WHITE STREET LANDFILL

Phase II

Greensboro, North Carolina
Nature and Extent Study
S&ME Project No. 1584-98-081

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EXECUTIVE SUMMARY

This report was prepared by S&ME Inc. on behalf of the City of Greensboro (City) to fulfill the requirements of 15A NCAC 13B .1634(g)(1) which requires the City to characterize the nature and extent of the release at the City's landfill (White Street Landfill Phase II) evidenced by volatile organic compounds detected in compliance groundwater monitoring samples. Phase II of the landfill is an active construction, demolition, and debris landfill on top of a closed municipal solid waste (MSW) cell. The Phase II portion of the landfill was included under Permit No. 41-03. The Facility is located at the end of White Street in the City of Greensboro, North Carolina (reference **Figure 1**).

The Facility encompasses an area of approximately 767 acres in the northeast quadrant of the City, at the end of White Street. The landfill was used for the disposal of waste generated within the City and Guilford County.

Given the absence of downgradient drinking water receptor wells between the landfill and the creek and the relatively low concentrations of the organic and inorganic constituents of concern, the level of risk to human health is expected to be low. The primary impact, if any occurs, will be to aquatic life in the stream.

1.0 INTRODUCTION

1.1 Purpose

This report is the Nature and Extent Study for Phase II of the White Street Landfill (Facility) in Greensboro, North Carolina. The Phase II portion of the Facility is permitted under the North Carolina Department of Environment and Natural Resources, Division of Waste Management, Permit No. 41-03 (SWMP 41-03). This report documents the activities surrounding the Nature and Extent Study (NES) performed and completed by S&ME Inc. as a result of NCAC 2L Standard and GPS exceedances in the regular groundwater monitoring network at the Facility. This NES has been prepared in accordance with 15A NCAC 13B.1634 g.1.A, and addresses the following components:

(a) Characterize the nature and extent of the release by installing additional monitoring wells as necessary,

(b) Install at least one additional monitoring well at the Facility boundary in the direction of contaminant migration and sample this well in accordance with 15A NCAC 13B.1634 d.2,

(c) Notify all persons who own the land or reside on the land that directly overlies any part of the plume of contamination if contaminants have migrated off-site if indicated by sampling of wells in accordance with 15A NCAC 13B.1634 d.2 and,

(d) Initiate an assessment of corrective measures per 15A NCAC 13B.1635

1.2 Location

The White Street Landfill is owned and operated by the City of Greensboro, North Carolina. The landfill is located at the north end of White Street in northeastern Greensboro. The White Street Landfill is accessed off of White Street and Phase II is regulated under SWMP 41-03. The Facility is bounded by woodlands and Rankin Mill Road to the east, the Phase III landfill area to the south and Buffalo Creek to the north and west. **Figure 3, Stream Sample Location Map** illustrates the regional setting around the White Street Landfill.

1.3 Monitoring History

Beginning in 1943, waste handling at the Landfill consisted primarily of incineration. Burning operations ceased in 1965, and since that time, refuse has been landfilled on site.

The Landfill consists of three distinct municipal solid waste (MSW) landfill areas designated as Phase I, Phase II, and Phase III. Phase I is the oldest of the three areas. It is approximately 65 acres in size and contains land clearing and inert debris (LCID) deposited on top of MSW. This phase was filled with MSW between the years 1965 and 1978 and contains approximately 3.0 million tons of MSW. In addition, the City disposed of LCID on top of the MSW from 1999 to 2004. There is approximately 20 to 25 feet of LCID on top of MSW in Phase I.

Phase II is an unlined, approximately 145-acre area that received approximately 5.4 million tons of MSW from 1978 to 1997. In addition, in 1998 the City began depositing construction and demolition (C&D) debris on top of portions of MSW in Phase II and is currently continuing this disposal until a projected date of January 2011.

Phase III, a Subtitle-D lined 52-acre area, began receiving waste in 1997. Phase III consists of thee cells. Cell 1 is approximately 25 acres in size, Cell 2 is approximately 15 acres in size and Cell 3 is approximately 12 acres in size. Phase III is the active portion of the landfill receiving MSW.

A series of groundwater monitoring wells was installed at the Facility beginning in 1993. In a letter dated June 24, 1994, the North Carolina Department of the Environment and Natural Resources (DENR) directed that the monitoring system be upgraded and at least one baseline sampling event of all wells in the approved detection monitoring system be completed and reported to the Solid Waste Section on or before October 9, 1994. More specifically, the Facility was directed to modify the groundwater monitoring system at the Facility by installing additional groundwater monitoring wells sufficient to monitor the active unit separately from the closed unit and to conduct baseline sampling and analysis at the Facility. The additional wells were installed in September 2004. HDR Engineering submitted a "Baseline Water Quality Sampling Report" on October 7, 1994 which included construction information on the newly installed monitoring wells (MW-II-6, MW-II-7, MW-II-8, and MW-14) along with the results of the initial sampling of these wells. Subsequent to the installation of these wells the Facility began monitoring groundwater quality under the North Carolina Solid Waste Management Regulations (NCSWMR) Detection Monitoring Program.

A compliance monitoring agreement was established between the City of Greensboro and NCDENR which specified the frequency and timing of sample collection with the submittal of a (Sampling and Analysis Plan) for the Facility. The plan was prepared in accordance with the rules codified under the North Carolina Solid Waste Management 15A NCAC 13B, Sections .1630 through .1637 under the guidance of a North Carolina Licensed Geologist. The (Water Quality Monitoring Plan) is intended to provide early detection of a release of hazardous constituents from the MSWLF unit to the uppermost aquifer, so as to be protective of public health and the environment. The Sampling and Analysis Plan (SAP) for the Facility was revised in 1998 by S&ME and approved in November of 1998. Subsequent to the approval of the SAP, compliance monitoring events conducted during 1997 reported concentrations of volatile organic compounds in several of the downgradient compliance monitoring wells that exceeded the statistically computed background Upper Limits. Due to these results an Assessment Monitoring Program was required according to 15A NCAC 13B.1634.

After entering the Assessment Monitoring Program, several target constituent concentrations exceeded the approved Groundwater Protection Standards (GPS) in several downgradient compliance groundwater monitoring wells. These constituents are

considered the primary constituents of concern within the monitoring well network and include the following volatile organic compounds: methylene chloride, cis-1,2-dichloroethene, 2-butanone, benzene, 1,2-dichloroethane, trichloroethene, 1,2-dichloropropane, and vinyl chloride as well as the inorganic constituents: cadmium, chromium, nickel, thallium, and vanadium. As a result the Facility has initiated the Assessment of Corrective Measures Process as per 15A NCAC 13B .1635. The initial phase of the ACM process is to perform a Nature and Extent study to "characterize the nature and extent of the release" as per 15A NCAC 13B .1634 (g) (1). As part of the study additional groundwater monitoring wells have been installed as necessary in order to characterize the nature and extent of the release.

Additional non-network property boundary monitoring wells were installed hydraulically downgradient of the impacted network monitoring wells to better define the extent of the impacted area. Hereinafter these wells will be referred to as the Nature and Extent Study (NES) groundwater monitoring wells. NES monitoring well II-2B was installed hydraulically downgradient of compliance monitoring well II-2 and further downgradient along the primary component of flow toward Buffalo Creek. This location was selected in order to determine if the landfill constituents detected in compliance monitoring well II-2 have likely reached Buffalo Creek. NES monitoring well II-7B was installed adjacent to II-7 at the northern landfill facility property boundary. This NES well was installed in order to define the vertical extent of the primary constituents of concern detected in compliance well II-7; therefore, the screened interval of NES II-7B was installed deeper than the regular network compliance monitoring wells, in the bedrock portion of the aquifier. NES monitoring well II-9 has been installed hydraulically crossgradient of compliance well II-7 at the northern landfill facility property boundary. NES well II-10 was installed southwest of compliance well II-7 in order to better define the lateral extent of the constituent plume in the vicinity of compliance well II-7. NES well II-11 was installed hydraulically downgradient of a storm water retention pond along the northern property boundary. NES well II-11 is also located between NES well II-9 and compliance well II-2 in order to better define the lateral extent of the constituents of concern beneath this portion of landfill Phase II. NES well II-12 was installed hydraulically downgradient of compliance monitoring well I-5 and further downstream along the unnamed tributary of Buffalo Creek from I-5. NES well II-12 was installed between compliance monitoring wells I-5 and II-6 in order to further define the lateral extent of the landfill constituent plume in this portion of the landfill. Certain primary constituents of concern were detected in compliance well II-2; however, none of the primary constituents of concern have been historically detected in compliance monitoring well II-3. Therefore, in order to define the edge of the landfill constituent plume between compliance wells II-2 and II-3, NES well II-13 was installed between these two wells in order to define the lateral extent of the landfill constituent plume in that region of the landfill. The locations of the NES well are illustrated on **Figure 2** and **Figure 4** of this report.

NES well II-7B was installed on December 11, 2000. NES monitoring wells II-9, II-10, II-11, and II-12 were installed on March 21, and 22, 2005. NES wells II-2B and II-13 were installed on July 10, 2007. The monitoring wells were designed and constructed in

accordance with techniques specified in the Resource Conservation and Recovery Act (RCRA) Groundwater Monitoring Technical Enforcement Guidance Document (TEGD). As discussed above, the NES wells were installed in stages. However, upon completion of the installation, the NES wells were developed prior to sample collection. After development and purging operations were complete, each of these groundwater monitoring wells was sampled and the collected groundwater samples were analyzed by a North Carolina Certified laboratory. NES well II-7B has been sampled and analyzed along with the regular network compliance monitoring wells since the September 13, 2001 groundwater monitoring event. Samples were collected from NES well II-7B semi-annually since the September 13, 2001 and were analyzed for the Appendix I list of constituents during the 1st Semi-Annual event and Appendix II constituents during the 2nd Semi-Annual event. NES wells II-9, II-10, II-11, and II-12 were sampled twice with the first event being the May 11, 2005 groundwater monitoring event and the second event being the April 24, 2006 groundwater monitoring event. The samples collected from these wells were analyzed for the North Carolina Appendix I volatile organic constituent suite as well as the Appendix I metals parameter suite for both of these events. The newest NES wells; II-2B and II-13, have been sampled once prior to the issuance of this report. This sampling event occurred on July 11, 2007 and the collected samples were analyzed for the North Carolina Appendix II volatile organic constituent suite. Collectively the parameter suite selected for analysis on groundwater samples collected from the NES wells included the constituents of concern which exceeded the GPS in the regular network groundwater monitoring wells. The laboratory analytical results of the Nature and Extent Study sampling event show that NES wells II-7B and II-2B exceed the NCAC 2L Standard for tetrachloroethene. Also, NES wells II-9 and II-2B are reported to contain vinyl chloride at concentrations that exceeded the established NCAC 2L Standard. NES wells II-11 and II-12 contain groundwater with concentrations that exceeded the North Carolina Department of the Environment and Natural Resources (DENR) established Groundwater Protection Standard (GPS) for thallium. Recent analytical results for NES well II-7B reported a vanadium concentration that exceeds the established DENR established GPS for vanadium. There were no exceedances over the established NCAC 2L Standard or approved GPS values of any of the monitored parameters in NES wells II-10 or II-13.

During the most recent groundwater compliance sampling event, which was conducted on April 12, 2007, static groundwater elevations were collected from the network groundwater monitoring wells for the purpose of illustrating the direction of groundwater flow at the site. Based upon the collected static water elevations, a potentiometric map was constructed which illustrates the major component of flow in the upper most aquifer beneath the Facility. The potentiometric map is included as Figure 4 of this report. The groundwater surface contours shown in Figure 4 are based on the static water levels taken during the April 2007 groundwater monitoring event. Contours were developed using standard hydrogeologic practices and professional judgment. The static water elevations indicate groundwater flows in a north, northwesterly direction toward Buffalo Creek. Based upon the laboratory analytical results discussed above and the calculated groundwater flow path, the constituents of concern which exceeded the NCAC 2L Standard or the GPS in the regular network groundwater monitoring wells have likely

migrated to Buffalo Creek which truncates the downgradient component of flow from the waste unit boundaries. This stream is illustrated on Figure 1 of this report.

2.0 SITE GEOLOGY AND HYDROLOGY

2.1 Regional Geology

The Greensboro area of North Carolina lies in the center of the Piedmont Physiographic province of the Appalachian Highlands. The Piedmont is comprised of five northeast southwest trending rock belts of various metamorphic grades. Greensboro lies within the Carolina Slate Belt, a group of low rank meta sedimentary rocks that were originally deposited in an off-shore island arc system. Various volcanic rocks including tuffs, basalts, argillites, and others were deposited in a shallow marine environment. The age of these rocks are believed to be Pre-Cambrian to Paleozoic.

Numerous tectonic events have greatly deformed these rocks and a general metamorphic imprint has taken place. Additionally, several intrusive events have occurred which have resulted in the emplacement of granitic plutons of Paleozoic age throughout the belt[2].

2.2 Site Geology

Locally, the landfill area is underlain by granitic plutonic rocks. The depth of these rocks varies with topography, but is generally less than 30 feet. As the rocks weather, the individual mineral grains tend to disintegrate into small rocks and pebbles within a sandy matrix. This soil is commonly referred to as “sandrock” in reference to its weathering characteristics[2].

2.3 Site Soil Classification

According to the Soil Survey of Guilford County, the soil in the landfill area has been classified as Pits (Pt). Pits are miscellaneous land types made up of areas where the original soil has been removed or altered beyond recognition. In landfill areas the original soil has been removed and solid waste material has been placed in alternating layers with original soils and other materials.

The soils around the landfill include Wehadkee silt loams (Wh), Chewacla sandy loams (Ch), Wilkes sandy loams (Wke), Madison sandy loams (MaE and MaD), Enon fine sandy loams (EnC and EnB), Mecklenburg sandy clay loam (McC2), Mecklenburg-Urban land complex (MuB), and Cecil-Urban land complex (CfB) [2].

2.4 Hydrogeologic Setting

2.4.1 Surface Water

The natural topography surrounding the waste management units at the Facility is best characterized as gradual to moderately sloping with small drains and small hollows truncating the slopes and feeding the unnamed tributaries of Buffalo Creek. Surface runoff in the undisturbed areas of the landfill will generally mimic the slope gradients and follow the drains and small hollows to the creek. Infiltration and percolation into the upper soil horizon is expected to be moderate due to the sandy loam content within this stratum. Percolation within the waste management units is expected to be minimal since the landfill has been capped with a compacted low permeability clay layer. However, in areas where weathering and erosion have thinned or removed the upper soil horizon such that it is exposed at the surface, vertical percolation rates will be higher as this soil horizon has a greater sand and gravel content. The nearest surface water body to the waste management units is Buffalo Creek. The shortest distance between any of the waste management units and Buffalo Creek is between the stream and the northeast corner of the Phase II disposal area located adjacent to the stream at the northeast property boundary. The distance from the stream to the northern edge of the waste management units of the landfill varies along the waste boundary. This stream will be the primary receptor of surface water runoff from the landfill

2.4.2 Groundwater Hydrogeology

The uppermost pervasive aquifer at the site is the soil to bedrock interface. The aquifer is contained within the weathered and metamorphosed granitic gneiss. The principal flow vectors within the bedrock aquifer will be along current or relic fracture planes and joints and as porous media flow in saprolitic intervals.

In the Piedmont region, groundwater generally occurs in two hydraulically interconnected zones. The upper zone, or regolith, consists of an unconsolidated or semi-consolidated mixture of clay fragmental material ranging in size from silt to sand boulders. The porosity of the regolith is generally on the order of 20 to 30 percent (Heath, 1984). Because of its high porosity, the regolith functions as a reservoir which slowly feeds water downward into the bedrock. Water is introduced to the regolith by precipitation and stream flow. Once in the regolith, groundwater moves between intergranular pore spaces.

This “water table” zone is controlled by climactic factors. Groundwater levels vary seasonally, declining during the summer when atmospheric conditions favor evaporation and plants transpire large amounts of water, and rising during the winter when plants are dormant. Annual groundwater storage in the vicinity of the Landfill Facility is thought to be relatively stable.

Groundwater also occurs below the regolith, in the bedrock zone where it moves through sheetlike openings formed along fractures. Fractures in bedrock are of two types: joints,

which are fractures along which there has been no differential movement, and faults, which are fractures along which the adjacent rocks have undergone measurable differential movement. Groundwater in the bedrock zone is fairly stable and not easily influenced by climactic conditions. The regolith and bedrock zones are connected hydraulically [2].

2.5 Hydraulic Conductivity

The uppermost aquifer was characterized during a subsurface exploration program executed by BPA Environmental and Engineering Inc. (BPA). This program was initiated during installation of the initial groundwater monitoring network during February, 1996. In situ hydraulic conductivity tests were performed by BPA on wells I-5, II-1, II-2, II-3, II-4, II-5, and MW-13. The data from these tests yielded hydraulic conductivity values ranging from 0.042 feet/day in II-5 to 0.380 feet/day in II-3. A complete discussion of the test methods and calculations is presented in BPA's February 1996 report "In-situ Hydraulic conductivity Testing, White Street Landfill, Greensboro, North Carolina". In-situ hydraulic conductivity tests were performed by HDR Engineering, Inc. on monitoring wells II-6, II-7, II-8, and MW-14 in the fall of 1995. The hydraulic conductivities determined by HDR ranged from 0.221 feet/day in II-6 to 2.353 feet/day in II-8. These data were used to calculate groundwater flow velocities across the site.

The static water levels in the Phase II monitoring wells were measured on April 12, 2007, and April 13, 2007. The depth to the water table ranged from 7.24 feet to 22.28 feet below the top of well casing on these dates. A groundwater contour map was constructed using the data collected during April 2007 is presented as **Figure 4**. The groundwater gradient at each well was calculated assuming a constant groundwater gradient along the flow line between adjacent groundwater elevation contours or between the well and the nearest contour. Groundwater flow lines were drawn through each well based upon the groundwater elevation data collected during this monitoring event. The groundwater elevation data collected during this monitoring event indicates that the groundwater beneath Phase II generally flows toward the northwest, toward Buffalo Creek.

Calculated hydraulic conductivity and gradient values and estimated effective porosity values for each well were used in the velocity calculations. The 20 percent effective porosity value is based on porosity and specific yield versus grain size distribution relationships presented in Fetter (1988), and is typical of the types of soils (predominantly silts and sandy silts with some clays) comprising the regolith at the landfill. The calculated groundwater velocities ranged from 0.004 feet/day to 0.429 feet/day.

The April 2007 groundwater velocity calculations can be found in **Appendix I** of this report. The potentiometric map on which the gradient calculations were based is included as **Figure 4** of this report. Calculation methodology is described in the following sections.

2.5.1 Darcy's Velocity

In 1856, Darcy first characterized flow through a porous media. Darcy's Law states that;

Q = kiA

where;

Q = Rate of flow, [cm3/sec]

k = Hydraulic Conductivity, [cm/sec]

I = Hydraulic gradient = dh/dl

A = Cross sectional area, perpendicular to direction of flow [cm2]

Therefore, flow is equal to the velocity of the fluid multiplied by the cross-sectional area where flow is occurring. This yields Darcy's velocity.

2.5.2 Seepage Velocity

The seepage velocity (vs) of a fluid flowing through a porous media is derived from Darcy's velocity. Darcy's velocity does not however, literally describe the movement of fluid through the porous media. It is simply a statistically convenient product. This is due to one of Darcy's original assumptions that flow occurs over the entire cross-sectional area, thus, ignoring the soil particles themselves. To determine the actual speed a fluid flows through a porous media, such as soil, a more accurate representation of the area of flow must be realized. Soil mechanics commonly makes use of a void space to soil solids space ratio. Porosity is defined as the volume of voids per volume of total space;

n = Vv/ Vt

Therefore, the seepage velocity of a fluid moving through soil may be expressed as;

vs = vd / n

3.0 GROUNDWATER MONITORING NETWORK

3.1 Regular Monitoring Network Description

Twelve wells (I-5, II-1, II-2, II-3, II-4, II-5, II-6, II-7, II-7B, II-8, MW-13 and MW-14) currently comprise the groundwater monitoring system for the Phase II solid waste disposal area of the landfill. Monitoring well MW-13 serves as a background well for both the Phase I and the Phase II areas. Monitor well MW-14 serves as a background well for Phase II.

Figure 1 shows the locations of network monitoring wells for Phase II of the White Street Landfill Facility. The regular network monitoring wells are sampled on a semi-annual basis at the White Street Landfill. With the exception of the background wells, MW-13, and MW-14, and compliance wells II-4, II-5, and II-8, the regular network

monitoring wells and the NES wells are located along the northern and northwestern property boundary. The locations of these wells were selected in order to monitor constituent concentrations migrating hydraulically downgradient towards the north-northwestern property boundary of the facility, toward Buffalo Creek.

3.2 Nature and Extent Study Monitoring Well Construction

For the Nature and Extent Study seven (7) additional groundwater monitoring wells were installed to define the extent of the release. The Nature and Extent Study wells were labeled II-2B, II-7B, II-9, II-10, II-11, II-12, and II-13. Monitoring well II-7B was selected to have a deeper bedrock screen interval due to the fact that analytical results for network monitoring well II-7 reported eight of the nine organic constituents of concern at concentrations exceeding the GPS during the monitoring history of this well at the Facility.

The Nature and Extent Study wells were designed and constructed in accordance with techniques specified in the RCRA Groundwater Monitoring Technical Enforcement Guidance Document (TEGD). All of the monitoring wells are constructed of 2 inch diameter Schedule 40 polyvinyl chloride (PVC) screens and riser pipe. The annular space between the slotted PVC screens and the boring wall is filled with ANSI certified filter pack sand in each of the NES wells. The annular space above the screened interval between the PVC riser pipe and boring wall is filled to a minimum 2 foot thickness with pelletized bentonite which was then hydrated. The remaining annular space above the bentonite seal was filled with cement grout to minimize infiltration of surface waters into the screened interval. Monitoring well construction diagrams are included in **Appendix II** of this report.

To date, no groundwater monitoring well has proved to be inadequate nor has yielded groundwater amount or elevation that suggested an inadequacy. A site plan depicting the spatial relationships between monitoring well locations and various site boundaries and landmarks is presented in Figure 1 (attached).

4.0 SITE CHARACTERIZATION

4.1 Site Background and Groundwater Monitoring History

Phase II of the landfill is an active construction, demolition, and debris landfill on top of a closed municipal solid waste (MSW) cell. The Phase II portion of the landfill was included under Permit No. 41-03.

Beginning in 1943, waste handling at the Landfill consisted primarily of incineration. Burning operations ceased in 1965, and since that time, until the Facility's closure in 2006, refuse was landfilled on site. Phase II is an unlined, approximate 145-acre area that received approximately 5.4 million tons of MSW from 1978 to 1997. In addition, in 1998 the City began depositing construction and demolition (C&D) debris on top of

portions of MSW in Phase II and is currently continuing this disposal until a projected date of January 2011.

A series of groundwater monitoring wells was installed at the Facility beginning in 1993. In a letter dated June 24, 1994 from the North Carolina Department of the Environment and Natural Resources (DENR) directed that the monitoring system be upgraded and at least one baseline sampling event of all wells in the approved detection monitoring system be completed and reported to the Solid Waste Section on or before October 9, 1994. More specifically, the Facility was directed to modify the groundwater monitoring system at the Facility by installing additional groundwater monitoring wells sufficient to monitor the active unit separately from the closed unit and to conduct baseline sampling and analysis at the Facility. The additional wells were installed in September 2004. HDR Engineering submitted a "Baseline Water Quality Sampling Report" on October 7, 1994 which included construction information on the newly installed monitoring wells (II-6, II-2, II-8, and MW-14) along with the results of the initial sampling of these wells. Subsequent to the installation of these wells the Facility began monitoring groundwater quality under the North Carolina Solid Waste Management Regulations (NCSWMR) Detection Monitoring Program.

A compliance monitoring agreement was established between the City of Greensboro and NCDENR which specified the frequency and timing of sample collection with the submittal of a Sampling and Analysis Plan for the Facility. The plan was prepared in accordance with the rules codified under the North Carolina Solid Waste Management 15A NCAC 13B, Sections .1630 through .1637 under the guidance of a North Carolina Licensed Geologist. The water quality monitoring plan is effective in providing early detection of any release of hazardous constituents from the MSWLF unit to the uppermost aquifer, so as to be protective of public health and the environment. The Sampling and Analysis Plan (SAP) for the Facility was approved in November of 1998. Subsequent to the approval of the SAP, compliance monitoring events conducted during 1997 showed detections of volatile organic compounds in several of the downgradient compliance monitoring wells in exceedance of the statistically computed background Upper Limits. Due to these results an Assessment Monitoring Program was required.

After entering the Assessment Monitoring Program, several constituents exceeded the approved GPS in several downgradient compliance groundwater monitoring wells. These constituents are considered the primary constituents of concern within the monitoring well network and include the volatile organic compounds: methylene chloride, cis-1,2-dichloroethene, 2-Butanone, benzene, 1,2-Dichloroethane, trichloroethene, 1,2-dichloropropane, and vinyl chloride as well as the inorganic constituents: cadmium, chromium, nickel, thallium, and vanadium. As a result the Facility has initiated the Assessment of Corrective Measures Process as per 15A NCAC 13B .1635. The initial phase of the ACM process is to perform a Nature and Extent study to "characterize the nature and extent of the release" as per 15A NCAC 13B .1634 (g) (1). As part of the study additional groundwater monitoring wells have been installed as necessary in order to characterize the nature and extent of the release.

This Nature and Extent study is the initial phase of the Assessment of Corrective Measures process and will be incorporated into the Assessment of Corrective Measures Report due in September of 2007. The first semi-annual groundwater sampling of the 2007 groundwater monitoring year was conducted on April 12, 2007. The results of this sampling event also confirmed that certain organic parameters are exceeding the GPS in select downgradient compliance monitoring wells.

4.2 Constituents of Concern

Historical groundwater monitoring results have been compiled since the Facility initiated groundwater monitoring in March of 1994. The results of this historical compilation are presented in **Table 1 through Table 21** of this report. The sampling results indicate several organic as well as inorganic constituents have consistently been present in the monitored hydrogeologic regime at the Facility. These organics include the volatile organic compounds: methylene chloride, cis-1,2-dichloroethene, 2-butanone, benzene, 1,2-dichloroethane, trichloroethene, 1,2-dichloropropane, and vinyl chloride as well as the inorganic constituents: cadmium, chromium, nickel, thallium, and vanadium. There have been sporadic detections of other organic and inorganic constituents during the Facility's monitoring history. However, these constituents have not consistently been detected and their reported concentrations did not exceed the NCAC 2L standard or GPS during compliance monitoring.

4.3 Constituent Characterization

For the following discussion, information on the uses/chemical origin, health effects and toxicity, and environmental fate for each of the constituents of concern was taken verbatim directly from online research databases including INCHEM, the Department of Health and Human Services, Environmental Protection Agency, and the Center for Disease Control.

For links to these web-based databases the reader is referred to **Section 6.0, References**, of this report.

4.3.1 Methylene Chloride:

Uses/Chemical Origin:

"Methylene chloride is a colorless liquid with a mild, sweet odor. Another name for it is dichloromethane. Methylene chloride does not occur naturally in the environment.

Methylene chloride is used as an industrial solvent and as a paint stripper. It may also be found in some aerosol and pesticide products and is used in the manufacture of photographic film."

Health Effects/Toxicity:

Acute: "Typical acute symptoms (within minutes to hours) include headache, drowsiness, lightheadedness, slurred speech, decreased alertness, slowed reaction times, irritability, impaired gait, and stupor. Rapid loss of consciousness, coma, seizures, and death has

been reported. Victims of acute, high-level inhalation exposures may suffer airway irritation, inflammation of the lungs, and accumulation of fluid in the lungs. Children may be more vulnerable because of relatively increased minute ventilation per kg and failure to evacuate an area promptly when exposed. Methylene chloride causes skin irritation and blistering. Prolonged dermal contact may result in second- and third-degree chemical burns. Because of their relatively larger surface area: body weight ratio, children are more vulnerable to toxicants absorbed through the skin.

High concentrations of methylene chloride vapor may cause eye irritation and tearing. When splashed in the eye, methylene chloride can cause burning pain, inflammation of the eye surface, and inflammation of the iris.

Survivors of severe, acute exposure (e.g., cases of coma, seizures, or respiratory arrest) may suffer brain or heart damage from lack of oxygen to these organs. Exposure to high levels of methylene chloride, which may lead to the formation of high amounts of the metabolite carbon monoxide, may lead to permanent sequelae, including mental deterioration, urinary and fecal incontinence, and gait disturbance. However, most cases of delayed neurologic sequelae are associated with loss of consciousness in the acute phase of intoxication."

Chronic: "Cardiovascular effects have been documented in case reports but have not been demonstrated in epidemiologic studies of workers exposed to methylene chloride. Irritant contact dermatitis manifested by inflammation and hives has been noted in workers who have chronic skin exposure. Chronic exposure may be more serious for children because of their potential longer latency period. The DHHS has determined that methylene chloride may be reasonably anticipated to be a human carcinogen based on adequate evidence in experimental animals.

In experimental animals, methylene chloride did not produce structural abnormalities but produced behavioral alterations and retarded development in offspring. The levels used in these studies were greater than 1,000 ppm. Whether these effects would have occurred in the absence of maternal toxicity is not clear. Embryotoxic effects have not been documented in humans. Methylene chloride is not included in Reproductive and Developmental Toxicants, a 1991 report published by the U.S. General Accounting Office (GAO) that lists 30 chemicals of concern because of widely acknowledged reproductive and developmental consequences.

Methylene chloride has been shown to cross the placenta in animals and has been found in human breast milk. The fetus and neonates are more susceptible to carbon monoxide, a methylene chloride metabolite, poisoning. Acute, nonlethal maternal intoxication with carbon monoxide may result in fetal death or permanent neurologic sequelae."

Environmental Fate:

"Methylene chloride tends to volatilize to the atmosphere from water and soil. The half-life of methylene chloride volatilization from water has been found to be 21 minutes under experimental conditions (Dilling et al. 1975), but actual volatilization from natural waters will depend on the rate of mixing, wind speed, temperature, and other factors (Dilling et al. 1975; EPA 1979b). The Henry's law constant value (H) of 0.002 atm/m3/mol (EPA 1982e; Gossett 1987) indicates that methylene chloride will volatilize rapidly from moist soil and water surfaces (Thomas 1990).

Methylene chloride is not strongly sorbed to soils or sediments (Dilling et al. 1975; Dobbs et al. 1989). Based on its low soil organic carbon partitioning coefficient (Koc) of 25, methylene chloride is likely to be very highly mobile in soils (Bahnick and Doucette 1988; Roy and Griffin 1985) and may be expected to leach from soils into groundwater. Based on a reported log octanol/water partition coefficient (Kow) of 1.3 (Hansch and Leo 1979), an estimated bioconcentration factor (BCF) of 2.3 was derived (EPA 1980a, 1984). There is no evidence of biomagnification, but because the estimated BCF is low, significant biomagnification of methylene chloride in aquatic food chains is not expected.

Methylene chloride undergoes slow hydrolysis in water. The experimental half-life reported for the hydrolysis reaction, at neutral conditions, is approximately 18 months at 25 EC (Dilling et al. 1975). However, the rate of reaction varies greatly with changes in temperature and pH

Degradation of methylene chloride was found to occur in soils with concentrations ranging from approximately 0.1 to 5.0 ppm (Davis and Madsen 1991). The rate of biodegradation was found to be dependent on soil type, substrate concentration, and redox state of the soil. Methylene chloride biodegradation has been reported to occur under both aerobic conditions and anaerobic conditions (Davis and Madsen 1991). The biodegradation of methylene chloride appears to be accelerated by the presence of elevated levels of organic carbon (Davis and Madsen 1991).

Methylene chloride has a low tendency to absorb to soil (Dilling et al. 1975; Dobbs et al. 1989); therefore, there is a potential for leaching to groundwater. Also, because of the high vapor pressure, volatilization to air is also a likely fate process from dry soil. Its high Henry's law constant (0.002 atm/m3/mol) indicates that volatilization from moist soil is also likely."

4.3.2 Cis-1,2-dichloroethene:

Uses/Chemical Origin:

"1,2-Dichloroethene, also called 1,2-dichloroethylene, is a highly flammable, colorless liquid with a sharp, harsh odor. It is used to produce solvents and in chemical mixtures. You can smell very small amounts of 1,2-dichloroethene in air (about 17 parts of 1,2-dichloroethene per million parts of air [17 ppm]).

There are two forms of 1,2-dichloroethene; one is called cis-1,2-dichloroethene and the other is called trans-1,2-di-chloroethene. Sometimes both forms are present as a mixture."

Health Effects/Toxicity:

Acute: "Breathing high levels of trans-1,2-dichloroethene can make you feel nauseous, drowsy, and tired. Breathing very high levels of its vapor can kill you. When animals breathed high levels of trans-1,2-dichloroethene for short or longer periods of time, their livers and lungs were damaged. The effects were more severe with longer exposure times. Animals that breathed very high levels of trans-1,2-dichloroethene had damaged hearts. Animals given extremely high doses of cis- or trans-1,2-dichloroethene by mouth died. Lower oral doses of cis-1,2-dichloroethene caused effects on the blood, such as decreased numbers of red blood cells, and effects on the liver."

Chronic: "The long-term human health effects after exposure to low concentrations of 1,2-dichloroethene are not known. No studies have been done to see whether cancer in people or animals is caused by exposure to 1,2-dichloroethene; exposure has not been shown to affect fertility in people or animals."

Environmental Fate:

1,2-Dichloroethene evaporates rapidly into air. In the air, it takes about 5-12 days for half of it to break down. Most 1,2-dichloroethene in the soil surface or bodies of water will evaporate into air. 1,2-Dichloroethene can travel through soil or dissolve in water in the soil. It is possible that it can contaminate groundwater. In groundwater, it takes about 13-48 weeks to break down. There is a slight chance that 1,2-dichloroethene will break down into vinyl chloride, a different chemical which is believed to be more toxic than 1,2-dichloroethene.

4.3.3 2-Butanone:

Uses/Chemical Origin:

"2-Butanone is a manufactured chemical but it is also present in the environment from natural sources. It is a colorless liquid with a sharp, sweet odor. It is also known as methyl ethyl ketone (MEK). 2-Butanone is produced in large quantities. Nearly half of its use is in paints and other coatings because it will quickly evaporate into the air and it dissolves many substances. It is also used in glues and as a cleaning agent. 2-Butanone occurs as a natural product. It is made by some trees and found in some fruits and vegetables in small amounts. It is also released to the air from car and truck exhausts."

Health Effects/Toxicity:

Acute: "The known health effects to people from exposure to 2-butanone are irritation of the nose, throat, skin, and eyes. No one has died from breathing 2-butanone alone. If 2-buta-none is breathed along with other chemicals that damage health, it can increase the amount of damage that occurs."

Chronic: "There are no long-term studies with animals either breathing or drinking 2-butanone."

Environmental Fate:

"2-Butanone enters the air during production, use and transport, and from hazardous waste sites. In air, one-half of it will break down from sunlight in 1 day or less. It dissolves in water and is broken down more slowly to a simpler chemical form in about 2 weeks. It does not stick to soil and will travel through the soil to the groundwater. Some of the 2-butanone in soil or water will evaporate into the air. It does not deposit in the bottom of rivers or lakes. It is not expected to concentrate in fish or increase in the tissues of animals further up the food chain."

4.3.4 Benzene:

Uses/Chemical Origin:

"Benzene is a colorless liquid with a sweet odor. It evaporates into the air very quickly and dissolves slightly in water. It is highly flammable and is formed from both natural processes and human activities.

Benzene is widely used in the United States; it ranks in the top 20 chemicals for production volume. Some industries use benzene to make other chemicals which are used to make plastics, resins, and nylon and synthetic fibers. Benzene is also used to make some types of rubbers, lubricants, dyes, detergents, drugs, and pesticides. Natural sources of benzene include volcanoes and forest fires. Benzene is also a natural part of crude oil, gasoline, and cigarette smoke. "

Health Effects/Toxicity:

Acute: "Breathing very high levels of benzene can result in death, while high levels can cause drowsiness, dizziness, rapid heart rate, headaches, tremors, confusion, and unconsciousness. Eating or drinking foods containing high levels of benzene can cause vomiting, irritation of the stomach, dizziness, sleepiness, convulsions, rapid heart rate, and death."

Chronic: "The major effect of benzene from long-term exposure is on the blood. Benzene causes harmful effects on the bone marrow and can cause a decrease in red blood cells leading to anemia. It can also cause excessive bleeding and can affect the immune system, increasing the chance for infection.

Some women who breathed high levels of benzene for many months had irregular menstrual periods and a decrease in the size of their ovaries. It is not known whether benzene will affect fertility in men.

Long-term exposure to high levels of benzene in the air can cause leukemia, particularly acute myelogenous leukemia, often referred to as AML. This is a cancer of the blood-forming organs. The Department of Health and Human Services (DHHS) has determined that benzene is a known carcinogen. The International Agency for Research on Cancer (IARC) and the EPA has determined that benzene is carcinogenic to humans."

Environmental Fate:

"Benzene can pass into the air from water and soil. It reacts with other chemicals in the air and breaks down within a few days. Benzene in the air can attach to rain or snow and be carried back down to the ground. It breaks down more slowly in water and soil, and can pass through the soil into underground water. Benzene does not build up in plants or animals."

4.3.5 1,2-Dichloroethane:

Uses/Chemical Origin:

"1,2-Dichloroethane, also called ethylene dichloride, is a manufactured chemical that is not found naturally in the environment. It is a clear liquid and has a pleasant smell and sweet taste."

"The most common use of 1,2-dichloroethane is in the production of vinyl chloride which is used to make a variety of plastic and vinyl products including polyvinyl chloride (PVC) pipes, furniture and automobile upholstery, wall coverings, house wares, and automobile parts. It is also used to as a solvent and is added to leaded gasoline to remove lead."

Health Effects/Toxicity:

Acute: "Nervous system disorders, liver and kidney diseases, and lung effects have been reported in humans ingesting or inhaling large amounts of 1,2-dichloroethane.

In laboratory animals, breathing or ingesting large amounts of 1,2-dichloroethane have also caused nervous system disorders and liver, kidney, and lung effects. Animal studies also suggest that 1,2-dichloroethane may damage the immune system."

Chronic: "Kidney disease has also been seen in animals ingesting low doses of 1,2-dichloroethane for a long time. Studies in animals indicate that 1,2-dichloroethane does not affect reproduction.

The Department of Health and Human Services (DHHS) has determined that 1,2-dichloroethane may reasonably be expected to cause cancer. The EPA has determined that 1,2-dichloroethane is a probable human carcinogen and the International Agency for Cancer Research (IARC) considers it to be a possible human carcinogen."

Environmental Fate:

"Most of the 1,2-dichloroethane released to the environment is released to the air. In the air, 1,2-dichloroethane breaks down by reacting with other compounds formed by sunlight. It can stay in the air for more than 5 months before it is broken down. 1,2-Dichloroethane can also be released into rivers and lakes. It breaks down very slowly in water and most of it will evaporate to the air. 1,2-Dichloroethane released in soil will either evaporate into the air or travel down through the soil and enter underground water."

4.3.6 Trichloroethene (TCE):

Uses/Chemical Origin:

Trichloroethylene is a colorless liquid with a characteristic, slightly sweet odor. TCE is a chlorinated hydrocarbon and is a commonly detected chlorinated hydrocarbon in the site groundwater. TCE is considered a daughter compound or degradation product of tetrachloroethene (PCE). It is used as a solvent in a variety of applications. A major use of trichloroethylene is in metal degreasing; other significant uses are in textile cleaning, solvent extraction processes and as a carrier solvent. TCE is also used in the metal finishing, paint and ink formulation, electrical/electronic components, and rubber processing industries. It is no longer used as a grain fumigant and is now only occasionally used in anesthesia. For practical use, trichloroethylene requires the addition of stabilizers (up to 2%)[3].

Health Effects/Toxicity:

Acute: EPA has found TCE to potentially cause vomiting and abdominal pain from acute exposures at levels above the MCL. No health advisories have been established for short term exposures.

Chronic: TCE has the potential to cause liver damage from a lifetime exposure at levels above the MCL. There is some evidence that TCE may have the potential to cause cancer from a lifetime exposure at levels above the MCL.

The limited toxicity data available show LC50 values for aquatic biota in the mg/liter range. Trichloroethylene is degraded in biological and a biotic systems[3]. Marine monitoring data only suggest moderate bioconcentration (2-25 times). Bioconcentration factors of 17 to 39 have been reported in bluegill sunfish and rainbow trout.

Environmental Fate:

Relatively high vapor pressure and low absorption coefficient to a number of soil types indicates ready transport through soil and low potential for absorption to sediments. The mobility in soil is confirmed in soil column studies and river bank infiltration studies Four to six percent of environmental concentrations of TCE absorbed to two silty clay loams (Koc = 87 and 150). No absorption to Ca-saturated montmorillonite and 17% absorption to AL-saturated montmorillonite was observed.

The high Henry's Law Constant indicates rapid evaporation from water. Half-lives of evaporation have been reported to be on the order of several minutes to hours, depending upon the turbulence. Field studies also support rapid evaporation from water. TCE is not hydrolyzed by water under normal conditions. It does not absorb light of less than 290 nm and therefore should not directly photodegrade. However, slow (half-life -10.7 months) photooxidation in water has been noted.

TCE is relatively reactive under smog conditions with 60% degradation in 140 minutes and 50% degradation in 1 to 3.5 hours reported. Atmospheric residence times based upon reaction with hydroxyl radical is 5 days (6-8) with production of phosgene, dichloroacetyl chloride, and formyl chloride.

4.3.7 1,2-Dichloropropane:

Uses/Chemical Origin:

Production of 1,2-dichloropropane has decreased greatly since a 1980 report of 77 million pounds. Dow Chemical, the only listed producer, discontinued its production in 1991.

The greatest use of 1,2-dichloropropane (DCP) is as a chemical intermediate in the production of carbon tetrachloride and perchloroethylene, lead scavenger for antiknock fluids, solvent. Other uses have included: ion exchange resin manufacture, paper coating, scouring, spotting, metal degreasing agent, soil fumigant for nematodes, and insecticide for stored grain.

Health Effects/Toxicity:

Acute: EPA has found short-term exposures to DCP at levels above the MCL to potentially impair the functions of the liver, kidneys, adrenal glands, bladder, and the gastrointestinal and respiratory tracts.

Drinking water levels which are considered "safe" for short term exposures: For a 10kg (22lb) child consuming 1 liter of water per day: a ten-day exposure to 0.09 mg/L.

Chronic: Long term exposures to DCP at levels above the MCL have been found to potentially affect the liver, kidneys, bladder, gastrointestinal tract and the respiratory tract. There is some evidence that DCP may have the potential to cause cancer from a lifetime exposure at levels above the MCL.

Human exposure is primarily due to inhalation. Occupational exposure, both dermal and via inhalation, will occur during and after its application as a soil fumigant as well as during its production and other uses.

Environmental Fate:

If injected into soil DCP will be primarily lost by volatilization. The fate of DCP in groundwater is unknown. If released to surface water, DCP will be lost by volatilization with half-lives ranging from approximately 6 hours for a river to 10 days for a lake. Absorption to soil and bioconcentration in fish will not be significant.

In air it will react with photochemically generated hydroxyl radicals (half-life > 23 days) and be washed out by rain. Therefore there will be ample time for dispersal as is evidenced by its presence in ambient air.

4.3.8 Tetrachloroethene:

Uses/Chemical Origin:

Tetrachloroethene is one of the most important chlorinated solvents worldwide and has been produced commercially since the early 1900s. Most of the tetrachloroethene (PCE) produced is used for dry cleaning garments; smaller amounts are used in the production of chlorofluorocarbons and for degreasing metals. About 513 thousand tons were used in all applications in Western Europe, Japan and the United States in 1990.

The greatest use of PCE is in the textile industry for processing, finishing, sizing, and as a component of aerosol dry-cleaning products. Other uses include: an intermediate in the synthesis of fluorocarbons, an insulating/cooling fluid in electric transformers, in typewriter correction fluids, as veterinary medication against worms, once used as a grain protectant/fumigant.

Health Effects/Toxicity:

Acute: EPA has found PCE to potentially cause the following health effects from acute exposures at levels above the MCL: detrimental effects to liver, kidney, and central nervous system.

Drinking water levels which are considered “safe” for short term exposures: for a 10kg 22lb) child consuming 1 liter of water per day: a one-to-ten day exposure of 2 mg/L; up to a 7- year exposure to 1 mg/L.

Chronic: PCE has the potential to cause the following health effects from long-term exposures at levels above the MCL: detrimental effects to the liver, kidney, and central nervous system. There is some evidence that PCE may have the potential to cause cancer from a lifetime exposure at levels above the MCL.

Five studies of people exposed to drinking-water contaminated with tetrachloroethene have been reported. In four of these, no consistent pattern of risk for any specific cancers was observed. In the fifth study, in Massachusetts, United States, although the increase

in the relative risk for leukemia was significant, the result was based on only two cases. No consistent evidence for an elevated risk for leukemia was seen in the cohort studies. Tetrachloroethene shows only low acute toxicity in humans and in experimental animals.

Environmental Fate:

If PCE is released to soil, it will be subject to evaporation into the atmosphere and to leaching to the groundwater. PCE was slightly absorbed on sand and clay minerals. The Henry's absorption coefficients were approximately in proportion to the organic content of the soil samples. Based on the reported and estimated Koc's (209 to 1685) PCE will be expected to exhibit low to medium mobility in soil and therefore may leach slowly to the groundwater.

There is evidence that slow biodegradation of PCE occurs under anaerobic conditions when the microorganisms have been acclimated. In experiments using continuous-flow laboratory methanogenic column with well acclimated mixed cultures and a 2 day detention time, there was an average PCE removal rate of 76%. Removal of 86% PCE occurred in a methanogenic biofilm column (8 weeks of activation followed by 9-12 weeks ofacclimation). In a microcosm containing muck from an aquifer recharge basin, 72.8% loss was observed in 21 days against 12-17% in controls. In one field groundwater recharge project, degradation was observed in the 50 day recharge period.

If PCE is released to water, it will be subject to rapid volatilization with estimated half-lives ranging from <1 day to several weeks. Measured volatilization half-lives in a mesocosm simulating Narraganset Bay, RI were 11 days in winter, 25 days in spring, and 14 days in summer. PCE will not be expected to significantly biodegrade in water or absorb to sediment. PCE will not be expected to significantly hydrolyze in soil or water under normal environmental conditions (half-life 9 months at 25 degrees C).

If PCE is released to the atmosphere, it will exist mainly in the gas phase and it will be subject to photooxidation with estimates of degradation time scales ranging from an approximate half-life of 2 months to complete degradation in an hour. Some of the PCE in the atmosphere may be subject to washout in rain based on the solubility of PCE in water and the fact that PCE has been detected in rain.

Based on the reported and estimated BCF's, PCE will not be expected to significantly bioconcentrate in aquatic organisms. BCFs of 39 to 49 were measured in fish; a BCF of 226 was estimated from octanol water partition coefficient.

4.3.9 Vinyl chloride:

Uses/Chemical Origin:

Vinyl chloride is a synthetic chemical obtained either by hydrochlorination of acetylene or by halogenation of ethylene (ILO, 1983; Budavari, 1989). Under normal conditions of temperature and pressure, vinyl chloride is a colorless gas with mild ethereal odor. It is usually handled under pressure as a colorless liquid. Vinyl chloride (VC) is used for the

production of vinyl chloride homo-polymer and co-polymer resins; these have many applications. It was formerly considered for use as an anesthetic agent, but was finally abandoned for this purpose because of cardiac arrhythmias during anesthesia. It has also been used as a refrigerant, an extraction solvent, a propellant, and for the production of methyl chloroform (ECETOC, 1988). VC is used in the manufacture of numerous products in building and construction, automotive industry, electrical wire insulation and cables, piping, industrial and household equipment, medical supplies, and is depended upon heavily by the rubber, paper, and glass industries. VC is also a product of anaerobic degradation of chlorination solvents such as would be expected to occur in groundwater and landfills. EPA has issued a maximum contaminant level of 2 ppb for vinyl chloride in drinking water.

Health Effects/Toxicity:

Acute: EPA has found vinyl chloride to potentially cause neurological effects from acute exposures at levels above the MCL.

Drinking water levels which are considered “safe” for short term exposures: For a 10kg (22lb) child consuming 1 liter of water per day: a one-to-ten day exposure of 3 mg/L; up to a 7-year exposure to 0.01 mg/L.

Chronic: Vinyl chloride has the potential to cause neurological and liver effects from long-term exposure at levels above the MCL. VC has the potential to cause cancer from a lifetime exposure at levels above the MCL.

Therefore the level of risk to human health is expected to be low. Insufficient data exists to determine the actual level of impact to aquatic life in the creek from vinyl chloride.

Environmental Fate:

If VC is released to soil, it will be subject to rapid volatilization with reported half-lives of 0.2 and 0.5 days for evaporation from soil at 1 and 10cm incorporation, respectively, based on a high vapor pressure of 2,600 mm Hg at 25 degrees C. Based on a reported water solubility of 2,700 mg/L, a Koc of 56 was estimated. According to estimated Koc values, vinyl chloride will be expected to be highly mobile in soil and it may leach to the groundwater. It may be subject to biodegradation under anaerobic conditions such as exists in flooded soil and groundwater.

If released to water, vinyl chloride will rapidly evaporate. Using a reported Henry’s Law constant of 0.0560 atm/cu m-mole, a half-life of 0.805 hr was calculated for evaporation from a model river 1 m deep with a current of 3 m/sec and with a wind velocity of 3 m/sec. In waters containing photosensitizers such as humic acid, photodegradation will occur fairly rapidly. Limited existing data indicate that vinyl chloride is resistant to biodegradation in aerobic systems and therefore, it may not be subject to biodegradation

in aerobic soils and natural waters. It will not be expected to hydrolyze in soils or natural waters under normal environmental conditions.

If vinyl chloride is released to the atmosphere, it can be expected to exist mainly in the vapor-phase in the ambient atmosphere and to degrade rapidly in air by gas-phase reaction with photochemically produced hydroxyl radicals with an estimated half-life of 1.5 days.

Some data indicate that vinyl chloride is too readily volatized to undergo bioaccumulation, except perhaps in the most extreme exposure conditions. Based on a reported water solubility of 2,700 mg/L, a BCF of 7 was estimated, indicating that VC will not be expected to significantly bioconcentrate in aquatic organisms.

4.3.10 Cadmium:

Uses/Chemical Origin:

"Cadmium is a natural element in the earth's crust. It is usually found as a mineral combined with other elements such as oxygen (cadmium oxide), chlorine (cadmium chloride), or sulfur (cadmium sulfate, cadmium sulfide).

All soils and rocks, including coal and mineral fertilizers, contain some cadmium. Most cadmium used in the United States is extracted during the production of other metals like zinc, lead, and copper. Cadmium does not corrode easily and has many uses, including batteries, pigments, metal coatings, and plastics."

Health Effects/Toxicity:

Acute: "Breathing high levels of cadmium severely damages the lungs and can cause death. Eating food or drinking water with very high levels severely irritates the stomach, leading to vomiting and diarrhea."

Chronic: "Long-term exposure to lower levels of cadmium in air, food, or water leads to a buildup of cadmium in the kidneys and possible kidney disease. Other long-term effects are lung damage and fragile bones. The Department of Health and Human Services (DHHS) has determined that cadmium and cadmium compounds may reasonably be anticipated to be carcinogens."

Environmental Fate:

"Cadmium enters air from mining, industry, and burning coal and household wastes. Cadmium particles in air can travel long distances before falling to the ground or water. It enters water and soil from waste disposal and spills or leaks at hazardous waste sites. It binds strongly to soil particles. Some cadmium dissolves in water. It doesn't break down in the environment, but can change forms. Fish, plants, and animals take up cadmium

from the environment. Cadmium stays in the body a very long time and can build up from many years of exposure to low levels."

4.3.11 Chromium:

Uses/Chemical Origin:

"Chromium is a naturally occurring element found in rocks, animals, plants, soil, and in volcanic dust and gases. Chromium is present in the environment in several different forms. The most common forms are chromium(0), chromium(III), and chromium(VI). No taste or odor is associated with chromium compounds.

Chromium(III) occurs naturally in the environment and is an essential nutrient. Chromium(VI) and chromium(0) are generally produced by industrial processes.

The metal chromium, which is the chromium(0) form, is used for making steel. Chromium(VI) and chromium(III) are used for chrome plating, dyes and pigments, leather tanning, and wood preserving."

Health Effects/Toxicity:

Acute: "Breathing high levels of chromium(VI) can cause irritation to the nose, such as runny nose, nosebleeds, and ulcers and holes in the nasal septum. Ingesting large amounts of chromium(VI) can cause stomach upsets and ulcers, convulsions, kidney and liver damage, and even death. Skin contact with certain chromium(VI) compounds can cause skin ulcers. Some people are extremely sensitive to chromium(VI) or chromium(III). Allergic reactions consisting of severe redness and swelling of the skin have been noted."

Chronic: "The World Health Organization (WHO) has determined that chromium(VI) is a human carcinogen. The Department of Health and Human Services (DHHS) has determined that certain chromium(VI) compounds are known to cause cancer in humans. The EPA has determined that chromium(VI) in air is a human carcinogen."

Environmental Fate:

"Chromium enters the air, water, and soil mostly in the chromium(III) and chromium(VI) forms. In air, chromium compounds are present mostly as fine dust particles which eventually settle over land and water. Chromium can strongly attach to soil and only a small amount can dissolve in water and move deeper in the soil to underground water. Fish do not accumulate much chromium in their bodies from water."

4.3.12 Nickel:

Uses/Chemical Origin:

"Nickel is a very abundant natural element. Pure nickel is a hard, silvery-white metal. Nickel can be combined with other metals, such as iron, copper, chromium, and zinc, to form alloys. These alloys are used to make coins, jewelry, and items such as valves and heat exchangers. Most nickel is used to make stainless steel.

Nickel can combine with other elements such as chlorine, sulfur, and oxygen to form nickel compounds. Many nickel compounds dissolve fairly easy in water and have a green color. Nickel compounds are used for nickel plating, to color ceramics, to make some batteries, and as substances known as catalysts that increase the rate of chemical reactions.

Nickel is found in all soil and is emitted from volcanoes. Nickel is also found in meteorites and on the ocean floor. Nickel and its compounds have no characteristic odor or taste."

Health Effects/Toxicity:

Acute: "The most common harmful health effect of nickel in humans is an allergic reaction. Approximately 10-20% of the population is sensitive to nickel. People can become sensitive to nickel when jewelry or other things containing it are in direct contact with the skin for a long time. Once a person is sensitized to nickel, further contact with the metal may produce a reaction. The most common reaction is a skin rash at the site of contact. The skin rash may also occur at a site away from the site of contact. Less frequently, some people who are sensitive to nickel have asthma attacks following exposure to nickel. Some sensitized people react when they consume food or water containing nickel or breathe dust containing it."

Chronic: "Cancers of the lung and nasal sinus have resulted when workers breathed dust containing high levels of nickel compounds while working in nickel refineries or nickel processing plants. The Department of Health and Human Services (DHHS) has determined that nickel metal may reasonably be anticipated to be a carcinogen and that nickel compounds are known human carcinogens. The International Agency for Research on Cancer (IARC) has determined that some nickel compounds are carcinogenic to humans and that metallic nickel may possibly be carcinogenic to humans. The EPA has determined nickel refinery dust and nickel subsulfide are human carcinogens."

Environmental Fate:

"Nickel is released into the atmosphere by industries that make or use nickel, nickel alloys, or nickel compounds. It is also released into the atmosphere by oil-burning power plants, coal-burning power plants, and trash incinerators. In the air, it attaches to small particles of dust that settle to the ground or are taken out of the air in rain or snow; this

usually takes many days. Nickel released in industrial waste-water ends up in soil or sediment where it strongly attaches to particles containing iron or manganese. Nickel does not appear to accumulate in fish or in other animals used as food."

4.3.13 Thallium:

Uses/Chemical Origin:

"Pure thallium is a bluish-white metal that is found in trace amounts in the earth's crust. In the past, thallium was obtained as a by-product from smelting other metals; however, it has not been produced in the United States since 1984. Currently, all the thallium is obtained from imports and from thallium reserves.

In its pure form, thallium is odorless and tasteless. It can also be found combined with other substances such as bromine, chlorine, fluorine, and iodine. When it's combined, it appears colorless-to-white or yellow.

Thallium is used mostly in manufacturing electronic devices, switches, and closures, primarily for the semiconductor industry. It also has limited use in the manufacture of special glass and for certain medical procedures."

Health Effects/Toxicity:

Acute: "Exposure to high levels of thallium can result in harmful health effects. A study on workers exposed on the job over several years reported nervous system effects, such as numbness of fingers and toes, from breathing thallium.

Studies in people who ingested large amounts of thallium over a short time have reported vomiting, diarrhea, temporary hair loss, and effects on the nervous system, lungs, heart, liver, and kidneys. It has caused death."

Chronic: "It is not known what the effects are from ingesting low levels of thallium over a long time.

The Department of Health and Human Services, the International Agency for Research on Cancer, and the Environmental Protection Agency (EPA) have not classified thallium as to its human carcinogenicity."

Environmental Fate:

"Thallium enters the environment primarily from coal-burning and smelting, in which it is a trace contaminant of the raw materials. It stays in the air, water, and soil for a long time and is not broken down. Some thallium compounds are removed from the atmosphere in rain and snow. It's absorbed by plants and enters the food chain. It builds up in fish and shellfish."

4.3.14 Vanadium:

Uses/Chemical Origin:

"Vanadium is a compound that occurs in nature as a white-to-gray metal, and is often found as crystals. Pure vanadium has no smell. It usually combines with other elements such as oxygen, sodium, sulfur, or chloride. Vanadium and vanadium compounds can be found in the earth's crust and in rocks, some iron ores, and crude petroleum deposits.

Vanadium is mostly combined with other metals to make special metal mixtures called alloys. Vanadium in the form of vanadium oxide is a component in special kinds of steel that is used for automobile parts, springs, and ball bearings. Most of the vanadium used in the United States is used to make steel. Vanadium oxide is a yellow-orange powder, dark-gray flakes, or yellow crystals. Vanadium is also mixed with iron to make important parts for aircraft engines.

Small amounts of vanadium are used in making rubber, plastics, ceramics, and other chemicals."

Health Effects/Toxicity:

Acute: "The major effects from breathing high levels of vanadium are on the lungs, throat, and eyes."

Chronic: "The Department of Health and Human Services, the International Agency for Research on Cancer, and the Environmental Protection Agency (EPA) have not classified vanadium as to its human carcinogenicity."

Environmental Fate:

"Vanadium mainly enters the environment from natural sources and from the burning of fuel oils. It stays in the air, water, and soil for a long time. It does not dissolve well in water. It combines with other elements and particles. It sticks to soil sediments. Low levels have been found in plants, but it is not likely to build up in the tissues of animals."

4.3.15 Zinc:

Uses/Chemical Origin:

"Zinc is one of the most common elements in the earth's crust. It is found in air, soil, and water, and is present in all foods. Pure zinc is a bluish-white shiny metal.

Zinc has many commercial uses as coatings to prevent rust, in dry cell batteries, and mixed with other metals to make alloys like brass, and bronze. A zinc and copper alloy is used to make pennies in the United States.

Zinc combines with other elements to form zinc compounds. Common zinc compounds found at hazardous waste sites include zinc chloride, zinc oxide, zinc sulfate, and zinc sulfide. Zinc compounds are widely used in industry to make paint, rubber, dyes, wood preservatives, and ointments."

Health Effects/Toxicity:

Acute: "Harmful effects generally begin at levels 10-15 times higher than the amount needed for good health. Large doses taken by mouth even for a short time can cause stomach cramps, nausea, and vomiting. Taken longer, it can cause anemia and decrease the levels of your good cholesterol. Inhaling large amounts of zinc (as dusts or fumes) can cause a specific short-term disease called metal fume fever."

Chronic: "The Department of Health and Human Services (DHHS) and the International Agency for Research on Cancer (IARC) have not classified zinc for carcinogenicity. Based on incomplete information from human and animal studies, the EPA has determined that zinc is not classifiable as to its human carcinogenicity."

Environmental Fate:

"Some is released into the environment by natural processes, but most comes from human activities like mining, steel production, coal burning, and burning of waste. It attaches to soil, sediments, and dust particles in the air. Rain and snow remove zinc dust particles from the air. Depending on the type of soil, some zinc compounds can move into the groundwater and into lakes, streams, and rivers. Most of the zinc in soil stays bound to soil particles and does not dissolve in water. It builds up in fish and other organisms, but it does not build up in plants."

4.3.16 Summary:

With the exception of 2-butanone and benzene, all of the organic constituents of concern at the White Street Landfill are classified as chlorinated hydrocarbons. The compound 2-butanone was only detected one time and only in NES well II-7B during the September 13, 2001 groundwater monitoring event and has not been detected in any monitoring well at the White Street Landfill since. The hydrocarbon benzene has been detected sporadically in the monitoring history of the landfill primarily in compliance monitoring well II-7. This compound had not been detected in any monitoring well since the October 1998 monitoring event until it was detected in monitoring well II-2 during the April 2007 groundwater monitoring event. Specifically PCE and TCE and their degradation products are the most commonly detected chlorinated hydrocarbons in groundwater samples from the site. The most frequently detected degradation products include TCE; 1,2-dichloropropane; and vinyl chloride. These daughter compounds may be present at the site solely due to biodegradation of PCE, or they may be present due to direct transport from a source within the waste management unit.

The chemical structure of chlorinated organic compounds makes extraction from groundwater or subsurface environments more difficult. Biodegradation of highly

chlorinated hydrocarbons occurs initially under anaerobic conditions, unlike aromatic compounds. Anaerobic degradation tends to occur at a much slower rate than aerobic degradation.

Based on current literature, we understand that parent compounds such as PCE and TCE which breakdown into daughter products such as those discussed above; typically occur relatively close to their decomposing waste source where conditions are typically anaerobic and reducing. Even if both originate from the same source area at the same time, chlorinated hydrocarbons tend to migrate further downgradient in groundwater than aromatics because chlorinated constituents are relatively soluble and mobile in water but do not degrade readily. The parent chlorinated compounds slowly degrade anaerobically to intermediate compounds including TCE; and 1,2 DCP which have both been reported in the groundwater at the site. These intermediate compounds are typically indicative of the middle to leading edge of an area of groundwater impacted by chlorinated hydrocarbons. The intermediate compounds then further degrade to other daughter products including chloroethane and finally vinyl chloride. These compounds are typically indicative of the leading edge of a chlorinated hydrocarbon plume within the hydrogeologic regime. As chlorinated hydrocarbons travel in groundwater farther from decomposing waste, groundwater conditions become increasingly aerobic and less reducing. Vinyl chloride degrades to ethane, carbon dioxide, and water in aerobic groundwater conditions.

4.4 White Street Landfill Facility Network Sampling Results Summary

Of the organic constituents of concern listed above, methylene chloride was only detected above the NCAC 2L Standard one time in the monitoring history of the landfill. This occurred in monitoring well II-7 during the October 1998 groundwater monitoring event and has not occurred since. The compound 2-butanone was also only detected above the NCAC 2L Standard one time in the monitoring history of the facility. This occurred in monitoring well II-7B during the September 13, 2001 groundwater monitoring event and has not occurred since. Since detection of these compounds has not occurred since the 2001 groundwater monitoring event and since detection of both of these compounds only occurred in a single monitoring event, these two compounds are not considered indicative of a release from the Facility and may have occurred due to other causes at the time the sampling event occurred.

The remaining chlorinated hydrocarbon constituents of concern have centered around compliance monitoring well II-7 and recently in compliance well II-2. As a result, the Nature and Extent Study has also centered around these compliance wells. **Table 1** through **Table 14** of this report illustrate the historical groundwater monitoring results, constituents of concern which were detected above the NCAC 2L Standard, and the compliance monitoring wells in which the exceedances occurred.

In order to evaluate the trend of the NCAC 2L standard exceedances, trend graphs plotting the concentrations of the constituents of concern over time were prepared. These time vs. concentrations graphs illustrate that the concentrations of all of the constituents

of concern, both organic as well as inorganic have dramatically decreased over time. These trend graphs illustrating the decline in concentrations of the constituents of concern over time at the Facility are included in **Appendix III** of this report.

4.5 Nature and Extent Study Results

In order to perform the Nature and Extent Study and fulfill the requirements of 15A NCAC 13B.1634.g.1, one additional groundwater monitoring well was installed downgradient of each network monitoring well in which an exceedance of the NCAC 2L Standard and/or GPS occurred. These wells were installed along the northern most downgradient vicinity of the Facility boundary and on the landfill side of Buffalo Creek. These locations were selected S&ME, to be positioned along the primary component of flow toward the stream so that the NES wells will maximally intercept a migrating plume away from the landfill. The locations of the Nature and Extent Study wells are shown in **Figure 1** and **Figure 2**.

The Nature and Extent Study wells were constructed with single piezometers to monitor the uppermost pervasive aquifer at the Facility boundary. NES well II-7B was selected to have a deeper screen interval installed due to the fact that analytical results for network monitoring well II-7 showed reported concentrations of eight of the nine organic constituents of concern in concentrations exceeding the NCAC 2L standard and/or GPS during the monitoring history of the Facility. By installing a deep monitoring well the vertical extent of contaminant distribution can be observed at the Facility boundary.

4.5.1 Monitoring Well II-7 Investigation

NES monitoring wells II-7B, II-9, II-10 were installed in response to detected exceedance of the corresponding NCAC 2L concentrations for the following organic constituents of concern at the network monitoring well II-7: methylene chloride, cis 1,2-dichloroethene, benzene, 1,2-dichloroethane, trichloroethene, 1,2-dichloropropane, and tetrachloroethene. Reference **Figure 1** and **Figure 2** for the location of II-7 and II-7B.

4.5.1.1 II-7B, II-9, II-10, and II-11 Non-Network Well Installations

Monitoring well II-7B was installed adjacent to well II-7 but included the installation of a deeper screen interval in order to vertically characterize the constituents of concern identified in compliance well II-7. NES wells II-9 and II-11 were installed northeast of well II-7 in order to characterize the extent of the plume in the northeast vicinity of II-7 along Buffalo Creek. NES well II-10 was installed cross gradient of well II-7 along the waste management unit boundary southwest of well II-7 in order to better characterize the plume in the southwest vicinity of II-7. The well construction diagrams for well II-7B, II-9, II-10, and II-11 are presented in **Appendix II**.

4.5.1.2 II-7B, II-9,II-10, and II-11 NES Sampling Results

NES well II-7B has been sampled on a regular basis since the September 2001 groundwater monitoring event as described earlier in this report. During the initial September 13, 2001 groundwater monitoring event, 2-butanone was detected at a reported concentration of 680 μg/L in II-7B which exceedes the NCAC 2L standard set at

170 μg/L. Tetrachloroethene was detected in II-7B at a reported concentration of 1.8 μg/L during the most recent April 12, 2007 groundwater monitoring event. This concentration exceeds the NACA 2L standard of 0.7 μg/L for tetrachloroethene. Also during the April 12, 2007 monitoring event, vanadium was detected at a reported concentration of 14.5 μg/L in II-7B. This concentration exceeds the NC DENR GPS for vanadium set at 3.5 μg/L. There is no NCAC 2L standard for vanadium.

Most of the constituents of concern have not been detected above the method detection limit in NES well II-7B. Since there have been single detections of three of the constituents of concern at concentrations close to the corresponding NCAC 2L standards in II-7B, it is reasonable to predict that the vertical extent of the constituent plume near the facility boundary for Phase II White Street has been defined by the screened interval of NES well II-7B.

For the following discussions, NES wells II-9, II-10, and II-11 were each sampled twice since their installation; once on May 11, 2005 and once on April 24, 2006.

The only constituent detected in NES well II-9 at a concentration above the NCAC 2L standard is vinyl chloride. Vinyl chloride was reported at a concentration of 12 μg/L in the sample collected from II-9 during the May 11, 2005 groundwater monitoring event.

The metal thallium was detected in the sample from NES well II-11 at a reported concentration of 12 μg/L during the May 11, 2005 groundwater monitoring event. This concentration exceeds the NC DENR GPS value for thallium set at 0.28 μg/L. There is no NCAC 2L standard for thallium; therefore, compliance is determined by the NC DENR GPS.

No constituents of concern have ever been detected in NES monitoring well II-10.

Tables 18 through **21** provides a summary of NES well sampling results. These results have already been reported to the NC DENR in previous groundwater monitoring reports.

4.5.2 Monitoring Well I-5 Investigation

Groundwater analytical results for network monitoring well I-5 have detected the following constituents of concern: chromium, nickel, thallium, and vanadium at concentrations that exceed the corresponding NCAC 2L standards. NES well II-12 was installed hydraulically downgradient and to the northeast of well I-5 to examine these constituents of concern downgradient of network monitoring well I-5. Reference **Figure 1** for the locations of I-5 and NES well II-12.

4.5.2.1 NES II-12 Non-Network Well Installation

Monitoring well II-12 was installed downgradient of I-5 in order to measure if the constituents of concern in I-5 have migrated further toward Buffalo Creek and also to be a replacement for well I-5. The well construction diagram for NES well II-12 is presented in **Appendix II**.

4.5.2.2 NES Well II-12 Sampling Results

The non-network monitoring well II-12 was sampled twice since its installation; once on May 11, 2005 and once on April 24, 2006, for the North Carolina Appendix I organic and inorganic listed constituents. The results of the April 24, 2006 sampling event indicated that thallium, reported at a concentration of 25.3 μg/L, exceeded the established NC DENR GPS value of 0.28 μg/L for thallium. There were no other constituents of concern detected above the NCAC 2L standard and/or DENR GPS values in NES well II-12. **Tables 18** through **21** provides a summary of the constituents detected during the Nature and Extent Study analysis.

4.5.3 Monitoring Well II-2 Investigation

Groundwater analytical results for network monitoring well II-2 have recently detected the following organic constituents of concern: benzene, trichloroethene, tetrachloroethene, and vinyl chloride at concentrations that exceed the corresponding NCAC 2L standards. As a result, NES wells II-2B and II-13 were installed. NES well II-2B was installed downgradient and northeast of II-2 in order to assess whether the constituents found in II-2 have likely migrated beyond the landfill property at Buffalo Creek. NES well II-13 was installed north and east of well II-2 and between compliance wells II-2 and II-3 in order to assess the extent of the contaminant plume between these two wells since no constituents of concern have historically been detected in compliance well II-3. Reference **Figure 1** for the locations of NES wells II-2B and II-13.

4.5.3.1 NES Wells II-2B and II-13 Non-Network Well Installations

NES wells II-2B and II-13 were installed to assess if the constituents of concern in II-2 have reached Buffalo Creek as well as to define the extent of the contaminant plume between compliance wells II-2 and II-3. The well construction diagrams NES wells II-2B and II-13 are presented in **Appendix II**.

4.5.3.2 NES Wells II-2B and II-13 Sampling Results

NES wells II-2B and II-13 were sampled for the complete North Carolina Appendix II suite of volatile organic compounds on July 11, 2007. The results of the sampling event report the detection of Tetrachloroethene and Vinyl Chloride at concentrations that exceed the corresponding established NCAC 2L standard in NES well II-2B. The reported concentrations of 2.3 μg/L and 3.2 μg/L for tetrachloroethene and vinyl chloride respectively both exceed their respective NCAC 2L standard of 0.7 μg/L and 0.015 μg/L.

There were no constituents of concern detected above the NCAC 2L standard in NES well II-13.

Tables 18 through **21** provide a summary of the constituents detected from the Nature and Extent Study analysis. The laboratory analytical results report of the July 11, 2007 sampling event for NES well II-2B and II-13 is included in **Appendix IV** of this report. The NCDENR Environmental Monitoring Reporting Form is included in **Appendix V**.

4.5.4 Drinking Water Well Receptor Survey

As part of this Nature and Extent Study, S&ME completed a visual observation for evidence of drinking water wells within a quarter mile radius of the compliance monitoring wells in which groundwater impact has been detected. This visual observation was completed from a vehicle traveling along public roads and right-of-ways within the quarter mile radius.

The results of our survey show that there are five (5) drinking water wells within a quarter mile radius of the impacted compliance monitoring wells II-2 and II-7. The drinking water wells were identified on the opposite side of Buffalo Creek from the landfill and are at a topographically higher elevation than the landfill. Buffalo Creek is a local hydraulic divide in this region.

Based on these results, the risk to these drinking water wells from the primary constituents of concern from the landfill is expected to be low. A map showing the locations of the identified drinking water wells within a quarter mile radius of compliance wells II-2 and II-7 is included as **Figure 5** of this Report.

4.6 Metals Analysis

The inorganic constituents of concern which have been detected in one or more compliance monitoring wells at reported concentrations exceeding the NCAC 2L standard or the DENR GPS values include: cadmium, chromium, nickel, thallium, and vanadium. These constituents have been detected at elevated levels in numerous downgradient compliance monitoring wells with no particular pattern or zone for the detections.

In order to address the inorganic constituents of concern, S&ME completed an Alternate Source Demonstration (ASD) for metals (White Street Landfill Phase II – Alternate Source Demonstration Amendment, S&ME Inc., August 2007). The purpose of the ASD was to determine if the presence of naturally occurring metals in the onsite in-situ soils were affecting groundwater quality through vertical percolation into the uppermost pervasive aquifer beneath the White Street Landfill.

In order to complete this ASD, in-situ soils within the immediate vicinity of the affected downgradient compliance monitoring wells were sampled and analyzed for the full Appendix I Metals suite. Next, a Dilution Attenuation Factor (DAF) was calculated for each metal based on the average concentration of the particular metal in the downgradient

monitoring well region of the landfill, following EPA's Soil Screening Guidance: Technical Background Document, Second Edition, United States Environmental Protection Agency, EPA/540/R95/128, May 1996 [2]. The recent groundwater analytical data were compared to the expected concentrations of the Appendix I metals based on the DAF computations.

If we apply EPA's standard DAF factor of 20 to the overall average concentration of naturally occurring metals in soil samples, we can calculate a DAF for the influence of the overlying soils to groundwater in the subsurface Hydrogeologic Regime. Then we can compute the expected concentration of the particular metal in groundwater at that point source based on the DAF calculations.

The concentrations of the naturally occurring metals cadmium, chromium, vanadium, and zinc within the in-situ soil at the Facility are sufficient to influence the concentrations of these metals in ground water samples collected from the downgradient ground water monitoring wells.

Based upon the results of the ASD, the exceedance of cadmium, chromium, and vanadium above their respective 2L Standards is not due to a release by the Facility, but instead can be the result of the natural occurrence of these metals in the native, residual soil.

Nickel was found to be naturally occurring in the in-situ soils at the Facility; however, the concentrations detected in compliance well I-5 are higher than would be expected in groundwater based on the DAF calculations completed for the ASD. The ASD was completed and prepared by S&ME and submitted to the Facility and the NC DENR under a separate cover on October 3, 2006. A revised ASD is currently being prepared by S&ME to include soils analysis from upgradient portions of the landfill as requested by NC DENR and will be submitted in August of 2007.

5.0 CONCLUSIONS/RECOMMENDATIONS

As a result of several network compliance monitoring wells exceeding the North Carolina established NCAC 2L groundwater standard and/or DENR GPS values, Phase II of the White Street Landfill as defined under NC DENR Permit #41-03 has installed seven non-network property boundary wells, with one deeper monitor well. The wells are designated II-2B, II-7B, II-9, II-10, II-11, II-12, and II-13. The following is a summary of the parameters of concern detected in the Nature and Extent Study wells during this investigation:

- The results of the Nature and Extent Study sampling indicated that Tetrachloroethene and Vinyl Chloride have been detected at NES well II-2B at concentrations that exceed the corresponding NCAC 2L standard

- Analytical results for NES well II-7B have detected 2-butanone, tetrachloroethene, and vanadium at concentrations which exceed the respective NCAC 2L groundwater standard and/or NC DENR GPS values. However, the detected concentrations of vanadium have been demonstrated to be the result of naturally occurring vanadium in the in-situ soils which is influencing groundwater quality in the uppermost aquifer at the Facility.
- The only constituent detected in NES well II-9 at a concentration above the NCAC 2L standard is vinyl chloride.
- No constituents of concern have been detected in NES monitoring well II-10.
- The metal thallium was detected in the groundwater sample from NES well II-11 at a concentration which exceeds the NC DENR GPS value for thallium set at 0.28 μg/L. No other constituents of concern were detected above the method detection limit in NES well II-11.
- In NES well II-2, thallium was detected at a concentration that exceeded the established NC DENR GPS. There were no other constituents of concern detected above the NCAC 2L standard and/or DENR GPS values in NES well II-12.
- There were no constituents of concern detected above the NCAC 2L standard in NES well II-13.

The nature of impact to the hydrogeologic regime at the White Street Landfill Facility is primarily from low level organic constituents. However, the metal thallium also exceeds the recently promulgated DENR GPS value of 0.28 μg/L set by DENR for thallium. The concentrations of the organic constituents of concern observed in the NES wells during this study are close to or less than their respective NCAC 2L standards. The lateral extent of contaminant migration away from the landfill is defined by Buffalo Creek which truncates the primary component of groundwater flow along the northern Facility boundary. This creek also represents the primary receptor of impact from migrating constituents away from the landfill and is expected to be a primary discharge point for the monitor aquifier. The vertical extent of contaminant migration is confined to the detection of tetrachloroethene at concentrations that approximate the NCAC 2L standard in NES well II-7B.

It is recommended that the Facility incorporate the results of this study into the next phase of the ACM process which is to prepare a comprehensive, scientifically sound Corrective Action Plan once DENR approval of this as well as the accompanying Assessment of Corrective Measures Report have been received. In the interim it is recommended that the Facility continue with the semi-annual groundwater monitoring program already underway at the Facility, and continue with the ACM process.

6.0 REFERENCES

1. North Carolina Administrative Code, Title 15A. Department of Environment, Health, and Natural Resources (Chapters 13 to 26), June 1998.

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8. Test Methods for Evaluating Solid Wastes-Physical/Chemical Methods, (SW-846), U.S. Environmental Protection Agency, 2nd and 3rd Editions, November 1986, December 1987, as promulgated and updated.

9. White Street Landfill Greensboro, North Carolina; Phase II Appendix I Detection Monitoring, Phase II Appendix II Assessment Monitoring, Phase I Post Closure Monitoring, May 1998 Sampling, BPA Environmental & Engineering, Inc, June 25, 1998.

10. Department of Health and Human Services – Agency for Toxic Substances & Disease Registry. **http://www.atsdr.cdc.gov/**

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14. White Street Landfill Greensboro, North Carolina Alternate Source Demonstration for Metals, S&ME Inc., October 2006

TABLES

TABLE 1
METHYLENE CHLORIDE
DETECTION ABOVE 2L SUMMARY TABLE
PHASE II - WHITE STREET LANDFILL
GREENSBORO, NORTH CAROLINA
S&ME PROJECT NO. 1584-98-081

Sampling Date	Sample Location											PQL	NCAC 2L
	I-5	II-1	II-2	II-3	II-4	II-5	II-6	II-7	II-8	MW-13	MW-14		std.
Oct-98	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**64**	BQL	BQL	BQL	10	4.6
Mar-99	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	4.6
Sep-99	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	4.6
Mar-00	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	4.6
Sep-00	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	4.6
Mar-01	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	4.6
Sep-01	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	4.6
Mar-02	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	4.6
Sep-02	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	4.6
Apr-03	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	4.6
Oct-03	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	4.6
Mar-04	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	4.6
Sep-04	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	4.6
May-05	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	4.6
Oct-05	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	4.6
Apr-06	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	4.6
Oct-06	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	4.6
Apr-07	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	1	4.6

PQL = ***Methods Practical Quantitation Limits***

BQL = ***Analytical results is less than the corresponding PQL***

NCAC 2L std.. = ***15A North Carolina Administrative Code 2L .0200, Groundwater Quality Standards for Class GA groundwater***

= Orange cells indicate the reported concentration exceeds the NCAC 2L groundwater standard.

All concentrations are reported in micrograms per liter (µ/L).

NCDENR DWM changed from PQL to Solid Waste Section Limit (SWSL) in 2007

TABLE 2
CIS 1,2-DICHLOROETHENE
DETECTION ABOVE 2L SUMMARY TABLE
PHASE II - WHITE STREET LANDFILL
GREENSBORO, NORTH CAROLINA
S&ME PROJECT NO. 1584-98-081

Sampling Date	Sample Location															PQL	NCAC 2L
	I-5	II-1	II-2	II-3	II-4	II-5	II-6	II-7	II-8	II-9	II-10	II-11	II-12	MW-13	MW-14		std.
3/17/1995	BQL	BQL	BQL	BQL	BQL	BQL	BQL	34.4	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	70
7/11/1995	BQL	BQL	BQL	BQL	BQL	BQL	BQL	48	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	70
11/17/1995	BQL	BQL	BQL	BQL	BQL	BQL	BQL	78	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	70
1/5/1996	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**110**	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	70
9/25/1996	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**160**	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	70
3/26/1997	BQL	BQL	BQL	BQL	BQL	BQL	BQL	63	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	70
9/17/1997	BQL	BQL	BQL	BQL	BQL	BQL	BQL	79	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	70
5/5/1998	BQL	BQL	BQL	BQL	BQL	BQL	BQL	9.7	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	70
10/16/1998	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**200**	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	70
3/26/1999	BQL	BQL	BQL	BQL	BQL	BQL	BQL	6.1	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	70
9/22/1999	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	70
3/27/2000	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	70
9/13/2000	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	70
3/12/2001	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	70
9/13/2001	BQL	BQL	BQL	BQL	BQL	BQL	BQL	44	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	70
3/7/2002	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	70
9/18/2002	BQL	BQL	BQL	BQL	BQL	BQL	BQL	8	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	70
4/15/2003	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	70
10/16/2003	BQL	BQL	BQL	BQL	BQL	BQL	BQL	6	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	70
3/24/2004	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	70
9/22/2004	BQL	BQL	5.2	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	70
2/17/2005	BQL	BQL	7	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	70
5/11/2005	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	42	BQL	BQL	BQL	BQL	BQL	5	70
10/11/2005	BQL	BQL	5	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	70
4/24/2006	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	28.7	BQL	BQL	BQL	BQL	BQL	5	70
10/19/2006	BQL	BQL	7.9	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	70
4/12/2007	BQL	BQL	6.8 J	BQL	BQL	BQL	BQL	1.1 J	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	70

PQL = ***Methods Practical Quantitation Limits***

BQL = ***Analytical results is less than the corresponding PQL***

NCAC 2L std.. = ***15A North Carolina Administrative Code 2L .0200, Groundwater Quality Standards for Class GA groundwater***

= Orange cells indicate the reported concentration exceeds the NCAC 2L groundwater standard.

All concentrations are reported in micrograms per liter (µ/L).

NCDENR DWM changed from PQL to Solid Waste Section Limit (SWSL) in 2007

J= ***Laboratory estimated concentration***

TABLE 3
2-BUTANONE
DETECTION ABOVE 2L SUMMARY TABLE
PHASE II - WHITE STREET LANDFILL
GREENSBORO, NORTH CAROLINA
S&ME PROJECT NO. 1584-98-081

Sampling Date	Sample Location												PQL	NCAC 2L
	I-5	II-1	II-2	II-3	II-4	II-5	II-6	II-7	II-7B	II-8	MW-13	MW-14		std.
9/13/2001	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**680**	BQL	BQL	BQL	100	170
3/7/2002	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	130	BQL	BQL	BQL	100	170
9/18/2002	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	100	170
4/15/2003	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	100	170
10/16/2003	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	100	170
3/24/2004	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	100	170
9/22/2004	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	100	170
2/17/2005	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	100	170
5/11/2005	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	100	170
10/11/2005	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	100	170
4/24/2006	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	100	170
10/19/2006	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	100	170
4/12/2007	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	38 J	BQL	BQL	BQL	100	170

PQL = ***Methods Practical Quantitation Limits***

BQL = ***Analytical results is less than the corresponding PQL***

NCAC 2L std.. = ***15A North Carolina Administrative Code 2L .0200, Groundwater Quality Standards for Class GA groundwater***

= Orange cells indicate the reported concentration exceeds the NCAC 2L groundwater standard.

All concentrations are reported in micrograms per liter (µ/L).

NCDENR DWM changed from PQL to Solid Waste Section Limit (SWSL) in 2007

J= ***Laboratory estimated concentration***

TABLE 4
BENZENE
DETECTION ABOVE 2L SUMMARY TABLE
PHASE II - WHITE STREET LANDFILL
GREENSBORO, NORTH CAROLINA
S&ME PROJECT NO. 1584-98-081

Sampling Date	Sample Location											PQL	NCAC 2L
	I-5	II-1	II-2	II-3	II-4	II-5	II-6	II-7	II-8	MW-13	MW-14		std.
3/25/1994	BQL	**5.4**	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	1
7/6/1994	BQL	**6.5**	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	1
9/9/1994	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	1
3/17/1995	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	1
7/11/1995	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**7**	BQL	BQL	BQL	5	1
11/17/1995	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**7**	BQL	BQL	BQL	5	1
1/5/1996	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**6.7**	BQL	BQL	BQL	5	1
9/25/1996	BQL	BQL	BQL	BQL	BQL	BQL	**5.2**	**14**	BQL	BQL	BQL	5	1
3/26/1997	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	1
9/17/1997	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**6**	BQL	BQL	BQL	5	1
5/5/1998	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	1
10/16/1998	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**11**	BQL	BQL	BQL	5	1
3/26/1999	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	1
9/22/1999	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	1
3/27/2000	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	1
9/13/2000	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	1
3/12/2001	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	1
9/13/2001	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	1
3/7/2002	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	1
9/18/2002	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	1
4/15/2003	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	1
10/16/2003	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	1
3/24/2004	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	1
9/22/2004	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	1
2/17/2005	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	1
5/11/2005	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	1
10/11/2005	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	1
4/24/2006	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	1
10/19/2006	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	1
4/12/2007	BQL	BQL	**1.4**	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	1	1

PQL = ***Methods Practical Quantitation Limits***

BQL = ***Analytical results is less than the corresponding PQL***

NCAC 2L std.. = ***15A North Carolina Administrative Code 2L .0200, Groundwater Quality Standards for Class GA groundwater***

= Orange cells indicate the reported concentration exceeds the NCAC 2L groundwater standard.

All concentrations are reported in micrograms per liter (µ/L).

NCDENR DWM changed from PQL to Solid Waste Section Limit (SWSL) in 2007

TABLE 5
1,2-DICHLOROETHANE
DETECTION ABOVE 2L SUMMARY TABLE
PHASE II - WHITE STREET LANDFILL
GREENSBORO, NORTH CAROLINA
S&ME PROJECT NO. 1584-98-081

Sampling Date	Sample Location											PQL	NCAC 2L
	I-5	II-1	II-2	II-3	II-4	II-5	II-6	II-7	II-8	MW-13	MW-14		std.
3/17/1995	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**25**	BQL	BQL	BQL	5	0.38
7/11/1995	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.38
11/17/1995	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.38
1/5/1996	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.38
9/25/1996	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.38
3/26/1997	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.38
9/17/1997	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.38
5/5/1998	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.38
10/16/1998	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**9.2**	BQL	BQL	BQL	5	0.38
3/26/1999	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.38
9/22/1999	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.38
3/27/2000	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.38
9/13/2000	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.38
3/12/2001	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.38
9/13/2001	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.38
3/7/2002	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.38
9/18/2002	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.38
4/15/2003	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.38
10/16/2003	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.38
3/24/2004	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.38
9/22/2004	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.38
2/17/2005	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.38
5/11/2005	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.38
10/11/2005	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.38
4/24/2006	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.38
10/19/2006	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.38
4/12/2007	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.38

PQL = ***Methods Practical Quantitation Limits***

BQL = ***Analytical results is less than the corresponding PQL***

NCAC 2L std.. = ***15A North Carolina Administrative Code 2L .0200, Groundwater Quality Standards for Class GA groundwater***

= Orange cells indicate the reported concentration exceeds the NCAC 2L groundwater standard.

All concentrations are reported in micrograms per liter (µ/L).

NCDENR DWM changed from PQL to Solid Waste Section Limit (SWSL) in 2007

TABLE 6
TRICHLOROETHENE
DETECTION ABOVE 2L SUMMARY TABLE
PHASE II - WHITE STREET LANDFILL
GREENSBORO, NORTH CAROLINA
S&ME PROJECT NO. 1584-98-081

Sampling Date	Sample Location												PQL	NCAC 2L
	I-5	II-1	II-2	II-3	II-4	II-5	II-6	II-7	II-7B	II-8	MW-13	MW-14		std.
3/25/1994	BQL	1.9	BQL	BQL	BQL	BQL	BQL	NA	NI	BQL	BQL	BQL	5	2.8
7/6/1994	BQL	BQL	BQL	BQL	BQL	0.9	BQL	NA	NI	BQL	BQL	BQL	5	2.8
9/9/1994	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NA	NI	BQL	BQL	BQL	5	2.8
3/17/1995	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**56.2**	NI	BQL	BQL	BQL	5	2.8
7/11/1995	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**93**	NI	BQL	BQL	BQL	5	2.8
11/17/1995	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**73**	NI	BQL	BQL	BQL	5	2.8
1/5/1996	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**82**	NI	BQL	BQL	BQL	5	2.8
9/25/1996	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**100**	NI	BQL	BQL	BQL	5	2.8
3/26/1997	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**63**	NI	BQL	BQL	BQL	5	2.8
9/17/1997	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**90**	NI	BQL	BQL	BQL	5	2.8
5/5/1998	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**10**	NI	BQL	BQL	BQL	5	2.8
10/16/1998	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**180**	NI	BQL	BQL	BQL	5	2.8
3/26/1999	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NI	BQL	BQL	BQL	5	2.8
9/22/1999	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NI	BQL	BQL	BQL	5	2.8
3/27/2000	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NI	BQL	BQL	BQL	5	2.8
9/13/2000	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NI	BQL	BQL	BQL	5	2.8
3/12/2001	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NI	BQL	BQL	BQL	5	2.8
9/13/2001	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**20**	BQL	BQL	BQL	BQL	5	2.8
3/7/2002	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	2.8
9/18/2002	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	2.8
4/15/2003	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	2.8
10/16/2003	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	2.8
3/24/2004	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	2.8
9/22/2004	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	2.8
2/17/2005	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	2.8
5/11/2005	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	2.8
10/11/2005	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	2.8
4/24/2006	BQL	BQL	**5.5**	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	2.8
10/19/2006	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	2.8
4/12/2007	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	1	2.8

PQL = ***Methods Practical Quantitation Limits***

BQL = ***Analytical results is less than the corresponding PQL***

NCAC 2L std.. = ***15A North Carolina Administrative Code 2L .0200, Groundwater Quality Standards for Class GA groundwater***

ns = ***no corresponding NCAC 2L groundwater quality standard***

NI = ***The well was not installed at the time of the earlier sampling event***

= Orange cells indicate the reported concentration exceeds the NCAC 2L groundwater standard.

All concentrations are reported in micrograms per liter (µ/L).

NCDENR DWM changed from PQL to Solid Waste Section Limit (SWSL) in 2007

TABLE 7
1,2-DICHLOROPROPANE
DETECTION ABOVE 2L SUMMARY TABLE
PHASE II - WHITE STREET LANDFILL
GREENSBORO, NORTH CAROLINA
S&ME PROJECT NO. 1584-98-081

Sampling Date	Sample Location											PQL	NCAC 2L
	I-5	II-1	II-2	II-3	II-4	II-5	II-6	II-7	II-8	MW-13	MW-14		std.
3/25/1994	BQL	**5.6**	BQL	BQL	BQL	BQL	BQL	NA	BQL	BQL	BQL	5	0.51
7/6/1994	BQL	**3.5**	BQL	BQL	BQL	BQL	BQL	NA	BQL	BQL	BQL	5	0.51
9/9/1994	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NA	BQL	BQL	BQL	5	0.51
3/17/1995	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.51
7/11/1995	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**8**	BQL	BQL	BQL	5	0.51
11/17/1995	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.51
1/5/1996	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.51
9/25/1996	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.51
3/26/1997	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**5**	BQL	BQL	BQL	5	0.51
9/17/1997	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**7.2**	BQL	BQL	BQL	5	0.51
5/5/1998	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.51
10/16/1998	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**11**	BQL	BQL	BQL	5	0.51
3/26/1999	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.51
9/22/1999	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.51
3/27/2000	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.51
9/13/2000	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.51
3/12/2001	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.51
9/13/2001	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.51
3/7/2002	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.51
9/18/2002	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.51
4/15/2003	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.51
10/16/2003	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.51
3/24/2004	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.51
9/22/2004	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.51
2/17/2005	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.51
5/11/2005	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.51
10/11/2005	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.51
4/24/2006	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.51
10/19/2006	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.51
4/12/2007	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	1	0.51

PQL = Methods Practical Quantitation Limits

BQL = Analytical results is less than the corresponding PQL

NCAC 2L std.. = 15A North Carolina Administrative Code 2L .0200, Groundwater Quality Standards for Class GA groundwater

NA = Not analyzed

= Orange cells indicate the reported concentration exceeds the NCAC 2L groundwater standard.

All concentrations are reported in micrograms per liter (µ/L).

NCDENR DWM changed from PQL to Solid Waste Section Limit (SWSL) in 2007

TABLE 8
TETRACHLOROETHENE
DETECTION ABOVE 2L SUMMARY TABLE
PHASE II - WHITE STREET LANDFILL
GREENSBORO, NORTH CAROLINA
S&ME PROJECT NO. 1584-98-081

Sampling Date	Sample Location												PQL	NCAC 2L
	I-5	II-1	II-2	II-3	II-4	II-5	II-6	II-7	II-7B	II-8	MW-13	MW-14		std.
3/25/1994	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NA	NI	BQL	BQL	BQL	5	0.7
7/6/1994	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NA	NI	BQL	BQL	BQL	5	0.7
9/9/1994	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NA	NI	BQL	BQL	BQL	5	0.7
3/17/1995	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**95.4**	NI	BQL	BQL	BQL	5	0.7
7/11/1995	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**160**	NI	BQL	BQL	BQL	5	0.7
11/17/1995	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**66**	NI	BQL	BQL	BQL	5	0.7
1/5/1996	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**77**	NI	BQL	BQL	BQL	5	0.7
9/25/1996	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**52**	NI	BQL	BQL	BQL	5	0.7
3/26/1997	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**87**	NI	BQL	BQL	BQL	5	0.7
9/17/1997	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**150**	NI	BQL	BQL	BQL	5	0.7
5/5/1998	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**15**	NI	BQL	BQL	BQL	5	0.7
10/16/1998	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**190**	NI	BQL	BQL	BQL	5	0.7
3/26/1999	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**12**	NI	BQL	BQL	BQL	5	0.7
9/22/1999	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**12**	NI	BQL	BQL	BQL	5	0.7
3/27/2000	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**9**	NI	BQL	BQL	BQL	5	0.7
9/13/2000	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**12**	NI	BQL	BQL	BQL	5	0.7
3/12/2001	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**9.6**	NI	BQL	BQL	BQL	5	0.7
9/13/2001	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**20**	BQL	BQL	BQL	BQL	5	0.7
3/7/2002	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**7**	BQL	BQL	BQL	BQL	5	0.7
9/18/2002	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**8.7**	BQL	BQL	BQL	BQL	5	0.7
4/15/2003	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.7
10/16/2003	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.7
3/24/2004	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**6.7**	BQL	BQL	BQL	BQL	5	0.7
9/22/2004	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.7
2/17/2005	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**5**	BQL	BQL	BQL	BQL	5	0.7
5/11/2005	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.7
10/11/2005	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.7
4/24/2006	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.7
10/19/2006	BQL	BQL	**5.2**	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5	0.7
4/12/2007	BQL	BQL	**5.1**	BQL	BQL	BQL	BQL	**3.6**	**1.8**	BQL	BQL	BQL	1	0.7

PQL = ***Methods Practical Quantitation Limits***

BQL = ***Analytical results is less than the corresponding PQL***

NCAC 2L std.. = ***15A North Carolina Administrative Code 2L .0200, Groundwater Quality Standards for Class GA groundwater***

ns = ***no corresponding NCAC 2L groundwater quality standard***

NI = ***The well was not installed at the time of the earlier sampling event***

= Orange cells indicate the reported concentration exceeds the NCAC 2L groundwater standard.

All concentrations are reported in micrograms per liter (µ/L).

NCDENR DWM changed from PQL to Solid Waste Section Limit (SWSL) in 2007

TABLE 9
VINYL CHLORIDE
DETECTION ABOVE 2L SUMMARY TABLE
PHASE II - WHITE STREET LANDFILL
GREENSBORO, NORTH CAROLINA
S&ME PROJECT NO. 1584-98-081

Sampling Date	Sample Location												PQL	NCAC 2L
	I-5	II-1	II-2	II-3	II-4	II-5	II-6	II-7	II-7B	II-8	MW-13	MW-14		std.
3/25/1994	BQL	**93**	BQL	BQL	BQL	BQL	BQL	BQL	NI	BQL	BQL	BQL	10	0.015
7/6/1994	BQL	**9**	BQL	BQL	BQL	BQL	BQL	BQL	NI	BQL	BQL	BQL	10	0.015
9/9/1994	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NI	BQL	BQL	BQL	10	0.015
3/17/1995	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NI	BQL	BQL	BQL	10	0.015
7/11/1995	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NI	BQL	BQL	BQL	10	0.015
11/17/1995	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NI	BQL	BQL	BQL	10	0.015
1/5/1996	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NI	BQL	BQL	BQL	10	0.015
9/25/1996	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NI	BQL	BQL	BQL	10	0.015
3/26/1997	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NI	BQL	BQL	BQL	10	0.015
9/17/1997	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NI	BQL	BQL	BQL	10	0.015
5/5/1998	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NI	BQL	BQL	BQL	10	0.015
10/16/1998	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NI	BQL	BQL	BQL	10	0.015
3/26/1999	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NI	BQL	BQL	BQL	10	0.015
9/22/1999	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NI	BQL	BQL	BQL	10	0.015
3/27/2000	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NI	BQL	BQL	BQL	10	0.015
9/13/2000	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NI	BQL	BQL	BQL	10	0.015
3/12/2001	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NI	BQL	BQL	BQL	10	0.015
9/13/2001	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	0.015
3/7/2002	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	0.015
9/18/2002	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	0.015
4/15/2003	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	0.015
10/16/2003	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	0.015
3/24/2004	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	0.015
9/22/2004	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	0.015
2/17/2005	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	0.015
5/11/2005	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	0.015
10/11/2005	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	0.015
4/24/2006	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	0.015
10/19/2006	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	0.015
4/12/2007	BQL	BQL	**3.2**	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	1	0.015

PQL = ***Methods Practical Quantitation Limits***

BQL = ***Analytical results is less than the corresponding PQL***

NCAC 2L std.. = ***15A North Carolina Administrative Code 2L .0200, Groundwater Quality Standards for Class GA groundwater***

NI = ***The well was not installed at the time of the earlier sampling event***

NA = ***Not analyzed***

= Orange cells indicate the reported concentration exceeds the NCAC 2L groundwater standard.

All concentrations are reported in micrograms per liter (µ/L).

NCDENR DWM changed from PQL to Solid Waste Section Limit (SWSL) in 2007

TABLE 10
CADMIUM
DETECTION ABOVE 2L SUMMARY TABLE
PHASE II - WHITE STREET LANDFILL
GREENSBORO, NORTH CAROLINA
S&ME PROJECT NO. 1584-98-081

Sampling Date	Sample Location												PQL	NCAC 2L
	I-5	II-1	II-2	II-3	II-4	II-5	II-6	II-7	II-7B	II-8	MW-13	MW-14		std.
3/25/1994	NA	0.3	0.4	0.4	0.2	0.8	NA	NA	NI	NA	NA	NA	1	5
7/6/1994	NA	0.1	0.1	BQL	BQL	BQL	NA	NA	NI	BQL	BQL	NA	1	5
9/9/1994	0.3	0.1	BQL	BQL	0.1	0.2	NA	NA	NI	BQL	0.1	NA	1	5
3/17/1995	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NI	BQL	BQL	BQL	1	5
7/11/1995	4	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NI	BQL	BQL	BQL	1	5
11/17/1995	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NI	BQL	BQL	BQL	1	5
1/5/1996	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NI	BQL	BQL	BQL	1	5
9/25/1996	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NI	BQL	BQL	BQL	1	5
3/26/1997	BQL	1	BQL	BQL	BQL	BQL	BQL	1	NI	BQL	BQL	BQL	1	5
9/17/1997	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NI	BQL	1	BQL	1	5
5/5/1998	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NI	BQL	BQL	BQL	1	5
10/16/1998	BQL	**14**	BQL	BQL	1	1	5	BQL	NI	2	BQL	BQL	1	5
3/26/1999	5	3	BQL	BQL	2	BQL	3	BQL	NI	BQL	BQL	BQL	1	5
9/22/1999	5	2	BQL	BQL	2	BQL	2	BQL	NI	1	BQL	BQL	1	5
3/27/2000	BQL	2	BQL	4	2	2	BQL	BQL	NI	BQL	BQL	BQL	1	5
9/13/2000	BQL	2	BQL	1	BQL	BQL	2	BQL	NI	BQL	BQL	BQL	1	5
3/12/2001	1.6	1.8	BQL	**5.7**	BQL	BQL	BQL	BQL	NI	BQL	BQL	BQL	1	5
9/13/2001	3.7	1.9	1.3	**5.6**	1	1.5	**6.1**	1	1.3	1.5	BQL	BQL	1	5
3/7/2002	4	1	1	2.1	BQL	1.9	2.1	BQL	BQL	1	BQL	BQL	1	5
9/18/2002	1.3	BQL	BQL	BQL	BQL	BQL	4.5	BQL	BQL	BQL	BQL	BQL	1	5
4/15/2003	BQL	BQL	BQL	2	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	1	5
10/16/2003	1.8	1.1	BQL	4.7	BQL	BQL	3.6	BQL	BQL	BQL	BQL	BQL	1	5
3/24/2004	3.2	1.2	1	1.6	1.3	1.4	1.8	BQL	BQL	BQL	BQL	1.3	1	5
9/22/2004	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	1	5
2/17/2005	NA	BQL	BQL	1.2	NA	NA	NA	BQL	BQL	NA	NA	NA	1	5
5/11/2005	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	1	5
10/11/2005	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	1	5
4/24/2006	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**4.3**	BQL	1	1.75
10/19/2006	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	1	1.75
4/12/2007	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	1	1.75

PQL = Methods Practical Quantitation Limits

BQL = Analytical results is less than the corresponding PQL

NCAC 2L std.. = 15A North Carolina Administrative Code 2L .0200, Groundwater Quality Standards for Class GA groundwater

NI = The well was not installed at the time of the earlier sampling event

NA = Not analyzed

= Orange cells indicate the reported concentration exceeds the NCAC 2L groundwater standard.

All concentrations are reported in micrograms per liter (µ/L).

NCDENR DWM changed from PQL to Solid Waste Section Limit (SWSL) in 2007

TABLE 11
CHROMIUM
DETECTION ABOVE 2L SUMMARY TABLE
PHASE II - WHITE STREET LANDFILL
GREENSBORO, NORTH CAROLINA
S&ME PROJECT NO. 1584-98-081

Sampling Date	Sample Location											PQL	NCAC 2L
	I-5	II-1	II-2	II-3	II-4	II-5	II-6	II-7	II-8	MW-13	MW-14		std.
3/25/1994	NA	51	13	20	9	14	NA	NA	NA	NA	NA	10	50
7/6/1994	NA	36	23	15	3	22	NA	NA	BQL	5	NA	10	50
9/9/1994	30	36	32	20	28	13	NA	NA	BQL	7	NA	10	50
3/17/1995	BQL	BQL	BQL	BQL	BQL	BQL	BQL	20	6	BQL	BQL	10	50
7/11/1995	**260**	**51**	29	38	75	25	41	28	BQL	BQL	10	10	50
11/17/1995	**118**	**60**	13	13	BQL	11	BQL	BQL	BQL	BQL	BQL	10	50
1/5/1996	**61**	29	18	13	BQL	29	17	BQL	BQL	BQL	13	10	50
9/25/1996	48	33	36	32	BQL	41	23	BQL	BQL	BQL	13	10	50
3/26/1997	**94**	23	20	**59**	12	45	32	12	12	BQL	16	10	50
9/17/1997	**140**	19	**53**	**61**	14	42	25	BQL	BQL	BQL	BQL	10	50
5/5/1998	BQL	33	BQL	BQL	11	BQL	BQL	BQL	BQL	BQL	BQL	10	50
10/16/1998	BQL	**210**	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	50
3/26/1999	11	47	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	50
9/22/1999	BQL	20	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	50
3/27/2000	BQL	**54**	BQL	BQL	13	12	BQL	BQL	BQL	BQL	BQL	10	50
9/13/2000	11	21	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	50
3/12/2001	BQL	32	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	50
9/13/2001	14	BQL	BQL	BQL	BQL	BQL	10	BQL	BQL	BQL	BQL	10	50
3/7/2002	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	50
9/18/2002	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	50
4/15/2003	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	50
10/16/2003	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	50
3/24/2004	13	BQL	BQL	16	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	50
9/22/2004	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	50
2/17/2005	NA	BQL	BQL	BQL	NA	NA	NA	BQL	NA	NA	NA	10	50
5/11/2005	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	50
10/11/2005	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	50
4/24/2006	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	50
10/19/2006	BQL	BQL	BQL	BQL	16.3	BQL	BQL	BQL	BQL	BQL	BQL	10	50
4/12/2007	BQL	BQL	BQL	BQL	5.9 J	BQL	BQL	BQL	BQL	BQL	3 J	10	50

PQL = Methods Practical Quantitation Limits

BQL = Analytical results is less than the corresponding PQL

NCAC 2L std.. = 15A North Carolina Administrative Code 2L .0200, Groundwater Quality Standards for Class GA groundwater

NI = The well was not installed at the time of the earlier sampling event

NA = Not analyzed

= Orange cells indicate the reported concentration exceeds the NCAC 2L groundwater standard.

All concentrations are reported in micrograms per liter (µ/L).

NCDENR DWM changed from PQL to Solid Waste Section Limit (SWSL) in 2007

J= Laboratory estimated concentration

TABLE 12
NICKEL
DETECTION ABOVE 2L SUMMARY TABLE
PHASE II - WHITE STREET LANDFILL
GREENSBORO, NORTH CAROLINA
S&ME PROJECT NO. 1584-98-081

Sampling Date	Sample Location												PQL	NCAC 2L
	I-5	II-1	II-2	II-3	II-4	II-5	II-6	II-7	II-7B	II-8	MW-13	MW-14		std.
3/25/1994	BQL	16	BQL	BQL	BQL	BQL	BQL	NA	NI	NA	BQL	BQL	50	100
7/6/1994	**BQL**	BQL	BQL	BQL	BQL	BQL	BQL	NA	NI	BQL	BQL	BQL	50	100
9/9/1994	96	BQL	BQL	BQL	22	BQL	BQL	NA	NI	6	BQL	BQL	50	100
3/17/1995	50	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NI	BQL	BQL	BQL	50	100
7/11/1995	**170**	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NI	BQL	BQL	BQL	50	100
11/17/1995	**104**	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NI	BQL	BQL	BQL	50	100
1/5/1996	77	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NI	BQL	BQL	BQL	50	100
9/25/1996	76	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NI	BQL	BQL	BQL	50	100
3/26/1997	**120**	BQL	BQL	88	BQL	BQL	59	BQL	NI	**120**	BQL	BQL	50	100
9/17/1997	**140**	BQL	BQL	61	BQL	BQL	BQL	BQL	NI	BQL	BQL	BQL	50	100
5/5/1998	BQL	66	BQL	BQL	BQL	BQL	BQL	BQL	NI	BQL	BQL	BQL	50	100
10/16/1998	50	71	BQL	BQL	BQL	50	BQL	BQL	NI	BQL	BQL	BQL	50	100
3/26/1999	23	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NI	BQL	BQL	BQL	50	100
9/22/1999	81	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NI	BQL	BQL	BQL	50	100
3/27/2000	BQL	BQL	BQL	BQL	BQL	97	BQL	BQL	NI	BQL	BQL	BQL	50	100
9/13/2000	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NI	BQL	BQL	BQL	50	100
3/12/2001	**130**	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NI	BQL	BQL	BQL	50	100
9/13/2001	100	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	50	100
3/7/2002	**120**	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	50	100
9/18/2002	94	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	50	100
4/15/2003	**110**	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	50	100
10/16/2003	**130**	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	50	100
3/24/2004	**150**	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	50	100
9/22/2004	**120**	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	50	100
2/17/2005	NA	BQL	BQL	BQL	NA	NA	NA	BQL	BQL	NA	BQL	BQL	50	100
5/11/2005	**120**	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	50	100
10/11/2005	**110**	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	50	100
4/24/2006	**114**	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	50	100
10/19/2006	**122**	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	50	100
4/12/2007	**107**	6.9 J	BQL	6.9 J	15.8 J	6.3 J	17.1 J	BQL	BQL	6.9 J	BQL	BQL	50	100

PQL = Methods Practical Quantitation Limits

BQL = Analytical results is less than the corresponding PQL

NCAC 2L std.. = 15A North Carolina Administrative Code 2L .0200, Groundwater Quality Standards for Class GA groundwater

NI = The well was not installed at the time of the earlier sampling event

NA = Not analyzed

= Orange cells indicate the reported concentration exceeds the NCAC 2L groundwater standard.

All concentrations are reported in micrograms per liter (µ/L).

NCDENR DWM changed from PQL to Solid Waste Section Limit (SWSL) in 2007

J= Laboratory estimated concentration

TABLE 13
THALLIUM
DETECTION ABOVE 2L SUMMARY TABLE
PHASE II - WHITE STREET LANDFILL
GREENSBORO, NORTH CAROLINA
S&ME PROJECT NO. 1584-98-081

Sampling Date	Sample Location											PQL	NCAC 2L	NC DENR
	I-5	II-1	II-2	II-3	II-4	II-5	II-6	II-7	II-8	MW-13	MW-14		std.	GPS (µg/L)
3/25/1994	NA	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NA	NA	10	ns	0.28
7/6/1994	NA	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NA	10	ns	0.28
9/9/1994	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NA	10	ns	0.28
3/17/1995	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	ns	0.28
7/11/1995	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	ns	0.28
11/17/1995	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	ns	0.28
1/5/1996	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	ns	0.28
9/25/1996	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	ns	0.28
3/26/1997	**14**	**14**	BQL	BQL	BQL	BQL	**26**	BQL	BQL	BQL	BQL	10	ns	0.28
9/17/1997	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	ns	0.28
5/5/1998	**18**	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	ns	0.28
10/16/1998	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	ns	0.28
3/26/1999	**15**	BQL	BQL	BQL	BQL	**14**	**29**	BQL	BQL	BQL	BQL	10	ns	0.28
9/22/1999	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	ns	0.28
3/27/2000	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	ns	0.28
9/13/2000	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	ns	0.28
3/12/2001	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	ns	0.28
9/13/2001	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	ns	0.28
3/7/2002	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	ns	0.28
9/18/2002	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	ns	0.28
4/15/2003	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	ns	0.28
10/16/2003	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	ns	0.28
3/24/2004	BQL	BQL	BQL	**13**	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	ns	0.28
9/22/2004	**14**	BQL	BQL	BQL	BQL	**10**	BQL	BQL	BQL	**10**	BQL	10	ns	0.28
2/17/2005	NA	BQL	BQL	BQL	BQL	NA	NA	BQL	BQL	NA	NA	10	ns	0.28
5/11/2005	**24**	**16**	**11**	BQL	BQL	BQL	**16**	BQL	BQL	BQL	BQL	10	ns	0.28
10/11/2005	**14**	**23**	BQL	BQL	BQL	BQL	**25**	BQL	BQL	BQL	BQL	10	ns	0.28
4/24/2006	**20.5**	**23.7**	BQL	BQL	BQL	BQL	**18.2**	BQL	BQL	BQL	BQL	10	ns	0.28
10/19/2006	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	10	ns	0.28
4/12/2007	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	5.5	ns	0.28

PQL = ***Methods Practical Quantitation Limits***

BQL = ***Analytical results is less than the corresponding PQL***

NCAC 2L std.. = ***15A North Carolina Administrative Code 2L .0200, Groundwater Quality Standards for Class GA groundwater***

ns = ***no corresponding NCAC 2L groundwater quality standard***

NA = ***Not analyzed***

= Orange cells indicate the reported concentration exceeds the NCDENR GPS groundwater standard.

All concentrations are reported in micrograms per liter (µ/L).

NCDENR DWM changed from PQL to Solid Waste Section Limit (SWSL) in 2007

TABLE 14
VANADIUM
DETECTION ABOVE 2L SUMMARY TABLE
PHASE II - WHITE STREET LANDFILL
GREENSBORO, NORTH CAROLINA
S&ME PROJECT NO. 1584-98-081

Sampling Date	Sample Location											PQL	NCAC 2L	NC DENR
	I-5	II-1	II-2	II-3	II-4	II-5	II-6	II-7	II-8	MW-13	MW-14		std.	GPS (µg/L)
3/25/1994	NA	**68**	**25**	**9**	BQL	**7**	NA	NA	NA	NA	NA	40	ns	3.5
7/6/1994	NA	**69**	**86**	**67**	BQL	**7**	NA	NA	**5**	**11**	NA	40	ns	3.5
9/9/1994	**45**	**51**	**75**	BQL	**208**	**6**	NA	NA	**15**	BQL	NA	40	ns	3.5
3/17/1995	**5**	**11**	**25**	BQL	BQL	**6**	BQL	**15**	BQL	**15**	BQL	40	ns	3.5
7/11/1995	**410**	**78**	**180**	**130**	**250**	BQL	**78**	**42**	BQL	BQL	**45**	40	ns	3.5
11/17/1995	**199**	**98**	**75**	**48**	BQL	BQL	BQL	BQL	**138**	BQL	BQL	40	ns	3.5
1/5/1996	**100**	**53**	**101**	**47**	BQL	**41**	BQL	BQL	**59**	BQL	**59**	40	ns	3.5
9/25/1996	**83**	**77**	**195**	**124**	BQL	**52**	**48**	BQL	BQL	BQL	**72**	40	ns	3.5
3/26/1997	**140**	**43**	**84**	**230**	**130**	**51**	**75**	BQL	**410**	BQL	**160**	40	ns	3.5
9/17/1997	**220**	**44**	**170**	**280**	**110**	**67**	**66**	BQL	**220**	BQL	BQL	40	ns	3.5
5/5/1998	BQL	**48**	BQL	BQL	**110**	BQL	BQL	BQL	BQL	BQL	BQL	40	ns	3.5
10/16/1998	BQL	**340**	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	40	ns	3.5
3/26/1999	BQL	**62**	BQL	BQL	**50**	BQL	BQL	BQL	BQL	BQL	BQL	40	ns	3.5
9/22/1999	BQL	BQL	BQL	BQL	**40**	BQL	BQL	BQL	BQL	BQL	BQL	40	ns	3.5
3/27/2000	BQL	**76**	BQL	**46**	**86**	BQL	BQL	BQL	BQL	BQL	BQL	40	ns	3.5
9/13/2000	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	40	ns	3.5
3/12/2001	BQL	**44**	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	40	ns	3.5
9/13/2001	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	40	ns	3.5
3/7/2002	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	40	ns	3.5
9/18/2002	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	40	ns	3.5
4/15/2003	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	40	ns	3.5
10/16/2003	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	40	ns	3.5
3/24/2004	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	40	ns	3.5
9/22/2004	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	40	ns	3.5
2/17/2005	NA	BQL	BQL	BQL	NA	NA	NA	BQL	NA	NA	NA	40	ns	3.5
5/11/2005	BQL	BQL	BQL	BQL	**40**	BQL	BQL	BQL	BQL	BQL	BQL	40	ns	3.5
10/11/2005	BQL	BQL	BQL	BQL	**42**	BQL	BQL	BQL	BQL	BQL	BQL	40	ns	3.5
4/24/2006	BQL	BQL	BQL	BQL	**63.2**	BQL	BQL	BQL	BQL	BQL	BQL	40	ns	3.5
10/19/2006	BQL	BQL	BQL	BQL	**113**	BQL	BQL	BQL	BQL	BQL	BQL	40	ns	3.5
4/12/2007	BQL	BQL	BQL	BQL	**55.8**	BQL	BQL	BQL	BQL	3.4	BQL	25	ns	3.5

PQL = ***Methods Practical Quantitation Limits***

BQL = ***Analytical results is less than the corresponding PQL***

NCAC 2L std.. = ***15A North Carolina Administrative Code 2L .0200, Groundwater Quality Standards for Class GA groundwater***

ns = ***no corresponding NCAC 2L groundwater quality standard***

NA = ***Not analyzed***

= Orange cells indicate the reported concentration exceeds the NCAC 2L groundwater standard.

All concentrations are reported in micrograms per liter (µ/L).

NCDENR DWM changed from PQL to Solid Waste Section Limit (SWSL) in 2007

TABLE 15
LEAD - SURFACE WATER
DETECTION SUMMARY TABLE
PHASE II - WHITE STREET LANDFILL
GREENSBORO, NORTH CAROLINA
S&ME PROJECT NO. 1584-98-081

Sampling Date	Sample Location								15A NCAC 2B	PQL
	SW-1	SW-2	SW-3	SW-4	SW-5	SWII-7	SWII-7 up	SWII-7 down	Standards*	(µg/l)
Sep-02	BQL	**86**	BQL	BQL	BQL	BQL	BQL	BQL	25	10

PQL = ***Methods Practical Quantitation Limits***

BQL = ***Analytical results is less than the corresponding PQL***

ns = ***no corresponding NCAC 2L groundwater quality standard***

**** =*** ***Title 15A NCAC 2B Standards for Class B, C surface water***

= Orange cells indicate the reported concentration exceeds the NCAC 2L groundwater standard.

All concentrations are reported in micrograms per liter (µ/L).

NCDENR DWM changed from PQL to Solid Waste Section Limit (SWSL) in 2007

TABLE 16
THALLIUM - SURFACE WATER
DETECTION SUMMARY TABLE
PHASE II - WHITE STREET LANDFILL
GREENSBORO, NORTH CAROLINA
S&ME PROJECT NO. 1584-98-081

Sampling Date	Sample Location								15A NCAC 2B Standards*	PQL (µg/l)
	SW-1	SW-2	SW-3	SW-4	SW-5	SWII-7	SWII-7 up	SWII-7 down		
Sep-01	BQL	BQL	BQL	BQL	12	BQL	BQL	BQL	ns	5.5

PQL = ***Methods Practical Quantitation Limits***

BQL = ***Analytical results is less than the corresponding PQL***

ns = ***no corresponding NCAC 2L groundwater quality standard***

**** =*** ***Title 15A NCAC 2B Standards for Class B, C surface water***

= Orange cells indicate the reported concentration exceeds the NCAC 2L groundwater standard.

All concentrations are reported in micrograms per liter (µ/L).

NCDENR DWM changed from PQL to Solid Waste Section Limit (SWSL) in 2007

TABLE 17
ZINC - SURFACE WATER
DETECTION SUMMARY TABLE
PHASE II - WHITE STREET LANDFILL
GREENSBORO, NORTH CAROLINA
S&ME PROJECT NO. 1584-98-081

Sampling Date	Sample Location								15A NCAC 2B Surface Water Standards	PQL
	SW-1	SW-2	SW-3	SW-4	SW-5	SWII-7	SWII-7 up	SWII-7 down		
Sep-99	BQL	BQL	62	72	57	--	--	--	ns	50
Mar-00	BQL	BQL	31	58	68	--	--	--	ns	50
Sep-00	BQL	BQL	130	50	60	--	--	--	ns	50
Mar-01	BQL	BQL	68	BQL	56	--	--	--	ns	50
Sep-01	120	BQL	60	BQL	50	BQL	BQL	100	ns	50
Mar-02	BQL	BQL	70	50	60	NA	NA	NA	ns	50
Sep-02	BQL	180	80	BQL	BQL	50	50	BQL	ns	50
Oct-03	BQL	BQL	120	50	50	NA	NA	NA	ns	50
Mar-04	BQL	BQL	52	BQL	BQL	NA	NA	NA	ns	50
Sep-04	58	BQL	56	BQL	59	NA	NA	NA	ns	50
Apr-06	BQL	BQL	51.6	BQL	BQL	NA	NA	NA	ns	50
Oct-06	BRDL	BRDL	60.9	BRDL	BRDL	NA	NA	NA	50	50
Apr-07	7.6 J	23.5	48.4	38.2	39.5	NA	NA	NA	10	10

PQL = Methods Practical Quantitation Limits

BQL = Analytical results is less than the corresponding PQL
ns = no corresponding NCAC 2L groundwater quality standard
**** = Title 15A NCAC 2B Standards for Class B, C surface water***
= Orange cells indicate the reported concentration exceeds the NCAC 2L groundwater standard.
All concentrations are reported in micrograms per liter (µ/L).
NCDENR DWM changed from PQL to Solid Waste Section Limit (SWSL) in 2007
J= Laboratory estimated concentration

TABLE 18
NES WELL DETECTS - TETRACHLOROETHENE
DETECTION ABOVE 2L SUMMARY TABLE
PHASE II - WHITE STREET LANDFILL
GREENSBORO, NORTH CAROLINA
S&ME PROJECT NO. 1584-98-081

Sampling Date	Sample Location							PQL	NCAC 2L
	II-7B	II-9	II-10	II-11	II-12	II-2B	II-13		std.
9/13/2001	BQL	NI	NI	NI	NI	NI	NI	5	0.7
3/7/2002	BQL	NI	NI	NI	NI	NI	NI	5	0.7
9/18/2002	BQL	NI	NI	NI	NI	NI	NI	5	0.7
4/15/2003	BQL	NI	NI	NI	NI	NI	NI	5	0.7
10/16/2003	BQL	NI	NI	NI	NI	NI	NI	5	0.7
3/24/2004	BQL	NI	NI	NI	NI	NI	NI	5	0.7
9/22/2004	BQL	NI	NI	NI	NI	NI	NI	5	0.7
2/17/2005	BQL	NI	NI	NI	NI	NI	NI	5	0.7
5/11/2005	BQL	BQL	BQL	BQL	BQL	NI	NI	5	0.7
10/11/2005	BQL	NA	NA	NA	NA	NI	NI	5	0.7
4/24/2006	BQL	BQL	BQL	BQL	BQL	NI	NI	5	0.7
10/19/2006	BQL	NA	NA	NA	NA	NI	NI	5	0.7
4/12/2007	**1.8**	NA	NA	NA	NA	NI	NI	1	0.7
7/11/2007	NA	NA	NA	NA	NA	**2.3**	BQL	1	0.7

PQL = Methods Practical Quantitation Limits

BQL = Analytical results is less than the corresponding PQL

NCAC 2L std.. = 15A North Carolina Administrative Code 2L .0200, Groundwater Quality Standards for Class GA groundwater

= Orange cells indicate the reported concentration exceeds the NCAC 2L groundwater standard.

All concentrations are reported in micrograms per liter (µ/L).

NCDENR DWM changed from PQL to Solid Waste Section Limit (SWSL) in 2007

TABLE 19
NES WELL DETECTS - VINYL CHLORIDE
DETECTION ABOVE 2L SUMMARY TABLE
PHASE II - WHITE STREET LANDFILL
GREENSBORO, NORTH CAROLINA
S&ME PROJECT NO. 1584-98-081

Sampling Date	Sample Location							PQL	NCAC 2L
	II-7B	II-9	II-10	II-11	II-12	II-2B	II-13		std.
9/13/2001	BQL	NI	NI	NI	NI	NI	NI	10	0.015
3/7/2002	BQL	NI	NI	NI	NI	NI	NI	10	0.015
9/18/2002	BQL	NI	NI	NI	NI	NI	NI	10	0.015
4/15/2003	BQL	NI	NI	NI	NI	NI	NI	10	0.015
10/16/2003	BQL	NI	NI	NI	NI	NI	NI	10	0.015
3/24/2004	BQL	NI	NI	NI	NI	NI	NI	10	0.015
9/22/2004	BQL	NI	NI	NI	NI	NI	NI	10	0.015
2/17/2005	BQL	NI	NI	NI	NI	NI	NI	10	0.015
5/11/2005	BQL	**12**	BQL	BQL	BQL	NI	NI	10	0.015
4/24/2006	BQL	BQL	BQL	BQL	BQL	NI	NI	10	0.015
4/12/2007	BQL	NA	NA	NA	NA	NI	NI	1	0.015
7/11/2007	NA	NA	NA	NA	NA	**3.2**	BQL	1	0.015

PQL = Methods Practical Quantitation Limits

BQL = Analytical results is less than the corresponding PQL

NCAC 2L std.. = 15A North Carolina Administrative Code 2L .0200, Groundwater Quality Standards for Class GA groundwater

= Orange cells indicate the reported concentration exceeds the NCAC 2L groundwater standard.

All concentrations are reported in micrograms per liter (µ/L).

NCDENR DWM changed from PQL to Solid Waste Section Limit (SWSL) in 2007

TABLE 20
NES WELL DETECTS - THALLIUM
DETECTION ABOVE 2L SUMMARY TABLE
PHASE II - WHITE STREET LANDFILL
GREENSBORO, NORTH CAROLINA
S&ME PROJECT NO. 1584-98-081

Sampling Date	Sample Location							PQL	NCAC 2L	NC DENR
	II-7B	II-9	II-10	II-11	II-12	II-2B	II-13		std.	GPS (µg/L)
9/13/2001	BQL	NI	NI	NI	NI	NI	NI	10	ns	0.28
3/7/2002	BQL	NI	NI	NI	NI	NI	NI	10	ns	0.28
9/18/2002	BQL	NI	NI	NI	NI	NI	NI	10	ns	0.28
4/15/2003	BQL	NI	NI	NI	NI	NI	NI	10	ns	0.28
10/16/2003	BQL	NI	NI	NI	NI	NI	NI	10	ns	0.28
3/24/2004	BQL	NI	NI	NI	NI	NI	NI	10	ns	0.28
9/22/2004	BQL	NI	NI	NI	NI	NI	NI	10	ns	0.28
2/17/2005	BQL	NI	NI	NI	NI	NI	NI	10	ns	0.28
5/11/2005	BQL	BQL	BQL	**12**	BQL	NI	NI	10	ns	0.28
4/24/2006	BQL	BQL	BQL	BQL	**25.3**	NI	NI	10	ns	0.28
4/12/2007	BQL	NA	NA	NA	NA	NI	NI	10	ns	0.28
7/11/2007	NA	NA	NA	NA	NA	NA	NA	5.5	ns	0.28

PQL = Methods Practical Quantitation Limits

BQL = Analytical results is less than the corresponding PQL

NCAC 2L std.. = 15A North Carolina Administrative Code 2L .0200, Groundwater Quality Standards for Class GA groundwater

NI = The well was not installed at the time of the earlier sampling event

NA = Not analyzed

= Orange cells indicate the reported concentration exceeds the NCDENR GPS groundwater standard.

All concentrations are reported in micrograms per liter (µ/L).

NCDENR DWM changed from PQL to Solid Waste Section Limit (SWSL) in 2007

TABLE 21
NES WELL DETECTS - VANADIUM
DETECTION ABOVE 2L SUMMARY TABLE
PHASE II - WHITE STREET LANDFILL
GREENSBORO, NORTH CAROLINA
S&ME PROJECT NO. 1584-98-081

Sampling Date	Sample Location							PQL	NCAC 2L	NC DENR
	II-7B	II-9	II-10	II-11	II-12	II-2B	II-13		std.	GPS (µg/L)
9/13/2001	BQL	NI	NI	NI	NI	NI	NI	10	ns	3.5
3/7/2002	BQL	NI	NI	NI	NI	NI	NI	10	ns	3.5
9/18/2002	BQL	NI	NI	NI	NI	NI	NI	10	ns	3.5
4/15/2003	BQL	NI	NI	NI	NI	NI	NI	10	ns	3.5
10/16/2003	BQL	NI	NI	NI	NI	NI	NI	10	ns	3.5
3/24/2004	BQL	NI	NI	NI	NI	NI	NI	10	ns	3.5
9/22/2004	BQL	NI	NI	NI	NI	NI	NI	10	ns	3.5
2/17/2005	BQL	NI	NI	NI	NI	NI	NI	10	ns	3.5
5/11/2005	BQL	BQL	BQL	BQL	BQL	NI	NI	10	ns	3.5
4/24/2006	BQL	BQL	BQL	BQL	BQL	NI	NI	10	ns	3.5
4/12/2007	**14.5**	BQL	BQL	BQL	BQL	NI	NI	25	ns	3.5

PQL = Methods Practical Quantitation Limits

BQL = Analytical results is less than the corresponding PQL

NCAC 2L std.. = 15A North Carolina Administrative Code 2L .0200, Groundwater Quality Standards for Class GA groundwater

ns = no corresponding NCAC 2L groundwater quality standard

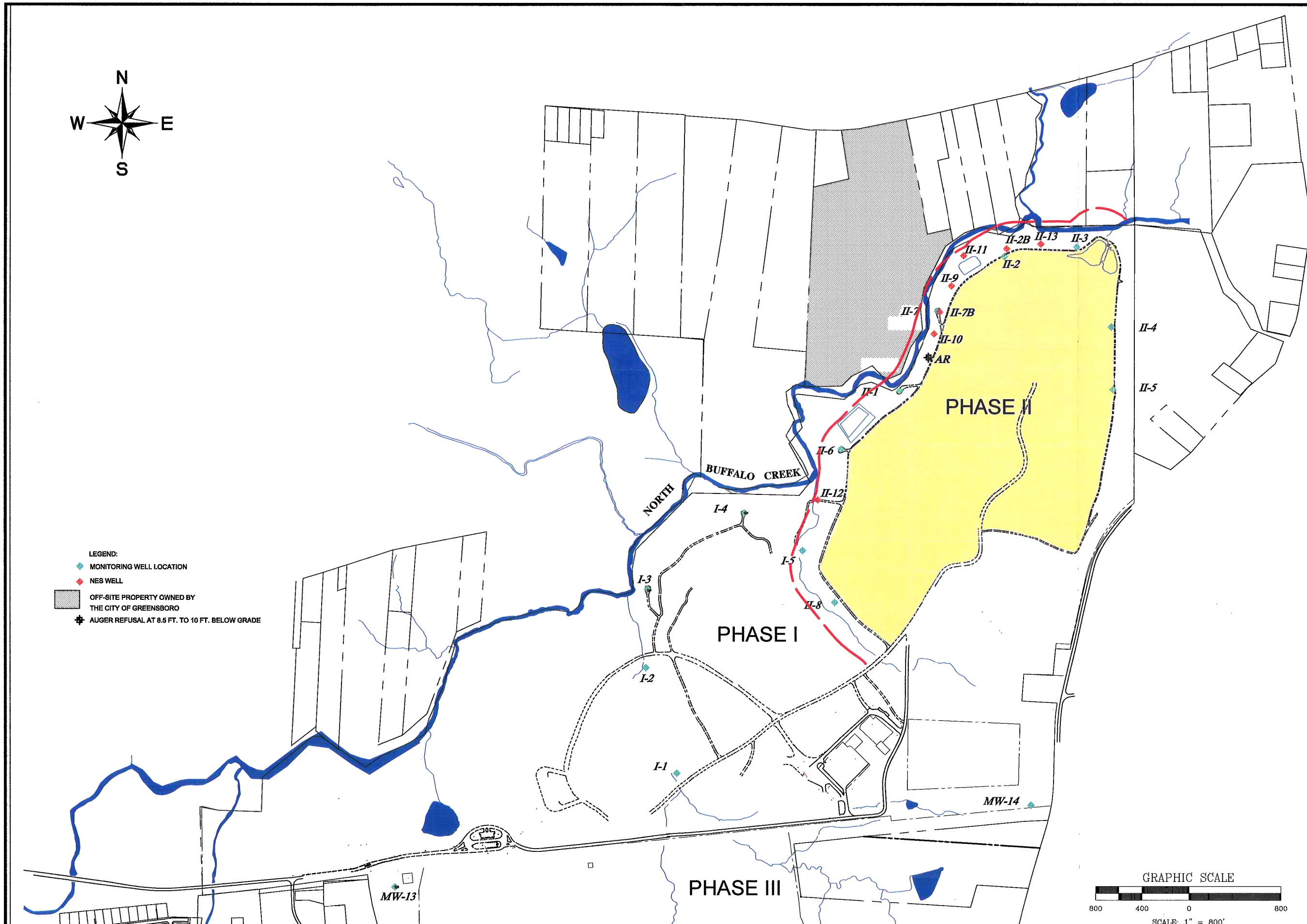
NI = The well was not installed at the time of the earlier sampling event

= Orange cells indicate the reported concentration exceeds the NCDENR GPS groundwater

All concentrations are reported in micrograms per liter (µ/L).

NCDENR DWM changed from PQL to Solid Waste Section Limit (SWSL) in 2007

FIGURES



SITE BASE MAP
PHASE II
WHITE STREET LANDFILL
GREENSBORO, NORTH CAROLINA

SCALE: AS SHOWN	DRAWN BY: DSB/RDM	CHECKED BY: DRL	
JOB NO. 1584-98-081	DATE: JUNE 2005	FIGURE NO. 1	

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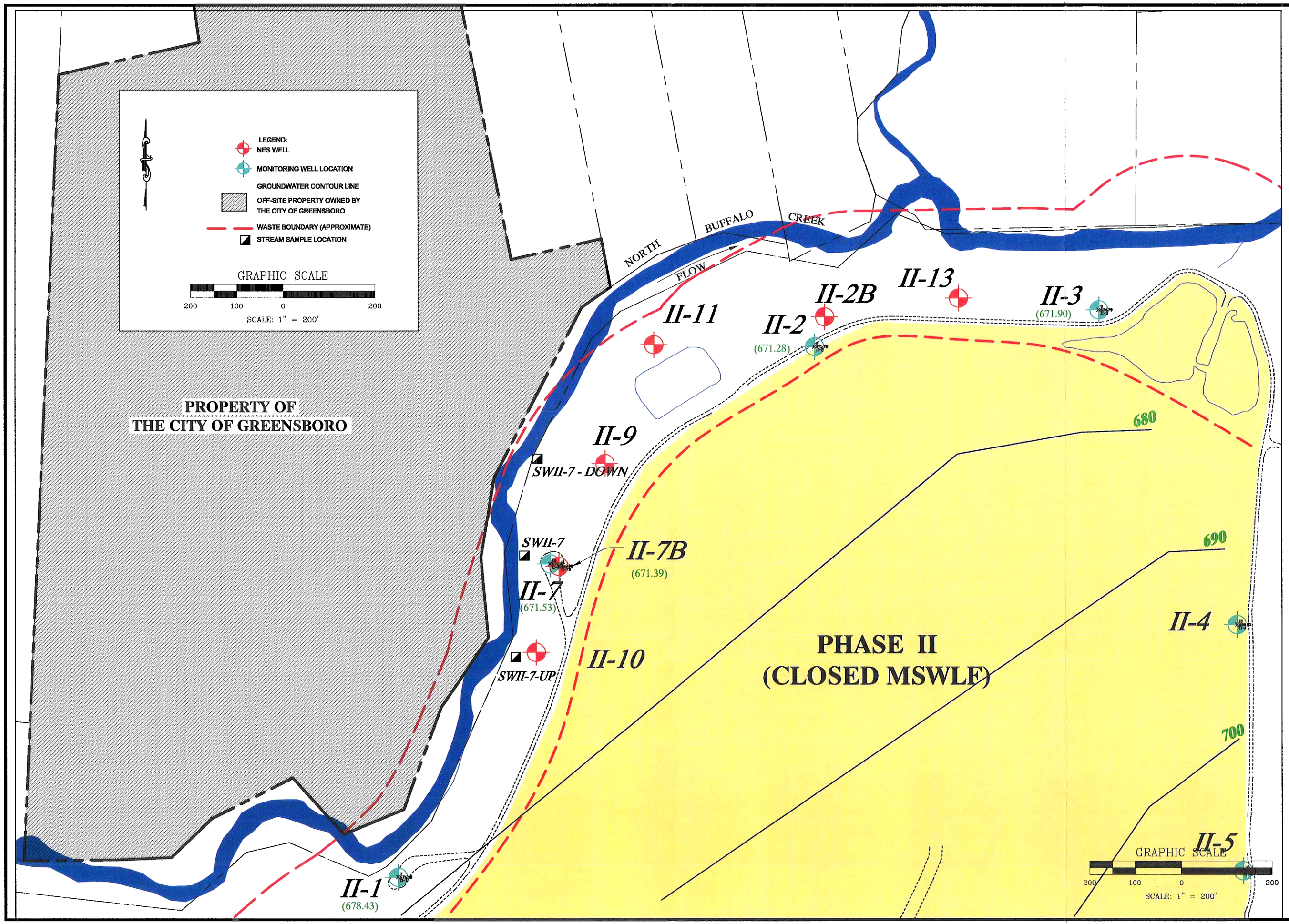

DETAILED SITE MAP
PHASE II
WHITE STREET LANDFILL
GREENSBORO, NORTH CAROLINA

SCALE: AS SHOWN	DRAWN BY: DSB/RDM	CHECKED BY: EQBH	
JOB NO. 1584-98-081B	DATE: JUNE 2005	FIGURE NO. 2	

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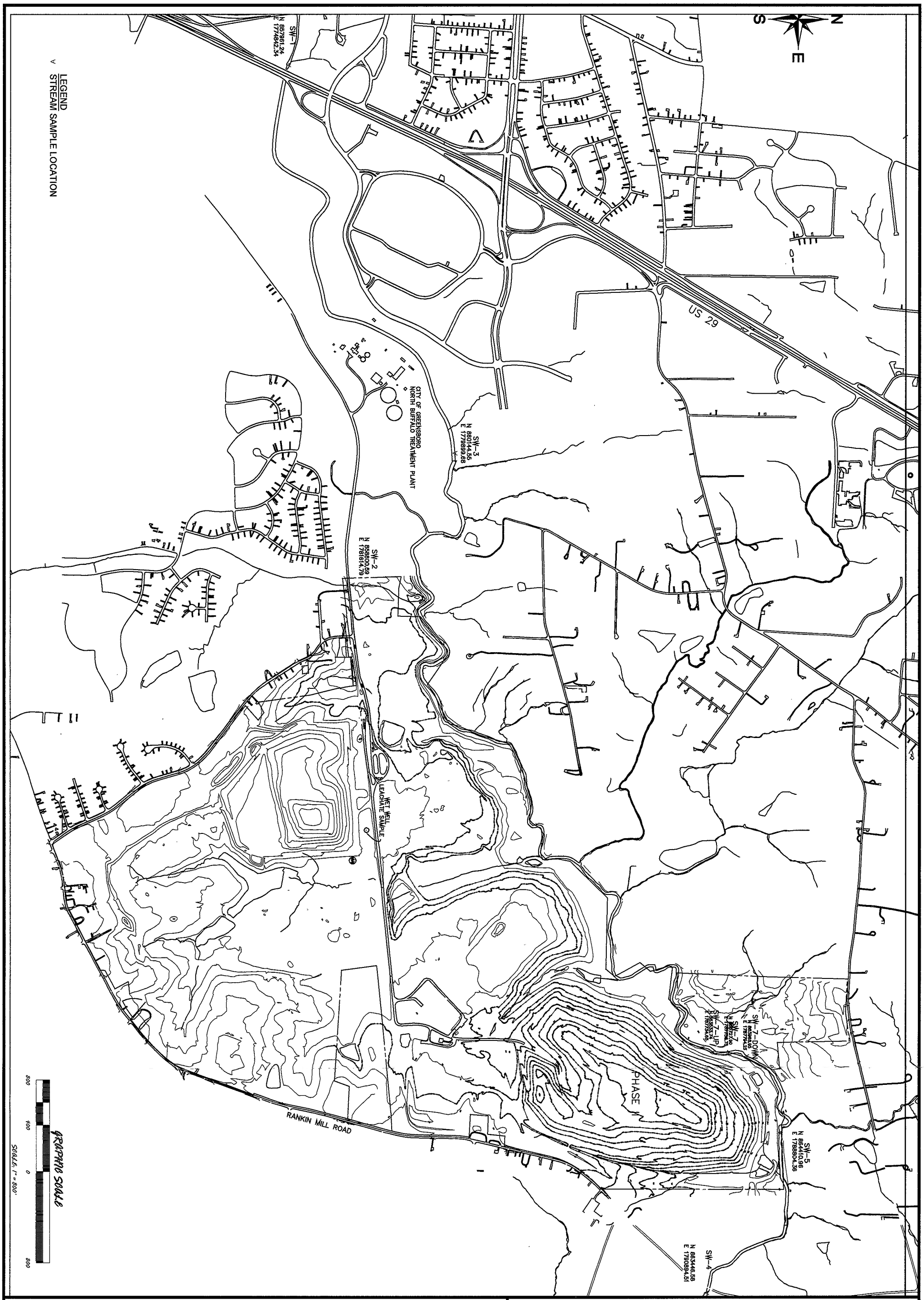

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STREAM SAMPLE LOCATION
PHASE II

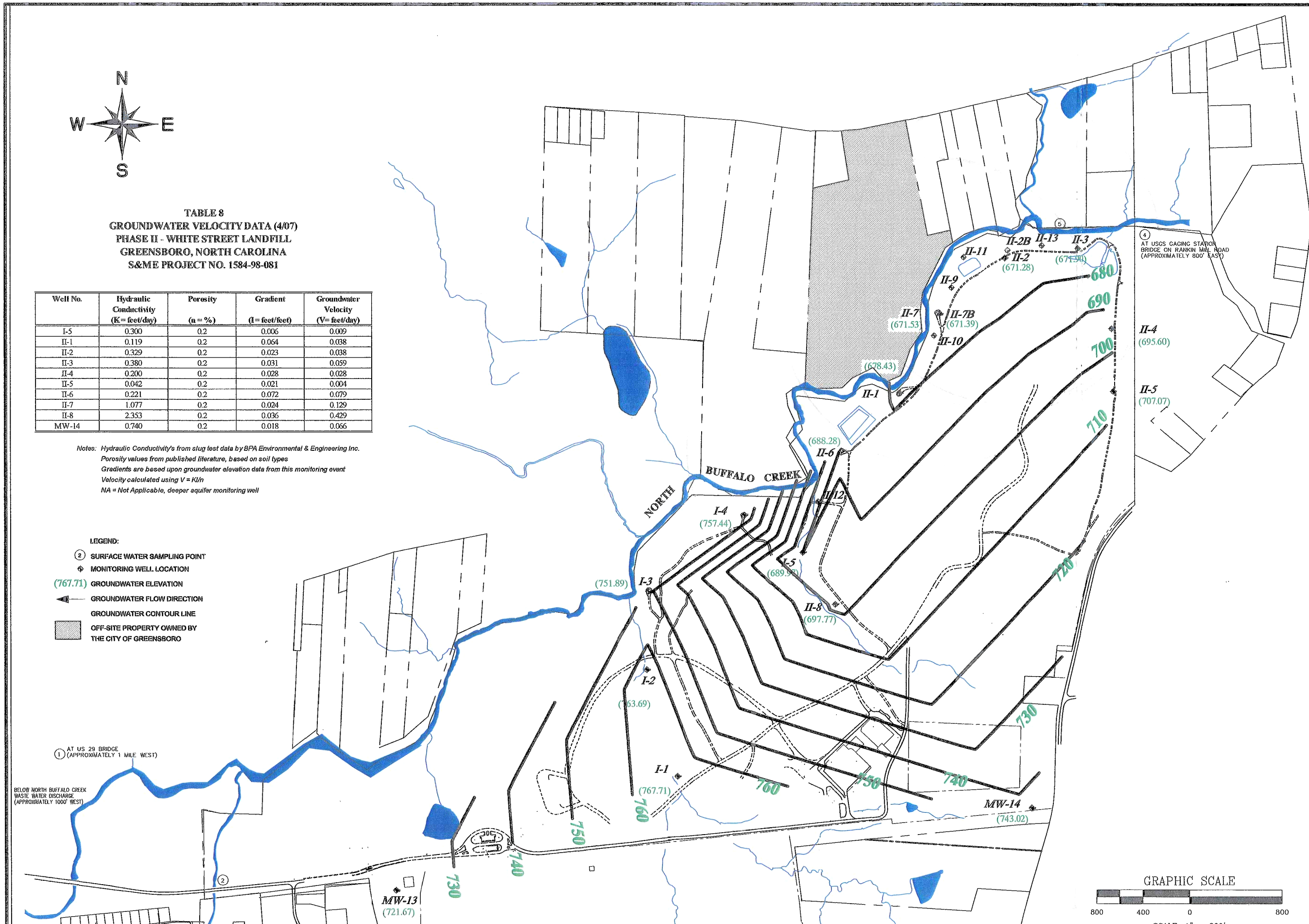
WHITE STREET LANDFILL
GREENSBORO, NORTH CAROLINA

SCALE: AS SHOWN	DRAWN BY: DSB/RDM	CHECKED BY: CW
JOB NO. 1584-98-081	DATE: DECEMBER 2006	FIGURE NO. 3

TABLE 8
GROUNDWATER VELOCITY DATA (4/07)
PHASE II - WHITE STREET LANDFILL
GREENSBORO, NORTH CAROLINA
S&ME PROJECT NO. 1584-98-081

Well No.	Hydraulic Conductivity (K= feet/day)	Porosity (n = %)	Gradient (I= feet/feet)	Groundwater Velocity (V= feet/day)
I-5	0.300	0.2	0.006	0.009
II-1	0.119	0.2	0.064	0.038
II-2	0.329	0.2	0.023	0.038
II-3	0.380	0.2	0.031	0.059
II-4	0.200	0.2	0.028	0.028
II-5	0.042	0.2	0.021	0.004
II-6	0.221	0.2	0.072	0.079
II-7	1.077	0.2	0.024	0.129
II-8	2.353	0.2	0.036	0.429
MW-14	0.740	0.2	0.018	0.066

Notes: Hydraulic Conductivity's from slug test data by BPA Environmental & Engineering Inc.
Porosity values from published literature, based on soil types
Gradients are based upon groundwater elevation data from this monitoring event
Velocity calculated using V = KI/n
NA = Not Applicable, deeper aquifer monitoring well



GROUNDWATER FLOW MAP
PHASE II
WHITE STREET LANDFILL
GREENSBORO, NORTH CAROLINA

SCALE: AS SHOWN
JOB NO. 1584-98-081
DRAWN BY: DSB/RDM
DATE: JUNE 2007
CHECKED BY: CW
FIGURE NO. 4

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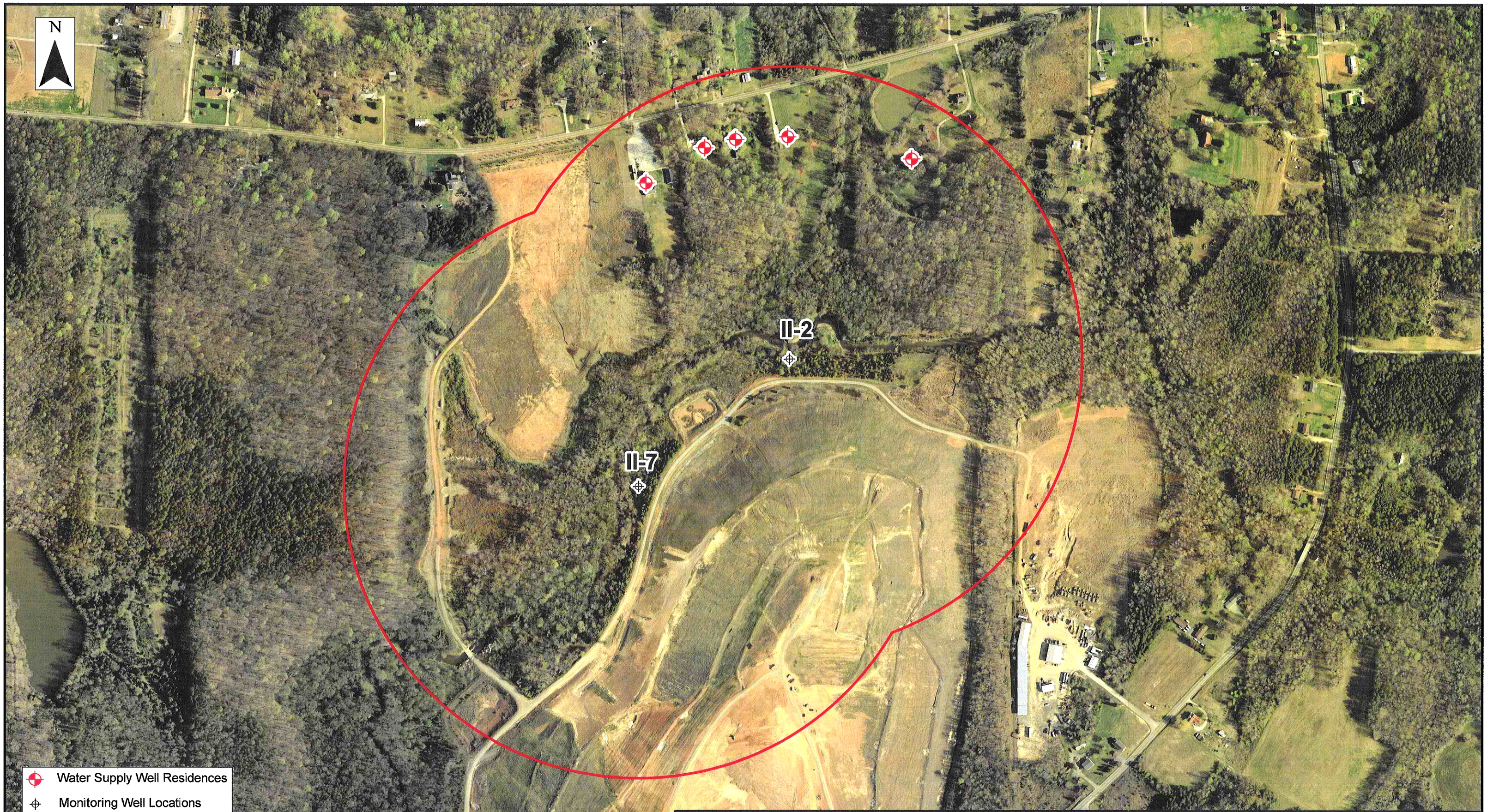


Scale: 1 inch equals 400 feet	S&ME	White Street Landfill	FIGURE
Drawn by: SDM	ENVIRONMENTAL SERVICES • ENGINEERING • TESTING	Greensboro, North Carolina	5
Reviewed by: CW		1/4-Mile Radius Drinking Water Well Receptor Survey	
Date: August 2007		Job No. 1584-98-081	

APPENDIX I

April 2007 Groundwater Velocity Calculations

GROUNDWATER VELOCITY DATA (4/07)
PHASE II - WHITE STREET LANDFILL
GREENSBORO, NORTH CAROLINA
S&ME PROJECT NO. 1584-98-081

Well No.	Hydraulic Conductivity (K = feet/day)	Porosity (n = %)	Gradient (I = feet/feet)	Groundwater Velocity (V= feet/day)
I-5	0.300	0.2	0.006	0.009
II-1	0.119	0.2	0.064	0.038
II-2	0.329	0.2	0.023	0.038
II-3	0.380	0.2	0.031	0.059
II-4	0.200	0.2	0.028	0.028
II-5	0.042	0.2	0.021	0.004
II-6	0.221	0.2	0.072	0.079
II-7	1.077	0.2	0.024	0.129
II-8	2.353	0.2	0.036	0.429
MW-14	0.740	0.2	0.018	0.066

Notes: Hydraulic Conductivity's from slug test data by BPA Environmental & Engineering Inc. and HDR Engineering
Porosity values from published literature, based on soil types
Gradients are based upon groundwater elevation data from this monitoring event
Velocity calculated using V = KI/n
NA = Not Applicable, deeper aquifer monitoring well

APPENDIX II

Well Construction Diagrams

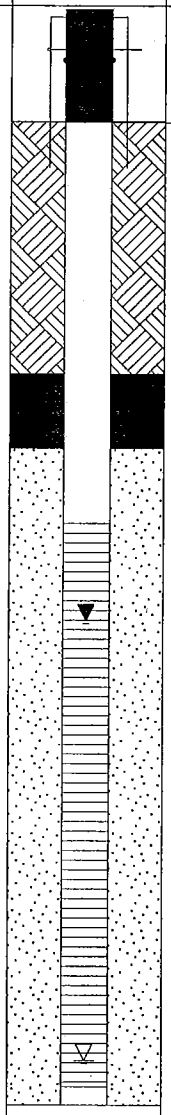
COMPLETION REPORT OF WELL No. II-2-B

PROJECT: **White Street Landfill**
PROJECT NO: **1584-98-081**
PROJECT LOCATION: **Greensboro, North Carolina**

WATER LEVEL: **Depth to water 15.77 Feet below top of casing on 7-11-07**
LATITUDE:
LONGITUDE:
TOP OF CASING ELEVATION:
DATUM: **MSL**
LOGGED BY: **L. Butler**

DRILLING CONTRACTOR: **Chad Odom**
DRILLING METHOD: **4 ¼" H.S.A.**
DATE DRILLED: **7/10/07**

STRATA DESCRIPTION	SYMBOL	DEPTH (ft.)
Fill: Brown Orange Clayey **SILT**		0
Fill: Brown Orange Clayey **SILT** with feldspathic fragments		5
Alluvium: Grey Green Silty **CLAY** (Moist)		10
Tan Brown Silty **CLAY** (Damp)		15
Green Tan Slightly Clayey **SILT**		
Green Tan Silty Fine to Coarse **SAND** Satured, saprolitic texture (granitic gneiss)		20
Partially Weathered Rock: sampled as Tan Brown Fine Sandy **SILT**		
Partially Weathered Rock: sampled as Blue Green Clayey Fine Sandy **SILT** with Rock Fragments: Saturated		25



WELL DETAILS	DEPTH (ft.)	LEGEND	ELEVATION (ft.)
	0.00	GS	
	0.00	CG	
	6.70	BS	
	8.70	FP	
	10.70	TSC	
	25.70	BSC	
	26.20	TD	

WELL CONSTRUCTION DETAILS

PROTECTIVE CASING
Diameter:
Type:
Interval: **+3 to -2**

RISER CASING
Diameter: **2"**
Type: **PVC**
Interval: **+3 TO 10.7**

GROUT
Type: **Neat Cement Grout**
Interval: **0-6.7**

SEAL
Type: **Bentonite**
Interval: **6.7-8.7**

FILTERPACK
Type: **#2 Sand**
Interval: **8.7-26.2**

SCREEN
Diameter: **2"**
Type: **0.010"**
Interval: **10.7-25.7**

LEGEND
- FILTER PACK
- BENTONITE
- CEMENT GROUT
- CUTTINGS / BACKFILL
- STATIC WATER LEVEL

TOC	TOP OF CASING
GS	GROUND SURFACE
BS	BENTONITE SEAL
FP	FILTER PACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
TD	TOTAL DEPTH
CG	CEMENT GROUT

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COMPLETION REPORT OF WELL No. II-2-B

MONITORING WELL 1584-98-081 WHITE STREET LANDFILL.GPJ S&ME.GDT 7/16/07

COMPLETION REPORT OF WELL No. II-7B

PROJECT: **White Street Landfill**
PROJECT NO: **1584-98-081B**
PROJECT LOCATION: **Greensboro, North Carolina**

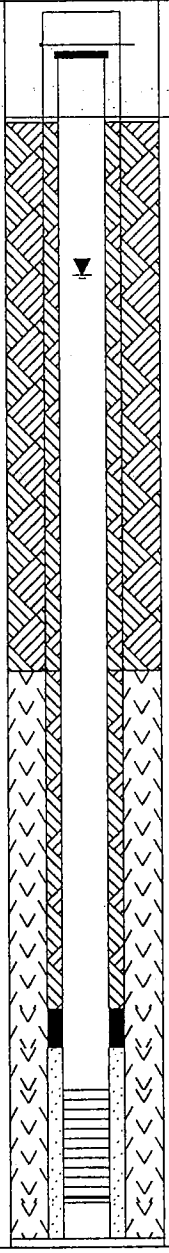
WATER LEVEL: **16.79 feet from Top of Casing**

LATITUDE:
LONGITUDE:
TOP OF CASING ELEVATION:
DATUM:
LOGGED BY: **EQH/LB**

DRILLING CONTRACTOR: **Graham & Curry**
DRILLING METHOD: **Air Rotary**
DATE DRILLED: **12/11/00**

STRATA DESCRIPTION	SYMBOL	DEPTH (ft.)
Saprolite		0 – 30
Rock- Diorite/granite		30 – 40
Rock- Diroite/granodiorite; water bearing zones from 58 to 65 feet, from 74 to 77 feet, from 78 to 80 feet, from 81 to 83 feet, from 85 to 101 feet		40 – 101.20

WELL DETAILS



DEPTH (ft.)	LEGEND	ELEVATION (ft.)
0.00	GS	
0.50	CG	
50.00		
50.00		
80.50	BS	
84.00	FP	
87.80	TSC	
97.55	BSC	
97.95	TD	
101.20		

WELL CONSTRUCTION DETAILS

PROTECTIVE CASING
Diameter: **6-inch**
Type: **Schedule 40 PVC**
Interval: **0.5-50.0**

RISER CASING
Diameter: **2-inch**
Type: **Schedule 40 PVC**
Interval: **+2.5-87.80**

GROUT
Type: **Neat Cement Grout**
Interval: **0.5-80.5**

SEAL
Type: **Bentonite**
Interval: **80.5-84.0**

FILTERPACK
Type: **#2 Sand**
Interval: **84.0-101.2**

SCREEN
Diameter: **2-inch**
Type: **0.001**
Interval: **87.8-97.55**

LEGEND

- FILTER PACK
- BENTONITE
- CEMENT GROUT
- CUTTINGS / BACKFILL
- ROCK
- STATIC WATER LEVEL

TOC	TOP OF CASING
GS	GROUND SURFACE
BS	BENTONITE SEAL
FP	FILTER PACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
TD	TOTAL DEPTH
CG	CEMENT GROUT

MONITORING WELL WSLF.GPJ S&ME.GDT 2/6/01

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COMPLETION REPORT OF WELL No. II-7B

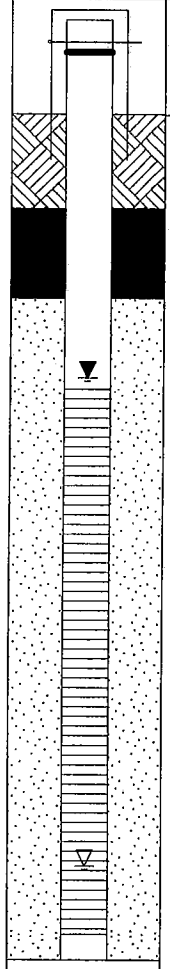
COMPLETION REPORT OF WELL No. II-9

PROJECT: **White Street Landfill**
PROJECT NO: **1584-98-081**
PROJECT LOCATION: **Greensboro, North Carolina**

WATER LEVEL: **Water Level is 9.5 Feet below top of casing**
LATITUDE:
LONGITUDE:
TOP OF CASING ELEVATION:
DATUM: **MSL**
LOGGED BY: **L. Butler**

DRILLING CONTRACTOR: **M. Moseley**
DRILLING METHOD: **4 ¼" H.S.A.**
DATE DRILLED: **3/21/05**

STRATA DESCRIPTION	SYMBOL	DEPTH (ft.)	WELL DETAILS	DEPTH (ft.)	LEGEND	ELEVATION (ft.)
Organic Laden Topsoil - 3"		0		0.00	GS	
Fill: Brown Tan Fine Slightly Sandy **SILT**				0.00	CG	
				2.50	BS	
Possible Residuum: Brown Green Fine Slightly Sandy Clayey **SILT** (Damp)		5		4.90	FP	
				7.30	TSC	
Residuum: Tan Brown Slightly Micaceous Clayey **SILT**; possible quartz seam from 16.0' to 16.25'		10				
		15				
Green Gray Fine Slightly Sandy **SILT**		20				
Brown Green Fine Slightly Sandy Clayey **SILT** (Moist)				21.80	BSC	
				22.50	TD	



WELL CONSTRUCTION DETAILS

PROTECTIVE CASING
Diameter:
Type:
Interval:

RISER CASING
Diameter: **2"**
Type: **PVC**
Interval: **+2.5-7.0**

GROUT
Type: **Neat Cement Grout**
Interval: **0-2.5**

SEAL
Type: **Bentonite**
Interval: **2.5-4.9**

FILTERPACK
Type: **#2 Sand**
Interval: **4.9-22.5**

SCREEN
Diameter: **2"**
Type: **0.010"**
Interval: **7.3-21.8**

LEGEND
- FILTER PACK
- BENTONITE
- CEMENT GROUT
- CUTTINGS / BACKFILL
- STATIC WATER LEVEL

TOC	TOP OF CASING
GS	GROUND SURFACE
BS	BENTONITE SEAL
FP	FILTER PACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
TD	TOTAL DEPTH
CG	CEMENT GROUT

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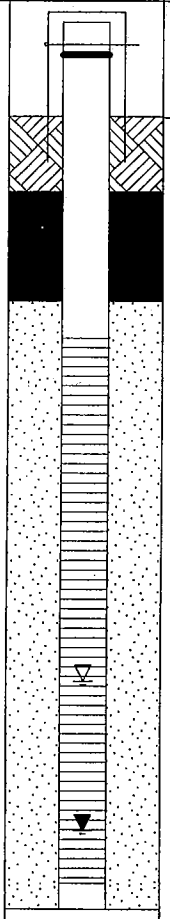
COMPLETION REPORT OF WELL No. II-9

COMPLETION REPORT OF WELL No. II-10

PROJECT: **White Street Landfill**
PROJECT NO: **1584-98-081**
PROJECT LOCATION: **Greensboro, North Carolina**

WATER LEVEL: **Depth to water is 21.5 feet below top of casing**
LATITUDE:
LONGITUDE:
TOP OF CASING ELEVATION:
DATUM: **MSL**
LOGGED BY: **L. Butler**

DRILLING CONTRACTOR: **M. Moseley**
DRILLING METHOD: **4 ¼" H.S.A.**
DATE DRILLED: **3/21/05**

STRATA DESCRIPTION	SYMBOL	DEPTH (ft.)	WELL DETAILS	DEPTH (ft.)	LEGEND	ELEVATION (ft.)
Fill: Orange Brown Slightly Clayey **SILT**		0		0.00	GS	
				0.00	CG	
				2.00	BS	
				4.90	FP	
Possible Residuum: Red Brown Slightly Clayey **SILT**		5		5.90	TSC	
Residuum: Black and Tan Green Fine Slightly Sandy **SILT** fine-grained, mafic relict structure, slightly micaceous		10				
		15				
		20		20.40	BSC	
				21.10	TD	

WELL CONSTRUCTION DETAILS

PROTECTIVE CASING
Diameter:
Type:
Interval:

RISER CASING
Diameter: **2"**
Type: **PVC**
Interval: **+2.5-5.9**

GROUT
Type: **Neat Cement Grout**
Interval: **0-2.0**

SEAL
Type: **Bentonite**
Interval: **2.0-4.9**

FILTERPACK
Type: **#2 Sand**
Interval: **4.9-21.1**

SCREEN
Diameter: **2"**
Type: **0.010"**
Interval: **5.9-20.4**

LEGEND

- FILTER PACK
- BENTONITE
- CEMENT GROUT
- CUTTINGS / BACKFILL
- STATIC WATER LEVEL

TOC	TOP OF CASING
GS	GROUND SURFACE
BS	BENTONITE SEAL
FP	FILTER PACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
TD	TOTAL DEPTH
CG	CEMENT GROUT

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COMPLETION REPORT OF WELL No. II-10

COMPLETION REPORT OF WELL No. II-11

PROJECT: **White Street Landfill**
PROJECT NO: **1584-98-081**
PROJECT LOCATION: **Greensboro, North Carolina**

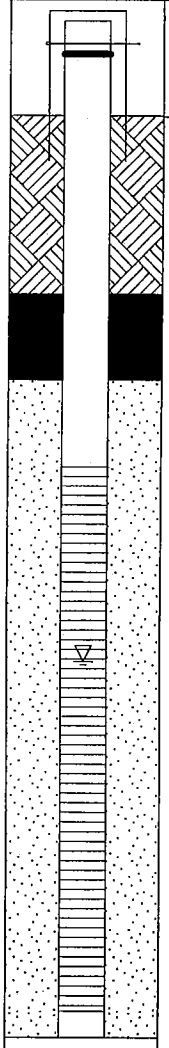
WATER LEVEL:

LATITUDE:
LONGITUDE:
TOP OF CASING ELEVATION:
DATUM: **MSL**
LOGGED BY: **L. Butler**

DRILLING CONTRACTOR: **M. Moseley**
DRILLING METHOD: **4 ¼" H.S.A.**
DATE DRILLED: **3/22/05**

STRATA DESCRIPTION	SYMBOL	DEPTH (ft.)
Fill: Brown Red Clayey **SILT**		0
Brown Tan Fine Sandy **SILT**		5
Possible Alluvium: Brown Green Slightly Clayey **SILT** (Damp)		10
Residuum: Gray and Orange Brown Slightly Micaceous Fine Sandy **SILT** (Moist)		15
Black Gray Fine Sandy **SILT**		20

WELL DETAILS



DEPTH (ft.)	LEGEND
0.00	GS
0.00	CG
4.70	BS
7.00	FP
9.30	TSC
23.80	BSC
24.50	TD

ELEVATION (ft.)

WELL CONSTRUCTION DETAILS

PROTECTIVE CASING
Diameter:
Type:
Interval:

RISER CASING
Diameter: **2"**
Type: **PVC**
Interval: **+2.5-9.3**

GROUT
Type: **Neat Cement Grout**
Interval: **0-4.7**

SEAL
Type: **Bentonite**
Interval: **4.7-7.0**

FILTERPACK
Type: **#2 Sand**
Interval: **7.0-24.5**

SCREEN
Diameter: **2"**
Type: **0.010"**
Interval: **9.3-23.8**

LEGEND

- FILTER PACK
- BENTONITE
- CEMENT GROUT
- CUTTINGS / BACKFILL
- STATIC WATER LEVEL

TOC	TOP OF CASING
GS	GROUND SURFACE
BS	BENTONITE SEAL
FP	FILTER PACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
TD	TOTAL DEPTH
CG	CEMENT GROUT

MONITORING WELL 1584-98-081 WHITE STREET LANDFILL.GPJ S&ME.GDT 4/18/05

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COMPLETION REPORT OF WELL No. II-11

COMPLETION REPORT OF WELL No. II-12

PROJECT: **White Street Landfill**
PROJECT NO: **1584-98-081**
PROJECT LOCATION: **Greensboro, North Carolina**

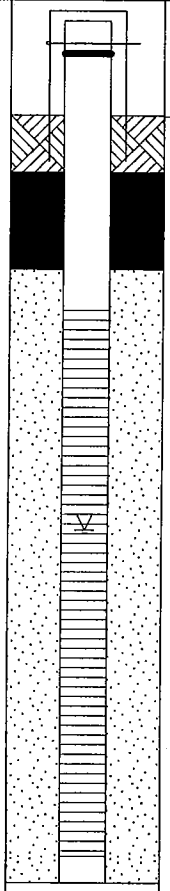
WATER LEVEL:

LATITUDE:
LONGITUDE:
TOP OF CASING ELEVATION:
DATUM: **MSL**
LOGGED BY: **L. Butler**

DRILLING CONTRACTOR: **M. Moseley**
DRILLING METHOD: **4 ¼" H.S.A.**
DATE DRILLED: **3/22/05**

STRATA DESCRIPTION	SYMBOL	DEPTH (ft.)
Fill: Asphalt Debris - 2"		0
Tan Slightly Clayey Fine Sandy **SILT**		
Alluvium: Gray Green Very Clayey **SILT** (Moist)		5
Possible Alluvium: Green Coarse Sandy Clayey **SILT** (Saturated)		10
Residuum: Gray Coarse to Fine Sandy Clayey **SILT**		15
Partially Weathered Rock: sampled as Gray Coarse to Fine Sandy **SILT**		20

WELL DETAILS



DEPTH (ft.)	LEGEND	ELEVATION (ft.)
0.00	GS	
0.00	CG	
1.50	BS	
4.10	FP	
5.20	TSC	
19.70	BSC	
20.40	TD	

WELL CONSTRUCTION DETAILS

PROTECTIVE CASING
Diameter:
Type:
Interval:

RISER CASING
Diameter: **2"**
Type: **PVC**
Interval: **+2.5-5.2**

GROUT
Type: **Neat Cement Grout**
Interval: **0-1.5**

SEAL
Type: **Bentonite**
Interval: **1.5-4.1**

FILTERPACK
Type: **#2 Sand**
Interval: **4.1-20.4**

SCREEN
Diameter: **2"**
Type: **0.010**
Interval: **5.2-19.7**

LEGEND
- FILTER PACK
- BENTONITE
- CEMENT GROUT
- CUTTINGS / BACKFILL
- STATIC WATER LEVEL

TOC	TOP OF CASING
GS	GROUND SURFACE
BS	BENTONITE SEAL
FP	FILTER PACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
TD	TOTAL DEPTH
CG	CEMENT GROUT

MONITORING WELL 1584-98-081 WHITE STREET LANDFILL.GPJ S&ME.GDT 4/18/05

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COMPLETION REPORT OF WELL No. II-12

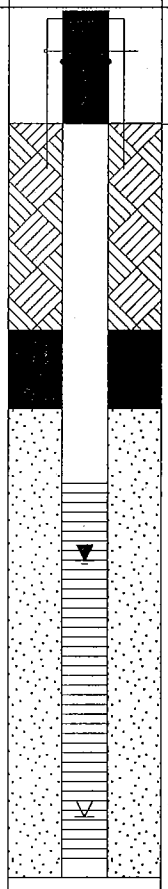
COMPLETION REPORT OF WELL No. II-13

PROJECT: **White Street Landfill**
PROJECT NO: **1584-98-081**
PROJECT LOCATION: **Greensboro, North Carolina**

WATER LEVEL: **Depth to water 14.17 Feet below top of casing on 7-11-07**
LATITUDE:
LONGITUDE:
TOP OF CASING ELEVATION:
DATUM: **MSL**
LOGGED BY: **L. Butler**

DRILLING CONTRACTOR: **Chad Odom**
DRILLING METHOD: **4 ¼" H.S.A.**
DATE DRILLED: **7/11/07**

STRATA DESCRIPTION	SYMBOL	DEPTH (ft.)	WELL DETAILS	DEPTH (ft.)	LEGEND	ELEVATION (ft.)
				0.00	GS	
Fill: Tan Brown Fine to Medium Sandy **SILT**		0		0.00	CG	
Green Gray Clayey **SILT**		5		5.50	BS	
Alluvium: Gray Silty **CLAY** (Damp)				7.60	FP	
Gray Silty Fine **SAND**						
Residuum: Tan Orange Very Silty Fine **SAND**		10		9.60	TSC	
Residuum: Partially Weathered Rock Sampled as Gray White and Tan Very Silty Fine Sandy Fine to Coarse **SAND**		15				
		20		19.60	BSC	
				20.10	TD	



WELL CONSTRUCTION DETAILS

PROTECTIVE CASING
Diameter:
Type:
Interval:

RISER CASING
Diameter: **2"**
Type: **PVC**
Interval: **+3 to 9.6**

GROUT
Type: **Neat Cement Grout**
Interval: **0-5.5**

SEAL
Type: **Bentonite**
Interval: **5.5-7.6**

FILTERPACK
Type: **#2 Sand**
Interval: **7.6-20.1**

SCREEN
Diameter: **2"**
Type: **0.010"**
Interval: **9.6-19.6**

LEGEND
- FILTER PACK
- BENTONITE
- CEMENT GROUT
- CUTTINGS / BACKFILL
- STATIC WATER LEVEL

TOC	TOP OF CASING
GS	GROUND SURFACE
BS	BENTONITE SEAL
FP	FILTER PACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
TD	TOTAL DEPTH
CG	CEMENT GROUT

S&ME
ENGINEERING • TESTING
ENVIRONMENTAL SERVICES

COMPLETION REPORT OF WELL No. II-13

MONITORING WELL 1584-98-081 WHITE STREET LANDFILL.GPJ S&ME.GDT 7/16/07

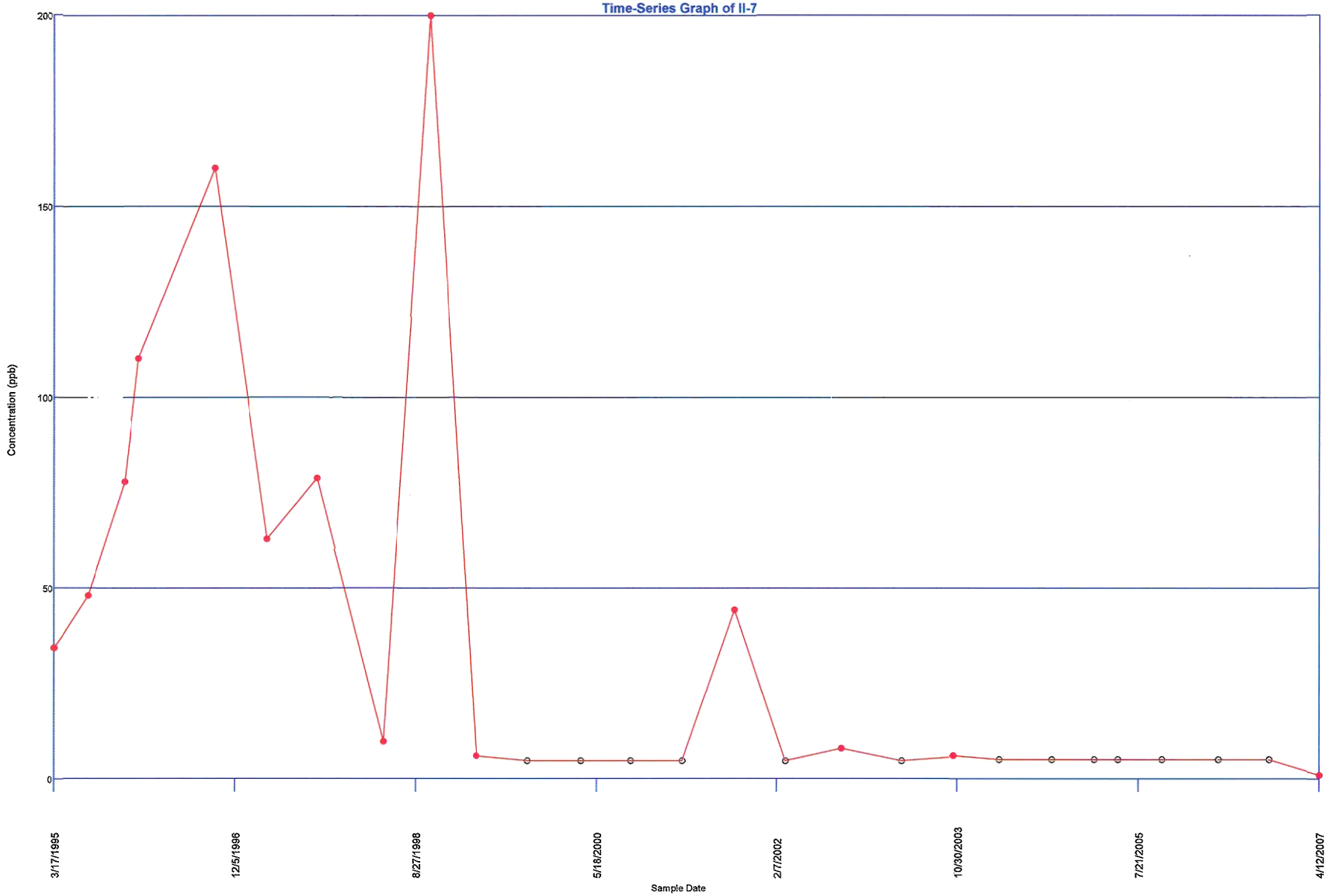
APPENDIX III

Trend Graphs

White Street Landfill

cis-1,2-Dichloroethene (-ethylene)

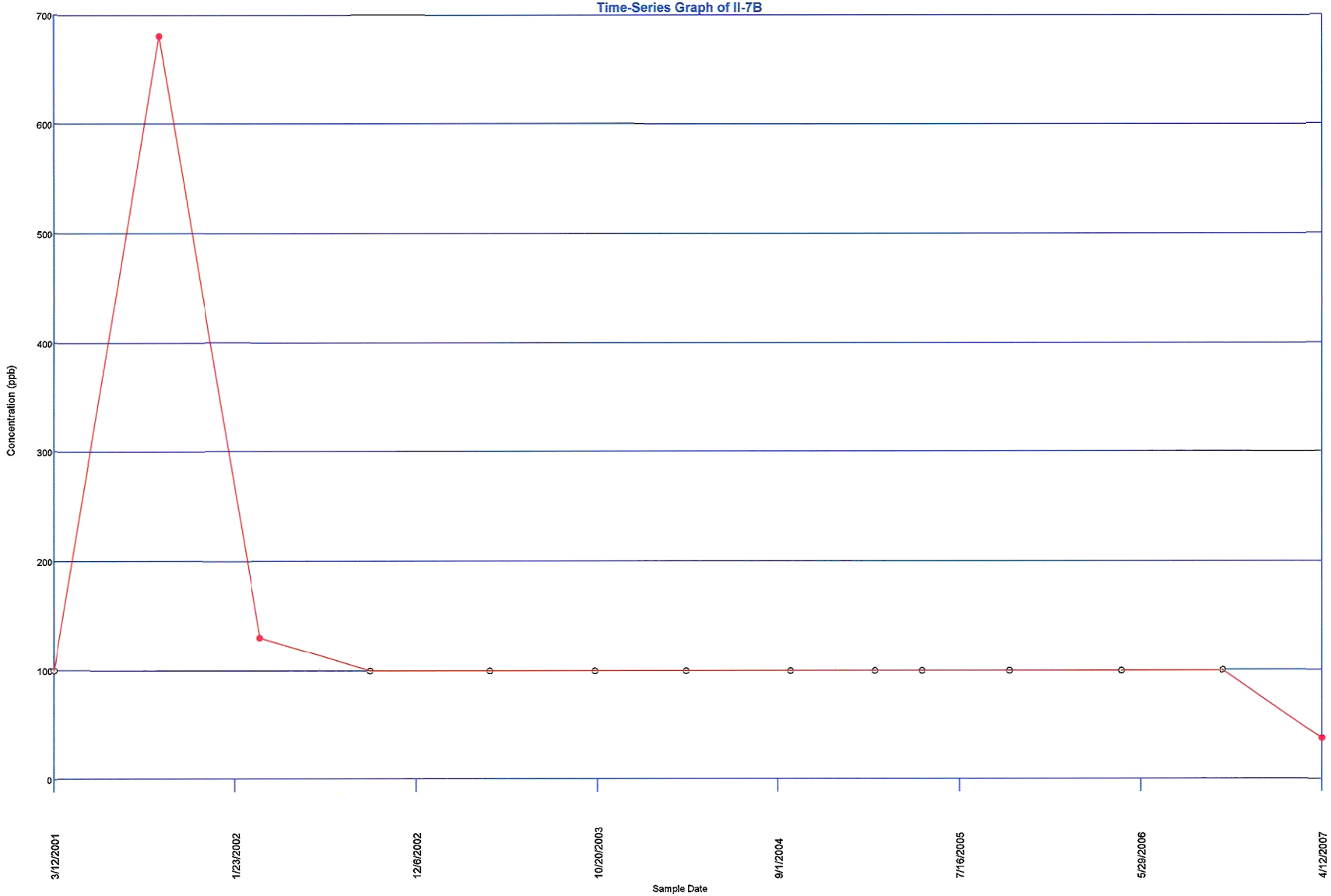
Time-Series Graph of II-7



White Street Landfill

Methyl Ethyl Ketone (MEK) (2-Butanone)

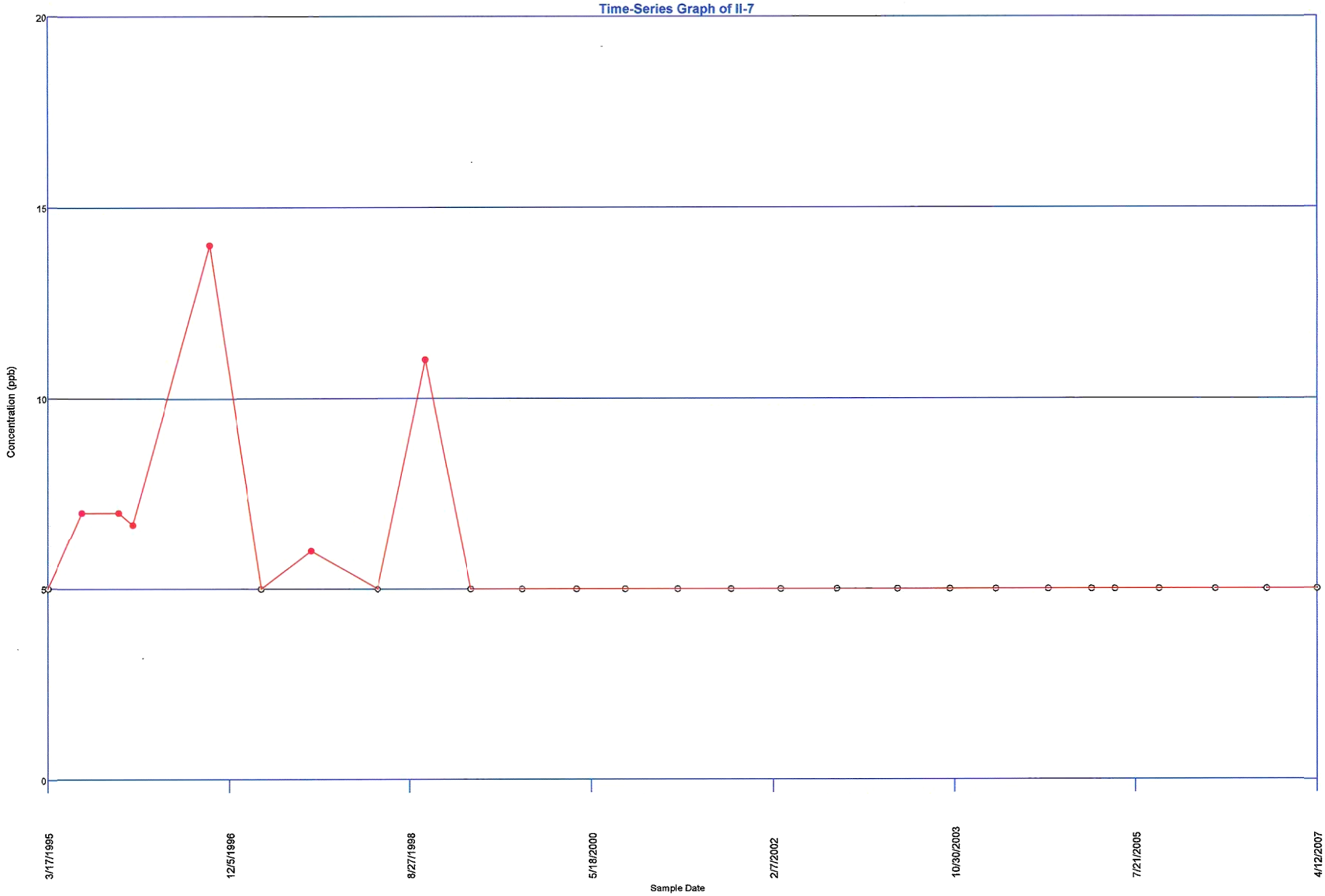
Time-Series Graph of II-7B



White Street Landfill

Benzene

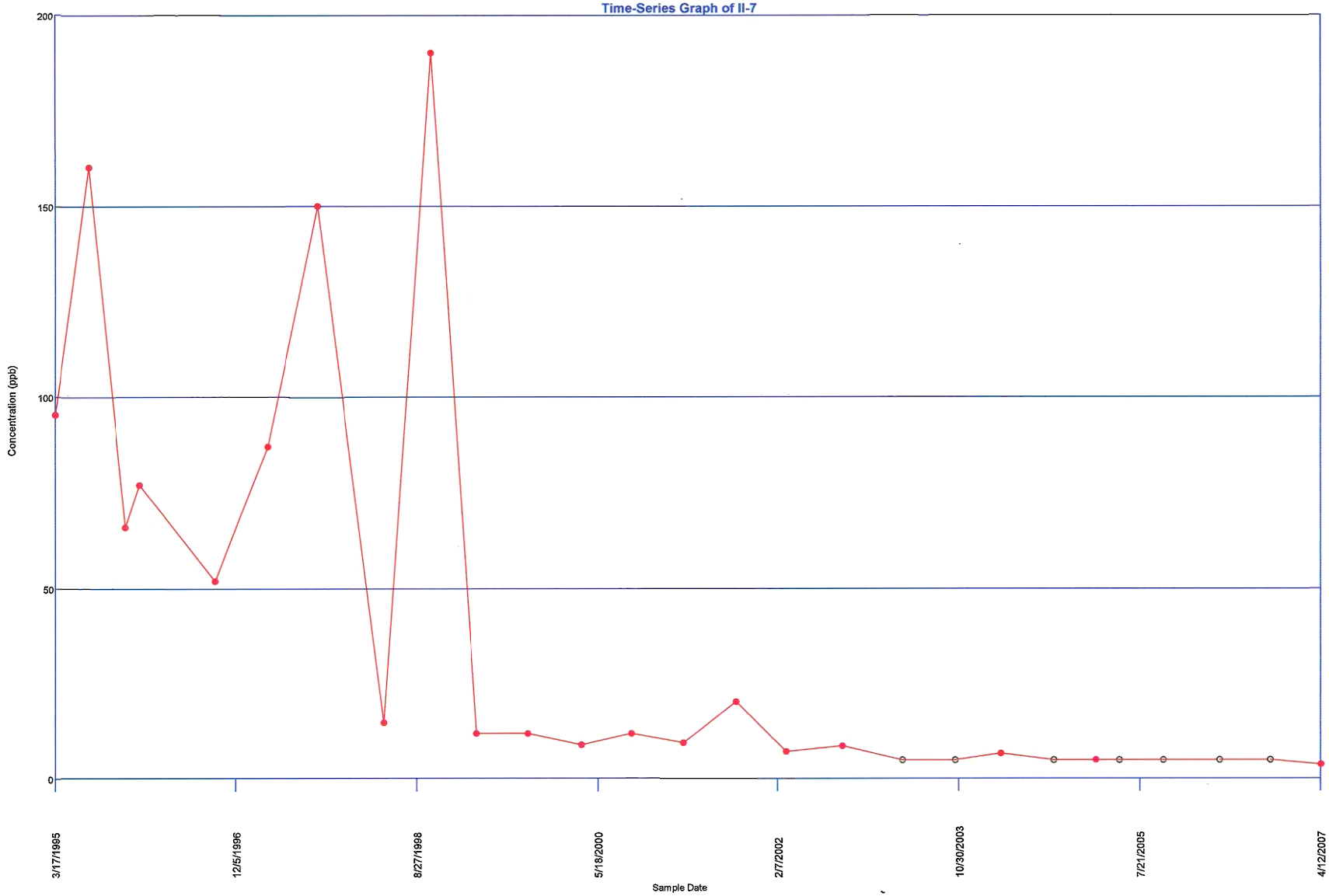
Time-Series Graph of II-7



White Street Landfill

Tetrachloroethene (-ethylene)

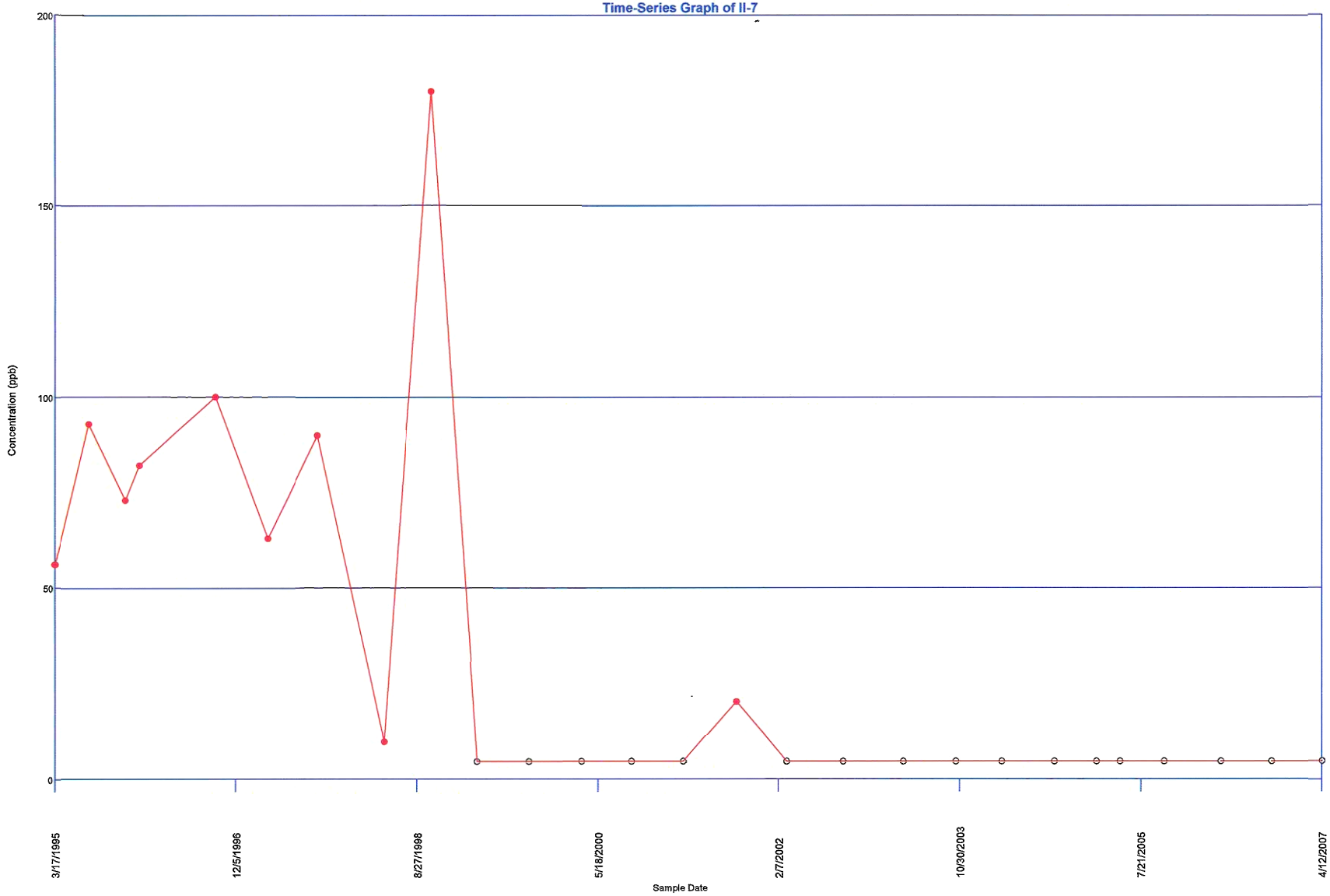
Time-Series Graph of II-7



White Street Landfill

Trichloroethene (-ethylene)

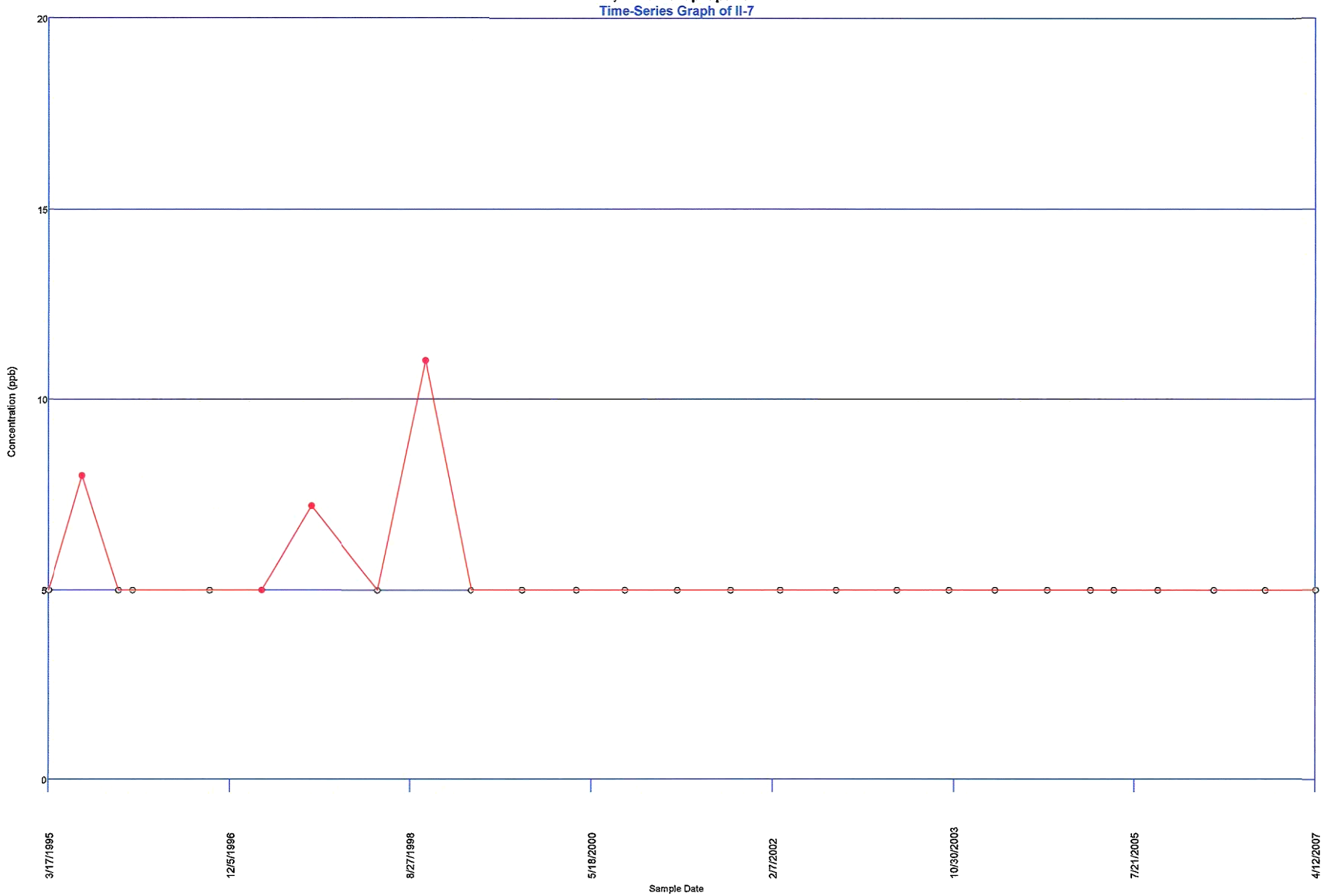
Time-Series Graph of II-7



White Street Landfill

1,2-Dichloropropane

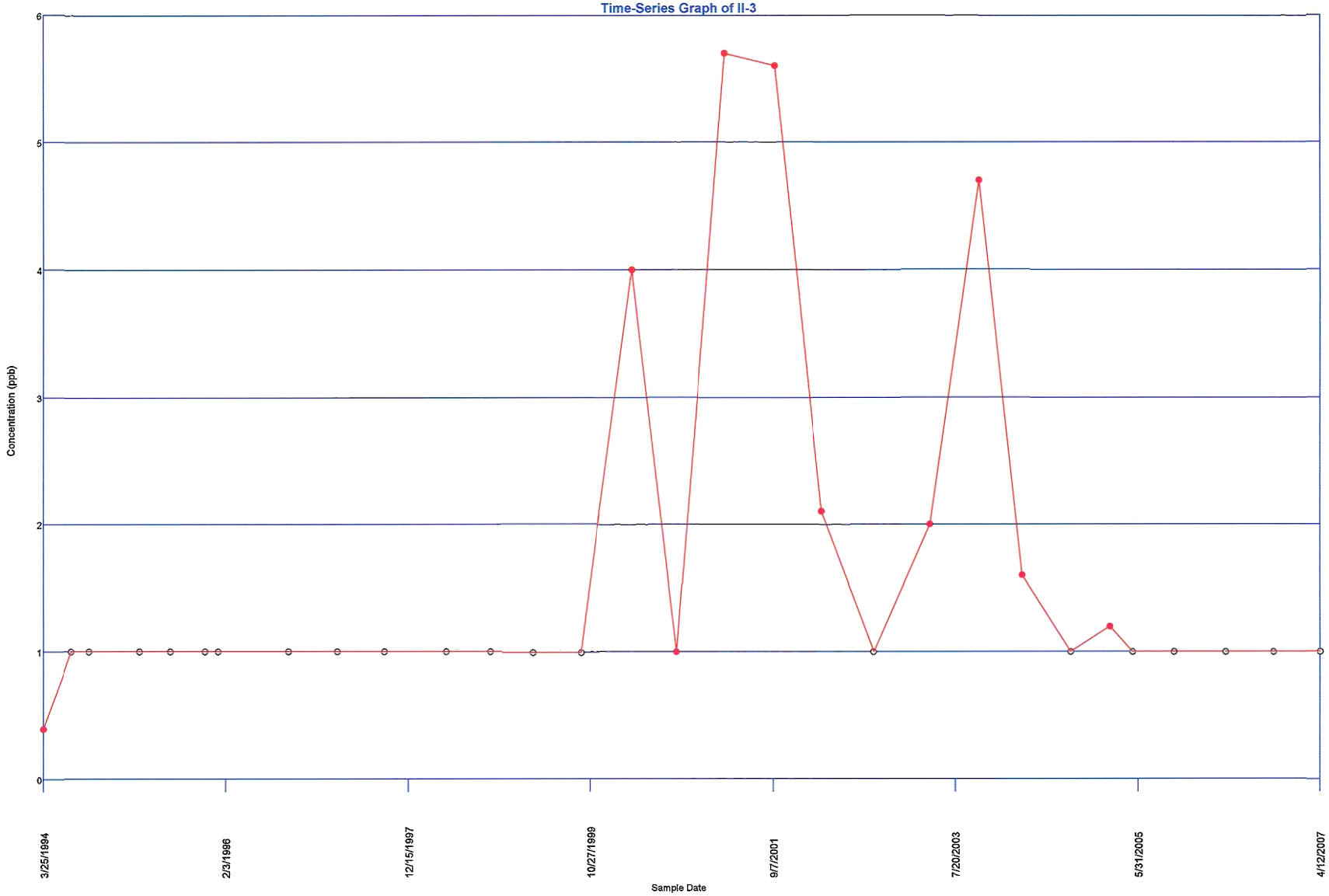
Time-Series Graph of II-7



White Street Landfill

Cadmium

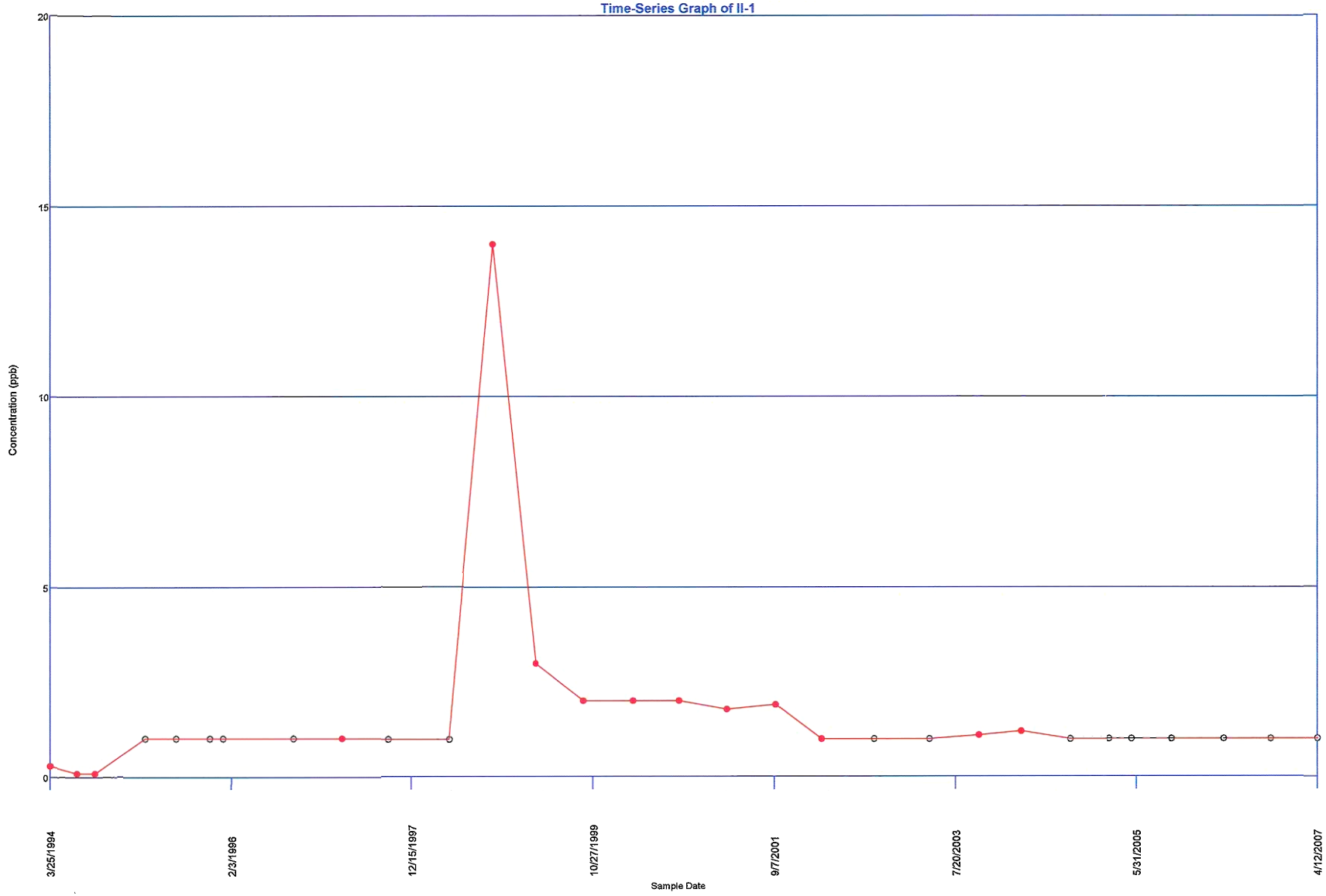
Time-Series Graph of II-3



White Street Landfill

Cadmium

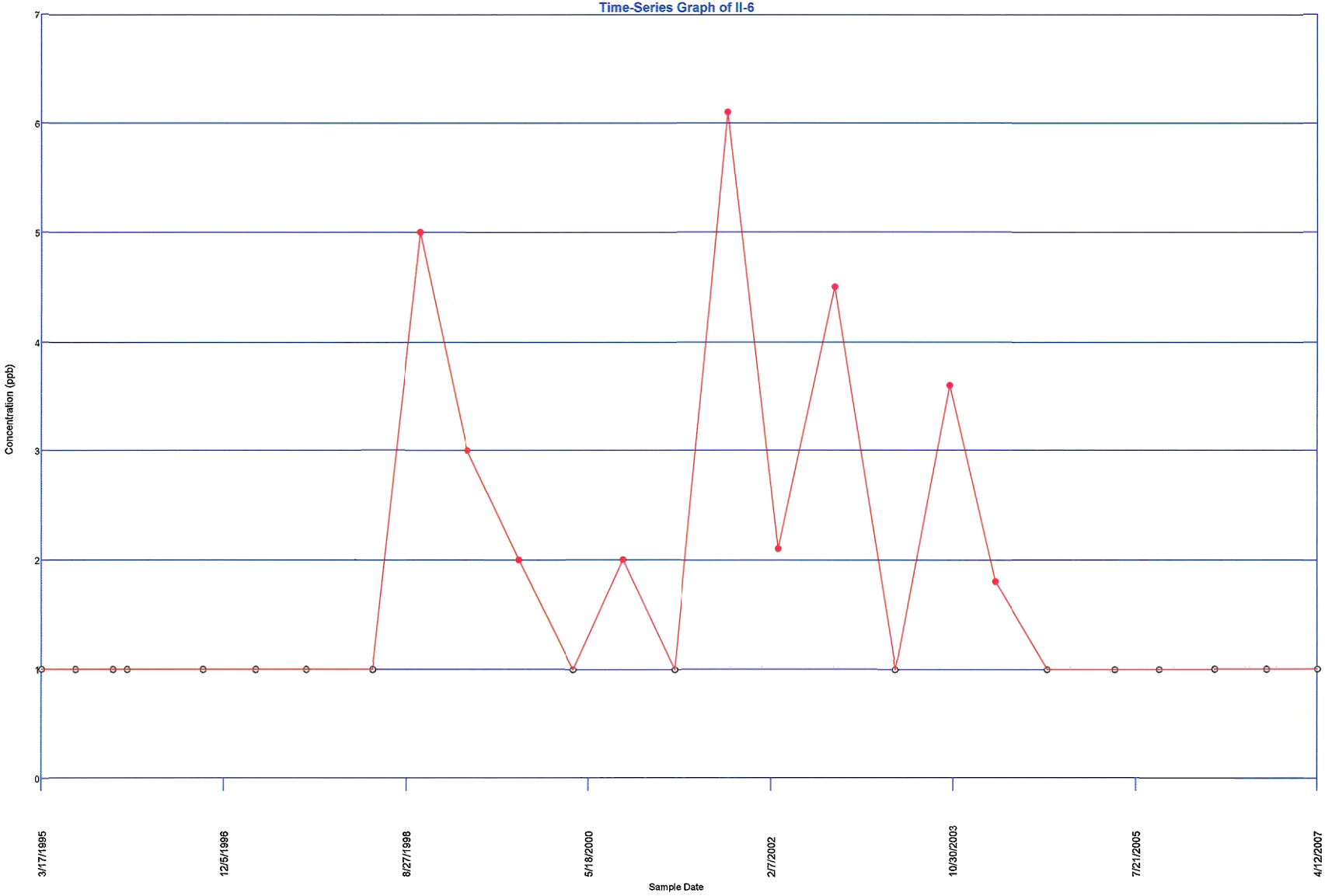
Time-Series Graph of II-1



White Street Landfill

Cadmium

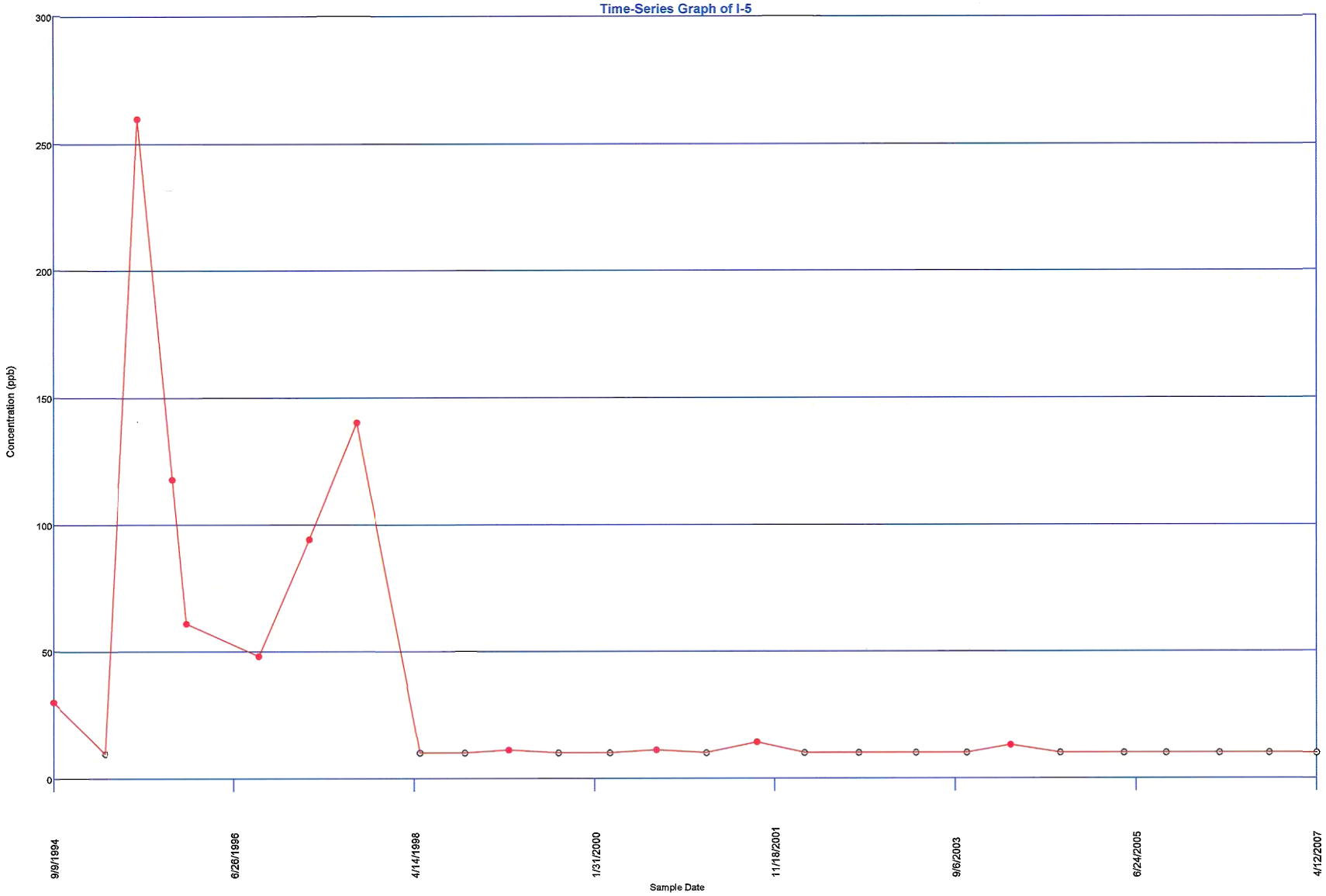
Time-Series Graph of II-6



White Street Landfill

Chromium

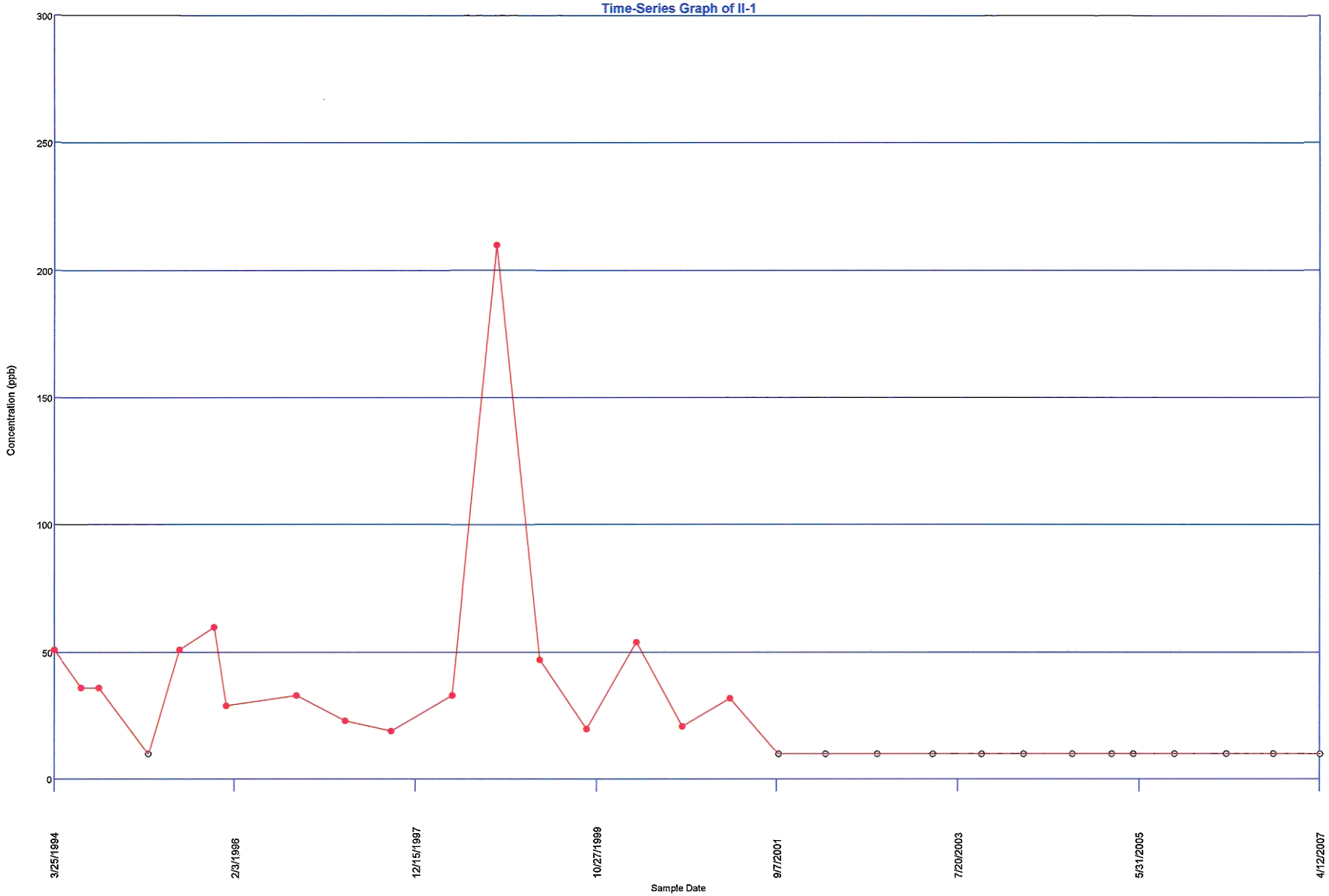
Time-Series Graph of I-5



White Street Landfill

Chromium

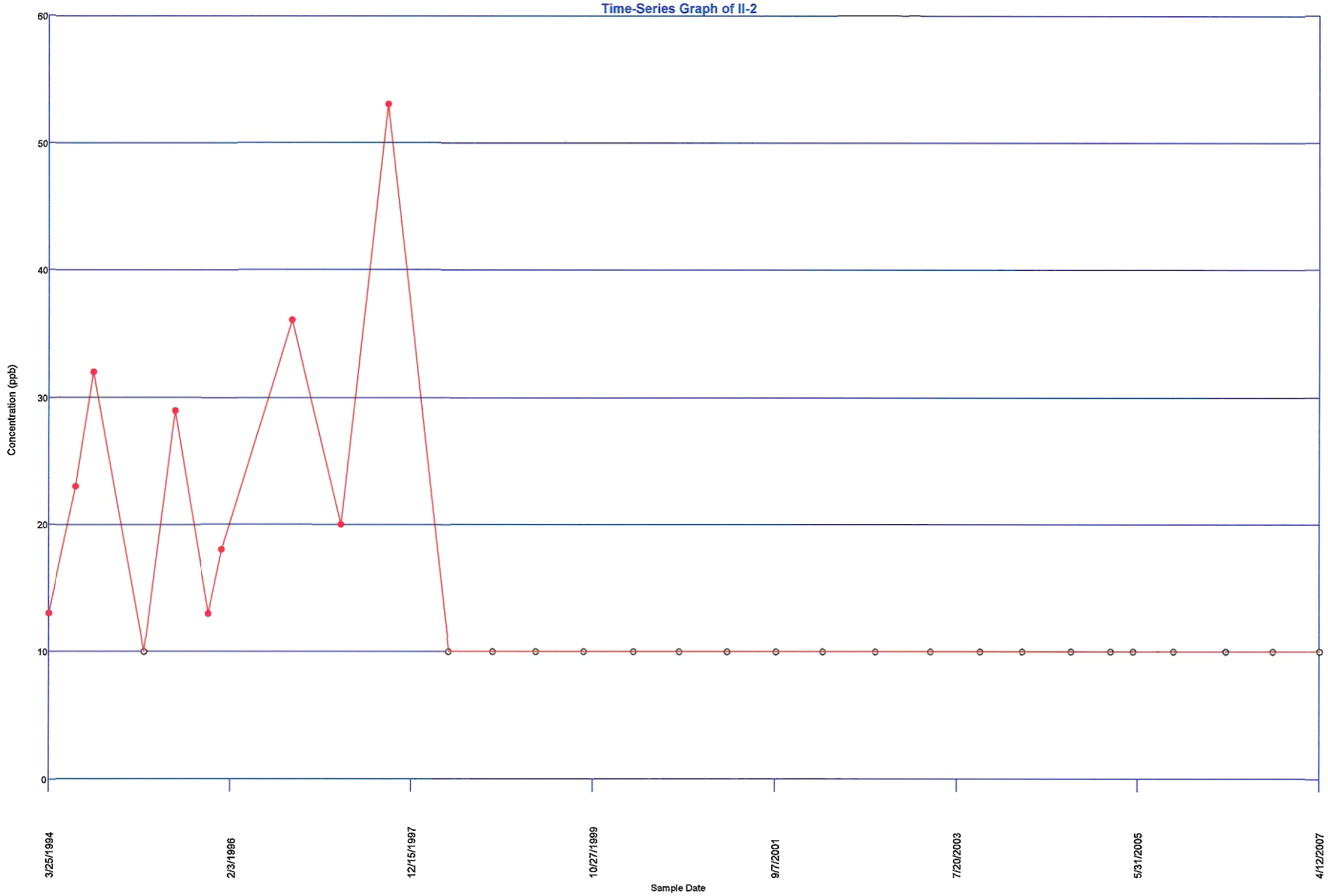
Time-Series Graph of II-1



White Street Landfill

Chromium

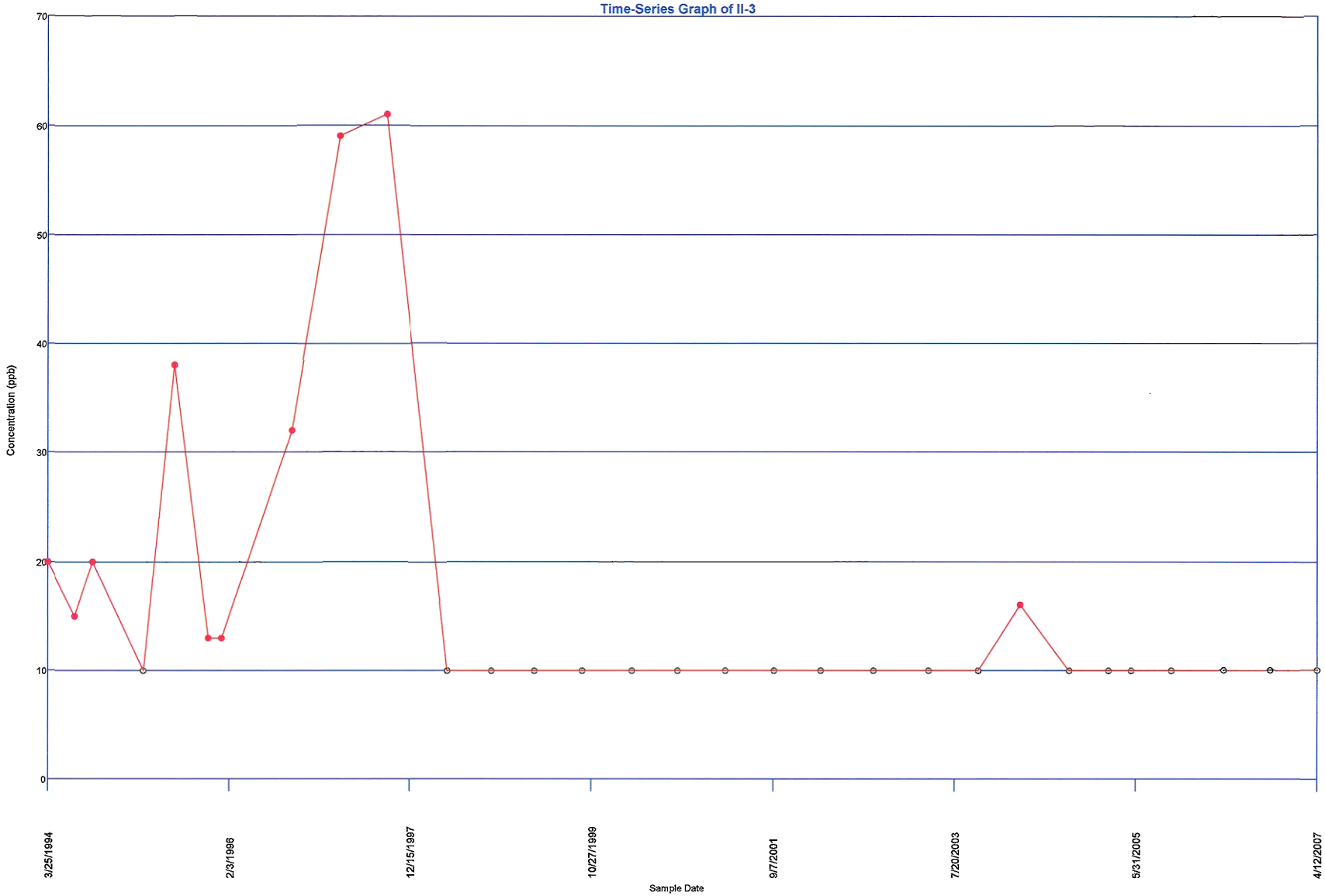
Time-Series Graph of II-2



White Street Landfill

Chromium

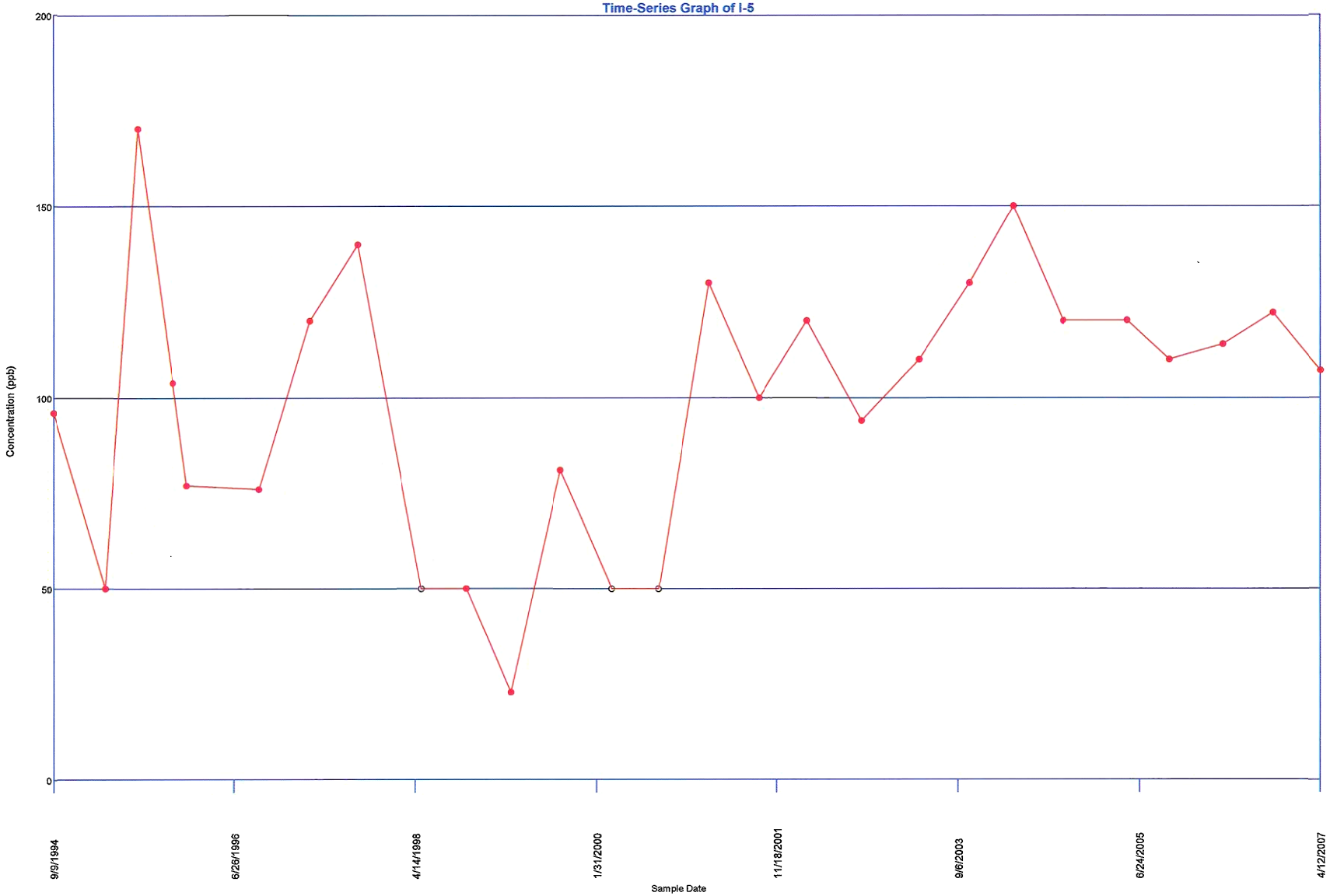
Time-Series Graph of II-3



White Street Landfill

Nickel

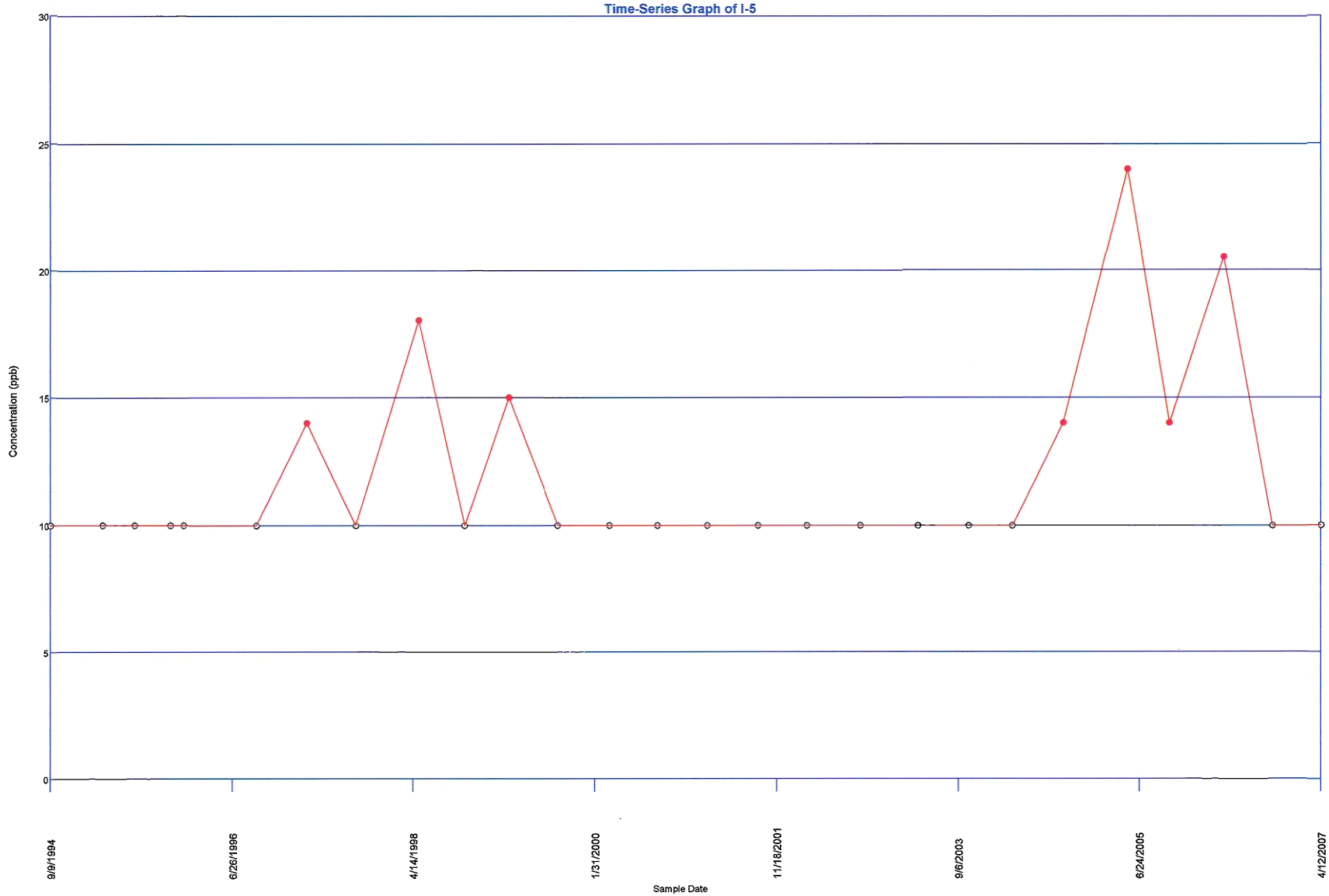
Time-Series Graph of I-5



White Street Landfill

Thallium

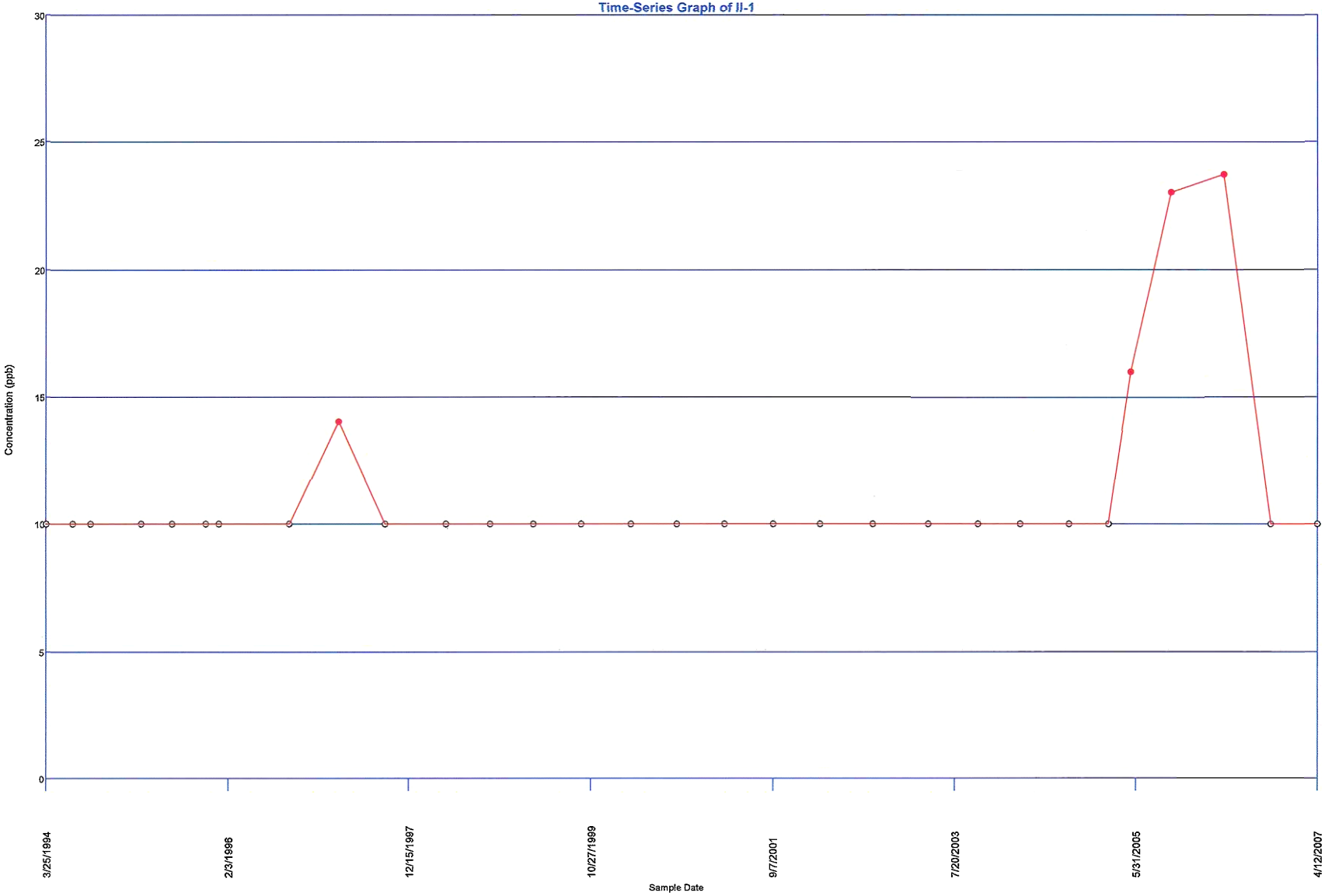
Time-Series Graph of I-5



White Street Landfill

Thallium

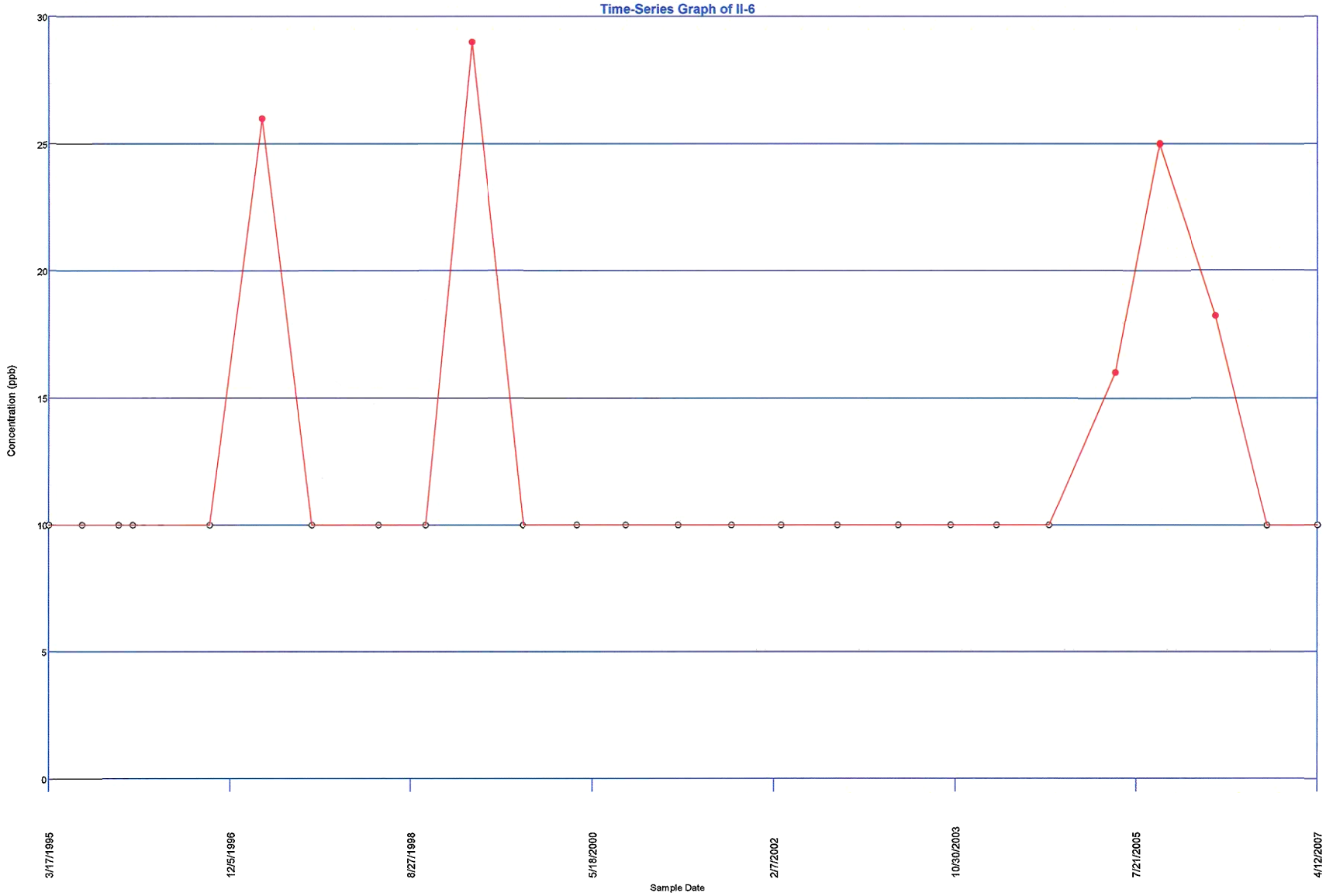
Time-Series Graph of II-1



White Street Landfill

Thallium

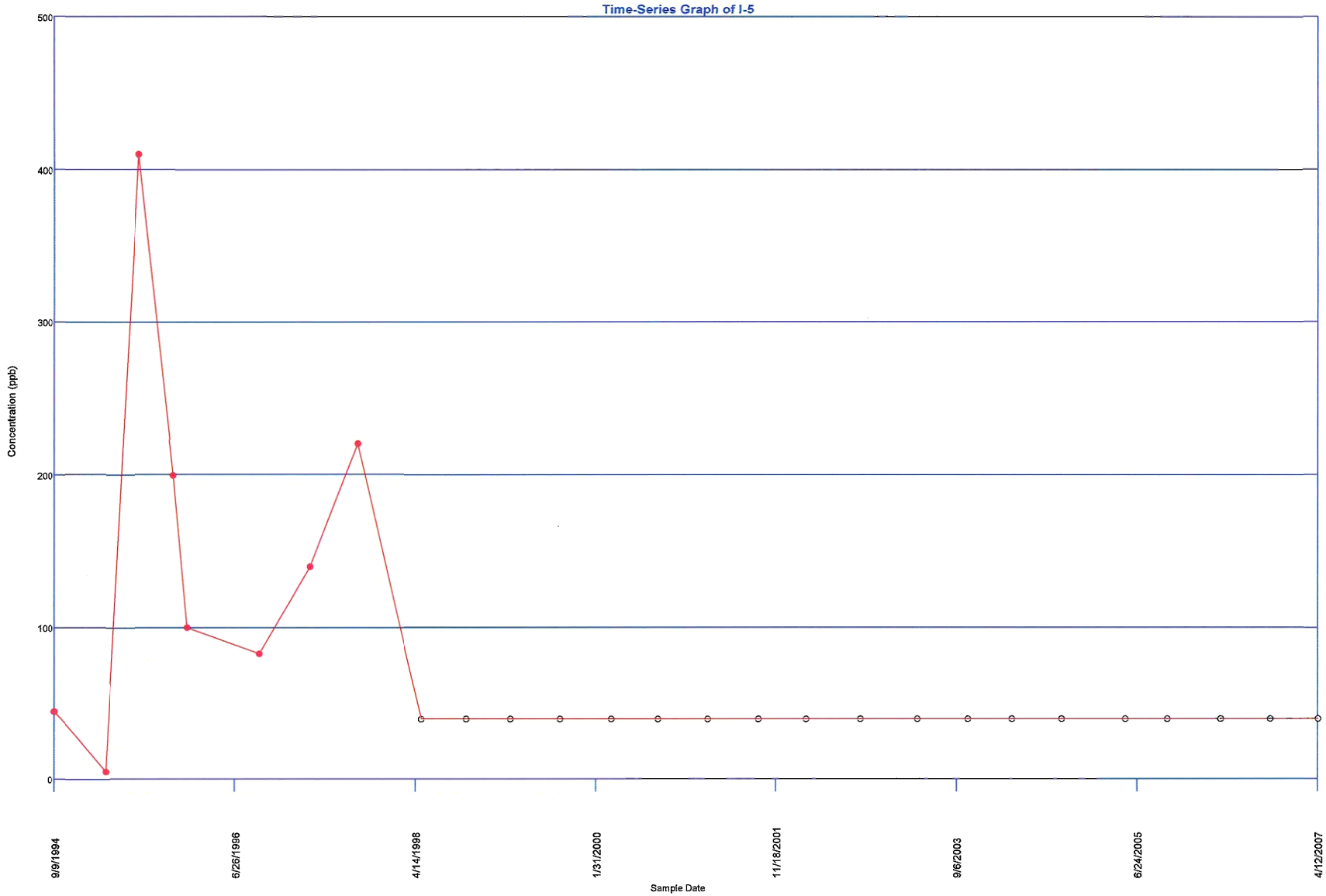
Time-Series Graph of II-6



White Street Landfill

Vanadium

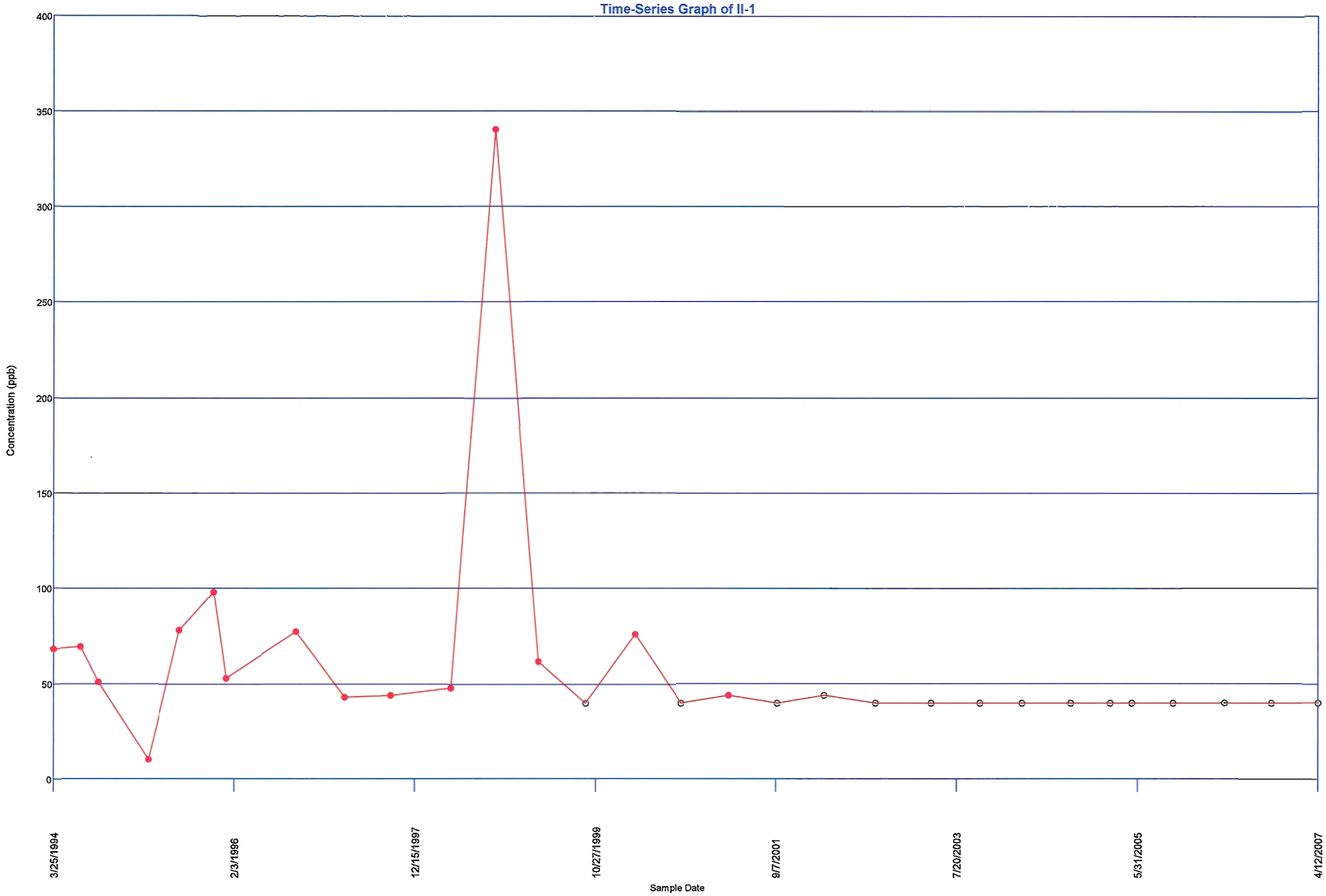
Time-Series Graph of I-5



White Street Landfill

Vanadium

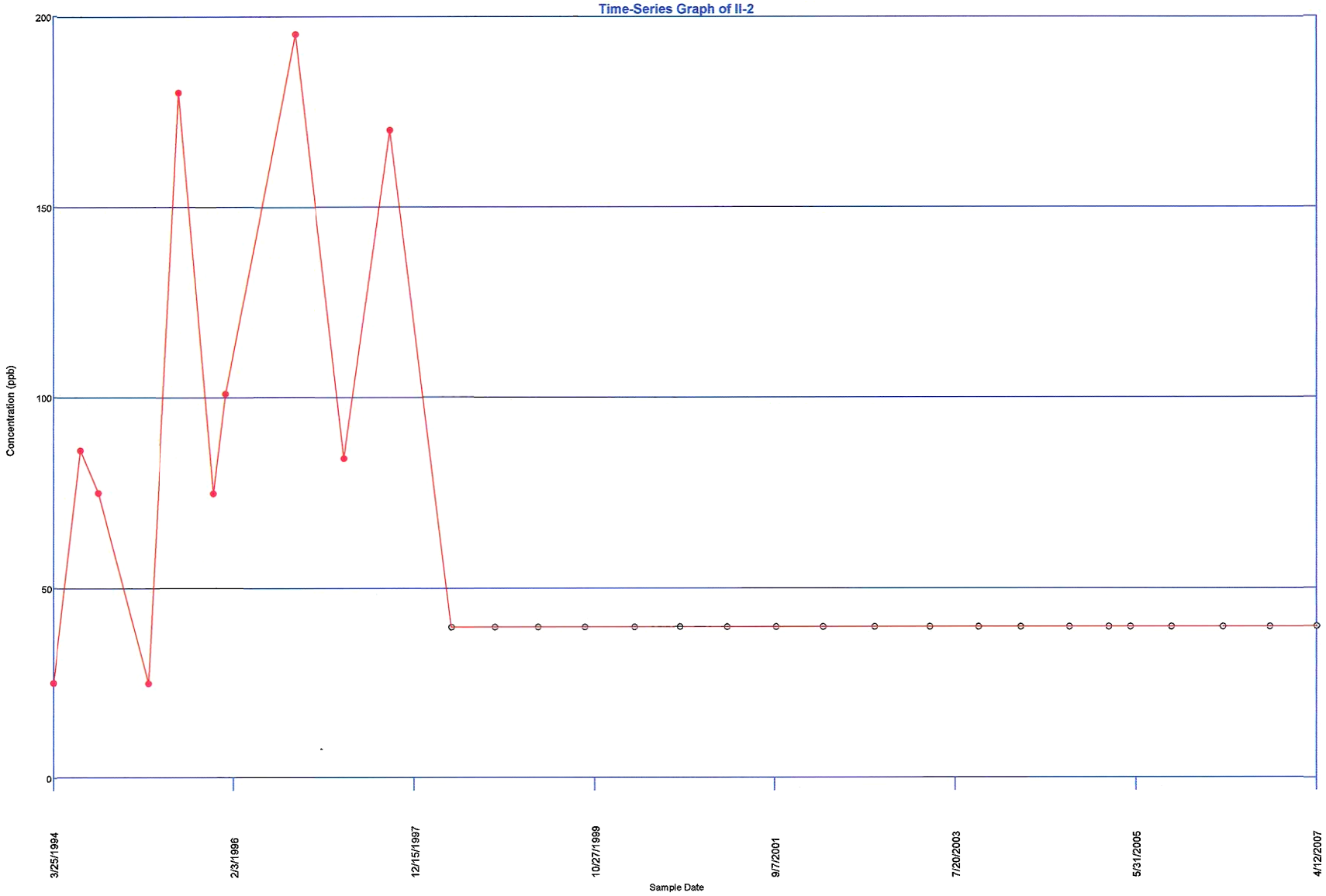
Time-Series Graph of II-1



White Street Landfill

Vanadium

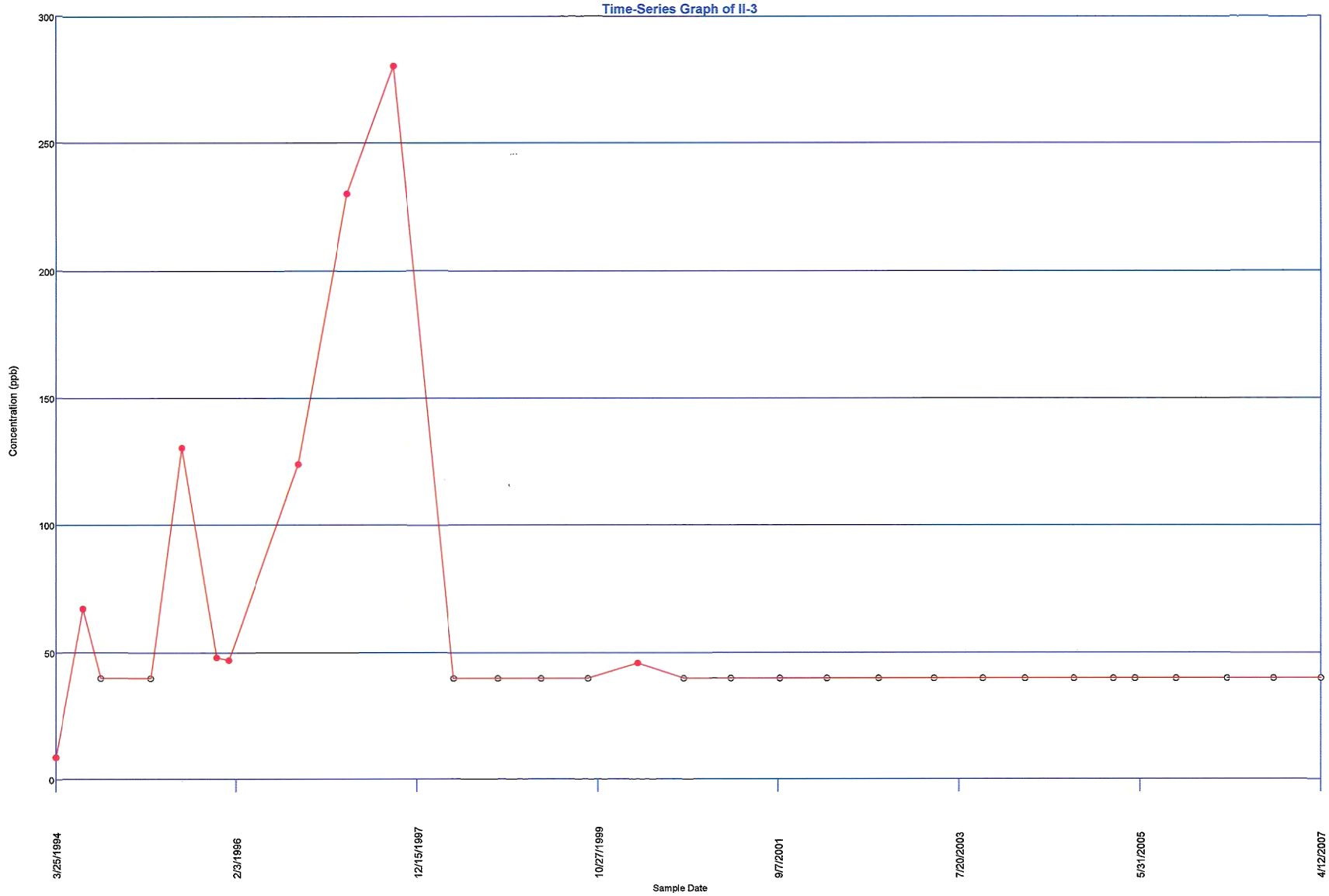
Time-Series Graph of II-2



White Street Landfill

Vanadium

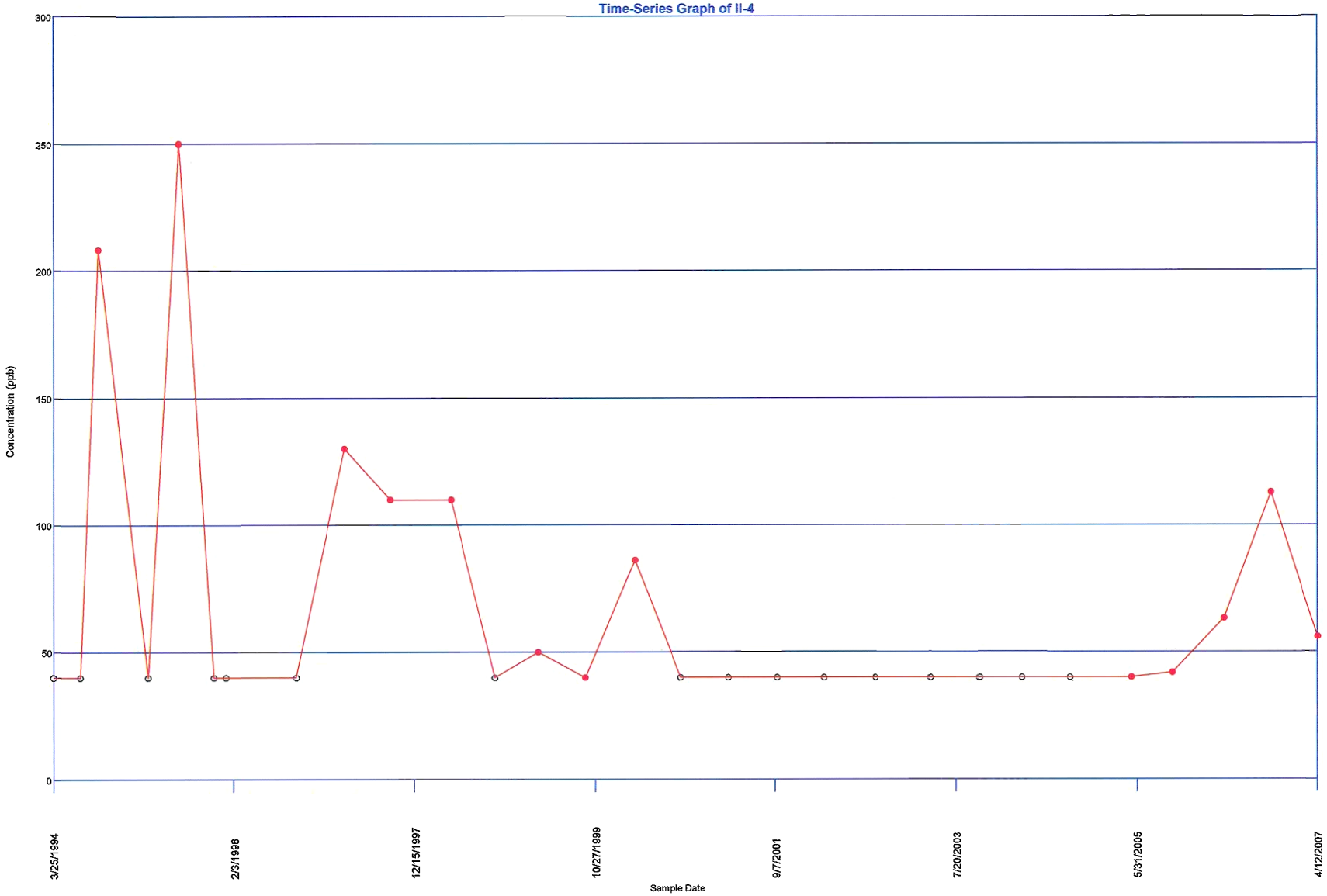
Time-Series Graph of II-3



White Street Landfill

Vanadium

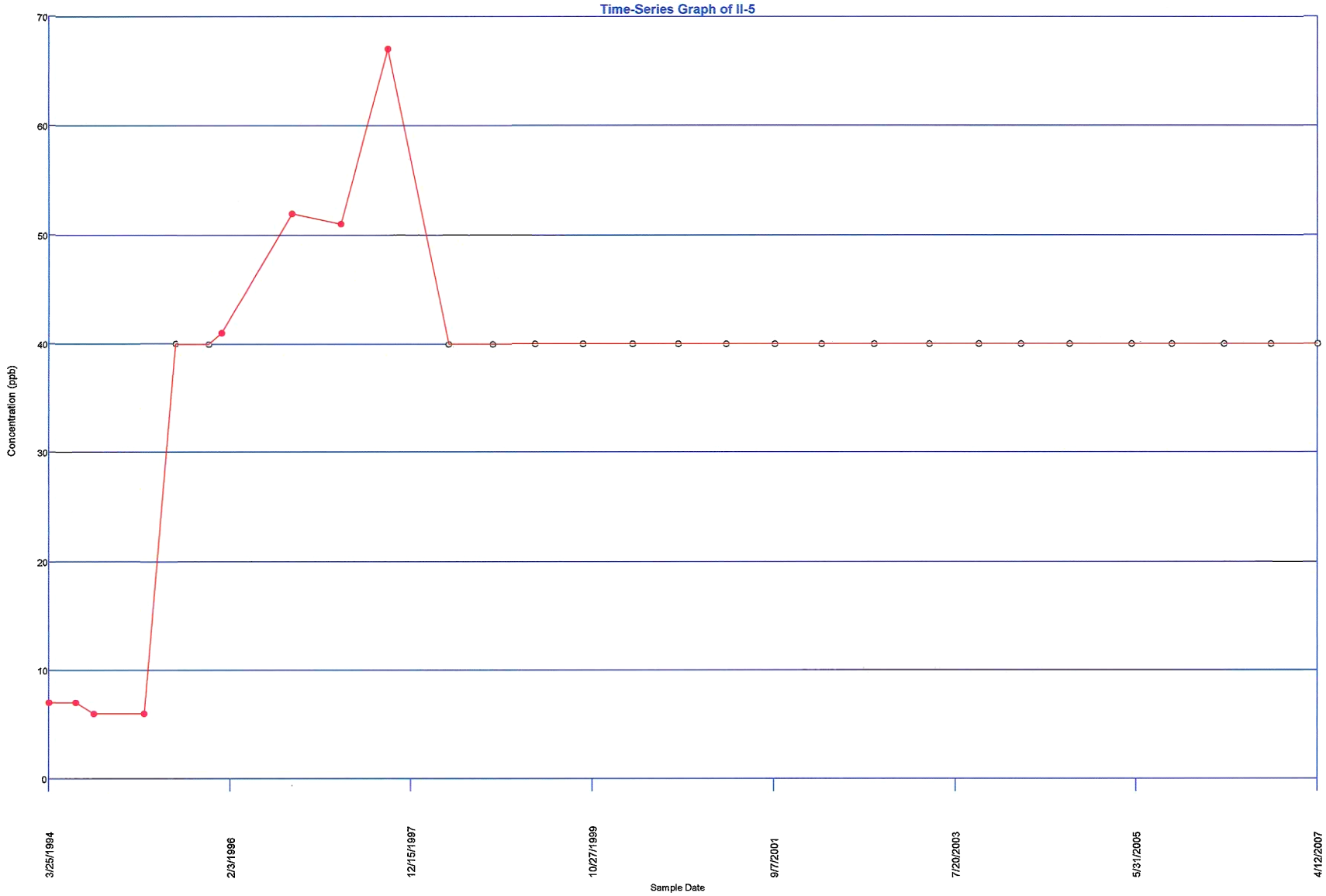
Time-Series Graph of II-4



White Street Landfill

Vanadium

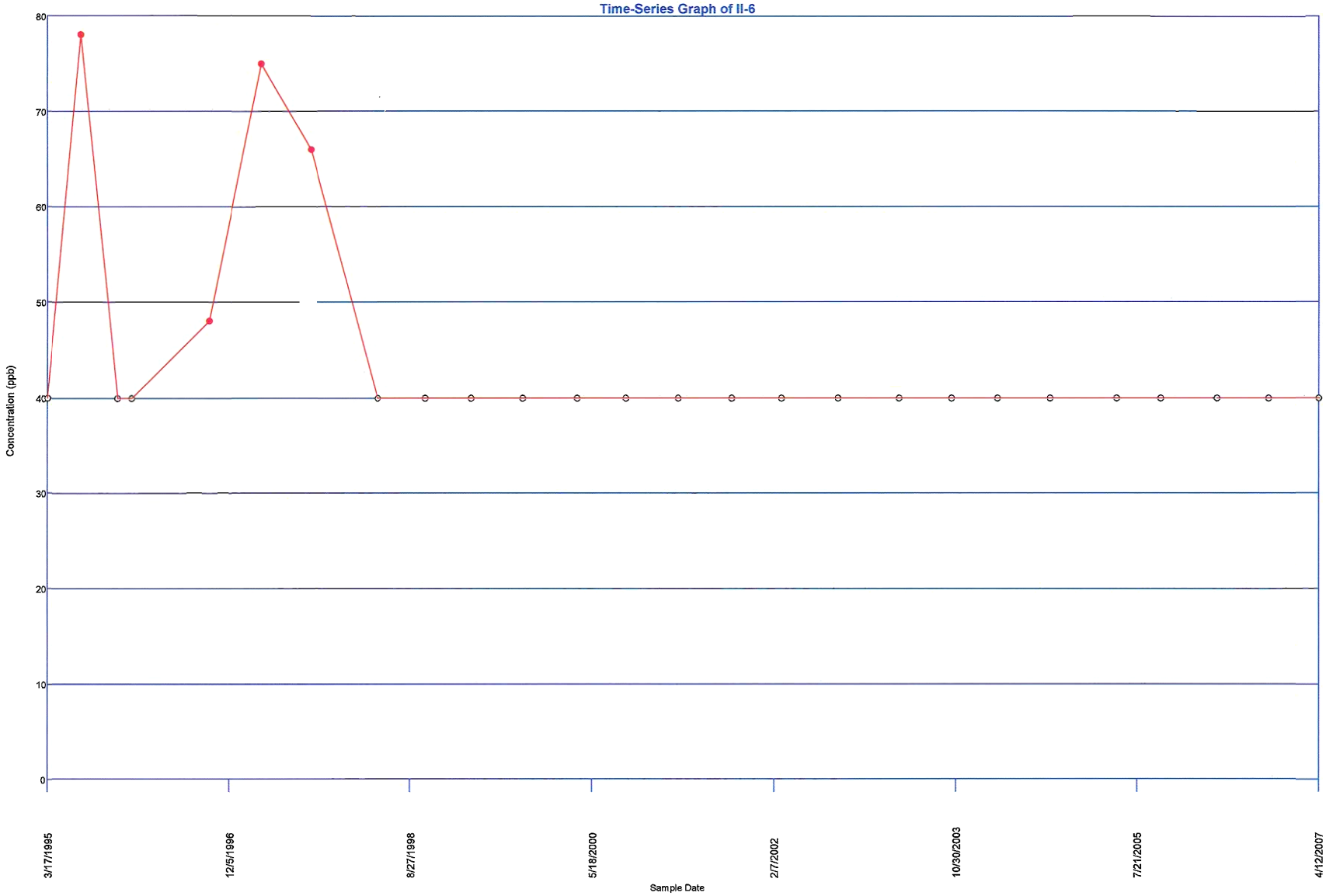
Time-Series Graph of II-5



White Street Landfill

Vanadium

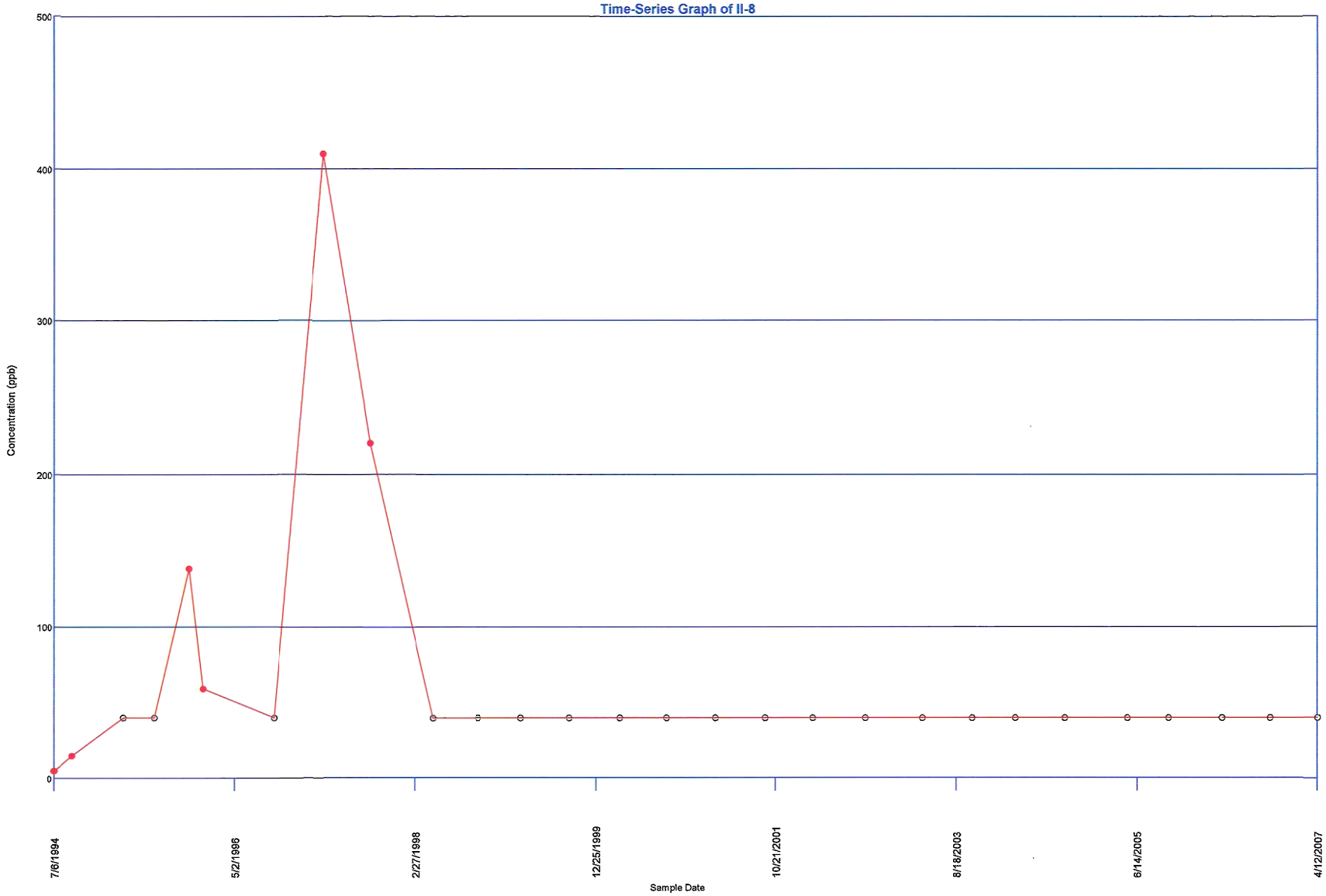
Time-Series Graph of II-6



White Street Landfill

Vanadium

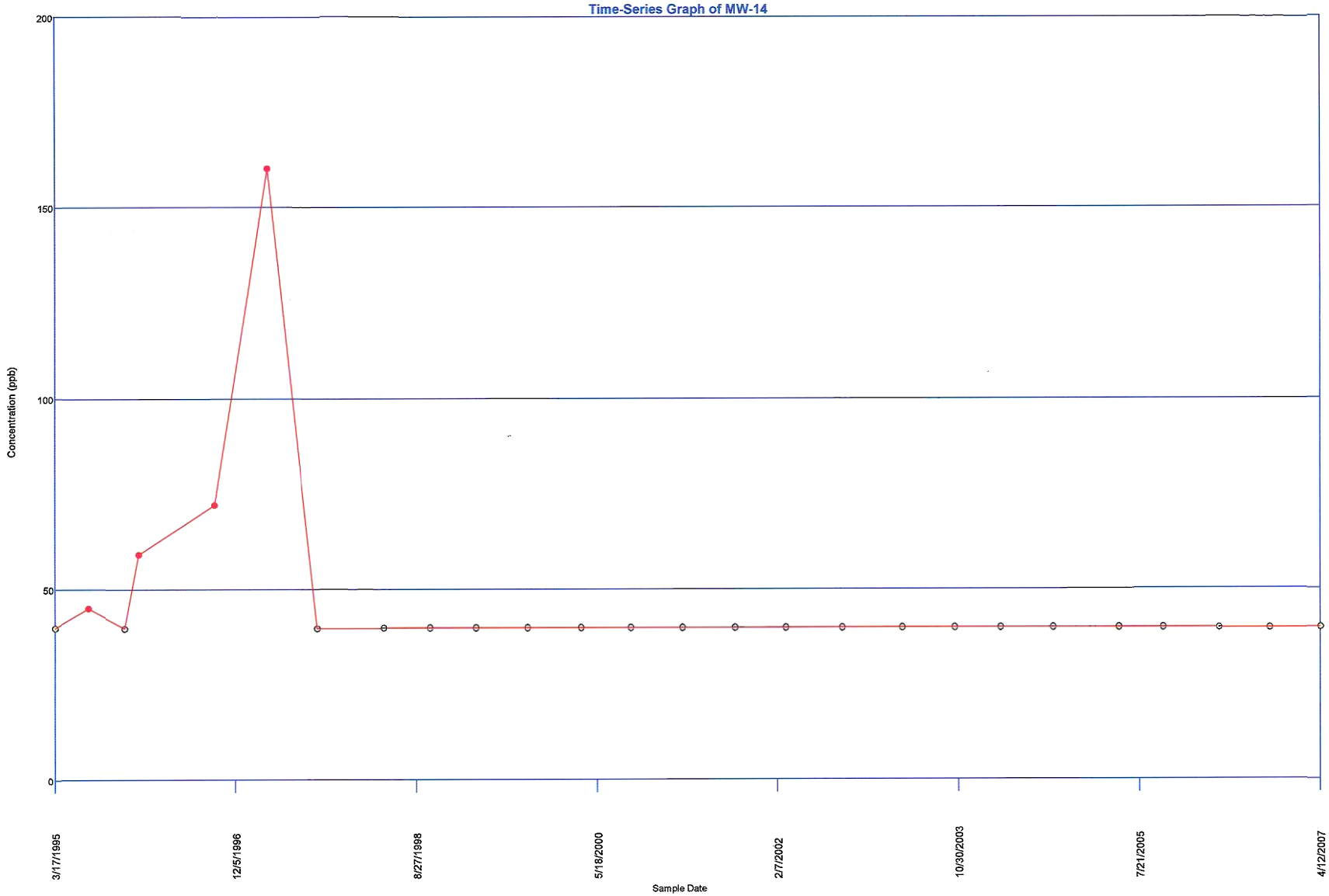
Time-Series Graph of II-8



White Street Landfill

Vanadium

Time-Series Graph of MW-14



APPENDIX IV

July 11, 2007 NES Sampling Event Laboratory Results Report

Environmental Conservation Laboratories, Inc.
102-A Woodwinds Industrial Court
Cary NC, 27511
Phone: 919.467.3090 FAX: 919.467.3515

www.encolabs.com

Thursday, July 26, 2007

S&ME, Inc. (SM004)

Attn: Edmund Henriques

3718 Old Battleground Rd.

Greensboro, NC 27410

RE: Project Number: [none], Project Name/Desc: White Street Landfill App IIs
ENCO Workorder: C709746

Dear Edmund Henriques,

Enclosed is a copy of your laboratory report for test samples received by our laboratory on Thursday, July 12, 2007.

Unless otherwise noted in an attached project narrative, all samples were received in acceptable condition and processed in accordance with the referenced methods/procedures. Results for these procedures apply only to the samples as submitted.

This data has been produced in accordance with NELAC standards (June, 2003). This report shall not be reproduced except in full, without the written approval of the Laboratory.

This report contains only those analyses performed by Environmental Conservation Laboratories. Data from outside organizations will be reported under separate cover.

If you have any questions or require further information, please do not hesitate to contact me.

Sincerely,

Stephanie Franz For Chuck Smith
Project Manager

Enclosure(s)

The total number of pages in this report, including this page is 19.

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SAMPLE SUMMARY/LABORATORY CHRONICLE

Client ID: 4103 II-2B **Lab ID:** C709746-01RE1

Sampled: 07/11/07 13:00 **Received:** 07/12/07 11:00

Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 8260B	07/25/07	07/19/07 14:40	7/25/2007 00:50

Client ID: 4103 II-13 **Lab ID:** C709746-02RE1

Sampled: 07/11/07 14:00 **Received:** 07/12/07 11:00

Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 8260B	07/25/07	07/19/07 14:40	7/24/2007 02:55

Client ID: 4103 Equipment Blank **Lab ID:** C709746-03

Sampled: 07/11/07 12:45 **Received:** 07/12/07 11:00

Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 8260B	07/25/07	07/20/07 12:35	7/20/2007 17:30

Client ID: 4103 Trip Blank **Lab ID:** C709746-04

Sampled: 07/11/07 00:00 **Received:** 07/12/07 11:00

Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 8260B	07/25/07	07/20/07 12:35	7/20/2007 17:56

NORTH CAROLINA SWS SAMPLE DETECTION SUMMARY

Client ID: 4103 II-2B **Lab ID: C709746-01RE1**

Analyte	Results/Qual		DF	MDL	MRL	NC SWSL	Units	Method
1,1-Dichloroethane	6.7		1	0.090	1.0	5	ug/L	EPA 8260B
1,1-Dichloroethene	0.35	J	1	0.14	1.0	5	ug/L	EPA 8260B
Benzene	0.85	J	1	0.12	1.0	1	ug/L	EPA 8260B
Chlorobenzene	0.30	J	1	0.16	1.0	3	ug/L	EPA 8260B
cis-1,2-Dichloroethene	4.4	J	1	0.14	1.0	5	ug/L	EPA 8260B
Dichlorodifluoromethane	3.8	J	1	0.14	1.0	5	ug/L	EPA 8260B
Tetrachloroethene	2.3		1	0.25	1.0	1	ug/L	EPA 8260B
Trichloroethene	2.4		1	0.23	1.0	1	ug/L	EPA 8260B
Trichlorofluoromethane	1.2		1	0.16	1.0	1	ug/L	EPA 8260B
Vinyl chloride	3.2		1	0.15	1.0	1	ug/L	EPA 8260B

Client ID: 4103 II-13 **Lab ID: C709746-02RE1**

Analyte	Results/Qual		DF	MDL	MRL	NC SWSL	Units	Method
1,1-Dichloroethane	2.1	J	1	0.090	1.0	5	ug/L	EPA 8260B

Client ID: 4103 Equipment Blank **Lab ID: C709746-03**

Analyte	Results/Qual		DF	MDL	MRL	NC SWSL	Units	Method
2-Butanone	4.4	J	1	0.56	5.0	100	ug/L	EPA 8260B

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ANALYTICAL REPORT

Sample ID:	4103 II-2B	Project:	White Street Landfill App IIs
Lab #:	C709746-01RE1	Work Order #:	C709746
Prep. Method:	EPA 5030B_MS	Matrix:	Ground Water
Analyzed:	07/25/07 By: jkg	Unit:	ug/L
Anal. Method:	EPA 8260B	Dilution Factor:	1
Anal. Batch:			
QC Batch:	7G24032		

Volatile Organic Compounds by GCMS

Parameter	CAS Number	Analytical Results	MDL	MRL	NC SWSL	Units
1,1,1,2-Tetrachloroethane	630-20-6	0.16 U	0.16	1.0	5	ug/L
1,1,1-Trichloroethane	71-55-6	0.24 U	0.24	1.0	1	ug/L
1,1,2,2-Tetrachloroethane	79-34-5	0.27 U	0.27	1.0	1	ug/L
1,1,2-Trichloroethane	79-00-5	0.24 U	0.24	1.0	5	ug/L
1,1-Dichloroethane	75-34-3	**6.7**	0.090	1.0	5	ug/L
1,1-Dichloroethene	75-35-4	**0.35** J	0.14	1.0	5	ug/L
1,1-Dichloropropene	563-58-6	0.13 U	0.13	1.0	5	ug/L
1,2,3-Trichloropropane	96-18-4	0.32 U	0.32	1.0	1	ug/L
1,2,4-Trichlorobenzene	120-82-1	0.14 U	0.14	1.0	10	ug/L
1,2-Dibromo-3-chloropropane	96-12-8	0.19 U	0.19	1.0	1	ug/L
1,2-Dibromoethane	106-93-4	0.19 U	0.19	1.0	1	ug/L
1,2-Dichlorobenzene	95-50-1	0.17 U	0.17	1.0	5	ug/L
1,2-Dichloroethane	107-06-2	0.36 U	0.36	1.0	1	ug/L
1,2-Dichloropropane	78-87-5	0.18 U	0.18	1.0	1	ug/L
1,3-Dichlorobenzene	541-73-1	0.15 U	0.15	1.0	5	ug/L
1,3-Dichloropropane	142-28-9	0.18 U	0.18	1.0	1	ug/L
1,4-Dichlorobenzene	106-46-7	0.15 U	0.15	1.0	1	ug/L
2,2-Dichloropropane	594-20-7	0.16 U	0.16	1.0	15	ug/L
2-Butanone	78-93-3	0.56 U	0.56	5.0	100	ug/L
2-Hexanone	591-78-6	0.24 U	0.24	5.0	50	ug/L
3-Chloropropene	107-05-1	0.20 U	0.20	1.0	10	ug/L
4-Methyl-2-pentanone	108-10-1	0.36 U	0.36	5.0	100	ug/L
Acetone	67-64-1	0.90 U	0.90	5.0	100	ug/L
Acetonitrile	75-05-8	1.8 U	1.8	10	55	ug/L
Acrolein	107-02-8	2.1 U	2.1	10	52.5	ug/L
Acrylonitrile	107-13-1	2.0 U	2.0	5.0	200	ug/L
Benzene	71-43-2	**0.85** J	0.12	1.0	1	ug/L
Bromochloromethane	74-97-5	0.19 U	0.19	1.0	3	ug/L
Bromodichloromethane	75-27-4	0.19 U	0.19	0.40	1	ug/L
Bromoform	75-25-2	0.36 U	0.36	1.0	3	ug/L
Bromomethane	74-83-9	0.21 U	0.21	1.0	10	ug/L
Carbon disulfide	75-15-0	0.12 U	0.12	5.0	100	ug/L
Carbon tetrachloride	56-23-5	0.38 U	0.38	1.0	1	ug/L
Chlorobenzene	108-90-7	**0.30** J	0.16	1.0	3	ug/L
Chloroethane	75-00-3	0.40 U	0.40	1.0	10	ug/L
Chloroform	67-66-3	0.16 U	0.16	1.0	5	ug/L
Chloromethane	74-87-3	0.18 U	0.18	1.0	1	ug/L

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ANALYTICAL REPORT

Sample ID:	4103 II-2B	Project:	White Street Landfill App IIs
Lab #:	C709746-01RE1	Work Order #:	C709746
Prep. Method:	EPA 5030B_MS	Matrix:	Ground Water
Analyzed:	07/25/07 By: jkg	Unit:	ug/L
Anal. Method:	EPA 8260B	Dilution Factor:	1
Anal. Batch:			
QC Batch:	7G24032		

Volatile Organic Compounds by GCMS

Parameter	CAS Number	Analytical Results	MDL	MRL	NC SWSL	Units
Chloroprene	126-99-8	0.19 U	0.19	1.0	20	ug/L
cis-1,2-Dichloroethene	156-59-2	**4.4** J	0.14	1.0	5	ug/L
cis-1,3-Dichloropropene	10061-01-5	0.16 U	0.16	0.20	1	ug/L
Dibromochloromethane	124-48-1	0.18 U	0.18	1.0	1	ug/L
Dibromomethane	74-95-3	0.14 U	0.14	1.0	10	ug/L
Dichlorodifluoromethane	75-71-8	**3.8** J	0.14	1.0	5	ug/L
Ethyl Methacrylate	97-63-2	0.17 U	0.17	2.0	10	ug/L
Ethylbenzene	100-41-4	0.17 U	0.17	1.0	1	ug/L
Iodomethane	74-88-4	0.23 U	0.23	2.0	10	ug/L
Isobutyl alcohol	78-83-1	8.4 U	8.4	20	100	ug/L
Methacrylonitrile	126-98-7	0.69 U	0.69	10	100	ug/L
Methyl Methacrylate	80-62-6	0.38 U	0.38	1.0	30	ug/L
Methylene chloride	75-09-2	0.088 U	0.088	2.0	1	ug/L
Naphthalene	91-20-3	0.25 U	0.25	1.0	10	ug/L
Propionitrile	107-12-0	1.6 U	1.6	10	150	ug/L
Styrene	100-42-5	0.12 U	0.12	1.0	1	ug/L
Tetrachloroethene	127-18-4	**2.3**	0.25	1.0	1	ug/L
Toluene	108-88-3	0.15 U	0.15	1.0	1	ug/L
trans-1,2-Dichloroethene	156-60-5	0.10 U	0.10	1.0	5	ug/L
trans-1,3-Dichloropropene	10061-02-6	0.18 U	0.18	0.20	1	ug/L
trans-1,4-Dichloro-2-butene	110-57-6	0.60 U	0.60	1.0	100	ug/L
Trichloroethene	79-01-6	**2.4**	0.23	1.0	1	ug/L
Trichlorofluoromethane	75-69-4	**1.2**	0.16	1.0	1	ug/L
Vinyl acetate	108-05-4	0.19 U	0.19	2.0	50	ug/L
Vinyl chloride	75-01-4	**3.2**	0.15	1.0	1	ug/L
Xylenes (Total)	1330-20-7	0.21 U	0.21	1.0	4	ug/L

Surrogate Recovery		Result	Spike Level	% Recovery	% Recovery Limits
4-Bromofluorobenzene	460-00-4	37	50.0	74 %	67-125
Dibromofluoromethane	1868-53-7	41	50.0	83 %	69-111
Toluene-d8	2037-26-5	44	50.0	89 %	85-120

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ANALYTICAL REPORT

Sample ID:	4103 II-13	Project:	White Street Landfill App IIs
Lab #:	C709746-02RE1	Work Order #:	C709746
Prep. Method:	EPA 5030B_MS	Matrix:	Ground Water
Analyzed:	07/24/07 By: jkg	Unit:	ug/L
Anal. Method:	EPA 8260B	Dilution Factor:	1
Anal. Batch:			
QC Batch:	7G23014		

Volatile Organic Compounds by GCMS

Parameter	CAS Number	Analytical Results	MDL	MRL	NC SWSL	Units
1,1,1,2-Tetrachloroethane	630-20-6	0.16 U	0.16	1.0	5	ug/L
1,1,1-Trichloroethane	71-55-6	0.24 U	0.24	1.0	1	ug/L
1,1,2,2-Tetrachloroethane	79-34-5	0.27 U	0.27	1.0	1	ug/L
1,1,2-Trichloroethane	79-00-5	0.24 U	0.24	1.0	5	ug/L
1,1-Dichloroethane	75-34-3	**2.1** J	0.090	1.0	5	ug/L
1,1-Dichloroethene	75-35-4	0.14 U	0.14	1.0	5	ug/L
1,1-Dichloropropene	563-58-6	0.13 U	0.13	1.0	5	ug/L
1,2,3-Trichloropropane	96-18-4	0.32 U	0.32	1.0	1	ug/L
1,2,4-Trichlorobenzene	120-82-1	0.14 U	0.14	1.0	10	ug/L
1,2-Dibromo-3-chloropropane	96-12-8	0.19 U	0.19	1.0	1	ug/L
1,2-Dibromoethane	106-93-4	0.19 U	0.19	1.0	1	ug/L
1,2-Dichlorobenzene	95-50-1	0.17 U	0.17	1.0	5	ug/L
1,2-Dichloroethane	107-06-2	0.36 U	0.36	1.0	1	ug/L
1,2-Dichloropropane	78-87-5	0.18 U	0.18	1.0	1	ug/L
1,3-Dichlorobenzene	541-73-1	0.15 U	0.15	1.0	5	ug/L
1,3-Dichloropropane	142-28-9	0.18 U	0.18	1.0	1	ug/L
1,4-Dichlorobenzene	106-46-7	0.15 U	0.15	1.0	1	ug/L
2,2-Dichloropropane	594-20-7	0.16 U	0.16	1.0	15	ug/L
2-Butanone	78-93-3	0.56 U	0.56	5.0	100	ug/L
2-Hexanone	591-78-6	0.24 U	0.24	5.0	50	ug/L
3-Chloropropene	107-05-1	0.20 U	0.20	1.0	10	ug/L
4-Methyl-2-pentanone	108-10-1	0.36 U	0.36	5.0	100	ug/L
Acetone	67-64-1	0.90 U	0.90	5.0	100	ug/L
Acetonitrile	75-05-8	1.8 U	1.8	10	55	ug/L
Acrolein	107-02-8	2.1 U	2.1	10	52.5	ug/L
Acrylonitrile	107-13-1	2.0 U	2.0	5.0	200	ug/L
Benzene	71-43-2	0.12 U	0.12	1.0	1	ug/L
Bromochloromethane	74-97-5	0.19 U	0.19	1.0	3	ug/L
Bromodichloromethane	75-27-4	0.19 U	0.19	0.40	1	ug/L
Bromoform	75-25-2	0.36 U	0.36	1.0	3	ug/L
Bromomethane	74-83-9	0.21 U	0.21	1.0	10	ug/L
Carbon disulfide	75-15-0	0.12 U	0.12	5.0	100	ug/L
Carbon tetrachloride	56-23-5	0.38 U	0.38	1.0	1	ug/L
Chlorobenzene	108-90-7	0.16 U	0.16	1.0	3	ug/L
Chloroethane	75-00-3	0.40 U	0.40	1.0	10	ug/L
Chloroform	67-66-3	0.16 U	0.16	1.0	5	ug/L
Chloromethane	74-87-3	0.18 U	0.18	1.0	1	ug/L

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ANALYTICAL REPORT

Sample ID:	4103 II-13	Project:	White Street Landfill App IIs
Lab #:	C709746-02RE1	Work Order #:	C709746
Prep. Method:	EPA 5030B_MS	Matrix:	Ground Water
Analyzed:	07/24/07 By: jkg	Unit:	ug/L
Anal. Method:	EPA 8260B	Dilution Factor:	1
Anal. Batch:			
QC Batch:	7G23014		

Volatile Organic Compounds by GCMS

Parameter	CAS Number	Analytical Results	MDL	MRL	NC SWSL	Units
Chloroprene	126-99-8	0.19 U	0.19	1.0	20	ug/L
cis-1,2-Dichloroethene	156-59-2	0.14 U	0.14	1.0	5	ug/L
cis-1,3-Dichloropropene	10061-01-5	0.16 U	0.16	0.20	1	ug/L
Dibromochloromethane	124-48-1	0.18 U	0.18	1.0	1	ug/L
Dibromomethane	74-95-3	0.14 U	0.14	1.0	10	ug/L
Dichlorodifluoromethane	75-71-8	0.14 U	0.14	1.0	5	ug/L
Ethyl Methacrylate	97-63-2	0.17 U	0.17	2.0	10	ug/L
Ethylbenzene	100-41-4	0.17 U	0.17	1.0	1	ug/L
Iodomethane	74-88-4	0.23 U	0.23	2.0	10	ug/L
Isobutyl alcohol	78-83-1	8.4 U	8.4	20	100	ug/L
Methacrylonitrile	126-98-7	0.69 U	0.69	10	100	ug/L
Methyl Methacrylate	80-62-6	0.38 U	0.38	1.0	30	ug/L
Methylene chloride	75-09-2	0.088 U	0.088	2.0	1	ug/L
Naphthalene	91-20-3	0.25 U	0.25	1.0	10	ug/L
Propionitrile	107-12-0	1.6 U	1.6	10	150	ug/L
Styrene	100-42-5	0.12 U	0.12	1.0	1	ug/L
Tetrachloroethene	127-18-4	0.25 U	0.25	1.0	1	ug/L
Toluene	108-88-3	0.15 U	0.15	1.0	1	ug/L
trans-1,2-Dichloroethene	156-60-5	0.10 U	0.10	1.0	5	ug/L
trans-1,3-Dichloropropene	10061-02-6	0.18 U	0.18	0.20	1	ug/L
trans-1,4-Dichloro-2-butene	110-57-6	0.60 U	0.60	1.0	100	ug/L
Trichloroethene	79-01-6	0.23 U	0.23	1.0	1	ug/L
Trichlorofluoromethane	75-69-4	0.16 U	0.16	1.0	1	ug/L
Vinyl acetate	108-05-4	0.19 U	0.19	2.0	50	ug/L
Vinyl chloride	75-01-4	0.15 U	0.15	1.0	1	ug/L
Xylenes (Total)	1330-20-7	0.21 U	0.21	1.0	4	ug/L

Surrogate Recovery		Result	Spike Level	% Recovery	% Recovery Limits
4-Bromofluorobenzene	460-00-4	37	50.0	74 %	67-125
Dibromofluoromethane	1868-53-7	43	50.0	85 %	69-111
Toluene-d8	2037-26-5	44	50.0	89 %	85-120

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ANALYTICAL REPORT

Sample ID:	4103 Equipment Blank	Project:	White Street Landfill App IIs
Lab #:	C709746-03	Work Order #:	C709746
Prep. Method:	EPA 5030B_MS	Matrix:	Ground Water
Analyzed:	07/20/07 By: jkg	Unit:	ug/L
Anal. Method:	EPA 8260B	Dilution Factor:	1
Anal. Batch:			
QC Batch:	7G20018		

Volatile Organic Compounds by GCMS

Parameter	CAS Number	Analytical Results	MDL	MRL	NC SWSL	Units
1,1,1,2-Tetrachloroethane	630-20-6	0.16 U	0.16	1.0	5	ug/L
1,1,1-Trichloroethane	71-55-6	0.24 U	0.24	1.0	1	ug/L
1,1,2,2-Tetrachloroethane	79-34-5	0.27 U	0.27	1.0	1	ug/L
1,1,2-Trichloroethane	79-00-5	0.24 U	0.24	1.0	5	ug/L
1,1-Dichloroethane	75-34-3	0.090 U	0.090	1.0	5	ug/L
1,1-Dichloroethene	75-35-4	0.14 U	0.14	1.0	5	ug/L
1,1-Dichloropropene	563-58-6	0.13 U	0.13	1.0	5	ug/L
1,2,3-Trichloropropane	96-18-4	0.32 U	0.32	1.0	1	ug/L
1,2,4-Trichlorobenzene	120-82-1	0.14 U	0.14	1.0	10	ug/L
1,2-Dibromo-3-chloropropane	96-12-8	0.19 U	0.19	1.0	1	ug/L
1,2-Dibromoethane	106-93-4	0.19 U	0.19	1.0	1	ug/L
1,2-Dichlorobenzene	95-50-1	0.17 U	0.17	1.0	5	ug/L
1,2-Dichloroethane	107-06-2	0.36 U	0.36	1.0	1	ug/L
1,2-Dichloropropane	78-87-5	0.18 U	0.18	1.0	1	ug/L
1,3-Dichlorobenzene	541-73-1	0.15 U	0.15	1.0	5	ug/L
1,3-Dichloropropane	142-28-9	0.18 U	0.18	1.0	1	ug/L
1,4-Dichlorobenzene	106-46-7	0.15 U	0.15	1.0	1	ug/L
2,2-Dichloropropane	594-20-7	0.16 U	0.16	1.0	15	ug/L
2-Butanone	78-93-3	**4.4** J	0.56	5.0	100	ug/L
2-Hexanone	591-78-6	0.24 U	0.24	5.0	50	ug/L
3-Chloropropene	107-05-1	0.20 U	0.20	1.0	10	ug/L
4-Methyl-2-pentanone	108-10-1	0.36 U	0.36	5.0	100	ug/L
Acetone	67-64-1	0.90 U	0.90	5.0	100	ug/L
Acetonitrile	75-05-8	1.8 U	1.8	10	55	ug/L
Acrolein	107-02-8	2.1 U	2.1	10	52.5	ug/L
Acrylonitrile	107-13-1	2.0 U	2.0	5.0	200	ug/L
Benzene	71-43-2	0.12 U	0.12	1.0	1	ug/L
Bromochloromethane	74-97-5	0.19 U	0.19	1.0	3	ug/L
Bromodichloromethane	75-27-4	0.19 U	0.19	0.40	1	ug/L
Bromoform	75-25-2	0.36 U	0.36	1.0	3	ug/L
Bromomethane	74-83-9	0.21 U	0.21	1.0	10	ug/L
Carbon disulfide	75-15-0	0.12 U	0.12	5.0	100	ug/L
Carbon tetrachloride	56-23-5	0.38 U	0.38	1.0	1	ug/L
Chlorobenzene	108-90-7	0.16 U	0.16	1.0	3	ug/L
Chloroethane	75-00-3	0.40 U	0.40	1.0	10	ug/L
Chloroform	67-66-3	0.16 U	0.16	1.0	5	ug/L
Chloromethane	74-87-3	0.18 U	0.18	1.0	1	ug/L

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ANALYTICAL REPORT

Sample ID:	4103 Equipment Blank	Project:	White Street Landfill App IIs
Lab #:	C709746-03	Work Order #:	C709746
Prep. Method:	EPA 5030B_MS	Matrix:	Ground Water
Analyzed:	07/20/07 By: jkg	Unit:	ug/L
Anal. Method:	EPA 8260B	Dilution Factor:	1
Anal. Batch:			
QC Batch:	7G20018		

Volatile Organic Compounds by GCMS

Parameter	CAS Number	Analytical Results	MDL	MRL	NC SWSL	Units
Chloroprene	126-99-8	0.19 U	0.19	1.0	20	ug/L
cis-1,2-Dichloroethene	156-59-2	0.14 U	0.14	1.0	5	ug/L
cis-1,3-Dichloropropene	10061-01-5	0.16 U	0.16	0.20	1	ug/L
Dibromochloromethane	124-48-1	0.18 U	0.18	1.0	1	ug/L
Dibromomethane	74-95-3	0.14 U	0.14	1.0	10	ug/L
Dichlorodifluoromethane	75-71-8	0.14 U	0.14	1.0	5	ug/L
Ethyl Methacrylate	97-63-2	0.17 U	0.17	2.0	10	ug/L
Ethylbenzene	100-41-4	0.17 U	0.17	1.0	1	ug/L
Iodomethane	74-88-4	0.23 U	0.23	2.0	10	ug/L
Isobutyl alcohol	78-83-1	8.4 U	8.4	20	100	ug/L
Methacrylonitrile	126-98-7	0.69 U	0.69	10	100	ug/L
Methyl Methacrylate	80-62-6	0.38 U	0.38	1.0	30	ug/L
Methylene chloride	75-09-2	0.088 U	0.088	2.0	1	ug/L
Naphthalene	91-20-3	0.25 U	0.25	1.0	10	ug/L
Propionitrile	107-12-0	1.6 U	1.6	10	150	ug/L
Styrene	100-42-5	0.12 U	0.12	1.0	1	ug/L
Tetrachloroethene	127-18-4	0.25 U	0.25	1.0	1	ug/L
Toluene	108-88-3	0.15 U	0.15	1.0	1	ug/L
trans-1,2-Dichloroethene	156-60-5	0.10 U	0.10	1.0	5	ug/L
trans-1,3-Dichloropropene	10061-02-6	0.18 U	0.18	0.20	1	ug/L
trans-1,4-Dichloro-2-butene	110-57-6	0.60 U	0.60	1.0	100	ug/L
Trichloroethene	79-01-6	0.23 U	0.23	1.0	1	ug/L
Trichlorofluoromethane	75-69-4	0.16 U	0.16	1.0	1	ug/L
Vinyl acetate	108-05-4	0.19 U	0.19	2.0	50	ug/L
Vinyl chloride	75-01-4	0.15 U	0.15	1.0	1	ug/L
Xylenes (Total)	1330-20-7	0.21 U	0.21	1.0	4	ug/L

Surrogate Recovery		Result	Spike Level	% Recovery	% Recovery Limits
4-Bromofluorobenzene	460-00-4	38	50.0	75 %	67-125
Dibromofluoromethane	1868-53-7	42	50.0	83 %	69-111
Toluene-d8	2037-26-5	44	50.0	88 %	85-120

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ANALYTICAL REPORT

Sample ID:	4103 Trip Blank	Project:	White Street Landfill App IIs
Lab #:	C709746-04	Work Order #:	C709746
Prep. Method:	EPA 5030B_MS	Matrix:	Ground Water
Analyzed:	07/20/07 By: jkg	Unit:	ug/L
Anal. Method:	EPA 8260B	Dilution Factor:	1
Anal. Batch:			
QC Batch:	7G20018		

Volatile Organic Compounds by GCMS

Parameter	CAS Number	Analytical Results	MDL	MRL	NC SWSL	Units
1,1,1,2-Tetrachloroethane	630-20-6	0.16 U	0.16	1.0	5	ug/L
1,1,1-Trichloroethane	71-55-6	0.24 U	0.24	1.0	1	ug/L
1,1,2,2-Tetrachloroethane	79-34-5	0.27 U	0.27	1.0	1	ug/L
1,1,2-Trichloroethane	79-00-5	0.24 U	0.24	1.0	5	ug/L
1,1-Dichloroethane	75-34-3	0.090 U	0.090	1.0	5	ug/L
1,1-Dichloroethene	75-35-4	0.14 U	0.14	1.0	5	ug/L
1,1-Dichloropropene	563-58-6	0.13 U	0.13	1.0	5	ug/L
1,2,3-Trichloropropane	96-18-4	0.32 U	0.32	1.0	1	ug/L
1,2,4-Trichlorobenzene	120-82-1	0.14 U	0.14	1.0	10	ug/L
1,2-Dibromo-3-chloropropane	96-12-8	0.19 U	0.19	1.0	1	ug/L
1,2-Dibromoethane	106-93-4	0.19 U	0.19	1.0	1	ug/L
1,2-Dichlorobenzene	95-50-1	0.17 U	0.17	1.0	5	ug/L
1,2-Dichloroethane	107-06-2	0.36 U	0.36	1.0	1	ug/L
1,2-Dichloropropane	78-87-5	0.18 U	0.18	1.0	1	ug/L
1,3-Dichlorobenzene	541-73-1	0.15 U	0.15	1.0	5	ug/L
1,3-Dichloropropane	142-28-9	0.18 U	0.18	1.0	1	ug/L
1,4-Dichlorobenzene	106-46-7	0.15 U	0.15	1.0	1	ug/L
2,2-Dichloropropane	594-20-7	0.16 U	0.16	1.0	15	ug/L
2-Butanone	78-93-3	0.56 U	0.56	5.0	100	ug/L
2-Hexanone	591-78-6	0.24 U	0.24	5.0	50	ug/L
3-Chloropropene	107-05-1	0.20 U	0.20	1.0	10	ug/L
4-Methyl-2-pentanone	108-10-1	0.36 U	0.36	5.0	100	ug/L
Acetone	67-64-1	0.90 U	0.90	5.0	100	ug/L
Acetonitrile	75-05-8	1.8 U	1.8	10	55	ug/L
Acrolein	107-02-8	2.1 U	2.1	10	52.5	ug/L
Acrylonitrile	107-13-1	2.0 U	2.0	5.0	200	ug/L
Benzene	71-43-2	0.12 U	0.12	1.0	1	ug/L
Bromochloromethane	74-97-5	0.19 U	0.19	1.0	3	ug/L
Bromodichloromethane	75-27-4	0.19 U	0.19	0.40	1	ug/L
Bromoform	75-25-2	0.36 U	0.36	1.0	3	ug/L
Bromomethane	74-83-9	0.21 U	0.21	1.0	10	ug/L
Carbon disulfide	75-15-0	0.12 U	0.12	5.0	100	ug/L
Carbon tetrachloride	56-23-5	0.38 U	0.38	1.0	1	ug/L
Chlorobenzene	108-90-7	0.16 U	0.16	1.0	3	ug/L
Chloroethane	75-00-3	0.40 U	0.40	1.0	10	ug/L
Chloroform	67-66-3	0.16 U	0.16	1.0	5	ug/L
Chloromethane	74-87-3	0.18 U	0.18	1.0	1	ug/L

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ANALYTICAL REPORT

Sample ID:	4103 Trip Blank	Project:	White Street Landfill App IIs
Lab #:	C709746-04	Work Order #:	C709746
Prep. Method:	EPA 5030B_MS	Matrix:	Ground Water
Analyzed:	07/20/07 By: jkg	Unit:	ug/L
Anal. Method:	EPA 8260B	Dilution Factor:	1
Anal. Batch:			
QC Batch:	7G20018		

Volatile Organic Compounds by GCMS

Parameter	CAS Number	Analytical Results	MDL	MRL	NC SWSL	Units
Chloroprene	126-99-8	0.19 U	0.19	1.0	20	ug/L
cis-1,2-Dichloroethene	156-59-2	0.14 U	0.14	1.0	5	ug/L
cis-1,3-Dichloropropene	10061-01-5	0.16 U	0.16	0.20	1	ug/L
Dibromochloromethane	124-48-1	0.18 U	0.18	1.0	1	ug/L
Dibromomethane	74-95-3	0.14 U	0.14	1.0	10	ug/L
Dichlorodifluoromethane	75-71-8	0.14 U	0.14	1.0	5	ug/L
Ethyl Methacrylate	97-63-2	0.17 U	0.17	2.0	10	ug/L
Ethylbenzene	100-41-4	0.17 U	0.17	1.0	1	ug/L
Iodomethane	74-88-4	0.23 U	0.23	2.0	10	ug/L
Isobutyl alcohol	78-83-1	8.4 U	8.4	20	100	ug/L
Methacrylonitrile	126-98-7	0.69 U	0.69	10	100	ug/L
Methyl Methacrylate	80-62-6	0.38 U	0.38	1.0	30	ug/L
Methylene chloride	75-09-2	0.088 U	0.088	2.0	1	ug/L
Naphthalene	91-20-3	0.25 U	0.25	1.0	10	ug/L
Propionitrile	107-12-0	1.6 U	1.6	10	150	ug/L
Styrene	100-42-5	0.12 U	0.12	1.0	1	ug/L
Tetrachloroethene	127-18-4	0.25 U	0.25	1.0	1	ug/L
Toluene	108-88-3	0.15 U	0.15	1.0	1	ug/L
trans-1,2-Dichloroethene	156-60-5	0.10 U	0.10	1.0	5	ug/L
trans-1,3-Dichloropropene	10061-02-6	0.18 U	0.18	0.20	1	ug/L
trans-1,4-Dichloro-2-butene	110-57-6	0.60 U	0.60	1.0	100	ug/L
Trichloroethene	79-01-6	0.23 U	0.23	1.0	1	ug/L
Trichlorofluoromethane	75-69-4	0.16 U	0.16	1.0	1	ug/L
Vinyl acetate	108-05-4	0.19 U	0.19	2.0	50	ug/L
Vinyl chloride	75-01-4	0.15 U	0.15	1.0	1	ug/L
Xylenes (Total)	1330-20-7	0.21 U	0.21	1.0	4	ug/L

Surrogate Recovery		Result	Spike Level	% Recovery	% Recovery Limits
4-Bromofluorobenzene	460-00-4	38	50.0	76 %	67-125
Dibromofluoromethane	1868-53-7	41	50.0	82 %	69-111
Toluene-d8	2037-26-5	45	50.0	90 %	85-120

QUALITY CONTROL

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Sanple Notes

Volatile Organic Compounds by GCMS - Quality Control

Batch 7G20018 - EPA 5030B_MS

Blank (7G20018-BLK1) Prepared: 07/20/2007 12:35 Analyzed: 07/20/2007 13:30

Dichlorodifluoromethane	0.14 U	1.0	ug/L
Chloromethane	0.18 U	1.0	ug/L
Vinyl chloride	0.15 U	1.0	ug/L
Bromomethane	0.21 U	1.0	ug/L
Chloroethane	0.40 U	1.0	ug/L
Trichlorofluoromethane	0.16 U	1.0	ug/L
Acrolein	2.1 U	10	ug/L
1,1-Dichloroethene	0.14 U	1.0	ug/L
Acetone	0.90 U	5.0	ug/L
Iodomethane	0.23 U	2.0	ug/L
Carbon disulfide	0.12 U	5.0	ug/L
Acetonitrile	1.8 U	10	ug/L
3-Chloropropene	0.20 U	1.0	ug/L
Methylene chloride	0.088 U	2.0	ug/L
Acrylonitrile	2.0 U	5.0	ug/L
trans-1,2-Dichloroethene	0.10 U	1.0	ug/L
1,1-Dichloroethane	0.090 U	1.0	ug/L
Vinyl acetate	0.19 U	2.0	ug/L
Chloroprene	0.19 U	1.0	ug/L
2-Butanone	0.56 U	5.0	ug/L
cis-1,2-Dichloroethene	0.14 U	1.0	ug/L
2,2-Dichloropropane	0.16 U	1.0	ug/L
Propionitrile	1.6 U	10	ug/L
Methacrylonitrile	0.69 U	10	ug/L
Bromochloromethane	0.19 U	1.0	ug/L
Chloroform	0.16 U	1.0	ug/L
1,1,1-Trichloroethane	0.24 U	1.0	ug/L
1,1-Dichloropropene	0.13 U	1.0	ug/L
Isobutyl alcohol	8.4 U	20	ug/L
Carbon tetrachloride	0.38 U	1.0	ug/L
1,2-Dichloroethane	0.36 U	1.0	ug/L
Benzene	0.12 U	1.0	ug/L
Trichloroethene	0.23 U	1.0	ug/L
1,2-Dichloropropane	0.18 U	1.0	ug/L
Methyl Methacrylate	0.38 U	1.0	ug/L
Dibromomethane	0.14 U	1.0	ug/L
Bromodichloromethane	0.19 U	0.40	ug/L
cis-1,3-Dichloropropene	0.16 U	0.20	ug/L
4-Methyl-2-pentanone	0.36 U	5.0	ug/L
Toluene	0.15 U	1.0	ug/L
trans-1,3-Dichloropropene	0.18 U	0.20	ug/L
Ethyl Methacrylate	0.17 U	2.0	ug/L
1,1,2-Trichloroethane	0.24 U	1.0	ug/L
1,3-Dichloropropane	0.18 U	1.0	ug/L
Tetrachloroethene	0.25 U	1.0	ug/L

QUALITY CONTROL

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Sanple Notes
Volatile Organic Compounds by GCMS - Quality Control										
Batch 7G20018 - EPA 5030B_MS										
Blank (7G20018-BLK1) Continued				Prepared: 07/20/2007 12:35 Analyzed: 07/20/2007 13:30						
2-Hexanone	0.24 U	5.0	ug/L							
Dibromochloromethane	0.18 U	1.0	ug/L							
1,2-Dibromoethane	0.19 U	1.0	ug/L							
Chlorobenzene	0.16 U	1.0	ug/L							
1,1,1,2-Tetrachloroethane	0.16 U	1.0	ug/L							
Ethylbenzene	0.17 U	1.0	ug/L							
Styrene	0.12 U	1.0	ug/L							
Bromoform	0.36 U	1.0	ug/L							
1,1,2,2-Tetrachloroethane	0.27 U	1.0	ug/L							
1,2,3-Trichloropropane	0.32 U	1.0	ug/L							
trans-1,4-Dichloro-2-butene	0.60 U	1.0	ug/L							
1,3-Dichlorobenzene	0.15 U	1.0	ug/L							
1,4-Dichlorobenzene	0.15 U	1.0	ug/L							
1,2-Dichlorobenzene	0.17 U	1.0	ug/L							
1,2-Dibromo-3-chloropropane	0.19 U	1.0	ug/L							
1,2,4-Trichlorobenzene	0.14 U	1.0	ug/L							
Naphthalene	0.25 U	1.0	ug/L							
Xylenes (Total)	0.21 U	1.0	ug/L							
Surrogate: Dibromofluoromethane	*44*		*ug/L*	*50.0*		*88*	*69-111*			
Surrogate: Toluene-d8	*47*		*ug/L*	*50.0*		*93*	*85-120*			
Surrogate: 4-Bromofluorobenzene	*39*		*ug/L*	*50.0*		*79*	*67-125*			
LCS (7G20018-BS1)				Prepared: 07/20/2007 12:35 Analyzed: 07/20/2007 13:57						
1,1-Dichloroethene	12	1.0	ug/L	20.0		62	57-141			
Benzene	19	1.0	ug/L	20.0		96	76-116			
Trichloroethene	19	1.0	ug/L	20.0		95	81-118			
Toluene	17	1.0	ug/L	20.0		83	77-120			
Chlorobenzene	18	1.0	ug/L	20.0		91	75-115			
Matrix Spike (7G20018-MS1)		**Source: C709032-02**		Prepared: 07/20/2007 12:35 Analyzed: 07/20/2007 14:23						
1,1-Dichloroethene	12	1.0	ug/L	20.0	0.14 U	59	57-141			
Benzene	17	1.0	ug/L	20.0	0.12 U	86	76-116			
Trichloroethene	17	1.0	ug/L	20.0	0.23 U	85	81-118			
Toluene	16	1.0	ug/L	20.0	0.15 U	78	77-120			
Chlorobenzene	16	1.0	ug/L	20.0	0.16 U	79	75-115			
Matrix Spike Dup (7G20018-MSD1)		**Source: C709032-02**		Prepared: 07/20/2007 12:35 Analyzed: 07/20/2007 14:50						
1,1-Dichloroethene	11 QM-07	1.0	ug/L	20.0	0.14 U	53	57-141	11	12	QM-07
Benzene	17	1.0	ug/L	20.0	0.12 U	85	76-116	1	14	
Trichloroethene	16	1.0	ug/L	20.0	0.23 U	81	81-118	4	11	
Toluene	14 QM-07	1.0	ug/L	20.0	0.15 U	70	77-120	10	17	QM-07
Chlorobenzene	15 QM-07	1.0	ug/L	20.0	0.16 U	73	75-115	7	12	QM-07
Batch 7G23014 - EPA 5030B_MS										
Blank (7G23014-BLK1)				Prepared: 07/23/2007 14:09 Analyzed: 07/23/2007 18:56						
Dichlorodifluoromethane	0.14 U	1.0	ug/L							
Chloromethane	0.18 U	1.0	ug/L							

QUALITY CONTROL

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Sanple Notes

Volatile Organic Compounds by GCMS - Quality Control

Batch 7G23014 - EPA 5030B_MS

Blank (7G23014-BLK1) Continued Prepared: 07/23/2007 14:09 Analyzed: 07/23/2007 18:56

Vinyl chloride	0.15 U	1.0	ug/L
Bromomethane	0.21 U	1.0	ug/L
Chloroethane	0.40 U	1.0	ug/L
Trichlorofluoromethane	0.16 U	1.0	ug/L
Acrolein	2.1 U	10	ug/L
1,1-Dichloroethene	0.14 U	1.0	ug/L
Acetone	0.90 U	5.0	ug/L
Iodomethane	0.23 U	2.0	ug/L
Carbon disulfide	0.12 U	5.0	ug/L
Acetonitrile	1.8 U	10	ug/L
3-Chloropropene	0.20 U	1.0	ug/L
Methylene chloride	0.088 U	2.0	ug/L
Acrylonitrile	2.0 U	5.0	ug/L
trans-1,2-Dichloroethene	0.10 U	1.0	ug/L
1,1-Dichloroethane	0.090 U	1.0	ug/L
Vinyl acetate	0.19 U	2.0	ug/L
Chloroprene	0.19 U	1.0	ug/L
2-Butanone	0.56 U	5.0	ug/L
cis-1,2-Dichloroethene	0.14 U	1.0	ug/L
2,2-Dichloropropane	0.16 U	1.0	ug/L
Propionitrile	1.6 U	10	ug/L
Methacrylonitrile	0.69 U	10	ug/L
Bromochloromethane	0.19 U	1.0	ug/L
Chloroform	0.16 U	1.0	ug/L
1,1,1-Trichloroethane	0.24 U	1.0	ug/L
1,1-Dichloropropene	0.13 U	1.0	ug/L
Isobutyl alcohol	8.4 U	20	ug/L
Carbon tetrachloride	0.38 U	1.0	ug/L
1,2-Dichloroethane	0.36 U	1.0	ug/L
Benzene	0.12 U	1.0	ug/L
Trichloroethene	0.23 U	1.0	ug/L
1,2-Dichloropropane	0.18 U	1.0	ug/L
Methyl Methacrylate	0.38 U	1.0	ug/L
Dibromomethane	0.14 U	1.0	ug/L
Bromodichloromethane	0.19 U	0.40	ug/L
cis-1,3-Dichloropropene	0.16 U	0.20	ug/L
4-Methyl-2-pentanone	0.36 U	5.0	ug/L
Toluene	0.15 U	1.0	ug/L
trans-1,3-Dichloropropene	0.18 U	0.20	ug/L
Ethyl Methacrylate	0.17 U	2.0	ug/L
1,1,2-Trichloroethane	0.24 U	1.0	ug/L
1,3-Dichloropropane	0.18 U	1.0	ug/L
Tetrachloroethene	0.25 U	1.0	ug/L
2-Hexanone	0.24 U	5.0	ug/L
Dibromochloromethane	0.18 U	1.0	ug/L

QUALITY CONTROL

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Sanple Notes
Volatile Organic Compounds by GCMS - Quality Control										
Batch 7G23014 - EPA 5030B_MS										
Blank (7G23014-BLK1) Continued				Prepared: 07/23/2007 14:09 Analyzed: 07/23/2007 18:56						
1,2-Dibromoethane	0.19 U	1.0	ug/L							
Chlorobenzene	0.16 U	1.0	ug/L							
1,1,1,2-Tetrachloroethane	0.16 U	1.0	ug/L							
Ethylbenzene	0.17 U	1.0	ug/L							
Styrene	0.12 U	1.0	ug/L							
Bromoform	0.36 U	1.0	ug/L							
1,1,2,2-Tetrachloroethane	0.27 U	1.0	ug/L							
1,2,3-Trichloropropane	0.32 U	1.0	ug/L							
trans-1,4-Dichloro-2-butene	0.60 U	1.0	ug/L							
1,3-Dichlorobenzene	0.15 U	1.0	ug/L							
1,4-Dichlorobenzene	0.15 U	1.0	ug/L							
1,2-Dichlorobenzene	0.17 U	1.0	ug/L							
1,2-Dibromo-3-chloropropane	0.19 U	1.0	ug/L							
1,2,4-Trichlorobenzene	0.14 U	1.0	ug/L							
Naphthalene	0.25 U	1.0	ug/L							
Xylenes (Total)	0.21 U	1.0	ug/L							
Surrogate: Dibromofluoromethane	*44*		*ug/L*	*50.0*		*87*	*69-111*			
Surrogate: Toluene-d8	*44*		*ug/L*	*50.0*		*89*	*85-120*			
Surrogate: 4-Bromofluorobenzene	*38*		*ug/L*	*50.0*		*77*	*67-125*			
LCS (7G23014-BS1)				Prepared: 07/23/2007 14:09 Analyzed: 07/23/2007 19:22						
1,1-Dichloroethene	13	1.0	ug/L	20.0		66	57-141			
Benzene	20	1.0	ug/L	20.0		102	76-116			
Trichloroethene	20	1.0	ug/L	20.0		100	81-118			
Toluene	18	1.0	ug/L	20.0		91	77-120			
Chlorobenzene	19	1.0	ug/L	20.0		94	75-115			
Matrix Spike (7G23014-MS1)		**Source: C709037-03**		Prepared: 07/23/2007 14:09 Analyzed: 07/23/2007 19:51						
1,1-Dichloroethene	13	1.0	ug/L	20.0	0.14 U	66	57-141			
Benzene	20	1.0	ug/L	20.0	0.12 U	101	76-116			
Trichloroethene	20	1.0	ug/L	20.0	0.35	96	81-118			
Toluene	18	1.0	ug/L	20.0	0.15 U	88	77-120			
Chlorobenzene	18	1.0	ug/L	20.0	0.16 U	90	75-115			
Matrix Spike Dup (7G23014-MSD1)		**Source: C709037-03**		Prepared: 07/23/2007 14:09 Analyzed: 07/23/2007 20:18						
1,1-Dichloroethene	15	1.0	ug/L	20.0	0.14 U	73	57-141	9	12	
Benzene	22	1.0	ug/L	20.0	0.12 U	108	76-116	7	14	
Trichloroethene	22 QR-02	1.0	ug/L	20.0	0.35	108	81-118	12	11	QR-02
Toluene	17	1.0	ug/L	20.0	0.15 U	87	77-120	0.9	17	
Chlorobenzene	18	1.0	ug/L	20.0	0.16 U	90	75-115	0	12	
Batch 7G24032 - EPA 5030B_MS										
Blank (7G24032-BLK1)				Prepared: 07/24/2007 16:06 Analyzed: 07/24/2007 22:12						
Dichlorodifluoromethane	0.14 U	1.0	ug/L							
Chloromethane	0.18 U	1.0	ug/L							
Vinyl chloride	0.15 U	1.0	ug/L							
Bromomethane	0.21 U	1.0	ug/L							

QUALITY CONTROL

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Sanple Notes

Volatile Organic Compounds by GCMS - Quality Control

Batch 7G24032 - EPA 5030B_MS

Blank (7G24032-BLK1) Continued Prepared: 07/24/2007 16:06 Analyzed: 07/24/2007 22:12

Chloroethane	0.40 U	1.0	ug/L
Trichlorofluoromethane	0.16 U	1.0	ug/L
Acrolein	2.1 U	10	ug/L
1,1-Dichloroethene	0.14 U	1.0	ug/L
Acetone	0.90 U	5.0	ug/L
Iodomethane	0.23 U	2.0	ug/L
Carbon disulfide	0.12 U	5.0	ug/L
Acetonitrile	1.8 U	10	ug/L
3-Chloropropene	0.20 U	1.0	ug/L
Methylene chloride	0.088 U	2.0	ug/L
Acrylonitrile	2.0 U	5.0	ug/L
trans-1,2-Dichloroethene	0.10 U	1.0	ug/L
1,1-Dichloroethane	0.090 U	1.0	ug/L
Vinyl acetate	0.19 U	2.0	ug/L
Chloroprene	0.19 U	1.0	ug/L
2-Butanone	0.56 U	5.0	ug/L
cis-1,2-Dichloroethene	0.14 U	1.0	ug/L
2,2-Dichloropropane	0.16 U	1.0	ug/L
Propionitrile	1.6 U	10	ug/L
Methacrylonitrile	0.69 U	10	ug/L
Bromochloromethane	0.19 U	1.0	ug/L
Chloroform	0.16 U	1.0	ug/L
1,1,1-Trichloroethane	0.24 U	1.0	ug/L
1,1-Dichloropropene	0.13 U	1.0	ug/L
Isobutyl alcohol	8.4 U	20	ug/L
Carbon tetrachloride	0.38 U	1.0	ug/L
1,2-Dichloroethane	0.36 U	1.0	ug/L
Benzene	0.12 U	1.0	ug/L
Trichloroethene	0.23 U	1.0	ug/L
1,2-Dichloropropane	0.18 U	1.0	ug/L
Methyl Methacrylate	0.38 U	1.0	ug/L
Dibromomethane	0.14 U	1.0	ug/L
Bromodichloromethane	0.19 U	0.40	ug/L
cis-1,3-Dichloropropene	0.16 U	0.20	ug/L
4-Methyl-2-pentanone	0.36 U	5.0	ug/L
Toluene	0.15 U	1.0	ug/L
trans-1,3-Dichloropropene	0.18 U	0.20	ug/L
Ethyl Methacrylate	0.17 U	2.0	ug/L
1,1,2-Trichloroethane	0.24 U	1.0	ug/L
1,3-Dichloropropane	0.18 U	1.0	ug/L
Tetrachloroethene	0.25 U	1.0	ug/L
2-Hexanone	0.24 U	5.0	ug/L
Dibromochloromethane	0.18 U	1.0	ug/L
1,2-Dibromoethane	0.19 U	1.0	ug/L
Chlorobenzene	0.16 U	1.0	ug/L

QUALITY CONTROL

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Sanple Notes
Volatile Organic Compounds by GCMS - Quality Control										
Batch 7G24032 - EPA 5030B_MS										
Blank (7G24032-BLK1) Continued				Prepared: 07/24/2007 16:06 Analyzed: 07/24/2007 22:12						
1,1,1,2-Tetrachloroethane	0.16 U	1.0	ug/L							
Ethylbenzene	0.17 U	1.0	ug/L							
Styrene	0.12 U	1.0	ug/L							
Bromoform	0.36 U	1.0	ug/L							
1,1,2,2-Tetrachloroethane	0.27 U	1.0	ug/L							
1,2,3-Trichloropropane	0.32 U	1.0	ug/L							
trans-1,4-Dichloro-2-butene	0.60 U	1.0	ug/L							
1,3-Dichlorobenzene	0.15 U	1.0	ug/L							
1,4-Dichlorobenzene	0.15 U	1.0	ug/L							
1,2-Dichlorobenzene	0.17 U	1.0	ug/L							
1,2-Dibromo-3-chloropropane	0.19 U	1.0	ug/L							
1,2,4-Trichlorobenzene	0.14 U	1.0	ug/L							
Naphthalene	0.25 U	1.0	ug/L							
Xylenes (Total)	0.21 U	1.0	ug/L							
Surrogate: Dibromofluoromethane	*43*		*ug/L*	*50.0*		*86*	*69-111*			
Surrogate: Toluene-d8	*46*		*ug/L*	*50.0*		*91*	*85-120*			
Surrogate: 4-Bromofluorobenzene	*38*		*ug/L*	*50.0*		*76*	*67-125*			
LCS (7G24032-BS1)				Prepared: 07/24/2007 16:06 Analyzed: 07/24/2007 22:39						
1,1-Dichloroethene	13	1.0	ug/L	20.0		66	57-141			
Benzene	20	1.0	ug/L	20.0		100	76-116			
Trichloroethene	20	1.0	ug/L	20.0		100	81-118			
Toluene	18	1.0	ug/L	20.0		89	77-120			
Chlorobenzene	18	1.0	ug/L	20.0		91	75-115			
Matrix Spike (7G24032-MS1)		**Source: C710703-02**		Prepared: 07/24/2007 16:06 Analyzed: 07/24/2007 23:06						
1,1-Dichloroethene	14	1.0	ug/L	20.0	0.14 U	72	57-141			
Benzene	22	1.0	ug/L	20.0	0.12 U	112	76-116			
Trichloroethene	22	1.0	ug/L	20.0	0.23 U	109	81-118			
Toluene	19 QM-07	1.0	ug/L	20.0	8.1	56	77-120			QM-07
Chlorobenzene	20	1.0	ug/L	20.0	0.16 U	99	75-115			
Matrix Spike Dup (7G24032-MSD1)		**Source: C710703-02**		Prepared: 07/24/2007 16:06 Analyzed: 07/24/2007 23:32						
1,1-Dichloroethene	9.6 QM-07	1.0	ug/L	20.0	0.14 U	48	57-141	41	12	QM-07
Benzene	14 QM-07	1.0	ug/L	20.0	0.12 U	72	76-116	43	14	QM-07
Trichloroethene	14 QM-07	1.0	ug/L	20.0	0.23 U	70	81-118	43	11	QM-07
Toluene	12 QM-07	1.0	ug/L	20.0	8.1	22	77-120	43	17	QM-07
Chlorobenzene	12 QM-07	1.0	ug/L	20.0	0.16 U	61	75-115	48	12	QM-07

NOTES AND DEFINITIONS

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
QR-02	The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
U	Analyte included in the analysis, but not detected

LABORATORY CERTIFICATION SUMMARY

Analysis	Matrix	Cert ID	Cert Number
8260B Appendix 2	Water	NC	591

ENVIRONMENTAL CONSERVATION LABORATORIES CHAIN-OF-CUSTODY RECORD

10775 Central Port Dr.
Orlando, FL 32824
(407) 826-5314 Fax (407) 850-6945

4810 Executive Park Court, Suite 211
Jacksonville, FL 32216-6069
(904) 296-3007 Fax (904) 296-6210

1815 Passport Way
Cary, NC 27513
(919) 677-1669 Fax (919) 677-1676

Page ____ of ____

Client Name: S&ME, Inc. (SM004)	Project Number: [none]
Address: 3718 Old Battleground Rd.	Project Name/Desc: White Street Landfill App IIs
City/ST/Zip: Greensboro, NC 27410	PO # / Billing Info:
Tel: (336) 288-7180 Fax: (336) 288-8980	Reporting Contact: Edmund Henriques
Sampler(s) Name, Affiliation (Print): GARY SIMCOX	Billing Contact: Accounts Payable
Sampler(s) Signature: [signature]	Facility # (if required):

Requested Analyses: 8260B Appendix 2

Requested Turnaround Times
Note: Rush requests subject to acceptance by the facility
___ Standard
___ Expedited
Due ___/___/___

Lab Workorder: C709746

Preservation (See Codes) (Complete as necessary)

Item #	Sample ID (Field Identification)	Collection Date	Collection Time	Comp / Grab	Matrix (see codes)	Total # of Containers	8260B Appendix 2	Sample Comments
	4103 II-2B	7/11/07	1300	G	Water	3	X	
	4103 II-13	7/11/07	1400	G	Water	3	X	
	4103 Equipment Blank	7/11/07	1245	G	Water	3	X	
	4103 Trip Blank				Water	3	X	

<-- Total # of Containers

Sample Kit Dispatched By	Date/Time	Relinquished By	Date/Time	Received By	Date/Time
CARY	7/6/07	[signature]	7/11/07 1500	Becky Wellett	7-12-07
Comments:		Relinquished By	Date/Time	[signature]	Date/Time
		Relinquished By	Date/Time	Received By	Date/Time

Cooler #'s & Temps on Receipt:

Condition Upon Receipt: ___ Acceptable ___ Unacceptable

Matrix: GW-Groundwater SO-Soil SE-Sediment SW-Surface Water WW-Wastewater A-Air O-Other (details in comments)

Preservation: H-Ice H-HCl N-HNO3 S-H2SO4 NO-NaOH O-Other (listed in comments)

Note: All samples submitted to ENCO Labs are in accordance with the terms and conditions listed on the reverse of this form, unless prior written agreements exist.

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ENVIRONMENTAL CONSERVATION LABORATORIES CHAIN-OF-CUSTODY RECORD

10775 Central Port Dr.
Orlando, FL 32824
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4810 Executive Park Court, Suite 211
Jacksonville, FL 32216-6069
(904) 296-3007 Fax (904) 296-6210

1015 Passport Way
Cary, NC 27513
(919) 677-1669 Fax (919) 677-9846

Page ____ of ____

Client Name: S&ME, Inc. (SM004)	Project Number: [none]
Address: 3718 Old Battleground Rd.	Project Name/Desc: White Street Landfill App IIs
City/ST/Zip: Greensboro, NC 27410	PO # / Billing Info:
Tel: (336) 288-7180 Fax: (336) 288-8980	Reporting Contact: Edmund Henriques
Sampler(s) Name, Affiliation (Print): GARY SIMCOX	Billing Contact: Accounts Payable
Sampler(s) Signature: [signature]	Facility # (if required):

Requested Analyses: 8260B Appendix 2

Requested Turnaround Times

Note : Rush requests subject to acceptance by the facility

___ Standard

___ Expedited

Due ___/___/___

Lab Workorder: C709746

Preservation (See Codes) (Combine as necessary)

Item #	Sample ID (Field Identification)	Collection Date	Collection Time	Comp / Grab	Matrix (see codes)	Total # of Containers	8260B Appendix 2	Sample Comments
	4103 II-2B	7/11/07	1300	G	Water	3	X	
	4103 II-13	7/11/07	1400	G	Water	3	X	
	4103 Equipment Blank	7/11/07	1245	G	Water	3	X	
	4103 Trip Blank				Water	3	X	

<-- Total # of Containers

Sample Kit Prepared By: CARY	Date/Time: 7/6/07	Relinquished By: [signature]	Date/Time: 7/11/07 1520	Received By: Becky Wallcutt	Date/Time: 7-12-07
Comments		Relinquished By	Date/Time	Received By: [signature]	Date/Time
		Relinquished By	Date/Time	Received By	Date/Time

Cooler #'s & Temps on Receipt: Received on Ice.

Condition Upon Receipt: ___ Acceptable ___ Unacceptable

Matrix : GW-Groundwater SO-Soil SE-Sediment SW-Surface Water WW-Wastewater A-Air O-Other (detail in comments)

Preservation: I-Ice H-HCl N-HNO3 S-H2SO4 NO-NaOH O-Other (detail in comments)

Note : All samples submitted to ENCO Labs are in accordance with the terms and conditions listed on the reverse of this form, unless prior written agreements exist

APPENDIX V

NCDENR Environmental Monitoring Reporting Form

DENR USE ONLY: ☐ Paper Report ☐ Electronic Data - Email CD (data loaded: Yes / No) Doc/Event #:

NC DENR
Division of Waste Management - Solid Waste

Environmental Monitoring Reporting Form

Notice: This form and any information attached to it are "Public Records" as defined in NC General Statute 132-1. As such, these documents are available for inspection and examination by any person upon request (NC General Statute 132-6).

Instructions:

- **Prepare one form for each individually monitored unit.**
- **Please type or print legibly.**
- Attach a notification table with values that attain or exceed NC 2L groundwater standards or NC 2B surface water standards. The notification must include a preliminary analysis of the cause and significance of each value. (e.g. naturally occurring, off-site source, pre-existing condition, etc.).
- Attach a notification table of any groundwater or surface water values that equal or exceed the reporting limits.
- Attach a notification table of any methane gas values that attain or exceed explosive gas levels. This includes any structures on or nearby the facility (NCAC 13B .1629 (4)(a)(i).
- Send the original signed and sealed form, any tables, and Electronic Data Deliverable to: Compliance Unit, NCDENR-DWM, Solid Waste Section, 1646 Mail Service Center, Raleigh, NC 27699-1646.

Solid Waste Monitoring Data Submittal Information

Name of entity submitting data (laboratory, consultant, facility owner):

S&ME, Inc.

Contact for questions about data formatting. Include data preparer's name, telephone number and E-mail address:

Name: Connel Ware Phone: (336) 288-7180

E-mail: cware@smeinc.com

Facility name:	Facility Address:	Facility Permit #	NC Landfill Rule: (.0500 or .1600)	Actual sampling dates (e.g., October 20-24, 2006)
White Street Landfill	White Street, Greensboro, North Carolin	41-03	.1600	July 11, 2007

Environmental Status: (Check all that apply)

☐ Initial/Background Monitoring ☐ Detection Monitoring ☒ Assessment Monitoring ☐ Corrective Action

Type of data submitted: (Check all that apply)

☒ Groundwater monitoring data from monitoring wells
☐ Groundwater monitoring data from private water supply wells
☐ Leachate monitoring data
☒ Surface water monitoring data
☐ Methane gas monitoring data
☐ Corrective action data (specify)
☐ Other(specify)

Notification attached?

☐ No. No groundwater or surface water standards were exceeded.
☒ Yes, a notification of values exceeding a groundwater or surface water standard is attached. It includes a list of groundwater and surface water monitoring points, dates, analytical values, NC 2L groundwater standard, NC 2B surface water standard or NC Solid Waste GWPS and preliminary analysis of the cause and significance of any concentration.
☒ Yes, a notification of values exceeding an explosive methane gas limit is attached. It includes the methane monitoring points, dates, sample values and explosive methane gas limits.

Certification

To the best of my knowledge, the information reported and statements made on this data submittal and attachments are true and correct. Furthermore, I have attached complete notification of any sampling values meeting or exceeding groundwater standards or explosive gas levels, and a preliminary analysis of the cause and significance of concentrations exceeding groundwater standards. I am aware that there are significant penalties for making any false statement, representation, or certification including the possibility of a fine and imprisonment.

Connel Ware	Senior Project Manager	(336) 288-7180
Facility Representative Name (Print)	Title	(Area Code) Telephone Number

Signature 8/30/07 Date

Affix NC Licensed/ Professional Geologist Seal

Revised 12/2006