CDM Camp Dresser & McKee

consulting engineering construction operations

5400 Glenwood Avenue, Suite 300
Raleigh, North Carolina 27612
Tel: 919 787-5620 Fax: 919 781-5730

Carmen Johnson
Scanned by ~~BZ~~ Date 8/20/12 Doc ID # RCO
92-09

October 25, 1999

Mr. Larry Rose
Solid Waste Section
401 Oberlin Road
Suite 150
Raleigh, North Carolina 27605-1350

Subject: Baseline Sampling Report Cells 5-11
North Wake Subtitle D Landfill

Dear Mr. Rose:

Enclosed are two copies of the Baseline Sampling Report for the North Wake Subtitle D Landfill Cells 5-11. This report presents a discussion of the results of the baseline sampling for MW-19, -20, -21, -25, -25d, and –26 from March 1999 through August 1999 and the statistical analysis. Also included in this report is a discussion of the well installation activities, hydraulic conductivity testing, the boring logs, and well completion records. The Baseline Sampling Report Cells1-4 for MW-11, -11d, -12, -12d, -13, -14, -15, -15d, -16, -17, -17d, and -18 was submitted to the Solid Waste Section in June 1996.

Several Appendix I metal constituents were detected during the baseline sampling above the North Carolina 2L Standards. Statistical analysis for each detection was performed and no constituent detections were found to be statistically significant. All detected constituents were also detected in the background wells at similar concentrations, and are therefore, most likely naturally occurring. No Appendix I volatile organic compounds were detected during any event.

If you have any questions or require further explanation, do not hesitate to call me at 787-5620.

Sincerely,

CAMP DRESSER & McKEE

Timothy Grant

Timothy D. Grant P.G.

NORTH CAROLINA LICENSED GEOLOGIST SEAL 1412 TIMOTHY DAVID GRANT

Timothy Grant
10-25-99

cc: Wayne Woodlief, Wake County
Project File

2000 Section

o:\reports\onslow\baseline\phase2\rose.doc

Contents

Letter of Transmittal

List of Appendices

List of Tables

List of Sheets

Section 1 Introduction 1-1

1.1 Site Background 1-1
1.2 Geology 1-1
1.3 Hydrogeology 1-2
1.4 Project Objectives 1-3

Section 2 Monitoring Well Installation and Field Observations 2-1

2.1 Drilling and Lithologic Logging 2-1
2.2 Monitoring Well Construction 2-2
2.3 Well Development 2-2
2.4 Slug Tests 2-4

Section 3 Site Hydrogeologic Characterization 3-1

3.1 Water Level Measurements 3-1
3.2 Hydraulic Conductivity Testing 3-3

Section 4 Water Quality Sampling 4-1

4.1 Methodology 4-1
4.2 Analytical Results 4-3

Section 5 Statistical Analysis 5-1

5.1 Methodology 5-1
5.2 Results - Statistical Analysis 5-2

List of Appendices

Appendix A - Well Completion Records and Boring Logs

Appendix B - Slug Test Data and Calculations

Appendix C - Laboratory Analytical Data (March 1999)

Appendix D - Laboratory Analytical Data (April 1999)

Appendix E - Laboratory Analytical Data (May 1999)

Appendix F - Laboratory Analytical Data (July 1999)

Appendix G - Laboratory Analytical Data (August 1999)

Appendix H - Statistical Calculations

List of Tables

Table

2-1 Summary of Monitoring Well Completion Data 2-3

3-1 Groundwater Elevations 3-2

3-2 Slug Test Hydraulic Conductivity Calculations 3-4

3-3 Summary of Calculated Groundwater Flow Velocities 3-6

3-4 Groundwater Flow Velocity Summary 3-7

4-1 Water Quality Field Parameters 4-2

4-2 Inorganic Groundwater Data 4-5

5-1 Statistically Significant Constituents over Background 5-5

List of Sheets

Sheet

2-1 Monitoring Well Locations and Groundwater Contours ..... Pocket

Section 1
Introduction

This report discusses the investigative activities and results for the North Wake Subtitle D Landfill, Cells 5-11, monitoring well installation. The tasks performed during this phase were completed as proposed in the Water Quality Monitoring Plan (CDM 1998) which was designed to address the requirements in Rule .1632(b)(3). The primary goals were to install a groundwater monitoring network yielding representative groundwater samples from the uppermost aquifer in the area of Cells 5-11 at the North Wake Subtitle D Landfill.

This report presents the results from the installation of six groundwater monitoring wells, aquifer testing (i.e., slug tests), and analytical data from groundwater sampling. Section 1 presents the background information for the Subtitle D Landfill and the environmental setting. Section 2 includes a discussion of the monitoring well installation activities. Section 3 includes a discussion of the sampling activities and the hydrogeologic data. Section 4 is a discussion of the analytical results. Section 5 is a discussion of the statistical analysis. The Appendices contain all of the boring log/monitoring well construction details, aquifer testing results, and groundwater analytical data.

1.1 Site Background

The North Wake County Subtitle D Landfill is located in northern Raleigh, North Carolina. The water quality monitoring system installation and sampling was performed in support of the expansion of the North Wake County Subtitle D Landfill in the area of Cells 5-11. The expansion cells are located east of the existing landfill Cells 1-4.

1.2 Geology

Near-surface soils are described in the Soil Survey of North Carolina (1970). The soil survey indicates that the Cecil soil series occurs at the site. These soils are gently sloping to steep, well-drained soils with a subsoil of firm sandy loam to clay. They are derived from gneiss and schist and are classified as saprolitic soils. The organic content is low and the permeability is moderate with low to moderate shrink-swell potential. These uppermost soils are present site-wide.

These soils are derived from the in-place chemical weathering of bedrock materials, and are characterized by the presence of relict mineral fabric from the original rock mass. Soil sampling has been conducted in each of the site investigations. Soil samples were obtained with a split-barrel sampler in accordance with standard penetration test procedures ASTM D-1586. The boring logs describing the soils encountered at the site are in Appendix A.

The soils from this investigation consist of reddish-brown, greenish-white to black silty/clayey sand, fine-to-medium-grained sand, and various rocks fragments. Overall, the sands were micaceous (biotite and some muscovite) and exhibited relic foliation. These unconsolidated soils extend from the ground surface to depths ranging from >20 to 40 feet in the borings advanced as part of this investigation. These soils overlie or laterally grade into the parent bedrock from which they were derived.

The transition zone between soils and bedrock has been designated the partially weathered rock (PWR) zone. PWR is characterized by deeply weathered bedrock material that can be penetrated by hollow-stem augers but requires more than 50 blows with a 140-pound hammer to advance a split-barrel sampler six inches.

PWR was encountered in only one of the borings, MW-25D, during this investigation. MW-25D exhibited PWR at approximately 40 feet bgs, based on increased drilling chatter and drill cuttings from this depth. Previous subsurface investigation in the proposed expansion area (Cells 5-11) indicated the PWR zone, where present, was generally less than 5 feet thick.

The Geologic Map of North Carolina shows the site to be located within the Raleigh Belt and is underlain by a mica gneiss unit of Cambrian to Later Proterozoic age. Additional mapping by Horton and others (1992) have included bedrock at the site as part of the Raleigh gneiss, which they state is equivalent to the injected gneiss and schist described by Parker (1979). The Raleigh gneiss is mainly a heterogeneous gneiss composed of interlayered biotite gneiss and hornblende-biotite gneiss. Diabase dikes are mapped throughout the area, and have been encountered within the sanitary landfill footprint during excavation activities. These dikes average 2 feet in width and generally strike in a North-East orientation, with a shallow to moderated dip to the South-West. Excavation has also revealed a 0.1 foot baked contact zone on either side of the dikes. The locations of the dikes are shown on Sheet 2-1.

1.3 Hydrogeology

The water table (unconfined aquifer) is generally encountered in the surficial soils and partially weathered rock zone which overlies competent bedrock. Previously, potentiometric contour mapping constructed from data collected on December 16, 1992 and March 11, 1998, indicated that the groundwater potentiometric surface is a subdued reflection of surface topography and corresponds to previous interpretations. Topographic divides are generally groundwater divides and groundwater flow converges into surficial drainage features. Groundwater flows away from topographically high areas, generally from the southwest to the northeast toward the creek.

The surficial aquifer discharges to a creek which is located along the northern and eastern boundaries. This creek separates the Subtitle D Landfill from the closed landfill. Groundwater flow within the surficial aquifer is influenced by two drainage features, located in the site center and west of Cells 5-11, and the diabase dike that intersects Cells 5 through 9. The diabase dike creates a slight mounding effect in the groundwater table on the upgradient side (west) of the dike.

Infiltration from rainfall provides the bulk of the recharge to the underlying aquifer. The surficial aquifer transmits water laterally to creeks. Recharge to the surficial aquifer depends on how rapidly rainfall can infiltrate into the aquifer. Locally, recharge would be expected to move laterally through the surficial aquifer to primary discharge points, in this instance, creeks and springs.

1.4 Project Objectives

The project objectives for this phase of the work effort were to install the Water Quality Monitoring System proposed for the site and to provide groundwater analytical data for the North Wake County Expansion prior to waste disposal. Specifically, the project objectives were to perform the following:

- Design and install a groundwater monitoring system, based on site-specific information, to yield groundwater samples from the uppermost aquifer that represents the quality of the background groundwater that has not been affected by landfill or other man-made activities.
- Design and install a groundwater monitoring system, based on site-specific information, to yield groundwater samples from the uppermost aquifer that represent the quality of groundwater passing the relevant point of compliance.
- Perform hydraulic conductivity testing on the newly installed wells.
- Complete location and elevation surveys for the newly installed wells.
- Perform baseline background sampling at the new groundwater monitoring locations.
- Perform statistical analysis of baseline data.
- Install three methane gas wells at selected locations around the perimeter of Cells 5 through 11 to monitor for methane gas migration.

Section 2
Monitoring Well Installation and Field Observations

Monitoring wells were installed to fulfill the objectives of the approved Water Quality Monitoring Plan. This section describes the methods used to install the wells and the field observation made during the installation procedures.

Monitoring wells were installed using hollow stem auger (HSA) drilling techniques except where noted otherwise. One nested pair of monitoring wells, MW-25 and MW-25D, was installed as proposed in the Water Quality Monitoring Plan. Monitoring well MW-25D was installed using HSA, air rotary, and mud/water rotary drilling techniques and MW-19 was installed using air rotary. Groundwater monitoring well locations are shown on Sheet 2-1. The wells were constructed in accordance with standard industry procedures and to meet the requirements of 15A NCAC 2C.

2.1 Drilling and Lithologic Logging

Borings for monitoring wells MW-20, MW-21, MW-25, and MW-26 were installed by advancing a hollow-stem auger through the water table at each site. Soil samples were collected at five-foot intervals with a split spoon sampler in accordance with ASTM D-1586. Soil lithologies were described by an on-site geologist during drilling. An auger with an 8 ¼-in outside diameter was used to advance each boring. All drilling and downhole equipment was decontaminated by steam cleaning between borings.

The boring for monitoring well MW-25D was initially advanced to 46 feet below ground surface (bgs) using HSA. Following initial HSA drilling, the augers were removed, thirty feet of steel casing was inserted into the borehole, and mud/water rotary was used to remove formation sediments that collapsed into the borehole. Air rotary drilling was then used, as specified, to drill through the partially weathered rock (PWR) zone and into bedrock.

Because the air rotary method undermined the formation below the steel casing at MW-25D and the PWR zone produced a significant amount of water during drilling, the well was set at 46 feet bgs in the PWR zone. Drill cuttings were used for lithologic descriptions by the on-site geologist. Monitoring well MW-19 was also installed using air rotary drilling techniques.

Lithologies encountered at each boring consisted of unconsolidated materials ranging from silty sands, clayey sands, silts and fine/medium sands. Detailed boring logs (combined with well construction diagrams) are presented in Appendix A.

2.2 Monitoring Well Construction

Following completion of each boring, a monitoring well was constructed using Schedule 40, 2-in PVC well casing with flush-threaded joints. A 15-ft section of 0.010-in slotted screen was installed at MW-19, MW-20, MW-21, MW-25, and MW-26. A 10-ft section of 0.010-in. slotted screen was installed at MW-25D. The wells were installed such that several feet of screen extended above the seasonal high water table to allow for future detection of immiscible layers while providing for seasonal variations in the water table. A sand pack of #2 silica sand was placed around the screen of each well, extending to 1.5 to 2.0 ft above the screen. A 2.0-2.5 ft bentonite seal was placed above the filter pack and hydrated with potable water. The remainder of the annulus was sealed with a Portland cement grout slurry to within 1 ft of the ground surface.

Water was encountered initially at 9.5 feet bgs at MW-25 inside the hollow-stem augers. Therefore, the well screen was set from 7 to 22 feet bgs to bracket the water table. However, following well installation, the water level rose to approximately 3.5 feet bgs, which is above the screened interval. Due to the shallow water table at MW-25, a well constructed according to 15A NCAC2C with a minimum of 2 feet of bentonite seal, 3 feet of cement grout, and screened from 5 to 20 feet bgs would not have bracketed the water table.

Monitoring well MW-19 was proposed to be screened completely within the saprolite/PWR zone or across the bedrock/soil interface. However, it was screened across the bedrock/PWR zone and encompassed several water-bearing fractures (38 to 40 feet bgs and 43 to 47 feet bgs).

Monitoring well MW-25D was screened within the PWR zone instead of across the shallow water-bearing fractures within the bedrock. Because the PWR zone produced a significant amount of water during air rotary drilling and MW-25 screen was set within the saprolite (7 to 22 feet bgs), the objective of the nested pair, to monitor water quality within shallow and deeper zones, was still fulfilled.

Monitoring wells were finished as above-grade (Type II) completions with approximately 3 ft of PVC above the ground surface with a locking protective outer casing. Monitoring well construction details are presented in Table 2-1, and combined well construction diagrams and boring logs are provided in Appendix A.

2.3 Well Development

Following completion, the monitoring wells were developed to remove fine-grained particles from the area of the well screen and allow for collection of

groundwater samples which are visibly clear. Each well was developed by bailing until the discharged water appeared clear and free of suspended sediment.

2.4 Slug Tests

Slug tests were performed in six monitoring wells as part of the current site investigation. Both slug-in (displacement) and slug-out (recovery) tests were performed in each well using a 5.0-foot by 0.12-foot stainless steel solid slug and a Hermit-1000 data logger with a 15 psi electronic pressure transducer. The transducer was initially lowered to the bottom of the piezometer and secured. It was then connected to the data logger and a reference water level measurement established.

Immediately after starting the data logger, the slug was lowered below the water table and secured. The data logger was then monitored until the water level had recovered to at least 90 percent of static head. The data logger was then re-started for the recovery test, and the slug immediately pulled to above the original water table surface and removed from the well. The data logger was again monitored until water level had stabilized. Insertion and removal of the slug sometimes disturbed the transducer cable, which occasionally resulted in anomalous measurements in the early portions of the slug in or out tests.

Slug test data were analyzed using the Bouwer and Rice Method (Bouwer, 1989) for unconfined aquifers. The test data are presented in Appendix B, and the results summarized and discussed in Section 3.

Section 3
Site Hydrogeologic Characterization

Data were collected during monitoring well installation and baseline sampling to assist in the hydrogeologic characterization of the site. These data consist of measurement of aquifer hydraulic conductivity and water levels in the newly installed wells and groundwater quality sampling and analysis.

3.1 Water Level Measurements

Static water levels were measured in each of the six recently installed monitoring wells following installation and prior to sample collection. An electronic water level indicator was used to accurately measure water elevation to within 0.01 feet. All measurements were referenced from the top of the casing. Table 3-1 provides top of casing and static water level elevation data.

Rule .1632(a)(9) requires a groundwater contour map showing occurrence and direction of groundwater flow in the uppermost aquifer. A potentiometric contour map for the surficial aquifer, shown on Sheet No. 2-1, was constructed using water level data collected during the sampling event on May 27, 1999. The groundwater contour patterns suggest a flow from the southwest toward the northeast for the majority of the site. Water levels from the newly installed monitoring wells in the surficial aquifer corroborate previous groundwater mapping.

The diabase dike intersecting Cells 5 through 9 influences groundwater flow by creating a mounding effect in the water table on the upgradient side (west) of the dike. Monitoring well MW-26 is located on the upgradient side.

Horizontal Gradients

The horizontal gradient for the surficial aquifer across the site was calculated in a southwest to northeast orientation based on water levels collected on May 27, 1999. The horizontal hydraulic gradient in the surficial unit was calculated using groundwater elevation data from MW-25 and MW-19 along the north/northwest boundary of Cells 5-11. The horizontal (map) distance between these two wells is approximately 1,362.5 feet. Groundwater levels were compared and indicated a head difference of 35.75 feet from west to east (285.45' - 249.70' = 35.75'). The horizontal gradient was then calculated by dividing the head difference (35.75 feet) by the horizontal distance (1,362.5 feet). The result indicated a horizontal gradient of 0.026 feet per foot which compares closely to the 0.029 feet per foot horizontal gradient derived during the previous Phase III investigation.

Table 3-1
Groundwater Elevations
North Wake County Subtitle D Landfill
Monitoring Well Installation/ Baseline Sampling

Monitoring Well	TOC Elevation (AMSL)	Ground Elevation (AMSL)	Groundwater Elevations (AMSL)				
			4/1/99	4/15/99	5/27/99	7/20/99	8/4/99
MW-19	283.61	280.81	250.37	250.29	249.70	249.05	248.85
MW-20	290.77	287.16	261.86	262.12	261.74	261.61	261.50
MW-21	308.67	304.99	278.37	278.42	277.89	277.53	277.33
MW-25	293.73	290.77	287.17	287.02	285.45	284.38	283.74
MW-25D	294.34	291.93	***269.50***	287.63	286.10	284.97	284.45
MW-26	275.22	272.20	266.89	NM	266.28	266.10	265.77

Notes:
AMSL - Above Mean Sea Level
Water level on 4/1/99 from MW-25D had not yet equilibrated (still recovering).
TOC = Top of PVC casing

Vertical Gradients
Vertical gradient data was evaluated through the examination of water levels collected on May 27, 1999 from the active nested monitoring well set, MW-25 and MW-25D. The vertical gradient was calculated as the difference in water level elevation between MW-25 and MW-25D, divided by the vertical distance from the screen mid-point. The relative groundwater elevations indicate that a slight upward gradient (0.003 feet/foot) exists at monitoring well cluster MW-25/MW-25D.

3.2 Hydraulic Conductivity Testing

Following installation and development of the new monitoring wells, a single-well hydraulic conductivity or slug test was performed at each well. These tests allow for the estimation of the in-situ hydraulic conductivity (K) of the alluvial aquifer underlying the site. The tests were performed by inserting a solid slug measuring 1.5 inches by 48 inches into the well and recording the rate at which the water level stabilized. The introduction of the slug (falling head test) was followed by removal of the slug (recovery test), also recording the resultant rate of recovery. Water level data were recorded using a pressure transducer and an electronic data logger.

Data from the slug tests were analyzed using the Bouwer and Rice (1976) method. Analysis of the data suggested that the slug-out (recovery test) data were more reliable and less impacted by "noise" caused by surging of groundwater within the filter pack and formation immediately around the well. Calculated values for hydraulic conductivity (K) are provided in Table 3-2 and the raw slug test data are provided in Appendix B.

Slug test results indicate that the hydraulic conductivity of the surficial unit ranges from 0.22 to 1.34 feet per day (Table 3-2). These values occur within the range exhibited during previous slug testing (0.009 to 9.21 feet per day) of the surficial unit.

Although it was believed that the water level in MW-25D had reached equilibrium prior to slug testing, subsequent water level measurements indicated differently. Therefore, results from MW-25D falling head (slug-in) test are inaccurate (too low) because the water level in the well was still rising and had not reached equilibrium. Also, the static water level in MW-25D had not been reached during the recovery test and the data set was incomplete.

Groundwater Flow Velocities
Using the horizontal hydraulic gradient calculated from the potentiometric surface map and hydraulic conductivity results from the slug tests, the average

Table 3-2
Slug Test Hydraulic Conductivity Calculations
North Wake Subtitle D Landfill

Well ID	b	r_w	A	B	D	d	Calculated $\ln(R_e/r_w)$	r_c	t	h_o	h_t	K (ft/min)	K (ft/day)	K (ft/sec)	K (m/sec)	K (cm/sec)
MW-19 FALL	18.96	0.34	2.8	0.5	100	15	2.5059	0.083	2.03	2.35	0.1	8.95E-04	1.29	1.49E-05	4.55E-06	4.55E-04
MW-19 REC	18.96	0.34	2.8	0.5	100	15	2.5059	0.083	1.9	2.45	0.1	9.69E-04	1.40	1.61E-05	4.92E-06	4.92E-04
MW-20 FALL	7.40	0.34	2.3	0.35	100	7.4	1.8085	0.083	16.75	1.56	0.01	2.54E-04	0.37	4.23E-06	1.29E-06	1.29E-04
MW-20 REC	7.40	0.34	2.3	0.35	100	7.4	1.8085	0.083	11.7	2.8	0.01	4.05E-04	0.58	6.76E-06	2.06E-06	2.06E-04
MW-21 FALL	8.16	0.34	2.4	0.4	100	8.16	1.8538	0.083	8	0.78	0.007	4.61E-04	0.66	7.68E-06	2.34E-06	2.34E-04
MW-21 REC	8.16	0.34	2.4	0.4	100	8.16	1.8538	0.083	6.55	2.4	0.001	9.30E-04	1.34	1.55E-05	4.73E-06	4.73E-04
MW-25 FALL	18.49	0.34	2.8	0.5	100	15	2.4948	0.083	3.37	1.95	0.01	8.96E-04	1.29	1.49E-05	4.56E-06	4.56E-04
MW-25 REC	18.49	0.34	2.8	0.5	100	15	2.4948	0.083	4.45	1.95	0.001	9.75E-04	1.40	1.63E-05	4.96E-06	4.96E-04
MW-25D FALL	23.05	0.34	2.5	0.4	100	10	2.3831	0.083	70	4.7	1.22	1.58E-05	0.02	2.64E-07	8.04E-08	8.04E-06
MW-25D REC	23.05	0.34	2.5	0.4	100	10	2.3831	0.083	DATA SET FOR MW-25D RECOVERY NOT COMPLETE							
MW-26 FALL	15.36	0.34	2.8	0.5	100	15	2.4116	0.083	26.75	1.7	0.001	1.54E-04	0.22	2.57E-06	7.83E-07	7.83E-05
MW-26 REC	15.36	0.34	2.8	0.5	100	15	2.4116	0.083	7.95	1.3	0.001	4.99E-04	0.72	8.32E-06	2.54E-06	2.54E-04

Notes:

Equations used: $\ln R_e/r_w = [1.1/\ln(b/r_w) + (A + B\ln[(D-b)/r_w])/(d/r_w)]^{-1}$

$$K = (r_c^2 \ln(R_e/r_w)/2d)\,(1/t)\,(\ln h_o/h_t)$$

Where:

r_c = radius of the unscreened part of the well where the head is rising
r_w = horizontal distance from well center to undisturbed aquifer
R_e = radial distance over which the difference in head, ho, is dissipated in the flow system of the aquifer
d = length of the saturated screen or open section of the well
h_o = head in the well at time to = 0
h_t = head in the well at time t > to
b = head in the well before slug test
A = dimensionless parameter which is a function of d/rw
B = dimensionless parameter which is a function of d/rw
D = saturated thickness of the aquifer
t = time (minutes)
K = hydraulic conductivity (units given above)

MW-25D Fall hydraulic conductivity is underestimated because water level was still recovering at time of slug test.
All measurements of length (e.g., radius, distance, head, thickness) are in feet unless specified otherwise.
FALL = Falling head slug test (slug-in); REC = Recovery or rising head slug test (slug-out).

linear groundwater flow velocities were calculated for each well using the following equation:

$$V = K/n_e \times dh/dl$$

where:

V = Average Linear Flow Velocity
K = Hydraulic Conductivity
n_e = Effective Porosity
dh/dl = Hydraulic Gradient

During the Phase III investigation, total porosity values were obtained through the laboratory analyses of Shelby tube samples. The effective porosity values for the surficial soils were estimated based on total porosity provided in the geotechnical report. The total porosity values were applied to the soil classification triangle which shows the relationship between grain size and the specific yield values provided by Johnson (1967) and an effective porosity value was determined. An average effective porosity value of 12.5% was used for the unconsolidated (surficial) material at the site. An estimated effective porosity value of 18% was used for MW-25d, which was screened in a weathered/very fractured rock zone. An estimated effective porosity value of 8% was used for MW-19, which was screened in the bedrock.

The calculated groundwater linear flow velocities, for the surficial aquifer, are summarized in Table 3-3. The range and average linear velocity for the surficial aquifer is presented in Table 3-4. Flow velocities within the surficial aquifer for the newly installed monitoring wells ranged from 0.301 to 0.0473 feet/day and averaged 0.177 feet/day.

Table 3-3
Summary of Calculated Groundwater Flow Velocities and Supporting Hydrogeological Data
North Wake County Subtitle D Landfill

Monitoring Well ID	Screened Interval (feet AMSL)	Geologic Unit	Water Level Elevation (5/27/99)	Type of Slug Test	Hydraulic Conductivity (ft/day)	Gradient	Effective Porosity	Average Linear Velocity (ft/day)
MW-19	246.41 - 231.41	Bedrock	249.70	Falling	1.29	0.0269	0.08	4.34E-01
MW-19	246.41 - 231.41	Bedrock	249.70	Recovery	1.40	0.0269	0.08	4.71E-01
MW-20	269.22 - 254.22	Surficial	261.74	Falling	0.37	0.0269	0.125	7.96E-02
MW-20	269.22 - 254.22	Surficial	261.74	Recovery	0.58	0.0269	0.125	1.25E-01
MW-21	285.18 - 270.18	Surficial	277.89	Falling	0.66	0.0269	0.125	1.42E-01
MW-21	285.18 - 270.18	Surficial	277.89	Recovery	1.34	0.0269	0.125	2.88E-01
MW-25	283.68 - 268.68	Surficial	285.45	Falling	1.29	0.0269	0.125	2.78E-01
MW-25	283.68 - 268.68	Surficial	285.45	Recovery	1.40	0.0269	0.15	2.51E-01
MW-25D*	256.45 - 246.45	Surf./Bedrock	286.10	Falling	0.02	0.0269	0.15	3.59E-03
MW-26	266.53 - 251.53	Surficial	266.28	Falling	0.22	0.0269	0.125	4.73E-02
MW-26	266.53 - 251.53	Surficial	266.28	Recovery	0.72	0.0269	0.125	1.55E-01

Notes:

Falling = Falling Head Slug Test Hydraulic Conductivity Value Used (Slug-in test).

Recovery = Recovery (Rising Head) Slug Test Hydraulic Conductivity Value Used (Slug-out test).

Permeability data taken from slug test results (Table 3-2).

Effective porosity calculated during Phase III investigation was used.

Hydraulic gradient was calculated based on water levels collected on May 27, 1999.

MW-25D* = Water level had not reached equilibrium at time of slug test and results are underestimated.

Table 3-4
Groundwater Flow Velocity Summary
North Wake County Subtitle D Landfill

Lithologic Unit	Gradient (ft/ft)	Effective Porosity (%)	Permeability (ft/day)			Average Linear Velocity (ft/day)	
			Maximum	Minimum	Average	Range	Average
Unconsolidated Material	0.0269	0.125	1.4	0.22	0.823	4.71E-01 - 4.73E-02	1.77E-01

Notes:
Permeability data taken from slug test results (Table 3-2).
Effective porosity calculated during Phase III investigation was used.
Hydraulic gradient was calculated based on water levels collected on May 27, 1999.

CDM Camp Dresser & McKee

consulting
engineering
construction
operations

5400 Glenwood Avenue, Suite 300
Raleigh, North Carolina 27612
Tel: 919 787-5620 Fax: 919 781-5730

October 25, 1999

Mr. Larry Rose
Solid Waste Section
401 Oberlin Road
Suite 150
Raleigh, North Carolina 27605-1350

Subject: Baseline Sampling Report Cells 5-11
North Wake Subtitle D Landfill

Dear Mr. Rose:

Enclosed are two copies of the Baseline Sampling Report for the North Wake Subtitle D Landfill Cells 5-11. This report presents a discussion of the results of the baseline sampling for MW-19, -20, -21, -25, -25d, and –26 from March 1999 through August 1999 and the statistical analysis. Also included in this report is a discussion of the well installation activities, hydraulic conductivity testing, the boring logs, and well completion records. The Baseline Sampling Report Cells1-4 for MW-11, -11d, -12, -12d, -13, -14, -15, -15d, -16, -17, -17d, and -18 was submitted to the Solid Waste Section in June 1996.

Several Appendix I metal constituents were detected during the baseline sampling above the North Carolina 2L Standards. Statistical analysis for each detection was performed and no constituent detections were found to be statistically significant. All detected constituents were also detected in the background wells at similar concentrations, and are therefore, most likely naturally occurring. No Appendix I volatile organic compounds were detected during any event.

If you have any questions or require further explanation, do not hesitate to call me at 787-5620.

Sincerely,

CAMP DRESSER & McKEE

Timothy Grant

Timothy D. Grant P.G.

NORTH CAROLINA LICENSED SEAL 1412 GEOLOGIST TIMOTHY DAVID GRANT

Timothy Grant

10-25-99

cc: Wayne Woodlief, Wake County
Project File

o:\reports\onslow\baseline\phase2\rose.doc

Section 4
Water Quality Sampling

4.1 Methodology

Monitoring well MW-19 was installed on March 1, 1999 and sampled one week later, March 8, for volatile organic compounds (VOCs) and Appendix I metals. The remaining monitoring wells, installed at the end of March 1999 (MW-20, MW-21, MW-25, MW-25D, and MW-26) and surface water sample SW-2, were sampled on April 15, 1999 for VOCs and Appendix 1 metals. Following this second sampling event, all newly installed monitoring wells were sampled again on May 27, 1999, July 20, 1999, and August 4, 1999. Monitoring well sampling locations are shown on Sheet No. 2-1.

All water quality sampling collection procedures were done in accordance with the Sampling and Analysis Plan contained in the Water Quality Monitoring Plan. The Sampling and Analysis Plan was developed so that representative groundwater samples could be collected during each event and also provided guidance for sample collection procedures, sample preservation and shipment, analytical procedures, and field and laboratory quality assurance/quality control (QA/QC).

Monitoring wells were sampled using disposable Teflon™ bailers. The water level at each well was measured prior to purging. Water quality parameters including pH, temperature, conductivity, and turbidity were monitored during well purging. Once these parameters had stabilized, ground water samples were collected. Table 4-1 presents field-measured water quality parameters for each well prior to sampling.

For quality assurance/quality control (QA/QC) purposes, one trip blank was collected during the first (MW-19) sampling event. Similarly, an equipment blank, trip blank, and one duplicate sample were collected during the May 27, 1999 and July 20, 1999 sampling events. A trip blank and a duplicate sample were collected during the August 4, 1999 sampling event. No equipment blank, trip blank, or duplicate sample was collected during the April 15, 1999 sampling event.

Groundwater samples were analyzed for North Carolina Appendix I volatile organic compounds using EPA Method 8260B and for metals including antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, nickel, selenium, silver, thallium, vanadium, and zinc, using EPA Method 6010A-NC. The duplicate groundwater samples and equipment blank samples were analyzed for the same parameters. The trip blanks were analyzed for VOCs only.

Table 4-1
Water Quality Field Parameters
North Wake County Subtitle D Landfill
Monitoring Well Installation/Baseline Sampling

Event:	No. 1				No. 2				No. 3				No. 4				No. 5			
Sampling Date:	3/8/99				4/15/99				5/27/99				7/20/99				8/4/99			
Monitoring Well Designation	pH (-)	Conductivity (mS)	Turbidity (NTU)	Temp. (deg. C)	pH (-)	Conductivity (mS)	Turbidity (NTU)	Temp. (deg. C)	pH (-)	Conductivity (mS)	Turbidity (NTU)	Temp. (deg. C)	pH (-)	Conductivity (mS)	Turbidity (NTU)	Temp. (deg. C)	pH (-)	Conductivity (mS)	Turbidity (NTU)	Temp. (deg. C)
MW-19	4.43	0.172	179	16	7.71	0.149	>999	15.8	6.40	0.136	>999	16.1	4.60	0.140	303	17.0	4.90	0.143	94	16.7
MW-20	NA	NA	NA	NA	6.92	0.206	>999	16.0	6.58	0.207	>999	16.0	4.75	0.205	521	16.7	5.50	0.207	330	16.7
MW-21	NA	NA	NA	NA	6.41	0.167	>999	13.8	6.67	0.089	>999	16.1	4.96	0.089	333	16.9	5.73	0.089	187	16.5
MW-25	NA	NA	NA	NA	6.06	0.112	426	13.9	5.70	0.116	364	14.8	4.94	0.114	359	16.0	5.61	0.112	501	16.5
MW-25D	NA	NA	NA	NA	11.43	0.767	433	15.2	6.89	0.240	35	15.6	6.55	0.210	240	18.0	6.64	0.193	431	18.6
MW-26	NA	NA	NA	NA	NS	NS	NS	NS	6.87	0.178	>999	14.5	5.15	0.186	483	17.2	5.85	0.178	227	17.5

Notes:
NA = Monitoring wells had not been installed at the time of sampling and were not available for sampling.
NS = Monitoring well not sampled.

All samples were submitted unfiltered. Samples to be analyzed for VOC's were preserved with hydrochloric acid. Samples to be analyzed for metals were preserved with nitric acid. Samples were placed in a laboratory supplied cooler on ice immediately after collection, and were shipped via overnight mail service to Paradigm Analytical Laboratories, Inc. in Wilmington, N.C. for analysis.

4.2 Analytical Results

This section presents a discussion of the results from all five sampling events. Table 4-2 provides a summary of the analytical results and a comparison of the results to the North Carolina 2L Standards and Groundwater Protection Standards. Groundwater analytical data from the March 8, April 15, May 27, July 20, and August 4 baseline sampling events is presented in Appendix C.

No Appendix I volatile organic compounds (VOCs) were detected in any of the sampled wells and duplicate, equipment blank, and trip blank samples for all of the sampling events.

During the March 8, 1999 sampling event, chromium (124 ug/l) was detected in MW-19 at levels above the North Carolina 2L Standards (Table 4-2). Cobalt (28.5 ug/l) and vanadium (82.6 ug/l) exceeded their respective groundwater protection standards. Other metals, detected in MW-19 during the initial sampling event, that did not exceed the N.C. 2L Standards included cadmium (3 ug/l), lead (12.4 ug/l), nickel (56 ug/l), and zinc (57.3 ug/l). There are currently no 2L standards for cobalt and vanadium. During the next four sampling events (April 15, May 27, June 20, and August 4), no Appendix I metals were detected in MW-19 above the laboratory method detection limits.

Cobalt was detected in MW-20 (36 ug/l) and MW-21 (63.2 ug/l) during the April 15, 1999 sampling event. Cadmium, chromium, and zinc were also detected in MW-20 (April event), at levels below the regulatory standards. Vanadium was also detected in MW-21 (56.5 ug/l) during the April sampling event. Other metals detected in MW-21 during the April event included cadmium, copper, lead, nickel, and zinc. However, these values were below the 2L Standards. During the next sampling events (May 27, July 20, and August 4), no Appendix I metals were detected in MW-20 or MW-21 above the laboratory method detection limits.

No metals were detected in MW-25 or MW-25D for all sampling events (April 15, May 27, July 20, and August 4).

Groundwater samples were collected from MW-26 during the baseline sampling events on May 27, July 20, and August 4, 1999. Cobalt was detected in the MW-26 samples from May 27, July 20, and August 4 at concentrations of 30.6 ug/l, 10.2 ug/l, and 10.0 ug/l. Each of these detections of cobalt exceeded the groundwater

protection standard of 2 ug/l. Cadmium (1.4 ug/l) was the only other metal detected in MW-26, however, it did not exceed the NC2L groundwater standard.

The trip blanks and equipment blank were below detection limits for all analyses. The duplicate sample collected from MW-20 on May 27, 1999 confirmed that no metals were present above method detection limits. The duplicate sample collected from MW-25 on July 20, 1999 confirmed that no metals were present above method detection limits. The duplicate sample collected from MW-26 on August 4, 1999 confirmed that no metals were present above method detection limits with the exception of cobalt. The samples from MW-26 on August 4 had detections of cobalt at 10.0 and 10.2 ug/l, respectively.

Due to the fact that these are newly installed wells, soil particles are still suspended in the sample. These high turbidity values in all likeliness account for any metal detections. As the wells continue to be purged before sampling, it can be expected that these metal concentrations will begin to drop. Table 4-1 presents turbidity values of the wells when sampling occurred. All of the inorganic constituents detected in the new wells have been previously detected in the background wells (MW-11 and -11d).

Table 4-2
Inorganic Constituents in Groundwater
North Wake Subtitle D Landfill
Baseline Sampling

Monitor Well	Sample Date	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
NC Standard			50	2000	2*	5	50	2*	1000	15	100	50	18	2*	25*	2100
MW-11	31-Oct-95	<30	11	842	4	<1	24	71	331	28	87	<20	<10	<10	117	314
MW-11	19-Dec-95	<30	<10	<500	<2	<1	<10	<10	<200	<10	<50	<20	<10	<10	<40	<50
MW-11	26-Feb-96	<30	<10	<500	<2	<1	11	22	<200	<10	<50	<20	<10	<10	<40	106
MW-11	29-Apr-96	<30	<10	<500	<2	<1	<10	<10	<200	<10	<50	<20	<10	<10	<40	106
MW-11	27-Nov-96	<30	<5	35	<1	<1	2	<2	<10	<5	<50	<5	<5	<1	<5	<10
MW-11	22-Apr-97	<30	<10	<500	<2	<1	<10	<10	<200	<10	<50	<20	<10	<10	<40	130
MW-11	31-Oct-97	<30	<10	<500	<2	<1	<10	<10	<200	<10	<50	<20	<10	<10	<40	66
MW-11	11-May-98	<30	<10	<500	<2	<1	<10	<10	<200	<10	<50	<20	<10	<10	<40	<50
MW-11	8-Dec-98	<30	<10	<500	<2	2.1	<10	<10	<200	<10	<50	<20	<10	<10	<40	<50
MW-11	14-Apr-99	<30	<10	<500	<2	<1	<10	<10	<200	<10	<50	<20	<10	<10	<40	<50
MW-11D	31-Oct-95	<30	<10	<500	<2	2	<10	<10	<200	<10	<50	<20	<10	<10	<40	<50
MW-11D	19-Dec-95	<30	<10	<500	<2	<2	<10	<10	<200	<10	<50	<20	<10	<10	<40	<50
MW-11D	26-Feb-96	<30	<10	<500	<2	1	<10	<10	<200	<10	<50	<20	<10	<10	<40	<50
MW-11D	29-Apr-96	<30	<10	<500	<2	<1	<10	<10	<200	<10	<50	<20	<10	<10	<40	<50
MW-11D (dup)	29-Apr-96	<30	<10	<500	<2	<1	<10	<10	<200	<10	<50	<20	<10	<10	<40	<50
MW-11 D	27-Nov-96	<30	<5	26	<1	<1	<2	<2	<10	<5	<50	<5	<5	<1	<5	<10
MW-11D	22-Apr-97	<30	<10	<500	<2	<1	<10	<10	<200	<10	<50	<20	<10	<10	<40	54
MW-11D	31-Oct-97	<30	<10	<500	<2	<1	<10	<10	<200	<10	<50	<20	<10	<10	<40	26
MW-11D	11-May-98	<30	<10	<500	<2	<1	<10	<10	<200	<10	<50	<20	12	<10	<40	69
MW-11D	8-Dec-98	<30	<10	<500	<2	19	<10	<10	<200	<10	<50	<20	<10	<10	<40	<50
MW-11D	14-Apr-99	<30	<10	<500	<2	<1	<10	<10	<200	<10	<50	<20	<10	<10	<40	<50
MW-19	8-Mar-99	<30	<10	<500	<2	3	124	24.4	<200	12.4	56	<20	<10	<10	82.8	57.3
MW-19	15-Apr-99	<30	<10	<500	<2	<1	<10	<10	<200	<10	<50	<20	<10	<10	<40	<50
MW-19	27-May-99	<30	<10	<500	<2	<1	<10	<10	<200	<10	<50	<20	<10	<10	<40	<50
MW-19	20-Jul-99	<30	<10	<500	<2	<1	<10	<10	<200	<10	<50	<20	<10	<10	<40	<50
MW-19	4-Aug-99	<30	<10	<500	<2	<1	<10	<10	<200	<10	<50	<20	<10	<10	<40	<50
MW-20	15-Apr-99	<30	<10	<500	<2	1.2	11.8	36	<200	<10	<50	<20	<10	<10	<40	98
MW-20	27-May-99	<30	<10	<500	<2	<1	<10	<10	<200	<10	<50	<20	<10	<10	<40	<50
MW-20 (dup)	27-May-99	<30	<10	<500	<2	<1	<10	<10	<200	<10	<50	<20	<10	<10	<40	<50
MW-20	20-Jul-99	<30	<10	<500	<2	<1	<10	<10	<200	<10	<50	<20	<10	<10	<40	<50
MW-20	4-Aug-99	<30	<10	<500	<2	<1	<10	<10	<200	<10	<50	<20	<10	<10	<40	<50
MW-21	15-Apr-99	<30	<10	<500	<2	4	<10	83.2	362	14.7	52.7	<20	<10	<10	56.6	347
MW-21	27-May-99	<30	<10	<500	<2	<1	<10	<10	<200	<10	<50	<20	<10	<10	<40	<50
MW-21	20-Jul-99	<30	<10	<500	<2	<1	<10	<10	<200	<10	<50	<20	<10	<10	<40	<50
MW-21	4-Aug-99	<30	<10	<500	<2	<1	<10	<10	<200	<10	<50	<20	<10	<10	<40	<50
MW-25	15-Apr-99	<30	<10	<500	<2	<1	<10	<10	<200	<10	<50	<20	<10	<10	<40	<50
MW-25	27-May-99	<30	<10	<500	<2	<1	<10	<10	<200	<10	<50	<20	<10	<10	<40	<50
MW-25	20-Jul-99	<30	<10	<500	<2	<1	<10	<10	<200	<10	<50	<20	<10	<10	<40	<50
MW-25 (dup)	20-Jul-99	<30	<10	<500	<2	<1	<10	<10	<200	<10	<50	<20	<10	<10	<40	<50
MW-25	4-Aug-99	<30	<10	<500	<2	<1	<10	<10	<200	<10	<50	<20	<10	<10	<40	<50
MW-25D	15-Apr-99	<30	<10	<500	<2	<1	<10	<10	<200	<10	<50	<20	<10	<10	<40	<50
MW-25D	27-May-99	<30	<10	<500	<2	<1	<10	<10	<200	<10	<50	<20	<10	<10	<40	<50
MW-25D	20-Jul-99	<30	<10	<500	<2	<1	<10	<10	<200	<10	<50	<20	<10	<10	<40	<50
MW-25D	4-Aug-99	<30	<10	<500	<2	<1	<10	<10	<200	<10	<50	<20	<10	<10	<40	<50
MW-26	27-May-99	<30	<10	<500	<2	1.4	<10	10.8	<200	<10	<50	<20	<10	<10	<40	<50
MW-26	20-Jul-99	<30	<10	<500	<2	<1	<10	10.2	<200	<10	<50	<20	<10	<10	<40	<50
MW-26	4-Aug-99	<30	<10	<500	<2	<1	<10	10	<200	<10	<50	<20	<10	<10	<40	<50
MW-26 (dup)	4-Aug-99	<30	<10	<500	<2	<1	<10	10.2	<200	<10	<50	<20	<10	<10	<40	<50

All units are in micrograms per liter (parts per billion).
*-Groundwater Protection Standard
- Concentrations exceeds N.C. Groundwater Standards (2L)

Section 5
Statistical Analysis

The Solid Waste Management Rule 15A NCAC 13B.1632 requires new MSWLF units to establish background groundwater quality in order to demonstrate compliance with groundwater monitoring requirements. Part of the compliance demonstration involves statistical comparisons of upgradient (background) and downgradient (compliance) monitoring well data. The statistical analysis is performed on the baseline groundwater quality monitoring, which consists of at least four independent sampling events. The intent of the statistical comparisons is to determine statistically significant increases over background parameters in compliance wells. A statistically significant increase of an Appendix I constituent in a compliance well requires further action on the part of the MSWLF owner/operator.

The following section details the statistical analysis performed on the background and compliance baseline groundwater monitoring data for the North Wake Solid Waste Management Facility (Subtitle D Landfill). The rationale and methods used in the statistical analysis of the groundwater data follow the EPA interim final guidance and the addendum, April 1989 and July 1992 publication, "Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities," and the NC Solid Waste Management Rule, 15A NCAC 13B.1632.

5.1 Methodology

The baseline groundwater quality data for the Nort Wake Solid Waste Management Facility that was used for statistical comparisons consisted of data from five independent sampling events from March 1999 to August 1999, at the compliance wells MW-19, -20, -21, 25, -25d, and 26. The background wells (MW-11 and -11d) were installed in October 1995.

Statistical Analyses - Statistical comparisons were performed on Appendix I constituents quantified above the detection limit during any of the baseline sampling events in the compliance wells. Based on the analytical laboratory results, no Appendix I volatile organic compounds were detected in the compliance wells during the baseline monitoring phase. Because there were no VOC constituents detected in either the background or compliance wells, no statistical comparisons of volatile organic compounds were performed. Cadmium, chromium, cobalt, lead, nickel, vanadium, and zinc were detected in compliance well MW-19 during the March 8, 1999 sampling event. Cadmium, chromium, cobalt, and zinc were detected in compliance well MW-20 during the April 15, 1999 sampling event. Cadmium, cobalt, copper, lead, nickel, vanadium, and zinc were detected in compliance well MW-21 during the April 15, 1999

sampling event. Cadmium and cobalt were detected in compliance well MW-26 during each of the baseline sampling events. No metas were detected in the MW-25 or 25d samples for all baseline sampling events.

Metals - The first step in the statistical analysis of the background and compliance metals data is to determine the number of values in the data set that are quantified above the detection limit. If greater than 50 percent of the values in the data set are below the detection limit, the appropriate comparison is the test of proportions. The test of proportions is used when a nonparametric test is needed and compliance well groups are being compared to background data. The test of proportions compares the proportion of detects in the compliance and background wells, to determine whether there is a significant proportion of detects in compliance well data over background.

A parametric analysis of variance (ANOVA) is a statistical procedure to determine whether there is a difference in the mean concentration between the groups of data. An ANOVA method can be used when greater than 50 percent of the data is quantified above the detection limit.

For individual well comparisons, an ANOVA will be performed at a Type I error level of 0.01. When the metal concentrations detected in a background or compliance well sample set were below the detection limit, a value of one-half the detection limit was used for statistical purposes. All detections in all compliance wells were less than 50 percent of the data quantified above the detection limits, therefore no ANOVA comparisons were performed.

The test of proportions was performed for the following comparisons:

Metal	Test of Proportions
Cadmium	MW-11 to MW-19, -20, -21, -26
Chromium	MW-11 to MW-19, -20
Cobalt	MW-11 to MW-19, -20, -21, -26
Copper	MW-11 to MW-21
Lead	MW-11 to MW-19, -21
Nickel	MW-11 to MW-19, -21
Vanadium	MW-11 to MW-19, -21
Zinc	MW-11 to MW-19, -20, -21

5.2 Results - Statistical Analysis

The results of the analytical and statistical analysis of the baseline groundwater quality data are discussed below. A summary of this information can be seen on Table 5-1. Statistical calculations are in Appendix G.

Background Well - MW-11

Arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, nickel, vanadium, and zinc were quantified above the detection limit in one or more of

the background well MW-11 samples. Lead concentrations in the MW-11 samples were above the 2L Standards for the October 31, 1995 sampling event.

Background Well - MW-11d
Barium, cadmium, and zinc were quantified above the detection limit in one or more of the background well MW-11d samples.

Compliance Well - MW-19
Cadmium, chromium, cobalt, lead, nickel, vanadium, and zinc were detected during the March 8, 1999 sampling event. The test of proportions was run for all constituent detections. None of these constituent detections were determined to be statistically significant over background. No Appendix I volatile organic compounds were quantified above the detection limit in any of the compliance well MW-19 samples, therefore no statistical comparisons were performed.

Compliance Well - MW-20
Cadmium, chromium, cobalt, and zinc were detected during the April 15, 1999 sampling event. The test of proportions was run for all constituent detections. None of these constituent detections were determined to be statistically significant over background. No Appendix I volatile organic compounds were quantified above the detection limit in any of the compliance well MW-20 samples, therefore no statistical comparisons were performed.

Compliance Well - MW-21
Cadmium, cobalt, copper, lead, nickel, vanadium,and zinc were detected during the April 15, 1999 sampling event. The test of proportions was run for all constituent detections. None of these constituent detections were determined to be statistically significant over background. No Appendix I volatile organic compounds were quantified above the detection limit in any of the compliance well MW-21 samples, therefore no statistical comparisons were performed.

Compliance Well - MW-25
No Appendix VOC's or metals were detected during any of the baseline sampling events at MW-25, therefore no statistical comparisons were performed.

Compliance Well - MW-25d
No Appendix VOC's or metals were detected during any of the baseline sampling events at MW-25d, therefore no statistical comparisons were performed.

Compliance Well - MW-26
Cadmium and cobalt were detected during the May 27, 1999 sampling event. Cobalt was detected again during the July 20, 1999 and August 4, 1999 sampling events. The test of proportions was run for all constituent detections. None of these constituent detections were determined to be statistically significant over background. No Appendix I volatile organic compounds were quantified above

the detection limit in any of the compliance well MW-26 samples, therefore no statistical comparisons were performed.

Conclusion

The results of the statistical comparisons show that there were no statistically significant Appendix I constituents in the compliance well samples over background well samples.

Table 5-1

Statistically Significant Constituents Over Background
North Wake Lined Landfill
Baseline Sampling

WELL	HISTORICALLY DETECTED CONSTITUENTS	PARAMETERS EXCEEDING 2L STANDARDS (Historical Data)	STATISTICALLY SIGNIFICANT PARAMETERS (Historical Data)
MW-11	Arsenic, Barium, Beryllium Cadmium, Chromium, Cobalt Copper, Lead, Nickel, Vanadium Zinc	Beryllium, Cobalt, Lead Vanadium	Designated Background Well
MW-11D	Barium, Cadmium, Chromium Silver, Zinc	Cadmium	Designated Background Well
MW-19	Cadmium, Chromium, Cobalt Lead, Nickel, Vanadium Zinc	Chromium, Cobalt, Vanadium	None
MW-20	Cadmium, Chromium, Cobalt Zinc	Cobalt	None
MW-21	Cadmium.Cobalt, Copper Lead, Nickel, Vanadium Zinc	Cobalt, Vanadium	None
MW-25	None	None	None
MW-25D	None	None	None
MW-26	Cadmium, Cobalt	Cobalt	None

APPENDIX A
WELL COMPLETION RECORDS AND BORING LOGS

CDM

environmental engineers, scientists,
planners & management consultants

LOG OF BORING

Project: North Wake Lined Landfill
Location: Raleigh, North Carolina
Date Drilled: 1-Mar-99
Drilling Co.: S&ME
Total Depth: 50 ft. bls
Method Used: 8.25 in. O.D. Hollow Stem Auger / Air Rotary
Inspector: Mathew Colone
Organic Vapor Inst:

BORING #: MW-19
Page 1 of 1
Permit #:
Job #: 6172-
Water elv: 38' bls @ 0 hr.

Depth (feet)	Sample No.	Blows/6" 140 lbs.	Sample Inter.	Rec (inches)	Org. Vap (ppm)	Sample Description	Strata Change	Remarks (time)
						- Reddish brown SILT/SAND		
4		4-10-27-23	3.5'-5.5'	24		-Moist, reddish brown, silt/clay	4' bls	
						-Moist, white and orange, silty SAND saprolite (weathered granite)		
8		11-14-16-19	8.5'-10.5'	24		-Moist, lt. reddish brown SILT saprolite w/black mineralized fractures		
12								
		7-10-21-30	13.5'-15.5'	24		-Moist, lt. Reddish brwon SILT saprolite		
16						-Dry, very dark green and white silty fine/med SAND saprolite, gneiss-schist mineralized texture	15' bls	
20		50/3	18.5'-20.5'	2		-Dry, very dark green and white, amphibolite/plagioclase schist (rock frags)		
24								
		50/2	23.5'-25.5'	1		-Pulverized Rock (SAA)		
28						-auger refusal @ 24' bls -switch to air hammer @ 24' bls		
32								
						-Pulverized Rock (SAA)		
36								
						Fracture @ 38' - 40' bls (+/-)		
40								
						Fracture @ 43' - 47' bls (+/-)		
44								
48								
						-Boring Terminated @ 50' bls		
52								

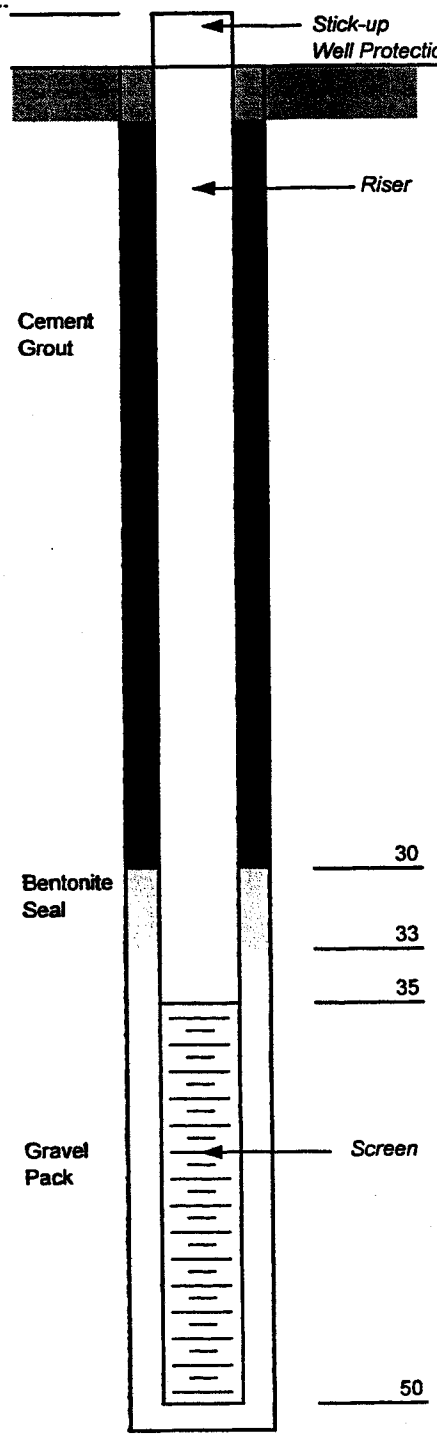
CDM

environmental engineers, scientists, planners & management consultants

WELL CONSTRUCTION SUMMARY

Project: North Wake Lined Landfill Location: Raleigh, North Carolina Well No.: MW-19
Permit No.:

TOC elev.:



DRILLING SUMMARY

Drilling Company: S&ME (Poole Bros.) Driller: Earl Mosely
Drill Rig/Model: CME 750 (HSA) /Schramm Rotadrill (Air)
Borehole Diameter: 8.25 in / 6 in Drilling Fluid: N/A
Bits/Depths: HSA (0'-24' bls) and Air Rotary (24'-50')
Total Depth: 50.0 ft. Depth To Water 38.51 ft btoc (static)
Supervisor Geologist: Mathew Colone

WELL DESIGN

Casing Material:	Schedule 40 PVC	Diameter:	2-in.
Screen Length:	10 ft.	Diameter:	2-in.
Slot Size:	0.010-in.	Setting:	35 to 50 ft bls
Filter Material:	#2 Filter Sand	Setting:	33 to 50 ft bls
Seal Material:	3/8 in. bentonite pellet	Setting:	30 to 33 ft bls
Grout:	type I portland cement	Setting:	30 to 1 ft. bls
Well Protection:	Above Grade Steel		

TIME LOG

	Started	Completed
Drilling:	2/26/99	3/1/99
Installation:	3/1/99	3/1/99
Development:	3/1/99	3/1/99

CAMP DRESSER & McKEE
CDM
233 South Wacker Drive, Suite 450
Chicago, Illinois 60606-6306

MONITORING WELL DETAIL
MONITORING WELL MW-20

Client: WAKE COUNTY
Project Name: NORTH WAKE COUNTY LANDFILL
Project Location: RALEIGH, NORTH CAROLINA
Project Number: 6172-25632

Drilling Contractor: ATLANTIC BORING CONTRACTORS
Drilling Method/Rig: HSA 8 1/4" OD / Mobil Drill B-53
Drillers: Bob Mallardo
Drilling Date: Start 3/26/99 **End** 3/29/99
Well Coordinates:
N **E**
Development Date: Start 4/1/99 **End** 4/1/99

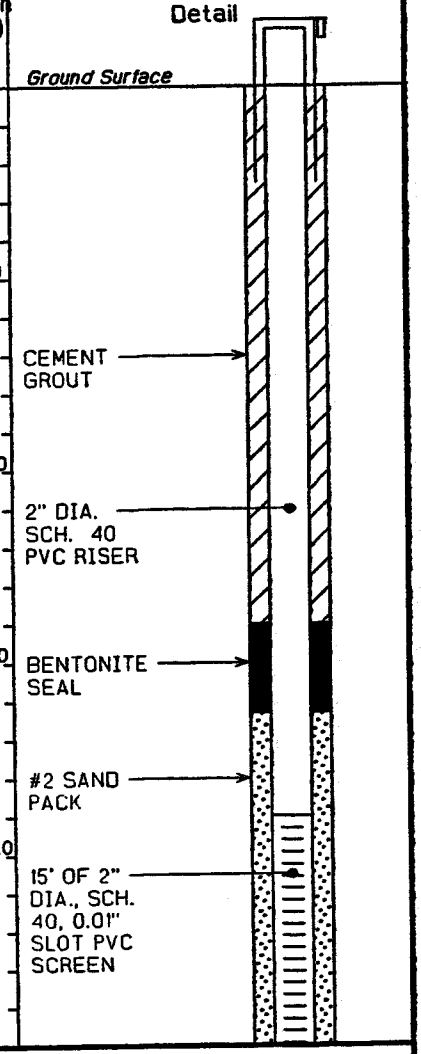
Surface Elevation (ft. MSL):
Total Depth (ft. BGS): 34.0
Depth to Initial Water Level (ft. BGS): 27.0
Development Method: Bailed
Field Screening Instrument:
Logged By: ANDREW R. KEAR
Top of Riser Elevation (ft.):

Sample Type	Sample Number	Organic Vapor (ppm)	Blows per 6 Inches	Recov./ Adv.	Material Description
					0'-5': Reddish-brown fine SAND, micaceous, dry (from cuttings).
SS	SS-1		8;19; 26;28;	2'/2'	5'-7': Reddish-brown fine SAND, w/trace silt and clay, micaceous (biotite), w/relic foliation, dry.
SS	SS-2		8;10; 14;13;	1.5'/2'	10'-12': Same as above (SAA), w/trace garnet and pyroxene, dry.
SS	SS-3		13;18; 21;20;	1.7'/2'	15'-16.2': SAA.
					16.2'-17': Greenish-white to black fine SAND, v. weathered biotite gneiss (saprolite) w/relic foliation and some pyroxene, dry.
SS	SS-4		13;15; 21;18;	1.7'/2'	20'-22': SAA, very weathered (saprolite), dry to damp.
					22.5'-22.8': Quartz vein.
SS	SS-5		37;17; 20;25;	1.5'/2'	22.8'-24.5': Greenish-white to black weathered

Graphic Log

Elev. Depth (ft.): 0, -5.0 (5), -10.0 (10), -15.0 (15), -20.0 (20)

Well Construction Detail



EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.6" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
WOH - Weight of Hammer

REMARKS

Collected one sample from 35'-37' bgs. Formation caved into borehole to 34' and well was set at 34' bgs.

Reviewed by: **Date:**

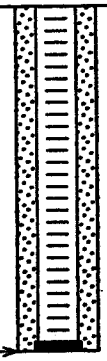
CAMP DRESSER & McKEE
CDM
233 South Wacker Drive, Suite 450
Chicago, Illinois 60606-6306

MONITORING WELL DETAIL

MONITORING WELL MW-20

Client: WAKE COUNTY
Project Name: NORTH WAKE COUNTY LANDFILL
Project Location: RALEIGH, NORTH CAROLINA
Project Number: 6172-25632

Sample Type	Sample Number	Organic Vapor (ppm)	Blows per 6 Inches	Recov./ Adv.	Material Description	Graphic Log	Elev. Depth (ft.)	Well Construction Detail
SS	SS-6		23;50; 47;38;	1.8'/2'	CONTD.- biotite gneiss (saprolite), w/orthoclase feldspar and pyroxene, trace garnet, damp.			
					25'-27': SAA (saprolite), damp.			
							30.0 / 30	
SS	SS-7		34;60; 100/5";	0.8'/2'	30'-30.3': Pegmatite, w/plagioclase feldspar, damp.			
					30.3'-32': Greenish-white to black biotite gneiss, partially weathered rock (PWR), damp.			Bottom of Well @34.0'
							35.0 / 35	
SS	SS-8		59; 100/3";	0.5'/2'	35'-37': SAA (PWR), damp to wet.			
					Borehole Depth = 34'. Formation collapsed to 34' bgs.			
							40.0 / 40	
							45.0 / 45	
							50.0 / 50	
							55.0 / 55	
							60.0 / 60	



CAMP DRESSER & McKEE
CDM
233 South Wacker Drive, Suite 450
Chicago, Illinois 60606-6306

MONITORING WELL DETAIL
MONITORING WELL MW-21

Client: WAKE COUNTY
Project Name: NORTH WAKE COUNTY LANDFILL
Project Location: RALEIGH, NORTH CAROLINA
Project Number: 6172-25632

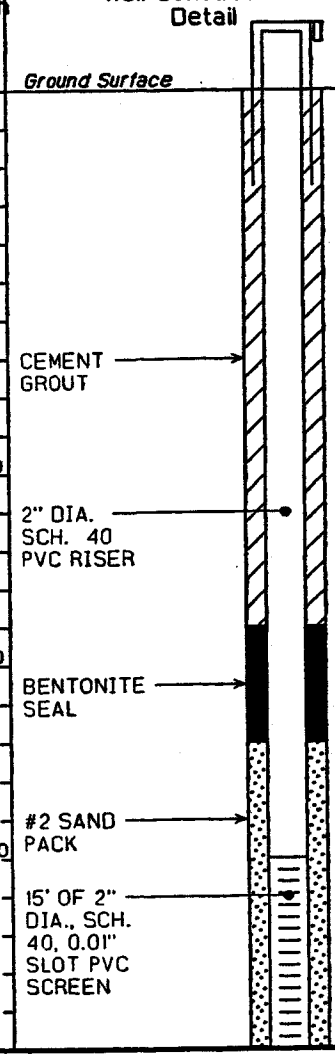
Drilling Contractor: ATLANTIC BORING CONTRACTORS
Surface Elevation (ft. MSL):
Drilling Method/Rig: HSA 8 1/4" OD / Mobil Drill B-53
Total Depth (ft. BGS): 35.0
Drillers: Bob Mallardo
Depth to Initial Water Level (ft. BGS): 26.0
Drilling Date: Start 3/26/99 **End** 3/29/99
Development Method: Bailed
Well Coordinates:
Field Screening Instrument:
N **E**
Logged By: ANDREW R. KEAR
Development Date: Start 4/1/99 **End** 4/1/99
Top of Riser Elevation (ft.):

Sample Type	Sample Number	Organic Vapor (ppm)	Blows per 6 Inches	Recov./ Adv.	Material Description
					0'-5': Reddish-brown Silty CLAY (FILL). (from cuttings).
SS	SS-1		4;8; 11;11;	2'/2'	5'-7': Reddish-brown Silty SAND, w/little clay, micaceous (biotite), dry.
SS	SS-2		5;7; 10;10;	2'/2'	10'-12': Same as above (SAA), w/no clay, dry.
SS	SS-3		3;6; 7;9;	2'/2'	15'-17': Reddish-brown Silty SAND, micaceous, w/pyroxene and relic foliation, dry.
SS	SS-4		6;6; 8;9;	2'/2'	20'-22': Greenish-white to black fine SAND, v. weathered biotite gneiss (saprolite) w/relic foliation and some pyroxene, dry.

Graphic Log

Elev. Depth (ft.): 0, -5.0 (5), -10.0 (10), -15.0 (15), -20.0 (20)

Well Construction Detail



EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.6" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
WOH - Weight of Hammer

REMARKS

Reviewed by: **Date:**

CAMP DRESSER & McKEE

CDM

233 South Wacker Drive, Suite 450
Chicago, Illinois 60606-6306

MONITORING WELL DETAIL

MONITORING WELL MW-21

Client: WAKE COUNTY

Project Name: NORTH WAKE COUNTY LANDFILL

Project Location: RALEIGH, NORTH CAROLINA

Project Number: 6172-25632

Sample Type	Sample Number	Organic Vapor (ppm)	Blows per 6 Inches	Recov./ Adv.	Material Description	Graphic Log	Elev. Depth (ft.)	Well Construction Detail
SS	SS-5		5;6; 8;10;	2'/2'	25'-27': Brown Silty SAND, v. micaceous (muscovite and biotite), moist to wet.			
							30.0 / 30	
SS	SS-6		-;7; 11;18;	2'/2'	30'-32': Reddish-brown to green v. weathered gneiss (saprolite), w/ plagioclase and orthoclase foliation @31'-32', trace pyroxene, wet.			
SS	SS-7		9;15; 16;20;	2'/2'	33'-35': SAA, less weathered, micaceous, wet.		35.0 / 35	Bottom of Well @35.0'
					Borehole Depth = 35'			
							40.0 / 40	
							45.0 / 45	
							50.0 / 50	
							55.0 / 55	
							60.0 / 60	

CAMP DRESSER & McKEE

CDM

233 South Wacker Drive, Suite 450
Chicago, Illinois 60606-6306

MONITORING WELL DETAIL

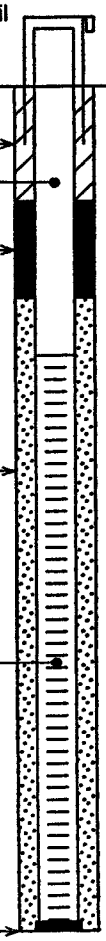
MONITORING WELL MW-25

Client: WAKE COUNTY
Project Name: NORTH WAKE COUNTY LANDFILL
Project Location: RALEIGH, NORTH CAROLINA
Project Number: 6172-25632

Drilling Contractor: ATLANTIC BORING CONTRACTORS
Surface Elevation (ft. MSL):
Drilling Method/Rig: HSA 8 1/4" OD / Mobil Drill B-53
Total Depth (ft. BGS): 22.0
Drillers: Dru Holmquist
Depth to Initial Water Level (ft. BGS): 9.5
Drilling Date: Start 3/30/99 **End** 3/30/99
Development Method: Bailed
Well Coordinates:
Field Screening Instrument:
N **E**
Logged By: ANDREW R. KEAR
Development Date: Start 4/2/99 **End** 4/2/99
Top of Riser Elevation (ft.):

Sample Type	Sample Number	Organic Vapor (ppm)	Blows per 6 Inches	Recov./ Adv.	Material Description	Graphic Log	Elev. Depth (ft.)
					0'-5': Reddish-brown Silty SAND, micaceous, damp (from cuttings).		0
SS	SS-1		6;7; 8;6;	1.3'/2'	5'-7': Reddish-brown Silty fine to med SAND, micaceous, w/little clay, moist to wet.		-5.0 5
SS	SS-2		3;4; 6;10;	2'/2'	10'-12': Greenish-black fine to med SAND, w/little silt, trace clay, v. micaceous (biotite), wet.		-10.0 10
SS	SS-3		5;5; 6;16;	1.7'/2'	15'-17': SAA, wet.		-15.0 15
SS	SS-4		3;5; 9;20;	0.6'/2'	20'-22': SAA, wet.		-20.0 20
					Borehole Depth = 22'		

Well Construction Detail



EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.6" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
WOH - Weight of Hammer

REMARKS

Reviewed by: **Date:**

CAMP DRESSER & McKEE
CDM
233 South Wacker Drive, Suite 450
Chicago, Illinois 60606-6306

MONITORING WELL DETAIL
MONITORING WELL MW-25D

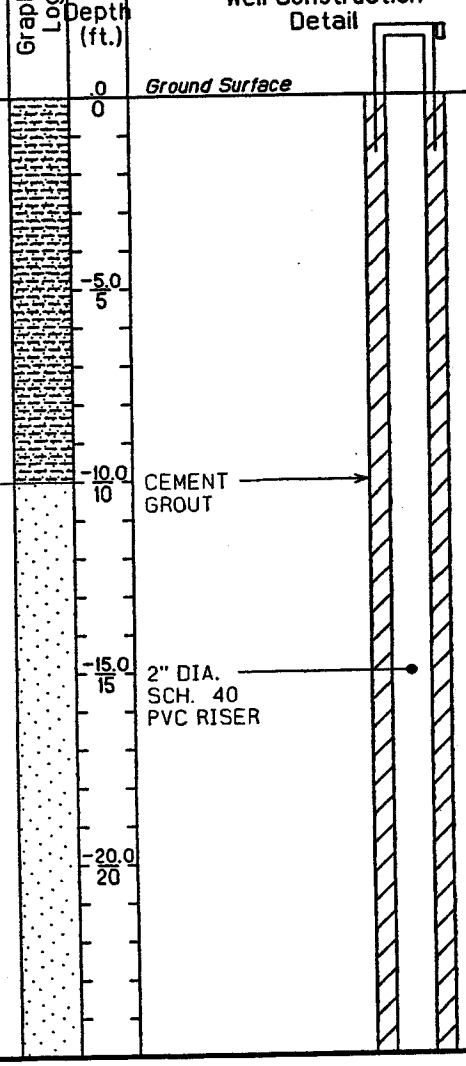
Client: WAKE COUNTY
Project Location: RALEIGH, NORTH CAROLINA
Project Name: NORTH WAKE COUNTY LANDFILL
Project Number: 6172-25632

Drilling Contractor: ATLANTIC BORING CONTRACTORS
Drilling Method/Rig: HSA 8 1/4" OD, MR, AR / Mobil Drill B-53
Drillers: Dru Holmquist
Drilling Date: Start 3/30/99 **End** 4/2/99
Well Coordinates:
N **E**
Development Date: Start 4/2/99 **End** 4/2/99

Surface Elevation (ft. MSL):
Total Depth (ft. BGS): 46.0
Depth to Initial Water Level (ft. BGS): 9.5
Development Method: Bailed
Field Screening Instrument:
Logged By: ANDREW R. KEAR
Top of Riser Elevation (ft.):

Sample Type	Sample Number	Organic Vapor (ppm)	Blows per 6 Inches	Recov./ Adv.	Material Description
					0'-5': Reddish-brown Silty SAND, micaceous, damp (from cuttings).
SS	SS-1		6;7; 8;6;	1.3'/2'	5'-7': Reddish-brown Silty fine to med SAND, micaceous, w/little clay, moist to wet.
SS	SS-2		3;4; 6;10;	2'/2'	10'-12': Greenish-black fine to med SAND, w/little silt, trace clay, v. micaceous (biotite), wet.
SS	SS-3		5;5; 6;16;	1.7'/2'	15'-17': SAA, wet.
SS	SS-4		3;5; 9;20;	0.6'/2'	20'-22': SAA, wet.
					Lithologic descriptions, blow counts, and recoveries taken from MW-25 well log.

Graphic Log / Elev. Depth (ft.) / Well Construction Detail



EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.6" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
WOH - Weight of Hammer

REMARKS

Lithologic descriptions from MW-25 (0'-22') were used for MW-25D well log. HSA was used to 46' and mud and air rotary were used from 40'-50' bgs. PWR (40'-50') zone produced significant water during air rotary. Formation collapsed and filled borehole to 46'. Set well in hydraulically productive PWR zone.

Reviewed by: **Date:**

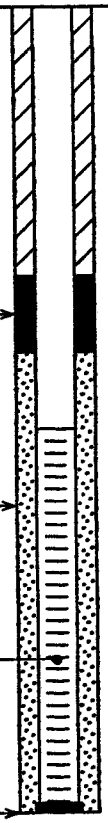
CAMP DRESSER & McKEE
CDM
233 South Wacker Drive, Suite 450
Chicago, Illinois 60606-6306

MONITORING WELL DETAIL

MONITORING WELL MW-25D

Client: WAKE COUNTY
Project Name: NORTH WAKE COUNTY LANDFILL
Project Location: RALEIGH, NORTH CAROLINA
Project Number: 6172-25632

Sample Type	Sample Number	Organic Vapor (ppm)	Blows per 6 Inches	Recov./ Adv.	Material Description	Graphic Log	Elev. Depth (ft.)	Well Construction Detail
							30.0 / 30	
								BENTONITE SEAL
							35.0 / 35	
								#2 SAND PACK
							40.0 / 40	
					Partially weathered rock (PWR) encountered @40'. Cuttings - Black and white (peppered) fine to med SAND, micaceous, wet, increased drilling chatter 40'-42'. 45': Quartz and orthoclase feldspar frags in cuttings, increased drilling chatter.			10' OF 2" DIA., SCH. 40, 0.01" SLOT PVC SCREEN
							45.0 / 45	
								Bottom of Well @46.0'
							50.0 / 50	
					Competent bedrock @50'. Formation collapsed from 50' to 46'.			
							55.0 / 55	
							60.0 / 60	



CAMP DRESSER & McKEE
CDM
233 South Wacker Drive, Suite 450
Chicago, Illinois 60606-6306

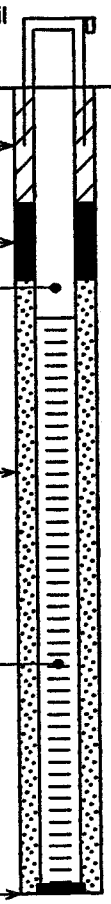
MONITORING WELL DETAIL
MONITORING WELL MW-26

Client: WAKE COUNTY
Project Name: NORTH WAKE COUNTY LANDFILL
Project Location: RALEIGH, NORTH CAROLINA
Project Number: 6172-25632

Drilling Contractor: TRIGON
Surface Elevation (ft. MSL):
Drilling Method/Rig: HSA 8 1/4" OD / CME 850 (ATV)
Total Depth (ft. BGS): 21.0
Drillers: Steve Williams
Depth to Initial Water Level (ft. BGS): 10.0
Drilling Date: Start 3/29/99 **End** 3/29/99
Development Method: Bailed
Well Coordinates:
Field Screening Instrument:
N **E**
Logged By: ANDREW R. KEAR
Development Date: Start 4/1/99 **End** 4/1/99
Top of Riser Elevation (ft.):

Sample Type	Sample Number	Organic Vapor (ppm)	Blows per 6 Inches	Recov./ Adv.	Material Description	Graphic Log	Elev. Depth (ft.)
					0'-5': Reddish-brown Clayey SAND, w/mica (from cuttings).		0
SS	SS-1		2;3; 3;5;	2'/2'	5'-5.7': Reddish-brown Clayey SAND, micaceous, trace silt, damp.		5
					5.7'-7': Green to black fine to med SAND, micaceous, relic foliation, damp.		
SS	SS-2		2;2; 2;4;	1.7'/2'	10'-12': Green to black v. weathered Clayey SAND, flank of diabase dike, wet.		10
SS	SS-3		7;10; 12;15;	2'/2'	15'-17': Greenish-black fine to med SAND, micaceous (biotite), w/some pyroxene, red-brown @16.9'-17', wet.		15
SS	SS-4		12;9; 13;23;	1.2'/2'	20'-22': Brown to black and white fine to med SAND, micaceous (biotite), wet.		20
					Borehole Depth = 21'. Formation collapsed from 21'-22'.		

Well Construction Detail



EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.6" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
WOH - Weight of Hammer

REMARKS

Collected one spoon sample from 20'-22' bgs.
Augered to 21' bgs and set well at 21' bgs.

Reviewed by: **Date:**

CAMP DRESSER & McKEE
CDM
233 South Wacker Drive, Suite 450
Chicago, Illinois 60606-6306

MONITORING WELL DETAIL
METHANE WELL M-7

Client: WAKE COUNTY
Project Location: RALEIGH, NORTH CAROLINA
Project Name: NORTH WAKE COUNTY LANDFILL
Project Number: 6172-25632

Drilling Contractor: TRIGON
Drilling Method/Rig: HSA 8 1/4" OD / CME 850 (ATV)
Drillers: Steve Williams
Drilling Date: **Start** 3/29/99 **End** 3/29/99
Well Coordinates:
N **E**
Development Date: **Start** **End**

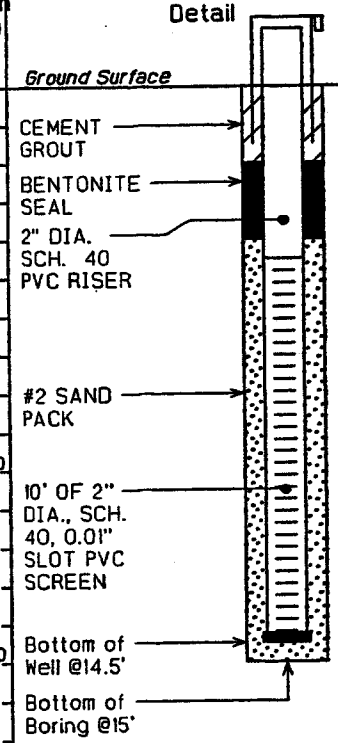
Surface Elevation (ft. MSL):
Total Depth (ft. BGS): 15.0
Depth to Initial Water Level (ft. BGS): 15.0
Development Method:
Field Screening Instrument:
Logged By: ANDREW R. KEAR
Top of Riser Elevation (ft.):

Sample Type	Sample Number	Organic Vapor (ppm)	Blows per 6 Inches	Recov./ Adv.	Material Description
					0'-5': Reddish-brown Silty SAND, w/mica (from cuttings).
SS	SS-1		6;8; 13;14;	2'/2'	5'-7': Reddish-brown Silty fine to med SAND, micaceous, tr. quartz, damp.
SS	SS-2		7;7; 14;18;	1.8'/2'	10'-12': SAA, damp to moist.
SS	SS-3		14;15; 25;50;	1.7'/2'	15'-16': SAA.
					Black and white fine to med SAND, v. weathered biotite gneiss (saprolite), damp.
					Borehole Depth = 15'; Formation collapsed to 15' bgs.

Graphic Log

Elev. Depth (ft.): .0 / 0; -5.0 / 5; -10.0 / 10; -15.0 / 15; -20.0 / 20

Well Construction Detail



EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.6" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
WOH - Weight of Hammer

REMARKS

Augered to 15' bgs and encountered groundwater
Pulled casing up to 14.5' and set well.

Reviewed by: **Date:**

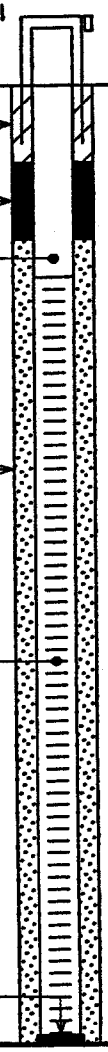
CAMP DRESSER & McKEE
CDM
233 South Wacker Drive, Suite 450
Chicago, Illinois 60606-6306

MONITORING WELL DETAIL
METHANE WELL M-8

Client: WAKE COUNTY
Project Name: NORTH WAKE COUNTY LANDFILL
Project Location: RALEIGH, NORTH CAROLINA
Project Number: 6172-25632

Drilling Contractor: ATLANTIC BORING CONTRACTORS
Surface Elevation (ft. MSL):
Drilling Method/Rig: HSA 6" OD / Simco 2400
Total Depth (ft. BGS): 25.5
Drillers: Dru Holmquist, Tony
Depth to Initial Water Level (ft. BGS): NOT ENCOUNTERED
Drilling Date: Start 3/31/99 **End** 3/31/99
Development Method:
Well Coordinates:
Field Screening Instrument:
N **E**
Logged By: ANDREW R. KEAR
Development Date: Start **End**
Top of Riser Elevation (ft.):

Sample Type	Sample Number	Organic Vapor (ppm)	Blows per 6 Inches	Recov./ Adv.	Material Description	Graphic Log	Elev. Depth (ft.)	Well Construction Detail
					WELL WAS NOT LOGGED		.0 / 0	*Ground Surface*
								CEMENT GROUT
								BENTONITE SEAL
							-5.0 / 5	2" DIA. SCH. 40 PVC RISER
							-10.0 / 10	#2 SAND PACK
							-15.0 / 15	20' OF 2" DIA., SCH. 40, 0.01" SLOT PVC SCREEN
							-20.0 / 20	
								Bottom of Well @25.0'



EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.6" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
WOH - Weight of Hammer

REMARKS

Augered to 25.5' bgs and encountered groundwater
Pulled casing up to 25' and set well.

Reviewed by: **Date:**

CAMP DRESSER & McKEE
CDM
233 South Wacker Drive, Suite 450
Chicago, Illinois 60606-6306

MONITORING WELL DETAIL

METHANE WELL M-8

Client: WAKE COUNTY
Project Name: NORTH WAKE COUNTY LANDFILL
Project Location: RALEIGH, NORTH CAROLINA
Project Number: 6172-25632

Sample Type	Sample Number	Organic Vapor (ppm)	Blows per 6 Inches	Recov./ Adv.	Material Description	Graphic Log	Elev. Depth (ft.)	Well Construction Detail
								Bottom of Boring @25.5'
							30.0 / 30	
							35.0 / 35	
							40.0 / 40	
							45.0 / 45	
							50.0 / 50	
							55.0 / 55	
							60.0 / 60	

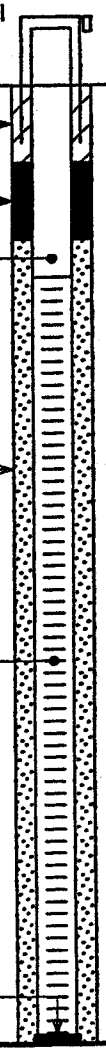
CAMP DRESSER & McKEE
CDM
233 South Wacker Drive, Suite 450
Chicago, Illinois 60606-6306

MONITORING WELL DETAIL
METHANE WELL M-9

Client: WAKE COUNTY
Project Name: NORTH WAKE COUNTY LANDFILL
Project Location: RALEIGH, NORTH CAROLINA
Project Number: 6172-25632

Drilling Contractor: ATLANTIC BORING CONTRACTORS
Surface Elevation (ft. MSL):
Drilling Method/Rig: HSA 8 1/4" OD / Mobil Drill B-53
Total Depth (ft. BGS): 25.0
Drillers: Bob Mallardo
Depth to Initial Water Level (ft. BGS): NOT ENCOUNTERED
Drilling Date: Start 3/29/99 **End** 3/29/99
Development Method:
Well Coordinates:
Field Screening Instrument:
N **E**
Logged By: MATHEW COLONE
Development Date: Start **End**
Top of Riser Elevation (ft.):

Sample Type	Sample Number	Organic Vapor (ppm)	Blows per 6 Inches	Recov./ Adv.	Material Description	Graphic Log	Elev. Depth (ft.)	Well Construction Detail
					WELL WAS NOT LOGGED		.0 / 0	*Ground Surface*
								CEMENT GROUT
								BENTONITE SEAL
							-5.0 / 5	2" DIA. SCH. 40 PVC RISER
							-10.0 / 10	#2 SAND PACK
							-15.0 / 15	20' OF 2" DIA., SCH. 40, 0.01" SLOT PVC SCREEN
							-20.0 / 20	
								Bottom of Well @25.0'



EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.6" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
WOH - Weight of Hammer

REMARKS
Augered to 25.0' bgs and set well.

Reviewed by: **Date:**

North Carolina - Department of Environment and Natural Resources
Division of Water Quality - Groundwater Section
P.O. Box 29578 - Raleigh, N.C. 27626-0578
Phone (919) 733-3221

FOR OFFICE USE ONLY	
QUAD. NO.	SERIAL NO.
Lat.	Long. / RO
Minor Basin	
Basin Code	
Header Ent.	GW-1 Ent.

WELL CONSTRUCTION RECORD

DRILLING CONTRACTOR: Atlantic Boring Contractors

DRILLER REGISTRATION NUMBER: 1747

STATE WELL CONSTRUCTION PERMIT NUMBER:

1. WELL LOCATION: (Show sketch of the location below)
   Nearest Town: Raleigh County: Wake
   Deponie Drive
   (Road, Community, or Subdivision and Lot No.)
2. OWNER N. Wake Landfill
   ADDRESS 9004 Deponie Drive
   (Street or Route No.)
   Raleigh N.C. 27614
   City or Town State Zip Code
3. DATE DRILLED 3/30/99 USE OF WELL Monitoring
4. TOTAL DEPTH 50'
5. CUTTINGS COLLECTED YES ☐ NO ☐
6. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☐
7. STATIC WATER LEVEL Below Top of Casing: _____ FT.
   (Use "+" if Above Top of Casing)
8. TOP OF CASING IS +3 FT. Above Land Surface*

* Casing Terminated at/or below land surface is illegal unless a variance is issued in accordance with 15A NCAC 2C .0118

9. YIELD (gpm): _____ METHOD OF TEST _____
10. WATER ZONES (depth): _____
11. CHLORINATION: Type _____ Amount _____
12. CASING:

	Depth From	Depth To	Diameter	Wall Thickness or Weight/Ft.	Material
		Ft.	2"	SCH 40	PVC
		Ft.			
		Ft.			

13. GROUT:

	Depth From	Depth To	Material	Method
		Ft.	Portland	Tremied
		Ft.		

14. SCREEN:

	Depth From	Depth To	Diameter	Slot Size	Material
		Ft	2" in.	010 in.	PVC
		Ft.	in.	in.	
		Ft.	in.	in.	

15. SAND/GRAVEL PACK:

	Depth From	Depth To	Size	Material
		Ft.	#7	Sand/Gravel
		Ft.		

16. REMARKS: _____

DEPTH From	DEPTH To	DRILLING LOG Formation Description

If additional space is needed use back of form

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Anthony P. Dowling 3/30/99
SIGNATURE OF CONTRACTOR OR AGENT DATE

Submit original to Division of Water Quality and copy to well owner.

GW-1 REV. 1/98

North Carolina - Department of Environment and Natural Resources
Division of Water Quality - Groundwater Section
P.O. Box 29578 - Raleigh, N.C. 27626-0578
Phone (919) 733-3221

FOR OFFICE USE ONLY	
QUAD. NO.	SERIAL NO.
Lat.	Long. / RO
Minor Basin	
Basin Code	
Header Ent.	GW-1 Ent.

WELL CONSTRUCTION RECORD

DRILLING CONTRACTOR: Atlantic Boring Contractors

DRILLER REGISTRATION NUMBER: 1747

STATE WELL CONSTRUCTION PERMIT NUMBER:

1. WELL LOCATION: (Show sketch of the location below)
   Nearest Town: Raleigh County: Wake
   Deponic Drive
   (Road, Community, or Subdivision and Lot No.)
2. OWNER N. Wake County Landfill
   ADDRESS 9004 Deponic Drive
   (Street or Route No.)
   Raleigh N.C. 27614
   City or Town State Zip Code
3. DATE DRILLED 3/30/99 USE OF WELL
4. TOTAL DEPTH 25
5. CUTTINGS COLLECTED YES ☐ NO ☐
6. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☐
7. STATIC WATER LEVEL Below Top of Casing: _____ FT.
   (Use "+" if Above Top of Casing)
8. TOP OF CASING IS 3 FT. Above Land Surface*

* Casing Terminated at/or below land surface is illegal unless a variance is issued in accordance with 15A NCAC 2C .0118

9. YIELD (gpm): _____ METHOD OF TEST
10. WATER ZONES (depth):
11. CHLORINATION: Type _____ Amount _____
12. CASING:

	Depth From	Depth To	Diameter	Wall Thickness or Weight/Ft.	Material
	+3	5	2"	SCH 40	PVC

13. GROUT:

	Depth From	Depth To	Material	Method
	0	2	Portland BP	Poured

14. SCREEN:

	Depth From	Depth To	Diameter	Slot Size	Material
	5	25	2" in.	.010 in.	PVC
			in.	in.	
			in.	in.	

15. SAND/GRAVEL PACK:

	Depth From	Depth To	Size	Material
	4	15	#2	Coarse Sand

16. REMARKS: Bentonite 2-4

DEPTH From	DEPTH To	DRILLING LOG Formation Description

If additional space is needed use back of form

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

M-9

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Anthony P. Dowling 4-5-99
SIGNATURE OF CONTRACTOR OR AGENT DATE

Submit original to Division of Water Quality and copy to well owner.

GW-1 REV. 1/98

North Carolina - Department of Environment and Natural Resources
Division of Water Quality - Groundwater Section
P.O. Box 29578 - Raleigh, N.C. 27626-0578
Phone (919) 733-3221

FOR OFFICE USE ONLY	
QUAD. NO.	SERIAL NO.
Lat.	Long. RO
Minor Basin	
Basin Code	
Header Ent.	GW-1 Ent.

WELL CONSTRUCTION RECORD

DRILLING CONTRACTOR: Atlantic Boring Contractor

STATE WELL CONSTRUCTION PERMIT NUMBER:

DRILLER REGISTRATION NUMBER: 17417

1. WELL LOCATION: (Show sketch of the location below)
   Nearest Town: Raleigh County: Wake
   Deponic Drive
   (Road, Community, or Subdivision and Lot No.)
2. OWNER N. Wake County Landfill
   ADDRESS 9604 Deponic Drive
   (Street or Route No.)
   Raleigh N.C. 27611
   City or Town State Zip Code
3. DATE DRILLED 3/30/99 USE OF WELL
4. TOTAL DEPTH 25
5. CUTTINGS COLLECTED YES ☐ NO ☐
6. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☐
7. STATIC WATER LEVEL Below Top of Casing: FT.
   (Use "+" if Above Top of Casing)
8. TOP OF CASING IS 3 FT. Above Land Surface*

* Casing Terminated at/or below land surface is illegal unless a variance is issued in accordance with 15A NCAC 2C .0118

9. YIELD (gpm): METHOD OF TEST
10. WATER ZONES (depth):

DEPTH From	DEPTH To	DRILLING LOG Formation Description

If additional space is needed use back of form

11. CHLORINATION: Type Amount
12. CASING:

	Depth From	Depth To	Diameter	Wall Thickness or Weight/Ft.	Material
	+3	5	2"	SCH 40	PVC

13. GROUT:

	Depth From	Depth To	Material	Method
	0	2	Portland II	Poured

14. SCREEN:

	Depth From	Depth To	Diameter	Slot Size	Material
	5	25	2 in.	010 in.	PVC
			in.	in.	
			in.	in.	

15. SAND/GRAVEL PACK:

	Depth From	Depth To	Size	Material
	4	25	#2	Gravel Sand

16. REMARKS: Bentonite 2-4'

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)
M - D

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Anthony P. Dowling 4/5/99
SIGNATURE OF CONTRACTOR OR AGENT DATE
Submit original to Division of Water Quality and copy to well owner.

GW-1 REV. 1/98

North Carolina - Department of Environment and Natural Resources
Division of Water Quality - Groundwater Section
P.O. Box 29578 - Raleigh, N.C. 27626-0578
Phone (919) 733-3221

FOR OFFICE USE ONLY	
QUAD. NO.	SERIAL NO.
Lat.	Long. / RO
Minor Basin	
Basin Code	
Header Ent.	GW-1 Ent.

WELL CONSTRUCTION RECORD

DRILLING CONTRACTOR: Atlantic Boring Contractors

DRILLER REGISTRATION NUMBER: 1747

STATE WELL CONSTRUCTION PERMIT NUMBER:

1. WELL LOCATION: (Show sketch of the location below)
   Nearest Town: Raleigh County: Wake
   9004 Deponic Road
   (Road, Community, or Subdivision and Lot No.)
2. OWNER N. Wake County Landfill
   ADDRESS 9004 Deponic Drive
   (Street or Route No.)
   Raleigh N.C. 27611
   City or Town State Zip Code
3. DATE DRILLED 3/30/99 USE OF WELL
4. TOTAL DEPTH 14.5
5. CUTTINGS COLLECTED YES ☐ NO ☒
6. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☐
7. STATIC WATER LEVEL Below Top of Casing: _____ FT.
   (Use "+" if Above Top of Casing)
8. TOP OF CASING IS _____ FT. Above Land Surface*

* Casing Terminated at/or below land surface is illegal unless a variance is issued in accordance with 15A NCAC 2C .0118

9. YIELD (gpm): _____ METHOD OF TEST
10. WATER ZONES (depth):
11. CHLORINATION: Type _____ Amount _____
12. CASING:

	Depth From	Depth To	Diameter	Wall Thickness or Weight/Ft.	Material
	+3	4.5	2"	SCH 40	PVC

13. GROUT:

	Depth From	Depth To	Material	Method
	0	2.5	Cement Portland Type II	Poured

14. SCREEN:

	Depth From	Depth To	Diameter	Slot Size	Material
	4.5	14.5	2 in.	.010 in.	PVC
			in.	in.	
			in.	in.	

15. SAND/GRAVEL PACK:

	Depth From	Depth To	Size	Material
	4	15	#2	Sand Gravel

16. REMARKS: 2.5 - 4 Bentonite Seal

DEPTH From	DEPTH To	DRILLING LOG Formation Description

If additional space is needed use back of form

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

M-7

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT DATE

Submit original to Division of Water Quality and copy to well owner.

GW-1 REV. 1/98

North Carolina - Department of Environment and Natural Resources
Division of Water Quality - Groundwater Section
P.O. Box 29578 - Raleigh, N.C. 27626-0578
Phone (919) 733-3221

FOR OFFICE USE ONLY	
QUAD. NO.	SERIAL NO.
Lat.	Long. / RO
Minor Basin	
Basin Code	
Header Ent.	GW-1 Ent.

WELL CONSTRUCTION RECORD

DRILLING CONTRACTOR: Atlantic Boring Contractors

DRILLER REGISTRATION NUMBER: 1747

STATE WELL CONSTRUCTION PERMIT NUMBER:

1. WELL LOCATION: (Show sketch of the location below)
   Nearest Town: Raleigh County: Wake
   Deponic Drive
   (Road, Community, or Subdivision and Lot No.)
2. OWNER N. Wake County Landfill
   ADDRESS 9004 Deponic Drive
   (Street or Route No.)
   Raleigh N.C. 27614
   City or Town State Zip Code
3. DATE DRILLED 3/30/99 USE OF WELL Monitoring
4. TOTAL DEPTH 21
5. CUTTINGS COLLECTED YES ☐ NO ☐
6. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☐
7. STATIC WATER LEVEL Below Top of Casing: _____ FT.
   (Use "+" if Above Top of Casing)
8. TOP OF CASING IS 3 FT. Above Land Surface*
   * Casing Terminated at/or below land surface is illegal unless a variance is issued in accordance with 15A NCAC 2C .0118
9. YIELD (gpm): _____ METHOD OF TEST _____
10. WATER ZONES (depth): _____
11. CHLORINATION: Type _____ Amount _____

DEPTH From	DEPTH To	DRILLING LOG Formation Description

If additional space is needed use back of form

12. CASING:

	Depth		Diameter	Wall Thickness or Weight/Ft.	Material
From +3	To 6	Ft.	2"	SCH 40	PVC
From	To	Ft.			
From	To	Ft.			

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)
MW 2L

13. GROUT:

	Depth		Material	Method
From 0	To 3	Ft.	Portland Type II	Poured
From	To	Ft.		

14. SCREEN:

	Depth		Diameter	Slot Size	Material
From 6	To 21	Ft	2 in.	010 in.	PVC
From	To	Ft.	in.	in.	
From	To	Ft.	in.	in.	

15. SAND/GRAVEL PACK:

	Depth		Size	Material
From 5	To 21	Ft.	#2	Gravel Sand
From	To	Ft.		

16. REMARKS: Bentonite 3'-5'

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Anthony P. Dowling 4/5/99
SIGNATURE OF CONTRACTOR OR AGENT DATE

Submit original to Division of Water Quality and copy to well owner.

GW-1 REV. 1/98

North Carolina - Department of Environment and Natural Resources
Division of Water Quality - Groundwater Section
P.O. Box 29578 - Raleigh, N.C. 27626-0578
Phone (919) 733-3221

FOR OFFICE USE ONLY	
QUAD. NO.	SERIAL NO.
Lat.	Long. / RO
Minor Basin	
Basin Code	
Header Ent.	GW-1 Ent.

WELL CONSTRUCTION RECORD

DRILLING CONTRACTOR: Atlantic Boring Contractors

DRILLER REGISTRATION NUMBER: 1747

STATE WELL CONSTRUCTION PERMIT NUMBER:

1. WELL LOCATION: (Show sketch of the location below)
   Nearest Town: Raleigh County: Wake
   Deponic Drive
   (Road, Community, or Subdivision and Lot No.)
2. OWNER N. Wake County Landfill
   ADDRESS 9004 Deponic Drive
   (Street or Route No.)
   Raleigh N.C. 27614
   City or Town State Zip Code
3. DATE DRILLED 3/31/99 USE OF WELL Monitoring
4. TOTAL DEPTH 46
5. CUTTINGS COLLECTED YES ☐ NO ☑
6. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☐
7. STATIC WATER LEVEL Below Top of Casing: _____ FT.
   (Use "+" if Above Top of Casing)
8. TOP OF CASING IS 3' FT. Above Land Surface*

* Casing Terminated at/or below land surface is illegal unless a variance is issued in accordance with 15A NCAC 2C .0118

9. YIELD (gpm): _____ METHOD OF TEST _____
10. WATER ZONES (depth): _____
11. CHLORINATION: Type _____ Amount _____
12. CASING:

	Depth From	Depth To	Ft.	Diameter	Wall Thickness or Weight/Ft.	Material
	+3	36		2"	SCH 40	PVC

13. GROUT:

	Depth From	Depth To	Ft.	Material	Method
	0	32		Portland Type II	Poured

14. SCREEN:

	Depth From	Depth To	Ft.	Diameter	Slot Size	Material
	36	46		2 in.	.010 in.	PVC
				in.	in.	
				in.	in.	

15. SAND/GRAVEL PACK:

	Depth From	Depth To	Ft.	Size	Material
	34	46		#2	Sand Gravel

16. REMARKS: Bentonite from 32 - 34

DEPTH From	DEPTH To	DRILLING LOG Formation Description

If additional space is needed use back of form

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

MW 25 D

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Anthony P. Dowling 4/5/99
SIGNATURE OF CONTRACTOR OR AGENT DATE

Submit original to Division of Water Quality and copy to well owner.

GW-1 REV. 1/98

North Carolina - Department of Environment and Natural Resources
Division of Water Quality - Groundwater Section
P.O. Box 29578 - Raleigh, N.C. 27626-0578
Phone (919) 733-3221

FOR OFFICE USE ONLY	
QUAD. NO.	SERIAL NO.
Lat.	Long. / RO
Minor Basin	
Basin Code	
Header Ent.	GW-1 Ent.

WELL CONSTRUCTION RECORD

DRILLING CONTRACTOR: Atlantic Boring

DRILLER REGISTRATION NUMBER: 1747

STATE WELL CONSTRUCTION PERMIT NUMBER:

1. WELL LOCATION: (Show sketch of the location below)
   Nearest Town: Raleigh County: Wake
   Deponie Drive
   (Road, Community, or Subdivision and Lot No.)
2. OWNER N. Wake County landfill
   ADDRESS 9004 Deponie Drive
   (Street or Route No.)
   Raleigh N.C. 27614
   City or Town State Zip Code
3. DATE DRILLED 3/31/99 USE OF WELL Monitoring
4. TOTAL DEPTH 22
5. CUTTINGS COLLECTED YES ☐ NO ☐
6. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☐
7. STATIC WATER LEVEL Below Top of Casing: _____ FT.
   (Use "+" if Above Top of Casing)
8. TOP OF CASING IS 3' FT. Above Land Surface*

* Casing Terminated at/or below land surface is illegal unless a variance is issued in accordance with 15A NCAC 2C .0118

9. YIELD (gpm): _____ METHOD OF TEST _____
10. WATER ZONES (depth): _____

DEPTH From	DEPTH To	DRILLING LOG Formation Description

If additional space is needed use back of form

11. CHLORINATION: Type _____ Amount _____
12. CASING:

Depth From	To	Ft.	Diameter	Wall Thickness or Weight/Ft.	Material
+3	7		2"	SCH40	PVC

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)
MW 2 S

13. GROUT:

Depth From	To	Ft.	Material	Method
0	3		Portland Type II	Poured

14. SCREEN:

Depth From	To	Ft.	Diameter	in.	Slot Size	in.	Material
7	22		2		010		PVC

15. SAND/GRAVEL PACK:

Depth From	To	Ft.	Size	Material
5.5	22		#2	Sand Gravel

16. REMARKS: Bentonite Chips From 3-5.5'

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Anthony P. Dowling 4/5/99
SIGNATURE OF CONTRACTOR OR AGENT DATE

Submit original to Division of Water Quality and copy to well owner.

GW-1 REV. 1/98

North Carolina - Department of Environment and Natural Resources
Division of Water Quality - Groundwater Section
P.O. Box 29578 - Raleigh, N.C. 27626-0578
Phone (919) 733-3221

FOR OFFICE USE ONLY	
QUAD. NO.	SERIAL NO.
Lat.	Long. / RO
Minor Basin	
Basin Code	
Header Ent.	GW-1 Ent.

WELL CONSTRUCTION RECORD

DRILLING CONTRACTOR: Atlantic Boring

DRILLER REGISTRATION NUMBER: 1747

STATE WELL CONSTRUCTION PERMIT NUMBER:

1. WELL LOCATION: (Show sketch of the location below)
   Nearest Town: Raleigh County:
   Deponie Drive
   (Road, Community, or Subdivision and Lot No.)
2. OWNER N. Wake County Landfill
   ADDRESS 9004 Deponie Drive
   (Street or Route No.)
   Raleigh N.C. 27614
   City or Town State Zip Code
3. DATE DRILLED 3/31/99 USE OF WELL Monitoring
4. TOTAL DEPTH 35
5. CUTTINGS COLLECTED YES ☐ NO ☑
6. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☐
7. STATIC WATER LEVEL Below Top of Casing: _____ FT.
   (Use "+" if Above Top of Casing)
8. TOP OF CASING IS 3 FT. Above Land Surface*

* Casing Terminated at/or below land surface is illegal unless a variance is issued in accordance with 15A NCAC 2C .0118

9. YIELD (gpm): _____ METHOD OF TEST
10. WATER ZONES (depth):

DEPTH From	DEPTH To	DRILLING LOG Formation Description

If additional space is needed use back of form

11. CHLORINATION: Type _____ Amount _____
12. CASING:

	Depth From	Depth To	Diameter	Wall Thickness or Weight/Ft.	Material
	+3	20	2"	SCH40	PVC

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)
MW 21

13. GROUT:

	Depth From	Depth To	Material	Method
	0	14	Portland Type II	Tremied Poured

14. SCREEN:

	Depth From	Depth To	Diameter	Slot Size	Material
	20	35	2 in.	010 in.	PVC
			in.	in.	
			in.	in.	

15. SAND/GRAVEL PACK:

	Depth From	Depth To	Size	Material
	17	35	#2	Gravel Sand

16. REMARKS: Bentonite Chips from 11-17'

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Anthony P. Dowling — 4/5/99
SIGNATURE OF CONTRACTOR OR AGENT — DATE

Submit original to Division of Water Quality and copy to well owner.

GW-1 REV. 1/98

North Carolina - Department of Environment and Natural Resources
Division of Water Quality - Groundwater Section
P.O. Box 29578 - Raleigh, N.C. 27626-0578
Phone (919) 733-3221

FOR OFFICE USE ONLY	
QUAD. NO.	SERIAL NO.
Lat.	Long. / RO
Minor Basin	
Basin Code	
Header Ent.	GW-1 Ent.

WELL CONSTRUCTION RECORD

DRILLING CONTRACTOR: Atlantic Boring Contractors

DRILLER REGISTRATION NUMBER: 1747

STATE WELL CONSTRUCTION PERMIT NUMBER:

1. WELL LOCATION: (Show sketch of the location below)
   Nearest Town: Raleigh N.C. County: Wake
   Deponic Drive
   (Road, Community, or Subdivision and Lot No.)
2. OWNER N. Wake County Landfill
   ADDRESS 9004 Deponic Drive
   (Street or Route No.)
   Raleigh N.C 27614
   City or Town State Zip Code
3. DATE DRILLED 3/31/99 USE OF WELL Monitoring
4. TOTAL DEPTH 34
5. CUTTINGS COLLECTED YES ☐ NO ☑
6. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☐
7. STATIC WATER LEVEL Below Top of Casing: _____ FT.
   (Use "+" if Above Top of Casing)
8. TOP OF CASING IS 3 FT. Above Land Surface*
   * Casing Terminated at/or below land surface is illegal unless a variance is issued in accordance with 15A NCAC 2C .0118
9. YIELD (gpm): _____ METHOD OF TEST _____
10. WATER ZONES (depth): _____
11. CHLORINATION: Type _____ Amount _____
12. CASING:

	Depth From	Depth To	Diameter	Wall Thickness or Weight/Ft.	Material
	0	19	2"	SCH 40	PVC

13. GROUT:

	Depth From	Depth To	Material	Method
	+3	14	Type III	Portland Tremied

14. SCREEN:

	Depth From	Depth To	Diameter	Slot Size	Material
	19	34	2 in.	.010 in.	PVC
			in.	in.	
			in.	in.	

15. SAND/GRAVEL PACK:

	Depth From	Depth To	Size	Material
	16.3	34	#2	Gravel Sand

16. REMARKS: Bentonite 14' - 16.3'

DEPTH From	DEPTH To	DRILLING LOG Formation Description

If additional space is needed use back of form

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

MW 20

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Anthony P. Dowling 4/5/99
SIGNATURE OF CONTRACTOR OR AGENT DATE

Submit original to Division of Water Quality and copy to well owner.

GW-1 REV. 1/98

APPENDIX B
SLUG TEST DATA AND CALCULATIONS

Table 3-2
Slug Test Hydraulic Conductivity Calculations
North Wake Subtitle D Landfill

Well ID	b	r_w	A	B	D	d	Calculated $\ln(R_e/r_w)$	r_c	t	h_o	h_t	K (ft/min)	K (ft/sec)	K (m/sec)	K (cm/sec)
MW-19 FALL	18.96	0.34	2.8	0.5	100	15	2.5059	0.083	2.03	1.35	0.1	7.38E-04	1.23E-05	3.75E-06	3.75E-04
MW-19 REC	18.96	0.34	2.8	0.5	100	15	2.5059	0.083	1.9	1.45	0.1	8.10E-04	1.35E-05	4.12E-06	4.12E-04
MW-20 FALL	7.40	0.34	2.3	0.35	100	7.4	1.8085	0.083	16.75	1.56	0.01	2.54E-04	4.23E-06	1.29E-06	1.29E-04
MW-20 REC	7.40	0.34	2.3	0.35	100	7.4	1.8085	0.083	11.7	2.8	0.01	4.05E-04	6.76E-06	2.06E-06	2.06E-04
MW-21 FALL	8.16	0.34	2.4	0.4	100	8.16	1.8538	0.083	8	0.78	0.007	4.61E-04	7.68E-06	2.34E-06	2.34E-04
MW-21 REC	8.16	0.34	2.4	0.4	100	8.16	1.8538	0.083	6.55	2.4	0.001	9.30E-04	1.55E-05	4.73E-06	4.73E-04
MW-25 FALL	18.49	0.34	2.8	0.5	100	15	2.4948	0.083	3.37	1.95	0.01	8.96E-04	1.49E-05	4.56E-06	4.56E-04
MW-25 REC	18.49	0.34	2.8	0.5	100	15	2.4948	0.083	4.45	1.95	0.001	9.75E-04	1.63E-05	4.96E-06	4.96E-04
MW-25D FALL	23.05	0.34	2.5	0.4	100	10	2.3831	0.083	70	4.7	1.22	1.58E-05	2.64E-07	8.04E-08	8.04E-06
MW-25D REC	23.05	0.34	2.5	0.4	100	10	2.3831	0.083	---------- DATA SET FOR MW-25D RECOVERY NOT COMPLETE ----------						
MW-26 FALL	15.36	0.34	2.8	0.5	100	15	2.4116	0.083	26.75	1.7	0.001	1.54E-04	2.57E-06	7.83E-07	7.83E-05
MW-26 REC	15.36	0.34	2.8	0.5	100	15	2.4116	0.083	7.95	1.3	0.001	4.99E-04	8.32E-06	2.54E-06	2.54E-04

Notes:

Equations used: $\ln R_e/r_w = [1.1/\ln (b/r_w) + (A + B\ln[(D-b)/r_w])/ (d/r_w)]^{-1}$

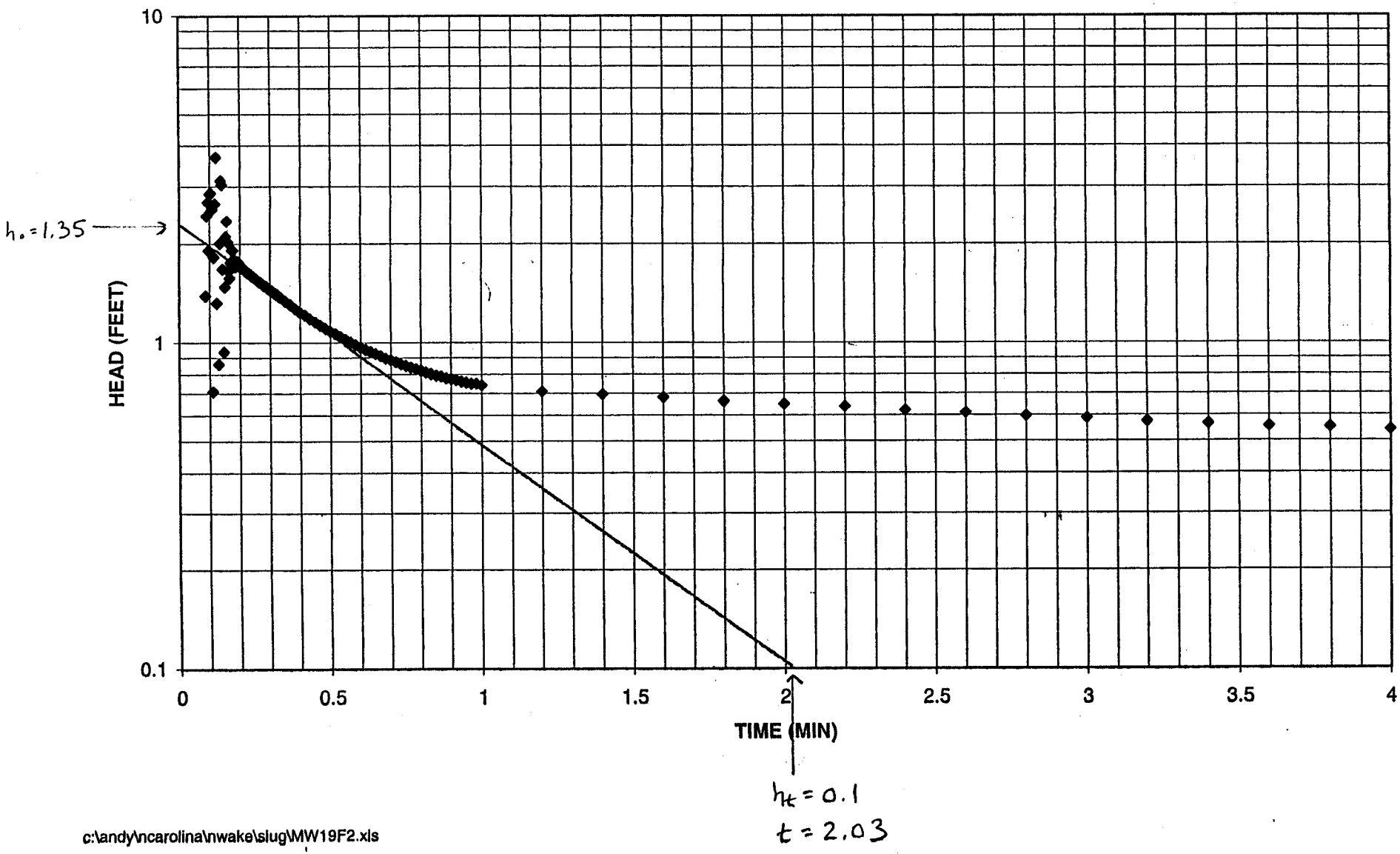
$$K = (r_c^2 \ln(R_e/r_w)/2d)\ (1/t)\ (\ln h_o/h_t)$$

Where:

r_c = radius of the unscreened part of the well where the head is rising
r_w = horizontal distance from well center to undisturbed aquifer
R_e = radial distance over which the difference in head, ho, is dissipated in the flow system of the aquifer
d = length of the saturated screen or open section of the well
h_o = head in the well at time to = 0
h_t = head in the well at time t > to
b = head in the well before slug test
A = dimensionless parameter which is a function of d/rw
B = dimensionless parameter which is a function of d/rw
D = saturated thickness of the aquifer
t = time (minutes)
K = hydraulic conductivity (units given above)

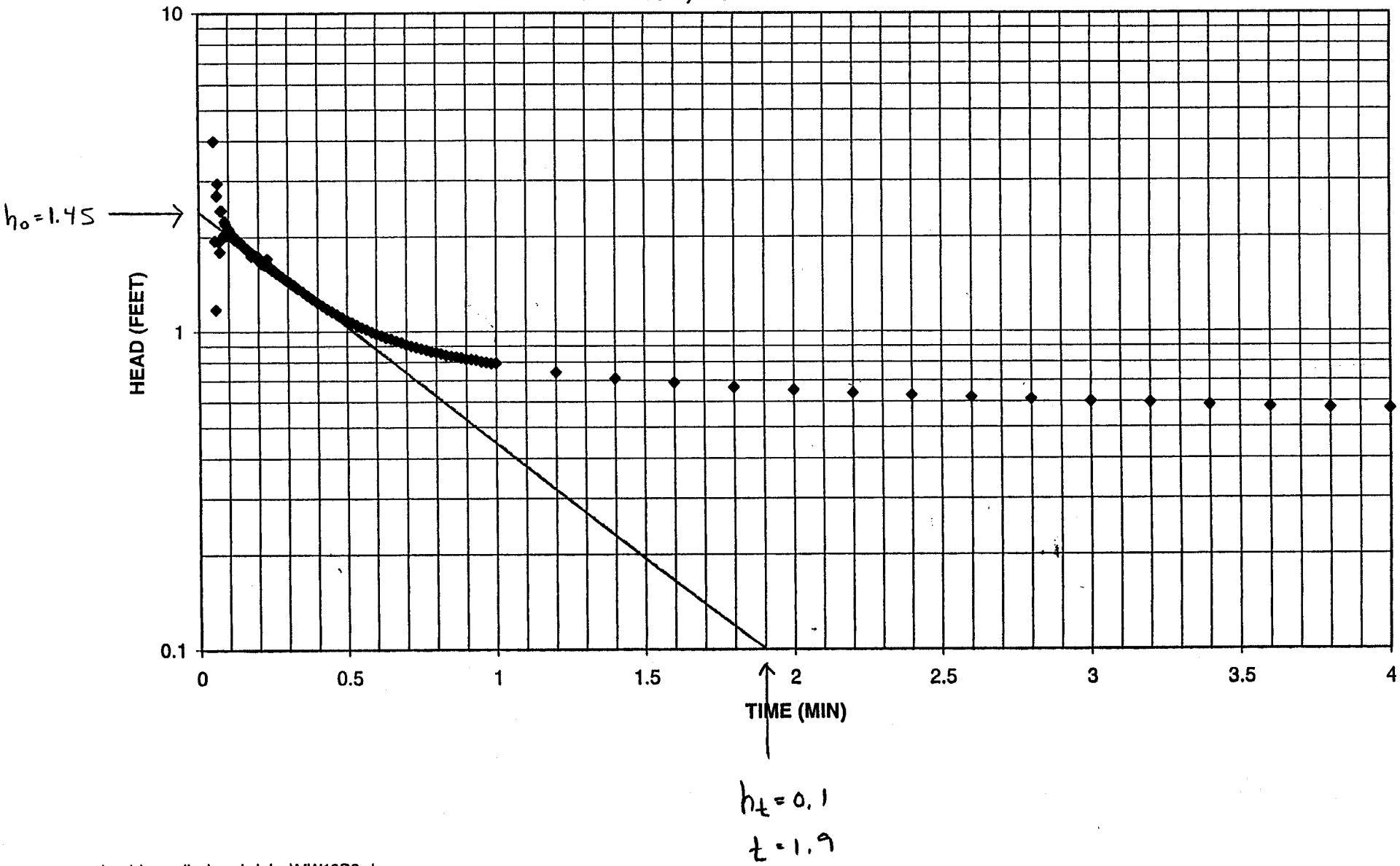
All measurements of length (e.g., radius, distance, head, thickness) are in feet unless specified otherwise.

MW-19 FALLING HEAD SLUG TEST
NORTH WAKE COUNTY LANDFILL
RALEIGH, NORTH CAROLINA



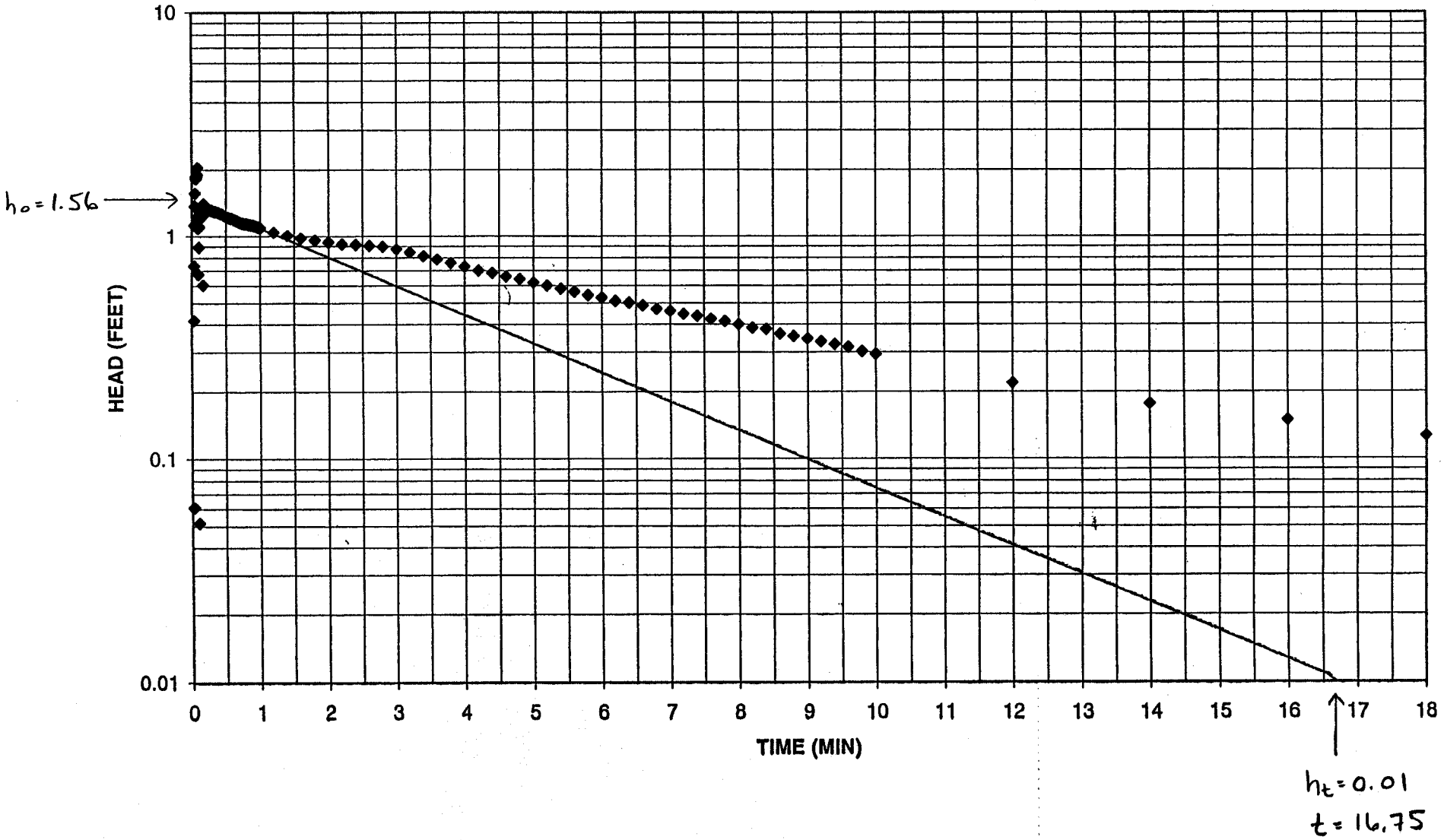
c:\andy\ncarolina\nwake\slug\MW19F2.xls

MW-19 RECOVERY SLUG TEST
NORTH WAKE COUNTY LANDFILL
RALEIGH, NORTH CAROLINA



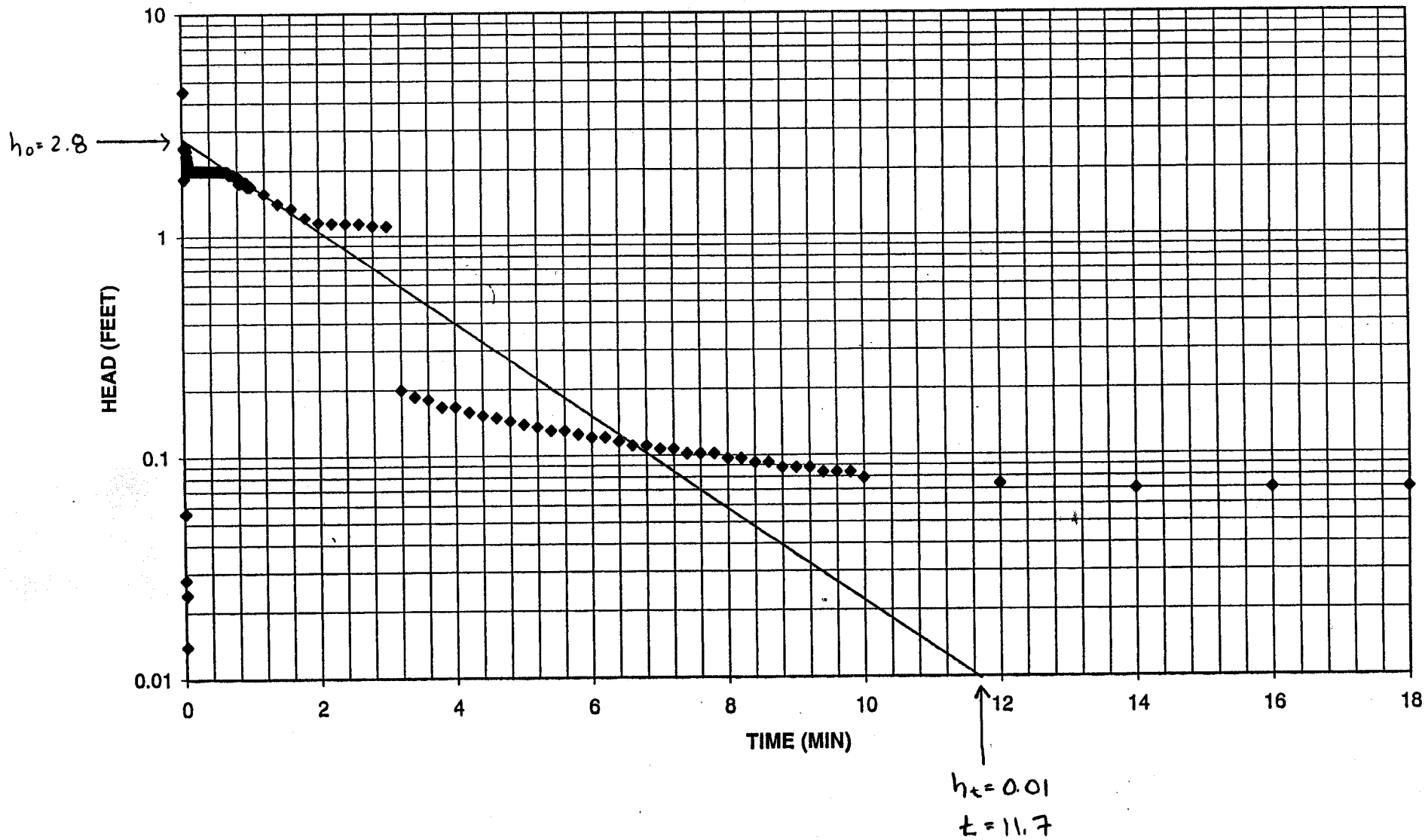
c:\andy\ncarolina\nwake\slug\MW19R2.xls

MW-20 FALLING HEAD SLUG TEST
NORTH WAKE COUNTY LANDFILL
RALEIGH, NORTH CAROLINA



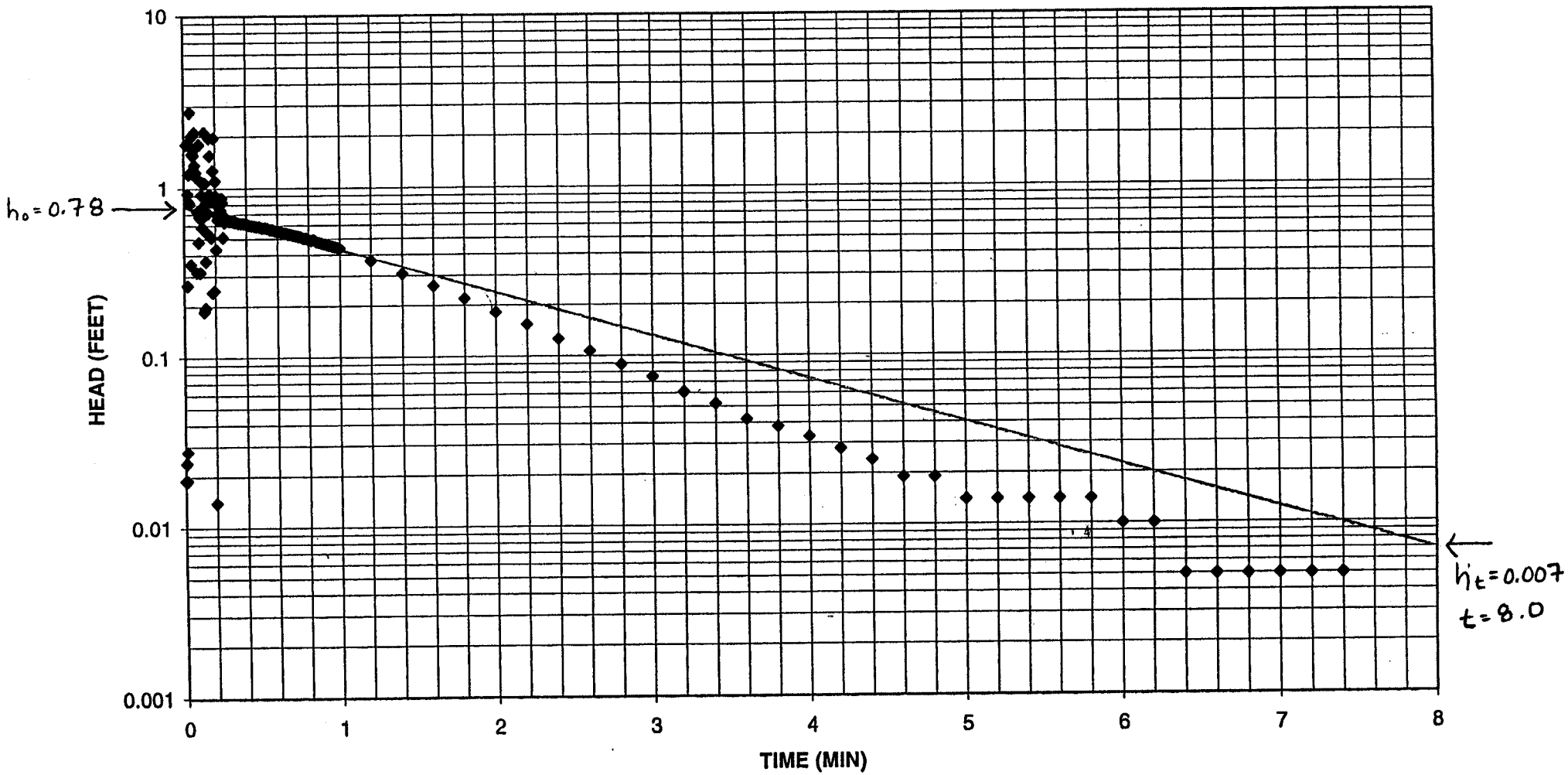
c:\andy\ncarolina\nwake\slug\MW20F.xls

MW-20 RECOVERY SLUG TEST
NORTH WAKE COUNTY LANDFILL
RALEIGH, NORTH CAROLINA



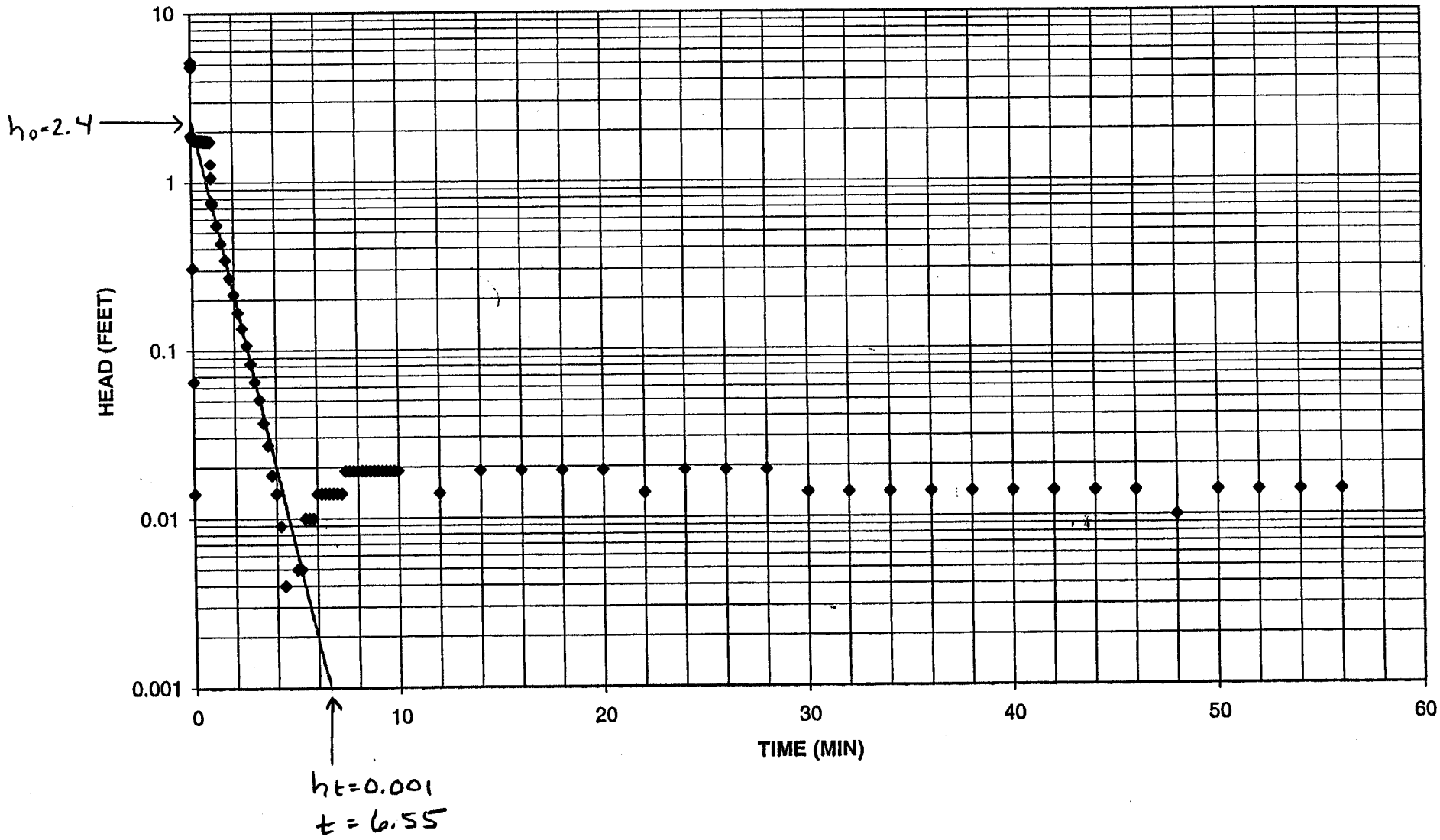
c:\andy\ncarolina\nwake\slug\MW20R.xls

MW-21 FALLING HEAD SLUG TEST
NORTH WAKE COUNTY LANDFILL
RALEIGH, NORTH CAROLINA



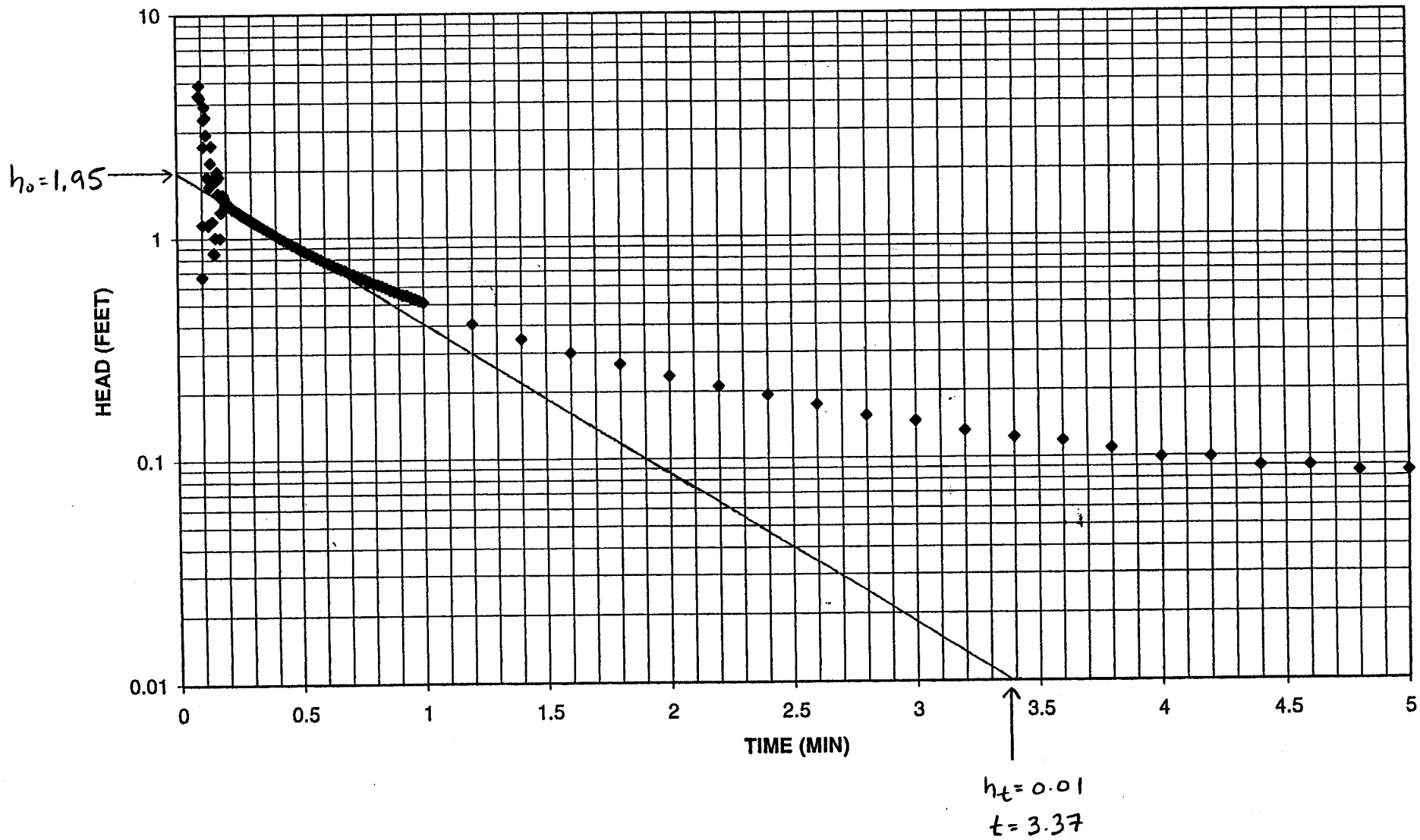
c:\andy\ncarolina\nwake\slug\MW21F.xls

MW-21 RECOVERY SLUG TEST
NORTH WAKE COUNTY LANDFILL
RALEIGH, NORTH CAROLINA



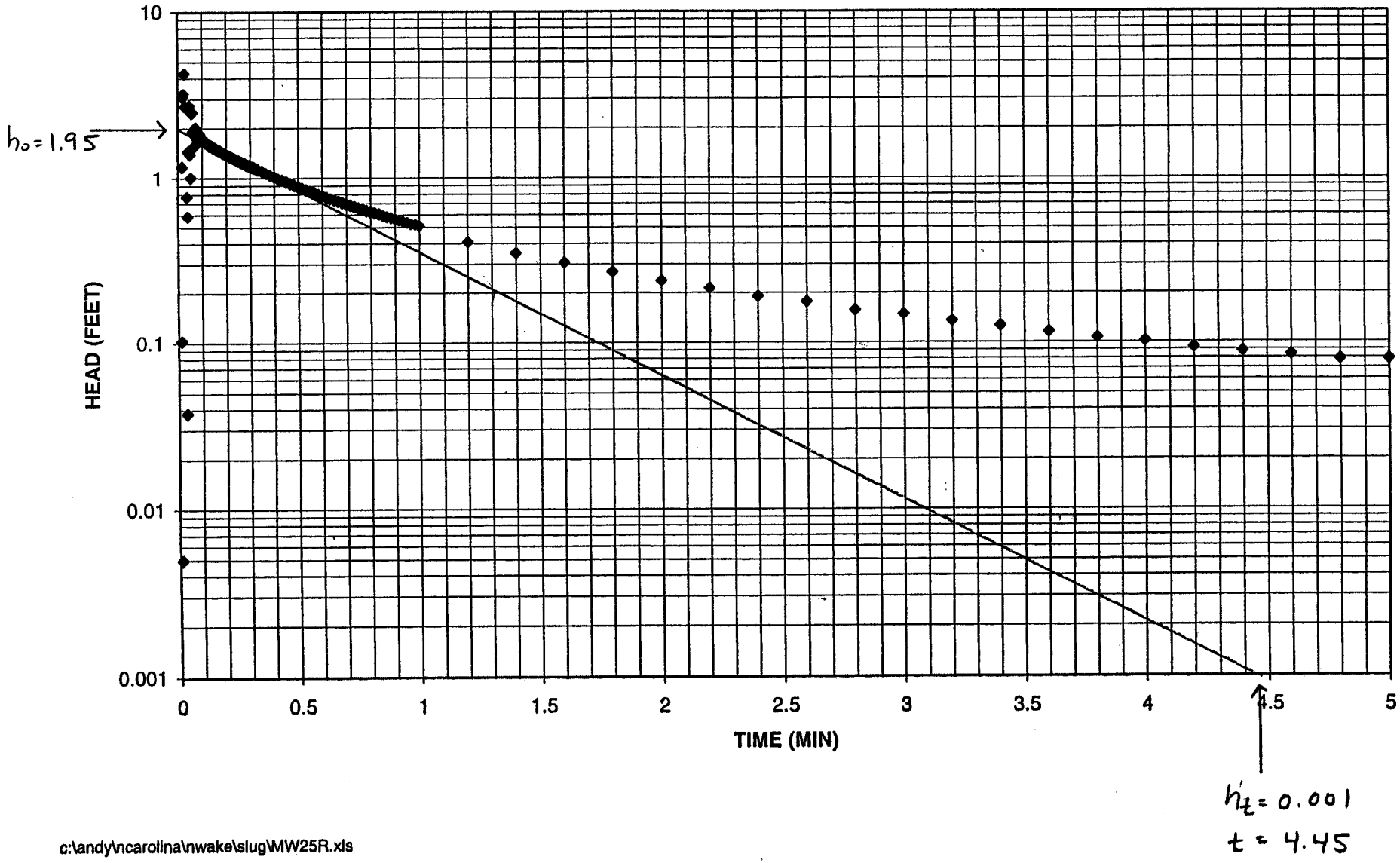
c:\andy\ncarolina\nwake\slug\MW21R.xls

MW-25 FALLING HEAD SLUG TEST
NORTH WAKE COUNTY LANDFILL
RALEIGH, NORTH CAROLINA



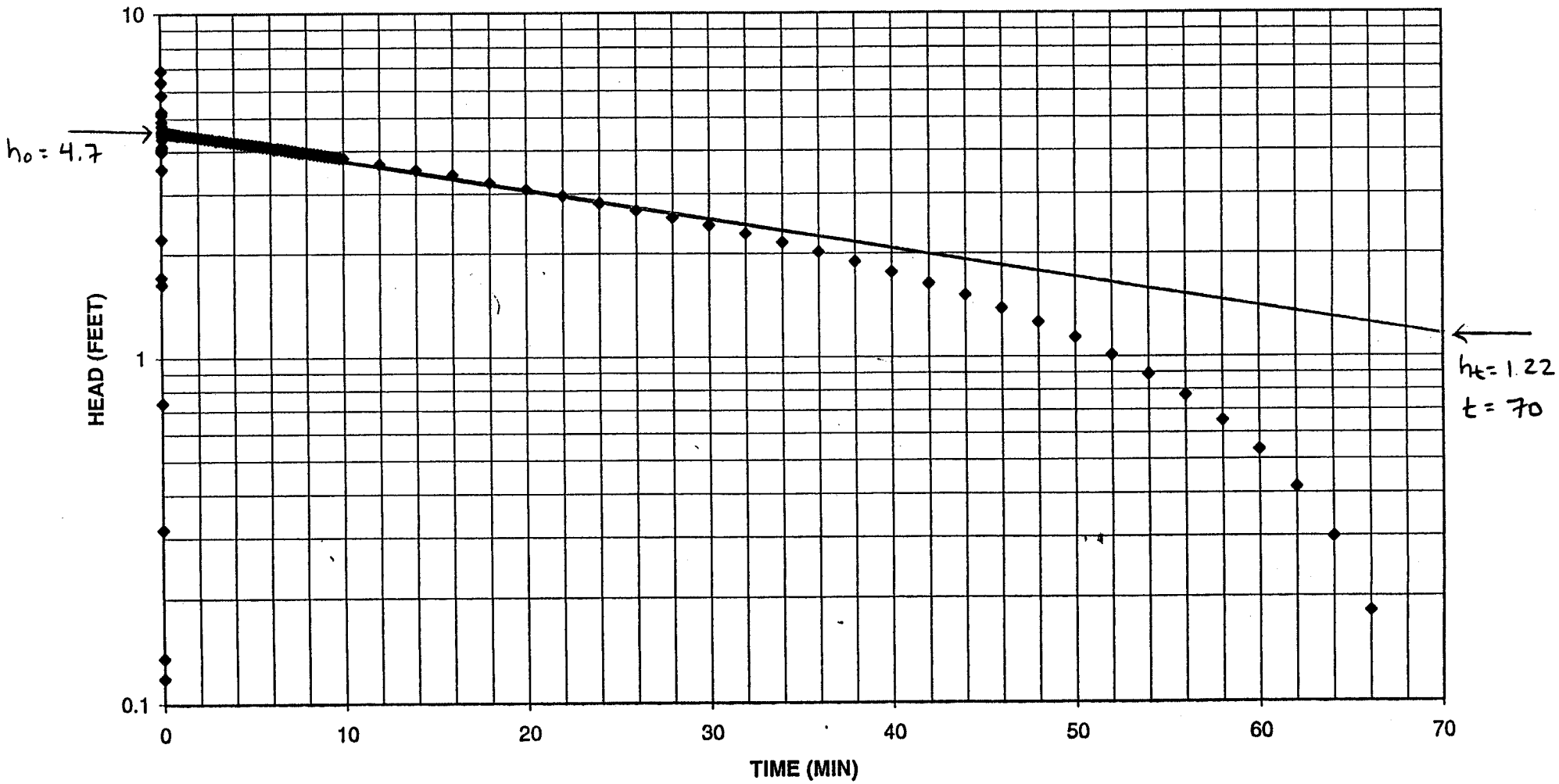
c:\andy\ncarolina\nwake\slug\MW25F.xls

MW-25 RECOVERY SLUG TEST
NORTH WAKE COUNTY LANDFILL
RALEIGH, NORTH CAROLINA



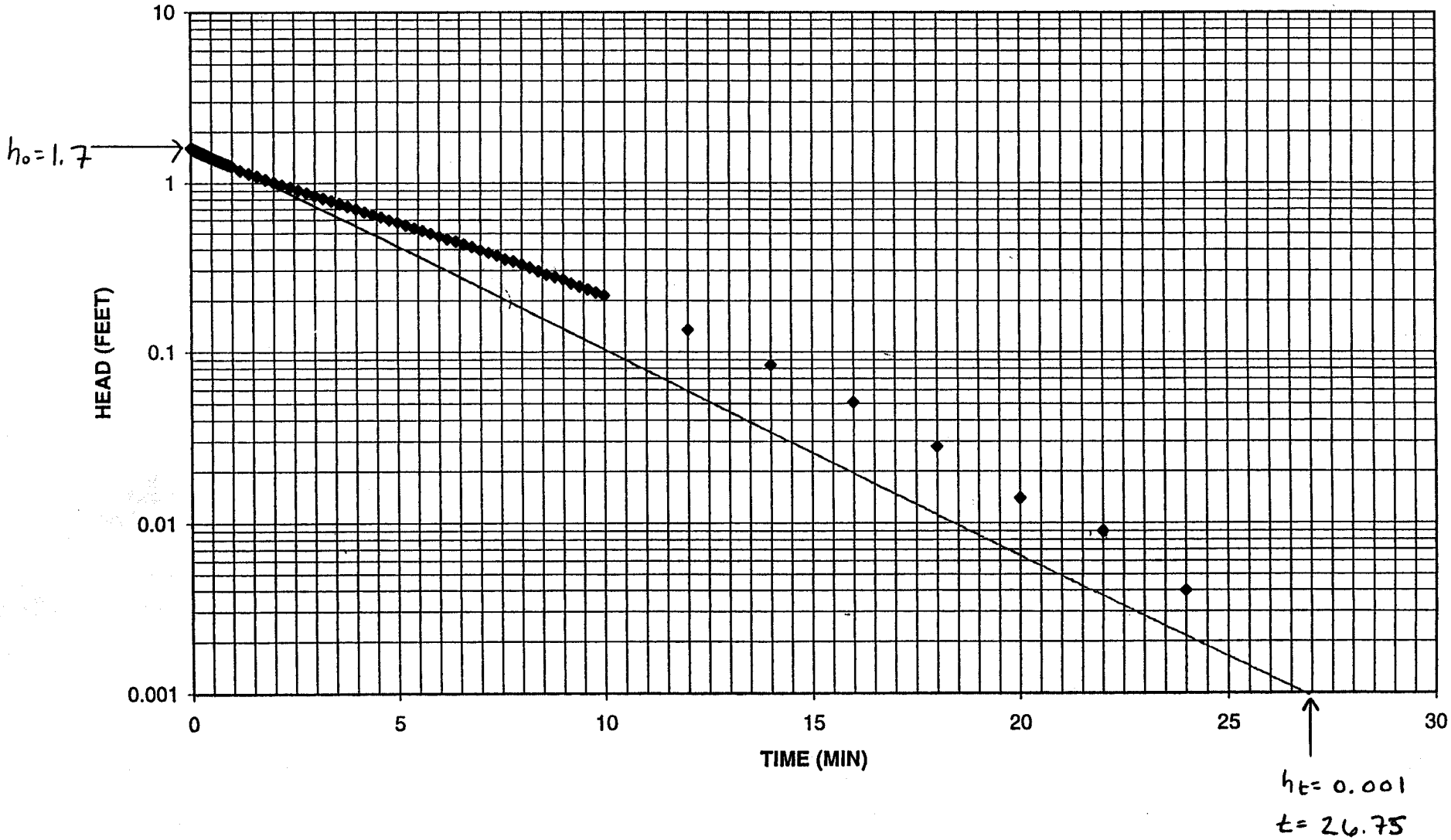
c:\andy\ncarolina\nwake\slug\MW25R.xls

MW-25D FALLING HEAD SLUG TEST
NORTH WAKE COUNTY LANDFILL
RALEIGH, NORTH CAROLINA



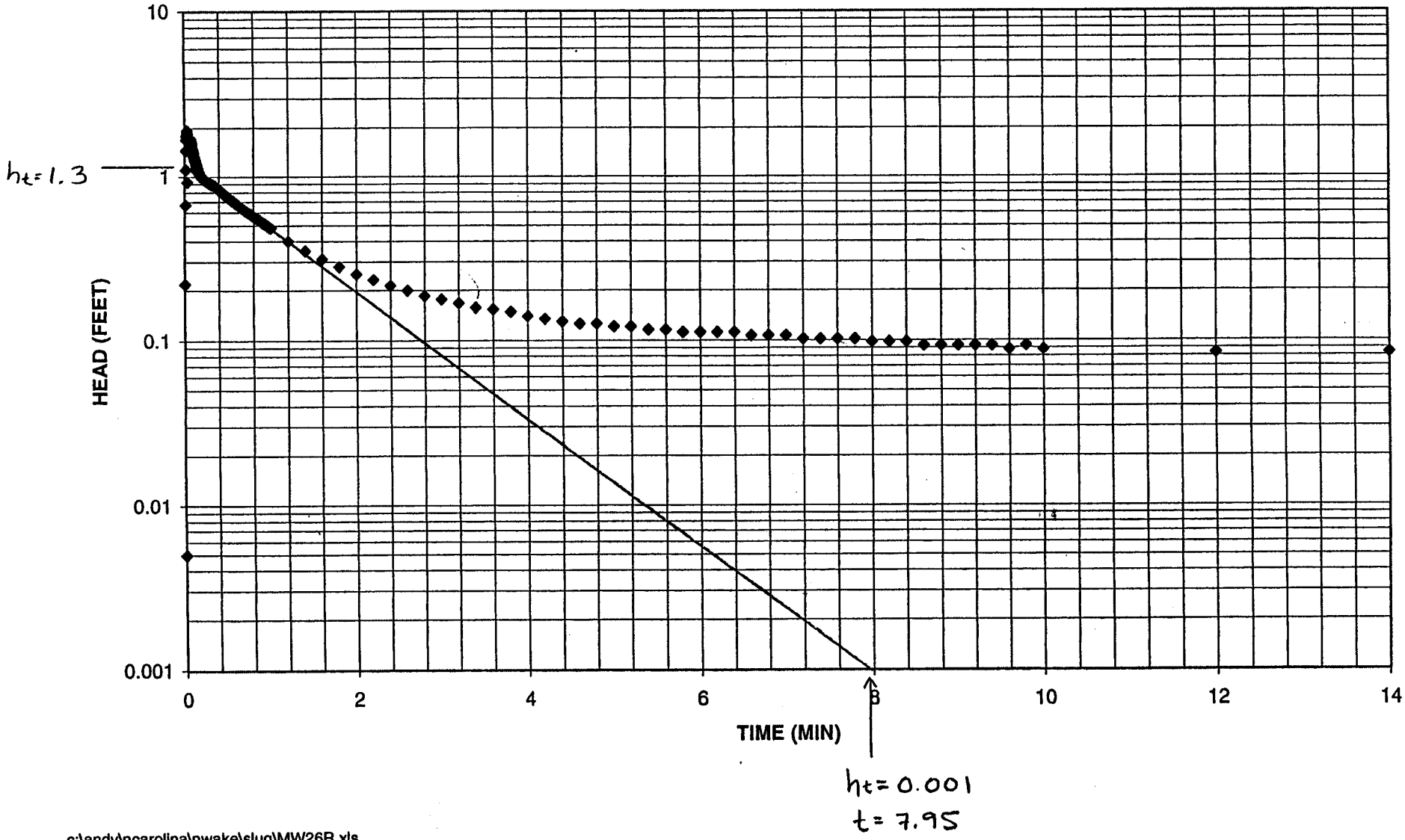
c:\andy\ncarolina\nwake\slug\MW25D-F.xls

MW-26 FALLING HEAD SLUG TEST
NORTH WAKE COUNTY LANDFILL
RALEIGH, NORTH CAROLINA



c:\andy\ncarolina\nwake\slug\MW26F.xls

MW-26 RECOVERY SLUG TEST
NORTH WAKE COUNTY LANDFILL
RALEIGH, NORTH CAROLINA



c:\andy\ncarolina\nwake\slug\MW26R.xls

APPENDIX C
LABORATORY DATA (MARCH 1999)

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID: MW-19
Client Project ID:
Lab Sample ID: 58244
Lab Project ID: G175-55
Matrix: Water

Date Analyzed: 3/17/99
Analyzed By: CKC
Date Collected: 3/8/99
Date Received: 3/9/99
Dilution: 1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)
Acetone	100	BQL
Acrylonitrile	200	BQL
Benzene	5.0	BQL
Bromochloromethane	5.0	BQL
Bromodichloromethane	5.0	BQL
Bromoform	5.0	BQL
Carbon disulfide	100	BQL
Carbon tetrachloride	10	BQL
Chlorobenzene	5.0	BQL
Chloroethane	10	BQL
Chloroform	5.0	BQL
Chlorodibromomethane	5.0	BQL
DBCP (1,2-Dibromo-3-chloropropane)	25	BQL
Ethylene dibromide (EDB)	5.0	BQL
o-Dichlorobenzene	5.0	BQL
p-Dichlorobenzene	5.0	BQL
t-1,4-Dichloro-2-butene	100	BQL
1,1-Dichloroethane	5.0	BQL
Ethylene dichloride	5.0	BQL
Vinylidene chloride	5.0	BQL
cis-1,2-Dichloroethene	5.0	BQL
t-1,2-Dichloroethene	5.0	BQL
Propylene dichloride	5.0	BQL
cis-1,3-Dichloropropene	10	BQL
t-1,3-Dichloropropene	10	BQL
Ethylbenzene	5.0	BQL
Methyl butyl ketone	50	BQL
Methyl bromide	10	BQL
Methyl chloride	10	BQL
Methylene bromide	10	BQL
Methylene chloride	10	BQL
MEK (2-Butanone)	100	BQL
Methyl iodide	10	BQL
Methyl isobutyl ketone	100	BQL
Styrene	10	BQL
1,1,1,2-Tetrachloroethane	5.0	BQL
1,1,2,2-Tetrachloroethane	5.0	BQL
Tetrachloroethylene	5.0	BQL
Toluene	5.0	BQL
1,1,1-Trichloroethane	5.0	BQL
1,1,2-Trichloroethane	5.0	BQL
Trichloroethene	5.0	BQL
CFC-11 (Trichlorofluoromethane)	5.0	BQL
1,2,3-Trichloropropane	15	BQL
Vinyl acetate	50	BQL
Vinyl chloride	10	BQL
Xylenes (total)	5.0	BQL

Reviewed by: MW

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID: MW-19
Client Project ID:
Lab Sample ID: 58244
Lab Project ID: G175-55
Matrix: Water

Date Analyzed: 3/17/99
Analyzed By: CKC
Date Collected: 3/8/99
Date Received: 3/9/99
Dilution: 1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)

Surrogate Spike Recoveries

Compound	Spike Added (ug/L)	Surrogate Result (ug/L)	%Rec
Bromofluorobenzene	10.0	10.1	101
1,2-Dichloroethane-d4	10.0	9.5	95
Toluene-d8	10.0	9.9	99

Comments:

All results are corrected for dilution.

Reviewed by: [illegible]

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID: Trip Blank
Client Project ID:
Lab Sample ID: 58245
Lab Project ID: G175-55
Matrix: Water

Date Analyzed: 3/15/99
Analyzed By: CKC
Date Collected: 3/8/99
Date Received: 3/9/99
Dilution: 1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)
Acetone	100	BQL
Acrylonitrile	200	BQL
Benzene	5.0	BQL
Bromochloromethane	5.0	BQL
Bromodichloromethane	5.0	BQL
Bromoform	5.0	BQL
Carbon disulfide	100	BQL
Carbon tetrachloride	10	BQL
Chlorobenzene	5.0	BQL
Chloroethane	10	BQL
Chloroform	5.0	BQL
Chlorodibromomethane	5.0	BQL
DBCP (1,2-Dibromo-3-chloropropane)	25	BQL
Ethylene dibromide (EDB)	5.0	BQL
o-Dichlorobenzene	5.0	BQL
p-Dichlorobenzene	5.0	BQL
t-1,4-Dichloro-2-butene	100	BQL
1,1-Dichloroethane	5.0	BQL
Ethylene dichloride	5.0	BQL
Vinylidene chloride	5.0	BQL
cis-1,2-Dichloroethene	5.0	BQL
t-1,2-Dichloroethene	5.0	BQL
Propylene dichloride	5.0	BQL
cis-1,3-Dichloropropene	10	BQL
t-1,3-Dichloropropene	10	BQL
Ethylbenzene	5.0	BQL
Methyl butyl ketone	50	BQL
Methyl bromide	10	BQL
Methyl chloride	10	BQL
Methylene bromide	10	BQL
Methylene chloride	10	BQL
MEK (2-Butanone)	100	BQL
Methyl iodide	10	BQL
Methyl isobutyl ketone	100	BQL
Styrene	10	BQL
1,1,1,2-Tetrachloroethane	5.0	BQL
1,1,2,2-Tetrachloroethane	5.0	BQL
Tetrachloroethylene	5.0	BQL
Toluene	5.0	BQL
1,1,1-Trichloroethane	5.0	BQL
1,1,2-Trichloroethane	5.0	BQL
Trichloroethene	5.0	BQL
CFC-11 (Trichlorofluoromethane)	5.0	BQL
1,2,3-Trichloropropane	15	BQL
Vinyl acetate	50	BQL
Vinyl chloride	10	BQL
Xylenes (total)	5.0	BQL

Reviewed by: _____

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles

by GCMS 8260B

Client Sample ID:	Trip Blank	Date Analyzed:	3/15/99
Client Project ID:		Analyzed By:	CKC
Lab Sample ID:	58245	Date Collected:	3/8/99
Lab Project ID:	G175-55	Date Received:	3/9/99
Matrix:	Water	Dilution:	1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)

Surrogate Spike Recoveries

Compound	Spike Added (ug/L)	Surrogate Result (ug/L)	%Rec
Bromofluorobenzene	10.0	10.9	109
1,2-Dichloroethane-d4	10.0	8.9	89
Toluene-d8	10.0	9.8	98

Comments:

All results are corrected for dilution.

Reviewed by: [illegible]

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix 1 Metals

Client Sample ID:	MW-19	Analyzed By:	JMF
Client Project ID:		Date Collected:	3/8/99
Lab Sample ID:	58244	Date Received:	3/9/99
Lab Project ID:	G175-55	Matrix:	Water

Metals	Result	Quantitation Limit	Units	Procedure	Date Analyzed
Antimony	BQL	0.0300	MG/L	6010B	3/26/99
Arsenic	BQL	0.0100	MG/L	6010B	3/26/99
Barium	BQL	0.500	MG/L	6010B	3/26/99
Beryllium	BQL	0.0020	MG/L	6010B	3/26/99
Cadmium	**0.0030**	0.0010	MG/L	6010B	3/26/99
Chromium	**0.124**	0.0100	MG/L	6010B	3/26/99
Cobalt	**0.0285**	0.0100	MG/L	6010B	3/26/99
Copper	BQL	0.200	MG/L	6010B	3/26/99
Lead	**0.0124**	0.0100	MG/L	6010B	3/26/99
Nickel	**0.0560**	0.0500	MG/L	6010B	3/26/99
Selenium	BQL	0.0200	MG/L	6010B	3/26/99
Silver	BQL	0.0100	MG/L	6010B	3/26/99
Thallium	BQL	0.0100	MG/L	6010B	3/26/99
Vanadium	**0.0826**	0.0400	MG/L	6010B	3/26/99
Zinc	**0.0573**	0.0500	MG/L	6010B	3/26/99

Comments
BQL = Below Quantitation Limits

Reviewed By: MM

PARADIGM ANALYTICAL LABORATORIES, INC.
2627 Northchase Parkway SE, Wilmington, NC 28405
Phone: (910)-350-1903 FAX: (910)-350-1557

Chain-of Custody Record & Analytical Request

COC# 08329

Page 1 of 1

Client: CDM
Address: 5400 GLENWOOD AVE SUITE 300
Address: Raleigh 27612
Quote #: 1165

Project ID:
P.O. Number:
Contact: Tim Grant
Phone: (919) 787-5620

Date: 3-8-99
Turnaround: NORMAL
Job Number: 4172-25632

Report To: Tim GRANT CDM
Invoice To: SAME

Sample ID	Date	Time	Matrix	Preservatives: HCL	Preservatives: HNO	Preservatives	Preservatives	Analyses: 8260	Analyses: Metal	Analyses	Analyses	Analyses	Analyses	Analyses	Analyses	Analyses	Analyses	Comments: Please specify any special reporting requirements
																		E175-55
MW-19	3-8-99	1300	GW	✓	✓			✓	✓									N.C. Landfill Appendix I

Relinquished By	Date	Time	Received By	Date	Time	Temperature	Sampled By	Airbill #
Tim Grant	3-8-99	1700	FEDEX					
			Emily Rakas	3/9/99	10:55	1.3C		

APPENDIX D
LABORATORY DATA - (APRIL 1999)

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix 1 Metals

Client Sample ID:	MW-25	Analyzed By:	JMF
Client Project ID:	N Wake	Date Collected:	4/15/99
Lab Sample ID:	61160	Date Received:	4/16/99
Lab Project ID:	G175-63	Matrix:	Water

Metals	Result	Quantitation Limit	Units	Procedure	Date Analyzed
Antimony	BQL	0.0300	MG/L	6010B	4/28/99
Arsenic	BQL	0.0100	MG/L	6010B	4/28/99
Barium	BQL	0.500	MG/L	6010B	4/28/99
Beryllium	BQL	0.0020	MG/L	6010B	4/28/99
Cadmium	BQL	0.0010	MG/L	6010B	4/28/99
Chromium	BQL	0.0100	MG/L	6010B	4/28/99
Cobalt	BQL	0.0100	MG/L	6010B	4/28/99
Copper	BQL	0.200	MG/L	6010B	4/28/99
Lead	BQL	0.0100	MG/L	6010B	4/28/99
Nickel	BQL	0.0500	MG/L	6010B	4/28/99
Selenium	BQL	0.0200	MG/L	6010B	4/28/99
Silver	BQL	0.0100	MG/L	6010B	4/28/99
Thallium	BQL	0.0100	MG/L	6010B	4/28/99
Vanadium	BQL	0.0400	MG/L	6010B	4/28/99
Zinc	BQL	0.0500	MG/L	6010B	4/28/99

Comments

BQL = Below Quantitation Limits

Reviewed By:

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix 1 Metals

Client Sample ID:	MW-25D	Analyzed By:	JMF
Client Project ID:	N Wake	Date Collected:	4/15/99
Lab Sample ID:	61161	Date Received:	4/16/99
Lab Project ID:	G175-63	Matrix:	Water

Metals	Result	Quantitation Limit	Units	Procedure	Date Analyzed
Antimony	BQL	0.0300	MG/L	6010B	4/28/99
Arsenic	BQL	0.0100	MG/L	6010B	4/28/99
Barium	BQL	0.500	MG/L	6010B	4/28/99
Beryllium	BQL	0.0020	MG/L	6010B	4/28/99
Cadmium	BQL	0.0010	MG/L	6010B	4/28/99
Chromium	BQL	0.0100	MG/L	6010B	4/28/99
Cobalt	BQL	0.0100	MG/L	6010B	4/28/99
Copper	BQL	0.200	MG/L	6010B	4/28/99
Lead	BQL	0.0100	MG/L	6010B	4/28/99
Nickel	BQL	0.0500	MG/L	6010B	4/28/99
Selenium	BQL	0.0200	MG/L	6010B	4/28/99
Silver	BQL	0.0100	MG/L	6010B	4/28/99
Thallium	BQL	0.0100	MG/L	6010B	4/28/99
Vanadium	BQL	0.0400	MG/L	6010B	4/28/99
Zinc	BQL	0.0500	MG/L	6010B	4/28/99

Comments

BQL = Below Quantitation Limits

Reviewed By: _____

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix 1 Metals

Client Sample ID:	MW-19	Analyzed By:	JMF
Client Project ID:	N Wake	Date Collected:	4/15/99
Lab Sample ID:	61162	Date Received:	4/16/99
Lab Project ID:	G175-63	Matrix:	Water

Metals	Result	Quantitation Limit	Units	Procedure	Date Analyzed
Antimony	BQL	0.0300	MG/L	6010B	4/28/99
Arsenic	BQL	0.0100	MG/L	6010B	4/28/99
Barium	BQL	0.500	MG/L	6010B	4/28/99
Beryllium	BQL	0.0020	MG/L	6010B	4/28/99
Cadmium	BQL	0.0010	MG/L	6010B	4/28/99
Chromium	BQL	0.0100	MG/L	6010B	4/28/99
Cobalt	BQL	0.0100	MG/L	6010B	4/28/99
Copper	BQL	0.200	MG/L	6010B	4/28/99
Lead	BQL	0.0100	MG/L	6010B	4/28/99
Nickel	BQL	0.0500	MG/L	6010B	4/28/99
Selenium	BQL	0.0200	MG/L	6010B	4/28/99
Silver	BQL	0.0100	MG/L	6010B	4/28/99
Thallium	BQL	0.0100	MG/L	6010B	4/28/99
Vanadium	BQL	0.0400	MG/L	6010B	4/28/99
Zinc	BQL	0.0500	MG/L	6010B	4/28/99

Comments

BQL = Below Quantitation Limits

Reviewed By: JRJ

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix 1 Metals

Client Sample ID:	MW-20	Analyzed By:	JMF
Client Project ID:	N Wake	Date Collected:	4/15/99
Lab Sample ID:	61164	Date Received:	4/16/99
Lab Project ID:	G175-63	Matrix:	Water

Metals	Result	Quantitation Limit	Units	Procedure	Date Analyzed
Antimony	BQL	0.0300	MG/L	6010B	4/28/99
Arsenic	BQL	0.0100	MG/L	6010B	4/28/99
Barium	BQL	0.500	MG/L	6010B	4/28/99
Beryllium	BQL	0.0020	MG/L	6010B	4/28/99
Cadmium	**0.0012**	0.0010	MG/L	6010B	4/28/99
Chromium	**0.0118**	0.0100	MG/L	6010B	4/28/99
Cobalt	**0.0360**	0.0100	MG/L	6010B	4/28/99
Copper	BQL	0.200	MG/L	6010B	4/28/99
Lead	BQL	0.0100	MG/L	6010B	4/28/99
Nickel	BQL	0.0500	MG/L	6010B	4/28/99
Selenium	BQL	0.0200	MG/L	6010B	4/28/99
Silver	BQL	0.0100	MG/L	6010B	4/28/99
Thallium	BQL	0.0100	MG/L	6010B	4/28/99
Vanadium	BQL	0.0400	MG/L	6010B	4/28/99
Zinc	**0.0980**	0.0500	MG/L	6010B	4/28/99

Comments

BQL = Below Quantitation Limits

Reviewed By: JMJ

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix 1 Metals

Client Sample ID:	MW-21	Analyzed By:	JMF
Client Project ID:	N Wake	Date Collected:	4/15/99
Lab Sample ID:	61165	Date Received:	4/16/99
Lab Project ID:	G175-63	Matrix:	Water

Metals	Result	Quantitation Limit	Units	Procedure	Date Analyzed
Antimony	BQL	0.0300	MG/L	6010B	4/28/99
Arsenic	BQL	0.0100	MG/L	6010B	4/28/99
Barium	BQL	0.500	MG/L	6010B	4/28/99
Beryllium	BQL	0.0020	MG/L	6010B	4/28/99
Cadmium	**0.0040**	0.0010	MG/L	6010B	4/28/99
Chromium	BQL	0.0100	MG/L	6010B	4/28/99
Cobalt	**0.0632**	0.0100	MG/L	6010B	4/28/99
Copper	**0.362**	0.200	MG/L	6010B	4/28/99
Lead	**0.0147**	0.0100	MG/L	6010B	4/28/99
Nickel	**0.0527**	0.0500	MG/L	6010B	4/28/99
Selenium	BQL	0.0200	MG/L	6010B	4/28/99
Silver	BQL	0.0100	MG/L	6010B	4/28/99
Thallium	BQL	0.0100	MG/L	6010B	4/28/99
Vanadium	**0.0565**	0.0400	MG/L	6010B	4/28/99
Zinc	**0.347**	0.0500	MG/L	6010B	4/28/99

Comments

BQL = Below Quantitation Limits

Reviewed By: JW

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID:	MW-25	Date Analyzed:	4/27/99
Client Project ID:	N Wake	Analyzed By:	CKC
Lab Sample ID:	61160	Date Collected:	4/15/99
Lab Project ID:	G175-63	Date Received:	4/16/99
Matrix:	Water	Dilution:	1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)
Acetone	100	BQL
Acrylonitrile	200	BQL
Benzene	5.0	BQL
Bromochloromethane	5.0	BQL
Bromodichloromethane	5.0	BQL
Bromoform	5.0	BQL
Carbon disulfide	100	BQL
Carbon tetrachloride	10	BQL
Chlorobenzene	5.0	BQL
Chloroethane	10	BQL
Chloroform	5.0	BQL
Chlorodibromomethane	5.0	BQL
DBCP (1,2-Dibromo-3-chloropropane)	25	BQL
Ethylene dibromide (EDB)	5.0	BQL
o-Dichlorobenzene	5.0	BQL
p-Dichlorobenzene	5.0	BQL
t-1,4-Dichloro-2-butene	100	BQL
1,1-Dichloroethane	5.0	BQL
Ethylene dichloride	5.0	BQL
Vinylidene chloride	5.0	BQL
cis-1,2-Dichloroethene	5.0	BQL
t-1,2-Dichloroethene	5.0	BQL
Propylene dichloride	5.0	BQL
cis-1,3-Dichloropropene	10	BQL
t-1,3-Dichloropropene	10	BQL
Ethylbenzene	5.0	BQL
Methyl butyl ketone	50	BQL
Methyl bromide	10	BQL
Methyl chloride	10	BQL
Methylene bromide	10	BQL
Methylene chloride	10	BQL
MEK (2-Butanone)	100	BQL
Methyl iodide	10	BQL
Methyl isobutyl ketone	100	BQL
Styrene	10	BQL
1,1,1,2-Tetrachloroethane	5.0	BQL
1,1,2,2-Tetrachloroethane	5.0	BQL
Tetrachloroethylene	5.0	BQL
Toluene	5.0	BQL
1,1,1-Trichloroethane	5.0	BQL
1,1,2-Trichloroethane	5.0	BQL
Trichloroethene	5.0	BQL
CFC-11 (Trichlorofluoromethane)	5.0	BQL
1,2,3-Trichloropropane	15	BQL
Vinyl acetate	50	BQL
Vinyl chloride	10	BQL
Xylenes (total)	5.0	BQL

Reviewed by: JRU

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles

by GCMS 8260B

Client Sample ID:	MW-25	Date Analyzed:	4/27/99
Client Project ID:	N Wake	Analyzed By:	CKC
Lab Sample ID:	61160	Date Collected:	4/15/99
Lab Project ID:	G175-63	Date Received:	4/16/99
Matrix:	Water	Dilution:	1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)

Surrogate Spike Recoveries

Compound	Spike Added (ug/L)	Surrogate Result (ug/L)	%Rec
Bromofluorobenzene	10.0	9.3	93
1,2-Dichloroethane-d4	10.0	9.9	99
Toluene-d8	10.0	10.0	100

Comments:

All results are corrected for dilution.

Reviewed by: _____

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID: MW-25D
Client Project ID: N Wake
Lab Sample ID: 61161
Lab Project ID: G175-63
Matrix: Water

Date Analyzed: 4/27/99
Analyzed By: CKC
Date Collected: 4/15/99
Date Received: 4/16/99
Dilution: 1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)
Acetone	100	BQL
Acrylonitrile	200	BQL
Benzene	5.0	BQL
Bromochloromethane	5.0	BQL
Bromodichloromethane	5.0	BQL
Bromoform	5.0	BQL
Carbon disulfide	100	BQL
Carbon tetrachloride	10	BQL
Chlorobenzene	5.0	BQL
Chloroethane	10	BQL
Chloroform	5.0	BQL
Chlorodibromomethane	5.0	BQL
DBCP (1,2-Dibromo-3-chloropropane)	25	BQL
Ethylene dibromide (EDB)	5.0	BQL
o-Dichlorobenzene	5.0	BQL
p-Dichlorobenzene	5.0	BQL
t-1,4-Dichloro-2-butene	100	BQL
1,1-Dichloroethane	5.0	BQL
Ethylene dichloride	5.0	BQL
Vinylidene chloride	5.0	BQL
cis-1,2-Dichloroethene	5.0	BQL
t-1,2-Dichloroethene	5.0	BQL
Propylene dichloride	5.0	BQL
cis-1,3-Dichloropropene	10	BQL
t-1,3-Dichloropropene	10	BQL
Ethylbenzene	5.0	BQL
Methyl butyl ketone	50	BQL
Methyl bromide	10	BQL
Methyl chloride	10	BQL
Methylene bromide	10	BQL
Methylene chloride	10	BQL
MEK (2-Butanone)	100	BQL
Methyl iodide	10	BQL
Methyl isobutyl ketone	100	BQL
Styrene	10	BQL
1,1,1,2-Tetrachloroethane	5.0	BQL
1,1,2,2-Tetrachloroethane	5.0	BQL
Tetrachloroethylene	5.0	BQL
Toluene	5.0	BQL
1,1,1-Trichloroethane	5.0	BQL
1,1,2-Trichloroethane	5.0	BQL
Trichloroethene	5.0	BQL
CFC-11 (Trichlorofluoromethane)	5.0	BQL
1,2,3-Trichloropropane	15	BQL
Vinyl acetate	50	BQL
Vinyl chloride	10	BQL
Xylenes (total)	5.0	BQL

Flags: BQL = Below Quantitation Limit

Reviewed by: JW

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID: MW-25D
Client Project ID: N Wake
Lab Sample ID: 61161
Lab Project ID: G175-63
Matrix: Water

Date Analyzed: 4/27/99
Analyzed By: CKC
Date Collected: 4/15/99
Date Received: 4/16/99
Dilution: 1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)

Surrogate Spike Recoveries

Compound	Spike Added (ug/L)	Surrogate Result (ug/L)	%Rec
Bromofluorobenzene	10.0	9.3	93
1,2-Dichloroethane-d4	10.0	9.9	99
Toluene-d8	10.0	10.0	100

Comments:

All results are corrected for dilution.

Flags: BQL = Below Quantitation Limit

Reviewed by: [signature]

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID: MW-19
Client Project ID: N Wake
Lab Sample ID: 61162
Lab Project ID: G175-63
Matrix: Water

Date Analyzed: 4/27/99
Analyzed By: CKC
Date Collected: 4/15/99
Date Received: 4/16/99
Dilution: 1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)
Acetone	100	BQL
Acrylonitrile	200	BQL
Benzene	5.0	BQL
Bromochloromethane	5.0	BQL
Bromodichloromethane	5.0	BQL
Bromoform	5.0	BQL
Carbon disulfide	100	BQL
Carbon tetrachloride	10	BQL
Chlorobenzene	5.0	BQL
Chloroethane	10	BQL
Chloroform	5.0	BQL
Chlorodibromomethane	5.0	BQL
DBCP (1,2-Dibromo-3-chloropropane)	25	BQL
Ethylene dibromide (EDB)	5.0	BQL
o-Dichlorobenzene	5.0	BQL
p-Dichlorobenzene	5.0	BQL
t-1,4-Dichloro-2-butene	100	BQL
1,1-Dichloroethane	5.0	BQL
Ethylene dichloride	5.0	BQL
Vinylidene chloride	5.0	BQL
cis-1,2-Dichloroethene	5.0	BQL
t-1,2-Dichloroethene	5.0	BQL
Propylene dichloride	5.0	BQL
cis-1,3-Dichloropropene	10	BQL
t-1,3-Dichloropropene	10	BQL
Ethylbenzene	5.0	BQL
Methyl butyl ketone	50	BQL
Methyl bromide	10	BQL
Methyl chloride	10	BQL
Methylene bromide	10	BQL
Methylene chloride	10	BQL
MEK (2-Butanone)	100	BQL
Methyl iodide	10	BQL
Methyl isobutyl ketone	100	BQL
Styrene	10	BQL
1,1,1,2-Tetrachloroethane	5.0	BQL
1,1,2,2-Tetrachloroethane	5.0	BQL
Tetrachloroethylene	5.0	BQL
Toluene	5.0	BQL
1,1,1-Trichloroethane	5.0	BQL
1,1,2-Trichloroethane	5.0	BQL
Trichloroethene	5.0	BQL
CFC-11 (Trichlorofluoromethane)	5.0	BQL
1,2,3-Trichloropropane	15	BQL
Vinyl acetate	50	BQL
Vinyl chloride	10	BQL
Xylenes (total)	5.0	BQL

Reviewed by: [illegible]

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID: MW-19
Client Project ID: N Wake
Lab Sample ID: 61162
Lab Project ID: G175-63
Matrix: Water

Date Analyzed: 4/27/99
Analyzed By: CKC
Date Collected: 4/15/99
Date Received: 4/16/99
Dilution: 1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)

Surrogate Spike Recoveries

Compound	Spike Added (ug/L)	Surrogate Result (ug/L)	%Rec
Bromofluorobenzene	10.0	9.4	94
1,2-Dichloroethane-d4	10.0	9.9	99
Toluene-d8	10.0	9.9	99

Comments:

All results are corrected for dilution.

Flags: BQL = Below Quantitation Limit

Reviewed by:

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID: MW-20
Client Project ID: N Wake
Lab Sample ID: 61164
Lab Project ID: G175-63
Matrix: Water

Date Analyzed: 4/27/99
Analyzed By: CKC
Date Collected: 4/15/99
Date Received: 4/16/99
Dilution: 1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)
Acetone	100	BQL
Acrylonitrile	200	BQL
Benzene	5.0	BQL
Bromochloromethane	5.0	BQL
Bromodichloromethane	5.0	BQL
Bromoform	5.0	BQL
Carbon disulfide	100	BQL
Carbon tetrachloride	10	BQL
Chlorobenzene	5.0	BQL
Chloroethane	10	BQL
Chloroform	5.0	BQL
Chlorodibromomethane	5.0	BQL
DBCP (1,2-Dibromo-3-chloropropane)	25	BQL
Ethylene dibromide (EDB)	5.0	BQL
o-Dichlorobenzene	5.0	BQL
p-Dichlorobenzene	5.0	BQL
t-1,4-Dichloro-2-butene	100	BQL
1,1-Dichloroethane	5.0	BQL
Ethylene dichloride	5.0	BQL
Vinylidene chloride	5.0	BQL
cis-1,2-Dichloroethene	5.0	BQL
t-1,2-Dichloroethene	5.0	BQL
Propylene dichloride	5.0	BQL
cis-1,3-Dichloropropene	10	BQL
t-1,3-Dichloropropene	10	BQL
Ethylbenzene	5.0	BQL
Methyl butyl ketone	50	BQL
Methyl bromide	10	BQL
Methyl chloride	10	BQL
Methylene bromide	10	BQL
Methylene chloride	10	BQL
MEK (2-Butanone)	100	BQL
Methyl iodide	10	BQL
Methyl isobutyl ketone	100	BQL
Styrene	10	BQL
1,1,1,2-Tetrachloroethane	5.0	BQL
1,1,2,2-Tetrachloroethane	5.0	BQL
Tetrachloroethylene	5.0	BQL
Toluene	5.0	BQL
1,1,1-Trichloroethane	5.0	BQL
1,1,2-Trichloroethane	5.0	BQL
Trichloroethene	5.0	BQL
CFC-11 (Trichlorofluoromethane)	5.0	BQL
1,2,3-Trichloropropane	15	BQL
Vinyl acetate	50	BQL
Vinyl chloride	10	BQL
Xylenes (total)	5.0	BQL

Reviewed by: [illegible]

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID: MW-20
Client Project ID: N Wake
Lab Sample ID: 61164
Lab Project ID: G175-63
Matrix: Water

Date Analyzed: 4/27/99
Analyzed By: CKC
Date Collected: 4/15/99
Date Received: 4/16/99
Dilution: 1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)

Surrogate Spike Recoveries

Compound	Spike Added (ug/L)	Surrogate Result (ug/L)	%Rec
Bromofluorobenzene	10.0	9.4	94
1,2-Dichloroethane-d4	10.0	9.8	98
Toluene-d8	10.0	9.9	99

Comments:

All results are corrected for dilution.

Reviewed by:

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID: MW-21
Client Project ID: N Wake
Lab Sample ID: 61165
Lab Project ID: G175-63
Matrix: Water

Date Analyzed: 4/27/99
Analyzed By: CKC
Date Collected: 4/15/99
Date Received: 4/16/99
Dilution: 1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)
Acetone	100	BQL
Acrylonitrile	200	BQL
Benzene	5.0	BQL
Bromochloromethane	5.0	BQL
Bromodichloromethane	5.0	BQL
Bromoform	5.0	BQL
Carbon disulfide	100	BQL
Carbon tetrachloride	10	BQL
Chlorobenzene	5.0	BQL
Chloroethane	10	BQL
Chloroform	5.0	BQL
Chlorodibromomethane	5.0	BQL
DBCP (1,2-Dibromo-3-chloropropane)	25	BQL
Ethylene dibromide (EDB)	5.0	BQL
o-Dichlorobenzene	5.0	BQL
p-Dichlorobenzene	5.0	BQL
t-1,4-Dichloro-2-butene	100	BQL
1,1-Dichloroethane	5.0	BQL
Ethylene dichloride	5.0	BQL
Vinylidene chloride	5.0	BQL
cis-1,2-Dichloroethene	5.0	BQL
t-1,2-Dichloroethene	5.0	BQL
Propylene dichloride	5.0	BQL
cis-1,3-Dichloropropene	10	BQL
t-1,3-Dichloropropene	10	BQL
Ethylbenzene	5.0	BQL
Methyl butyl ketone	50	BQL
Methyl bromide	10	BQL
Methyl chloride	10	BQL
Methylene bromide	10	BQL
Methylene chloride	10	BQL
MEK (2-Butanone)	100	BQL
Methyl iodide	10	BQL
Methyl isobutyl ketone	100	BQL
Styrene	10	BQL
1,1,1,2-Tetrachloroethane	5.0	BQL
1,1,2,2-Tetrachloroethane	5.0	BQL
Tetrachloroethylene	5.0	BQL
Toluene	5.0	BQL
1,1,1-Trichloroethane	5.0	BQL
1,1,2-Trichloroethane	5.0	BQL
Trichloroethene	5.0	BQL
CFC-11 (Trichlorofluoromethane)	5.0	BQL
1,2,3-Trichloropropane	15	BQL
Vinyl acetate	50	BQL
Vinyl chloride	10	BQL
Xylenes (total)	5.0	BQL

Reviewed by: [illegible]

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID: MW-21
Client Project ID: N Wake
Lab Sample ID: 61165
Lab Project ID: G175-63
Matrix: Water

Date Analyzed: 4/27/99
Analyzed By: CKC
Date Collected: 4/15/99
Date Received: 4/16/99
Dilution: 1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)

Surrogate Spike Recoveries

Compound	Spike Added (ug/L)	Surrogate Result (ug/L)	%Rec
Bromofluorobenzene	10.0	9.3	93
1,2-Dichloroethane-d4	10.0	10.0	100
Toluene-d8	10.0	10.0	100

Comments:

All results are corrected for dilution.

Reviewed by: _____

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID: SW-2
Client Project ID: N Wake
Lab Sample ID: 61163
Lab Project ID: G175-63
Matrix: Water

Date Analyzed: 4/27/99
Analyzed By: CKC
Date Collected: 4/15/99
Date Received: 4/16/99
Dilution: 1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)
Acetone	100	BQL
Acrylonitrile	200	BQL
Benzene	5.0	BQL
Bromochloromethane	5.0	BQL
Bromodichloromethane	5.0	BQL
Bromoform	5.0	BQL
Carbon disulfide	100	BQL
Carbon tetrachloride	10	BQL
Chlorobenzene	5.0	BQL
Chloroethane	10	BQL
Chloroform	5.0	BQL
Chlorodibromomethane	5.0	BQL
DBCP (1,2-Dibromo-3-chloropropane)	25	BQL
Ethylene dibromide (EDB)	5.0	BQL
o-Dichlorobenzene	5.0	BQL
p-Dichlorobenzene	5.0	BQL
t-1,4-Dichloro-2-butene	100	BQL
1,1-Dichloroethane	5.0	BQL
Ethylene dichloride	5.0	BQL
Vinylidene chloride	5.0	BQL
cis-1,2-Dichloroethene	5.0	BQL
t-1,2-Dichloroethene	5.0	BQL
Propylene dichloride	5.0	BQL
cis-1,3-Dichloropropene	10	BQL
t-1,3-Dichloropropene	10	BQL
Ethylbenzene	5.0	BQL
Methyl butyl ketone	50	BQL
Methyl bromide	10	BQL
Methyl chloride	10	BQL
Methylene bromide	10	BQL
Methylene chloride	10	BQL
MEK (2-Butanone)	100	BQL
Methyl iodide	10	BQL
Methyl isobutyl ketone	100	BQL
Styrene	10	BQL
1,1,1,2-Tetrachloroethane	5.0	BQL
1,1,2,2-Tetrachloroethane	5.0	BQL
Tetrachloroethylene	5.0	BQL
Toluene	5.0	BQL
1,1,1-Trichloroethane	5.0	BQL
1,1,2-Trichloroethane	5.0	BQL
Trichloroethene	5.0	BQL
CFC-11 (Trichlorofluoromethane)	5.0	BQL
1,2,3-Trichloropropane	15	BQL
Vinyl acetate	50	BQL
Vinyl chloride	10	BQL
Xylenes (total)	5.0	BQL

Flags: BQL = Below Quantitation Limit

Reviewed by: JRJ

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID: SW-2
Client Project ID: N Wake
Lab Sample ID: 61163
Lab Project ID: G175-63
Matrix: Water

Date Analyzed: 4/27/99
Analyzed By: CKC
Date Collected: 4/15/99
Date Received: 4/16/99
Dilution: 1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)

Surrogate Spike Recoveries

Compound	Spike Added (ug/L)	Surrogate Result (ug/L)	%Rec
Bromofluorobenzene	10.0	9.4	94
1,2-Dichloroethane-d4	10.0	10.0	100
Toluene-d8	10.0	10.0	100

Comments:

All results are corrected for dilution.

Flags: BQL = Below Quantitation Limit

Reviewed by: _____

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix 1 Metals

Client Sample ID:	SW-2	Analyzed By:	JMF
Client Project ID:	N Wake	Date Collected:	4/15/99
Lab Sample ID:	61163	Date Received:	4/16/99
Lab Project ID:	G175-63	Matrix:	Water

Metals	Result	Quantitation Limit	Units	Procedure	Date Analyzed
Antimony	BQL	0.0300	MG/L	6010B	4/28/99
Arsenic	BQL	0.0100	MG/L	6010B	4/28/99
Barium	BQL	0.500	MG/L	6010B	4/28/99
Beryllium	BQL	0.0020	MG/L	6010B	4/28/99
Cadmium	BQL	0.0010	MG/L	6010B	4/28/99
Chromium	BQL	0.0100	MG/L	6010B	4/28/99
Cobalt	BQL	0.0100	MG/L	6010B	4/28/99
Copper	BQL	0.200	MG/L	6010B	4/28/99
Lead	BQL	0.0100	MG/L	6010B	4/28/99
Nickel	BQL	0.0500	MG/L	6010B	4/28/99
Selenium	BQL	0.0200	MG/L	6010B	4/28/99
Silver	BQL	0.0100	MG/L	6010B	4/28/99
Thallium	BQL	0.0100	MG/L	6010B	4/28/99
Vanadium	BQL	0.0400	MG/L	6010B	4/28/99
Zinc	BQL	0.0500	MG/L	6010B	4/28/99

Comments

BQL = Below Quantitation Limits

Reviewed By: JU

PARADIGM ANALYTICAL LABORATORIES, INC.
627 Northchase Parkway SE, Wilmington, NC 28405
Phone: (910)-350-1903 FAX: (910)-350-1557

Chain-of Custody Record & Analytical Request

COC# 00920

Page ____ of ____

Client: N WAKE
Address: 5400 Glenwood AV
Address: Ste 300 Raleigh NC 27612
Quote #:

Project ID:
P.O. Number:
Contact:
Phone: 919-787-5620

Date:
Turnaround:
Job Number:

Report To: Tim Grant (CDM)

Invoice To:

Sample ID	Date	Time	Matrix	Preservatives: HNO3	Preservatives: HCL	Preservatives:	Preservatives:	Analyses: VOC's	Analyses: Metals	Analyses: SEMI VOC's	Analyses:	Analyses:	Analyses:	Analyses:	Analyses:	Analyses:	Analyses:	Comments: Please specify any special reporting requirements
																		6175-63
MW-25	4-15	1230																
MW-25D		1330																
MW-19		1400																
SW-2		1445								X								NO SEMI'S per Tim Grant 4/21/99
MW-20		1500																
MW-21		1600																

Relinquished By	Date	Time	Received By	Date	Time	Temperature	Sampled By	Airbill #
Brian Dalton	4-15-99	1800	Emily Rakes	4/16/99	10:39	3.9		

APPENDIX E
LABORATORY DATA - (MAY 1999)

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID:	MW-19	Date Analyzed:	5/31/99
Client Project ID:	North Wake Baseline	Analyzed By:	CKC
Lab Sample ID:	64679	Date Collected:	5/27/99
Lab Project ID:	G175-73	Date Received:	5/28/99
Matrix:	Water	Dilution:	1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)
Acetone	100	BQL
Acrylonitrile	200	BQL
Benzene	5.0	BQL
Bromochloromethane	5.0	BQL
Bromodichloromethane	5.0	BQL
Bromoform	5.0	BQL
Carbon disulfide	100	BQL
Carbon tetrachloride	10	BQL
Chlorobenzene	5.0	BQL
Chloroethane	10	BQL
Chloroform	5.0	BQL
Chlorodibromomethane	5.0	BQL
DBCP (1,2-Dibromo-3-chloropropane)	25	BQL
Ethylene dibromide (EDB)	5.0	BQL
o-Dichlorobenzene	5.0	BQL
p-Dichlorobenzene	5.0	BQL
t-1,4-Dichloro-2-butene	100	BQL
1,1-Dichloroethane	5.0	BQL
Ethylene dichloride	5.0	BQL
Vinylidene chloride	5.0	BQL
cis-1,2-Dichloroethene	5.0	BQL
t-1,2-Dichloroethene	5.0	BQL
Propylene dichloride	5.0	BQL
cis-1,3-Dichloropropene	10	BQL
t-1,3-Dichloropropene	10	BQL
Ethylbenzene	5.0	BQL
Methyl butyl ketone	50	BQL
Methyl bromide	10	BQL
Methyl chloride	10	BQL
Methylene bromide	10	BQL
Methylene chloride	10	BQL
MEK (2-Butanone)	100	BQL
Methyl iodide	10	BQL
Methyl isobutyl ketone	100	BQL
Styrene	10	BQL
1,1,1,2-Tetrachloroethane	5.0	BQL
1,1,2,2-Tetrachloroethane	5.0	BQL
Tetrachloroethylene	5.0	BQL
Toluene	5.0	BQL
1,1,1-Trichloroethane	5.0	BQL
1,1,2-Trichloroethane	5.0	BQL
Trichloroethene	5.0	BQL
CFC-11 (Trichlorofluoromethane)	5.0	BQL
1,2,3-Trichloropropane	15	BQL
Vinyl acetate	50	BQL
Vinyl chloride	10	BQL
Xylenes (total)	5.0	BQL

Reviewed by: [illegible]

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID:	MW-19	Date Analyzed:	5/31/99
Client Project ID:	North Wake Baseline	Analyzed By:	CKC
Lab Sample ID:	64679	Date Collected:	5/27/99
Lab Project ID:	G175-73	Date Received:	5/28/99
Matrix:	Water	Dilution:	1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)

Surrogate Spike Recoveries Compound	Spike Added (ug/L)	Surrogate Result (ug/L)	%Rec
Bromofluorobenzene	10.0	11.3	113
1,2-Dichloroethane-d4	10.0	9.7	97
Toluene-d8	10.0	9.9	99

Comments:
All results are corrected for dilution.

Reviewed by: _____

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles

by GCMS 8260B

Client Sample ID:	MW-20	Date Analyzed:	5/31/99
Client Project ID:	North Wake Baseline	Analyzed By:	CKC
Lab Sample ID:	64680	Date Collected:	5/27/99
Lab Project ID:	G175-73	Date Received:	5/28/99
Matrix:	Water	Dilution:	1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)
Acetone	100	BQL
Acrylonitrile	200	BQL
Benzene	5.0	BQL
Bromochloromethane	5.0	BQL
Bromodichloromethane	5.0	BQL
Bromoform	5.0	BQL
Carbon disulfide	100	BQL
Carbon tetrachloride	10	BQL
Chlorobenzene	5.0	BQL
Chloroethane	10	BQL
Chloroform	5.0	BQL
Chlorodibromomethane	5.0	BQL
DBCP (1,2-Dibromo-3-chloropropane)	25	BQL
Ethylene dibromide (EDB)	5.0	BQL
o-Dichlorobenzene	5.0	BQL
p-Dichlorobenzene	5.0	BQL
t-1,4-Dichloro-2-butene	100	BQL
1,1-Dichloroethane	5.0	BQL
Ethylene dichloride	5.0	BQL
Vinylidene chloride	5.0	BQL
cis-1,2-Dichloroethene	5.0	BQL
t-1,2-Dichloroethene	5.0	BQL
Propylene dichloride	5.0	BQL
cis-1,3-Dichloropropene	10	BQL
t-1,3-Dichloropropene	10	BQL
Ethylbenzene	5.0	BQL
Methyl butyl ketone	50	BQL
Methyl bromide	10	BQL
Methyl chloride	10	BQL
Methylene bromide	10	BQL
Methylene chloride	10	BQL
MEK (2-Butanone)	100	BQL
Methyl iodide	10	BQL
Methyl isobutyl ketone	100	BQL
Styrene	10	BQL
1,1,1,2-Tetrachloroethane	5.0	BQL
1,1,2,2-Tetrachloroethane	5.0	BQL
Tetrachloroethylene	5.0	BQL
Toluene	5.0	BQL
1,1,1-Trichloroethane	5.0	BQL
1,1,2-Trichloroethane	5.0	BQL
Trichloroethene	5.0	BQL
CFC-11 (Trichlorofluoromethane)	5.0	BQL
1,2,3-Trichloropropane	15	BQL
Vinyl acetate	50	BQL
Vinyl chloride	10	BQL
Xylenes (total)	5.0	BQL

Reviewed by: [illegible]

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles

by GCMS 8260B

Client Sample ID:	MW-20	Date Analyzed:	5/31/99
Client Project ID:	North Wake Baseline	Analyzed By:	CKC
Lab Sample ID:	64680	Date Collected:	5/27/99
Lab Project ID:	G175-73	Date Received:	5/28/99
Matrix:	Water	Dilution:	1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)

Surrogate Spike Recoveries

Compound	Spike Added (ug/L)	Surrogate Result (ug/L)	%Rec
Bromofluorobenzene	10.0	9.9	99
1,2-Dichloroethane-d4	10.0	9.6	96
Toluene-d8	10.0	9.9	99

Comments:

All results are corrected for dilution.

Reviewed by: _____

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles

by GCMS 8260B

Client Sample ID:	MW-21	Date Analyzed:	5/31/99
Client Project ID:	North Wake Baseline	Analyzed By:	CKC
Lab Sample ID:	64681	Date Collected:	5/27/99
Lab Project ID:	G175-73	Date Received:	5/28/99
Matrix:	Water	Dilution:	1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)
Acetone	100	BQL
Acrylonitrile	200	BQL
Benzene	5.0	BQL
Bromochloromethane	5.0	BQL
Bromodichloromethane	5.0	BQL
Bromoform	5.0	BQL
Carbon disulfide	100	BQL
Carbon tetrachloride	10	BQL
Chlorobenzene	5.0	BQL
Chloroethane	10	BQL
Chloroform	5.0	BQL
Chlorodibromomethane	5.0	BQL
DBCP (1,2-Dibromo-3-chloropropane)	25	BQL
Ethylene dibromide (EDB)	5.0	BQL
o-Dichlorobenzene	5.0	BQL
p-Dichlorobenzene	5.0	BQL
t-1,4-Dichloro-2-butene	100	BQL
1,1-Dichloroethane	5.0	BQL
Ethylene dichloride	5.0	BQL
Vinylidene chloride	5.0	BQL
cis-1,2-Dichloroethene	5.0	BQL
t-1,2-Dichloroethene	5.0	BQL
Propylene dichloride	5.0	BQL
cis-1,3-Dichloropropene	10	BQL
t-1,3-Dichloropropene	10	BQL
Ethylbenzene	5.0	BQL
Methyl butyl ketone	50	BQL
Methyl bromide	10	BQL
Methyl chloride	10	BQL
Methylene bromide	10	BQL
Methylene chloride	10	BQL
MEK (2-Butanone)	100	BQL
Methyl iodide	10	BQL
Methyl isobutyl ketone	100	BQL
Styrene	10	BQL
1,1,1,2-Tetrachloroethane	5.0	BQL
1,1,2,2-Tetrachloroethane	5.0	BQL
Tetrachloroethylene	5.0	BQL
Toluene	5.0	BQL
1,1,1-Trichloroethane	5.0	BQL
1,1,2-Trichloroethane	5.0	BQL
Trichloroethene	5.0	BQL
CFC-11 (Trichlorofluoromethane)	5.0	BQL
1,2,3-Trichloropropane	15	BQL
Vinyl acetate	50	BQL
Vinyl chloride	10	BQL
Xylenes (total)	5.0	BQL

Reviewed by: _____

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles

by GCMS 8260B

Client Sample ID:	MW-21	Date Analyzed:	5/31/99
Client Project ID:	North Wake Baseline	Analyzed By:	CKC
Lab Sample ID:	64681	Date Collected:	5/27/99
Lab Project ID:	G175-73	Date Received:	5/28/99
Matrix:	Water	Dilution:	1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)

Surrogate Spike Recoveries Compound	Spike Added (ug/L)	Surrogate Result (ug/L)	%Rec
Bromofluorobenzene	10.0	11.3	113
1,2-Dichloroethane-d4	10.0	9.6	96
Toluene-d8	10.0	10.0	100

Comments:

All results are corrected for dilution.

Reviewed by: _____

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID:	MW-25	Date Analyzed:	5/31/99
Client Project ID:	North Wake Baseline	Analyzed By:	CKC
Lab Sample ID:	64682	Date Collected:	5/27/99
Lab Project ID:	G175-73	Date Received:	5/28/99
Matrix:	Water	Dilution:	1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)
Acetone	100	BQL
Acrylonitrile	200	BQL
Benzene	5.0	BQL
Bromochloromethane	5.0	BQL
Bromodichloromethane	5.0	BQL
Bromoform	5.0	BQL
Carbon disulfide	100	BQL
Carbon tetrachloride	10	BQL
Chlorobenzene	5.0	BQL
Chloroethane	10	BQL
Chloroform	5.0	BQL
Chlorodibromomethane	5.0	BQL
DBCP (1,2-Dibromo-3-chloropropane)	25	BQL
Ethylene dibromide (EDB)	5.0	BQL
o-Dichlorobenzene	5.0	BQL
p-Dichlorobenzene	5.0	BQL
t-1,4-Dichloro-2-butene	100	BQL
1,1-Dichloroethane	5.0	BQL
Ethylene dichloride	5.0	BQL
Vinylidene chloride	5.0	BQL
cis-1,2-Dichloroethene	5.0	BQL
t-1,2-Dichloroethene	5.0	BQL
Propylene dichloride	5.0	BQL
cis-1,3-Dichloropropene	10	BQL
t-1,3-Dichloropropene	10	BQL
Ethylbenzene	5.0	BQL
Methyl butyl ketone	50	BQL
Methyl bromide	10	BQL
Methyl chloride	10	BQL
Methylene bromide	10	BQL
Methylene chloride	10	BQL
MEK (2-Butanone)	100	BQL
Methyl iodide	10	BQL
Methyl isobutyl ketone	100	BQL
Styrene	10	BQL
1,1,1,2-Tetrachloroethane	5.0	BQL
1,1,2,2-Tetrachloroethane	5.0	BQL
Tetrachloroethylene	5.0	BQL
Toluene	5.0	BQL
1,1,1-Trichloroethane	5.0	BQL
1,1,2-Trichloroethane	5.0	BQL
Trichloroethene	5.0	BQL
CFC-11 (Trichlorofluoromethane)	5.0	BQL
1,2,3-Trichloropropane	15	BQL
Vinyl acetate	50	BQL
Vinyl chloride	10	BQL
Xylenes (total)	5.0	BQL

Reviewed by: _____

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles

by GCMS 8260B

Client Sample ID:	MW-25	Date Analyzed:	5/31/99
Client Project ID:	North Wake Baseline	Analyzed By:	CKC
Lab Sample ID:	64682	Date Collected:	5/27/99
Lab Project ID:	G175-73	Date Received:	5/28/99
Matrix:	Water	Dilution:	1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)

Surrogate Spike Recoveries Compound	Spike Added (ug/L)	Surrogate Result (ug/L)	%Rec
Bromofluorobenzene	10.0	11.7	117
1,2-Dichloroethane-d4	10.0	9.6	96
Toluene-d8	10.0	10.0	100

Comments:

All results are corrected for dilution.

Reviewed by: _____

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID:	MW-25d	Date Analyzed:	6/1/99
Client Project ID:	North Wake Baseline	Analyzed By:	CKC
Lab Sample ID:	64683	Date Collected:	5/27/99
Lab Project ID:	G175-73	Date Received:	5/28/99
Matrix:	Water	Dilution:	1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)
Acetone	100	BQL
Acrylonitrile	200	BQL
Benzene	5.0	BQL
Bromochloromethane	5.0	BQL
Bromodichloromethane	5.0	BQL
Bromoform	5.0	BQL
Carbon disulfide	100	BQL
Carbon tetrachloride	10	BQL
Chlorobenzene	5.0	BQL
Chloroethane	10	BQL
Chloroform	5.0	BQL
Chlorodibromomethane	5.0	BQL
DBCP (1,2-Dibromo-3-chloropropane)	25	BQL
Ethylene dibromide (EDB)	5.0	BQL
o-Dichlorobenzene	5.0	BQL
p-Dichlorobenzene	5.0	BQL
t-1,4-Dichloro-2-butene	100	BQL
1,1-Dichloroethane	5.0	BQL
Ethylene dichloride	5.0	BQL
Vinylidene chloride	5.0	BQL
cis-1,2-Dichloroethene	5.0	BQL
t-1,2-Dichloroethene	5.0	BQL
Propylene dichloride	5.0	BQL
cis-1,3-Dichloropropene	10	BQL
t-1,3-Dichloropropene	10	BQL
Ethylbenzene	5.0	BQL
Methyl butyl ketone	50	BQL
Methyl bromide	10	BQL
Methyl chloride	10	BQL
Methylene bromide	10	BQL
Methylene chloride	10	BQL
MEK (2-Butanone)	100	BQL
Methyl iodide	10	BQL
Methyl isobutyl ketone	100	BQL
Styrene	10	BQL
1,1,1,2-Tetrachloroethane	5.0	BQL
1,1,2,2-Tetrachloroethane	5.0	BQL
Tetrachloroethylene	5.0	BQL
Toluene	5.0	BQL
1,1,1-Trichloroethane	5.0	BQL
1,1,2-Trichloroethane	5.0	BQL
Trichloroethene	5.0	BQL
CFC-11 (Trichlorofluoromethane)	5.0	BQL
1,2,3-Trichloropropane	15	BQL
Vinyl acetate	50	BQL
Vinyl chloride	10	BQL
Xylenes (total)	5.0	BQL

Reviewed by: _____

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles

by GCMS 8260B

Client Sample ID:	MW-25d	Date Analyzed:	6/1/99
Client Project ID:	North Wake Baseline	Analyzed By:	CKC
Lab Sample ID:	64683	Date Collected:	5/27/99
Lab Project ID:	G175-73	Date Received:	5/28/99
Matrix:	Water	Dilution:	1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)

Surrogate Spike Recoveries Compound	Spike Added (ug/L)	Surrogate Result (ug/L)	%Rec
Bromofluorobenzene	10.0	11.7	117
1,2-Dichloroethane-d4	10.0	10.0	100
Toluene-d8	10.0	10.1	101

Comments:

All results are corrected for dilution.

Reviewed by: _____

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles

by GCMS 8260B

Client Sample ID:	MW-26	Date Analyzed:	6/1/99
Client Project ID:	North Wake Baseline	Analyzed By:	CKC
Lab Sample ID:	64684	Date Collected:	5/27/99
Lab Project ID:	G175-73	Date Received:	5/28/99
Matrix:	Water	Dilution:	1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)
Acetone	100	BQL
Acrylonitrile	200	BQL
Benzene	5.0	BQL
Bromochloromethane	5.0	BQL
Bromodichloromethane	5.0	BQL
Bromoform	5.0	BQL
Carbon disulfide	100	BQL
Carbon tetrachloride	10	BQL
Chlorobenzene	5.0	BQL
Chloroethane	10	BQL
Chloroform	5.0	BQL
Chlorodibromomethane	5.0	BQL
DBCP (1,2-Dibromo-3-chloropropane)	25	BQL
Ethylene dibromide (EDB)	5.0	BQL
o-Dichlorobenzene	5.0	BQL
p-Dichlorobenzene	5.0	BQL
t-1,4-Dichloro-2-butene	100	BQL
1,1-Dichloroethane	5.0	BQL
Ethylene dichloride	5.0	BQL
Vinylidene chloride	5.0	BQL
cis-1,2-Dichloroethene	5.0	BQL
t-1,2-Dichloroethene	5.0	BQL
Propylene dichloride	5.0	BQL
cis-1,3-Dichloropropene	10	BQL
t-1,3-Dichloropropene	10	BQL
Ethylbenzene	5.0	BQL
Methyl butyl ketone	50	BQL
Methyl bromide	10	BQL
Methyl chloride	10	BQL
Methylene bromide	10	BQL
Methylene chloride	10	BQL
MEK (2-Butanone)	100	BQL
Methyl iodide	10	BQL
Methyl isobutyl ketone	100	BQL
Styrene	10	BQL
1,1,1,2-Tetrachloroethane	5.0	BQL
1,1,2,2-Tetrachloroethane	5.0	BQL
Tetrachloroethylene	5.0	BQL
Toluene	5.0	BQL
1,1,1-Trichloroethane	5.0	BQL
1,1,2-Trichloroethane	5.0	BQL
Trichloroethene	5.0	BQL
CFC-11 (Trichlorofluoromethane)	5.0	BQL
1,2,3-Trichloropropane	15	BQL
Vinyl acetate	50	BQL
Vinyl chloride	10	BQL
Xylenes (total)	5.0	BQL

Reviewed by: [illegible]

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID:	MW-26	Date Analyzed:	6/1/99
Client Project ID:	North Wake Baseline	Analyzed By:	CKC
Lab Sample ID:	64684	Date Collected:	5/27/99
Lab Project ID:	G175-73	Date Received:	5/28/99
Matrix:	Water	Dilution:	1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)

Surrogate Spike Recoveries Compound	Spike Added (ug/L)	Surrogate Result (ug/L)	%Rec
Bromofluorobenzene	10.0	10.2	102
1,2-Dichloroethane-d4	10.0	10.0	100
Toluene-d8	10.0	10.2	102

Comments:

All results are corrected for dilution.

Reviewed by: [illegible]

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID:	DUP	Date Analyzed:	6/1/99
Client Project ID:	North Wake Baseline	Analyzed By:	CKC
Lab Sample ID:	64685	Date Collected:	5/27/99
Lab Project ID:	G175-73	Date Received:	5/28/99
Matrix:	Water	Dilution:	1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)
Acetone	100	BQL
Acrylonitrile	200	BQL
Benzene	5.0	BQL
Bromochloromethane	5.0	BQL
Bromodichloromethane	5.0	BQL
Bromoform	5.0	BQL
Carbon disulfide	100	BQL
Carbon tetrachloride	10	BQL
Chlorobenzene	5.0	BQL
Chloroethane	10	BQL
Chloroform	5.0	BQL
Chlorodibromomethane	5.0	BQL
DBCP (1,2-Dibromo-3-chloropropane)	25	BQL
Ethylene dibromide (EDB)	5.0	BQL
o-Dichlorobenzene	5.0	BQL
p-Dichlorobenzene	5.0	BQL
t-1,4-Dichloro-2-butene	100	BQL
1,1-Dichloroethane	5.0	BQL
Ethylene dichloride	5.0	BQL
Vinylidene chloride	5.0	BQL
cis-1,2-Dichloroethene	5.0	BQL
t-1,2-Dichloroethene	5.0	BQL
Propylene dichloride	5.0	BQL
cis-1,3-Dichloropropene	10	BQL
t-1,3-Dichloropropene	10	BQL
Ethylbenzene	5.0	BQL
Methyl butyl ketone	50	BQL
Methyl bromide	10	BQL
Methyl chloride	10	BQL
Methylene bromide	10	BQL
Methylene chloride	10	BQL
MEK (2-Butanone)	100	BQL
Methyl iodide	10	BQL
Methyl isobutyl ketone	100	BQL
Styrene	10	BQL
1,1,1,2-Tetrachloroethane	5.0	BQL
1,1,2,2-Tetrachloroethane	5.0	BQL
Tetrachloroethylene	5.0	BQL
Toluene	5.0	BQL
1,1,1-Trichloroethane	5.0	BQL
1,1,2-Trichloroethane	5.0	BQL
Trichloroethene	5.0	BQL
CFC-11 (Trichlorofluoromethane)	5.0	BQL
1,2,3-Trichloropropane	15	BQL
Vinyl acetate	50	BQL
Vinyl chloride	10	BQL
Xylenes (total)	5.0	BQL

Reviewed by: [illegible]

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID:	DUP	Date Analyzed:	6/1/99
Client Project ID:	North Wake Baseline	Analyzed By:	CKC
Lab Sample ID:	64685	Date Collected:	5/27/99
Lab Project ID:	G175-73	Date Received:	5/28/99
Matrix:	Water	Dilution:	1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)

Surrogate Spike Recoveries Compound	Spike Added (ug/L)	Surrogate Result (ug/L)	%Rec
Bromofluorobenzene	10.0	11.0	110
1,2-Dichloroethane-d4	10.0	9.9	99
Toluene-d8	10.0	10.1	101

Comments:
All results are corrected for dilution.

Reviewed by: W

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID:	EQ Blank	Date Analyzed:	5/30/99
Client Project ID:	North Wake Baseline	Analyzed By:	CKC
Lab Sample ID:	64686	Date Collected:	5/27/99
Lab Project ID:	G175-73	Date Received:	5/28/99
Matrix:	Water	Dilution:	1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)
Acetone	100	BQL
Acrylonitrile	200	BQL
Benzene	5.0	BQL
Bromochloromethane	5.0	BQL
Bromodichloromethane	5.0	BQL
Bromoform	5.0	BQL
Carbon disulfide	100	BQL
Carbon tetrachloride	10	BQL
Chlorobenzene	5.0	BQL
Chloroethane	10	BQL
Chloroform	5.0	BQL
Chlorodibromomethane	5.0	BQL
DBCP (1,2-Dibromo-3-chloropropane)	25	BQL
Ethylene dibromide (EDB)	5.0	BQL
o-Dichlorobenzene	5.0	BQL
p-Dichlorobenzene	5.0	BQL
t-1,4-Dichloro-2-butene	100	BQL
1,1-Dichloroethane	5.0	BQL
Ethylene dichloride	5.0	BQL
Vinylidene chloride	5.0	BQL
cis-1,2-Dichloroethene	5.0	BQL
t-1,2-Dichloroethene	5.0	BQL
Propylene dichloride	5.0	BQL
cis-1,3-Dichloropropene	10	BQL
t-1,3-Dichloropropene	10	BQL
Ethylbenzene	5.0	BQL
Methyl butyl ketone	50	BQL
Methyl bromide	10	BQL
Methyl chloride	10	BQL
Methylene bromide	10	BQL
Methylene chloride	10	BQL
MEK (2-Butanone)	100	BQL
Methyl iodide	10	BQL
Methyl isobutyl ketone	100	BQL
Styrene	10	BQL
1,1,1,2-Tetrachloroethane	5.0	BQL
1,1,2,2-Tetrachloroethane	5.0	BQL
Tetrachloroethylene	5.0	BQL
Toluene	5.0	BQL
1,1,1-Trichloroethane	5.0	BQL
1,1,2-Trichloroethane	5.0	BQL
Trichloroethene	5.0	BQL
CFC-11 (Trichlorofluoromethane)	5.0	BQL
1,2,3-Trichloropropane	15	BQL
Vinyl acetate	50	BQL
Vinyl chloride	10	BQL
Xylenes (total)	5.0	BQL

Reviewed by: W

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles

by GCMS 8260B

Client Sample ID:	EQ Blank	Date Analyzed:	5/30/99
Client Project ID:	North Wake Baseline	Analyzed By:	CKC
Lab Sample ID:	64686	Date Collected:	5/27/99
Lab Project ID:	G175-73	Date Received:	5/28/99
Matrix:	Water	Dilution:	1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)

Surrogate Spike Recoveries Compound	Spike Added (ug/L)	Surrogate Result (ug/L)	%Rec
Bromofluorobenzene	10.0	10.1	101
1,2-Dichloroethane-d4	10.0	10.2	102
Toluene-d8	10.0	9.9	99

Comments:

All results are corrected for dilution.

Reviewed by: _____

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID:	Trip Blank	Date Analyzed:	5/30/99
Client Project ID:	North Wake Baseline	Analyzed By:	CKC
Lab Sample ID:	64687	Date Collected:	5/27/99
Lab Project ID:	G175-73	Date Received:	5/28/99
Matrix:	Water	Dilution:	1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)
Acetone	100	BQL
Acrylonitrile	200	BQL
Benzene	5.0	BQL
Bromochloromethane	5.0	BQL
Bromodichloromethane	5.0	BQL
Bromoform	5.0	BQL
Carbon disulfide	100	BQL
Carbon tetrachloride	10	BQL
Chlorobenzene	5.0	BQL
Chloroethane	10	BQL
Chloroform	5.0	BQL
Chlorodibromomethane	5.0	BQL
DBCP (1,2-Dibromo-3-chloropropane)	25	BQL
Ethylene dibromide (EDB)	5.0	BQL
o-Dichlorobenzene	5.0	BQL
p-Dichlorobenzene	5.0	BQL
t-1,4-Dichloro-2-butene	100	BQL
1,1-Dichloroethane	5.0	BQL
Ethylene dichloride	5.0	BQL
Vinylidene chloride	5.0	BQL
cis-1,2-Dichloroethene	5.0	BQL
t-1,2-Dichloroethene	5.0	BQL
Propylene dichloride	5.0	BQL
cis-1,3-Dichloropropene	10	BQL
t-1,3-Dichloropropene	10	BQL
Ethylbenzene	5.0	BQL
Methyl butyl ketone	50	BQL
Methyl bromide	10	BQL
Methyl chloride	10	BQL
Methylene bromide	10	BQL
Methylene chloride	10	BQL
MEK (2-Butanone)	100	BQL
Methyl iodide	10	BQL
Methyl isobutyl ketone	100	BQL
Styrene	10	BQL
1,1,1,2-Tetrachloroethane	5.0	BQL
1,1,2,2-Tetrachloroethane	5.0	BQL
Tetrachloroethylene	5.0	BQL
Toluene	5.0	BQL
1,1,1-Trichloroethane	5.0	BQL
1,1,2-Trichloroethane	5.0	BQL
Trichloroethene	5.0	BQL
CFC-11 (Trichlorofluoromethane)	5.0	BQL
1,2,3-Trichloropropane	15	BQL
Vinyl acetate	50	BQL
Vinyl chloride	10	BQL
Xylenes (total)	5.0	BQL

Reviewed by: _____

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles

by GCMS 8260B

Client Sample ID:	Trip Blank	Date Analyzed:	5/30/99
Client Project ID:	North Wake Baseline	Analyzed By:	CKC
Lab Sample ID:	64687	Date Collected:	5/27/99
Lab Project ID:	G175-73	Date Received:	5/28/99
Matrix:	Water	Dilution:	1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)

Surrogate Spike Recoveries Compound	Spike Added (ug/L)	Surrogate Result (ug/L)	%Rec
Bromofluorobenzene	10.0	11.0	110
1,2-Dichloroethane-d4	10.0	10.1	101
Toluene-d8	10.0	9.9	99

Comments:

All results are corrected for dilution.

Reviewed by: _____

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix 1 Metals

Client Sample ID:	MW-19	Analyzed By:	JMF
Client Project ID:	North Wake Baseline	Date Collected:	5/27/99
Lab Sample ID:	64679	Date Received:	5/28/99
Lab Project ID:	G175-73	Matrix:	Water

Metals	Result	Quantitation Limit	Units	Procedure	Date Analyzed
Antimony	BQL	0.0300	MG/L	6010B	6/7/99
Arsenic	BQL	0.0100	MG/L	6010B	6/7/99
Barium	BQL	0.500	MG/L	6010B	6/7/99
Beryllium	BQL	0.0020	MG/L	6010B	6/7/99
Cadmium	BQL	0.0010	MG/L	6010B	6/7/99
Chromium	BQL	0.0100	MG/L	6010B	6/7/99
Cobalt	BQL	0.0100	MG/L	6010B	6/7/99
Copper	BQL	0.200	MG/L	6010B	6/7/99
Lead	BQL	0.0100	MG/L	6010B	6/7/99
Nickel	BQL	0.0500	MG/L	6010B	6/7/99
Selenium	BQL	0.0200	MG/L	6010B	6/7/99
Silver	BQL	0.0100	MG/L	6010B	6/7/99
Thallium	BQL	0.0100	MG/L	6010B	6/7/99
Vanadium	BQL	0.0400	MG/L	6010B	6/7/99
Zinc	BQL	0.0500	MG/L	6010B	6/7/99

Comments

BQL = Below Quantitation Limits

Reviewed By: _____

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix 1 Metals

Client Sample ID:	MW-20	Analyzed By:	JMF
Client Project ID:	North Wake Baseline	Date Collected:	5/27/99
Lab Sample ID:	64680	Date Received:	5/28/99
Lab Project ID:	G175-73	Matrix:	Water

Metals	Result	Quantitation Limit	Units	Procedure	Date Analyzed
Antimony	BQL	0.0300	MG/L	6010B	6/7/99
Arsenic	BQL	0.0100	MG/L	6010B	6/7/99
Barium	BQL	0.500	MG/L	6010B	6/7/99
Beryllium	BQL	0.0020	MG/L	6010B	6/7/99
Cadmium	BQL	0.0010	MG/L	6010B	6/7/99
Chromium	BQL	0.0100	MG/L	6010B	6/7/99
Cobalt	BQL	0.0100	MG/L	6010B	6/7/99
Copper	BQL	0.200	MG/L	6010B	6/7/99
Lead	BQL	0.0100	MG/L	6010B	6/7/99
Nickel	BQL	0.0500	MG/L	6010B	6/7/99
Selenium	BQL	0.0200	MG/L	6010B	6/7/99
Silver	BQL	0.0100	MG/L	6010B	6/7/99
Thallium	BQL	0.0100	MG/L	6010B	6/7/99
Vanadium	BQL	0.0400	MG/L	6010B	6/7/99
Zinc	BQL	0.0500	MG/L	6010B	6/7/99

Comments

BQL = Below Quantitation Limits

Reviewed By: _____

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix 1 Metals

Client Sample ID:	MW-21	Analyzed By:	JMF
Client Project ID:	North Wake Baseline	Date Collected:	5/27/99
Lab Sample ID:	64681	Date Received:	5/28/99
Lab Project ID:	G175-73	Matrix:	Water

Metals	Result	Quantitation Limit	Units	Procedure	Date Analyzed
Antimony	BQL	0.0300	MG/L	6010B	6/7/99
Arsenic	BQL	0.0100	MG/L	6010B	6/7/99
Barium	BQL	0.500	MG/L	6010B	6/7/99
Beryllium	BQL	0.0020	MG/L	6010B	6/7/99
Cadmium	BQL	0.0010	MG/L	6010B	6/7/99
Chromium	BQL	0.0100	MG/L	6010B	6/7/99
Cobalt	BQL	0.0100	MG/L	6010B	6/7/99
Copper	BQL	0.200	MG/L	6010B	6/7/99
Lead	BQL	0.0100	MG/L	6010B	6/7/99
Nickel	BQL	0.0500	MG/L	6010B	6/7/99
Selenium	BQL	0.0200	MG/L	6010B	6/7/99
Silver	BQL	0.0100	MG/L	6010B	6/7/99
Thallium	BQL	0.0100	MG/L	6010B	6/7/99
Vanadium	BQL	0.0400	MG/L	6010B	6/7/99
Zinc	BQL	0.0500	MG/L	6010B	6/7/99

Comments
BQL = Below Quantitation Limits

Reviewed By: _____

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix 1 Metals

Client Sample ID:	MW-25	Analyzed By:	JMF
Client Project ID:	North Wake Baseline	Date Collected:	5/27/99
Lab Sample ID:	64682	Date Received:	5/28/99
Lab Project ID:	G175-73	Matrix:	Water

Metals	Result	Quantitation Limit	Units	Procedure	Date Analyzed
Antimony	BQL	0.0300	MG/L	6010B	6/7/99
Arsenic	BQL	0.0100	MG/L	6010B	6/7/99
Barium	BQL	0.500	MG/L	6010B	6/7/99
Beryllium	BQL	0.0020	MG/L	6010B	6/7/99
Cadmium	BQL	0.0010	MG/L	6010B	6/7/99
Chromium	BQL	0.0100	MG/L	6010B	6/7/99
Cobalt	BQL	0.0100	MG/L	6010B	6/7/99
Copper	BQL	0.200	MG/L	6010B	6/7/99
Lead	BQL	0.0100	MG/L	6010B	6/7/99
Nickel	BQL	0.0500	MG/L	6010B	6/7/99
Selenium	BQL	0.0200	MG/L	6010B	6/7/99
Silver	BQL	0.0100	MG/L	6010B	6/7/99
Thallium	BQL	0.0100	MG/L	6010B	6/7/99
Vanadium	BQL	0.0400	MG/L	6010B	6/7/99
Zinc	BQL	0.0500	MG/L	6010B	6/7/99

Comments

BQL = Below Quantitation Limits

Reviewed By: _____

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix 1 Metals

Client Sample ID:	MW-25d	Analyzed By:	JMF
Client Project ID:	North Wake Baseline	Date Collected:	5/27/99
Lab Sample ID:	64683	Date Received:	5/28/99
Lab Project ID:	G175-73	Matrix:	Water

Metals	Result	Quantitation Limit	Units	Procedure	Date Analyzed
Antimony	BQL	0.0300	MG/L	6010B	6/7/99
Arsenic	BQL	0.0100	MG/L	6010B	6/7/99
Barium	BQL	0.500	MG/L	6010B	6/7/99
Beryllium	BQL	0.0020	MG/L	6010B	6/7/99
Cadmium	BQL	0.0010	MG/L	6010B	6/7/99
Chromium	BQL	0.0100	MG/L	6010B	6/7/99
Cobalt	BQL	0.0100	MG/L	6010B	6/7/99
Copper	BQL	0.200	MG/L	6010B	6/7/99
Lead	BQL	0.0100	MG/L	6010B	6/7/99
Nickel	BQL	0.0500	MG/L	6010B	6/7/99
Selenium	BQL	0.0200	MG/L	6010B	6/7/99
Silver	BQL	0.0100	MG/L	6010B	6/7/99
Thallium	BQL	0.0100	MG/L	6010B	6/7/99
Vanadium	BQL	0.0400	MG/L	6010B	6/7/99
Zinc	BQL	0.0500	MG/L	6010B	6/7/99

Comments

BQL = Below Quantitation Limits

Reviewed By: W

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix 1 Metals

Client Sample ID:	MW-26	Analyzed By:	JMF
Client Project ID:	North Wake Baseline	Date Collected:	5/27/99
Lab Sample ID:	64684	Date Received:	5/28/99
Lab Project ID:	G175-73	Matrix:	Water

Metals	Result	Quantitation Limit	Units	Procedure	Date Analyzed
Antimony	BQL	0.0300	MG/L	6010B	6/7/99
Arsenic	BQL	0.0100	MG/L	6010B	6/7/99
Barium	BQL	0.500	MG/L	6010B	6/7/99
Beryllium	BQL	0.0020	MG/L	6010B	6/7/99
Cadmium	**0.0014**	0.0010	MG/L	6010B	6/7/99
Chromium	BQL	0.0100	MG/L	6010B	6/7/99
Cobalt	**0.0306**	0.0100	MG/L	6010B	6/7/99
Copper	BQL	0.200	MG/L	6010B	6/7/99
Lead	BQL	0.0100	MG/L	6010B	6/7/99
Nickel	BQL	0.0500	MG/L	6010B	6/7/99
Selenium	BQL	0.0200	MG/L	6010B	6/7/99
Silver	BQL	0.0100	MG/L	6010B	6/7/99
Thallium	BQL	0.0100	MG/L	6010B	6/7/99
Vanadium	BQL	0.0400	MG/L	6010B	6/7/99
Zinc	BQL	0.0500	MG/L	6010B	6/7/99

Comments

BQL = Below Quantitation Limits

Reviewed By: _____

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix 1 Metals

Client Sample ID:	DUP	Analyzed By:	JMF
Client Project ID:	North Wake Baseline	Date Collected:	5/27/99
Lab Sample ID:	64685	Date Received:	5/28/99
Lab Project ID:	G175-73	Matrix:	Water

Metals	Result	Quantitation Limit	Units	Procedure	Date Analyzed
Antimony	BQL	0.0300	MG/L	6010B	6/7/99
Arsenic	BQL	0.0100	MG/L	6010B	6/7/99
Barium	BQL	0.500	MG/L	6010B	6/7/99
Beryllium	BQL	0.0020	MG/L	6010B	6/7/99
Cadmium	BQL	0.0010	MG/L	6010B	6/7/99
Chromium	BQL	0.0100	MG/L	6010B	6/7/99
Cobalt	BQL	0.0100	MG/L	6010B	6/7/99
Copper	BQL	0.200	MG/L	6010B	6/7/99
Lead	BQL	0.0100	MG/L	6010B	6/7/99
Nickel	BQL	0.0500	MG/L	6010B	6/7/99
Selenium	BQL	0.0200	MG/L	6010B	6/7/99
Silver	BQL	0.0100	MG/L	6010B	6/7/99
Thallium	BQL	0.0100	MG/L	6010B	6/7/99
Vanadium	BQL	0.0400	MG/L	6010B	6/7/99
Zinc	BQL	0.0500	MG/L	6010B	6/7/99

Comments

BQL = Below Quantitation Limits

Reviewed By: _____

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix 1 Metals

Client Sample ID:	EQ Blank	Analyzed By:	JMF
Client Project ID:	North Wake Baseline	Date Collected:	5/27/99
Lab Sample ID:	64686	Date Received:	5/28/99
Lab Project ID:	G175-73	Matrix:	Water

Metals	Result	Quantitation Limit	Units	Procedure	Date Analyzed
Antimony	BQL	0.0300	MG/L	6010B	6/7/99
Arsenic	BQL	0.0100	MG/L	6010B	6/7/99
Barium	BQL	0.500	MG/L	6010B	6/7/99
Beryllium	BQL	0.0020	MG/L	6010B	6/7/99
Cadmium	BQL	0.0010	MG/L	6010B	6/7/99
Chromium	BQL	0.0100	MG/L	6010B	6/7/99
Cobalt	BQL	0.0100	MG/L	6010B	6/7/99
Copper	BQL	0.200	MG/L	6010B	6/7/99
Lead	BQL	0.0100	MG/L	6010B	6/7/99
Nickel	BQL	0.0500	MG/L	6010B	6/7/99
Selenium	BQL	0.0200	MG/L	6010B	6/7/99
Silver	BQL	0.0100	MG/L	6010B	6/7/99
Thallium	BQL	0.0100	MG/L	6010B	6/7/99
Vanadium	BQL	0.0400	MG/L	6010B	6/7/99
Zinc	BQL	0.0500	MG/L	6010B	6/7/99

Comments

BQL = Below Quantitation Limits

Reviewed By: _____

PARADIGM ANALYTICAL LABORATORIES, INC.
627 Northchase Parkway SE, Wilmington, NC 28405
Phone: (910)-350-1903 FAX: (910)-350-1557

Chain-of Custody Record & Analytical Request

COC# 12356

Page 1 of 1

Client: CDM
Address: 5400 Glenwood Ave
Address: Raleigh, NC 27612
Quote #:

Project ID: NORTH WAKE BASELINE
P.O. Number:
Contact: TIM GRANT
Phone: (919) 781-5620

Date: 5/27/99
Turnaround: STANDARD
Job Number:

Report To: MAT COLONE

Invoice To: TIM GRANT

Sample ID	Date	Time	Matrix	Preservatives: HCl	Preservatives: HNO_3			Analyses: 8260	Analyses: Metals (Lab)									Comments: Please specify any special reporting requirements
																		G175-73
MW-19	5/27	11:00	W	3	1			✓	✓									NORTH CAROLINA APPENDIX
MW-20	5/27	10:50	W	3	1			✓	✓									I Metals & VOC
MW-21	5/27	12:20	W	3	1			✓	✓									
MW-25	5/27	13:00	W	3	1			✓	✓									
MW-25d	5/27	14:30	W	3	1			✓	✓									
MW-26	5/27	12:15	W	3	1			✓	✓									
DUP	5/27	—	W	3	1			✓	✓									
EQ. Blank	5/27	10:15	W	3	1			✓	✓									
T.B.			W	1* (1 broke in transport from Paradigm)				✓										

Relinquished By	Date	Time	Received By	Date	Time	Temperature	Sampled By	Airbill #
Matthew J. Colone	15:30	5/27	[illegible]	5/28/99	10:30	2.6°C		812314957955

ORIGINAL

APPENDIX F
LABORATORY DATA - (JULY 1999)

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID:	MW-19	Date Analyzed:	7/27/99
Client Project ID:	N. Wake Baseline	Analyzed By:	CKC
Lab Sample ID:	68644	Date Collected:	7/20/99
Lab Project ID:	G175-83	Date Received:	7/21/99
Matrix:	Water	Dilution:	1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)
Acetone	100	BQL
Acrylonitrile	200	BQL
Benzene	5.0	BQL
Bromochloromethane	5.0	BQL
Bromodichloromethane	5.0	BQL
Bromoform	5.0	BQL
Carbon disulfide	100	BQL
Carbon tetrachloride	10	BQL
Chlorobenzene	5.0	BQL
Chloroethane	10	BQL
Chloroform	5.0	BQL
Chlorodibromomethane	5.0	BQL
DBCP (1,2-Dibromo-3-chloropropane)	25	BQL
Ethylene dibromide (EDB)	5.0	BQL
o-Dichlorobenzene	5.0	BQL
p-Dichlorobenzene	5.0	BQL
t-1,4-Dichloro-2-butene	100	BQL
1,1-Dichloroethane	5.0	BQL
Ethylene dichloride	5.0	BQL
Vinylidene chloride	5.0	BQL
cis-1,2-Dichloroethene	5.0	BQL
t-1,2-Dichloroethene	5.0	BQL
Propylene dichloride	5.0	BQL
cis-1,3-Dichloropropene	10	BQL
t-1,3-Dichloropropene	10	BQL
Ethylbenzene	5.0	BQL
Methyl butyl ketone	50	BQL
Methyl bromide	10	BQL
Methyl chloride	10	BQL
Methylene bromide	10	BQL
Methylene chloride	10	BQL
MEK (2-Butanone)	100	BQL
Methyl iodide	10	BQL
Methyl isobutyl ketone	100	BQL
Styrene	10	BQL
1,1,1,2-Tetrachloroethane	5.0	BQL
1,1,2,2-Tetrachloroethane	5.0	BQL
Tetrachloroethylene	5.0	BQL
Toluene	5.0	BQL
1,1,1-Trichloroethane	5.0	BQL
1,1,2-Trichloroethane	5.0	BQL
Trichloroethene	5.0	BQL
CFC-11 (Trichlorofluoromethane)	5.0	BQL
1,2,3-Trichloropropane	15	BQL
Vinyl acetate	50	BQL
Vinyl chloride	10	BQL
Xylenes (total)	5.0	BQL

Reviewed by: [illegible]

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles

by GCMS 8260B

Client Sample ID:	MW-19	Date Analyzed:	7/27/99
Client Project ID:	N. Wake Baseline	Analyzed By:	CKC
Lab Sample ID:	68644	Date Collected:	7/20/99
Lab Project ID:	G175-83	Date Received:	7/21/99
Matrix:	Water	Dilution:	1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)

Surrogate Spike Recoveries

Compound	Spike Added (ug/L)	Surrogate Result (ug/L)	%Rec
Bromofluorobenzene	10.0	10.2	102
1,2-Dichloroethane-d4	10.0	10.5	105
Toluene-d8	10.0	10.1	101

Comments:

All results are corrected for dilution.

Reviewed by: [illegible]

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID: MW-20
Client Project ID: N. Wake Baseline
Lab Sample ID: 68645
Lab Project ID: G175-83
Matrix: Water

Date Analyzed: 7/27/99
Analyzed By: CKC
Date Collected: 7/20/99
Date Received: 7/21/99
Dilution: 1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)
Acetone	100	BQL
Acrylonitrile	200	BQL
Benzene	5.0	BQL
Bromochloromethane	5.0	BQL
Bromodichloromethane	5.0	BQL
Bromoform	5.0	BQL
Carbon disulfide	100	BQL
Carbon tetrachloride	10	BQL
Chlorobenzene	5.0	BQL
Chloroethane	10	BQL
Chloroform	5.0	BQL
Chlorodibromomethane	5.0	BQL
DBCP (1,2-Dibromo-3-chloropropane)	25	BQL
Ethylene dibromide (EDB)	5.0	BQL
o-Dichlorobenzene	5.0	BQL
p-Dichlorobenzene	5.0	BQL
t-1,4-Dichloro-2-butene	100	BQL
1,1-Dichloroethane	5.0	BQL
Ethylene dichloride	5.0	BQL
Vinylidene chloride	5.0	BQL
cis-1,2-Dichloroethene	5.0	BQL
t-1,2-Dichloroethene	5.0	BQL
Propylene dichloride	5.0	BQL
cis-1,3-Dichloropropene	10	BQL
t-1,3-Dichloropropene	10	BQL
Ethylbenzene	5.0	BQL
Methyl butyl ketone	50	BQL
Methyl bromide	10	BQL
Methyl chloride	10	BQL
Methylene bromide	10	BQL
Methylene chloride	10	BQL
MEK (2-Butanone)	100	BQL
Methyl iodide	10	BQL
Methyl isobutyl ketone	100	BQL
Styrene	10	BQL
1,1,1,2-Tetrachloroethane	5.0	BQL
1,1,2,2-Tetrachloroethane	5.0	BQL
Tetrachloroethylene	5.0	BQL
Toluene	5.0	BQL
1,1,1-Trichloroethane	5.0	BQL
1,1,2-Trichloroethane	5.0	BQL
Trichloroethene	5.0	BQL
CFC-11 (Trichlorofluoromethane)	5.0	BQL
1,2,3-Trichloropropane	15	BQL
Vinyl acetate	50	BQL
Vinyl chloride	10	BQL
Xylenes (total)	5.0	BQL

Reviewed by: [illegible]

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID: MW-20
Client Project ID: N. Wake Baseline
Lab Sample ID: 68645
Lab Project ID: G175-83
Matrix: Water

Date Analyzed: 7/27/99
Analyzed By: CKC
Date Collected: 7/20/99
Date Received: 7/21/99
Dilution: 1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)

Surrogate Spike Recoveries

Compound	Spike Added (ug/L)	Surrogate Result (ug/L)	%Rec
Bromofluorobenzene	10.0	10.1	101
1,2-Dichloroethane-d4	10.0	10.5	105
Toluene-d8	10.0	10.1	101

Comments:

All results are corrected for dilution.

Reviewed by: [illegible]

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID: MW-21
Client Project ID: N. Wake Baseline
Lab Sample ID: 68646
Lab Project ID: G175-83
Matrix: Water

Date Analyzed: 7/27/99
Analyzed By: CKC
Date Collected: 7/20/99
Date Received: 7/21/99
Dilution: 1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)
Acetone	100	BQL
Acrylonitrile	200	BQL
Benzene	5.0	BQL
Bromochloromethane	5.0	BQL
Bromodichloromethane	5.0	BQL
Bromoform	5.0	BQL
Carbon disulfide	100	BQL
Carbon tetrachloride	10	BQL
Chlorobenzene	5.0	BQL
Chloroethane	10	BQL
Chloroform	5.0	BQL
Chlorodibromomethane	5.0	BQL
DBCP (1,2-Dibromo-3-chloropropane)	25	BQL
Ethylene dibromide (EDB)	5.0	BQL
o-Dichlorobenzene	5.0	BQL
p-Dichlorobenzene	5.0	BQL
t-1,4-Dichloro-2-butene	100	BQL
1,1-Dichloroethane	5.0	BQL
Ethylene dichloride	5.0	BQL
Vinylidene chloride	5.0	BQL
cis-1,2-Dichloroethene	5.0	BQL
t-1,2-Dichloroethene	5.0	BQL
Propylene dichloride	5.0	BQL
cis-1,3-Dichloropropene	10	BQL
t-1,3-Dichloropropene	10	BQL
Ethylbenzene	5.0	BQL
Methyl butyl ketone	50	BQL
Methyl bromide	10	BQL
Methyl chloride	10	BQL
Methylene bromide	10	BQL
Methylene chloride	10	BQL
MEK (2-Butanone)	100	BQL
Methyl iodide	10	BQL
Methyl isobutyl ketone	100	BQL
Styrene	10	BQL
1,1,1,2-Tetrachloroethane	5.0	BQL
1,1,2,2-Tetrachloroethane	5.0	BQL
Tetrachloroethylene	5.0	BQL
Toluene	5.0	BQL
1,1,1-Trichloroethane	5.0	BQL
1,1,2-Trichloroethane	5.0	BQL
Trichloroethene	5.0	BQL
CFC-11 (Trichlorofluoromethane)	5.0	BQL
1,2,3-Trichloropropane	15	BQL
Vinyl acetate	50	BQL
Vinyl chloride	10	BQL
Xylenes (total)	5.0	BQL

Flags: BQL = Below Quantitation Limit

Reviewed by:

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID: MW-21
Client Project ID: N. Wake Baseline
Lab Sample ID: 68646
Lab Project ID: G175-83
Matrix: Water

Date Analyzed: 7/27/99
Analyzed By: CKC
Date Collected: 7/20/99
Date Received: 7/21/99
Dilution: 1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)

Surrogate Spike Recoveries

Compound	Spike Added (ug/L)	Surrogate Result (ug/L)	%Rec
Bromofluorobenzene	10.0	10.0	100
1,2-Dichloroethane-d4	10.0	10.8	108
Toluene-d8	10.0	10.1	101

Comments:

All results are corrected for dilution.

Flags: BQL = Below Quantitation Limit

Reviewed by: [illegible]

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID: MW-25
Client Project ID: N. Wake Baseline
Lab Sample ID: 68647
Lab Project ID: G175-83
Matrix: Water

Date Analyzed: 7/27/99
Analyzed By: CKC
Date Collected: 7/20/99
Date Received: 7/21/99
Dilution: 1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)
Acetone	100	BQL
Acrylonitrile	200	BQL
Benzene	5.0	BQL
Bromochloromethane	5.0	BQL
Bromodichloromethane	5.0	BQL
Bromoform	5.0	BQL
Carbon disulfide	100	BQL
Carbon tetrachloride	10	BQL
Chlorobenzene	5.0	BQL
Chloroethane	10	BQL
Chloroform	5.0	BQL
Chlorodibromomethane	5.0	BQL
DBCP (1,2-Dibromo-3-chloropropane)	25	BQL
Ethylene dibromide (EDB)	5.0	BQL
o-Dichlorobenzene	5.0	BQL
p-Dichlorobenzene	5.0	BQL
t-1,4-Dichloro-2-butene	100	BQL
1,1-Dichloroethane	5.0	BQL
Ethylene dichloride	5.0	BQL
Vinylidene chloride	5.0	BQL
cis-1,2-Dichloroethene	5.0	BQL
t-1,2-Dichloroethene	5.0	BQL
Propylene dichloride	5.0	BQL
cis-1,3-Dichloropropene	10	BQL
t-1,3-Dichloropropene	10	BQL
Ethylbenzene	5.0	BQL
Methyl butyl ketone	50	BQL
Methyl bromide	10	BQL
Methyl chloride	10	BQL
Methylene bromide	10	BQL
Methylene chloride	10	BQL
MEK (2-Butanone)	100	BQL
Methyl iodide	10	BQL
Methyl isobutyl ketone	100	BQL
Styrene	10	BQL
1,1,1,2-Tetrachloroethane	5.0	BQL
1,1,2,2-Tetrachloroethane	5.0	BQL
Tetrachloroethylene	5.0	BQL
Toluene	5.0	BQL
1,1,1-Trichloroethane	5.0	BQL
1,1,2-Trichloroethane	5.0	BQL
Trichloroethene	5.0	BQL
CFC-11 (Trichlorofluoromethane)	5.0	BQL
1,2,3-Trichloropropane	15	BQL
Vinyl acetate	50	BQL
Vinyl chloride	10	BQL
Xylenes (total)	5.0	BQL

Flags: BQL = Below Quantitation Limit

Reviewed by: [illegible]

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID: MW-25
Client Project ID: N. Wake Baseline
Lab Sample ID: 68647
Lab Project ID: G175-83
Matrix: Water

Date Analyzed: 7/27/99
Analyzed By: CKC
Date Collected: 7/20/99
Date Received: 7/21/99
Dilution: 1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)

Surrogate Spike Recoveries

Compound	Spike Added (ug/L)	Surrogate Result (ug/L)	%Rec
Bromofluorobenzene	10.0	10.1	101
1,2-Dichloroethane-d4	10.0	10.6	106
Toluene-d8	10.0	10.1	101

Comments:

All results are corrected for dilution.

Flags: BQL = Below Quantitation Limit

Reviewed by: [illegible]

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID: MW-25d
Client Project ID: N. Wake Baseline
Lab Sample ID: 68648
Lab Project ID: G175-83
Matrix: Water

Date Analyzed: 7/27/99
Analyzed By: CKC
Date Collected: 7/20/99
Date Received: 7/21/99
Dilution: 1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)
Acetone	100	BQL
Acrylonitrile	200	BQL
Benzene	5.0	BQL
Bromochloromethane	5.0	BQL
Bromodichloromethane	5.0	BQL
Bromoform	5.0	BQL
Carbon disulfide	100	BQL
Carbon tetrachloride	10	BQL
Chlorobenzene	5.0	BQL
Chloroethane	10	BQL
Chloroform	5.0	BQL
Chlorodibromomethane	5.0	BQL
DBCP (1,2-Dibromo-3-chloropropane)	25	BQL
Ethylene dibromide (EDB)	5.0	BQL
o-Dichlorobenzene	5.0	BQL
p-Dichlorobenzene	5.0	BQL
t-1,4-Dichloro-2-butene	100	BQL
1,1-Dichloroethane	5.0	BQL
Ethylene dichloride	5.0	BQL
Vinylidene chloride	5.0	BQL
cis-1,2-Dichloroethene	5.0	BQL
t-1,2-Dichloroethene	5.0	BQL
Propylene dichloride	5.0	BQL
cis-1,3-Dichloropropene	10	BQL
t-1,3-Dichloropropene	10	BQL
Ethylbenzene	5.0	BQL
Methyl butyl ketone	50	BQL
Methyl bromide	10	BQL
Methyl chloride	10	BQL
Methylene bromide	10	BQL
Methylene chloride	10	BQL
MEK (2-Butanone)	100	BQL
Methyl iodide	10	BQL
Methyl isobutyl ketone	100	BQL
Styrene	10	BQL
1,1,1,2-Tetrachloroethane	5.0	BQL
1,1,2,2-Tetrachloroethane	5.0	BQL
Tetrachloroethylene	5.0	BQL
Toluene	5.0	BQL
1,1,1-Trichloroethane	5.0	BQL
1,1,2-Trichloroethane	5.0	BQL
Trichloroethene	5.0	BQL
CFC-11 (Trichlorofluoromethane)	5.0	BQL
1,2,3-Trichloropropane	15	BQL
Vinyl acetate	50	BQL
Vinyl chloride	10	BQL
Xylenes (total)	5.0	BQL

Flags: BQL = Below Quantitation Limit

Reviewed by:

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID: MW-25d
Client Project ID: N. Wake Baseline
Lab Sample ID: 68648
Lab Project ID: G175-83
Matrix: Water

Date Analyzed: 7/27/99
Analyzed By: CKC
Date Collected: 7/20/99
Date Received: 7/21/99
Dilution: 1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)

Surrogate Spike Recoveries

Compound	Spike Added (ug/L)	Surrogate Result (ug/L)	%Rec
Bromofluorobenzene	10.0	10.2	102
1,2-Dichloroethane-d4	10.0	10.4	104
Toluene-d8	10.0	10.0	100

Comments:

All results are corrected for dilution.

Flags: BQL = Below Quantitation Limit

Reviewed by:

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID: MW-26
Client Project ID: N. Wake Baseline
Lab Sample ID: 68649
Lab Project ID: G175-83
Matrix: Water

Date Analyzed: 7/27/99
Analyzed By: CKC
Date Collected: 7/20/99
Date Received: 7/21/99
Dilution: 1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)
Acetone	100	BQL
Acrylonitrile	200	BQL
Benzene	5.0	BQL
Bromochloromethane	5.0	BQL
Bromodichloromethane	5.0	BQL
Bromoform	5.0	BQL
Carbon disulfide	100	BQL
Carbon tetrachloride	10	BQL
Chlorobenzene	5.0	BQL
Chloroethane	10	BQL
Chloroform	5.0	BQL
Chlorodibromomethane	5.0	BQL
DBCP (1,2-Dibromo-3-chloropropane)	25	BQL
Ethylene dibromide (EDB)	5.0	BQL
o-Dichlorobenzene	5.0	BQL
p-Dichlorobenzene	5.0	BQL
t-1,4-Dichloro-2-butene	100	BQL
1,1-Dichloroethane	5.0	BQL
Ethylene dichloride	5.0	BQL
Vinylidene chloride	5.0	BQL
cis-1,2-Dichloroethene	5.0	BQL
t-1,2-Dichloroethene	5.0	BQL
Propylene dichloride	5.0	BQL
cis-1,3-Dichloropropene	10	BQL
t-1,3-Dichloropropene	10	BQL
Ethylbenzene	5.0	BQL
Methyl butyl ketone	50	BQL
Methyl bromide	10	BQL
Methyl chloride	10	BQL
Methylene bromide	10	BQL
Methylene chloride	10	BQL
MEK (2-Butanone)	100	BQL
Methyl iodide	10	BQL
Methyl isobutyl ketone	100	BQL
Styrene	10	BQL
1,1,1,2-Tetrachloroethane	5.0	BQL
1,1,2,2-Tetrachloroethane	5.0	BQL
Tetrachloroethylene	5.0	BQL
Toluene	5.0	BQL
1,1,1-Trichloroethane	5.0	BQL
1,1,2-Trichloroethane	5.0	BQL
Trichloroethene	5.0	BQL
CFC-11 (Trichlorofluoromethane)	5.0	BQL
1,2,3-Trichloropropane	15	BQL
Vinyl acetate	50	BQL
Vinyl chloride	10	BQL
Xylenes (total)	5.0	BQL

Flags: BQL = Below Quantitation Limit

Reviewed by:

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID: MW-26
Client Project ID: N. Wake Baseline
Lab Sample ID: 68649
Lab Project ID: G175-83
Matrix: Water

Date Analyzed: 7/27/99
Analyzed By: CKC
Date Collected: 7/20/99
Date Received: 7/21/99
Dilution: 1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)

Surrogate Spike Recoveries

Compound	Spike Added (ug/L)	Surrogate Result (ug/L)	%Rec
Bromofluorobenzene	10.0	10.2	102
1,2-Dichloroethane-d4	10.0	10.3	103
Toluene-d8	10.0	10.0	100

Comments:

All results are corrected for dilution.

Flags: BQL = Below Quantitation Limit

Reviewed by:

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID: DUP
Client Project ID: N. Wake Baseline
Lab Sample ID: 68650
Lab Project ID: G175-83
Matrix: Water

Date Analyzed: 7/27/99
Analyzed By: CKC
Date Collected: 7/20/99
Date Received: 7/21/99
Dilution: 1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)
Acetone	100	BQL
Acrylonitrile	200	BQL
Benzene	5.0	BQL
Bromochloromethane	5.0	BQL
Bromodichloromethane	5.0	BQL
Bromoform	5.0	BQL
Carbon disulfide	100	BQL
Carbon tetrachloride	10	BQL
Chlorobenzene	5.0	BQL
Chloroethane	10	BQL
Chloroform	5.0	BQL
Chlorodibromomethane	5.0	BQL
DBCP (1,2-Dibromo-3-chloropropane)	25	BQL
Ethylene dibromide (EDB)	5.0	BQL
o-Dichlorobenzene	5.0	BQL
p-Dichlorobenzene	5.0	BQL
t-1,4-Dichloro-2-butene	100	BQL
1,1-Dichloroethane	5.0	BQL
Ethylene dichloride	5.0	BQL
Vinylidene chloride	5.0	BQL
cis-1,2-Dichloroethene	5.0	BQL
t-1,2-Dichloroethene	5.0	BQL
Propylene dichloride	5.0	BQL
cis-1,3-Dichloropropene	10	BQL
t-1,3-Dichloropropene	10	BQL
Ethylbenzene	5.0	BQL
Methyl butyl ketone	50	BQL
Methyl bromide	10	BQL
Methyl chloride	10	BQL
Methylene bromide	10	BQL
Methylene chloride	10	BQL
MEK (2-Butanone)	100	BQL
Methyl iodide	10	BQL
Methyl isobutyl ketone	100	BQL
Styrene	10	BQL
1,1,1,2-Tetrachloroethane	5.0	BQL
1,1,2,2-Tetrachloroethane	5.0	BQL
Tetrachloroethylene	5.0	BQL
Toluene	5.0	BQL
1,1,1-Trichloroethane	5.0	BQL
1,1,2-Trichloroethane	5.0	BQL
Trichloroethene	5.0	BQL
CFC-11 (Trichlorofluoromethane)	5.0	BQL
1,2,3-Trichloropropane	15	BQL
Vinyl acetate	50	BQL
Vinyl chloride	10	BQL
Xylenes (total)	5.0	BQL

Flags: BQL = Below Quantitation Limit

Reviewed by:

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID: DUP
Client Project ID: N. Wake Baseline
Lab Sample ID: 68650
Lab Project ID: G175-83
Matrix: Water

Date Analyzed: 7/27/99
Analyzed By: CKC
Date Collected: 7/20/99
Date Received: 7/21/99
Dilution: 1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)

Surrogate Spike Recoveries

Compound	Spike Added (ug/L)	Surrogate Result (ug/L)	%Rec
Bromofluorobenzene	10.0	10.0	100
1,2-Dichloroethane-d4	10.0	10.4	104
Toluene-d8	10.0	10.1	101

Comments:

All results are corrected for dilution.

Flags: BQL = Below Quantitation Limit

Reviewed by: [illegible]

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID: EQ. Blank
Client Project ID: N. Wake Baseline
Lab Sample ID: 68651
Lab Project ID: G175-83
Matrix: Water

Date Analyzed: 7/27/99
Analyzed By: CKC
Date Collected: 7/20/99
Date Received: 7/21/99
Dilution: 1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)
Acetone	100	BQL
Acrylonitrile	200	BQL
Benzene	5.0	BQL
Bromochloromethane	5.0	BQL
Bromodichloromethane	5.0	BQL
Bromoform	5.0	BQL
Carbon disulfide	100	BQL
Carbon tetrachloride	10	BQL
Chlorobenzene	5.0	BQL
Chloroethane	10	BQL
Chloroform	5.0	BQL
Chlorodibromomethane	5.0	BQL
DBCP (1,2-Dibromo-3-chloropropane)	25	BQL
Ethylene dibromide (EDB)	5.0	BQL
o-Dichlorobenzene	5.0	BQL
p-Dichlorobenzene	5.0	BQL
t-1,4-Dichloro-2-butene	100	BQL
1,1-Dichloroethane	5.0	BQL
Ethylene dichloride	5.0	BQL
Vinylidene chloride	5.0	BQL
cis-1,2-Dichloroethene	5.0	BQL
t-1,2-Dichloroethene	5.0	BQL
Propylene dichloride	5.0	BQL
cis-1,3-Dichloropropene	10	BQL
t-1,3-Dichloropropene	10	BQL
Ethylbenzene	5.0	BQL
Methyl butyl ketone	50	BQL
Methyl bromide	10	BQL
Methyl chloride	10	BQL
Methylene bromide	10	BQL
Methylene chloride	10	BQL
MEK (2-Butanone)	100	BQL
Methyl iodide	10	BQL
Methyl isobutyl ketone	100	BQL
Styrene	10	BQL
1,1,1,2-Tetrachloroethane	5.0	BQL
1,1,2,2-Tetrachloroethane	5.0	BQL
Tetrachloroethylene	5.0	BQL
Toluene	5.0	BQL
1,1,1-Trichloroethane	5.0	BQL
1,1,2-Trichloroethane	5.0	BQL
Trichloroethene	5.0	BQL
CFC-11 (Trichlorofluoromethane)	5.0	BQL
1,2,3-Trichloropropane	15	BQL
Vinyl acetate	50	BQL
Vinyl chloride	10	BQL
Xylenes (total)	5.0	BQL

Flags: BQL = Below Quantitation Limit

Reviewed by: [illegible]

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID: EQ. Blank
Client Project ID: N. Wake Baseline
Lab Sample ID: 68651
Lab Project ID: G175-83
Matrix: Water

Date Analyzed: 7/27/99
Analyzed By: CKC
Date Collected: 7/20/99
Date Received: 7/21/99
Dilution: 1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)

Surrogate Spike Recoveries

Compound	Spike Added (ug/L)	Surrogate Result (ug/L)	%Rec
Bromofluorobenzene	10.0	9.8	98
1,2-Dichloroethane-d4	10.0	10.5	105
Toluene-d8	10.0	10.1	101

Comments:

All results are corrected for dilution.

Reviewed by: _____

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles

by GCMS 8260B

Client Sample ID: Trip Blank
Client Project ID: N. Wake Baseline
Lab Sample ID: 68652
Lab Project ID: G175-83
Matrix: Water

Date Analyzed: 7/27/99
Analyzed By: CKC
Date Collected: 7/20/99
Date Received: 7/21/99
Dilution: 1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)
Acetone	100	BQL
Acrylonitrile	200	BQL
Benzene	5.0	BQL
Bromochloromethane	5.0	BQL
Bromodichloromethane	5.0	BQL
Bromoform	5.0	BQL
Carbon disulfide	100	BQL
Carbon tetrachloride	10	BQL
Chlorobenzene	5.0	BQL
Chloroethane	10	BQL
Chloroform	5.0	BQL
Chlorodibromomethane	5.0	BQL
DBCP (1,2-Dibromo-3-chloropropane)	25	BQL
Ethylene dibromide (EDB)	5.0	BQL
o-Dichlorobenzene	5.0	BQL
p-Dichlorobenzene	5.0	BQL
t-1,4-Dichloro-2-butene	100	BQL
1,1-Dichloroethane	5.0	BQL
Ethylene dichloride	5.0	BQL
Vinylidene chloride	5.0	BQL
cis-1,2-Dichloroethene	5.0	BQL
t-1,2-Dichloroethene	5.0	BQL
Propylene dichloride	5.0	BQL
cis-1,3-Dichloropropene	10	BQL
t-1,3-Dichloropropene	10	BQL
Ethylbenzene	5.0	BQL
Methyl butyl ketone	50	BQL
Methyl bromide	10	BQL
Methyl chloride	10	BQL
Methylene bromide	10	BQL
Methylene chloride	10	BQL
MEK (2-Butanone)	100	BQL
Methyl iodide	10	BQL
Methyl isobutyl ketone	100	BQL
Styrene	10	BQL
1,1,1,2-Tetrachloroethane	5.0	BQL
1,1,2,2-Tetrachloroethane	5.0	BQL
Tetrachloroethylene	5.0	BQL
Toluene	5.0	BQL
1,1,1-Trichloroethane	5.0	BQL
1,1,2-Trichloroethane	5.0	BQL
Trichloroethene	5.0	BQL
CFC-11 (Trichlorofluoromethane)	5.0	BQL
1,2,3-Trichloropropane	15	BQL
Vinyl acetate	50	BQL
Vinyl chloride	10	BQL
Xylenes (total)	5.0	BQL

Reviewed by: _____

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID:	Trip Blank	Date Analyzed:	7/27/99
Client Project ID:	N. Wake Baseline	Analyzed By:	CKC
Lab Sample ID:	68652	Date Collected:	7/20/99
Lab Project ID:	G175-83	Date Received:	7/21/99
Matrix:	Water	Dilution:	1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)

Surrogate Spike Recoveries

Compound	Spike Added (ug/L)	Surrogate Result (ug/L)	%Rec
Bromofluorobenzene	10.0	9.9	99
1,2-Dichloroethane-d4	10.0	10.5	105
Toluene-d8	10.0	10.1	101

Comments:

All results are corrected for dilution.

Reviewed by: [signature]

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix 1 Metals

Client Sample ID:	MW-19	Analyzed By:	JMF
Client Project ID:	N. Wake Baseline	Date Collected:	7/20/99
Lab Sample ID:	68644	Date Received:	7/21/99
Lab Project ID:	G175-83	Matrix:	Water

Metals	Result	Quantitation Limit	Units	Procedure	Date Analyzed
Antimony	BQL	0.0300	MG/L	6010B	8/2/99
Arsenic	BQL	0.0100	MG/L	6010B	8/2/99
Barium	BQL	0.500	MG/L	6010B	8/2/99
Beryllium	BQL	0.0020	MG/L	6010B	8/2/99
Cadmium	BQL	0.0010	MG/L	6010B	8/2/99
Chromium	BQL	0.0100	MG/L	6010B	8/2/99
Cobalt	BQL	0.0100	MG/L	6010B	8/2/99
Copper	BQL	0.200	MG/L	6010B	8/2/99
Lead	BQL	0.0100	MG/L	6010B	8/2/99
Nickel	BQL	0.0500	MG/L	6010B	8/2/99
Selenium	BQL	0.0200	MG/L	6010B	8/2/99
Silver	BQL	0.0100	MG/L	6010B	8/2/99
Thallium	BQL	0.0100	MG/L	6010B	8/2/99
Vanadium	BQL	0.0400	MG/L	6010B	8/2/99
Zinc	BQL	0.0500	MG/L	6010B	8/2/99

Comments

BQL = Below Quantitation Limits

Reviewed By: _____

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix 1 Metals

Client Sample ID:	MW-20	Analyzed By:	JMF
Client Project ID:	N. Wake Baseline	Date Collected:	7/20/99
Lab Sample ID:	68645	Date Received:	7/21/99
Lab Project ID:	G175-83	Matrix:	Water

Metals	Result	Quantitation Limit	Units	Procedure	Date Analyzed
Antimony	BQL	0.0300	MG/L	6010B	8/2/99
Arsenic	BQL	0.0100	MG/L	6010B	8/2/99
Barium	BQL	0.500	MG/L	6010B	8/2/99
Beryllium	BQL	0.0020	MG/L	6010B	8/2/99
Cadmium	BQL	0.0010	MG/L	6010B	8/2/99
Chromium	BQL	0.0100	MG/L	6010B	8/2/99
Cobalt	BQL	0.0100	MG/L	6010B	8/2/99
Copper	BQL	0.200	MG/L	6010B	8/2/99
Lead	BQL	0.0100	MG/L	6010B	8/2/99
Nickel	BQL	0.0500	MG/L	6010B	8/2/99
Selenium	BQL	0.0200	MG/L	6010B	8/2/99
Silver	BQL	0.0100	MG/L	6010B	8/2/99
Thallium	BQL	0.0100	MG/L	6010B	8/2/99
Vanadium	BQL	0.0400	MG/L	6010B	8/2/99
Zinc	BQL	0.0500	MG/L	6010B	8/2/99

Comments

BQL = Below Quantitation Limits

Reviewed By: _____

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix 1 Metals

Client Sample ID:	MW-21	Analyzed By:	JMF
Client Project ID:	N. Wake Baseline	Date Collected:	7/20/99
Lab Sample ID:	68646	Date Received:	7/21/99
Lab Project ID:	G175-83	Matrix:	Water

Metals	Result	Quantitation Limit	Units	Procedure	Date Analyzed
Antimony	BQL	0.0300	MG/L	6010B	8/2/99
Arsenic	BQL	0.0100	MG/L	6010B	8/2/99
Barium	BQL	0.500	MG/L	6010B	8/2/99
Beryllium	BQL	0.0020	MG/L	6010B	8/2/99
Cadmium	BQL	0.0010	MG/L	6010B	8/2/99
Chromium	BQL	0.0100	MG/L	6010B	8/2/99
Cobalt	BQL	0.0100	MG/L	6010B	8/2/99
Copper	BQL	0.200	MG/L	6010B	8/2/99
Lead	BQL	0.0100	MG/L	6010B	8/2/99
Nickel	BQL	0.0500	MG/L	6010B	8/2/99
Selenium	BQL	0.0200	MG/L	6010B	8/2/99
Silver	BQL	0.0100	MG/L	6010B	8/2/99
Thallium	BQL	0.0100	MG/L	6010B	8/2/99
Vanadium	BQL	0.0400	MG/L	6010B	8/2/99
Zinc	BQL	0.0500	MG/L	6010B	8/2/99

Comments

BQL = Below Quantitation Limits

Reviewed By: _____

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix 1 Metals

Client Sample ID:	MW-25	Analyzed By:	JMF
Client Project ID:	N. Wake Baseline	Date Collected:	7/20/99
Lab Sample ID:	68647	Date Received:	7/21/99
Lab Project ID:	G175-83	Matrix:	Water

Metals	Result	Quantitation Limit	Units	Procedure	Date Analyzed
Antimony	BQL	0.0300	MG/L	6010B	8/2/99
Arsenic	BQL	0.0100	MG/L	6010B	8/2/99
Barium	BQL	0.500	MG/L	6010B	8/2/99
Beryllium	BQL	0.0020	MG/L	6010B	8/2/99
Cadmium	BQL	0.0010	MG/L	6010B	8/2/99
Chromium	BQL	0.0100	MG/L	6010B	8/2/99
Cobalt	BQL	0.0100	MG/L	6010B	8/2/99
Copper	BQL	0.200	MG/L	6010B	8/2/99
Lead	BQL	0.0100	MG/L	6010B	8/2/99
Nickel	BQL	0.0500	MG/L	6010B	8/2/99
Selenium	BQL	0.0200	MG/L	6010B	8/2/99
Silver	BQL	0.0100	MG/L	6010B	8/2/99
Thallium	BQL	0.0100	MG/L	6010B	8/2/99
Vanadium	BQL	0.0400	MG/L	6010B	8/2/99
Zinc	BQL	0.0500	MG/L	6010B	8/2/99

Comments

BQL = Below Quantitation Limits

Reviewed By: _____

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix 1 Metals

Client Sample ID:	MW-25d	Analyzed By:	JMF
Client Project ID:	N. Wake Baseline	Date Collected:	7/20/99
Lab Sample ID:	68648	Date Received:	7/21/99
Lab Project ID:	G175-83	Matrix:	Water

Metals	Result	Quantitation Limit	Units	Procedure	Date Analyzed
Antimony	BQL	0.0300	MG/L	6010B	8/2/99
Arsenic	BQL	0.0100	MG/L	6010B	8/2/99
Barium	BQL	0.500	MG/L	6010B	8/2/99
Beryllium	BQL	0.0020	MG/L	6010B	8/2/99
Cadmium	BQL	0.0010	MG/L	6010B	8/2/99
Chromium	BQL	0.0100	MG/L	6010B	8/2/99
Cobalt	BQL	0.0100	MG/L	6010B	8/2/99
Copper	BQL	0.200	MG/L	6010B	8/2/99
Lead	BQL	0.0100	MG/L	6010B	8/2/99
Nickel	BQL	0.0500	MG/L	6010B	8/2/99
Selenium	BQL	0.0200	MG/L	6010B	8/2/99
Silver	BQL	0.0100	MG/L	6010B	8/2/99
Thallium	BQL	0.0100	MG/L	6010B	8/2/99
Vanadium	BQL	0.0400	MG/L	6010B	8/2/99
Zinc	BQL	0.0500	MG/L	6010B	8/2/99

Comments

BQL = Below Quantitation Limits

Reviewed By: _____

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix 1 Metals

Client Sample ID:	MW-26	Analyzed By:	JMF
Client Project ID:	N. Wake Baseline	Date Collected:	7/20/99
Lab Sample ID:	68649	Date Received:	7/21/99
Lab Project ID:	G175-83	Matrix:	Water

Metals	Result	Quantitation Limit	Units	Procedure	Date Analyzed
Antimony	BQL	0.0300	MG/L	6010B	8/2/99
Arsenic	BQL	0.0100	MG/L	6010B	8/2/99
Barium	BQL	0.500	MG/L	6010B	8/2/99
Beryllium	BQL	0.0020	MG/L	6010B	8/2/99
Cadmium	BQL	0.0010	MG/L	6010B	8/2/99
Chromium	BQL	0.0100	MG/L	6010B	8/2/99
Cobalt	**0.0102**	0.0100	MG/L	6010B	8/2/99
Copper	BQL	0.200	MG/L	6010B	8/2/99
Lead	BQL	0.0100	MG/L	6010B	8/2/99
Nickel	BQL	0.0500	MG/L	6010B	8/2/99
Selenium	BQL	0.0200	MG/L	6010B	8/2/99
Silver	BQL	0.0100	MG/L	6010B	8/2/99
Thallium	BQL	0.0100	MG/L	6010B	8/2/99
Vanadium	BQL	0.0400	MG/L	6010B	8/2/99
Zinc	BQL	0.0500	MG/L	6010B	8/2/99

Comments

BQL = Below Quantitation Limits

Reviewed By: LW

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix 1 Metals

Client Sample ID:	DUP	Analyzed By:	JMF
Client Project ID:	N. Wake Baseline	Date Collected:	7/20/99
Lab Sample ID:	68650	Date Received:	7/21/99
Lab Project ID:	G175-83	Matrix:	Water

Metals	Result	Quantitation Limit	Units	Procedure	Date Analyzed
Antimony	BQL	0.0300	MG/L	6010B	8/2/99
Arsenic	BQL	0.0100	MG/L	6010B	8/2/99
Barium	BQL	0.500	MG/L	6010B	8/2/99
Beryllium	BQL	0.0020	MG/L	6010B	8/2/99
Cadmium	BQL	0.0010	MG/L	6010B	8/2/99
Chromium	BQL	0.0100	MG/L	6010B	8/2/99
Cobalt	BQL	0.0100	MG/L	6010B	8/2/99
Copper	BQL	0.200	MG/L	6010B	8/2/99
Lead	BQL	0.0100	MG/L	6010B	8/2/99
Nickel	BQL	0.0500	MG/L	6010B	8/2/99
Selenium	BQL	0.0200	MG/L	6010B	8/2/99
Silver	BQL	0.0100	MG/L	6010B	8/2/99
Thallium	BQL	0.0100	MG/L	6010B	8/2/99
Vanadium	BQL	0.0400	MG/L	6010B	8/2/99
Zinc	BQL	0.0500	MG/L	6010B	8/2/99

Comments

BQL = Below Quantitation Limits

Reviewed By: _____

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix 1 Metals

Client Sample ID:	EQ. Blank	Analyzed By:	JMF
Client Project ID:	N. Wake Baseline	Date Collected:	7/20/99
Lab Sample ID:	68651	Date Received:	7/21/99
Lab Project ID:	G175-83	Matrix:	Water

Metals	Result	Quantitation Limit	Units	Procedure	Date Analyzed
Antimony	BQL	0.0300	MG/L	6010B	8/2/99
Arsenic	BQL	0.0100	MG/L	6010B	8/2/99
Barium	BQL	0.500	MG/L	6010B	8/2/99
Beryllium	BQL	0.0020	MG/L	6010B	8/2/99
Cadmium	BQL	0.0010	MG/L	6010B	8/2/99
Chromium	BQL	0.0100	MG/L	6010B	8/2/99
Cobalt	BQL	0.0100	MG/L	6010B	8/2/99
Copper	BQL	0.200	MG/L	6010B	8/2/99
Lead	BQL	0.0100	MG/L	6010B	8/2/99
Nickel	BQL	0.0500	MG/L	6010B	8/2/99
Selenium	BQL	0.0200	MG/L	6010B	8/2/99
Silver	BQL	0.0100	MG/L	6010B	8/2/99
Thallium	BQL	0.0100	MG/L	6010B	8/2/99
Vanadium	BQL	0.0400	MG/L	6010B	8/2/99
Zinc	BQL	0.0500	MG/L	6010B	8/2/99

Comments

BQL = Below Quantitation Limits

Reviewed By: _____

PARADIGM ANALYTICAL LABORATORIES, INC.
2627 Northchase Parkway SE, Wilmington, NC 28405
Phone: (910)-350-1903 FAX: (910)-350-1557

Chain-of Custody Record & Analytical Request

COC# 11939

Page 1 of 1

Client: CDM
Address: 5400 Glenwood Ave Suite 300
Address: Raleigh, NC 27612
Quote #:

Project ID: NWARE BASELINE
P.O. Number:
Contact: TIM GRANT
Phone: (919) 787-5620

Date: 7/20/99
Turnaround: STANDARD
Job Number:

Report To: MAT COLONE

Invoice To: TIM GRANT

Sample ID	Date	Time	Matrix	Preservatives: HCl	Preservatives: HNO3			Analyses: 8260*	Analyses: Metals*									Comments: Please specify any special reporting requirements
																		9175-83
MW-19	7/20	10:40	W					3	1									*NORTH CAROLINA APP. I
MW-20	7/20	11:45	W					3	1									VOC & METALS
MW-21	7/20	13:20	W					3	1									
MW-25	7/20	12:20	W					3	1									
MW-25d	7/20	13:35	W					3	1									
MW-26	7/20	13:05	W					3	1									
DUP	7/20	—	W					3	1									
EQ. BLANK	7/20	9:25	W					3	1									
TRIP BLANK			W					2										

Relinquished By	Date	Time	Received By	Date	Time	Temperature	Sampled By	Airbill #
Matt Colone	7/20/99	16:00	Emily Rabb	7/21/99	9:42	0.1		812 314 749 64

ORIGINAL

APPENDIX G
LABORATORY DATA - (AUGUST 1999)

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID:	MW-19	Date Analyzed:	8/14/99
Client Project ID:	N. Wake Baseline	Analyzed By:	CKC
Lab Sample ID:	69786	Date Collected:	8/4/99
Lab Project ID:	G175-84	Date Received:	8/5/99
Matrix:	Water	Dilution:	1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)
Acetone	100	BQL
Acrylonitrile	200	BQL
Benzene	5.0	BQL
Bromochloromethane	5.0	BQL
Bromodichloromethane	5.0	BQL
Bromoform	5.0	BQL
Carbon disulfide	100	BQL
Carbon tetrachloride	10	BQL
Chlorobenzene	5.0	BQL
Chloroethane	10	BQL
Chloroform	5.0	BQL
Chlorodibromomethane	5.0	BQL
DBCP (1,2-Dibromo-3-chloropropane)	25	BQL
Ethylene dibromide (EDB)	5.0	BQL
o-Dichlorobenzene	5.0	BQL
p-Dichlorobenzene	5.0	BQL
t-1,4-Dichloro-2-butene	100	BQL
1,1-Dichloroethane	5.0	BQL
Ethylene dichloride	5.0	BQL
Vinylidene chloride	5.0	BQL
cis-1,2-Dichloroethene	5.0	BQL
t-1,2-Dichloroethene	5.0	BQL
Propylene dichloride	5.0	BQL
cis-1,3-Dichloropropene	10	BQL
t-1,3-Dichloropropene	10	BQL
Ethylbenzene	5.0	BQL
Methyl butyl ketone	50	BQL
Methyl bromide	10	BQL
Methyl chloride	10	BQL
Methylene bromide	10	BQL
Methylene chloride	10	BQL
MEK (2-Butanone)	100	BQL
Methyl iodide	10	BQL
Methyl isobutyl ketone	100	BQL
Styrene	10	BQL
1,1,1,2-Tetrachloroethane	5.0	BQL
1,1,2,2-Tetrachloroethane	5.0	BQL
Tetrachloroethylene	5.0	BQL
Toluene	5.0	BQL
1,1,1-Trichloroethane	5.0	BQL
1,1,2-Trichloroethane	5.0	BQL
Trichloroethene	5.0	BQL
CFC-11 (Trichlorofluoromethane)	5.0	BQL
1,2,3-Trichloropropane	15	BQL
Vinyl acetate	50	BQL
Vinyl chloride	10	BQL
Xylenes (total)	5.0	BQL

Reviewed by: _____

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID:	MW-19	Date Analyzed:	8/14/99
Client Project ID:	N. Wake Baseline	Analyzed By:	CKC
Lab Sample ID:	69786	Date Collected:	8/4/99
Lab Project ID:	G175-84	Date Received:	8/5/99
Matrix:	Water	Dilution:	1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)

Surrogate Spike Recoveries Compound	Spike Added (ug/L)	Surrogate Result (ug/L)	%Rec
Bromofluorobenzene	10.0	9.9	99
1,2-Dichloroethane-d4	10.0	9.5	95
Toluene-d8	10.0	10.2	102

Comments:
All results are corrected for dilution.

Reviewed by: _____

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID:	MW-20	Date Analyzed:	8/14/99
Client Project ID:	N. Wake Baseline	Analyzed By:	CKC
Lab Sample ID:	69787	Date Collected:	8/4/99
Lab Project ID:	G175-84	Date Received:	8/5/99
Matrix:	Water	Dilution:	1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)
Acetone	100	BQL
Acrylonitrile	200	BQL
Benzene	5.0	BQL
Bromochloromethane	5.0	BQL
Bromodichloromethane	5.0	BQL
Bromoform	5.0	BQL
Carbon disulfide	100	BQL
Carbon tetrachloride	10	BQL
Chlorobenzene	5.0	BQL
Chloroethane	10	BQL
Chloroform	5.0	BQL
Chlorodibromomethane	5.0	BQL
DBCP (1,2-Dibromo-3-chloropropane)	25	BQL
Ethylene dibromide (EDB)	5.0	BQL
o-Dichlorobenzene	5.0	BQL
p-Dichlorobenzene	5.0	BQL
t-1,4-Dichloro-2-butene	100	BQL
1,1-Dichloroethane	5.0	BQL
Ethylene dichloride	5.0	BQL
Vinylidene chloride	5.0	BQL
cis-1,2-Dichloroethene	5.0	BQL
t-1,2-Dichloroethene	5.0	BQL
Propylene dichloride	5.0	BQL
cis-1,3-Dichloropropene	10	BQL
t-1,3-Dichloropropene	10	BQL
Ethylbenzene	5.0	BQL
Methyl butyl ketone	50	BQL
Methyl bromide	10	BQL
Methyl chloride	10	BQL
Methylene bromide	10	BQL
Methylene chloride	10	BQL
MEK (2-Butanone)	100	BQL
Methyl iodide	10	BQL
Methyl isobutyl ketone	100	BQL
Styrene	10	BQL
1,1,1,2-Tetrachloroethane	5.0	BQL
1,1,2,2-Tetrachloroethane	5.0	BQL
Tetrachloroethylene	5.0	BQL
Toluene	5.0	BQL
1,1,1-Trichloroethane	5.0	BQL
1,1,2-Trichloroethane	5.0	BQL
Trichloroethene	5.0	BQL
CFC-11 (Trichlorofluoromethane)	5.0	BQL
1,2,3-Trichloropropane	15	BQL
Vinyl acetate	50	BQL
Vinyl chloride	10	BQL
Xylenes (total)	5.0	BQL

Reviewed by: [illegible]

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID:	MW-20	Date Analyzed:	8/14/99
Client Project ID:	N. Wake Baseline	Analyzed By:	CKC
Lab Sample ID:	69787	Date Collected:	8/4/99
Lab Project ID:	G175-84	Date Received:	8/5/99
Matrix:	Water	Dilution:	1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)

Surrogate Spike Recoveries Compound	Spike Added (ug/L)	Surrogate Result (ug/L)	%Rec
Bromofluorobenzene	10.0	10.3	103
1,2-Dichloroethane-d4	10.0	10.3	103
Toluene-d8	10.0	10.4	104

Comments:
All results are corrected for dilution.

Reviewed by: [signature]

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID:	MW-21	Date Analyzed:	8/14/99
Client Project ID:	N. Wake Baseline	Analyzed By:	CKC
Lab Sample ID:	69788	Date Collected:	8/4/99
Lab Project ID:	G175-84	Date Received:	8/5/99
Matrix:	Water	Dilution:	1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)
Acetone	100	BQL
Acrylonitrile	200	BQL
Benzene	5.0	BQL
Bromochloromethane	5.0	BQL
Bromodichloromethane	5.0	BQL
Bromoform	5.0	BQL
Carbon disulfide	100	BQL
Carbon tetrachloride	10	BQL
Chlorobenzene	5.0	BQL
Chloroethane	10	BQL
Chloroform	5.0	BQL
Chlorodibromomethane	5.0	BQL
DBCP (1,2-Dibromo-3-chloropropane)	25	BQL
Ethylene dibromide (EDB)	5.0	BQL
o-Dichlorobenzene	5.0	BQL
p-Dichlorobenzene	5.0	BQL
t-1,4-Dichloro-2-butene	100	BQL
1,1-Dichloroethane	5.0	BQL
Ethylene dichloride	5.0	BQL
Vinylidene chloride	5.0	BQL
cis-1,2-Dichloroethene	5.0	BQL
t-1,2-Dichloroethene	5.0	BQL
Propylene dichloride	5.0	BQL
cis-1,3-Dichloropropene	10	BQL
t-1,3-Dichloropropene	10	BQL
Ethylbenzene	5.0	BQL
Methyl butyl ketone	50	BQL
Methyl bromide	10	BQL
Methyl chloride	10	BQL
Methylene bromide	10	BQL
Methylene chloride	10	BQL
MEK (2-Butanone)	100	BQL
Methyl iodide	10	BQL
Methyl isobutyl ketone	100	BQL
Styrene	10	BQL
1,1,1,2-Tetrachloroethane	5.0	BQL
1,1,2,2-Tetrachloroethane	5.0	BQL
Tetrachloroethylene	5.0	BQL
Toluene	5.0	BQL
1,1,1-Trichloroethane	5.0	BQL
1,1,2-Trichloroethane	5.0	BQL
Trichloroethene	5.0	BQL
CFC-11 (Trichlorofluoromethane)	5.0	BQL
1,2,3-Trichloropropane	15	BQL
Vinyl acetate	50	BQL
Vinyl chloride	10	BQL
Xylenes (total)	5.0	BQL

Reviewed by: _____

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID:	MW-21	Date Analyzed:	8/14/99
Client Project ID:	N. Wake Baseline	Analyzed By:	CKC
Lab Sample ID:	69788	Date Collected:	8/4/99
Lab Project ID:	G175-84	Date Received:	8/5/99
Matrix:	Water	Dilution:	1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)

Surrogate Spike Recoveries Compound	Spike Added (ug/L)	Surrogate Result (ug/L)	%Rec
Bromofluorobenzene	10.0	10.3	103
1,2-Dichloroethane-d4	10.0	10.2	102
Toluene-d8	10.0	10.3	103

Comments:

All results are corrected for dilution.

Reviewed by: [signature]

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID:	MW-25	Date Analyzed:	8/14/99
Client Project ID:	N. Wake Baseline	Analyzed By:	CKC
Lab Sample ID:	69789	Date Collected:	8/4/99
Lab Project ID:	G175-84	Date Received:	8/5/99
Matrix:	Water	Dilution:	1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)
Acetone	100	BQL
Acrylonitrile	200	BQL
Benzene	5.0	BQL
Bromochloromethane	5.0	BQL
Bromodichloromethane	5.0	BQL
Bromoform	5.0	BQL
Carbon disulfide	100	BQL
Carbon tetrachloride	10	BQL
Chlorobenzene	5.0	BQL
Chloroethane	10	BQL
Chloroform	5.0	BQL
Chlorodibromomethane	5.0	BQL
DBCP (1,2-Dibromo-3-chloropropane)	25	BQL
Ethylene dibromide (EDB)	5.0	BQL
o-Dichlorobenzene	5.0	BQL
p-Dichlorobenzene	5.0	BQL
t-1,4-Dichloro-2-butene	100	BQL
1,1-Dichloroethane	5.0	BQL
Ethylene dichloride	5.0	BQL
Vinylidene chloride	5.0	BQL
cis-1,2-Dichloroethene	5.0	BQL
t-1,2-Dichloroethene	5.0	BQL
Propylene dichloride	5.0	BQL
cis-1,3-Dichloropropene	10	BQL
t-1,3-Dichloropropene	10	BQL
Ethylbenzene	5.0	BQL
Methyl butyl ketone	50	BQL
Methyl bromide	10	BQL
Methyl chloride	10	BQL
Methylene bromide	10	BQL
Methylene chloride	10	BQL
MEK (2-Butanone)	100	BQL
Methyl iodide	10	BQL
Methyl isobutyl ketone	100	BQL
Styrene	10	BQL
1,1,1,2-Tetrachloroethane	5.0	BQL
1,1,2,2-Tetrachloroethane	5.0	BQL
Tetrachloroethylene	5.0	BQL
Toluene	5.0	BQL
1,1,1-Trichloroethane	5.0	BQL
1,1,2-Trichloroethane	5.0	BQL
Trichloroethene	5.0	BQL
CFC-11 (Trichlorofluoromethane)	5.0	BQL
1,2,3-Trichloropropane	15	BQL
Vinyl acetate	50	BQL
Vinyl chloride	10	BQL
Xylenes (total)	5.0	BQL

Reviewed by: _____

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID:	MW-25	Date Analyzed:	8/14/99
Client Project ID:	N. Wake Baseline	Analyzed By:	CKC
Lab Sample ID:	69789	Date Collected:	8/4/99
Lab Project ID:	G175-84	Date Received:	8/5/99
Matrix:	Water	Dilution:	1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)

Surrogate Spike Recoveries Compound	Spike Added (ug/L)	Surrogate Result (ug/L)	%Rec
Bromofluorobenzene	10.0	10.3	103
1,2-Dichloroethane-d4	10.0	10.3	103
Toluene-d8	10.0	10.3	103

Comments:
All results are corrected for dilution.

Reviewed by: [signature]

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID:	MW-25d	Date Analyzed:	8/14/99
Client Project ID:	N. Wake Baseline	Analyzed By:	CKC
Lab Sample ID:	69790	Date Collected:	8/4/99
Lab Project ID:	G175-84	Date Received:	8/5/99
Matrix:	Water	Dilution:	1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)
Acetone	100	BQL
Acrylonitrile	200	BQL
Benzene	5.0	BQL
Bromochloromethane	5.0	BQL
Bromodichloromethane	5.0	BQL
Bromoform	5.0	BQL
Carbon disulfide	100	BQL
Carbon tetrachloride	10	BQL
Chlorobenzene	5.0	BQL
Chloroethane	10	BQL
Chloroform	5.0	BQL
Chlorodibromomethane	5.0	BQL
DBCP (1,2-Dibromo-3-chloropropane)	25	BQL
Ethylene dibromide (EDB)	5.0	BQL
o-Dichlorobenzene	5.0	BQL
p-Dichlorobenzene	5.0	BQL
t-1,4-Dichloro-2-butene	100	BQL
1,1-Dichloroethane	5.0	BQL
Ethylene dichloride	5.0	BQL
Vinylidene chloride	5.0	BQL
cis-1,2-Dichloroethene	5.0	BQL
t-1,2-Dichloroethene	5.0	BQL
Propylene dichloride	5.0	BQL
cis-1,3-Dichloropropene	10	BQL
t-1,3-Dichloropropene	10	BQL
Ethylbenzene	5.0	BQL
Methyl butyl ketone	50	BQL
Methyl bromide	10	BQL
Methyl chloride	10	BQL
Methylene bromide	10	BQL
Methylene chloride	10	BQL
MEK (2-Butanone)	100	BQL
Methyl iodide	10	BQL
Methyl isobutyl ketone	100	BQL
Styrene	10	BQL
1,1,1,2-Tetrachloroethane	5.0	BQL
1,1,2,2-Tetrachloroethane	5.0	BQL
Tetrachloroethylene	5.0	BQL
Toluene	5.0	BQL
1,1,1-Trichloroethane	5.0	BQL
1,1,2-Trichloroethane	5.0	BQL
Trichloroethene	5.0	BQL
CFC-11 (Trichlorofluoromethane)	5.0	BQL
1,2,3-Trichloropropane	15	BQL
Vinyl acetate	50	BQL
Vinyl chloride	10	BQL
Xylenes (total)	5.0	BQL

Reviewed by: [illegible]

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID:	MW-25d	Date Analyzed:	8/14/99
Client Project ID:	N. Wake Baseline	Analyzed By:	CKC
Lab Sample ID:	69790	Date Collected:	8/4/99
Lab Project ID:	G175-84	Date Received:	8/5/99
Matrix:	Water	Dilution:	1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)

Surrogate Spike Recoveries Compound	Spike Added (ug/L)	Surrogate Result (ug/L)	%Rec
Bromofluorobenzene	10.0	10.2	102
1,2-Dichloroethane-d4	10.0	10.2	102
Toluene-d8	10.0	10.3	103

Comments:

All results are corrected for dilution.

Reviewed by: _____

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID:	MW-26	Date Analyzed:	8/16/99
Client Project ID:	N. Wake Baseline	Analyzed By:	CKC
Lab Sample ID:	69791	Date Collected:	8/4/99
Lab Project ID:	G175-84	Date Received:	8/5/99
Matrix:	Water	Dilution:	1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)
Acetone	100	BQL
Acrylonitrile	200	BQL
Benzene	5.0	BQL
Bromochloromethane	5.0	BQL
Bromodichloromethane	5.0	BQL
Bromoform	5.0	BQL
Carbon disulfide	100	BQL
Carbon tetrachloride	10	BQL
Chlorobenzene	5.0	BQL
Chloroethane	10	BQL
Chloroform	5.0	BQL
Chlorodibromomethane	5.0	BQL
DBCP (1,2-Dibromo-3-chloropropane)	25	BQL
Ethylene dibromide (EDB)	5.0	BQL
o-Dichlorobenzene	5.0	BQL
p-Dichlorobenzene	5.0	BQL
t-1,4-Dichloro-2-butene	100	BQL
1,1-Dichloroethane	5.0	BQL
Ethylene dichloride	5.0	BQL
Vinylidene chloride	5.0	BQL
cis-1,2-Dichloroethene	5.0	BQL
t-1,2-Dichloroethene	5.0	BQL
Propylene dichloride	5.0	BQL
cis-1,3-Dichloropropene	10	BQL
t-1,3-Dichloropropene	10	BQL
Ethylbenzene	5.0	BQL
Methyl butyl ketone	50	BQL
Methyl bromide	10	BQL
Methyl chloride	10	BQL
Methylene bromide	10	BQL
Methylene chloride	10	BQL
MEK (2-Butanone)	100	BQL
Methyl iodide	10	BQL
Methyl isobutyl ketone	100	BQL
Styrene	10	BQL
1,1,1,2-Tetrachloroethane	5.0	BQL
1,1,2,2-Tetrachloroethane	5.0	BQL
Tetrachloroethylene	5.0	BQL
Toluene	5.0	BQL
1,1,1-Trichloroethane	5.0	BQL
1,1,2-Trichloroethane	5.0	BQL
Trichloroethene	5.0	BQL
CFC-11 (Trichlorofluoromethane)	5.0	BQL
1,2,3-Trichloropropane	15	BQL
Vinyl acetate	50	BQL
Vinyl chloride	10	BQL
Xylenes (total)	5.0	BQL

Reviewed by: [illegible]

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID:	MW-26	Date Analyzed:	8/16/99
Client Project ID:	N. Wake Baseline	Analyzed By:	CKC
Lab Sample ID:	69791	Date Collected:	8/4/99
Lab Project ID:	G175-84	Date Received:	8/5/99
Matrix:	Water	Dilution:	1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)

Surrogate Spike Recoveries Compound	Spike Added (ug/L)	Surrogate Result (ug/L)	%Rec
Bromofluorobenzene	10.0	10.0	100
1,2-Dichloroethane-d4	10.0	11.3	113
Toluene-d8	10.0	10.2	102

Comments:

All results are corrected for dilution.

Reviewed by: _____

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID:	Dup	Date Analyzed:	8/14/99
Client Project ID:	N. Wake Baseline	Analyzed By:	CKC
Lab Sample ID:	69792	Date Collected:	8/4/99
Lab Project ID:	G175-84	Date Received:	8/5/99
Matrix:	Water	Dilution:	1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)

Surrogate Spike Recoveries Compound	Spike Added (ug/L)	Surrogate Result (ug/L)	%Rec
Bromofluorobenzene	10.0	10.4	104
1,2-Dichloroethane-d4	10.0	10.1	101
Toluene-d8	10.0	10.4	104

Comments:

All results are corrected for dilution.

Reviewed by: [illegible]

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID:	Trip Blank	Date Analyzed:	8/16/99
Client Project ID:	N. Wake Baseline	Analyzed By:	CKC
Lab Sample ID:	69793	Date Collected:	8/4/99
Lab Project ID:	G175-84	Date Received:	8/5/99
Matrix:	Water	Dilution:	1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)
Acetone	100	BQL
Acrylonitrile	200	BQL
Benzene	5.0	BQL
Bromochloromethane	5.0	BQL
Bromodichloromethane	5.0	BQL
Bromoform	5.0	BQL
Carbon disulfide	100	BQL
Carbon tetrachloride	10	BQL
Chlorobenzene	5.0	BQL
Chloroethane	10	BQL
Chloroform	5.0	BQL
Chlorodibromomethane	5.0	BQL
DBCP (1,2-Dibromo-3-chloropropane)	25	BQL
Ethylene dibromide (EDB)	5.0	BQL
o-Dichlorobenzene	5.0	BQL
p-Dichlorobenzene	5.0	BQL
t-1,4-Dichloro-2-butene	100	BQL
1,1-Dichloroethane	5.0	BQL
Ethylene dichloride	5.0	BQL
Vinylidene chloride	5.0	BQL
cis-1,2-Dichloroethene	5.0	BQL
t-1,2-Dichloroethene	5.0	BQL
Propylene dichloride	5.0	BQL
cis-1,3-Dichloropropene	10	BQL
t-1,3-Dichloropropene	10	BQL
Ethylbenzene	5.0	BQL
Methyl butyl ketone	50	BQL
Methyl bromide	10	BQL
Methyl chloride	10	BQL
Methylene bromide	10	BQL
Methylene chloride	10	BQL
MEK (2-Butanone)	100	BQL
Methyl iodide	10	BQL
Methyl isobutyl ketone	100	BQL
Styrene	10	BQL
1,1,1,2-Tetrachloroethane	5.0	BQL
1,1,2,2-Tetrachloroethane	5.0	BQL
Tetrachloroethylene	5.0	BQL
Toluene	5.0	BQL
1,1,1-Trichloroethane	5.0	BQL
1,1,2-Trichloroethane	5.0	BQL
Trichloroethene	5.0	BQL
CFC-11 (Trichlorofluoromethane)	5.0	BQL
1,2,3-Trichloropropane	15	BQL
Vinyl acetate	50	BQL
Vinyl chloride	10	BQL
Xylenes (total)	5.0	BQL

Reviewed by: _____

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix I Volatiles
by GCMS 8260B

Client Sample ID:	Trip Blank	Date Analyzed:	8/16/99
Client Project ID:	N. Wake Baseline	Analyzed By:	CKC
Lab Sample ID:	69793	Date Collected:	8/4/99
Lab Project ID:	G175-84	Date Received:	8/5/99
Matrix:	Water	Dilution:	1.0

Compound	Quantitation Limit (ug/L)	Result (ug/L)

Surrogate Spike Recoveries

Compound	Spike Added (ug/L)	Surrogate Result (ug/L)	%Rec
Bromofluorobenzene	10.0	10.2	102
1,2-Dichloroethane-d4	10.0	11.4	114
Toluene-d8	10.0	10.3	103

Comments:

All results are corrected for dilution.

Reviewed by:

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix 1 Metals

Client Sample ID:	MW-19	Analyzed By:	JMF
Client Project ID:	N. Wake Basseline	Date Collected:	8/4/99
Lab Sample ID:	69786	Date Received:	8/5/99
Lab Project ID:	G175-84	Matrix:	Water

Metals	Result	Quantitation Limit	Units	Procedure	Date Analyzed
Antimony	BQL	0.0300	MG/L	6010B	8/12/99
Arsenic	BQL	0.0100	MG/L	6010B	8/12/99
Barium	BQL	0.500	MG/L	6010B	8/12/99
Beryllium	BQL	0.0020	MG/L	6010B	8/12/99
Cadmium	BQL	0.0010	MG/L	6010B	8/12/99
Chromium	BQL	0.0100	MG/L	6010B	8/12/99
Cobalt	BQL	0.0100	MG/L	6010B	8/12/99
Copper	BQL	0.200	MG/L	6010B	8/12/99
Lead	BQL	0.0100	MG/L	6010B	8/12/99
Nickel	BQL	0.0500	MG/L	6010B	8/12/99
Selenium	BQL	0.0200	MG/L	6010B	8/12/99
Silver	BQL	0.0100	MG/L	6010B	8/12/99
Thallium	BQL	0.0100	MG/L	6010B	8/12/99
Vanadium	BQL	0.0400	MG/L	6010B	8/12/99
Zinc	BQL	0.0500	MG/L	6010B	8/12/99

Comments

BQL = Below Quantitation Limits

Reviewed By: _____

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix 1 Metals

Client Sample ID:	MW-20	Analyzed By:	JMF
Client Project ID:	N. Wake Basseline	Date Collected:	8/4/99
Lab Sample ID:	69787	Date Received:	8/5/99
Lab Project ID:	G175-84	Matrix:	Water

Metals	Result	Quantitation Limit	Units	Procedure	Date Analyzed
Antimony	BQL	0.0300	MG/L	6010B	8/12/99
Arsenic	BQL	0.0100	MG/L	6010B	8/12/99
Barium	BQL	0.500	MG/L	6010B	8/12/99
Beryllium	BQL	0.0020	MG/L	6010B	8/12/99
Cadmium	BQL	0.0010	MG/L	6010B	8/12/99
Chromium	BQL	0.0100	MG/L	6010B	8/12/99
Cobalt	BQL	0.0100	MG/L	6010B	8/12/99
Copper	BQL	0.200	MG/L	6010B	8/12/99
Lead	BQL	0.0100	MG/L	6010B	8/12/99
Nickel	BQL	0.0500	MG/L	6010B	8/12/99
Selenium	BQL	0.0200	MG/L	6010B	8/12/99
Silver	BQL	0.0100	MG/L	6010B	8/12/99
Thallium	BQL	0.0100	MG/L	6010B	8/12/99
Vanadium	BQL	0.0400	MG/L	6010B	8/12/99
Zinc	BQL	0.0500	MG/L	6010B	8/12/99

Comments

BQL = Below Quantitation Limits

Reviewed By: _____

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix 1 Metals

Client Sample ID:	MW-21	Analyzed By:	JMF
Client Project ID:	N. Wake Basseline	Date Collected:	8/4/99
Lab Sample ID:	69788	Date Received:	8/5/99
Lab Project ID:	G175-84	Matrix:	Water

Metals	Result	Quantitation Limit	Units	Procedure	Date Analyzed
Antimony	BQL	0.0300	MG/L	6010B	8/12/99
Arsenic	BQL	0.0100	MG/L	6010B	8/12/99
Barium	BQL	0.500	MG/L	6010B	8/12/99
Beryllium	BQL	0.0020	MG/L	6010B	8/12/99
Cadmium	BQL	0.0010	MG/L	6010B	8/12/99
Chromium	BQL	0.0100	MG/L	6010B	8/12/99
Cobalt	BQL	0.0100	MG/L	6010B	8/12/99
Copper	BQL	0.200	MG/L	6010B	8/12/99
Lead	BQL	0.0100	MG/L	6010B	8/12/99
Nickel	BQL	0.0500	MG/L	6010B	8/12/99
Selenium	BQL	0.0200	MG/L	6010B	8/12/99
Silver	BQL	0.0100	MG/L	6010B	8/12/99
Thallium	BQL	0.0100	MG/L	6010B	8/12/99
Vanadium	BQL	0.0400	MG/L	6010B	8/12/99
Zinc	BQL	0.0500	MG/L	6010B	8/12/99

Comments

BQL = Below Quantitation Limits

Reviewed By: _____

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix 1 Metals

Client Sample ID:	MW-25	Analyzed By:	JMF
Client Project ID:	N. Wake Basseline	Date Collected:	8/4/99
Lab Sample ID:	69789	Date Received:	8/5/99
Lab Project ID:	G175-84	Matrix:	Water

Metals	Result	Quantitation Limit	Units	Procedure	Date Analyzed
Antimony	BQL	0.0300	MG/L	6010B	8/12/99
Arsenic	BQL	0.0100	MG/L	6010B	8/12/99
Barium	BQL	0.500	MG/L	6010B	8/12/99
Beryllium	BQL	0.0020	MG/L	6010B	8/12/99
Cadmium	BQL	0.0010	MG/L	6010B	8/12/99
Chromium	BQL	0.0100	MG/L	6010B	8/12/99
Cobalt	BQL	0.0100	MG/L	6010B	8/12/99
Copper	BQL	0.200	MG/L	6010B	8/12/99
Lead	BQL	0.0100	MG/L	6010B	8/12/99
Nickel	BQL	0.0500	MG/L	6010B	8/12/99
Selenium	BQL	0.0200	MG/L	6010B	8/12/99
Silver	BQL	0.0100	MG/L	6010B	8/12/99
Thallium	BQL	0.0100	MG/L	6010B	8/12/99
Vanadium	BQL	0.0400	MG/L	6010B	8/12/99
Zinc	BQL	0.0500	MG/L	6010B	8/12/99

Comments

BQL = Below Quantitation Limits

Reviewed By: _____

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix 1 Metals

Client Sample ID:	MW-25d	Analyzed By:	JMF
Client Project ID:	N. Wake Basseline	Date Collected:	8/4/99
Lab Sample ID:	69790	Date Received:	8/5/99
Lab Project ID:	G175-84	Matrix:	Water

Metals	Result	Quantitation Limit	Units	Procedure	Date Analyzed
Antimony	BQL	0.0300	MG/L	6010B	8/12/99
Arsenic	BQL	0.0100	MG/L	6010B	8/12/99
Barium	BQL	0.500	MG/L	6010B	8/12/99
Beryllium	BQL	0.0020	MG/L	6010B	8/12/99
Cadmium	BQL	0.0010	MG/L	6010B	8/12/99
Chromium	BQL	0.0100	MG/L	6010B	8/12/99
Cobalt	BQL	0.0100	MG/L	6010B	8/12/99
Copper	BQL	0.200	MG/L	6010B	8/12/99
Lead	BQL	0.0100	MG/L	6010B	8/12/99
Nickel	BQL	0.0500	MG/L	6010B	8/12/99
Selenium	BQL	0.0200	MG/L	6010B	8/12/99
Silver	BQL	0.0100	MG/L	6010B	8/12/99
Thallium	BQL	0.0100	MG/L	6010B	8/12/99
Vanadium	BQL	0.0400	MG/L	6010B	8/12/99
Zinc	BQL	0.0500	MG/L	6010B	8/12/99

Comments

BQL = Below Quantitation Limits

Reviewed By: [illegible]

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix 1 Metals

Client Sample ID:	MW-26	Analyzed By:	JMF
Client Project ID:	N. Wake Basseline	Date Collected:	8/4/99
Lab Sample ID:	69791	Date Received:	8/5/99
Lab Project ID:	G175-84	Matrix:	Water

Metals	Result	Quantitation Limit	Units	Procedure	Date Analyzed
Antimony	BQL	0.0300	MG/L	6010B	8/12/99
Arsenic	BQL	0.0100	MG/L	6010B	8/12/99
Barium	BQL	0.500	MG/L	6010B	8/12/99
Beryllium	BQL	0.0020	MG/L	6010B	8/12/99
Cadmium	BQL	0.0010	MG/L	6010B	8/12/99
Chromium	BQL	0.0100	MG/L	6010B	8/12/99
Cobalt	**0.0100**	0.0100	MG/L	6010B	8/12/99
Copper	BQL	0.200	MG/L	6010B	8/12/99
Lead	BQL	0.0100	MG/L	6010B	8/12/99
Nickel	BQL	0.0500	MG/L	6010B	8/12/99
Selenium	BQL	0.0200	MG/L	6010B	8/12/99
Silver	BQL	0.0100	MG/L	6010B	8/12/99
Thallium	BQL	0.0100	MG/L	6010B	8/12/99
Vanadium	BQL	0.0400	MG/L	6010B	8/12/99
Zinc	BQL	0.0500	MG/L	6010B	8/12/99

Comments

BQL = Below Quantitation Limits

Reviewed By: _____

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Appendix 1 Metals

Client Sample ID:	Dup	Analyzed By:	JMF
Client Project ID:	N. Wake Basseline	Date Collected:	8/4/99
Lab Sample ID:	69792	Date Received:	8/5/99
Lab Project ID:	G175-84	Matrix:	Water

Metals	Result	Quantitation Limit	Units	Procedure	Date Analyzed
Antimony	BQL	0.0300	MG/L	6010B	8/12/99
Arsenic	BQL	0.0100	MG/L	6010B	8/12/99
Barium	BQL	0.500	MG/L	6010B	8/12/99
Beryllium	BQL	0.0020	MG/L	6010B	8/12/99
Cadmium	BQL	0.0010	MG/L	6010B	8/12/99
Chromium	BQL	0.0100	MG/L	6010B	8/12/99
Cobalt	**0.0102**	0.0100	MG/L	6010B	8/12/99
Copper	BQL	0.200	MG/L	6010B	8/12/99
Lead	BQL	0.0100	MG/L	6010B	8/12/99
Nickel	BQL	0.0500	MG/L	6010B	8/12/99
Selenium	BQL	0.0200	MG/L	6010B	8/12/99
Silver	BQL	0.0100	MG/L	6010B	8/12/99
Thallium	BQL	0.0100	MG/L	6010B	8/12/99
Vanadium	BQL	0.0400	MG/L	6010B	8/12/99
Zinc	BQL	0.0500	MG/L	6010B	8/12/99

Comments

BQL = Below Quantitation Limits

Reviewed By: _____

ARADIGM ANALYTICAL LABORATORIES, IN
527 Northchase Parkway SE, Wilmington, NC 28405
hone: (910)-350-1903 FAX: (910)-350-1557

Chain-of Custody Record & Analytical Request

lient: CDM
ddress: 5400 Glenwood Ave Ste 300
ddress: Raleigh, NC 27612
Quote #:

Project ID: N. WAKE BASCUNE
P.O. Number:
Contact: TIM GRANT
Phone: (919) 787-5620

Date: 8-4-99
Turnaround: STANDARD
Job Number:

Report To: MAT COCHRANE
CDM-Ral

Invoice To: TIM GRANT

Sample ID	Date	Time	Matrix	Preservatives: HCl	Preservatives: HNO3			Analyses: 8260*	Analyses: Metals*									Comments: Please specify any special reporting requirements
																		G175-84
MW-19	8-4-99	12:10	W	✓	✓			3	1									NORTH CAROLINA APPENDIX
MW-20	8-4-99	11:55	W	✓	✓			3	1									I - Metals & VOC's
MW-21	8-4-99	1445	W	✓	✓			3	1									
MW-25	8-4-99	1350	W	✓	✓			3	1									
MW-25d	8-4-99	1510	W	✓	✓			3	1									
MW-26	8-4-99	14:30	W	✓	✓			2	1									
Dup	8-4-99	—	W	✓	✓			3	1									
T.B.			W	✓				2										

Relinquished By	Date	Time	Received By	Date	Time	Temperature	Sampled By	Airbill #
Matthew Cochrane	8-4-99	16:30	[illegible]	8/4/99	1000	1.2°C		812314[illegible]

ORIGINAL

APPENDIX H
STATISTICAL CALCULATIONS

North Wake - Lined Landfill Baseline Sampling (MW-19, -20, -21, -25, -25d, -26)
Test of Proportions - used when the data is greater than 50% nondetect (data through April 1999)

BACKGROUND AND COMPLIANCE WELLS

Parameter	N	P	NP	N(1-P)	X	Y	Nb	Nc	PB = X/NB	PC = Y/NC	X+Y	NB+NC	SD	Z
MW-19														
Cadmium	15.00	0.13	2.00	13.00	1.00	1.00	10.00	5.00	0.10	0.20	2.00	15.00	0.21	-0.47
Chromium	15.00	0.27	4.00	11.00	3.00	1.00	10.00	5.00	0.30	0.20	4.00	15.00	0.28	0.36
Cobalt	15.00	0.20	3.00	12.00	2.00	1.00	10.00	5.00	0.20	0.20	3.00	15.00	0.25	0.00
Lead	15.00	0.13	2.00	13.00	1.00	1.00	10.00	5.00	0.10	0.20	2.00	15.00	0.21	-0.47
Nickel	15.00	0.13	2.00	13.00	1.00	1.00	10.00	5.00	0.10	0.20	2.00	15.00	0.21	-0.47
Vanadium	15.00	0.13	2.00	13.00	1.00	1.00	10.00	5.00	0.10	0.20	2.00	15.00	0.21	-0.47
Zinc	15.00	0.40	6.00	9.00	5.00	1.00	10.00	5.00	0.50	0.20	6.00	15.00	0.31	0.97
MW-20														
Cadmium	14.00	0.14	2.00	12.00	1.00	1.00	10.00	4.00	0.10	0.25	2.00	14.00	0.25	-0.61
Chromium	14.00	0.29	4.00	10.00	3.00	1.00	10.00	4.00	0.30	0.25	4.00	14.00	0.32	0.16
Cobalt	14.00	0.21	3.00	11.00	2.00	1.00	10.00	4.00	0.20	0.25	3.00	14.00	0.29	-0.17
Zinc	14.00	0.43	6.00	8.00	5.00	1.00	10.00	4.00	0.50	0.25	6.00	14.00	0.35	0.71
MW-21														
Cadmium	14.00	0.14	2.00	12.00	1.00	1.00	10.00	4.00	0.10	0.25	2.00	14.00	0.25	-0.61
Cobalt	14.00	0.21	3.00	11.00	2.00	1.00	10.00	4.00	0.20	0.25	3.00	14.00	0.29	-0.17
Copper	14.00	0.14	2.00	12.00	1.00	1.00	10.00	4.00	0.10	0.25	2.00	14.00	0.25	-0.61
Lead	14.00	0.14	2.00	12.00	1.00	1.00	10.00	4.00	0.10	0.25	2.00	14.00	0.25	-0.61
Nickel	14.00	0.14	2.00	12.00	1.00	1.00	10.00	4.00	0.10	0.25	2.00	14.00	0.25	-0.61
Vanadium	14.00	0.14	2.00	12.00	1.00	1.00	10.00	4.00	0.10	0.25	2.00	14.00	0.25	-0.61
Zinc	14.00	0.43	6.00	8.00	5.00	1.00	10.00	4.00	0.50	0.25	6.00	14.00	0.35	0.71
MW-26														
Cadmium	14.00	0.14	2.00	12.00	1.00	1.00	10.00	4.00	0.10	0.25	2.00	14.00	0.25	-0.61
Cobalt	14.00	0.29	4.00	10.00	2.00	2.00	10.00	4.00	0.20	0.50	4.00	14.00	0.32	-0.94

N = number of samples in data set (bg and compliance) Nb - Number of background samples; Nc - Number of compliance samples
P = Number of bg and compliance detections, divided by N
NP and N(1-P) are tests of the normality of the data; if both of these equations result in a value of >=5, the normal approximation is justified.
X = number of detections in the background set
Y = number of detections in the compliance set
SD = standard error of the difference in proportions
Z = the Z statistic, which is compared to the 99.5 percentile from the standard normal distribution, 2.58.
(If the absolute value of Z exceeds 2.58, this provides statistically significant evidence at the 1% significance level that the proportion of detections in the compliance well is statistically different than the detections in the background well. A value greater than 2.58 would be interpreted as evidence of contamination).