory	<200	<200	<200	<200	<5.0
Oxidation reduction potential(mV)	in-line purge	-75.5	-90.1	-91.5	-109.2	-87.0
pH(SU)	in-line purge	6.21	6.35	6.44	6.56	6.41
Specific conductivity(umhos)	in-line purge	11421	2975	1078	1975	19163
Sulfate (mg/l)	field kit	62	<4.9	2	<4.9	180
Sulfide (mg/l)	field kit	0.02	0.07	0.06	0.05	0.06
Temperature(degrees Cesius)	in-line purge	16.39	15.56	14.20	17.67	16.76
Turbidity(NTU)	purge	5.3	2.0	5.1	6.9	3.9

Table 7-2

Kin-Buc Landfill Operable Unit 1
1998 Groundwater Monitoring Results
Natural Attenuation Parameters
Bedrock Wells

		WE-3R	WE-5R	WE-6R	WE-7R	WE-10R	WE-114DR
Parameter	***Method***						
Alkalinity (mg/l)	field kit	600	400	720	260	440	120
Dissolved Oxygen(mg/l)	in-line purge	1.07	0.52	0.54	1.62	1.92	0.49
Ferrous iron (mg/l)	field kit	15.2	18.7	16.05	14.05	2.7	8.45
Methane(ug/l)	laboratory	84	40	350	4.8	41	880
Ethane(ug/l)	laboratory	<2.5	<2.0	<20	<1.0	<2.0	<50
Ethylene(ug/l)	laboratory	<2.5	<2.0	<20	<1.0	<2.0	<50
Oxidation reduction potential(mV)	in-line purge	-65.8	-3.7	-35.7	-11.9	-75.7	-69.1
pH(SU)	in-line purge	6.20	6.25	6.47	6.35	6.80	6.57
Specific conductivity(umhos)	in-line purge	17329	4512	3813	2621	18487	703
Sulfate (mg/l)	field kit	140	220	164	168	730	180
Sulfide (mg/l)	field kit	0.05	0.01	0.01	<0.01**	0.01	0.06
Temperature(degrees Celsius)	in-line purge	16.27	15.85	16.72	14.80	18.18	16.78
Turbidity(NTU)	purge	1.4	4.4	8.8	103.3	18.0	3.5

** Estimated value, less than detection limit.

Table 7-2

Kin-Buc Landfill
1998 Surface Water Monitoring Results
Natural Attenuation Parameters

		SW RR-01	SW RR-02	SW RR-03	SW RR-04
Parameter	***Method***				
Alkalinity (mg/l)	field kit	60	75	80	70
Dissolved Oxygen(mg/l)	in-line purge	13.51	12.05	12.09	11.75
Ferrous iron (mg/l)	field kit	0.03	<0.03**	<0.03**	0.02
Methane(ug/L)	laboratory	6.8	8.0	6.0	5.8
Ethane(ug/L)	laboratory	<1.0	<1.0	<1.0	<1.0
Ethylene(ug/l)	laboratory	<1.0	<1.0	<1.0	<1.0
Oxidation reduction potential(mV)	in-line purge	144.8	226.2	240.1	254.6
pH(SU)	in-line purge	7.30	7.50	7.38	7.35
Specific conductivity(umhos)	in-line purge	3326	8069	6390	7848
Sulfate (mg/l)	field kit	90	60	240	210
Sulfide (mg/l)	field kit	<0.01**	<0.01**	0.19	<0.01**
Temperature(degrees Celsius)	in-line purge	9.25	9.39	9.04	9.72
Turbidity(NTU)	purge	10.0	9.1	8.1	7.3

** Estimated value, less than detection limit.

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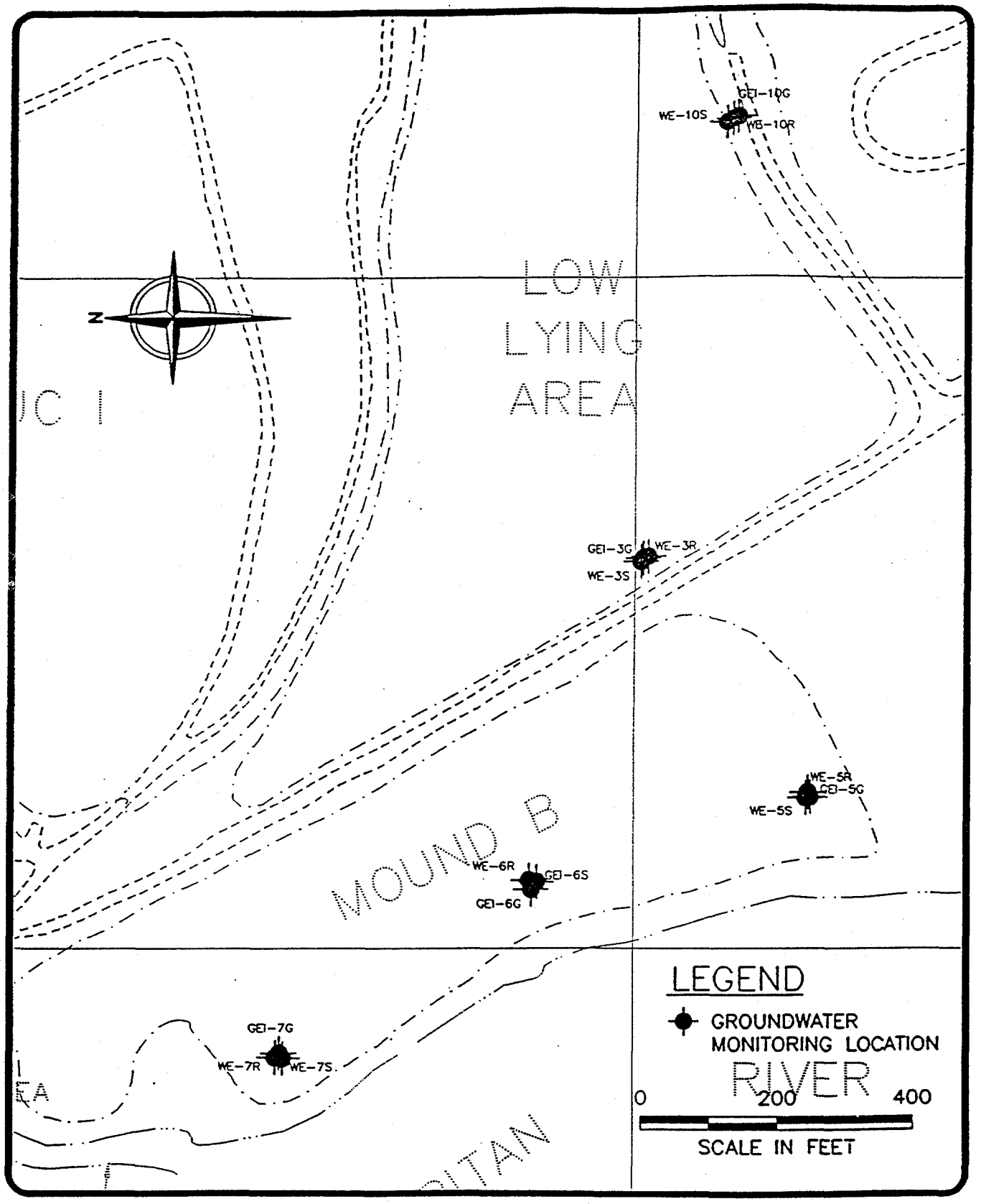
FIGURES

FIGURES



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EMCON

DATE
DWN DBT
APP RB
REV

KINBUC LANDFILL

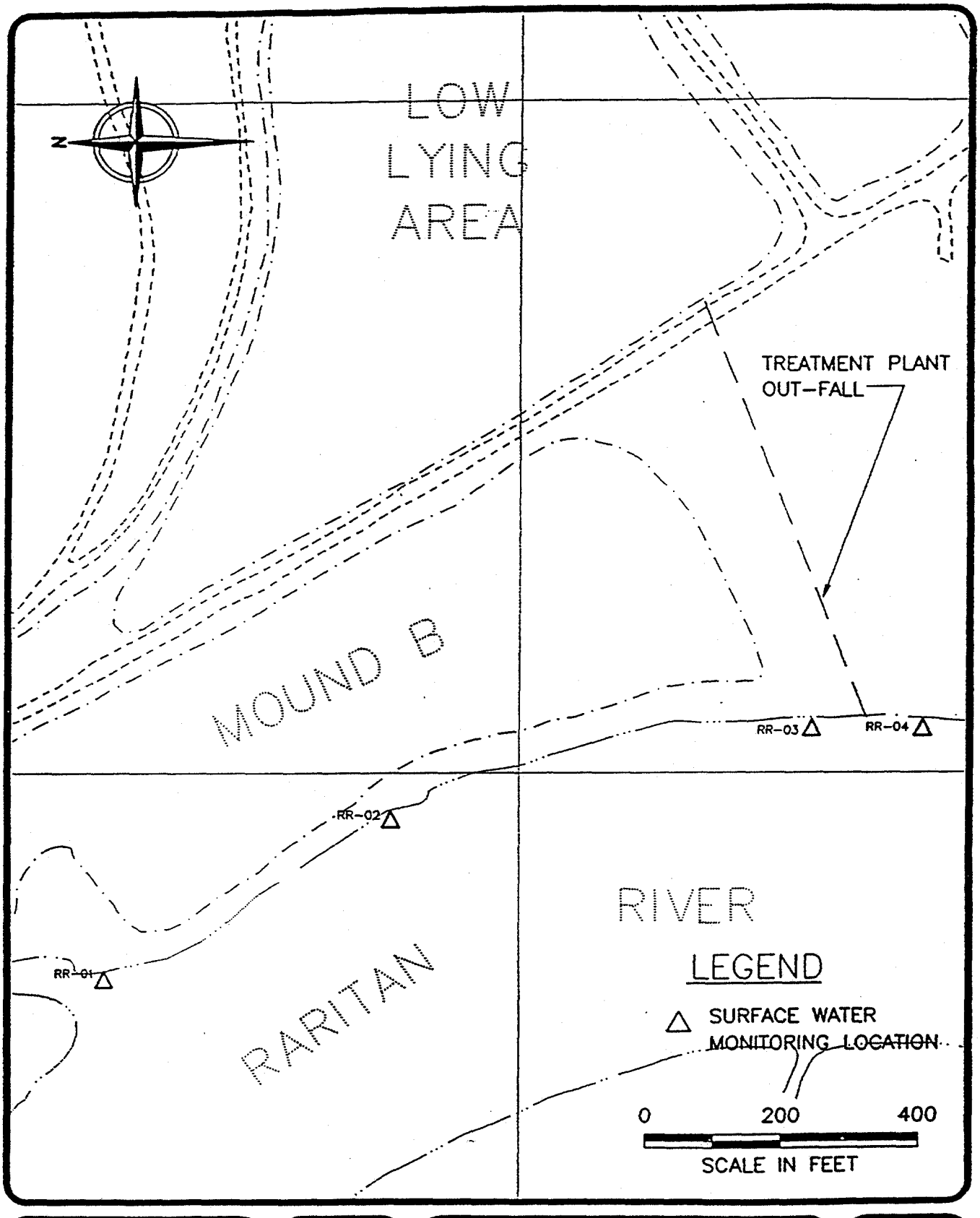
EDISON TOWNSHIP, NEW JERSEY

OU2 GROUNDWATER MONITORING LOCATIONS

FIGURE
1-1

PROJECT NO.
12568-001.000

502325



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EMCON

DATE
DWN DBT
APP RB
REV

KINBUC LANDFILL

EDISON TOWNSHIP, NEW JERSEY

OU2 SURFACE WATER MONITORING LOCATIONS

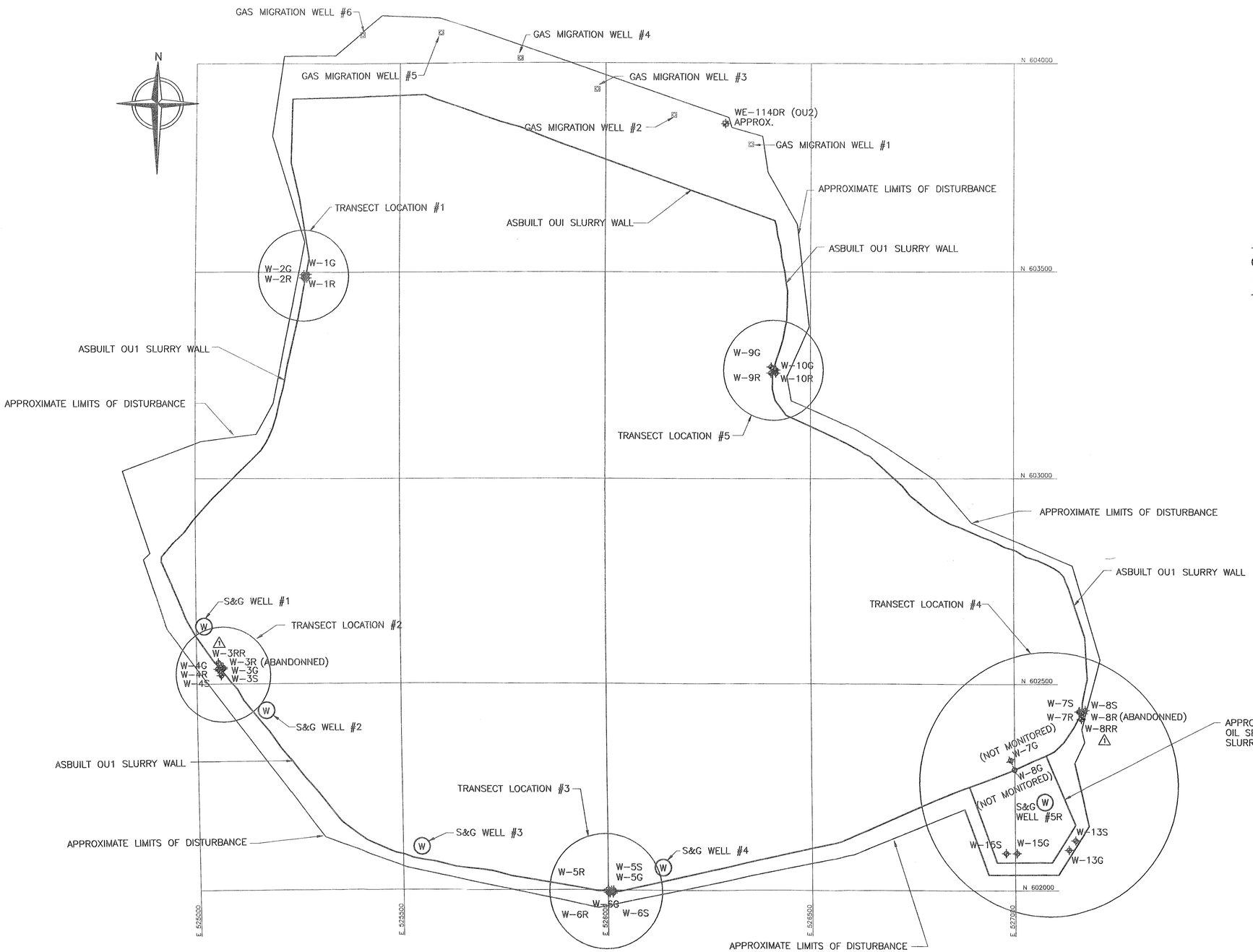
FIGURE
1-2

PROJECT NO.
12568-001.000

502326

DRAWING

502327



LEGEND

- NEW MONITORING WELLS
- NEW SAND & GRAVEL PUMPING WELLS
- NEW GAS MIGRATION WELLS
- OU2 UPGRADIENT MONITORING BEDROCK WELL (APPROXIMATE LOCATION)

SOURCE: BASEMAP DATA TAKEN FROM PLAN SHEET 10A OF MAP ENTITLED "KINBUC LANDFILL FINAL WELL LOCATION PLAN" PREPARED BY CONTI ENVIRONMENTAL INC. DATED JULY 17, 1995.

NOTES:
1. THE MONITORING WELL LOCATIONS W-7G, W-8G, W-13G, W-13S, W-15G, AND W-15S ARE APPROXIMATE.
2. MONITORING WELL W-8R IS DAMAGED AND NOT SERVICABLE AS A WATER QUALITY MONITORING POINT.
3. MONITORING WELLS W-7G AND W-8G REPLACED BY W-15G AND W-13G.
4. MONITORING WELLS W-8R AND W-3R ABANDONED AND REPLACED BY NEW MONITORING WELLS W-8RR AND W-3RR RESPECTIVELY.

0 150 300
SCALE IN FEET

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY
1	2/99	ADD NEW WELLS				

DATE OF ISSUE 5/96 DWN BY SDT DES BY RB CHK BY APP BY

EMCON

KIN-BUC LANDFILL
EXISTING GROUNDWATER MONITORING PLAN
EDISON TOWNSHIP, NEW JERSEY

OPERABLE UNIT 1 MONITORING NETWORK

DRAWING NO. 1

PROJECT NO. 01862-025.000

502328

APPENDIX A

APPENDIX A
ANALYTICAL REPORT

(Under Separate Cover)

APPENDIX B

502331

APPENDIX B
FIELD DATA SHEETS

OWT ENVIROTECH
GROUNDWATER LOW FLOW SAMPLE DATA SHEET

Sample ID: W-1R
Laboratory: Columbia Analytical Services
Lab sample ID: # 039
Project Name and number: Kin-Buc Landfill 50235
Sample date: 11-30-98
Field personnel: M. Colantuono, A. Lizcardi,
Oversight personnel:
Weather conditions: Overcast ~60°F

Monitoring Well Information

Casing diameter & construction: 2 inch PVC
Static water level & reference: 14.43 TOC
Well bottom depth: 35.30
Screened Interval: 24.5 - 29.5 FBGS
Screened Interval volume: 0.80 gal.

Monitoring Well Purge Data

Pump type and rate: Submersible / Redi-Flo2 <0.50 l/min.
Purge/sample line construction: PEP Polyethylene
Pump decontaminated?: yes
Decontamination procedure: Di run cycle/alconox run cycle/Di run cycle

Purge start time and complete: (S) 1022 → (C) 1056
Volume purged: 3.5 gal.

Periodic static water level monitoring

time	level	time	level
1030	19.43	1052	22.7
1039	23.12	1055	22.6
1048	22.9		

Well evacuated? (yes/no)

Sampling Data

Pump intake depth: 32.3
Sample time: 1054

Last three intervals - Water quality parameter results

3rd last interval time 1048

parameter	result
temp	18.93
sp. cond.	21657
DO	.71
pH	5.33
redox	-25.5
turbidity	15

2nd last interval time 1052

parameter	result
temp	19.62
sp. cond.	21600
DO	.71
pH	5.34
redox	-26.7
turbidity	17

last interval time 1055

parameter	result
temp	19.52
sp. cond.	21604
DO	.70
pH	5.33
redox	-26.4
turbidity	16

Total number of sample containers: 16
Analysis: modified and existing

Metals field filtered? (yes/no)
Sample/general observations: odor, green color

502333

c:kinbu/fldatsht

OWT ENVIROTECH
GROUNDWATER LOW FLOW SAMPLE DATA SHEET

Sample ID: W-2R
Laboratory: Columbia Analytical Services
Lab sample ID: #036
Project Name and number: Kin-Buc Landfill 50235
Sample date: 11-30-98
Field personnel: M. Colantuono, A. Licardi,
Oversight personnel:
Weather conditions: Overcast ~60°F

Monitoring Well Information

Casing diameter & construction: 2 inch PVC
Static water level & reference: 22.75 TOC
Well bottom depth: 35.50
Screened Interval: 24.5 - 29.5 FBGS
Screened Interval volume: 0.80 gal.

Monitoring Well Purge Data

Pump type and rate: Submersible / Red. Flo 2 < 0.50 l/min.
Purge/sample line construction: PEP Polyethylene
Pump decontaminated?: yes
Decontamination procedure: Di run cycle/alconox run cycle/Di run cycle

Purge start time and complete: ⊙ 1141 → ⊙ 1221
Volume purged: 5 gal

Periodic static water level monitoring

time	level	time	level
1146	24.39	1210	25.00
1155	25.09	1213	25.21
1207	24.81	1221	24.98

Well evacuated? (yes/no)

Sampling Data

Pump intake depth: 32.8
Sample time: 1224

Last three intervals - Water quality parameter results

3rd last interval time		2nd last interval time		last interval time	
parameter	result	parameter	result	parameter	result
temp	18.78	temp	19.01	temp	18.9
sp. cond.	19,037	sp. cond.	19,240	sp. cond.	19,290
DO	48.2	DO	48.2	DO	48.2
pH	5.12	pH	5.13	pH	5.12
redox	-24.7	redox	-25.0	redox	-24.2
turbidity	12	turbidity	12	turbidity	11

Total number of sample containers: 16
Analysis: modified and existing

Metals field filtered? (yes/no)
Sample/general observations: Black color, odor

c:kinbu/fldatsht

502334

OWT ENVIROTECH
GROUNDWATER LOW FLOW SAMPLE DATA SHEET

Sample ID	W-3RR
Laboratory	Columbia Analytical Services
Lab sample ID	#029
Project Name and number	Kin-Buc Landfill 50235
Sample date	11-24-98
Field personnel	M. Colantuono, A. Licardi, D. Parsons
Oversight personnel	
Weather conditions	46°F 5-10mph winds partly cloudy

Monitoring Well Information

Casing diameter & construction	4 inch PVC
Static water level & reference	20.12 TOC
Well bottom depth	54.40
Screened Interval	47-52' bG
Screened Interval volume	3.25

Monitoring Well Purge Data

Pump type and rate	Submersible / Redi Flo 2 <0.50 l/min
Purge/sample line construction	PEP Polyethylene
Pump decontaminated?	yes
Decontamination procedure	Di run cycle/alconox run cycle/Di run cycle
Purge start time and complete	(s) 1126 → (c) 1153
Volume purged	3.57 gallons

Periodic static water level monitoring

time	level	time	level
1126	20.74	1150	20.81
1132	20.79		
1141	20.82		

Well evacuated? (yes/no)

Sampling Data

Pump intake depth	49'
Sample time	1154

Last three intervals - Water quality parameter results

3rd last interval time 1147

parameter	result
temp	19.64
sp. cond.	9327
DO	1.10
pH	6.38
redox	-93.0
turbidity	25

2nd last interval time 1150

parameter	result
temp	19.73
sp. cond.	9322
DO	1.09
pH	6.38
redox	-93.4
turbidity	22

last interval time 1153

parameter	result
temp	19.66
sp. cond.	9280
DO	1.08
pH	6.38
redox	-94.8
turbidity	22

Total number of sample containers	16
Analysis	modified and existing
Metals field filtered?	(yes/no)
Sample/general observations	no odor, slightly brown

c:kinbu/fldatsht

502335

OWT ENVIROTECH
GROUNDWATER LOW FLOW SAMPLE DATA SHEET

Sample ID: W-3S
Laboratory: Columbia Analytical Services
Lab sample ID: #028
Project Name and number: Kin-Buc Landfill 50235
Sample date: 11-24-98
Field personnel: M. Colantuono, A. Licardi, D. Parsons
Oversight personnel:
Weather conditions: 46°F 5-10mph winds partly cloudy

Monitoring Well Information

Casing diameter & construction: 2 inch PVC
Static water level & reference: 20.05 TOC
Well bottom depth: 31.42
Screened Interval: 24.5 - 29.5 FBGS
Screened Interval volume: 0.80 gal.

Monitoring Well Purge Data

Pump type and rate: Submersible / Redi Flo 2 <0.50 l/min.
Purge/sample line construction: PEP Polyethylene
Pump decontaminated?: yes
Decontamination procedure: Di run cycle/alconox run cycle/Di run cycle

Purge start time and complete: (S) 0948 → (C) 1033
Volume purged: 5.9 gal

Periodic static water level monitoring

time	level	time	level
0951	20.22	1018	20.27
0957	20.25	1030	20.10
1009	20.43	1033	20.18

Well evacuated? (yes/no)

Sampling Data

Pump intake depth: 27.4
Sample time: 1036

Last three intervals - Water quality parameter results

3rd last interval time 1024

parameter	result
temp	19.24
sp. cond.	8891
DO	1.03
pH	6.30
redox	-129.2
turbidity	28

2nd last interval time 1027

parameter	result
temp	20.07
sp. cond.	8904
DO	1.01
pH	6.29
redox	-130.7
turbidity	28

last interval time 1030

parameter	result
temp	20.17
sp. cond.	8869
DO	4.75
pH	6.30
redox	-127.9
turbidity	26

Total number of sample containers: 16
Analysis: modified and existing

Metals field filtered? (yes/no)
Sample/general observations: slight LFG odor, muddy brown

c:kinbu/fldatsht

502336

OWT ENVIROTECH
GROUNDWATER LOW FLOW SAMPLE DATA SHEET

Sample ID	W-4G
Laboratory	Columbia Analytical Services
Lab sample ID	#038
Project Name and number	Kin-Buc Landfill 50235
Sample date	11-30-98 PURGE DATE 11-24-98
Field personnel	M. Colantuono, A. Licardi, D. Parsons
Oversight personnel	
Weather conditions	46°F 5-10 mph winds partly cloudy (11-24)

Monitoring Well Information

Casing diameter & construction	2 inch PVC
Static water level & reference	10.80 TOC
Well bottom depth	17.56
Screened Interval	6-15.5 FBGS
Screened Interval volume	1.21 gal.

Monitoring Well Purge Data

Pump type and rate	Peristaltic <0.50 l/min.
Purge/sample line construction	PEP Polyethylene
Pump decontaminated?	yes
Decontamination procedure	Di run cycle/alconox run cycle/Di run cycle
Purge start time and complete	11-24-98 (S) 0720 → (C) 0727 dry
Volume purged	0.9 gallons

Periodic static water level monitoring

time	level	time	level
0723	14.58		

Well evacuated? (yes/no)

Sampling Data

Pump intake depth	17.6 → bottom (drawdown forces intake on bottom)
Sample time	11-30-98 @ 0900

Last three intervals - Water quality parameter results

3rd last interval time 0720

parameter	result
temp	17.10
sp. cond.	5221
DO	3.22
pH	6.83
redox	-142.5
turbidity	50

2nd last interval time 0723

parameter	result
temp	17.73
sp. cond.	5193
DO	3.11
pH	6.87
redox	-134.1
turbidity	60

last interval time 0726

parameter	result
temp	17.69
sp. cond.	5031
DO	2.50
pH	6.91
redox	-135.4
turbidity	65

Total number of sample containers	16
Analysis	modified and existing
Metals field filtered?	(yes/no)
Sample/general observations	odor of gas, slightly brownish well dry 11-24 → after 5 days full recovery, sampled dry on 11-30

c:kinbu/fldatsht

502337

OWT ENVIROTECH
GROUNDWATER LOW FLOW SAMPLE DATA SHEET

Sample ID: W-4R
Laboratory: Columbia Analytical Services
Lab sample ID: #016
Project Name and number: Kin-Buc Landfill 50235
Sample date: 11-24-98
Field personnel: M. Colantuono, A. Licardi, D. Parsons
Oversight personnel:
Weather conditions: 46°F 5-10 mph winds partly cloudy

Monitoring Well Information

Casing diameter & construction: 2 inch PVC
Static water level & reference: 20.87 TOC
Well bottom depth: 55.95
Screened Interval: 47-52 FBGS
Screened Interval volume: 0.80 gal

Monitoring Well Purge Data

Pump type and rate: Submersible / Redi Flo 2 <0.50 l/min
Purge/sample line construction: PEP Polyethylene
Pump decontaminated?: yes
Decontamination procedure: Di run cycle/alconox run cycle/Di run cycle

Purge start time and complete: ⓢ 0738 → ⓒ 0810
Volume purged: 4.2 gallons

Periodic static water level monitoring

time	level	time	level
0741	21.22		
0747	21.25	0800	21.24
0756	21.24		

Well evacuated?: (yes/no)

Sampling Data

Pump intake depth: 53.9
Sample time: 0811

Last three intervals - Water quality parameter results

3rd last interval time 0803

parameter	result
temp	18.76
sp. cond.	9590
DO	.83
pH	6.33
redox	-70.0
turbidity	21.0

2nd last interval time 0806

parameter	result
temp	18.84
sp. cond.	9616
DO	.83
pH	6.33
redox	-73.5
turbidity	18.8

last interval time 0809

parameter	result
temp	18.85
sp. cond.	9623
DO	.81
pH	6.33
redox	-77.2
turbidity	18.0

Total number of sample containers: 24 MS/MSD
Analysis: modified and existing

Metals field filtered?: (yes/no)
Sample/general observations: slight odor slightly gray MS/MSD performed

c:kinbu/fldatsht

502338

OWT ENVIROTECH
GROUNDWATER LOW FLOW SAMPLE DATA SHEET

Sample ID: W-4S
Laboratory: Columbia Analytical Services
Lab sample ID:
Project Name and number: Kin-Buc Landfill 50235
Sample date: 11-24-98
Field personnel: M. Colantuono, A. Licardi, D. Parsons
Oversight personnel:
Weather conditions: 46°F 5-10mph winds partly cloudy

Monitoring Well Information

Casing diameter & construction: 2 inch PVC
Static water level & reference: 19.36 TOC
Well bottom depth: 31.52
Screened Interval: 23.5 -28.5 FBGS
Screened Interval volume: 0.80 gal

Monitoring Well Purge Data

Pump type and rate: Submersible/RediFlo2 <0.50 l/min
Purge/sample line construction: PEP Polyethylene
Pump decontaminated?: yes
Decontamination procedure: Di run cycle/alconox run cycle/Di run cycle

Purge start time and complete: (S) 0847 → (C) 0915
Volume purged: 3.7 gallons

Periodic static water level monitoring

time	level	time	level
0851	19.62	0912	19.57
0900	19.52		
0903	19.65		

Well evacuated? (yes/no)

Sampling Data

Pump intake depth: 27.5
Sample time: 0916

Last three intervals - Water quality parameter results

3rd last interval time 0906

parameter	result
temp	19.30
sp. cond.	8646
DO	.93
pH	6.35
redox	-134.9
turbidity	70

2nd last interval time 0909

parameter	result
temp	20.17
sp. cond.	8657
DO	.93
pH	6.36
redox	-134.6
turbidity	65

last interval time 0912

parameter	result
temp	20.86
sp. cond.	8736
DO	.91
pH	6.37
redox	-134.4
turbidity	64

Total number of sample containers: 16
Analysis: modified and existing

Metals field filtered? (yes/no)
Sample/general observations: no odor, slightly brown, oil sheen

c:kinbu/fldatsht

502339

OWT ENVIROTECH
GROUNDWATER LOW FLOW SAMPLE DATA SHEET

Sample ID: W-5R
Laboratory: Columbia Analytical Services
Lab sample ID: #04
Project Name and number: Kin-Buc Landfill 50235
Sample date: 12-2-98
Field personnel: M. Colantuono, A. Licardi,
Oversight personnel:
Weather conditions: Sunny ~60°F calm

Monitoring Well Information

Casing diameter & construction: 2 inch PVC
Static water level & reference: 22.59 TOC
Well bottom depth: 41.70
Screened Interval: 49-54 FBGS
Screened Interval volume: 0.80 gal.

Monitoring Well Purge Data

Pump type and rate: Submersible / Redi Flo 2 <0.50 l/min.
Purge/sample line construction: PEP Polyethylene
Pump decontaminated?: yes
Decontamination procedure: Di run cycle/alconox run cycle/Di run cycle

Purge start time and complete: @ 1012 → @ 1039
Volume purged: 3.5 gal.

Periodic static water level monitoring

time	level	time	level
1021	22.7	1039	22.7
1029	22.7		
1033	22.7		

Well evacuated? (yes/no)

Sampling Data

Pump intake depth: 38.70
Sample time: 1040

Last three intervals - Water quality parameter results

3rd last interval time 1033

parameter	result
temp	19.2
sp. cond.	17005
DO	0.63
pH	6.21
redox	-94.1
turbidity	11.1

2nd last interval time 1036

parameter	result
temp	19.4
sp. cond.	16999
DO	0.64
pH	6.20
redox	-94.6
turbidity	10.9

last interval time 1039

parameter	result
temp	19.5
sp. cond.	16998
DO	0.64
pH	6.20
redox	-95.0
turbidity	11.0

Total number of sample containers: 16
Analysis: modified and existing

Metals field filtered? (yes/no)
Sample/general observations: W-101 DUP set # 042 @0830
clear, no odor

c:kinbu/fldatsht

502340

OWT ENVIROTECH
GROUNDWATER LOW FLOW SAMPLE DATA SHEET

Sample ID: W-6 G
Laboratory: Columbia Analytical Services
Lab sample ID: #001
Project Name and number: Kin-Buc Landfill 50235
Sample date: 12-2-98
Field personnel: M. Colantuono, A. Licardi,

Oversight personnel:
Weather conditions: Sunny ~60°F calm

Monitoring Well Information

Casing diameter & construction: 2 inch PVC
Static water level & reference: 12.22 TOC
Well bottom depth: 23.80
Screened Interval: 11.5 - 21.5 FBGS
Screened Interval volume: 1.6 gal.

Monitoring Well Purge Data

Pump type and rate: Submersible / Redi Flo 2 < 0.50 l/min
Purge/sample line construction: PEP Polyethylene
Pump decontaminated?: yes
Decontamination procedure: Di run cycle/alconox run cycle/Di run cycle

Purge start time and complete: (S) 1124 → (C) 1200
Volume purged: 4.75 gallons.

Periodic static water level monitoring

time	level	time	level
1129	12.32	1147	12.39
1135	12.33	1156	12.42
1141	12.37	1159	12.42

Well evacuated?: (yes/no)

Sampling Data

Pump intake depth: 20.80
Sample time: 1201

Last three intervals - Water quality parameter results

3rd last interval time 1153

parameter	result
temp	19.94
sp. cond.	4618
DO	0.70
pH	6.00
redox	-96.0
turbidity	25.1

2nd last interval time 1156

parameter	result
temp	19.70
sp. cond.	4620
DO	0.71
pH	5.99
redox	-96.9
turbidity	23.7

last interval time 1159

parameter	result
temp	20.0
sp. cond.	4617
DO	0.72
pH	6.00
redox	-97.3
turbidity	24.3

Total number of sample containers: 16
Analysis: modified and existing

Metals field filtered?: (yes/no)
Sample/general observations: Brown color, odor

c:kinbu/fldatsht

502341

OWT ENVIROTECH
GROUNDWATER LOW FLOW SAMPLE DATA SHEET

Sample ID: W-65
Laboratory: Columbia Analytical Services
Lab sample ID: #002
Project Name and number: Kin-Buc Landfill 50235
Sample date: 12-2-98
Field personnel: M. Colantuono, A. Licardi,

Oversight personnel:
Weather conditions: Sunny ~60°F calm

Monitoring Well Information

Casing diameter & construction: 2 inch PVC
Static water level & reference: 22.37 TOC
Well bottom depth: 38.10
Screened Interval: 31.5 – 36.5 FBGS
Screened Interval volume: 0.80 gal.

Monitoring Well Purge Data

Pump type and rate: Peristaltic <0.50 l/min
Purge/sample line construction: PEP Polyethylene
Pump decontaminated?: yes
Decontamination procedure: Di run cycle/alconox run cycle/Di run cycle

Purge start time and complete: (S) 1237 → (E) 1300
Volume purged: 3.5 gal.

Periodic static water level monitoring

time	level	time	level
1244	22.45	1300	22.46
1251	22.46		
1257	22.46		

Well evacuated? (yes/no)

Sampling Data

Pump intake depth: 35.10
Sample time: 1301

Last three intervals - Water quality parameter results

3rd last interval time 1254

parameter	result
temp	15.8
sp. cond.	14720
DO	1.04
pH	6.19
redox	-87.0
turbidity	6.85

2nd last interval time 1257

parameter	result
temp	15.8
sp. cond.	14732
DO	1.03
pH	6.19
redox	-87.3
turbidity	6.91

last interval time 1300

parameter	result
temp	15.77
sp. cond.	14736
DO	1.04
pH	6.18
redox	-86.9
turbidity	6.62

Total number of sample containers: 16
Analysis: modified and existing

Metals field filtered? (yes/no)
Sample/general observations: clear, no odor

c:kinbu/fldatsht

502342

OWT ENVIROTECH
GROUNDWATER LOW FLOW SAMPLE DATA SHEET

Sample ID	W-6R
Laboratory	Columbia Analytical Services
Lab sample ID	#003
Project Name and number	Kin-Buc Landfill 50235
Sample date	12-2-98
Field personnel	M. Colantuono, A. Licardi,
Oversight personnel	
Weather conditions	Sunny ~60°F calm

Monitoring Well Information

Casing diameter & construction	2 inch PVC
Static water level & reference	24.73 TOC
Well bottom depth	30.00
Screened Interval	48-53 FBGS
Screened Interval volume	0.80 gal

Monitoring Well Purge Data

Pump type and rate	Peristaltic <0.50 l/30sec
Purge/sample line construction	PEP Polyethylene
Pump decontaminated?	yes
Decontamination procedure	Di run cycle/alconox run cycle/Di run cycle
Purge start time and complete	(S) 1351 → (C) 1419
Volume purged	7 gallons

Periodic static water level monitoring

time	level	time	level
		1400	24.41
		1409	23.70
		1418	23.22

Well evacuated? (yes/no)

Sampling Data

Pump intake depth	~51'
Sample time	1420

Last three intervals - Water quality parameter results

3rd last interval time 1412

parameter	result
temp	16.79
sp. cond.	16671
DO	7.44
pH	6.39
redox	-90.6
turbidity	22.6

2nd last interval time 1415

parameter	result
temp	16.82
sp. cond.	16767
DO	8.45
pH	6.40
redox	-88.1
turbidity	22.8

last interval time 1418

parameter	result
temp	16.83
sp. cond.	16812
DO	8.57
pH	6.41
redox	-86.5
turbidity	23.2

Total number of sample containers	16
Analysis	modified and existing
Metals field filtered?	(yes/no)
Sample/general observations	dark brown/blk color very slow discharge EB-07 set #004 @1530

c:kinbu/fldatsht

502343

OWT ENVIROTECH
GROUNDWATER LOW FLOW SAMPLE DATA SHEET

Sample ID: W-7R
Laboratory: Columbia Analytical Services
Lab sample ID: #031
Project Name and number: Kin-Buc Landfill 50235
Sample date: 12-1-98
Field personnel: M. Colantuono, A. Licardi,
Oversight personnel:
Weather conditions: Sunny ~ 60°F Gusts to 30mph

Monitoring Well Information

Casing diameter & construction: 2 inch PVC
Static water level & reference: 9.02 TOC
Well bottom depth: 21.14 artificial bottom /bailer @ bottom of well.
Screened Interval: 36 - 41 FBGS
Screened Interval volume: 0.80 gal.

Monitoring Well Purge Data

Pump type and rate: Submersible /RediFlo 2 <0.50 l/min
Purge/sample line construction: PEP Polyethylene
Pump decontaminated?: yes
Decontamination procedure: Di run cycle/alconox run cycle/Di run cycle

Purge start time and complete: (S) 1146 → (C) 1215
Volume purged: 3 gal.

Periodic static water level monitoring

time	level	time	level
1154	10.62	1212	10.51
1200	11.28	1215	9.90
1206	10.51		

Well evacuated? (yes/no) no

Sampling Data

Pump intake depth: 21.14
Sample time: 1216

Last three intervals - Water quality parameter results

3rd last interval time 1206

parameter	result
temp	17.50
sp. cond.	9740
DO	.84
pH	7.06
redox	-221
turbidity	31.4

2nd last interval time 1209

parameter	result
temp	18.34
sp. cond.	9744
DO	.83
pH	7.07
redox	-230
turbidity	24.9

last interval time 1212

parameter	result
temp	19.0
sp. cond.	9750
DO	.70
pH	7.07
redox	-250
turbidity	27.2

Total number of sample containers: 16
Analysis: modified and existing

Metals field filtered? (yes/no) yes
Sample/general observations: black color, w/ odor
Try peristaltic next time

c:kinbu/fldatsht

502344

OWT ENVIROTECH
GROUNDWATER LOW FLOW SAMPLE DATA SHEET

Sample ID: W-8RR
Laboratory: Columbia Analytical Services
Lab sample ID: #035
Project Name and number: Kin-Buc Landfill 50235
Sample date: 12-1-98
Field personnel: M. Colantuono, A. Licardi,

Oversight personnel:
Weather conditions: Sunny ~60°F gusts to 30mph

Monitoring Well Information

Casing diameter & construction: 4 inch PVC
Static water level & reference: 6.95 TOC
Well bottom depth: 41.60
Screened Interval: 34-39' below grade
Screened Interval volume: .80

Monitoring Well Purge Data

Pump type and rate: Submersible / Red. Flo 2 <0.9 l/min
Purge/sample line construction: PEP Polyethylene
Pump decontaminated?: yes
Decontamination procedure: Di run cycle/alconox run cycle/Di run cycle

Purge start time and complete: @ 0855 → @ 0919
Volume purged: 3.2 gallons

Periodic static water level monitoring

time	level	time	level
0857	6.95	0915	7.27
0903	7.37	0918	7.25
0912	7.27		

Well evacuated? (yes/no)

Sampling Data

Pump intake depth: ~37'
Sample time: 0920

Last three intervals - Water quality parameter results

3rd last interval time 0912

parameter	result
temp	15.52
sp. cond.	18346
DO	1.09
pH	6.46
redox	-103.6
turbidity	9.89

2nd last interval time 0915

parameter	result
temp	15.67
sp. cond.	18349
DO	1.08
pH	6.46
redox	-104.3
turbidity	9.06

last interval time 0918

parameter	result
temp	15.72
sp. cond.	18357
DO	1.01
pH	6.46
redox	-105.4
turbidity	9.09

Total number of sample containers: 16
Analysis: modified and existing

Metals field filtered? (yes/no)
Sample/general observations: clear, no odor
good well for future dup.

c:kinbu/fldatsht

502345

OWT ENVIROTECH
GROUNDWATER LOW FLOW SAMPLE DATA SHEET

Sample ID: W-8S
Laboratory: Columbia Analytical Services
Lab sample ID: #034
Project Name and number: Kin-Buc Landfill 50235
Sample date: 12-1-98
Field personnel: M. Colantuono, A. Licardi,
Oversight personnel:
Weather conditions: Partly Cloudy ~50°F windy up to 20mph

Monitoring Well Information

Casing diameter & construction: 2 inch PVC
Static water level & reference: 8.35 TOC
Well bottom depth: 28.60
Screened Interval: 19.5 - 24.5 FBGS
Screened Interval volume: 0.80 gal.

Monitoring Well Purge Data

Pump type and rate: Peristaltic <0.50 l/min
Purge/sample line construction: PEP Polyethylene
Pump decontaminated?: yes
Decontamination procedure: Di run cycle/alconox run cycle/Di run cycle

Purge start time and complete: @ 0749 → @ 0812
Volume purged: 3 gallons

Periodic static water level monitoring

time	level	time	level
0757	8.46	0812	8.46
0803	8.46		
0809	8.46		

Well evacuated? (yes/no)

Sampling Data

Pump intake depth: 25.4
Sample time: 0815

Last three intervals - Water quality parameter results

3rd last interval time 0806

parameter	result
temp	13.5
sp. cond.	14864
DO	1.63
pH	5.97
redox	-56.6
turbidity	4.27

2nd last interval time 0809

parameter	result
temp	13.48
sp. cond.	14867
DO	1.70
pH	5.97
redox	-58.3
turbidity	4.0

last interval time 0812

parameter	result
temp	13.47
sp. cond.	14868
DO	1.71
pH	5.98
redox	-60.0
turbidity	3.79

Total number of sample containers: 16
Analysis: modified and existing

Metals field filtered? (yes/no)
Sample/general observations: good well for future dup. clear, no odor

c:kinbu/fldatsht

502346

OWT ENVIROTECH
GROUNDWATER LOW FLOW SAMPLE DATA SHEET

Sample ID: W-9R
Laboratory: Columbia Analytical Services
Lab sample ID: #051
Project Name and number: Kin-Buc Landfill 50235
Sample date: 12-3-98
Field personnel: M. Colantuono, A. Licardi,
Oversight personnel:
Weather conditions: Overcast ~60°F

Monitoring Well Information

Casing diameter & construction: 2 inch PVC
Static water level & reference: 21.58 TOC
Well bottom depth: 39.20
Screened Interval: 30 - 35 FBGS
Screened Interval volume: 0.80 gal

Monitoring Well Purge Data

Pump type and rate: Peristaltic < 0.50 l/min.
Purge/sample line construction: PEP Polyethylene
Pump decontaminated?: yes
Decontamination procedure: Di run cycle/alconox run cycle/Di run cycle

Purge start time and complete: (S) 0912 → (C) 0944
Volume purged: 4.3 gallons

Periodic static water level monitoring

time	level	time	level
0920	25.27	0938	25.79
0926	25.89	0944	25.97
0932	25.97		

Well evacuated? (yes/no) no

Sampling Data

Pump intake depth: 36.2
Sample time: 0945

Last three intervals - Water quality parameter results

3rd last interval time 0938

parameter	result
temp	13.5
sp. cond.	1107
DO	.94
pH	6.08
redox	-67.9
turbidity	7.42

2nd last interval time 0941

parameter	result
temp	13.61
sp. cond.	1108
DO	.94
pH	6.07
redox	-67.3
turbidity	7.08

last interval time 0944

parameter	result
temp	13.63
sp. cond.	1108
DO	.94
pH	6.05
redox	-67.3
turbidity	7.01

Total number of sample containers: 25
Analysis: modified and existing

Metals field filtered? (yes/no) yes
Sample/general observations: MS/MSD performed
EB-08 set #050 @ 1115

c:kinbu/fldatsht

502347

OWT ENVIROTECH
GROUNDWATER LOW FLOW SAMPLE DATA SHEET

Sample ID: W-10 G
Laboratory: Columbia Analytical Services
Lab sample ID: #054
Project Name and number: Kin-Buc Landfill 50235
Sample date: 12-3-98 purged dry 11-30-98
Field personnel: M. Colantuono, A. Licardi,
Oversight personnel:
Weather conditions: Overcast ~60°F 11-30

Monitoring Well Information

Casing diameter & construction: 2 inch PVC
Static water level & reference: 19.67 TOC
Well bottom depth: 22.22
Screened Interval: 8.5 - 18.5 FBGS
Screened Interval volume: 0.48 gal

Monitoring Well Purge Data

Pump type and rate: Peristaltic <0.50 l/min.
Purge/sample line construction: PEP Polyethylene
Pump decontaminated?: yes
Decontamination procedure: Di run cycle/alconox run cycle/Di run cycle

Purge start time and complete: (5) 1401 → (6) 1416
Volume purged: ~ 1.5 gal.

Periodic static water level monitoring

time	level	time	level
1406	21.07		
1412	22.1		

Well evacuated? (yes/no)

Sampling Data

Pump intake depth: 22.22 drawdown forces intake to bottom
Sample time: 0808 → 0819 12-3-98

Last three intervals - Water quality parameter results

3rd last interval time 1409

parameter	result
temp	15.64
sp. cond.	446
DO	4.22
pH	4.43
redox	134.9
turbidity	4.8

2nd last interval time 1412

parameter	result
temp	15.54
sp. cond.	440
DO	4.08
pH	4.77
redox	133
turbidity	3.5

last interval time 1415

parameter	result
temp	15.34
sp. cond.	426
DO	4.07
pH	4.70
redox	116
turbidity	6.2

Total number of sample containers: 12 - VOA's 608, 625, TDS NO_3, COD, & partial BOD bottle
Analysis: modified and existing

Metals field filtered? NA (yes/no)
Sample/general observations: Sampled Dry did not complete set.

c:kinbu/fldatsht

502348

OWT ENVIROTECH
GROUNDWATER LOW FLOW SAMPLE DATA SHEET

Sample ID: W-10R
Laboratory: Columbia Analytical Services
Lab sample ID: #030
Project Name and number: Kin-Buc Landfill 50235
Sample date: 11-30-98
Field personnel: M. Colantuono, A. Licardi,

Oversight personnel:
Weather conditions: Overcast ~60°F

Monitoring Well Information

Casing diameter & construction: 2 inch PVC
Static water level & reference: 19.25 TOC
Well bottom depth: 34.00
Screened Interval: 25.5 - 30.5 FBGS
Screened Interval volume: 0.80 gal.

Monitoring Well Purge Data

Pump type and rate: Submersible / Redi Flo 2 <0.50 l/min
Purge/sample line construction: PEP Polyethylene
Pump decontaminated?: yes
Decontamination procedure: Di run cycle/alconox run cycle/Di run cycle

Purge start time and complete: @ 1429 → @ 1509
Volume purged: 4.5 gal.

Periodic static water level monitoring

time	level	time	level
1436	23.90	1454	27.5
1442	25.12	1500	29.3
1448	26.2	1509	DRY

Well evacuated? (yes/no)

Sampling Data

Pump intake depth: 34.00 drawdown forces intake to bottom
Sample time: 1530

Last three intervals - Water quality parameter results

3rd last interval time 1500

parameter	result
temp	20.4
sp. cond.	206
DO	41
pH	6.49
redox	-74.5
turbidity	15

2nd last interval time 1503

parameter	result
temp	20.41
sp. cond.	204
DO	41
pH	6.50
redox	-74.8
turbidity	23

last interval time 1506

parameter	result
temp	19.9
sp. cond.	197
DO	40
pH	6.55
redox	-81
turbidity	17

Total number of sample containers: 16
Analysis: modified and existing

Metals field filtered? (yes/no)
Sample/general observations: pump minimum drawdown greater than well recharge
EB-05 set #037 @ 1320

c:kinbu/fldatsht

502349

OWT ENVIROTECH
GROUNDWATER LOW FLOW SAMPLE DATA SHEET

Sample ID: W-13 G
Laboratory: Columbia Analytical Services
Lab sample ID: #045
Project Name and number: Kin-Buc Landfill 50235
Sample date: 12-1-98
Field personnel: M. Colantuono, A. Licardi,

Oversight personnel:
Weather conditions: Sunny ~60°F Gusts to 30mph

Monitoring Well Information

Casing diameter & construction: 2 inch PVC
Static water level & reference: 4.01 TOC
Well bottom depth: 10.84
Screened Interval: 1.5 - 6.5 FBGS
Screened Interval volume: 1.09 gal.

Monitoring Well Purge Data

Pump type and rate: Submersible / RediFlo 2 <0.50 l/min.
Purge/sample line construction: PEP Polyethylene
Pump decontaminated?: yes
Decontamination procedure: Di run cycle/alconox run cycle/Di run cycle

Purge start time and complete: @ 1339 → @ 1401
Volume purged: 3 gallons

Periodic static water level monitoring

time	level	time	level
1343	4.82		
1352	4.90		
1401	5.10		

Well evacuated? (yes/no)

Sampling Data

Pump intake depth: 7.8
Sample time: 1402

Last three intervals - Water quality parameter results

3rd last interval time 1355

parameter	result
temp	15.17
sp. cond.	2702
DO	1.30
pH	6.15
redox	-110.2
turbidity	13.4

2nd last interval time 1358

parameter	result
temp	15.08
sp. cond.	2700
DO	1.29
pH	6.14
redox	-111.0
turbidity	12.2

last interval time 1401

parameter	result
temp	14.87
sp. cond.	2699
DO	1.28
pH	6.13
redox	-111.9
turbidity	13.2

Total number of sample containers: 16
Analysis: modified and existing

Metals field filtered? (yes/no)
Sample/general observations:

c:kinbu/fldatsht

502350

OWT ENVIROTECH
GROUNDWATER LOW FLOW SAMPLE DATA SHEET

Sample ID: W-13S
Laboratory: Columbia Analytical Services
Lab sample ID: #046
Project Name and number: Kin-Buc Landfill 50235
Sample date: 12-1-98
Field personnel: M. Colantuono, A. Licardi,
Oversight personnel:
Weather conditions: Sunny ~60°F Gusts to 30mph

Monitoring Well Information

Casing diameter & construction: 2 inch PVC
Static water level & reference: 8.21 TOC
Well bottom depth: 29.20
Screened Interval: 21-26 FBGS
Screened Interval volume: 0.80 gal

Monitoring Well Purge Data

Pump type and rate: Submersible / Redi-Flo 2 <0.5 l/min
Purge/sample line construction: PEP/Polyethylene
Pump decontaminated?: yes
Decontamination procedure: Di run cycle/alconox run cycle/Di run cycle

Purge start time and complete: @ 1400 → @ 1508
Volume purged: 3.5 gallons

Periodic static water level monitoring

time	level	time	level
1446	8.26		
1455	8.26		
1504	8.25		

Well evacuated? (yes/no)

Sampling Data

Pump intake depth: 26.30
Sample time: 1512

Last three intervals - Water quality parameter results

3rd last interval time 1501

parameter	result
temp	15.83
sp. cond.	17769
DO	2.49
pH	6.12
redox	-77.1
turbidity	5.81

2nd last interval time 1504

parameter	result
temp	15.81
sp. cond.	17814
DO	2.53
pH	6.12
redox	-78.9
turbidity	6.18

last interval time 1507

parameter	result
temp	15.80
sp. cond.	17879
DO	2.56
pH	6.12
redox	-79.5
turbidity	5.42

Total number of sample containers: 16
Analysis: modified and existing

Metals field filtered? (yes/no)
Sample/general observations: Clear, no odor
EB-06 set # 041 @ 1700

c:kinbu/fldatsht

502351

OWT ENVIROTECH
GROUNDWATER LOW FLOW SAMPLE DATA SHEET

Sample ID: W-15G
Laboratory: Columbia Analytical Services
Lab sample ID: #055
Project Name and number: Kin-Buc Landfill 50235
Sample date: 12-3-98 purged dry 12-1-98
Field personnel: M. Colantuono, A. Licardi,
Oversight personnel:
Weather conditions: Sunny ~60°F Gusts to 30mph

Monitoring Well Information

Casing diameter & construction: 2 inch PVC
Static water level & reference: 15.35 TOPVC
Well bottom depth: 17.00
Screened Interval: 11.7-17.2 FBVC
Screened Interval volume: 0.43 gal.

Monitoring Well Purge Data

Pump type and rate: Peristaltic <0.50 l/min.
Purge/sample line construction: PEP Polyethylene
Pump decontaminated?: yes
Decontamination procedure: Di run cycle/alconox run cycle/Di run cycle

Purge start time and complete: (S) 1606 → (C) 1609 dry
Volume purged: ~.25 gal

Periodic static water level monitoring N/A

time	level	time	level

Well evacuated? (yes/no)

Sampling Data

Pump intake depth: 17.00 drawdown forces intake to bottom
Sample time: 1015 12-3-98

Last three intervals - Water quality parameter results

3rd last interval time		2nd last interval time		last interval time 12-1-98 1607	
parameter	result	parameter	result	parameter	result
temp		temp		temp	16.68
sp. cond.		sp. cond.		sp. cond.	563
DO		DO		DO	3.07
pH		pH		pH	6.59
redox		redox		redox	-89.9
turbidity		turbidity		turbidity	N/A

Total number of sample containers: 16
Analysis: modified and existing

Metals field filtered? (yes/no)
Sample/general observations: sampled dry
EB-06 set # 041 @ 1700

c:kinbu/fldatsht

502352

OWT ENVIROTECH
GROUNDWATER LOW FLOW SAMPLE DATA SHEET

Sample ID: GEI ~3G
Laboratory: Columbia Analytical Services
Lab sample ID: #013
Project Name and number: Kin-Buc Landfill 50235
Sample date: 11-20-98
Field personnel: M. Colantuono, A. Larcardi, B. Melancon
D. Parsons
Oversight personnel:
Weather conditions: 55-60°F, overcast ~0-3 mph winds

Monitoring Well Information

Casing diameter & construction: 4 inch PVC
Static water level & reference: 5.42 TOC
Well bottom depth: 13.90
Screened Interval: 7.3-12.3 FBGS
Screened Interval volume: 3.25 gal

Monitoring Well Purge Data

Pump type and rate: submersible / RediFlo2 <0.50 l/min
Purge/sample line construction: PEP Polyethylene
Pump decontaminated?: yes
Decontamination procedure: Di run cycle/alconox run cycle/Di run cycle

Purge start time and complete: (S) 1112 → (C) 1136
Volume purged: 3 gallons

Periodic static water level monitoring

time	level	time	level
1115	5.47	1136	5.42
1124	5.43		
1130	5.42		

Well evacuated? (yes/no)

Sampling Data

Pump intake depth: 10.7
Sample time: 1137

Last three intervals - Water quality parameter results

3rd last interval time 1130

parameter	result
temp	16.54
sp. cond.	1176
DO	0.28
pH	6.35
redox	-56.0
turbidity	25.0

2nd last interval time 1133

parameter	result
temp	16.58
sp. cond.	1178
DO	0.26
pH	6.34
redox	-57.1
turbidity	24.0

last interval time 1136

parameter	result
temp	16.56
sp. cond.	1179
DO	0.26
pH	6.33
redox	-58.0
turbidity	23.0

Total number of sample containers: 16
Analysis: modified and existing

Metals field filtered? (yes/no)
Sample/general observations: no odor, slightly yellow

c:kinbu/fldatsht

502353

OWT ENVIROTECH
GROUNDWATER LOW FLOW SAMPLE DATA SHEET

Sample ID: WE-3R
Laboratory: Columbia Analytical Services
Lab sample ID: # 021
Project Name and number: Kin-Buc Landfill 50235
Sample date: 11-23-98
Field personnel: M. Colantuono, A. Licardi, D. Parsons
Oversight personnel:
Weather conditions: 45-50°F clear slight breeze to 10mph winds

Monitoring Well Information

Casing diameter & construction: 2 inch stainless
Static water level & reference: 14.29 TOC
Well bottom depth: 42.00
Screened Interval: 41.5-45.5 FBGS
Screened Interval volume: 0.80 gal

Monitoring Well Purge Data

Pump type and rate: Submersible/Redi Flo 2 <0.50 l/min
Purge/sample line construction: PEP Polyethylene
Pump decontaminated?: yes
Decontamination procedure: Di run cycle/alconox run cycle/Di run cycle

Purge start time and complete: ⑤ 0835 → 0845 → restart 1018 → ⑥ 1038
Volume purged: 4.0 gal.

Periodic static water level monitoring

time	level	time	level
1023	14.42		
1032	14.66		
1035	14.70		

Well evacuated? (yes/no) no

Sampling Data

Pump intake depth: 39.0
Sample time: 1042

Last three intervals - Water quality parameter results

3rd last interval time 1032

parameter	result
temp	16.02
sp. cond.	17343
DO	1.08
pH	6.26
redox	-61.6
turbidity	1.5

2nd last interval time 1035

parameter	result
temp	16.23
sp. cond.	17323
DO	1.07
pH	6.28
redox	-67.5
turbidity	1.3

last interval time 1038

parameter	result
temp	16.56
sp. cond.	17320
DO	1.07
pH	6.07
redox	-68.3
turbidity	1.3

Total number of sample containers: 16
Analysis: modified and existing

Metals field filtered? (yes/no) yes
Sample/general observations: no odor, slightly yellow
Stopped purge to replace YSI.

c:kinbu/fldatsht

502354

OWT ENVIROTECH
GROUNDWATER LOW FLOW SAMPLE DATA SHEET

Sample ID	WE -3S
Laboratory	Columbia Analytical Services
Lab sample ID	#014
Project Name and number	Kin-Buc Landfill 50235
Sample date	11-20-98
Field personnel	M. Colantuono, A. Larcardi, B. Melancon
	D. Parsons
Oversight personnel	
Weather conditions	55-60°F overcast ~0-5mph winds

Monitoring Well Information

Casing diameter & construction	2 inch PVC
Static water level & reference	13.41 TOC
Well bottom depth	25.90
Screened Interval	19.5 - 24.5 FBGS
Screened Interval volume	0.80

Monitoring Well Purge Data

Pump type and rate	Submersible / Redi Flo 2 <0.50 l/min
Purge/sample line construction	PEP Polyethylene
Pump decontaminated?	yes
Decontamination procedure	Di run cycle/alconox run cycle/Di run cycle
Purge start time and complete	(s) 1200 → (c) 1224
Volume purged	3.0 gallons

Periodic static water level monitoring

time	level		time	level
N/A	well bubbled & surged			

Well evacuated? (yes/no)

Sampling Data

Pump intake depth	22.9
Sample time	1225

Last three intervals - Water quality parameter results

3rd last interval time 1217

parameter	result
temp	16.37
sp. cond.	11450
DO	0.44
pH	6.21
redox	-74.8
turbidity	5.9

2nd last interval time 1220

parameter	result
temp	16.39
sp. cond.	11413
DO	0.45
pH	6.21
redox	-75.3
turbidity	5.0

last interval time 1223

parameter	result
temp	16.40
sp. cond.	11400
DO	0.45
pH	6.21
redox	-76.3
turbidity	5.0

Total number of sample containers	16
Analysis	modified and existing
Metals field filtered?	(yes/no)
Sample/general observations	heavy surging & foaming during purge slightly yellow foam EB 02 set# 015 @ 1400

c:kinbu/fldatsht

502355

OWT ENVIROTECH
GROUNDWATER LOW FLOW SAMPLE DATA SHEET

Sample ID: GEI-5G
Laboratory: Columbia Analytical Services
Lab sample ID: # 012
Project Name and number: Kin-Buc Landfill 50235
Sample date: 11-20-98
Field personnel: M. Colantuono, A. Larcardi, B. Melancon
D. Parsons
Oversight personnel:
Weather conditions: 55-60°F overcast ~0-5mph winds

Monitoring Well Information

Casing diameter & construction: 4 inch PVC
Static water level & reference: 9.59 TOC
Well bottom depth: 14.80
Screened Interval: 9-12 FBGS
Screened Interval volume: 2.07 gal

Monitoring Well Purge Data

Pump type and rate: Peristaltic
Purge/sample line construction: PEP Polyethylene
Pump decontaminated?: yes
Decontamination procedure: Di run cycle/alconox run cycle/Di run cycle

Purge start time and complete: (S) 0955 → (C) 1026
Volume purged: 4.5 gallons

Periodic static water level monitoring

time	level	time	level
1005	10.15		
1014	10.14		
1023	10.16		

Well evacuated? (yes/no)

Sampling Data

Pump intake depth: 10.8
Sample time: 1028

Last three intervals - Water quality parameter results

3rd last interval time 1020

parameter	result
temp	16.51
sp. cond.	971
DO	0.40
pH	6.38
redox	-50.8
turbidity	28.0

2nd last interval time 1023

parameter	result
temp	16.54
sp. cond.	965
DO	0.40
pH	6.38
redox	-52.5
turbidity	27.0

last interval time 1026

parameter	result
temp	16.56
sp. cond.	961
DO	0.39
pH	6.38
redox	-53.4
turbidity	26.0

Total number of sample containers: 16
Analysis: modified and existing

Metals field filtered? (yes/no)
Sample/general observations: no odor, slightly yellow
slow purging & sampling

c:kinbu/fldatsht

502356

OWT ENVIROTECH
GROUNDWATER LOW FLOW SAMPLE DATA SHEET

Sample ID: WE - 5R
Laboratory: Columbia Analytical Services
Lab sample ID: #007
Project Name and number: Kin-Buc Landfill 50235
Sample date: 11-20-98
Field personnel: M. Colantuono, A. Larcardi, B. Melancon
D. Parsons
Oversight personnel:
Weather conditions: 55-60°F overcast ~0-5mph winds

Monitoring Well Information

Casing diameter & construction: 2 inch stainless
Static water level & reference: 13.58 TOC
Well bottom depth: 50.0
Screened Interval: 43-48 FBGS
Screened Interval volume: 0.80

Monitoring Well Purge Data

Pump type and rate: submersible /Redi Flo 2 < 0.50 l/min.
Purge/sample line construction: PEP Polyethylene
Pump decontaminated?: yes
Decontamination procedure: Di run cycle/alconox run cycle/Di run cycle

Purge start time and complete: (S) 0904 → (C) 0931
Volume purged: 3 gallons

Periodic static water level monitoring

time	level	time	level
0910	13.29	0925	14.00
0916	14.22	0928	13.98
0922	14.10		

Well evacuated? (yes/no)

Sampling Data

Pump intake depth: 46.8
Sample time: 0932

Last three intervals - Water quality parameter results

3rd last interval time 0925

parameter	result
temp	15.64
sp. cond.	4512
DO	0.52
pH	6.25
redox	-3.4
turbidity	4.6

2nd last interval time 0928

parameter	result
temp	15.79
sp. cond.	4510
DO	0.54
pH	6.25
redox	-3.1
turbidity	4.2

last interval time 0931

parameter	result
temp	16.06
sp. cond.	4515
DO	0.49
pH	6.25
redox	-4.5
turbidity	4.3

Total number of sample containers: 16
Analysis: modified and existing

Metals field filtered? (yes/no)
Sample/general observations: no odor, slightly yellow

c:kinbu/fldatsht

502357

OWT ENVIROTECH
GROUNDWATER LOW FLOW SAMPLE DATA SHEET

Sample ID	WE -5S
Laboratory	Columbia Analytical Services
Lab sample ID	# 006
Project Name and number	Kin-Buc Landfill 50235
Sample date	11-20-98
Field personnel	M. Colantuono, A. Larcardi, B. Melancon
	D. Parsons
Oversight personnel	
Weather conditions	55-60°F overcast ~0-3 mph winds

Monitoring Well Information

Casing diameter & construction	2 inch PVC
Static water level & reference	13.37 TOC
Well bottom depth	26.20
Screened Interval	20-25 FBGS
Screened Interval volume	0.80 gal

Monitoring Well Purge Data

Pump type and rate	submersible /RediFlo2 <0.50 l/min
Purge/sample line construction	PEP Polyethylene
Pump decontaminated?	yes
Decontamination procedure	Di run cycle/alconox run cycle/Di run cycle
Purge start time and complete	(S) 0812 → (C) 0826
Volume purged	1.5 gallons

Periodic static water level monitoring

time	level	time	level
0818	13.41		
0821	13.41		
0824	13.41		

Well evacuated? (yes/no)

Sampling Data

Pump intake depth	23.1
Sample time	0828

Last three intervals - Water quality parameter results

3rd last interval time 0818

parameter	result
temp	15.44
sp. cond.	2974
DO	0.56
pH	6.32
redox	-87.4
turbidity	1.9

2nd last interval time 0821

parameter	result
temp	15.57
sp. cond.	2974
DO	0.55
pH	6.36
redox	-89.9
turbidity	2.1

last interval time 0824

parameter	result
temp	15.67
sp. cond.	2976
DO	0.53
pH	6.38
redox	-93.0
turbidity	2.1

Total number of sample containers	27 MS/MSD
Analysis	modified and existing
Metals field filtered?	(yes/no)
Sample/general observations	slightly yellow, LFG odor MS/MSD completed for first 20 wells

c:kinbu/fldatsht

502358

OWT ENVIROTECH
GROUNDWATER LOW FLOW SAMPLE DATA SHEET

Sample ID: GEI - 6G
Laboratory: Columbia Analytical Services
Lab sample ID: # 008
Project Name and number: Kin-Buc Landfill 50235
Sample date: 11 - 19 - 98
Field personnel: M. Colantuono, A. Larcardi, B. Melancon
D. Parsons
Oversight personnel:
Weather conditions: 56°F, NW winds ~0-2 mph, partly cloudy

Monitoring Well Information

Casing diameter & construction: 4 inch PVC
Static water level & reference: 11.82 TOC
Well bottom depth: 15.10
Screened Interval: 7.3 - 12.3 FBGS
Screened Interval volume: 1.79 gal.

Monitoring Well Purge Data

Pump type and rate: Peristaltic <0.50 l/min.
Purge/sample line construction: PEP Polyethylene
Pump decontaminated?: yes
Decontamination procedure: Di run cycle/alconox run cycle/Di run cycle

Purge start time and complete: @ 1440 → @ 1501
Volume purged: 2.5 gallons

Periodic static water level monitoring

time	level	time	level
1446	12.77	1501	13.30
1455	13.11		
1458	13.24		

Well evacuated? (yes/no)

Sampling Data

Pump intake depth: 14.1
Sample time: 1502

Last three intervals - Water quality parameter results

3rd last interval time 1455

parameter	result
temp	16.44
sp. cond.	3151
DO	0.54
pH	6.92
redox	-74.9
turbidity	61.2

2nd last interval time 1458

parameter	result
temp	16.42
sp. cond.	3151
DO	0.52
pH	6.92
redox	-77.3
turbidity	70.5

last interval time 1501

parameter	result
temp	16.26
sp. cond.	3170
DO	0.55
pH	6.91
redox	-79.4
turbidity	68.3

Total number of sample containers: 16
Analysis: modified and existing

Metals field filtered? (yes/no)
Sample/general observations: no odor, slight golden tint
FB-01, set # 001 @ 1645

c:kinbu/fldatsht

502359

OWT ENVIROTECH
GROUNDWATER LOW FLOW SAMPLE DATA SHEET

Sample ID: WE -6R
Laboratory: Columbia Analytical Services
Lab sample ID: #005
Project Name and number: Kin-Buc Landfill 50235
Sample date: 11-19-98
Field personnel: M. Colantuono, A. Larcardi, B. Melancon
D. Parsons
Oversight personnel:
Weather conditions: 56°F, NW winds ~0-2mph, partly cloudy

Monitoring Well Information

Casing diameter & construction: 2 inch PVC
Static water level & reference: 19.14 TOC
Well bottom depth: 47.10
Screened Interval: 44-49 FBGS
Screened Interval volume: 0.80 gal

Monitoring Well Purge Data

Pump type and rate: Submersible / Redi Flo2 < 0.50 l/min.
Purge/sample line construction: PEP Polyethylene
Pump decontaminated?: yes
Decontamination procedure: Di run cycle/alconox run cycle/Di run cycle

Purge start time and complete: (S) 1236 → (C) 1307
Volume purged: 4 gallons

Periodic static water level monitoring

time	level	time	level
1236	19.14		
1252	22.58		
1301	22.51		

Well evacuated? (yes/no)

Sampling Data

Pump intake depth: 44.3
Sample time: 1308

Last three intervals - Water quality parameter results

3rd last interval time 1301

parameter	result
temp	16.75
sp. cond.	3819
DO	0.56
pH	6.47
redox	-34.5
turbidity	9.85

2nd last interval time 1304

parameter	result
temp	16.72
sp. cond.	3815
DO	0.53
pH	6.47
redox	-36.8
turbidity	10.2

last interval time 1307

parameter	result
temp	16.68
sp. cond.	3806
DO	0.52
pH	6.47
redox	-35.8
turbidity	10.5

Total number of sample containers: 16
Analysis: modified and existing

Metals field filtered? (yes/no)
Sample/general observations: no odor, slightly yellow

c:kinbu/fldatsht

502360

OWT ENVIROTECH
GROUNDWATER LOW FLOW SAMPLE DATA SHEET

Sample ID	GEI-6S
Laboratory	Columbia Analytical Services
Lab sample ID	# 010
Project Name and number	Kin-Buc Landfill 50235
Sample date	11-19-98
Field personnel	M. Colantuono, A. Larcardi, B. Melancon
	D. Parsons
Oversight personnel	
Weather conditions	56°F, NW winds ~0-2 mph, partly cloudy

Monitoring Well Information

Casing diameter & construction	2 inch PVC
Static water level & reference	12.14 TOC
Well bottom depth	43.90
Screened Interval	36-41 FBGs
Screened Interval volume	0.80 gal.

Monitoring Well Purge Data

Pump type and rate	Peristaltic <0.50 l/min.
Purge/sample line construction	PEP Polyethylene
Pump decontaminated?	yes
Decontamination procedure	Di run cycle/alconox run cycle/Di run cycle
Purge start time and complete	@ 1323 → @ 1340
Volume purged	2 gallons

Periodic static water level monitoring

time	level	time	level
1327	20.85		
1336	20.99		
1339	20.99		

Well evacuated? (yes/no)

Sampling Data

Pump intake depth	40.4
Sample time	1348

Last three intervals - Water quality parameter results

3rd last interval time 1333

parameter	result
temp	14.24
sp. cond.	1079
DO	0.30
pH	6.45
redox	-90.1
turbidity	5.09

2nd last interval time 1336

parameter	result
temp	14.19
sp. cond.	1077
DO	0.25
pH	6.44
redox	-91.5
turbidity	5.07

last interval time 1339

parameter	result
temp	14.17
sp. cond.	1078
DO	0.27
pH	6.44
redox	-92.9
turbidity	5.08

Total number of sample containers	16
Analysis	modified and existing
Metals field filtered?	(yes/no)
Sample/general observations	no odor, slightly gray DUP WE-99; set # 011 @ 1348

c:kinbu/fldatsht

502361

OWT ENVIROTECH
GROUNDWATER LOW FLOW SAMPLE DATA SHEET

Sample ID: WE - 7R
Laboratory: Columbia Analytical Services
Lab sample ID: # 002
Project Name and number: Kin-Buc Landfill 50235
Sample date: 11-19-98
Field personnel: M. Colantuono, A. Larcardi, B. Melancon
D. Parsons
Oversight personnel:
Weather conditions: 56°F, NW winds ~0-2mph, partly cloudy

Monitoring Well Information

Casing diameter & construction: 2 inch stainless
Static water level & reference: 13.32 TOC
Well bottom depth: 73.60
Screened Interval: 66.5 - 71.5 FBGS
Screened Interval volume: 0.80 gal

Monitoring Well Purge Data

Pump type and rate: Submersible Redi Flo 2 < .5 l/min.
Purge/sample line construction: PEP Polyethylene
Pump decontaminated?: yes
Decontamination procedure: Di run cycle/alconox run cycle/Di run cycle

Purge start time and complete: (S) 0940 → (C) 1024
Volume purged: 5.5 gallons

Periodic static water level monitoring

time	level	time	level
0930	13.12	1009	22.09
0957	21.21	1023	22.09
1003	21.09		

Well evacuated? (yes/no) no

Sampling Data

Pump intake depth: 70.5
Sample time: 1026

Last three intervals - Water quality parameter results

3rd last interval time 1018

parameter	result
temp	15.20
sp. cond.	2607
DO	2.08
pH	6.35
redox	12.5
turbidity	110

2nd last interval time 1021

parameter	result
temp	15.10
sp. cond.	2625
DO	1.71
pH	6.36
redox	11.8
turbidity	90

last interval time 1024

parameter	result
temp	14.09
sp. cond.	2632
DO	1.07
pH	6.35
redox	11.3
turbidity	110

Total number of sample containers: 16
Analysis: modified and existing

Metals field filtered? (yes/no) yes
Sample/general observations: no odor
FB 01 set#004 @ 1115

502362

c:kinbu/fldatsht

OWT ENVIROTECH
GROUNDWATER LOW FLOW SAMPLE DATA SHEET

Sample ID	WE - 7S
Laboratory	Columbia Analytical Services
Lab sample ID	# 003
Project Name and number	Kin-Buc Landfill 50235
Sample date	11-19-98
Field personnel	M. Colantuono, A. Larcardi, B. Melancon
	D. Parsons
Oversight personnel	
Weather conditions	56°F, NW winds ~0-2mph, partly cloudy

Monitoring Well Information

Casing diameter & construction	2 inch PVC
Static water level & reference	13.82 TOC
Well bottom depth	30.30
Screened Interval	24-29 FBGS
Screened Interval volume	0.80 gal.

Monitoring Well Purge Data

Pump type and rate	Submersible / Redi Flo 2 < 0.50 l/min
Purge/sample line construction	PEP Polyethylene
Pump decontaminated?	yes
Decontamination procedure	Di run cycle/alconox run cycle/Di run cycle
Purge start time and complete	(s) 1126 → (c) 1157
Volume purged	4 gallons

Periodic static water level monitoring

time	level	time	level
1135	14.72		
1141	14.74		
1150	14.82		

Well evacuated? (yes/no)

Sampling Data

Pump intake depth	27.3
Sample time	1158

Last three intervals - Water quality parameter results

3rd last interval time 1150

parameter	result
temp	17.65
sp. cond.	1976
DO	0.99
pH	6.55
redox	-109.1
turbidity	6.76

2nd last interval time 1152

parameter	result
temp	17.67
sp. cond.	1973
DO	0.93
pH	6.56
redox	-109.2
turbidity	7.73

last interval time 1155

parameter	result
temp	17.80
sp. cond.	1976
DO	0.89
pH	6.56
redox	-109.4
turbidity	6.15

Total number of sample containers	16
Analysis	modified and existing
Metals field filtered?	(yes/no)
Sample/general observations	clear / no odor

c:kinbu/fldatsht

502363

OWT ENVIROTECH
GROUNDWATER LOW FLOW SAMPLE DATA SHEET

Sample ID	GEI - 10G
Laboratory	Columbia Analytical Services
Lab sample ID	#027
Project Name and number	Kin-Buc Landfill 50235
Sample date	11-23-98
Field personnel	M. Colantuono, A. Licardi, D. Parsons
Oversight personnel	
Weather conditions	45-50°F clear slight breeze to 10-mph winds

Monitoring Well Information

Casing diameter & construction	4 inch PVC
Static water level & reference	1.85 TOC
Well bottom depth	14.50
Screened Interval	7-12 FBGS
Screened Interval volume	3.25 gal.

Monitoring Well Purge Data

Pump type and rate	Submersible / RediFlo 2 <0.50 l/min.
Purge/sample line construction	PEP Polyethylene
Pump decontaminated?	yes
Decontamination procedure	Di run cycle/alconox run cycle/Di run cycle
Purge start time and complete	(S) 1217 → (E) 1243
Volume purged	3.5 gallons

Periodic static water level monitoring

time	level	time	level
1221	2.4	1239	2.3
1227	2.4	1245	2.3
1233	2.3		

Well evacuated? (yes/no)

Sampling Data

Pump intake depth	11.5
Sample time	1244

Last three intervals - Water quality parameter results

3rd last interval time 1239

parameter	result
temp	16.23
sp. cond.	7273
DO	46.1
pH	6.49
redox	-148.5
turbidity	5.5

2nd last interval time 1242

parameter	result
temp	16.23
sp. cond.	7275
DO	46.1
pH	6.47
redox	-148.5
turbidity	5.7

last interval time 1245

parameter	result
temp	16.27
sp. cond.	7312
DO	46.1
pH	6.47
redox	-148.9
turbidity	5.6

Total number of sample containers	16
Analysis	modified and existing
Metals field filtered?	(yes/no)
Sample/general observations	clear no odor

c:kinbu/fldatsht

502364

OWT ENVIROTECH
GROUNDWATER LOW FLOW SAMPLE DATA SHEET

Sample ID: WE -10R
Laboratory: Columbia Analytical Services
Lab sample ID: #026
Project Name and number: Kin-Buc Landfill 50235
Sample date: 11-23-98
Field personnel: M. Colantuono, A. Licardi, D. Parsons
Oversight personnel:
Weather conditions: 45-50°F clear slight breeze to 10mph winds

Monitoring Well Information

Casing diameter & construction: 2 inch. stainless
Static water level & reference: 12.05 TOC
Well bottom depth: 41.90
Screened Interval: 38.5 - 43.5 FBGS
Screened Interval volume: 0.80 gal.

Monitoring Well Purge Data

Pump type and rate: Submersible /RediFlo2 <0.50 l/min.
Purge/sample line construction: PEP Polyethylene
Pump decontaminated?: yes
Decontamination procedure: Di run cycle/alconox run cycle/Di run cycle

Purge start time and complete: (s) 1104 → (c) 1135
Volume purged: 4 gallons

Periodic static water level monitoring

time	level	time	level
1111	15.90		
1120	16.0		
1129	16.2		

Well evacuated? (yes/no)

Sampling Data

Pump intake depth: 38.9
Sample time: 1136

Last three intervals - Water quality parameter results

3rd last interval time 1129

parameter	result
temp	18.28
sp. cond.	18486
DO	1.93
pH	6.81
redox	-74.0
turbidity	19

2nd last interval time 1132

parameter	result
temp	18.14
sp. cond.	18486
DO	1.91
pH	6.80
redox	-76.0
turbidity	18

last interval time 1135

parameter	result
temp	18.2
sp. cond.	18489
DO	1.91
pH	6.80
redox	-77.0
turbidity	18

Total number of sample containers: 16
Analysis: modified and existing

Metals field filtered? (yes/no)
Sample/general observations:

c:kinbu/fldatsht

502365

OWT ENVIROTECH
GROUNDWATER LOW FLOW SAMPLE DATA SHEET

Sample ID: WE-10S
Laboratory: Columbia Analytical Services
Lab sample ID: #024
Project Name and number: Kin-Buc Landfill 50235
Sample date: 11-23-98
Field personnel: M. Colantuono, A. Lizcardi, D. Parsons
Oversight personnel:
Weather conditions: 45-50°F clear slight breeze to 10mph winds

Monitoring Well Information

Casing diameter & construction: 2 inch PVC
Static water level & reference: 12.72 TOC
Well bottom depth: 32.80
Screened Interval: 26-31 FBGS
Screened Interval volume: 0.80 gal.

Monitoring Well Purge Data

Pump type and rate: Submersible/Redi Flo 2 < 0.50 l/min
Purge/sample line construction: PEP Polyethylene
Pump decontaminated?: yes
Decontamination procedure: Di run cycle/alconox run cycle/Di run cycle

Purge start time and complete: (s) 1306 → (c) 1336
Volume purged: 4 gallons

Periodic static water level monitoring

time	level	time	level
1311	13.44	1336	13.76
1317	13.72		
1326	13.80		

Well evacuated?: (yes/no)

Sampling Data

Pump intake depth: 29.8
Sample time: 1337

Last three intervals - Water quality parameter results

3rd last interval time 1329

parameter	result
temp	16.74
sp. cond.	19156
DO	.88
pH	6.42
redox	-87.0
turbidity	4.4

2nd last interval time 1332

parameter	result
temp	16.74
sp. cond.	19141
DO	.82
pH	6.42
redox	-87.2
turbidity	3.8

last interval time 1336

parameter	result
temp	16.81
sp. cond.	19191
DO	.82
pH	6.38
redox	-86.4
turbidity	3.5

Total number of sample containers: 16
Analysis: modified and existing

Metals field filtered?: (yes/no)
Sample/general observations: slightly brown, LFG odor

c:kinbu/fldatsht

502366

OWT ENVIROTECH
GROUNDWATER LOW FLOW SAMPLE DATA SHEET

Sample ID	WE-114 DR
Laboratory	Columbia Analytical Services
Lab sample ID	#025
Project Name and number	Kin-Buc Landfill 50235
Sample date	11-23-98
Field personnel	M. Colantuono, A. Lizcardi, D. Parsons
Oversight personnel	
Weather conditions	45-50°F clear slight breeze to 10-mph winds

Monitoring Well Information

Casing diameter & construction	2 inch PVC
Static water level & reference	16.88 TOC
Well bottom depth	44.60
Screened Interval	31-41 FBGS
Screened Interval volume	1.6 gal.

Monitoring Well Purge Data

Pump type and rate	Submersible / Redi-Flo 2 <0.50 l/min.
Purge/sample line construction	PEP Polyethylene
Pump decontaminated?	yes
Decontamination procedure	Di run cycle/alconox run cycle/Di run cycle
Purge start time and complete	(S) 1438 → (C) 1522
Volume purged	5.5 gal.

Periodic static water level monitoring

time	level	time	level
1446	20.10	1510	22.10
1452	20.10	1513	21.90
1501	21.24	1516	21.93

Well evacuated? (yes/no)

Sampling Data

Pump intake depth	41.8
Sample time	1523

Last three intervals - Water quality parameter results

3rd last interval time 1516

parameter	result
temp	16.80
sp. cond.	706
DO	.50
pH	6.57
redox	-65.8
turbidity	3.8

2nd last interval time 1519

parameter	result
temp	16.78
sp. cond.	701
DO	.49
pH	6.57
redox	-70.1
turbidity	3.3

last interval time 1522

parameter	result
temp	16.77
sp. cond.	701
DO	.49
pH	6.58
redox	-71.5
turbidity	3.3

Total number of sample containers	16
Analysis	modified and existing
Metals field filtered?	(yes/no)
Sample/general observations	no odor, slightly gray EB03 set #022 @ 1605

c:kinbu/fldatsht

502367

EMCON

502368

FIELD SAMPLING DATA SHEET

sample ID: RR 01
sample date/time: 11-22-98 1000
(lab) sample number: # 020
field personnel: D. Parsons
project: Kin Buc
project number: 15023-500.000
observer:
weather conditions(estimate wind,cloud,precip,humidity,temp): ~50°F clear - partly cloudy breeze

SAMPLE TYPE

- [ ] composite
- [x] grab
- [ ] groundwater
- [x] surface water
- [ ] soil
- [ ] sediment
- [ ] leachate
- [ ] industrial
- [ ] storm sewer
- [ ] gas
- [ ] other

MONITORING WELL DATA

N/A

casing diameter: ____ [ ] PVC [ ] steel [ ] other
static water level: ____ from [ ] well casing from [ ] protective casing
bottom depth: ____ from [ ] well casing from [ ] protective casing
static water level indicator type [ ] steel tape [ ] electronic [ ] other
linear conversion: ____ water volume in well: ____
well condition: ____

MONITORING WELL PURGE DATA

N/A

- [ ] submersible pump
- [ ] PVC bailer
- [ ] suction pump
- [ ] teflon bailer
- [ ] poly bailer
- [ ] poly cup
- [ ] other

dedicated purge equipment ? [ ] yes [ ] no
pumping rate: ____ elapsed time: ____
bail volume: ____ number of bails: ____
volume purged: ____ well volumes: ____
time purge complete: ____ well evacuated ? [ ] yes [ ] no

SAMPLING DATA

- [ ] pump
- [ ] PVC bailer
- [ ] poly bailer
- [ ] teflon bailer
- [ ] stainless bucket
- [ ] poly cup
- [ ] tedlar bag
- [x] direct
- [ ] hand corer
- [ ] hand auger
- [ ] stainless spoon
- [ ] split spoon
- [ ] other

dedicated sampling equipment ? [ ] yes [x] no
metals field filtered ? [ ] yes [x] no
depth of sample: Surface
sample containers: existing & modified 16 containers

PHYSICAL AND CHEMICAL DATA

odor ? [x] no [ ] yes
sediment ? [ ] no [ ] yes NA
color ? [x] no [ ] yes
[x] clear [ ] turbid [ ] sheen [ ] immiscible product
[ ] other

pH (SU): 7.30 temp (C): 9.25 Sp cond (omhos): 3326
ORP (mv): 144.8 turbidity (NTUs): 10.0 DO: 13.51
comments/remarks: Surface water samples

EMCON

FIELD SAMPLING DATA SHEET

502369

sample ID: RR02
sample date/time: 11-22-98 1145
(lab) sample number: #019
field personnel: D. Parsons
project: Kin Buc
project number: 15023-500.000
observer:
weather conditions(estimate wind,cloud,precip,humidity,temp): ~50°F clear - partly cloudy breeze

SAMPLE TYPE

- [ ] composite
- [x] grab
- [ ] groundwater
- [x] surface water
- [ ] soil
- [ ] sediment
- [ ] leachate
- [ ] industrial
- [ ] storm sewer
- [ ] gas
- [ ] other

MONITORING WELL DATA

N/A

casing diameter: ____ [ ] PVC [ ] steel [ ] other
static water level: ____ from [ ] well casing from [ ] protective casing
bottom depth: ____ from [ ] well casing from [ ] protective casing
static water level indicator type [ ] steel tape [ ] electronic [ ] other
linear conversion: ____ water volume in well: ____
well condition: ____

MONITORING WELL PURGE DATA

N/A

- [ ] submersible pump
- [ ] PVC bailer
- [ ] suction pump
- [ ] teflon bailer
- [ ] poly bailer
- [ ] poly cup
- [ ] other

dedicated purge equipment ? [ ] yes [ ] no
pumping rate: ____ elapsed time: ____
bail volume: ____ number of bails: ____
volume purged: ____ well volumes: ____
time purge complete: ____ well evacuated ? [ ] yes [ ] no

SAMPLING DATA

- [ ] pump
- [ ] PVC bailer
- [ ] poly bailer
- [ ] teflon bailer
- [ ] stainless bucket
- [ ] poly cup
- [ ] tedlar bag
- [x] direct
- [ ] hand corer
- [ ] hand auger
- [ ] stainless spoon
- [ ] split spoon
- [ ] other

dedicated sampling equipment ? [ ] yes [x] no
metals field filtered ? [ ] yes [x] no
depth of sample: SURFACE
sample containers: existing & modified 16 containers

PHYSICAL AND CHEMICAL DATA

odor ? [x] no [ ] yes
sediment ? [ ] no [ ] yes N/A
color ? [x] no [ ] yes
- [x] clear
- [ ] turbid
- [ ] sheen
- [ ] immiscible product
- [ ] other

pH (SU): 7.50 temp (C): 9.39 Sp cond (omhos): 8069
ORP (mv): 226.2 turbidity (NTUs): 9.1 DO: 12.05
comments/remarks: Surface water samples

EMCON

502370

FIELD SAMPLING DATA SHEET

sample ID: RR 03
sample date/time: 11-22-98 1315
(lab) sample number: #017
field personnel: D. Parsons
project: Kin Buc
project number: 15023-500.000
observer:
weather conditions(estimate wind,cloud,precip,humidity,temp): ~50°F clear - partly cloudy breeze

SAMPLE TYPE

- [ ] composite
- [x] grab
- [ ] groundwater
- [x] surface water
- [ ] soil
- [ ] sediment
- [ ] leachate
- [ ] industrial
- [ ] storm sewer
- [ ] gas
- [ ] other

MONITORING WELL DATA

N/A

casing diameter: ____ [ ] PVC [ ] steel [ ] other
static water level: ____ from [ ] well casing from [ ] protective casing
bottom depth: ____ from [ ] well casing from [ ] protective casing
static water level indicator type [ ] steel tape [ ] electronic [ ] other
linear conversion: ____ water volume in well: ____
well condition: ____

MONITORING WELL PURGE DATA

N/A

- [ ] submersible pump
- [ ] PVC bailer
- [ ] suction pump
- [ ] teflon bailer
- [ ] poly bailer
- [ ] poly cup
- [ ] other

dedicated purge equipment ? [ ] yes [ ] no
pumping rate: ____ elapsed time: ____
bail volume: ____ number of bails: ____
volume purged: ____ well volumes: ____
time purge complete: ____ well evacuated ? [ ] yes [ ] no

SAMPLING DATA

- [ ] pump
- [ ] PVC bailer
- [ ] poly bailer
- [ ] teflon bailer
- [ ] stainless bucket
- [ ] poly cup
- [ ] tedlar bag
- [x] direct
- [ ] hand corer
- [ ] hand auger
- [ ] stainless spoon
- [ ] split spoon
- [ ] other

dedicated sampling equipment ? [ ] yes [x] no
metals field filtered ? [ ] yes [x] no
depth of sample: surface
sample containers: existing & modified 16 containers

PHYSICAL AND CHEMICAL DATA

odor ? [x] no [ ] yes
sediment ? [ ] no [ ] yes N/A
color ? [x] no [ ] yes
[x] clear [ ] turbid [ ] sheen [ ] immiscible product
[ ] other

pH (SU): 7.38 temp (C): 9.04 Sp cond (omhos): 6390
ORP (mv): 240.1 turbidity (NTUs): 8.1 DO: 12.09
comments/remarks: Surface water samples

EMCON

502371

FIELD SAMPLING DATA SHEET

sample ID: RR 04
sample date/time: 11-22-98 1515
(lab) sample number: #018
field personnel: D. Parsons
project: Kin Buc
project number: 15023-500.000
observer:
weather conditions(estimate wind,cloud,precip,humidity,temp): ~50°F clear - partly cloudy breeze

SAMPLE TYPE

- [ ] composite
- [x] grab
- [ ] groundwater
- [ ] surface water
- [ ] soil
- [ ] sediment
- [ ] leachate
- [ ] industrial
- [ ] storm sewer
- [ ] gas
- [ ] other

MONITORING WELL DATA

casing diameter: N/A
- [ ] PVC
- [ ] steel
- [ ] other

static water level: from [ ] well casing from [ ] protective casing
bottom depth: from [ ] well casing from [ ] protective casing
static water level indicator type: [ ] steel tape [ ] electronic [ ] other
linear conversion:
water volume in well:
well condition:

MONITORING WELL PURGE DATA

N/A
- [ ] submersible pump
- [ ] PVC bailer
- [ ] suction pump
- [ ] teflon bailer
- [ ] poly bailer
- [ ] poly cup
- [ ] other

dedicated purge equipment ? [ ] yes [ ] no
pumping rate:
elapsed time:
bail volume:
number of bails:
volume purged:
well volumes:
time purge complete:
well evacuated ? [ ] yes [ ] no

SAMPLING DATA

- [ ] pump
- [ ] PVC bailer
- [ ] poly bailer
- [ ] teflon bailer
- [ ] stainless bucket
- [ ] poly cup
- [ ] tedlar bag
- [x] direct
- [ ] hand corer
- [ ] hand auger
- [ ] stainless spoon
- [ ] split spoon
- [ ] other

dedicated sampling equipment ? [ ] yes [x] no
metals field filtered ? [ ] yes [x] no
depth of sample: Surface
sample containers: existing & modified 16 containers

PHYSICAL AND CHEMICAL DATA

odor ? [x] no [ ] yes
sediment ? [ ] no [ ] yes N/A
color ? [x] no [ ] yes
- [x] clear
- [ ] turbid
- [ ] sheen
- [ ] immiscible product
- [ ] other

pH (SU): 7.35
temp (C): 9.72
Sp cond (omhos): 7848
ORP (mv): 254.6
turbidity (NTUs): 7.3
DO: 11.75
comments/remarks: Surface water samples

APPENDIX C

502372

APPENDIX C
OU1/OU2 1998 EQUIPMENT FIELD BLANK AND TRIP BLANK RESULTS - MODIFIED MONITORING

Appendix - C

Kin-Buc Landfill Operable Units 1 and 2
1998 Equipment, Field and Trip Blank Results

	EB-01	TB-01	FB-01	EB-02	TB-02	EB-03	TB-03	EB-04	TB-04	EB-05	TB-05	EB-06	TB-06	EB-07	TB-07	EB-08	TB-08
Volatiles (ug/l) *Dilution Factor*	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chloromethane	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
Bromomethane	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1
Vinyl Chloride	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6
Chloroethane	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
Methylene Chloride	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4
1,1-Dichloroethene	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,1-Dichloroethane	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4
Chloroform	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3
1,2-Dichloroethane	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92
1,1,1-Trichloroethane	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
Carbon tetrachloride	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Bromodichloromethane	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
1,2-Dichloropropane	<0.93	<0.93	<0.93	<0.93	<0.93	<0.93	<0.93	<0.93	<0.93	<0.93	<0.93	<0.93	<0.93	<0.93	<0.93	<0.93	<0.93
cis-1,3-Dichloropropene	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3
Trichloroethene	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4
Dibromochloromethane	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4
1,1,2-Trichloroethane	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4
Benzene	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4
trans-1,3-Dichloropropene	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3
Bromoform	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6
Tetrachloroethene	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3
1,1,2,2-Tetrachloroethane	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3
Toluene	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2	2
Chlorobenzene	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2
Ethylbenzene	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
Trichlorofluoromethane	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4
2-Chloroethylvinyl Ether	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2
Trans-1,2-Dichloroethene	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1

502374

B - Compound detected in associated blank.
E - Estimated value, exceeds calibration curve range.
J - Estimated value, less than detection limit.

Appendix - C

Kin-Buc Landfill Operable Units 1 and 2
1998 Equipment, Field and Trip Blank Results

	EB-01	TB-01	FB-01	EB-02	TB-02	EB-03	TB-03	EB-04	TB-04	EB-05	TB-05	EB-06	TB-06	EB-07	TB-07	EB-08	TB-08
Semi-Volatiles (ug/l) *Dilution Factor*	1	NA	1.04	1.02	NA	1	NA	1	NA	1	NA	1.11	NA	1	NA	1.11	NA
Phenol	<0.93	NA	<0.97	<0.95	NA	<0.93	NA	<0.93	NA	<0.93	NA	<1	NA	<0.93	NA	<1	NA
bis(2-Chloroethyl) Ether	<1.2	NA	<1.2	<1.2	NA	<1.2	NA	<1.2	NA	<1.2	NA	<1.3	NA	<1.2	NA	<1.3	NA
2-Chlorophenol	<1.2	NA	<1.2	<1.2	NA	<1.2	NA	<1.2	NA	<1.2	NA	<1.3	NA	<1.2	NA	<1.3	NA
1,3-Dichlorobenzene	<0.82	NA	<0.85	<0.84	NA	<0.82	NA	<0.82	NA	<0.82	NA	<0.91	NA	<0.82	NA	<0.91	NA
1,4-Dichlorobenzene	<0.92	NA	<0.96	<0.94	NA	<0.92	NA	<0.92	NA	<0.92	NA	<1	NA	<0.92	NA	<1	NA
1,2-Dichlorobenzene	<1.1	NA	<1.1	<1.1	NA	<1.1	NA	<1.1	NA	<1.1	NA	<1.2	NA	<1.1	NA	<1.2	NA
2,2'- oxybis(1-Chloropropane)	<0.95	NA	<0.99	<0.97	NA	<0.95	NA	<0.95	NA	<0.95	NA	<1.1	NA	<0.95	NA	<1.1	NA
N-Nitroso-di-n-propylamine	<1.2	NA	<1.2	<1.2	NA	<1.2	NA	<1.2	NA	<1.2	NA	<1.3	NA	<1.2	NA	<1.3	NA
Hexachloroethane	<0.9	NA	<0.94	<0.92	NA	<0.9	NA	<0.9	NA	<0.9	NA	<1	NA	<0.9	NA	<1	NA
Nitrobenzene	<1.3	NA	<1.4	<1.3	NA	<1.3	NA	<1.3	NA	<1.3	NA	<1.4	NA	<1.3	NA	<1.4	NA
Isophorone	<1.4	NA	<1.5	<1.4	NA	<1.4	NA	<1.4	NA	<1.4	NA	<1.6	NA	<1.4	NA	<1.6	NA
2-Nitrophenol	<1.4	NA	<1.5	<1.4	NA	<1.4	NA	<1.4	NA	<1.4	NA	<1.6	NA	<1.4	NA	<1.6	NA
2,4-Dimethylphenol	<3	NA	<3.1	<3.1	NA	<3	NA	<3	NA	<3	NA	<3.3	NA	<3	NA	<3.3	NA
2,4-Dichlorophenol	<3	NA	<3.1	<3.1	NA	<3	NA	<3	NA	<3	NA	<3.3	NA	<3	NA	<3.3	NA
1,2,4-Trichlorobenzene	<0.79	NA	<0.82	<0.81	NA	<0.79	NA	<0.79	NA	<0.79	NA	<0.88	NA	<0.79	NA	<0.88	NA
Naphthalene	<0.074	NA	<0.77	<0.75	NA	<0.074	NA	<0.074	NA	<0.074	NA	<0.82	NA	<0.074	NA	<0.82	NA
Hexachlorobutadiene	<1.1	NA	<1.1	<1.1	NA	<1.1	NA	<1.1	NA	<1.1	NA	<1.2	NA	<1.1	NA	<1.2	NA
bis-(2-Chloroethoxy)methane	<1.8	NA	<1.9	<1.8	NA	<1.8	NA	<1.8	NA	<1.8	NA	<2	NA	<1.8	NA	<2	NA
4-Chloro-3-Methylphenol	<2	NA	<2.1	<2.0	NA	<2	NA	<2	NA	<2	NA	<2.2	NA	<2	NA	<2.2	NA
Hexachlorocyclopentadiene	<1.1	NA	<1.1	<1.1	NA	<1.1	NA	<1.1	NA	<1.1	NA	<1.2	NA	<1.1	NA	<1.2	NA
2,4,6-Trichlorophenol	<1.3	NA	<1.4	<1.3	NA	<1.3	NA	<1.3	NA	<1.3	NA	<1.4	NA	<1.3	NA	<1.4	NA
2-Chloronaphthalene	<1.1	NA	<1.1	<1.1	NA	<1.1	NA	<1.1	NA	<1.1	NA	<1.2	NA	<1.1	NA	<1.2	NA
Dimethylphthalate	<2.8	NA	<2.9	<4.2	NA	<2.8	NA	<2.8	NA	<2.8	NA	<4.6	NA	<2.8	NA	<4.6	NA
Acenaphthylene	<1.2	NA	<1.2	<1.2	NA	<1.2	NA	<1.2	NA	<1.2	NA	<1.3	NA	<1.2	NA	<1.3	NA
2,6-Dinitrotoluene	<1.5	NA	<1.6	<1.5	NA	<1.5	NA	<1.5	NA	<1.5	NA	<1.7	NA	<1.5	NA	<1.7	NA
Acenaphthene	<1.2	NA	<1.2	<1.2	NA	<1.2	NA	<1.2	NA	<1.2	NA	<1.3	NA	<1.2	NA	<1.3	NA
2,4-Dinitrophenol	<2.6	NA	<2.7	<2.7	NA	<2.6	NA	<2.6	NA	<2.6	NA	<2.9	NA	<2.6	NA	<2.9	NA
4-Nitrophenol	<1	NA	<1	<1	NA	<1	NA	<1	NA	<1	NA	<1.1	NA	<1	NA	<1.1	NA
2,4-Dinitrotoluene	<1.2	NA	<1.2	<1.2	NA	<1.2	NA	<1.2	NA	<1.2	NA	<1.3	NA	<1.2	NA	<1.3	NA
Diethylphthalate	<2.8	NA	<2.9	<2.9	NA	<2.8	NA	<2.8	NA	<2.8	NA	<3.1	NA	<2.8	NA	<3.1	NA
4-Chlorophenyl-phenylether	<1.1	NA	<1.1	<1.1	NA	<1.1	NA	<1.1	NA	<1.1	NA	<1.2	NA	<1.1	NA	<1.2	NA

B - Compound detected in associated blank.

E - Estimated value, exceeds calibration curve range.

J - Estimated value, less than detection limit.

502375

Appendix - C

Kin-Buc Landfill Operable Units 1 and 2
1998 Equipment, Field and Trip Blank Results

	EB-01	TB-01	FB-01	EB-02	TB-02	EB-03	TB-03	EB-04	TB-04	EB-05	TB-05	EB-06	TB-06	EB-07	TB-07	EB-08	TB-08
Fluorene	<1.3	NA	<1.4	<1.3	NA	<1.3	NA	<1.3	NA	<1.3	NA	<1.4	NA	<1.3	NA	<1.4	NA
4,6-Dinitro-2-methylphenol	<3.3	NA	<3.4	<3.4	NA	<3.3	NA	<3.3	NA	<3.3	NA	<3.7	NA	<3.3	NA	<3.7	NA
N-Nitrosodiphenylamine	<1.5	NA	<1.6	<1.5	NA	<1.5	NA	<1.5	NA	<1.5	NA	<1.7	NA	<1.5	NA	<1.7	NA
4-Bromophenyl-phenylether	<0.83	NA	<0.86	<0.85	NA	<0.83	NA	<0.83	NA	<0.83	NA	<0.92	NA	<0.83	NA	<0.92	NA
Hexachlorobenzene	<1.3	NA	<1.4	<1.3	NA	<1.3	NA	<1.3	NA	<1.3	NA	<1.4	NA	<1.3	NA	<1.4	NA
Pentachlorophenol	<2.5	NA	<2.6	<2.6	NA	<2.5	NA	<2.5	NA	<2.5	NA	<2.8	NA	<2.5	NA	<2.8	NA
Phenanthrene	<1.2	NA	<1.2	<1.2	NA	<1.2	NA	<1.2	NA	<1.2	NA	<1.3	NA	<1.2	NA	<1.3	NA
Anthracene	<1.4	NA	<1.5	<1.4	NA	<1.4	NA	<1.4	NA	<1.4	NA	<1.6	NA	<1.4	NA	<1.6	NA
Di-n-butylphthalate	<2.5	NA	<2.6	<2.6	NA	<2.5	NA	2.6	NA	<2.5	NA	<2.8	NA	<2.5	NA	<2.8	NA
Fluoranthene	<1.4	NA	<1.5	<1.4	NA	<1.4	NA	<1.4	NA	<1.4	NA	<1.6	NA	<1.4	NA	<1.6	NA
Pyrene	<1.4	NA	<1.5	<1.4	NA	<1.4	NA	<1.4	NA	<1.4	NA	<1.6	NA	<1.4	NA	<1.6	NA
Butylbenzylphthalate	<4.1	NA	<4.3	<4.2	NA	<4.1	NA	<4.1	NA	<4.1	NA	<4.6	NA	<4.1	NA	<4.6	NA
3,3'-Dichlorobenzidine	<2.3	NA	<2.4	<2.3	NA	<2.3	NA	<2.3	NA	<2.3	NA	<2.6	NA	<2.3	NA	<2.6	NA
Benzo(a)anthrance	<1.3	NA	<1.4	<1.3	NA	<1.3	NA	<1.3	NA	<1.3	NA	<1.4	NA	<1.3	NA	<1.4	NA
Chrysene	<1.6	NA	<1.7	<1.6	NA	<1.6	NA	<1.6	NA	<1.6	NA	<1.8	NA	<1.6	NA	<1.8	NA
bis(2-Ethylhexyl)phthalate	<2.2	NA	<2.3	<2.2	NA	<2.2	NA	<2.2	NA	<2.2	NA	<2.4	NA	<2.2	NA	<2.4	NA
Di-n-octylphalate	<2.4	NA	<2.5	<2.4	NA	<2.4	NA	<2.4	NA	<2.4	NA	<2.7	NA	<2.4	NA	<2.7	NA
Benzo(b)fluoranthene	<1.4	NA	<1.5	<1.4	NA	<1.4	NA	<1.4	NA	<1.4	NA	<1.6	NA	<1.4	NA	<1.6	NA
Benzo(k)fluoranthene	<2.3	NA	<2.4	<2.3	NA	<2.3	NA	<2.3	NA	<2.3	NA	<2.6	NA	<2.3	NA	<2.6	NA
Benzo(a)pyrene	<1.4	NA	<1.4	<1.4	NA	<1.4	NA	<1.4	NA	<1.4	NA	<1.6	NA	<1.4	NA	<1.6	NA
Indeno(1,2,3-cd)pyrene	<1.1	NA	<1.1	<1.1	NA	<1.1	NA	<1.1	NA	<1.1	NA	<1.2	NA	<1.1	NA	<1.2	NA
Dibenzo(a,h)anthracene	<1.2	NA	<1.2	<1.2	NA	<1.2	NA	<1.2	NA	<1.2	NA	<1.3	NA	<1.2	NA	<1.3	NA
Benzo(g,h,i)perylene	<1.2	NA	<1.2	<1.2	NA	<1.2	NA	<1.2	NA	<1.2	NA	<1.3	NA	<1.2	NA	<1.3	NA
N-Nitrosodimethylamine	<0.69	NA	<0.72	<0.7	NA	<0.69	NA	<0.69	NA	<0.69	NA	<0.77	NA	<0.69	NA	<0.77	NA
Benzidine	<3.4	NA	<3.5	<3.5	NA	<3.4	NA	<3.4	NA	<3.4	NA	<3.8	NA	<3.4	NA	<3.8	NA
1,2-Diphenylhydrazine	<1.4	NA	<1.5	<1.4	NA	<1.4	NA	<1.4	NA	<1.4	NA	<1.6	NA	<1.4	NA	<1.6	NA

502376

B - Compound detected in associated blank.
E - Estimated value, exceeds calibration curve range.
J - Estimated value, less than detection limit.

Appendix - C

Kin-Buc Landfill Operable Units 1 and 2
1998 Equipment, Field and Trip Blank Results

	EB-01	TB-01	FB-01	EB-02	TB-02	EB-03	TB-03	EB-04	TB-04	EB-05	TB-05	EB-06	TB-06	EB-07	TB-07	EB-08	TB-08
Pesticide/PCB (ug/l) *Dilution Factor*	1	NA	1	1.05	NA	1	NA	1.05	NA	1.08	NA	1.11	NA	1	NA	1.04	NA
alpha-BHC	<0.05	NA	<0.05	<0.053	NA	<0.05	NA	<0.053	NA	<0.054	NA	<0.056	NA	<0.053	NA	<0.052	NA
beta-BHC	<0.05	NA	<0.05	<0.053	NA	<0.05	NA	<0.053	NA	<0.054	NA	<0.056	NA	<0.053	NA	<0.052	NA
delta-BHC	<0.05	NA	<0.05	<0.053	NA	<0.05	NA	<0.053	NA	<0.054	NA	<0.056	NA	<0.053	NA	<0.052	NA
gamma-BHC (Lindane)	<0.05	NA	<0.05	<0.053	NA	<0.05	NA	<0.053	NA	<0.054	NA	<0.056	NA	<0.053	NA	<0.052	NA
Heptachlor	<0.05	NA	<0.05	<0.053	NA	<0.05	NA	<0.053	NA	<0.054	NA	<0.056	NA	<0.053	NA	<0.052	NA
Aldrin	<0.05	NA	<0.05	<0.053	NA	<0.05	NA	<0.053	NA	<0.054	NA	<0.056	NA	<0.053	NA	<0.052	NA
Heptachlor Epoxide	<0.05	NA	<0.05	<0.053	NA	<0.05	NA	<0.053	NA	<0.054	NA	<0.056	NA	<0.053	NA	<0.052	NA
Endosulfan 1	<0.05	NA	<0.05	<0.053	NA	<0.05	NA	<0.053	NA	<0.054	NA	<0.056	NA	<0.053	NA	<0.052	NA
Dieldrin	<0.05	NA	<0.05	<0.053	NA	<0.05	NA	<0.053	NA	<0.054	NA	<0.056	NA	<0.053	NA	<0.052	NA
4,4'-DDE	<0.05	NA	<0.05	<0.053	NA	<0.05	NA	<0.053	NA	<0.054	NA	<0.056	NA	<0.053	NA	<0.052	NA
Endrin	<0.10	NA	<0.10	<0.053	NA	<0.10	NA	<0.053	NA	<0.054	NA	<0.056	NA	<0.053	NA	<0.052	NA
Endosulfan 2	<0.10	NA	<0.10	<0.11	NA	<0.10	NA	<0.11	NA	<0.11	NA	<0.11	NA	<0.11	NA	<0.1	NA
4,4'-DDD	<0.05	NA	<0.05	<0.053	NA	<0.05	NA	<0.053	NA	<0.054	NA	<0.056	NA	<0.053	NA	<0.052	NA
Endosulfan Sulfate	<0.10	NA	<0.10	<0.11	NA	<0.10	NA	<0.11	NA	<0.11	NA	<0.11	NA	<0.11	NA	<0.1	NA
4,4'-DDT	<0.10	NA	<0.10	<0.11	NA	<0.10	NA	<0.11	NA	<0.11	NA	<0.11	NA	<0.11	NA	<0.1	NA
Methoxychlor		NA			NA		NA		NA		NA		NA		NA		NA
Endrin Ketone		NA			NA		NA		NA		NA		NA		NA		NA
Endrin Aldehyde	<0.10	NA	<0.10	<0.11	NA	<0.10	NA	<0.11	NA	<0.11	NA	<0.11	NA	<0.11	NA	<0.1	NA
alpha-Chlordane		NA			NA		NA		NA		NA		NA		NA		NA
gamma-Chlordane		NA			NA		NA		NA		NA		NA		NA		NA
Toxaphene	<1.0	NA	<1.0	<1.1	NA	<1.0	NA	<1.1	NA	<1.1	NA	<1.1	NA	<1.1	NA	<1	NA
Technical Chlordane	<0.2	NA	<0.2	<0.21	NA	<0.2	NA	<0.21	NA	<0.22	NA	<0.22	NA	<0.21	NA	<0.21	NA
Aroclor-1016	<0.5	NA	<0.5	<0.53	NA	<0.5	NA	<0.53	NA	<0.54	NA	<0.56	NA	<0.53	NA	<0.52	NA
Aroclor-1221	<0.5	NA	<0.5	<0.53	NA	<0.5	NA	<0.53	NA	<0.54	NA	<0.56	NA	<0.53	NA	<0.52	NA
Aroclor-1232	<0.5	NA	<0.5	<0.53	NA	<0.5	NA	<0.53	NA	<0.54	NA	<0.56	NA	<0.53	NA	<0.52	NA
Aroclor-1242	<0.5	NA	<0.5	<0.53	NA	<0.5	NA	<0.53	NA	<0.54	NA	<0.56	NA	<0.53	NA	<0.52	NA
Aroclor-1248	<0.5	NA	<0.5	<0.53	NA	<0.5	NA	<0.53	NA	<0.54	NA	<0.56	NA	<0.53	NA	<0.52	NA
Aroclor-1254	<0.5	NA	<0.5	<0.53	NA	<0.5	NA	<0.53	NA	<0.54	NA	<0.56	NA	<0.53	NA	<0.52	NA
Aroclor-1260	<0.5	NA	<0.5	<0.53	NA	<0.5	NA	<0.53	NA	<0.54	NA	<0.56	NA	<0.53	NA	<0.52	NA

B - Compound detected in associated blank.
E - Estimated value, exceeds calibration curve range.
J - Estimated value, less than detection limit.

502377

Appendix - C

Kin-Buc Landfill Operable Units 1 and 2
1998 Equipment, Field and Trip Blank Results

	EB-01	TB-01	FB-01	EB-02	TB-02	EB-03	TB-03	EB-04	TB-04	EB-05	TB-05	EB-06	TB-06	EB-07	TB-07	EB-08	TB-08
Dissolved Metals (ug/l)																	
Antimony	<60	NA	<60	<60	NA	<60	NA	<60	NA	<60	NA	<60	NA	<60	NA	<60	NA
Arsenic	<10	NA	<10	<10	NA	<10	NA	<10	NA	<10	NA	<10	NA	<10	NA	<10	NA
Beryllium	<5	NA	<5	<5	NA	<5	NA	<5	NA	<5	NA	<5	NA	<5	NA	<5	NA
Barium	<20	NA	<20	<20	NA	<20	NA	<20	NA	<20	NA	283	NA	<20	NA	<20	NA
Cadmium	<5	NA	<5	<5	NA	<5	NA	<5	NA	<5	NA	<5	NA	<5	NA	<5	NA
Lead	<5	NA	<5	<5	NA	<5	NA	<5	NA	<5	NA	<5	NA	<5	NA	<5	NA
Manganese	<10	NA	<10	<10	NA	<10	NA	<10	NA	<10	NA	<10	NA	<10	NA	<10	NA
Mercury	<0.3	NA	<0.3	<0.3	NA	<0.3	NA	<0.3	NA	<0.3	NA	<0.3	NA	<0.3	NA	<0.3	NA
Nickel	<40	NA	<40	<40	NA	<40	NA	<40	NA	<40	NA	<40	NA	<40	NA	<40	NA
Vanadium	<50	NA	<50	<50	NA	<50	NA	<50	NA	<50	NA	<50	NA	<50	NA	<50	NA
Zinc	<10	NA	<10	<10	NA	<10	NA	<10	NA	<10	NA	<10	NA	<10	NA	<10	NA
General Chemistry (mg/l)																	
BOD	<2	NA	<2	58.9	NA	<2	NA	<2	NA	<2	NA	<2	NA	<2	NA	<2	NA
COD	5.75	NA	<5	11.20	NA	<5	NA	<5	NA	<5	NA	<5	NA	<5	NA	<5	NA
Chloride	<1	NA	<1	<1	NA	<1	NA	<1	NA	<1	NA	<1	NA	<1	NA	<1	NA
Nitrate, Nitrogen	<0.5	NA	<0.5	<0.5	NA	0.79	NA	<0.5	NA	<0.5	NA	<0.5	NA	<0.5	NA	<0.5	NA
Phenols	<0.005	NA	<0.005	<0.005	NA	<0.005	NA	<0.005	NA	<0.005	NA	<0.005	NA	<0.005	NA	<0.005	NA
Total Cyanide	<0.01	NA	<0.01	<0.01	NA	<0.01	NA	<0.01	NA	<0.01	NA	<0.01	NA	<0.01	NA	<0.01	NA
Total Dissolved Solids	<10.0	NA	<10.0	22	NA	<10.0	NA	11	NA	<10	NA	<10	NA	<10	NA	<10	NA
Total Organic Carbon	1.77	NA	<1	12.4	NA	<1	NA	<1	NA	1.29	NA	<1	NA	<1	NA	<1	NA
Total Organic Halides ***(ppm)***	120	NA	47	27	NA	470	NA	400	NA	130	NA	130	NA	68	NA	150	NA

502378

B - Compound detected in associated blank.
E - Estimated value, exceeds calibration curve range.
J - Estimated value, less than detection limit.

APPENDIX D

502379

APPENDIX D
OU1/OU2 1998 DUPLICATE SAMPLE COMPARISON - MODIFIED MONITORING

Appendix D

Kin-Buc Landfill Operable Units 1 and 2
1998 Duplicate Sample Comparison

	GEI-6S	W-99(GEI6S)	W-5R	W-101(5R)
Volatiles (ug/l) *Dilution Factor*	1	1	1	1
Acrolein	<28	<28	<28	<28
Acrylonitrile	<31	<31	<31	<31
Chloromethane	<1.8	<1.8	<1.8	<1.8
Bromomethane	<2.1	<2.1	<2.1	<2.1
Vinyl Chloride	1.6	1.6	2.9	2.9
Chloroethane	<1.5	<1.5	<1.5	1.6
Methylene Chloride	2.8	2.8	1.5	1.5
1,1-Dichloroethene	<2	<2	<2	<2
1,1-Dichloroethane	<2.4	<2.4	<2.4	<2.4
Chloroform	<1.3	<1.3	<1.3	<1.3
1,2-Dichloroethane	<0.92	<0.92	<0.92	<0.92
1,1,1-Trichloroethane	<1.8	<1.8	<1.8	<1.8
Carbon tetrachloride	<2	<2	<2	<2
Bromodichloromethane	<1.1	<1.1	<1.1	<1.1
1,2-Dichloropropane	<0.93	<0.93	<0.93	<0.93
cis-1,3-Dichloropropene	<1.3	<1.3	<1.3	<1.3
Trichloroethene	<2.4	<2.4	<2.4	<2.4
Dibromochloromethane	<1.4	<1.4	<1.4	<1.4
1,1,2-Trichloroethane	<1.4	<1.4	<1.4	<1.4
Benzene	38	58	4	3.8
trans-1,3-Dichloropropene	<1.3	<1.3	<1.3	<1.3
Bromoform	<2.6	<2.6	<2.6	<2.6
Tetrachloroethene	<2.3	<2.3	<2.3	<2.3
1,1,2,2-Tetrachloroethane	<2.3	<2.3	<2.3	<2.3
Toluene	<2.0	<2.0	<2.0	<2.0
Chlorobenzene	72	13	7.6	7.5
Ethylbenzene	<1.5	<1.5	<1.5	<1.5
Trichlorofluoromethane	<1.4	<1.4	<1.4	<1.4
2-Chloroethylvinyl Ether	<5.2	<5.2	<5.2	<5.2
Trans-1,2-Dichloroethene	<2.1	<2.1	<2.1	<2.1

B - Compound detected in associated blank.
E - Estimated value, exceeds calibration curve range.
J - Estimated value, less than detection limit.

502381

Appendix D

Kin-Buc Landfill Operable Units 1 and 2
1998 Duplicate Sample Comparison

	GEI-6S	W-99(GEI6S)	W-5R	W-101(5R)
Semi-Volatiles (ug/l) *Dilution Factor*	1.05	1	1.05	1
Phenol	<0.98	<0.93	<0.98	<0.93
bis(2-Chloroethyl) Ether	<1.3	<1.2	<1.3	<1.2
2-Chlorophenol	<1.3	<1.2	<1.3	<1.2
1,3-Dichlorobenzene	<0.86	<0.82	<0.86	<0.82
1,4-Dichlorobenzene	<0.97	<0.92	<0.97	<0.92
1,2-Dichlorobenzene	<1.2	<1.1	<1.2	<1.1
2,2'- oxybis(1-Chloropropane)	<1	<0.95	<1	<0.95
N-Nitroso-di-n-propylamine	<1.3	<1.2	<1.3	<1.2
Hexachloroethane	<0.95	<0.9	<0.95	<0.9
Nitrobenzene	<1.4	<1.3	<1.4	<1.3
Isophorone	<1.5	<1.4	<1.5	<1.4
2-Nitrophenol	<1.5	<1.4	<1.5	<1.4
2,4-Dimethylphenol	<3.2	<3	<3.2	<3
2,4-Dichlorophenol	<3.2	<3	<3.2	<3
1,2,4-Trichlorobenzene	<0.83	<0.79	<0.83	<0.79
Naphthalene	3.1	1.4	<0.78	<0.74
Hexachlorobutadiene	<1.2	<1.1	<1.2	<1.1
bis-(2-Chloroethoxy)methane	<1.9	<1.8	<1.9	<1.8
4-Chloro-3-Methylphenol	<2.1	<2.0	<2.1	<2.0
Hexachlorocyclopentadiene	<1.2	<1.1	<1.2	<1.1
2,4,6-Trichlorophenol	<1.4	<1.3	<1.4	<1.3
2-Chloronaphthalene	<1.2	<1.1	<1.2	<1.1
Dimethylphthalate	<4.3	<4.1	<4.3	<4.1
Acenaphthylene	<1.3	<1.2	<1.3	<1.2
2,6-Dinitrotoluene	<1.6	<1.5	<1.6	<1.5
Acenaphthene	<1.3	<1.2	<1.3	<1.2
2,4-Dinitrophenol	<2.7	<2.6	<2.7	<2.6
4-Nitrophenol	<1.1	<1	<1.1	<1
2,4-Dinitrotoluene	<1.6	<1.2	<1.6	<1.2
Diethylphthalate	<2.9	<2.8	<2.9	<2.8
4-Chlorophenyl-phenylether	<1.2	<1.1	<1.2	<1.1
Fluorene	<1.4	<1.3	<1.4	<1.3
4,6-Dinitro-2-methylphenol	<3.5	<3.3	<3.5	<3.3
N-Nitrosodiphenylamine	<1.6	<1.5	<1.6	<1.5
4-Bromophenyl-phenylether	<0.87	<0.83	<0.87	<0.83
Hexachlorobenzene	<0.87	<1.3	<0.87	<1.3
Pentachlorophenol	<2.6	<2.5	<2.6	<2.5
Phenanthrene	<1.3	<1.2	<1.3	<1.2
Anthracene	<1.5	<1.4	<1.5	<1.4
Di-n-butylphthalate	<1.6	<2.5	<1.6	<2.5
Fluoranthene	<1.5	<1.4	<1.5	<1.4

502382

B - Compound detected in associated blank.
E - Estimated value, exceeds calibration curve range.
J - Estimated value, less than detection limit.

Appendix D

Kin-Buc Landfill Operable Units 1 and 2
1998 Duplicate Sample Comparison

	GEI-6S	W-99(GEI6S)	W-5R	W-101(5R)
Pyrene	<1.5	<1.4	<1.5	<1.4
Butylbenzylphthalate	<4.3	<4.1	<4.3	<4.1
3,3'-Dichlorobenzidine	<2.4	<2.3	<2.4	<2.3
Benzo(a)anthrance	<1.4	<1.3	<1.4	<1.3
Chrysene	<1.7	<1.6	<1.7	<1.6
bis(2-Ethylhexyl)phthalate	<2.3	<2.2	<2.3	<2.2
Di-n-octylphalate	<2.5	<2.4	<2.5	<2.4
Benzo(b)fluoranthene	<1.5	<1.4	<1.5	<1.4
Benzo(k)fluoranthene	<2.4	<2.3	<2.4	<2.3
Benzo(a)pyrene	<1.5	<1.4	<1.5	<1.4
Indeno(1,2,3-cd)pyrene	<1.2	<1.1	<1.2	<1.1
Dibenzo(a,h)anthracene	<1.3	<1.2	<1.3	<1.2
Benzo(g,h,i)perylene	<1.3	<1.2	<1.3	<1.2
N-Nitrosodimethylamine	<0.72	<0.69	<0.72	<0.69
Benzidine	<3.6	<3.4	<3.6	<3.4
1,2-Diphenylhydrazine	<1.5	<1.4	<1.5	<1.4

B - Compound detected in associated blank.
E - Estimated value, exceeds calibration curve range.
J - Estimated value, less than detection limit.

Appendix D

Kin-Buc Landfill Operable Units 1 and 2
1998 Duplicate Sample Comparison

	GEI-6S	W-99(GEI6S)	W-5R	W-101(5R)
Pesticide/PCB (ug/l) *Dilution Factor*	1	1.11	1.06	1
alpha-BHC	<0.05	<0.056	<0.053	<0.05
beta-BHC	<0.05	<0.056	<0.053	<0.05
delta-BHC	<0.05	<0.056	<0.053	<0.05
gamma-BHC (Lindane)	<0.05	<0.056	<0.053	<0.05
Heptachlor	<0.05	<0.056	<0.053	<0.05
Aldrin	<0.05	<0.056	<0.053	<0.05
Heptachlor Epoxide	<0.05	<0.056	<0.053	<0.05
Alpha-Endosulfan	<0.05	<0.056	<0.053	<0.05
Dieldrin	<0.05	<0.056	<0.053	<0.05
4,4'-DDE	<0.05	<0.056	<0.053	<0.05
Endrin	<0.05	<0.056	<0.053	<0.05
Beta-Endosulfan	<0.1	<0.11	<0.11	<0.1
4,4'-DDD	<0.05	<0.056	<0.053	<0.05
Endosulfan Sulfate	<0.1	<0.11	<0.11	<0.1
4,4'-DDT	<0.1	<0.11	<0.11	<0.1
Endrin Aldehyde	<0.1	<0.11	<0.11	<0.1
Toxaphene	<1	<1.1	<1.1	<1
Chlordane	<0.2	<0.22	<0.21	<0.2
Aroclor-1016	<0.5	<0.56	<0.53	<0.5
Aroclor-1221	<0.5	<0.56	<0.53	<0.5
Aroclor-1232	<0.5	<0.56	<0.53	<0.5
Aroclor-1242	<0.5	<0.56	<0.53	<0.5
Aroclor-1248	<0.5	<0.56	<0.53	<0.5
Aroclor-1254	<0.5	<0.56	<0.53	<0.5
Aroclor-1260	<0.5	<0.56	<0.53	<0.5

B - Compound detected in associated blank.
E - Estimated value, exceeds calibration curve range.
J - Estimated value, less than detection limit.

502384

Appendix D

Kin-Buc Landfill Operable Units 1 and 2
1998 Duplicate Sample Comparison

	GEI-6S	W-99(GEI6S)	W-5R	W-101(5R)
Dissolved Metals (ug/l)				
Antimony	<60	<60	<60	<60
Arsenic	11.8	18.4	<10	<10
Beryllium	<5	<5	<5	<5
Barium	1730	709	956	525
Cadmium	<5	<5	<5	<5
Lead	<5	<5	<5	<5
Manganese	1070	356	1420	1450
Mercury	<0.3	<0.3	<0.3	<0.3
Nickel	<40	<40	<40	<40
Vanadium	<50	<50	<50	<50
Zinc	186	935	116	<10
General Chemistry (mg/l)				
BOD	9.18	30.7	10.2	10.7
COD	280 B	304 B	272	281
Chloride	4600	511	5130	5230
Nitrate, Nitrogen	<0.5	<0.5	<0.5	<0.5
Phenols	<0.005	0.058	<0.005	<0.01
Total Cyanide	<0.01	<0.01	<0.01	<0.01
Total Dissolved Solids	8350	1670	8880	9090
Total Organic Carbon	17.7 B	71.5 B	16.3	16.7
Total Organic Halides ***(ppm)***	1300 B	240 B	6600 B	2600 B

B - Compound detected in associated blank.
E - Estimated value, exceeds calibration curve range.
J - Estimated value, less than detection limit.

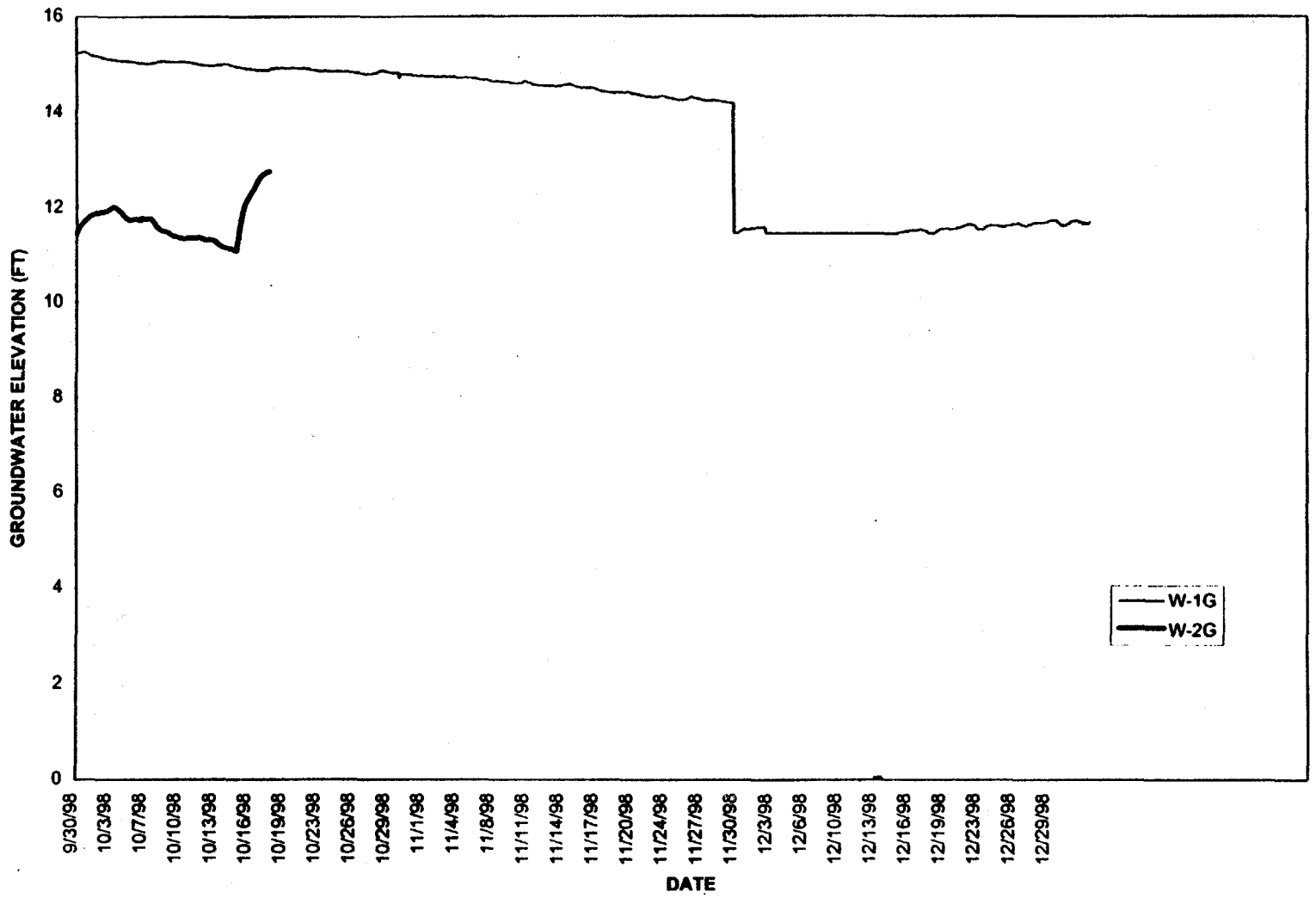
502385

APPENDIX E

502386

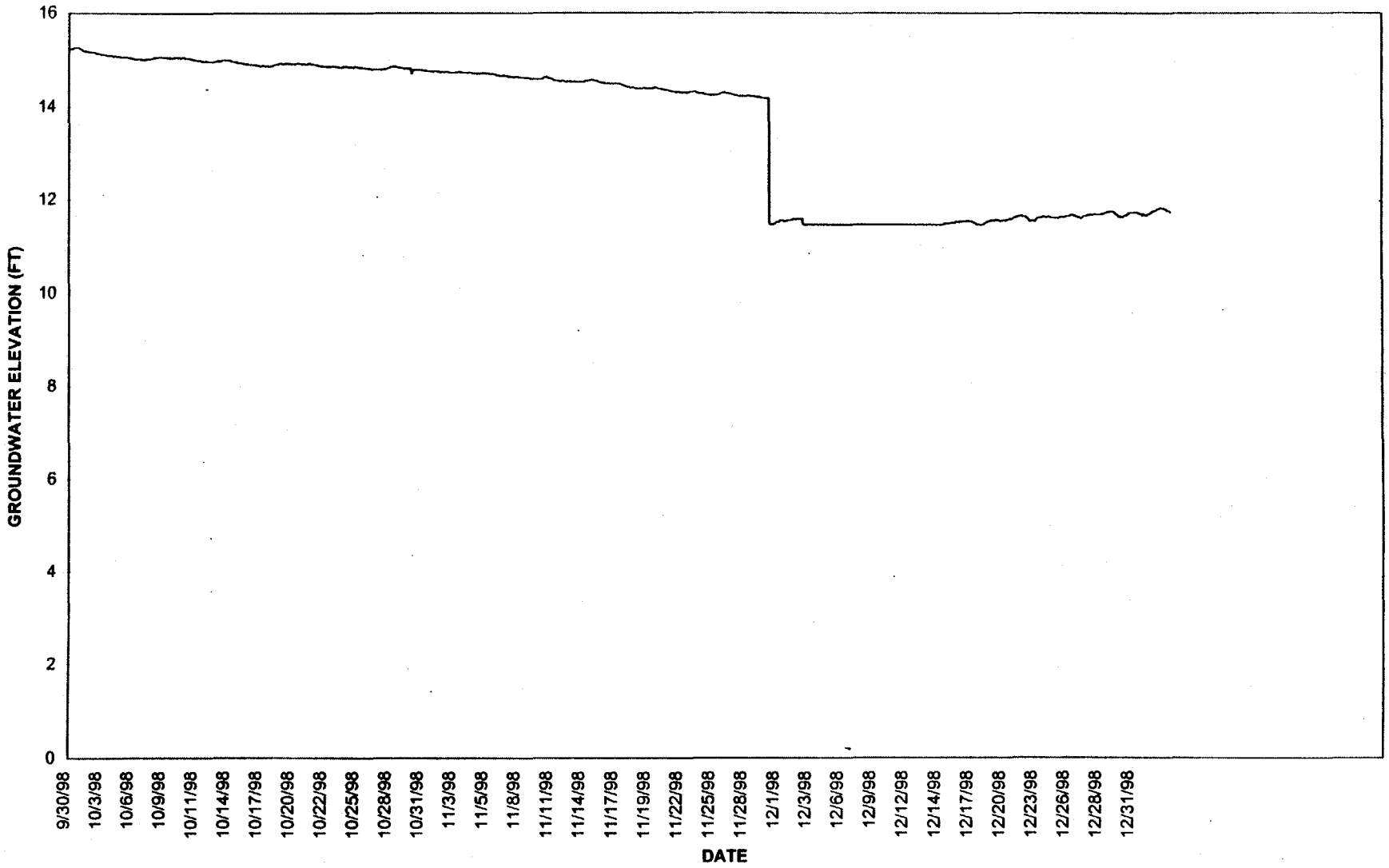
APPENDIX E
OU1/OIL SEEPS REFUSE WELLS CONTINUOUS WATER LEVEL MONITORING HYDROGRAPHS

KIN-BUC LANDFILL GROUNDWATER ELEVATIONS ACROSS SLURRY WALL IN THE REFUSE UNIT AT TRANSECT LOCATION NO. 1



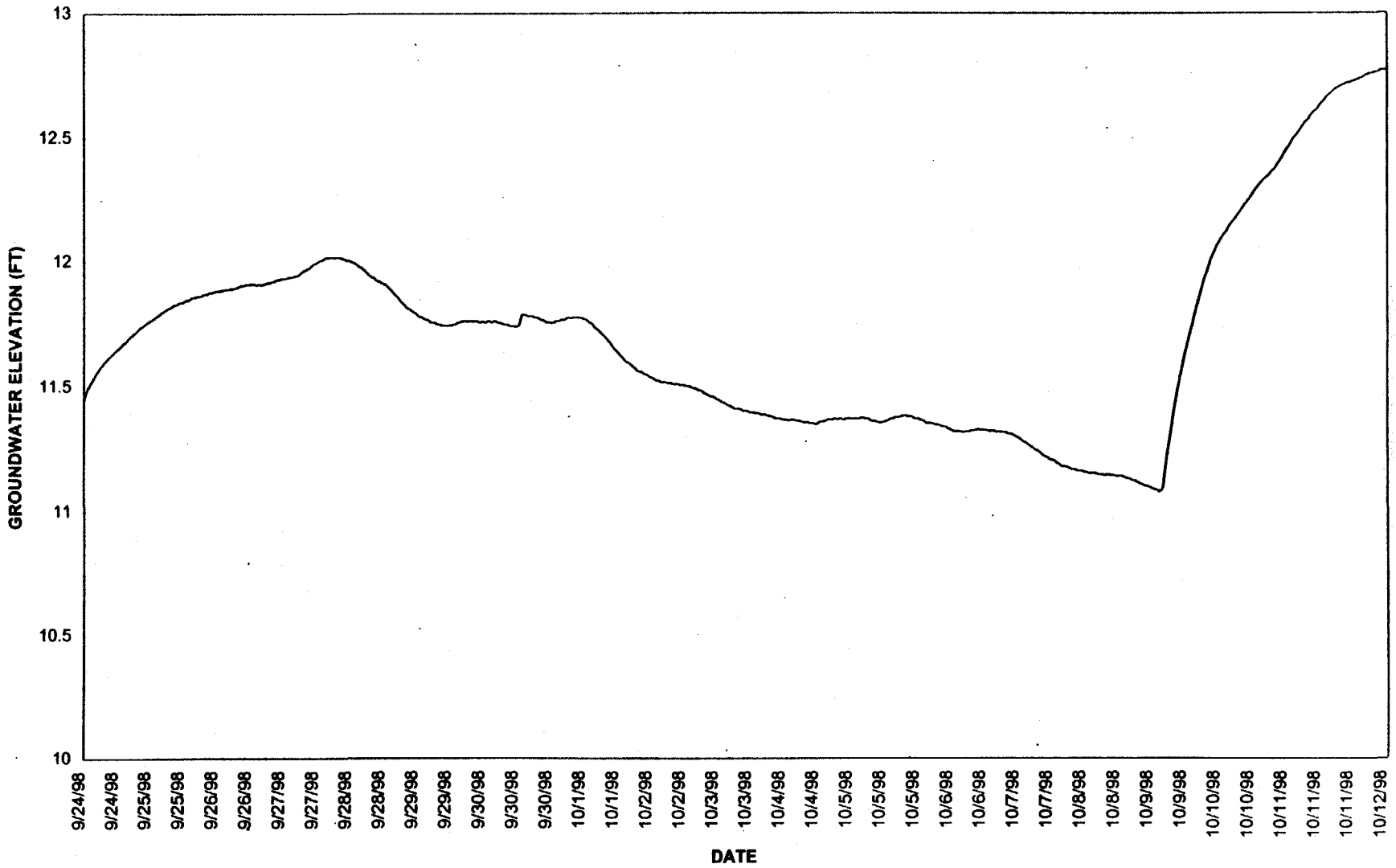
502388

KIN-BUC LANDFILL GROUNDWATER ELEVATION HYDROGRAPH 1G REFUSE UNIT



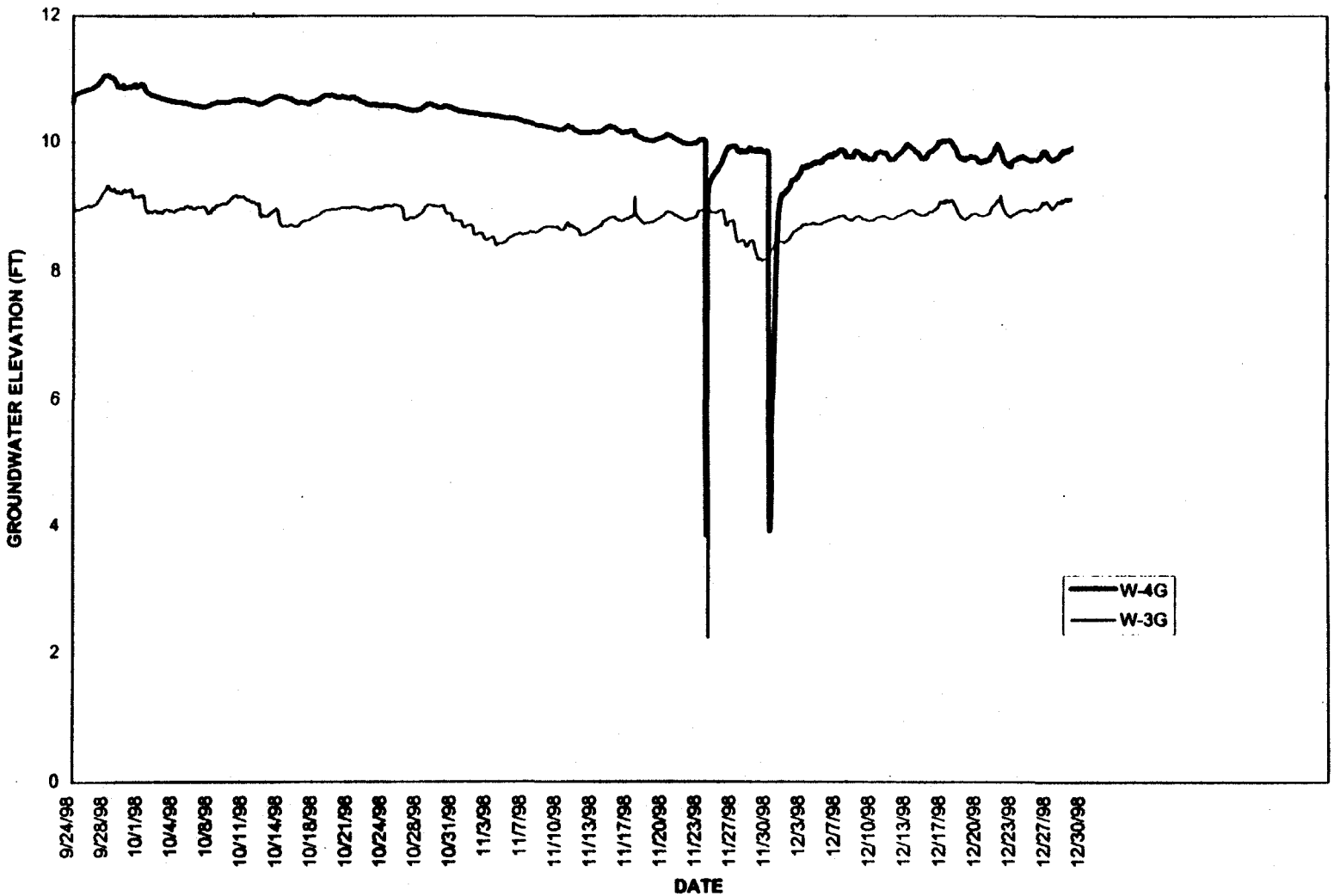
502389

KIN-BUC LANDFILL GROUNDWATER ELEVATION HYDROGRAPH 2G REFUSE UNIT



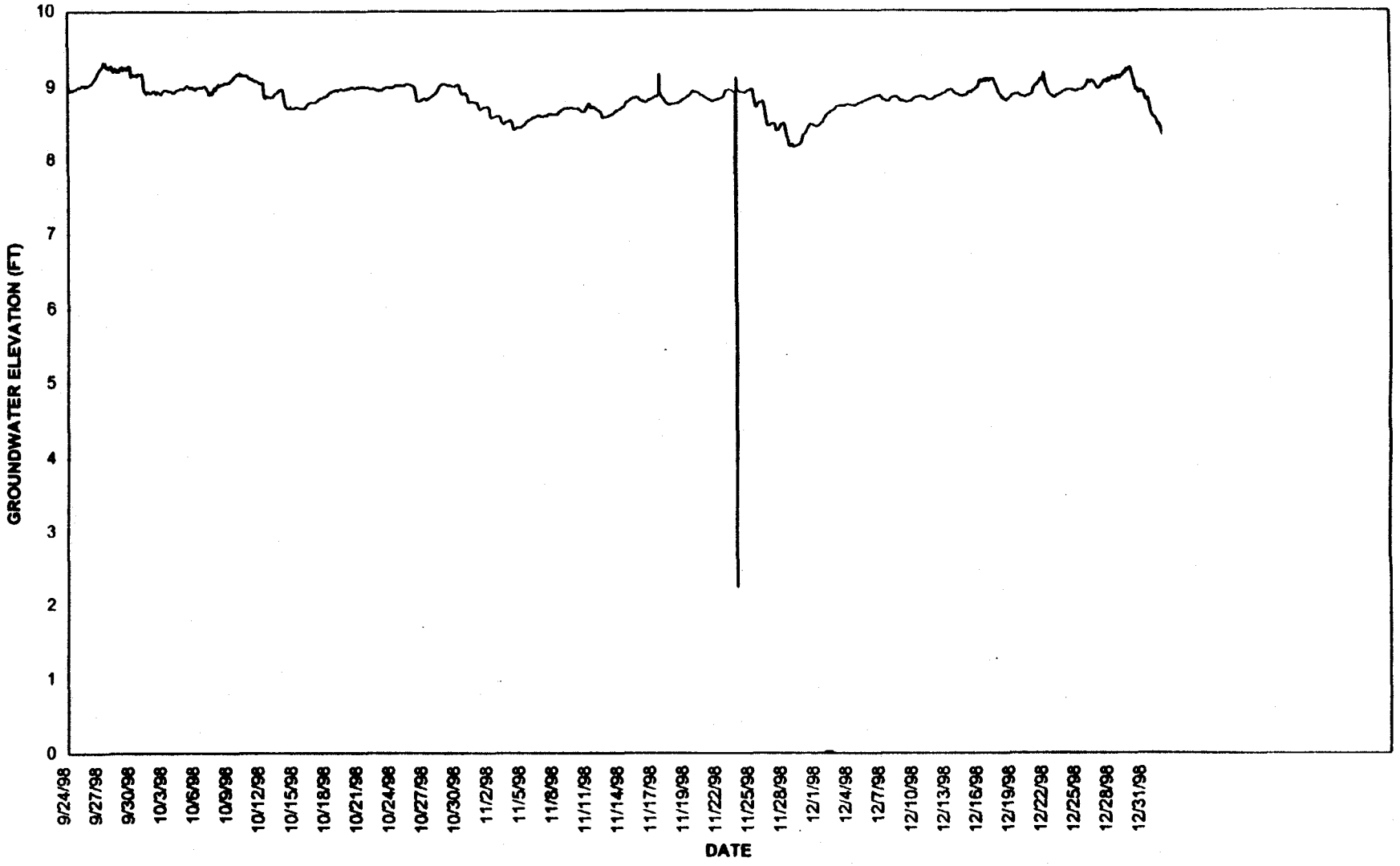
502390

KIN-BUC LANDFILL GROUNDWATER ELEVATIONS ACROSS SLURRY WALL IN REFUSE UNIT AT TRANSECT LOCATION NO. 2



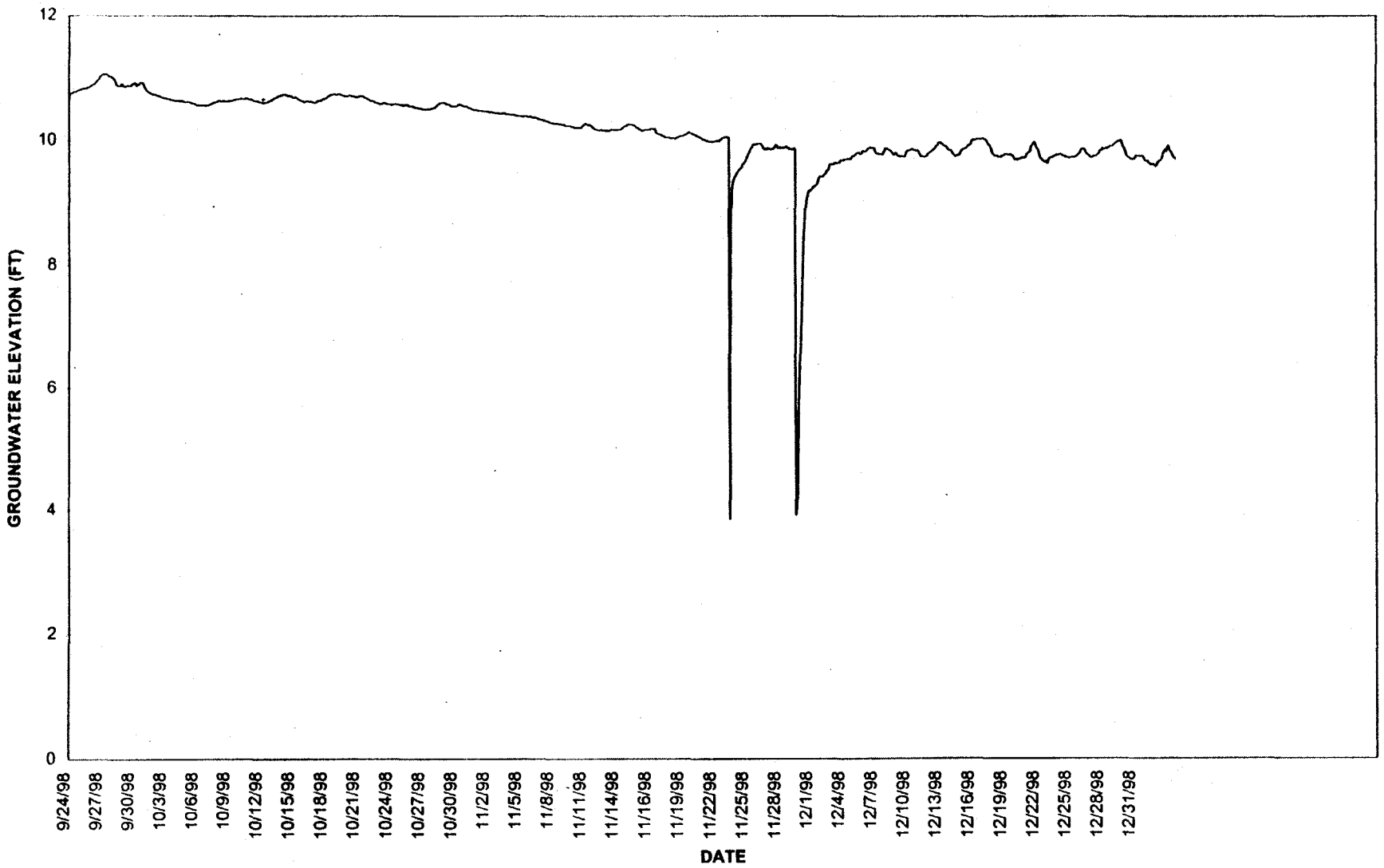
502391

KIN-BUC LANDFILL GROUDWATER ELEVATION HYDROGRAPH 3G REFUSE UNIT



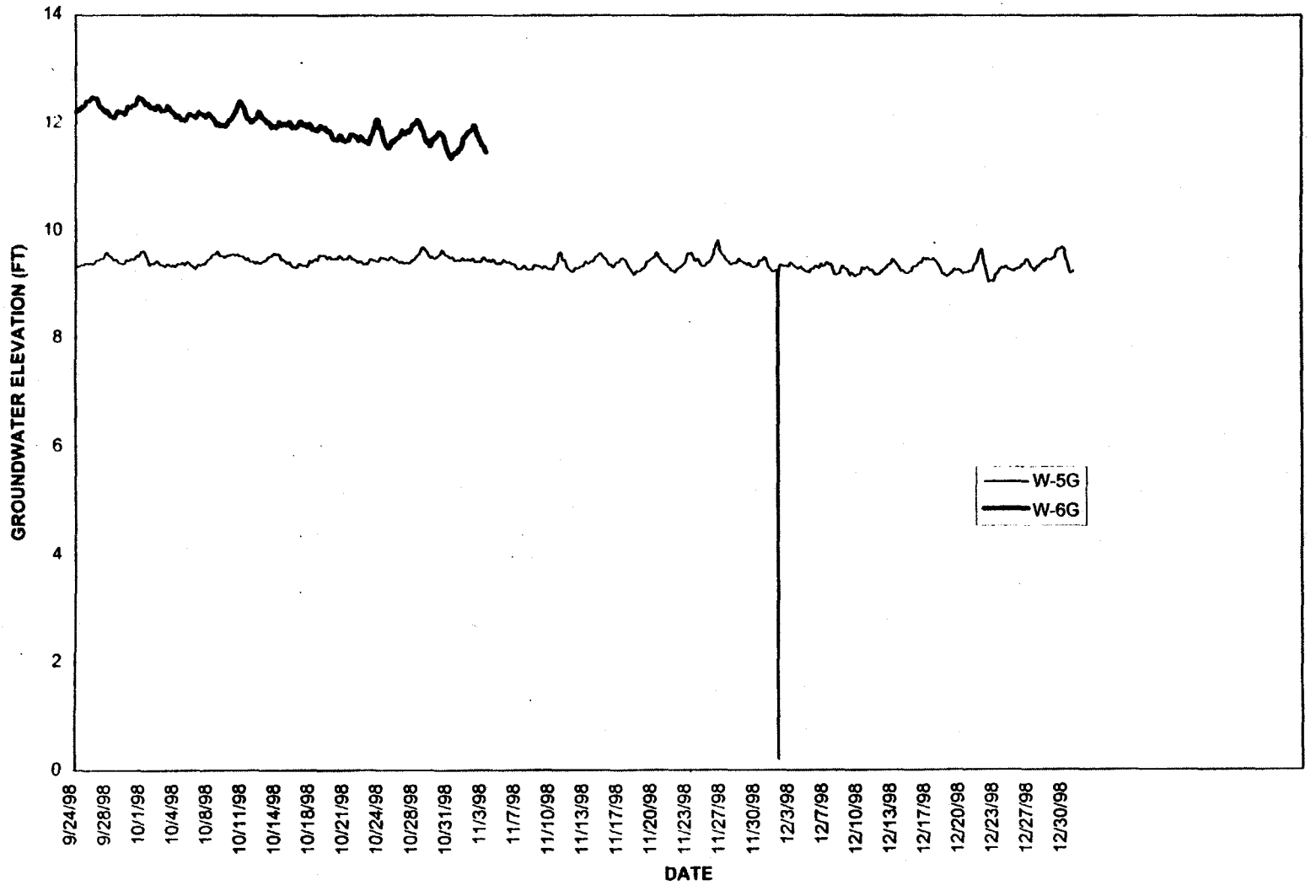
502392

KIN-BUC LANDFILL GROUNDWATER ELEVATION HYDROGRAPH 4G REFUSE UNIT



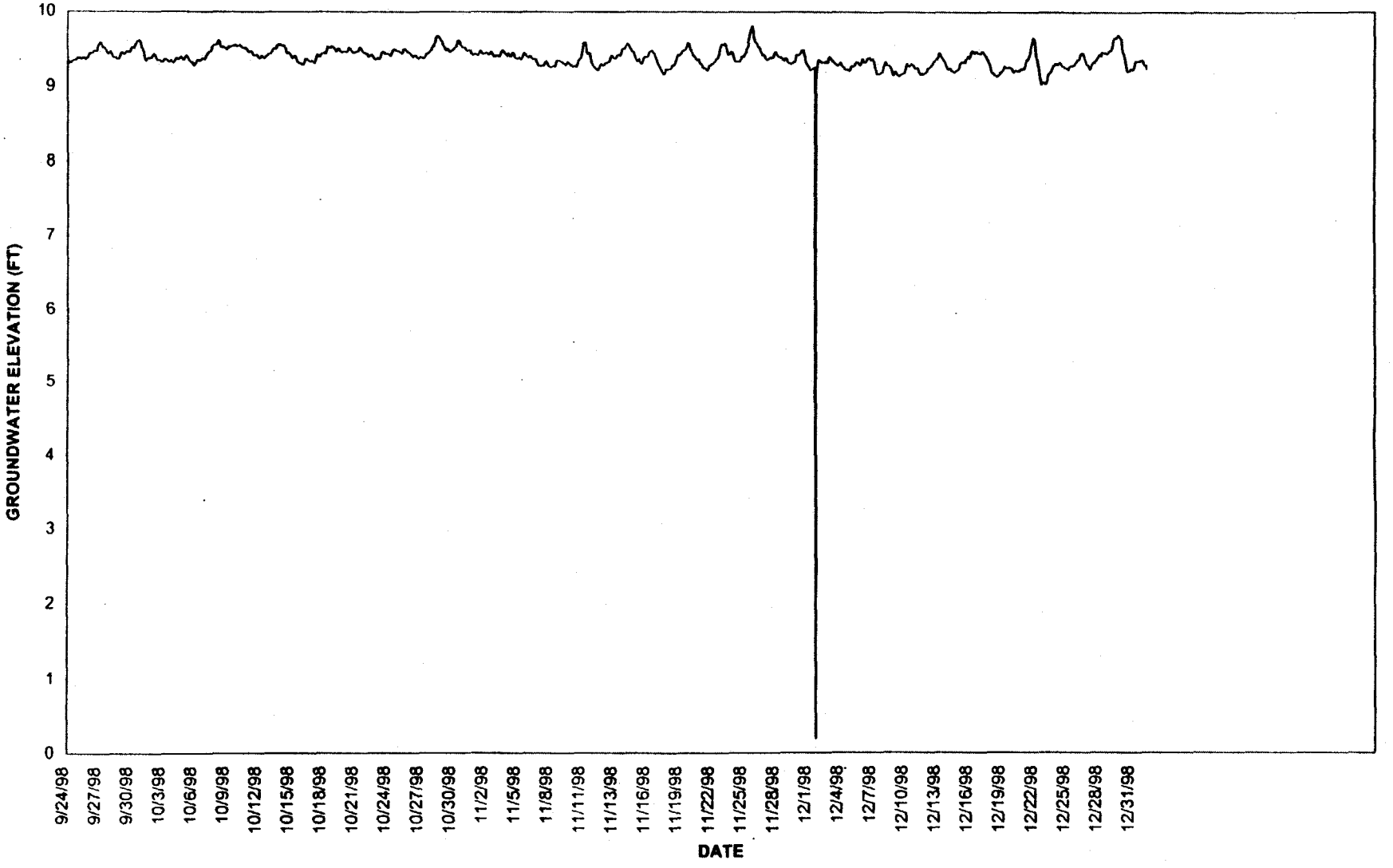
502393

KIN-BUC LANDFILL GROUNDWATER ELEVATIONS ACROSS SLURRY WALL IN THE REFUSE UNIT AT TRANSECT LOCATION NO. 3



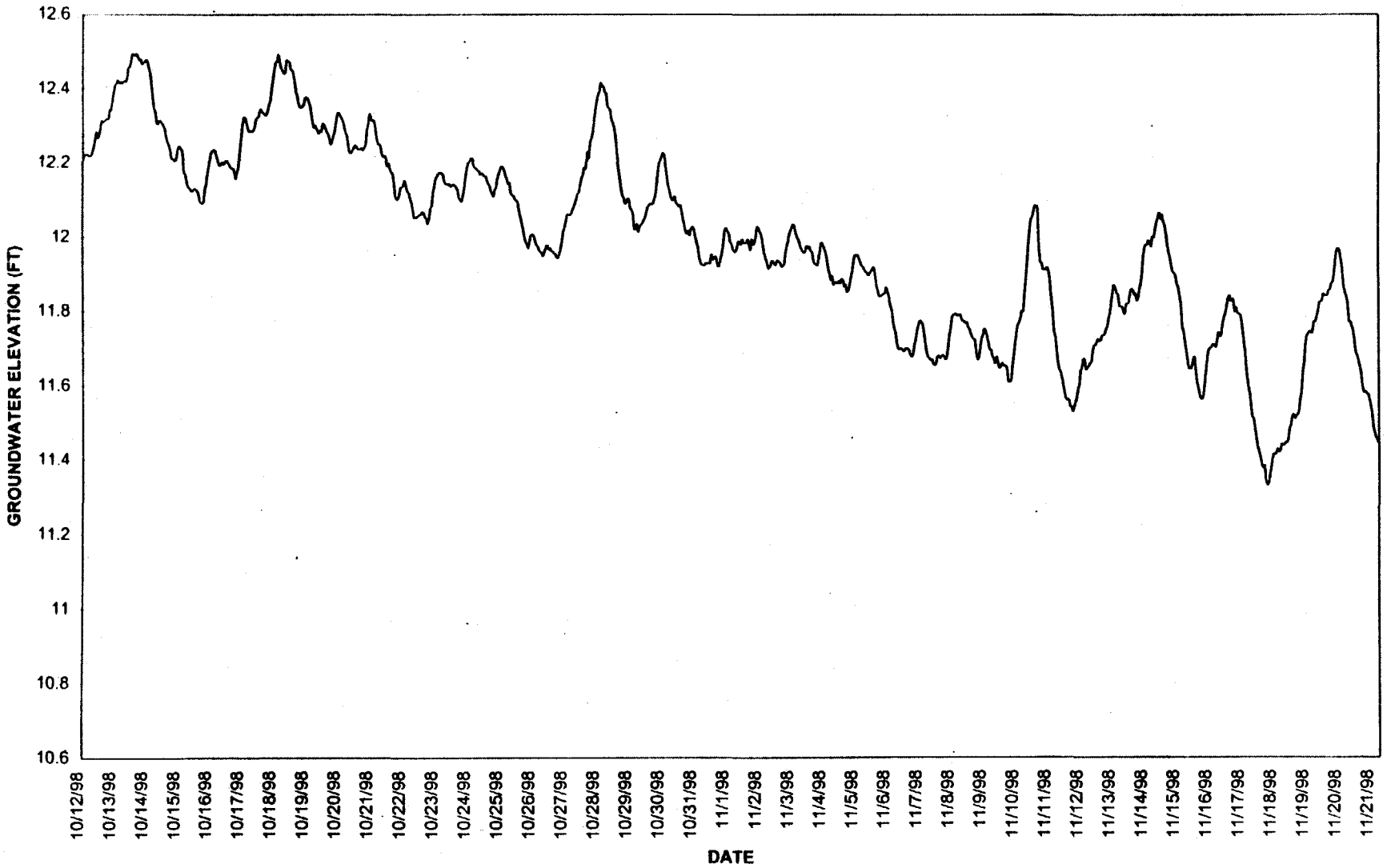
502394

KIN-BUC LANDFILL GROUNDWATER ELEVATION HYDROGRAPH 5G REFUSE UNIT



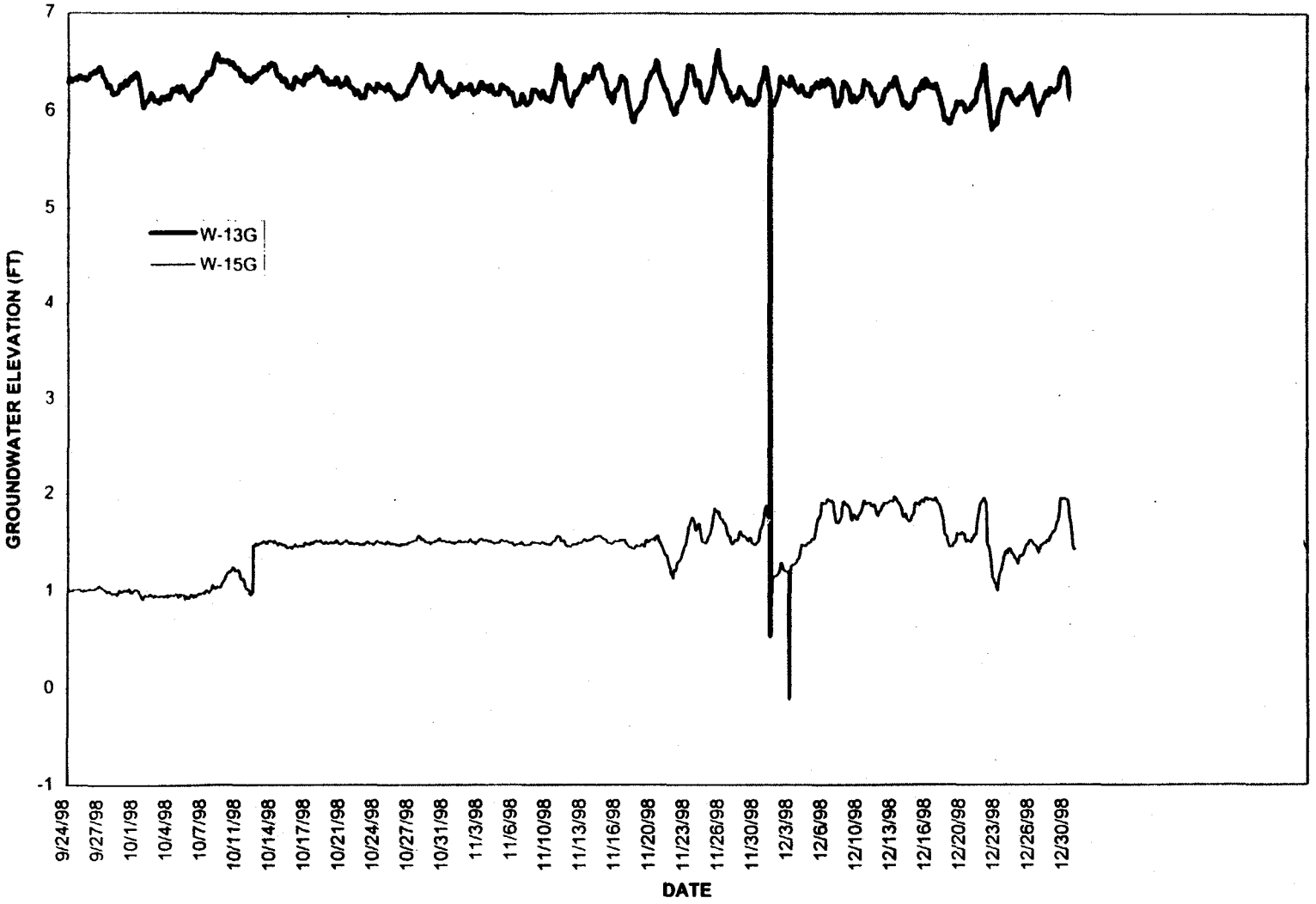
502395

KIN-BUC LANDFILL GROUNDWATER ELEVATION HYDROGRAPH 6G REFUSE UNIT



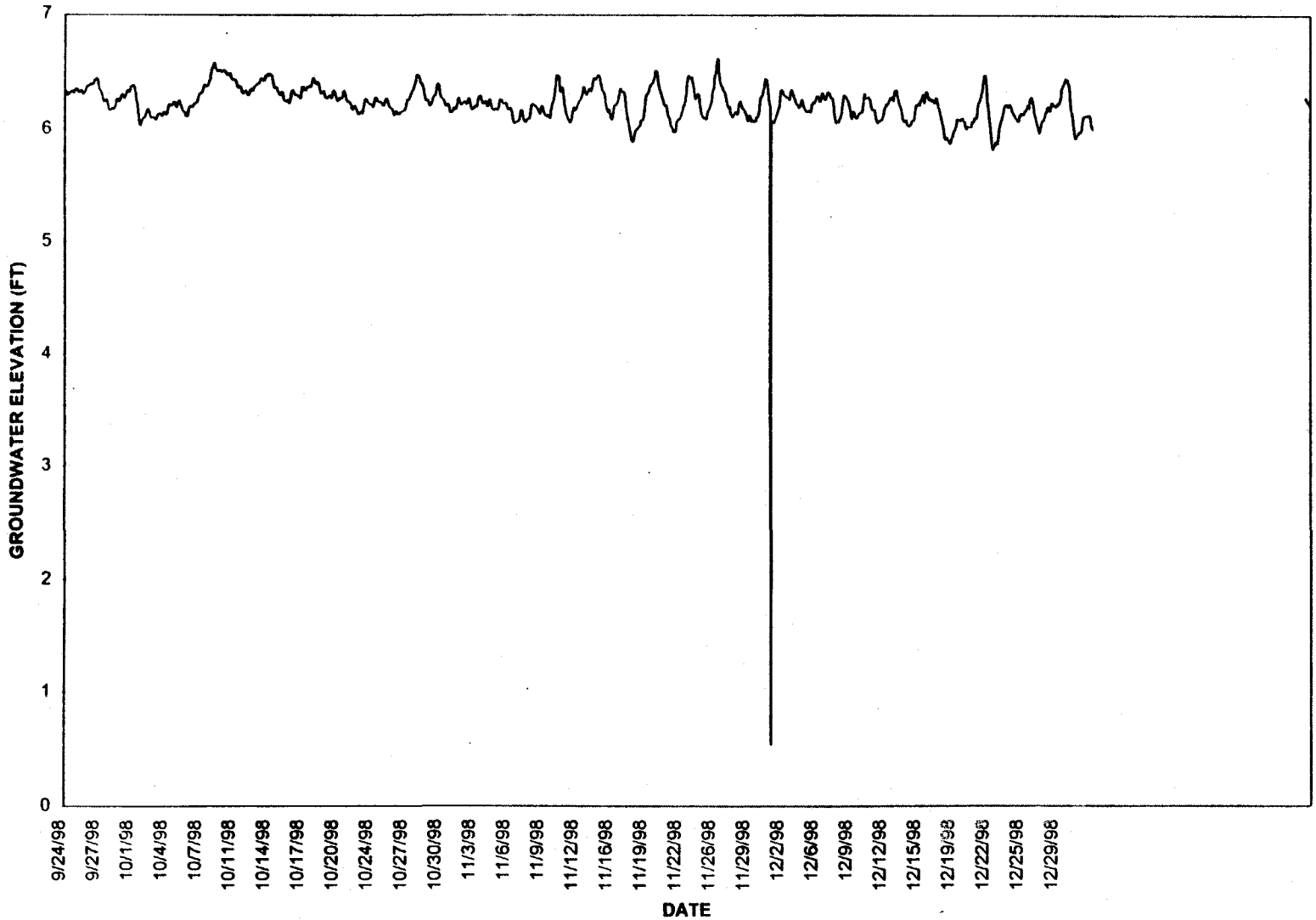
502396

KIN-BUC LANDFILL GROUNDWATER ELEVATIONS ACROSS SLURRY WALL IN THE REFUSE UNIT AT TRANSECT LOCATION NO. 4



502397

KIN-BUC LANDFILL GROUNDWATER ELEVATION HYDROGRAPH 13G REFUSE UNIT



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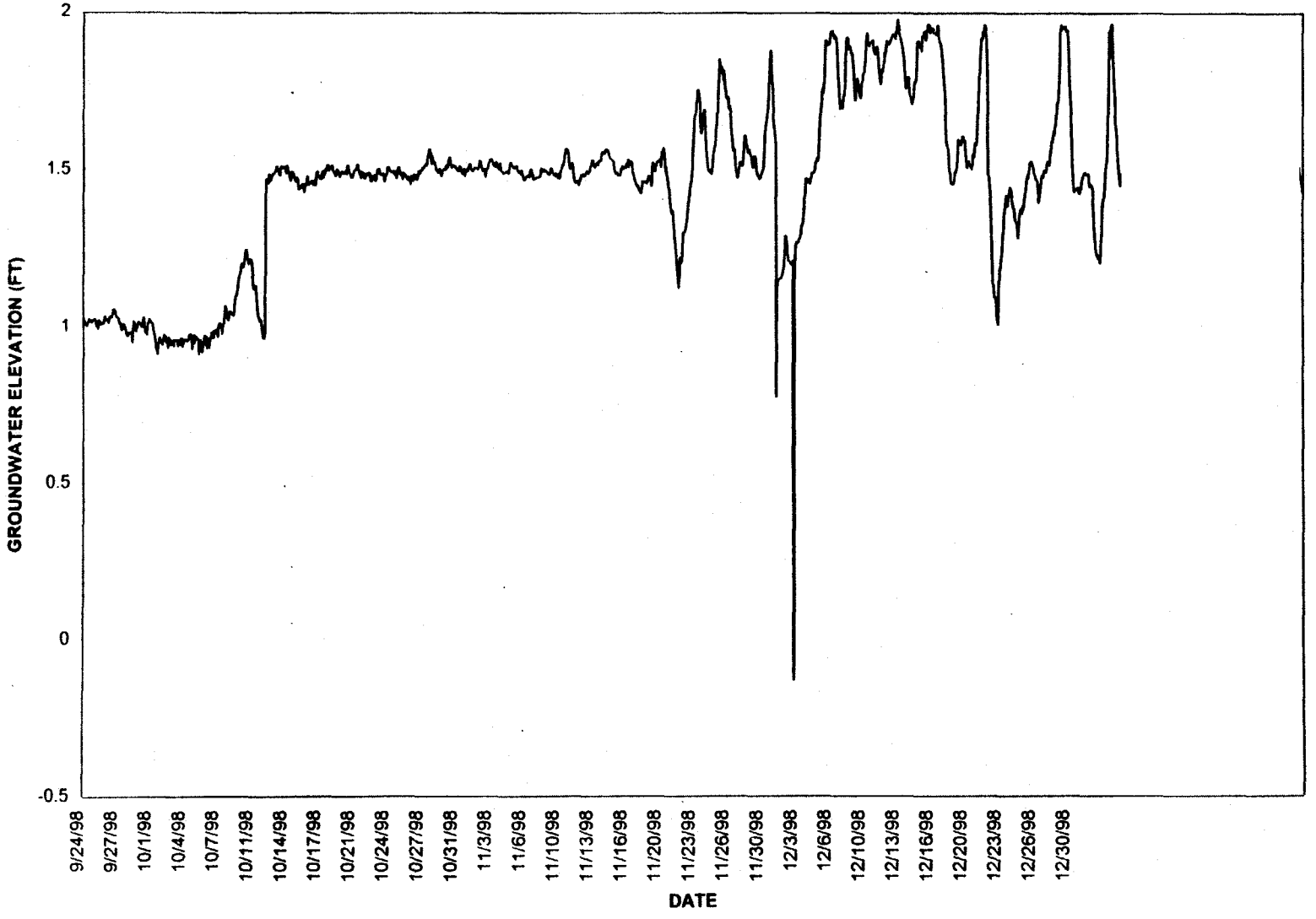
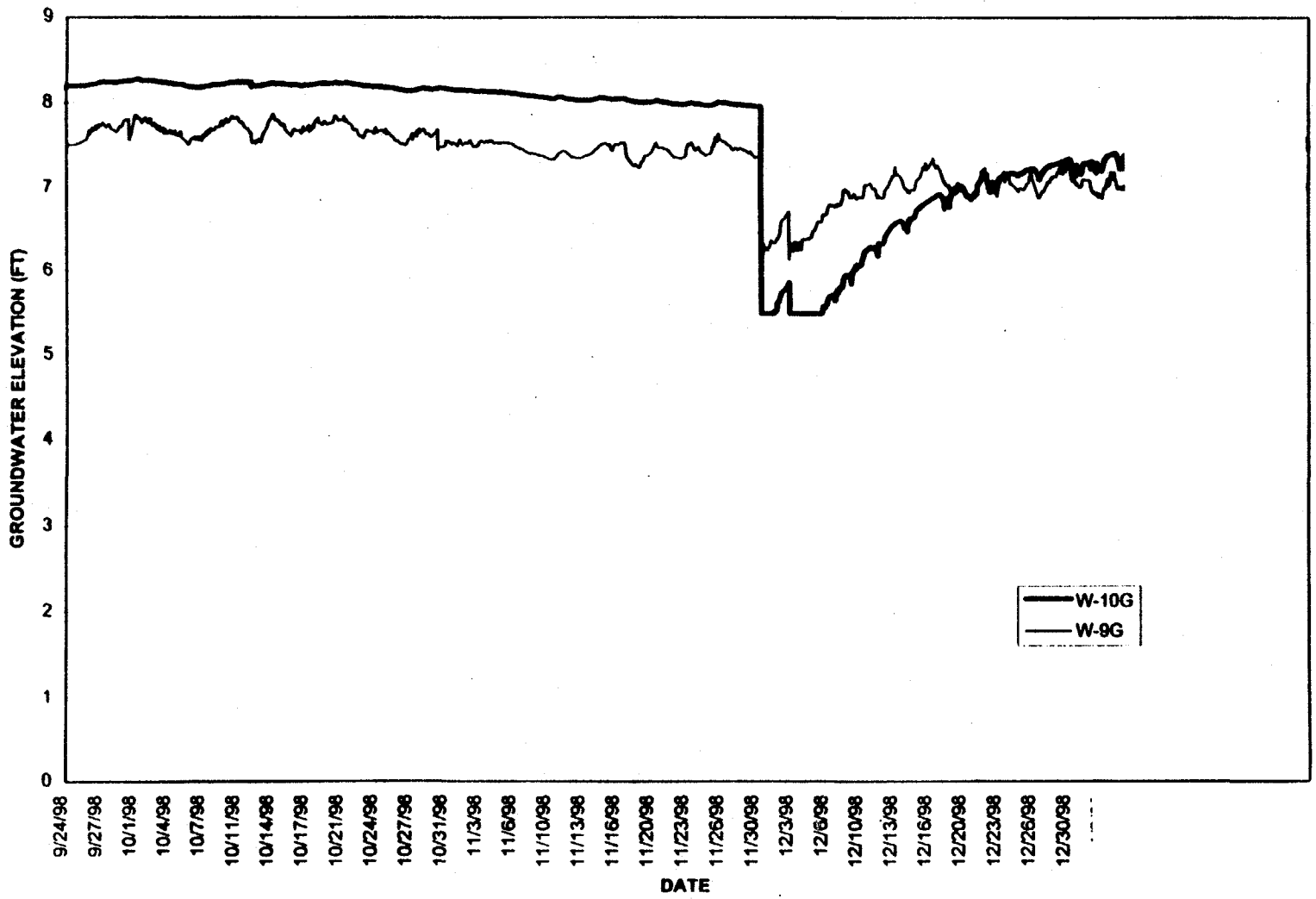
KIN-BUC LANDFILL GROUNDWATER ELEVATION HYDROGRAPH 15G REFUSE UNIT



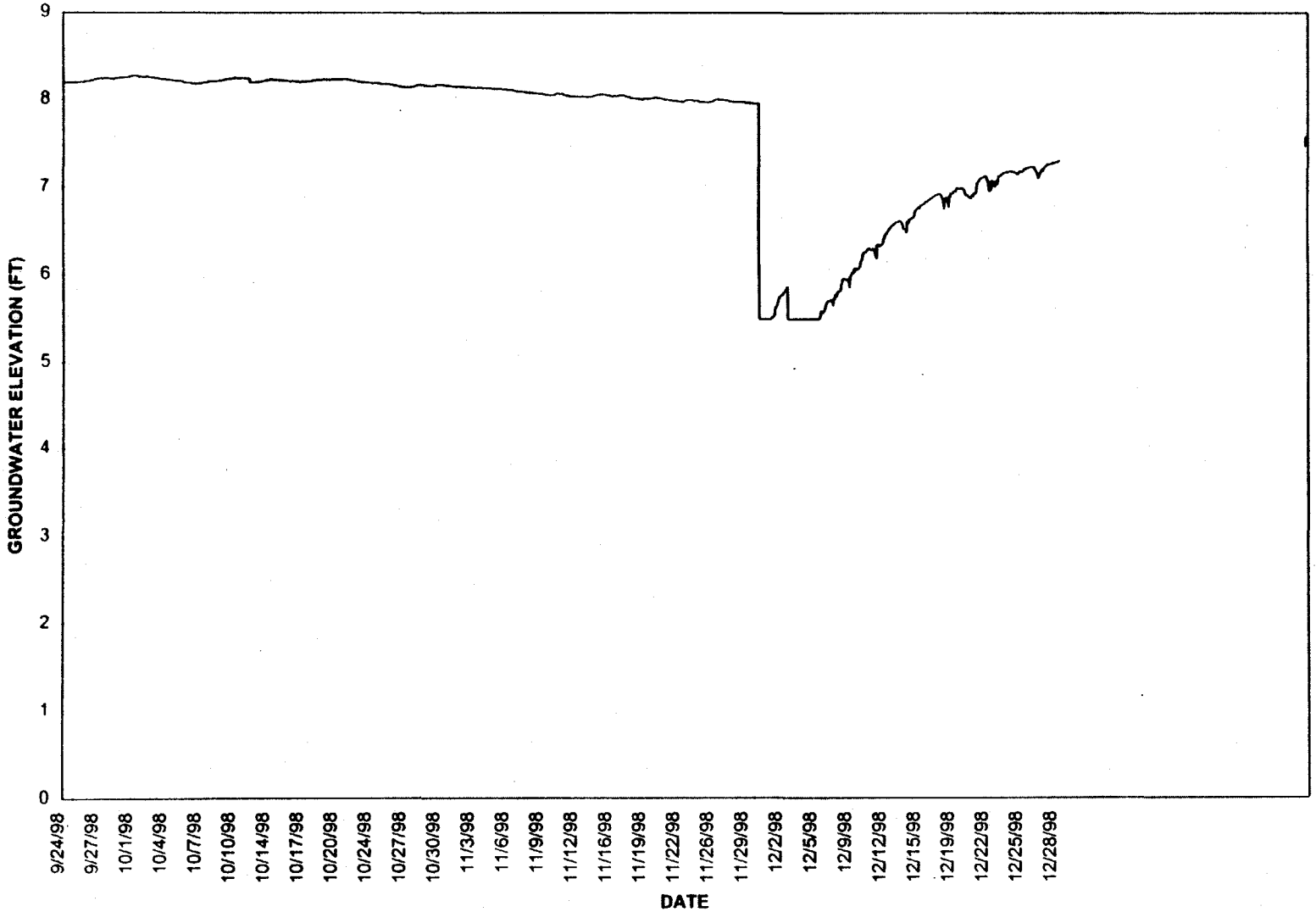
502399

KIN-BUC LANDFILL GROUNDWATER ELEVATIONS ACROSS SLURRY WALL IN THE REFUSE UNIT AT TRANSECT LOCATION NO. 5



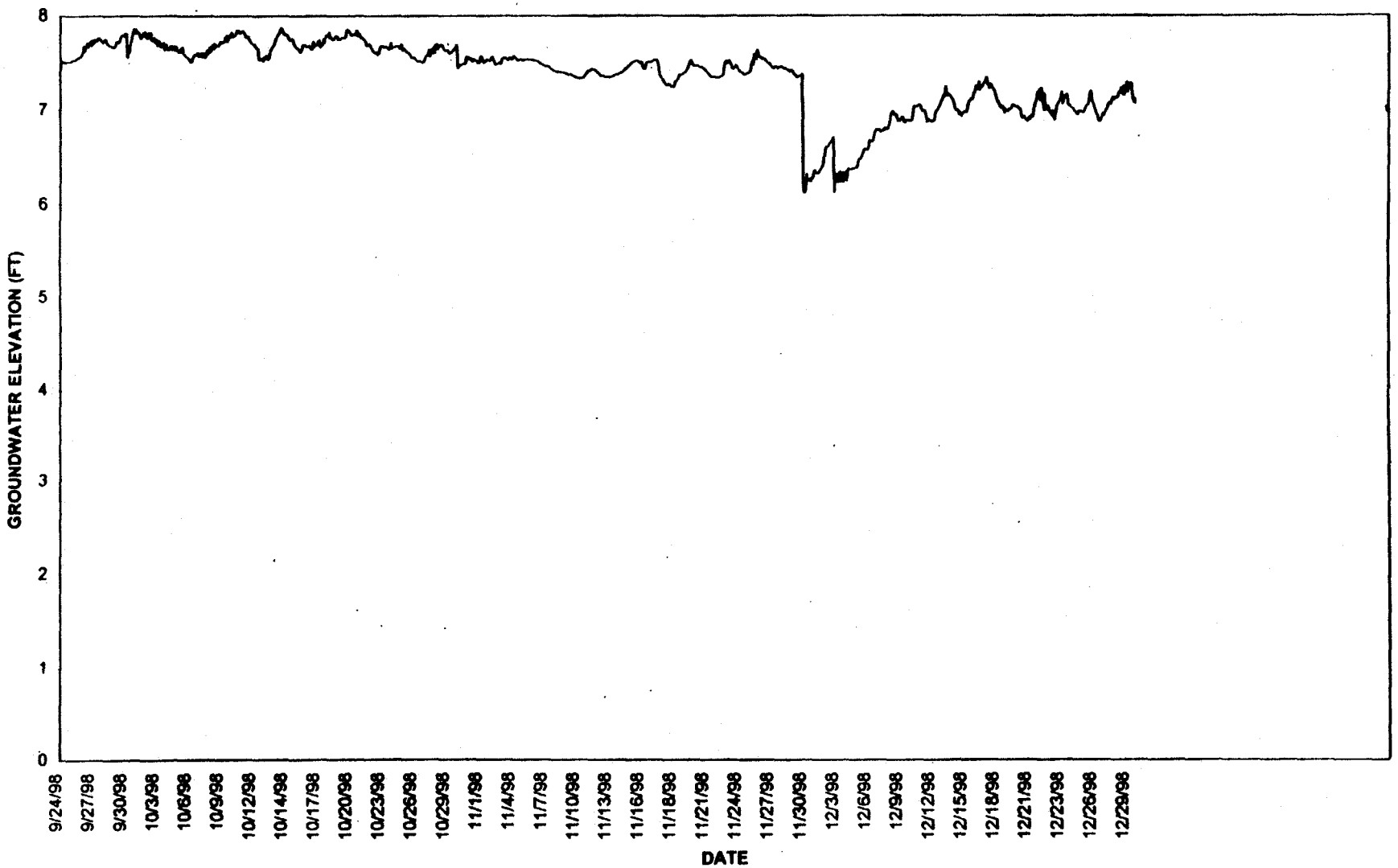
502400

KIN-BUC LANDFILL GROUNDWATER ELEVATION HYDROGRAPH 10G REFUSE UNIT



502401

KIN-BUC LANDFILL GROUNDWATER ELEVATION HYDROGRAPH 9G REFUSE UNIT



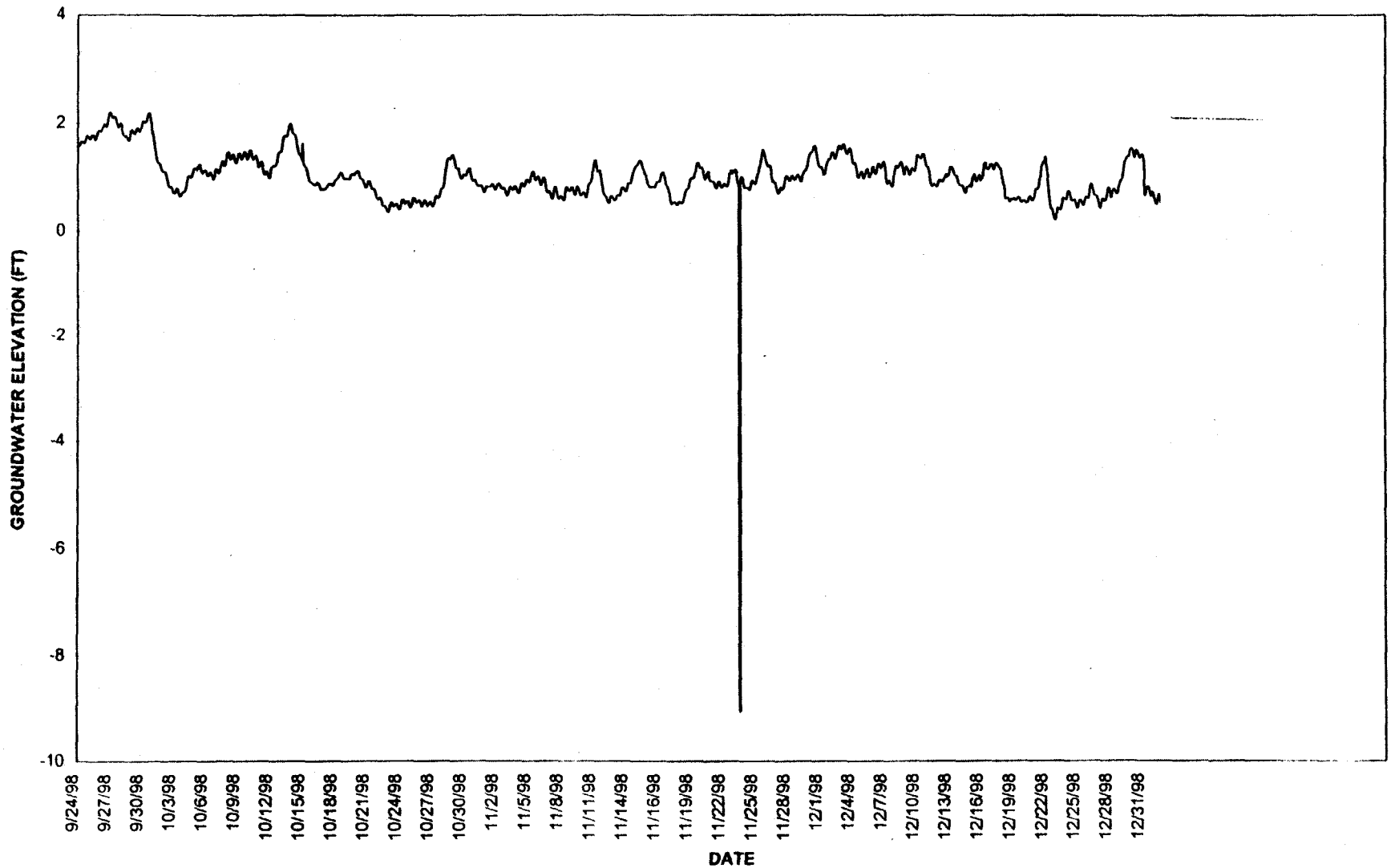
502402

APPENDIX F

502403

APPENDIX F
OU1/OIL SEEPS WELLS
CONTINUOUS WATER LEVEL
MONITORING HYDROGRAPHS

KIN-BUC LANDFILL GROUNDWATER ELEVATION HYDROGRAPH 3S SAND AND GRAVEL UNIT



502405

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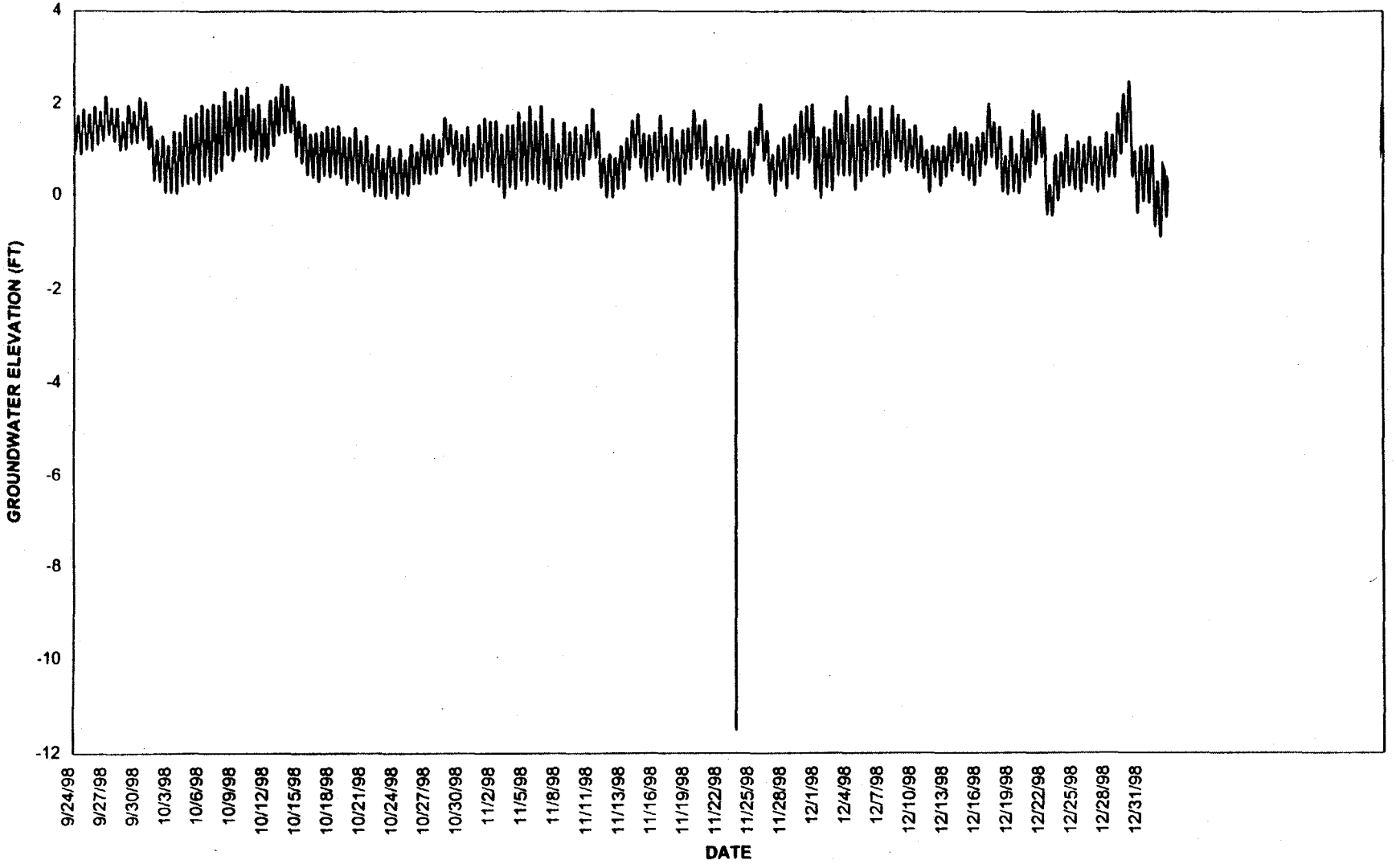
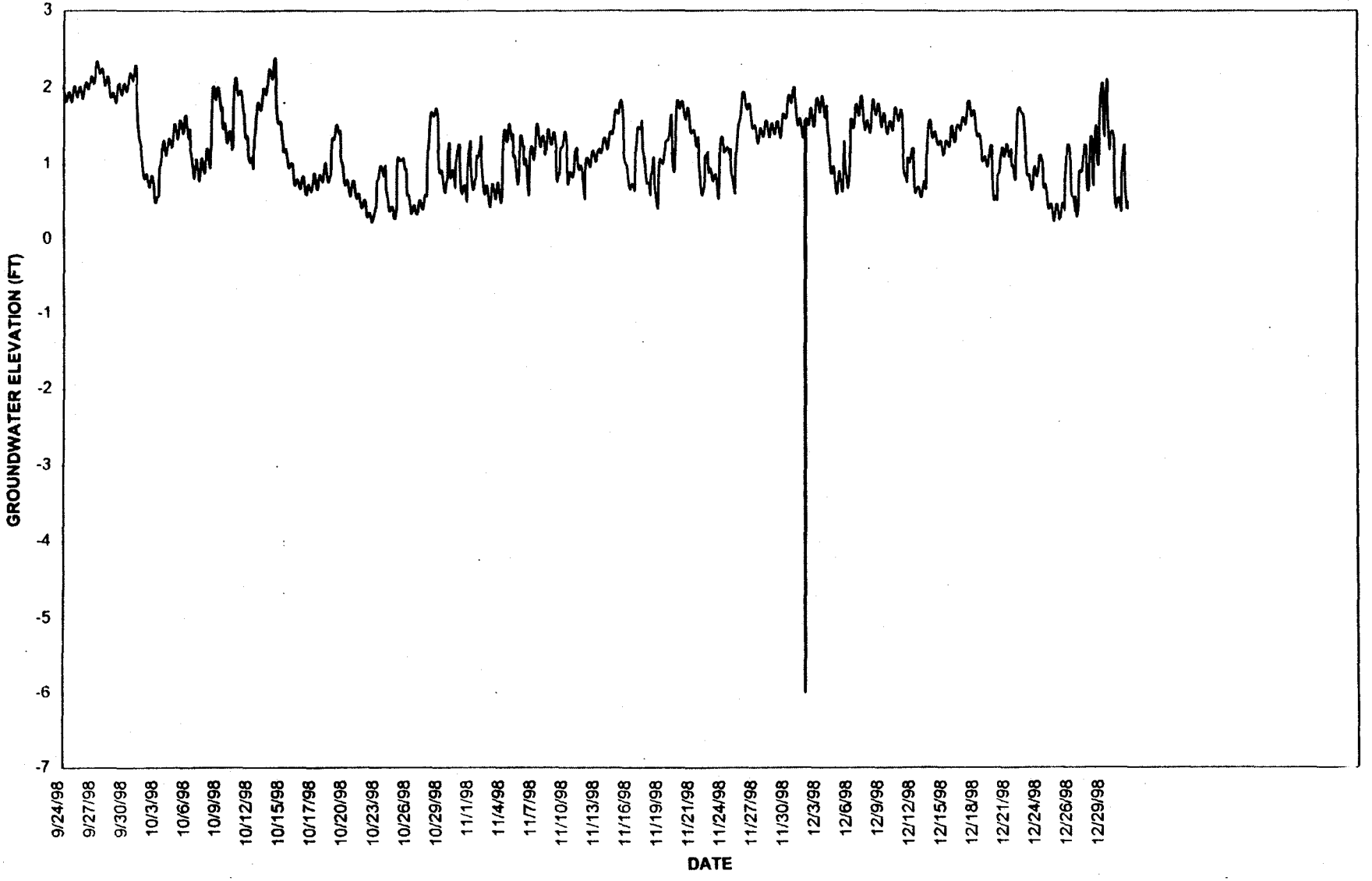


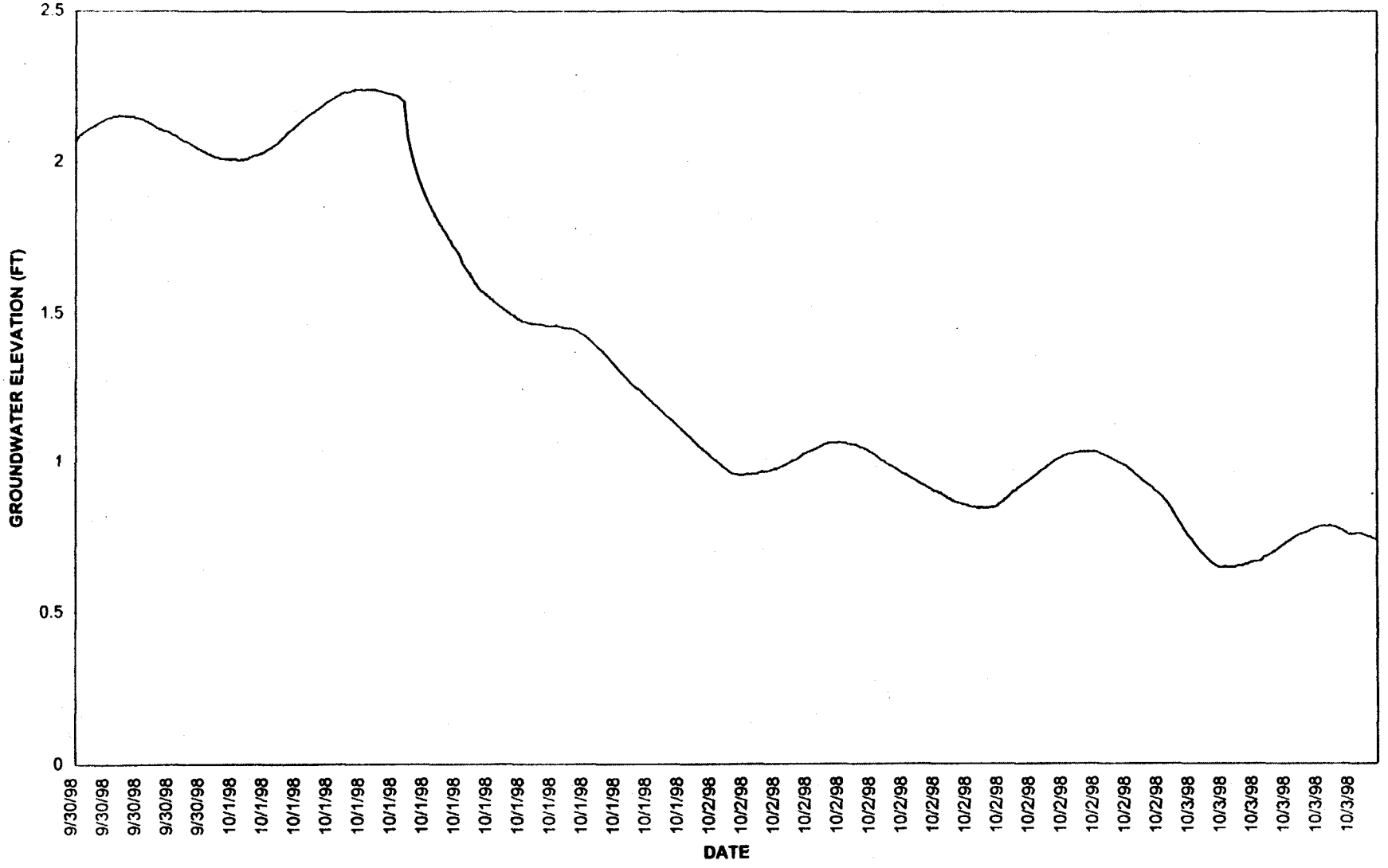
502406

KIN-BUC LANDFILL GROUNDWATER ELEVATION HYDROGRAPH 5S SAND AND GRAVEL UNIT



502407

KIN-BUC LANDFILL GROUNDWATER ELEVATION HYDROGRAPH 6S SAND AND GRAVEL UNIT



502408

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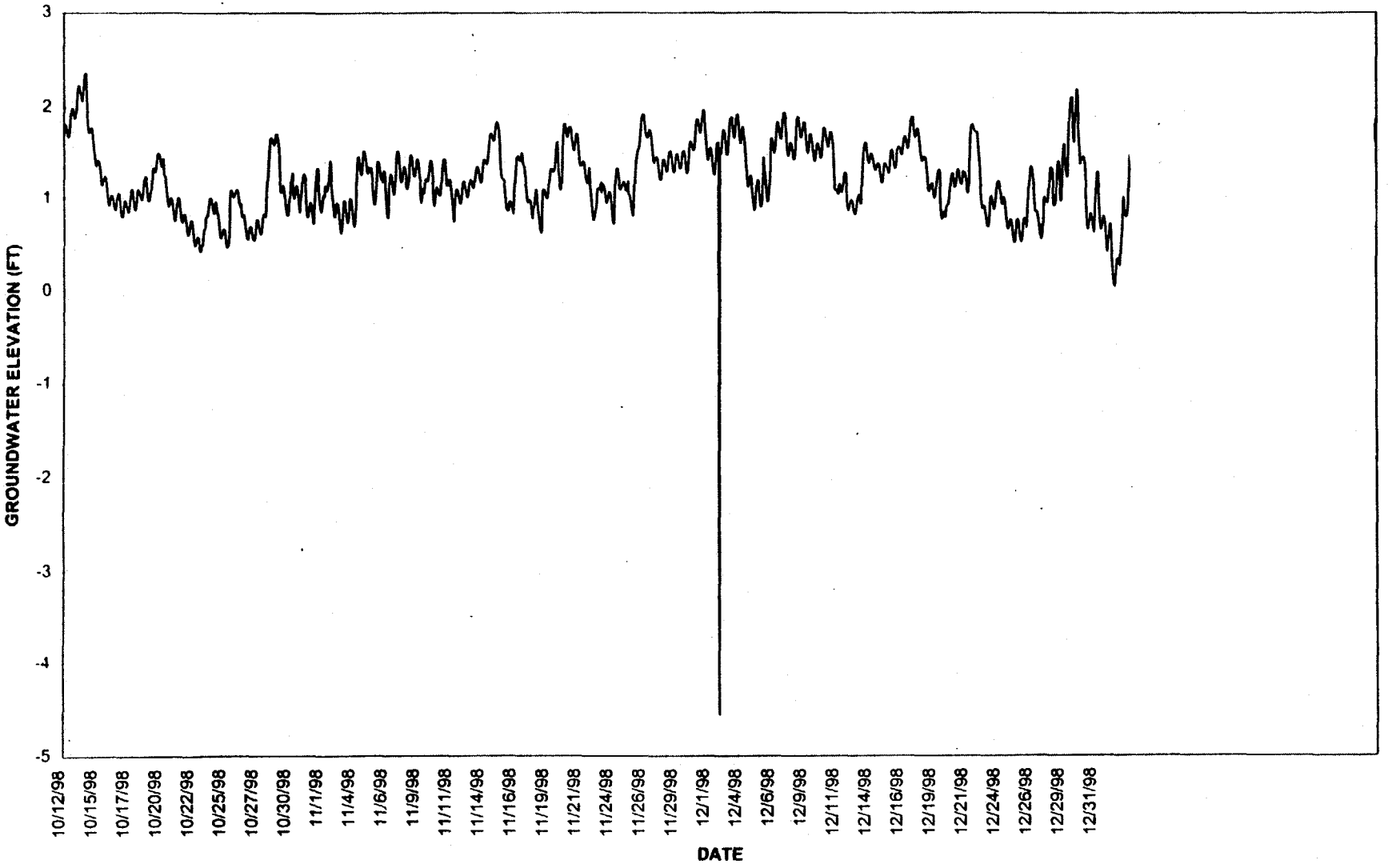

502409

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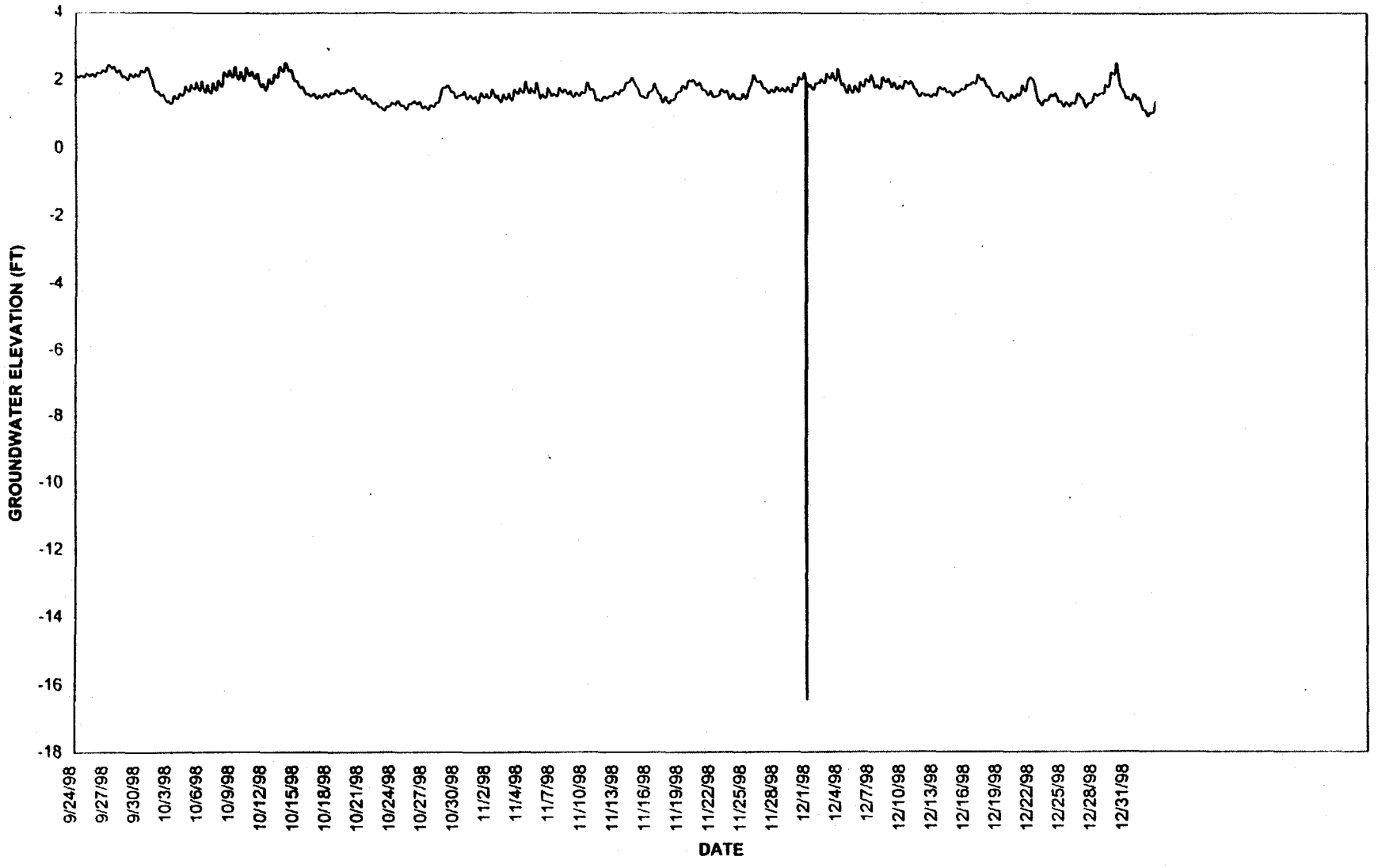

502410

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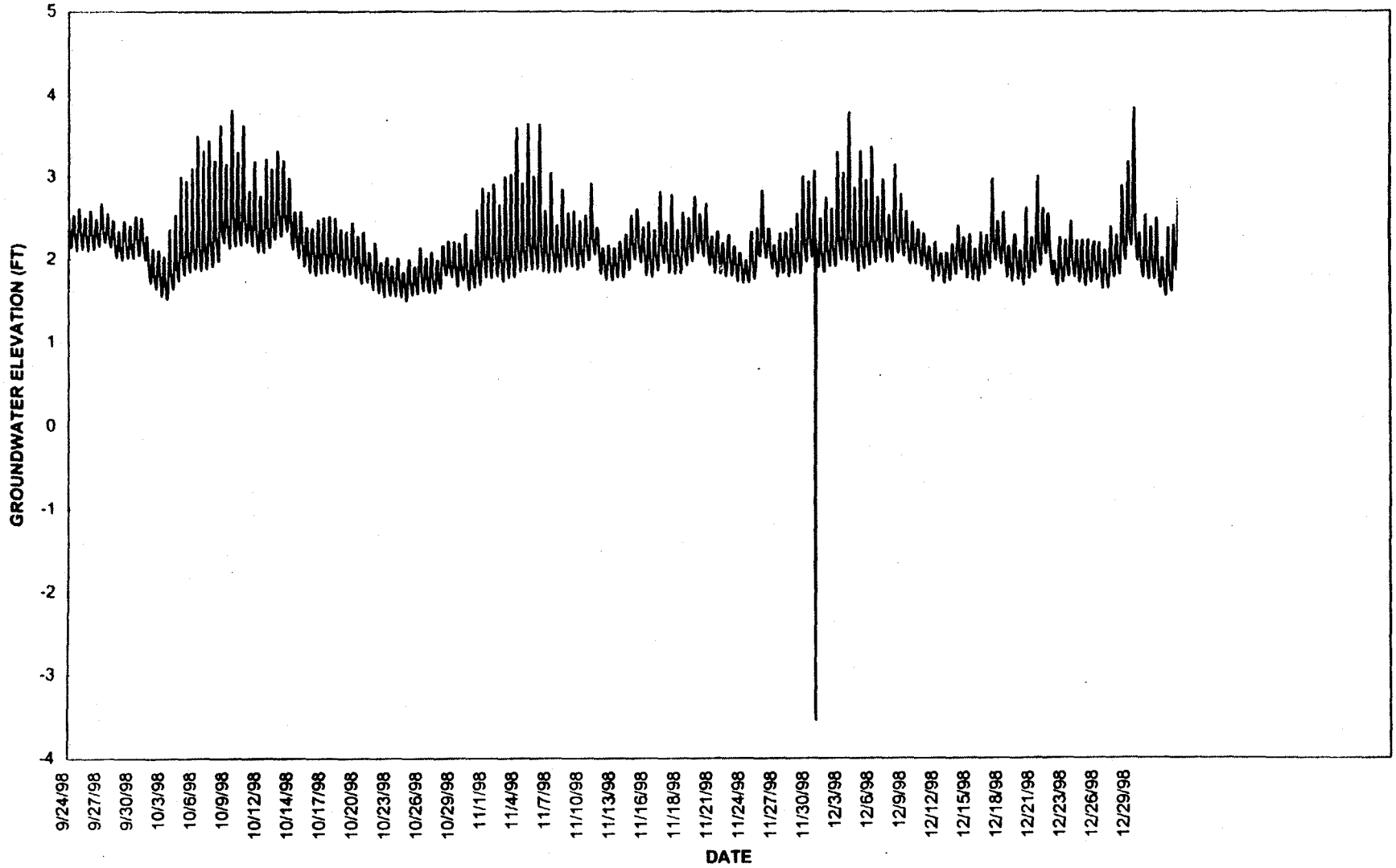

502411

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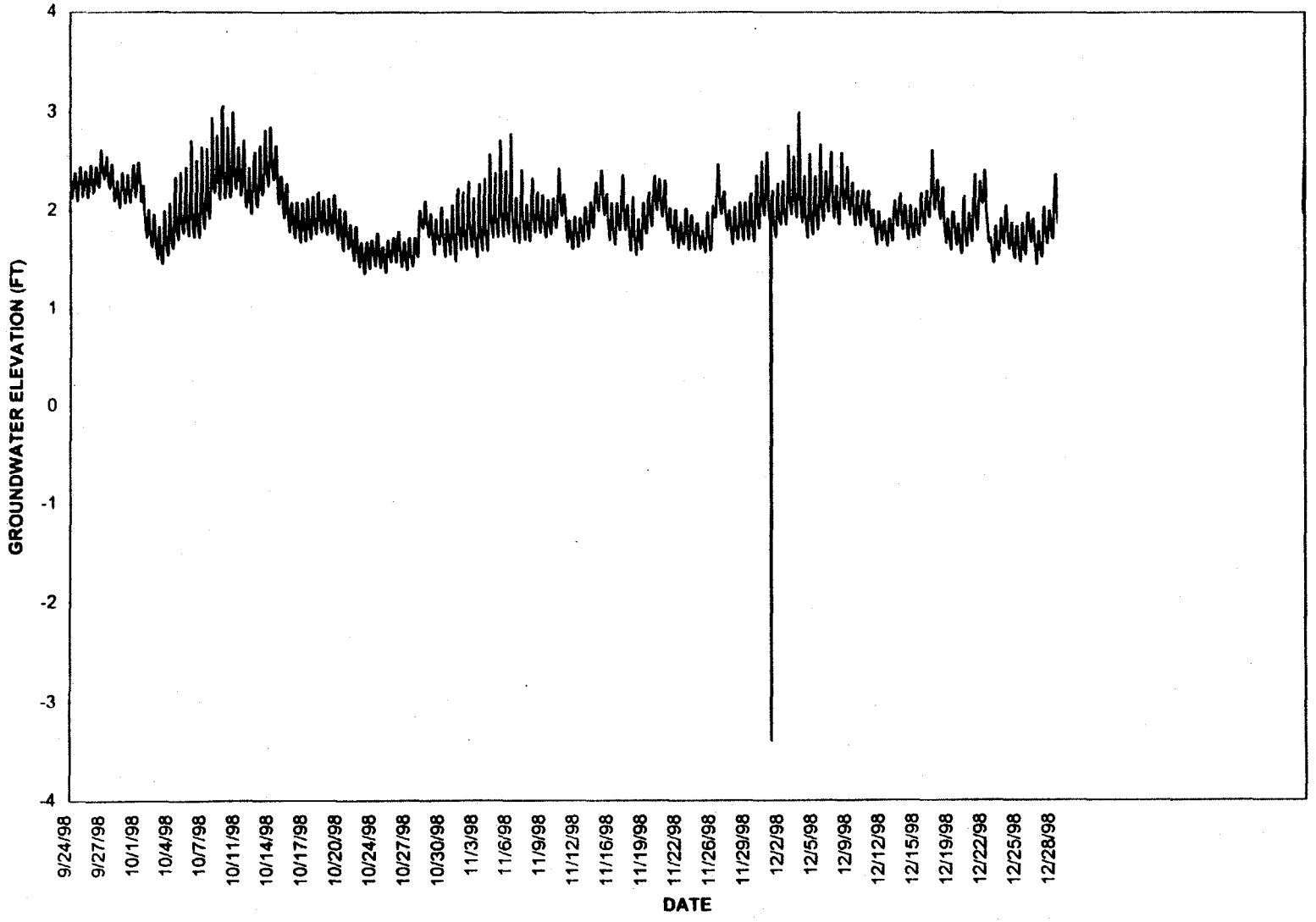

502412

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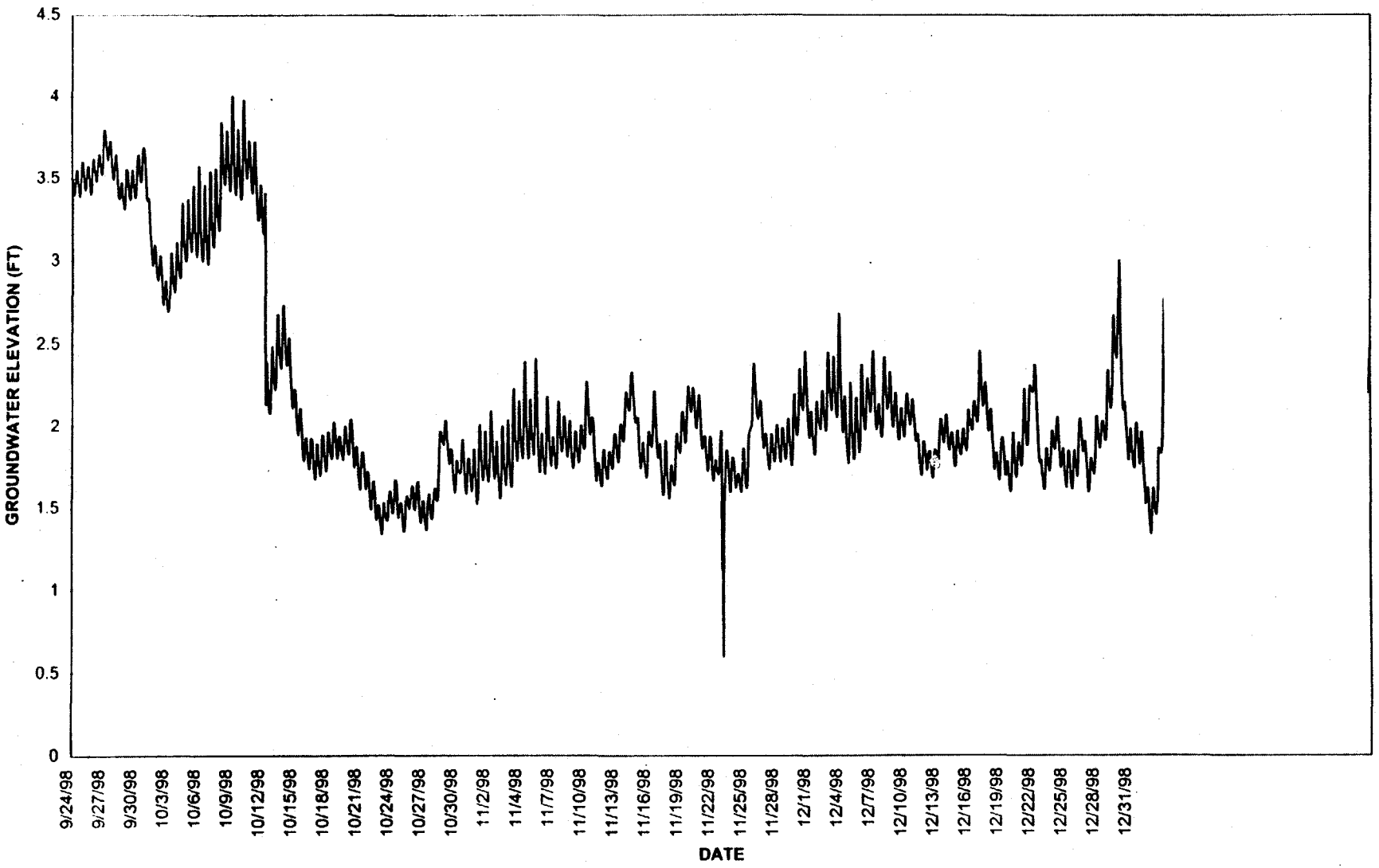

502413

APPENDIX G

502414