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# PRELIMINARY SITE CHARACTERIZATION REPORT

**GS Roofing Products Site**
**6350 NW Front Avenue**
**Portland, Oregon**

**February 11, 2005**

**Prepared for:**
**GS Roofing Products**
**6350 NW Front Avenue**
**Portland, Oregon**

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IS EXISTING DATA ADEQUATE

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I Copies of Laboratory Analytical Data Packages - Soil and Ground-Water Samples

## SECTION 1.0

## HISTORICAL SITE OPERATIONS

### 1.1 Site History and Operations

The GS Roofing Products site (GS Roofing site) is located at 6350 NW Front Avenue, Portland, Oregon in Section 18 of Township 1 North, Range 1 East, and Section 13 of Township 1 North, Range 1 West, on tax lots 13, 19, and 31 (Figure 1-1). The subject property, currently operated by the CertainTeed Corporation (CertainTeed), occupies approximately 17.5 acres along the west bank of the Willamette River in Portland's Northwest Industrial District, which is zoned as heavy industrial. The site consists of an office building, south warehouse, roofing plant, east warehouse, warehouse annex, west warehouse, asphalt loading area, and finished product storage area (Figure 1-2). A small stream, Saltzman Creek, emerges from a culvert adjacent to the eastern boundary of the property and flows east to the Willamette River. In addition to this property, CertainTeed leases several adjacent lots to the southeast of Saltzman Creek for finished product storage.

The subject site was reportedly undeveloped land prior to being developed by a roofing products manufacturing company (Pacific Roofing Company) in 1939. Since that time it has been owned and operated by a series of roofing and/or paper products manufacturers. Prior operators include PABCO products, Fibreboard Paper Products, and Bird and Son. GS Roofing Products Company, Inc. (formerly known as Genstar) operated at the site from the 1980's until Bird Incorporated (a subsidiary of CertainTeed Corporation) purchased the facility in 1999. Current operations include manufacturing of roofing products including asphalt-based shingles and roll goods. Activities associated with production of roofing products include asphalt storage and heating; materials handling; and finished product storage.

Raw materials currently used in the production of roofing products include heated asphalt, fiberglass mat, and crushed limestone, sand, colored granules, and to a lesser degree, copper granules. The fiberglass mat receives sequential treatments during the manufacturing process. First, the heated asphalt is mixed with crushed limestone and applied to the glass mat followed by the application of textural material such as crushed rock or silica sand. Application of sand, plastic, mylar strips, and alignment paint strips complete the manufacturing process.

Neighboring properties include the Willbridge Bulk Fuels Facility (Willbridge Facility) to the west and south, and a chemical manufacturing facility operated by ATOFINA Chemicals, Inc. (ATOFINA; former ELF Atochem Corporation), to the north. There are 141 aboveground storage tanks (ASTs) on the immediately adjacent portion of the Willbridge Facility, the Kinder Morgan terminal (formerly known as the GATX Terminals Corporation and Shell Oil Company). The Kinder Morgan terminal reportedly has managed/manages a variety of petroleum products including diesel, gasoline, fuel oils, motor oil, greases and lubrication oils. A total of 95 spills have been documented at the adjacent terminal, with volumes ranging from less than 1 gallon to 126,000 gallons (see Table 2, KHM Environmental Management, Inc. [KHM], Remedial Investigation [RI[ Report, draft RI report dated December 2000, provided in Appendix A). The portion of the ATOFINA site immediately adjacent to the GS Roofing site was used for the storage of chemical salts.

Other properties in the general vicinity of the GS Roofing site include additional manufacturing facilities, a municipal waste transfer station, gasoline service stations, and railroad yards. High-pressure underground pipelines used to transport refined petroleum product (i.e., gasoline and diesel) run parallel to NW Front Avenue beneath the GS Roofing Products parking lot or the adjacent sidewalk. Santa Fe Pacific Pipeline (SFPP) operates three (3) 8-inch diameter underground pipelines while Olympic Pipeline is believed to operate one pipeline.

OLYMPIC PIPELINE
SANTA FE PIPELINE

## 1.2 Site Areas of Concern (AOCs)

IT IS HARD TO FIND THESE POINTS ON AOC MAP FIG 1-3

Based on historical and current site uses and available environmental sampling data, the following areas of concern (AOCs) have been identified at the Site (see Figure 1-3): 1) two former dry wells, which were located northwest of the west warehouse; 2) a "possible" 5,000-gallon capacity bunker fuel underground storage tank (UST), located south of the west warehouse; 3) the historical asphalt "processing" area, located northwest of the west warehouse; 4) the storm drain/former process sewer system; 5) a former "landfill" area, which extends across the current product storage area from the office buildings towards the Willamette River; and 6) riverbank soils (fill) associated with Saltzman Creek and with the adjacent Willamette River. Environmental conditions in these site areas are reviewed in Section 5.0. The site investigation activities detailed herein focused on AOCs #1, #2 & #5, and based on the results obtained, the former dry wells (AOC #1) and the bunker fuel UST (AOC #2) have been eliminated as AOCs at the GS Roofing site.

NOT FOUND ON FIG 1-3

SEE PREVIOUS NOTE

IN CURSORY WAY

## 1.3 Upgradient Sources

Regional ground-water flow in the vicinity of the GS Roofing site is to the east (towards the Willamette River). Surrounding properties are depicted on Figure 1-4.

As discussed previously, the Willbridge Facility borders the GS Roofing site to the southwest and west (across NW Front Avenue). The December 2000 KHM RI Report indicates that the portion of the Willbridge Facility (the Kinder Morgan or former GATX Terminal) west of the GS Roofing site is located hydraulically upgradient, and the RI Report includes the GS Roofing site within the boundaries of the Willbridge facility "locality" (i.e., human or eco-receptor contact is reasonably likely now or in the future).

GS ROOF IS WITHIN LOCALITY OF PROPERTY FOR KINDER MORGAN WILLBRIDGE

SPH IS OF KINDER-MORGAN ORIGIN

Numerous historical spills have been documented at the Kinder Morgan Terminal and at least one KINDER-MORGAN monitoring well (MW-7) in the portion of the facility located immediately upgradient of the GS Roofing Site contained separate-phase hydrocarbons (SPH) during a March 2003 gauging event. This well has historically demonstrated an apparent product thickness (APT) exceeding one foot (Delta Environmental Consultants, Inc., Semi-Annual Groundwater Monitoring Report, July 3, 2003). Also, the Oregon Department of Environmental Quality (DEQ) acknowledged in a March 12, 2001 letter to Saint-Gobain Corporation that soil and ground-water data "confirmed contamination is migrating from the Willbridge Terminal and is affecting the western portion of the GS Roofing property".

The Willbridge Facility draft RI Report also documents the presence of a former surface water channel or slough northwest of the GS Roofing site that extended from the area of present day Doane Lake before discharging to the Willamette River via Saltzman Creek (see Figure 5, KHM, December 2002, provided in Appendix A). The RI Report indicates that fill material placed in the former channel and lake bed areas appears to influence current ground-water flow. Industrial facilities adjacent to the former surface water channel (also known as the Doane Lake Study Area) include Air Liquide Corporation, Gould, Inc./NL Industries, Esco, Inc., and Aventis Cropscience USA, LP (former Rhone-Poulenc AG Company).

CO-MINGLED PLUMES

ATOFINA borders the GS Roofing site to the northwest (see Figure 1-4). Although ground-water flow across much of the ATOFINA site follows the easterly regional flow, ground-water in the southern portion of the ATOFINA site is to the southeast, and available data suggest that a dissolved chromium plume (and possibly a perchlorate plume) extends from the ATOFINA site onto the eastern portion of the GS Roofing site (see Figure 2; Environmental Resources Management, Quarterly Progress Report, October 2003, provided in Appendix A).

Cr. POSSIBLE PER CHLORATE IN GW

## SECTION 2.0

## PRELIMINARY SOIL AND GROUND-WATER QUALITY DATA / SITE HISTORY SKETCH

### 2.1 Prior UST Removal/Closure Sampling

LOCATION OF OFFICE

A 1,000-gallon leaded gasoline tank was removed from the site by Chempro on April 4, 1990. The former gasoline UST location is illustrated in Figure 1-2. Samples taken at each end of the tank (I-N & I-S) were analyzed for total petroleum hydrocarbons (TPH) by EPA Method 418.1. Former investigation sample locations are depicted in Figure 2-1. Results indicated 240 milligrams per kilogram (mg/kg) and 2,100 mg/kg, respectively. Contaminated soils were reportedly not removed at the time of the excavation due to proximity to natural gas lines.

ARE MTBE OR ORGANIC PB FOUND IN MW-7?

1000 GAL GAS UST

OWNER OR NOT PERFORMED

In March of 1991, Cascade Earth Sciences, Ltd. (CES) conducted a soils investigation prior to decommissioning a diesel UST. The former diesel UST location is depicted in Figure 2-1. Six boreholes were installed on May 1, 1991 in the area of the diesel UST. Former boring locations are depicted in Figure 2-1. Samples from borings 3, 5 and 6 were collected and submitted to the laboratory for analysis of Hydrocarbon Identification (HCID), TPH-gasoline range hydrocarbons (TPH-G), and TPH by EPA Method 418.1. The TPH concentrations ranged from less than 10 mg/kg to 2,800 mg/kg.

I CANNOT FIND DIES UST & 6 BORING LOCATIONS ON F-102.1

DIESEL UST # NOT ON MAP. SIZE?

On July 30, 1991 OMNI Environmental Service, Inc. (OMNI) reportedly removed a 2,000-gallon diesel UST. Approximately 10 cubic yards of soil were removed and stockpiled on-site. Four soil samples were collected at the bottom and sides of the excavation (A-D). Samples were submitted to the laboratory for analysis of TPH-Diesel (TPH-D) via Method OAR/DEQ. Samples B & C were also analyzed for TPH-HCID via Method OAR/DEQ. TPH-D results ranged from less than 25 mg/kg to 5,900 mg/kg.

10 CY OVEREX

2000 GAL DIESEL UST #2 NOT FOUND ON MAP

CONF. SAMPLES NOT FOR DIES.

ARE DATA IN TABLE SO NEWHERE?

In October 1991, OMNI installed 14 soil borings to investigate the extent of ground-water contamination associated with the former gasoline and diesel USTs; five were completed as monitoring wells (MW-1 through MW-5). On February 19, 1992, OMNI installed one additional monitoring well, MW-6. A soil sample was collected from B-15/MW-6 at a depth of 20 feet below surface grade (bgs). Former boring/monitoring well locations are depicted in Figure 2-1. The sample was analyzed for TPH-HCID, and results indicated diesel and bunker-related petroleum products. The sample was also analyzed for TPH by EPA Method 418.1 and resulted in a concentration of 420 mg/kg.

MW-2 THRU MW-6 ABANDONED

As a result of the October 1991 and February 1992 investigations, OMNI excavated an additional 80 cubic yards of soil, to a depth of 6-10 feet bgs on April 23, 1992. Two soil samples were collected from the excavated soil and submitted to the laboratory for analysis of TPH-HCID, TPH-G, and benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Method 8020. For soil sample 0507-SS-1, the BTEX analysis results were: benzene, <500 micrograms per kilogram (µg/kg); toluene, <1,500 µg/kg; ethylbenzene, <500 µg/kg; and total xylenes 55,000 µg/kg. For soil sample 0507-SS-2, the BTEX analysis results were: benzene, <5,000 µg/kg; toluene, 59,000 µg/kg; ethylbenzene, <5,000 µg/kg; and total xylenes, 640,000 µg/kg. TPH-D analysis demonstrated concentrations of 50 mg/kg & 51 mg/kg in the two samples, respectively, and TPH-G analysis demonstrated concentrations of 1,900 mg/kg and 8,900 mg/kg, respectively.

DOCY OVERLY LOCATION UNK. WHY?

SOUNDS LIKE A GASOLINE ISSUE.

On February 14-16, 1995, four additional monitoring wells (MW-7 through MW-10) were installed by De Minimis, Inc. Environmental Management (De Minimis) to further define the extent of subsurface contamination. The TPH-G result for S7-10 was 490 mg/kg, and TPH-D results ranged from 12 mg/kg to 2,500 mg/kg. TPH-HCID results indicated gas/diesel, diesel, diesel/heavy oil, and non-detect (in S10-15).

MORE WELLS 7-10 LOOKING FOR FUELS

A total of ten ground-water monitoring wells were installed at the site from October 1991 through February 1995. Former monitoring well locations are depicted in Figure 2-1. The monitoring well array was sampled quarterly from the fourth quarter of 1991 to the first quarter of 1998. Ground-water sampling activities were also conducted in August & November 2000. A copy of the summary historical liquid-level and ground-water quality data table from the January 5, 2001, CertainTeed Corporation Closure Report prepared by IT Corporation is provided in Appendix A.

Compounds of environmental concern in ground water previously identified at the site include aromatic hydrocarbon (BTEX) compounds, TPH gasoline-range organics (TPH-GRO) and selected total metals. BTEX constituents were historically detected in all of the monitoring wells at the Site (MW-1 through MW-10). Monitoring wells exhibiting the highest historical total BTEX concentrations (MW-2, MW-7, and MW-8) are located south of the former gasoline UST. Maximum detected total BTEX concentrations in monitoring wells MW-2, MW-7, and MW-8 were 31,400 micrograms per liter (µg/L; 2/26/92); 20,000 µg/L (5/22/96); and 1,499 µg/L (10/22/97); respectively (see Appendix A).

GW CONTAINS: BTEX G METALS

APP. A NOT FOUND IN THIS RPT

Elevated benzene concentrations were observed in upgradient monitoring well MW-1 in August & November 1996, October 1997, and March 1998. Spikes in benzene concentrations also occurred in monitoring wells MW-6, MW-8, and MW-10 in November 1996, June 1997, and October 1997, respectively (see Appendix A).

Based upon these data, on July 28, 1998, EMCON submitted a closure report to the Oregon Department of Environmental Quality (DEQ) requesting no further action (NFA) for the former USTs. EMCON attributed increases/persistence of benzene concentrations in upgradient wells to be a result of on-site migration from the Willbridge Terminal.

IN CLOSURE REQUEST BENZ IN GW IS ATTRIBUTED TO KM WILLBRIDGE

In response to the July 28, 1998, NFA request, DEQ required additional ground-water sampling and a soil investigation. On October 9, 2000, IT Corporation (IT) installed three direct-push Geoprobe borings in order to satisfy DEQ's request for additional data. The results indicated no significant residual petroleum contamination in the shallow soils. Samples from the shallow zone were non-detect for petroleum hydrocarbons. Based upon these data, IT concluded that no additional residual source material was present in the area of the former USTs. IT subsequently issued a Closure Report for the two USTs on January 5, 2001. On March 19, 2001 DEQ responded issuing a NFA letter relative to the two USTs removed in the early 1990s.

DID GEOPROBE BIAS FINDINGS? DEQ NFA WHAT ABOUT SECOND DISPENSER UST?

## 2.2 Prior Sampling in the Former Landfill AOC Area

In November-December 1992, Applied Geotechnology, Inc. (Applied) conducted an investigation in the former fill area at the request of GS Roofing prior to expanding and paving the outdoor finished product storage area. The investigation consisted of excavating seven test pits along the eastern portion of the property (bordered by Saltzman Creek, the facility buildings, Front Avenue and the Willamette River). Test pit locations are depicted in Figure 2-1. Applied noted an "oily substance" and "groundwater" seeping into test pit number six, located proximal to the south-central portion of the investigation area. Reportedly no soil or ground-water samples were collected and analyzed by Applied.

On December 16, 1992, De Minimis, Inc. collected five water samples from a test pit dug three feet bgs on the southern portion of the property to further explore Applied's report of an oily substance. Approximate sample locations are illustrated on Figure 2-1.

NOT IDENTIFIED ON FIG 2-1

Water samples were analyzed for TPH via EPA Method 418.1, volatile organic compounds (VOCs) via EPA Method 8240, semi-volatile organic compounds (SVOCs) via EPA Method 8270, polychlorinated biphenyls (PCBs) via EPA Method 3510/8080, and toxicity

characteristic leaching procedures (TCLP) analysis via EPA Method 1311 with Heavy Metals analysis via EPA Method 6010/7470. Results for VOCs, SVOCs, and TCLP heavy metals were non-detect (ND). TPH was detected at a reported concentration of 860 parts per million (ppm), and PCBs were detected at a reported concentration of 1 ppm.

In January of 1993, De Minimis, Inc. conducted an expanded subsurface investigation to further assess the occurrence and significance of conditions documented by the December 1992 investigations. The investigation resulted in the excavation of five test pits and the collection of eight soil samples (see Figure 2-1 for test pit locations). Samples were submitted for laboratory analysis of TPH and PCBs. Results indicated TPH concentrations ranging from ND (less than 3 mg/kg) to 23,000 mg/kg, and PCBs from ND (less than 0.05 mg/kg) to 0.59 mg/kg (initial preliminary results indicated a PCB detection of 3.0 mg/kg but were reanalyzed by the laboratory and found to be an apparent "lab error").

## 2.3 NPDES Sampling

The Oregon DEQ issued National Pollutant Discharge Elimination System (NPDES) General Permit #1200-H to CertainTeed on December 23, 1992, revised NPDES General Permit #1200-Z on October 23, 1997, and revised NPDES General Permit #1200-Z on July 26, 2002. NPDES permits authorized CertainTeed to discharge storm water into Saltzman Creek via two outfalls (Outfall A and Outfall B). Outfall A is located at the end of a surface drainage swale in the loading dock area. Outfall B is located south of the product storage area on the northern side of Saltzman Creek. Outfall/sample locations are depicted in Figure 1-2. Saltzman Creek ultimately discharges into the Willamette River.

STORMWATER CHARACTERIZATION SECTION

ONLY NPS 001 FOUND ON FIG 1-2

There are four drainage basins located on the property: Drainage Basins (DBs) 001 & 002, which contain point-source discharges, and NPS 001 & 002, which contain non-point source (NPS) discharges. Catch basin and drainage basin locations are illustrated on Figure 1-2. The majority of the manufacturing and industrial activities at the GS Roofing facility occur within DB 001, which encompasses approximately 5.0 acres of generally flat topography. A network of catch basins direct drainage and storm water runoff in DB 001 to Outfall B, which is located on the southern slope of the product storage area. Prior to being discharged at Outfall B, storm water is processed through an oil/water separator.

Drainage Basin 002 encompasses approximately 2.9 acres of generally flat topography. Storm water in DB 002 is diverted from a concrete box catch basin adjacent to the South Warehouse to Outfall A. Storm water in DB 002 also drains by sheet-flow to a drainage ditch, and then via a culvert located southwest of the former landfill area (see Figure 1-2).

There are also two areas of non-point source runoff each approximately 1 acre in area: NPS 001, located in the eastern area of the site, and NPS 002, located in the southwestern area of the site. NPS 001 & NPS 002 do not flow to a discrete outfall, and storm water runoff is not channeled by catch basins. Areas encompassing NPS 001 & NPS 002 are utilized for the storage of finished products wrapped in water-resistant material. Raw materials are not stored in either of the NPS drainage basin areas.

Laboratory sampling requirements associated with the NPDES permit dated December 23, 1992 (and subsequent reissuances) included arsenic, cadmium, chromium, copper, lead, mercury, nickel, zinc, pH, total organic carbon (TOC), chemical oxygen demand (COD), total suspended solids (TSS), and oil and grease at Outfalls A and B on a biannual basis. Visual monitoring of storm water discharge for the presence of floating solids (color and/or foam) or an oil and grease sheen is required on a monthly basis.

NPDES PERMIT PRIORITY METALS

NPDES permit compliance monitoring data from November 1993 through May 2004 are presented in Table 2-1. With respect to effluent discharge limits, several parameters exceeded their respective effluent limits during sampling activities from November 1993 through May 2004. Oil and Grease exceeded the effluent limit of 10 milligrams per liter (mg/L) in Outfall B on March 30, 2004 at a concentration of 22.1 mg/L. The March 30, 2004 sample was collected by the City of Portland Bureau of Environmental Services (BES). Outfall B was resampled on May 26, 2004, and oil and grease was ND. Copper exceeded the effluent limit of 0.1 mg/L in Outfall A on the following sampling events (5/28/02, 4/3/03, 11/19/03, 5/26/04 & 11/2/04) at concentrations of 0.141 mg/L, 0.124 mg/L, 0.379 mg/L & 0.167 mg/L, respectively, but was below the effluent limit in the BES sample collected on March 30, 2004.

Zinc slightly exceeded the discharge limit of 0.6 mg/L in Outfall A on 5/7/99 & 10/10/01 at concentrations of 0.665 mg/L & 0.719 mg/L, respectively, and in Outfall B on 11/29/00 at a concentration of 0.659 mg/L. Finally, TSS exceeded the discharge limit of 130 mg/L in Outfall A on 11/30/93, 4/3/03 & 5/26/04 at concentrations of 614 mg/L, 156 mg/L & 149 mg/L, respectively. Except for the instances described above, all other sampled parameters were either "ND" or detected concentrations were below established effluent discharge limits during biannual sampling events. When exceedances were noted, investigations were conducted in an attempt to identify the source/reason for the exceedance. When applicable and appropriate, Best Practices measures were instituted to address permit exceedances.

## SECTION 3.0

## PRELIMINARY SITE CHARACTERIZATION WORK SCOPE / METHODS

In June 2003, a scope of work was developed by CertainTeed, in part, to:

1) determine the nature, extent and mobility of materials utilized as fill on the eastern portion of the site ("former" landfill AOC); PARTIALLY COMPLETED

2) investigate the presence/absence of a "potential" 5,000 gallon bunker fuel UST; SEE TANK NOT FOUND, QUESTION REMAINS OPEN & SOIL NOT FOUND

3) evaluate the presence/absence of subsurface impact proximal to the former bunker fuel AST; and DONE

4) investigate and close the two registered storm water UIC dry wells in accordance with federal and state regulations. DONE

### 3.1 Scope of Work

In conjunction with preliminary site characterization (Expanded Preliminary Assessment [XPA], as identified in the June 25, 2003 correspondence from Forensic Environmental Services, Inc. [FES]), FES directed the following activities at the site: 1) non-intrusive (geophysical) investigations of the former landfill area and the vicinity of the potential 5,000 UST; 2) intrusive investigations of the former landfill and former bunker fuels AST areas via the installation of soil borings and/or monitoring wells and the collection of soil and/or ground-water samples; 3) hydraulic conductivity testing at selected monitoring wells in the former landfill AOC; and 4) closure of two former dry wells. Details are provided below.

#### 3.1.1 Geophysical Investigations

The geophysical investigations in the vicinity of the potential 5,000-gallon bunker fuel UST (conducted during September 2003), consisted of ten (10) ground penetrating radar (GPR)

transects on a north-south/east-west grid with a spacing of approximately 5 feet to identify potential buried metallic objects/utilities. The geophysical investigations in the vicinity of the former landfill (also conducted during September 2003), included 17 electromagnetic conductivity transects to determine the lateral extent of the fill, and four electrical resistivity soundings to determine the vertical extent and structure of native soils beneath the fill. Results are discussed in Section 4.7. RESULTS NOT FOUND HERE

### 3.1.2 Soil and Ground-Water Sampling

Based on the results of the geophysical investigation, proposed soil boring and monitoring well locations were identified, and a scope of work was developed for soil and ground-water sampling. Nine soil borings were installed to a total depth of approximately 30 feet via hollow-stem auger drilling methods with ASTM standard-penetration split-spoon sampling at 5-foot intervals to a total depth of approximately 30 feet. Soil boring locations are depicted on Figure 3-1. A total of 22 soil samples were collected and analyzed for: VOCs via EPA Methods 8260B, SVOCs via EPA Method 8270C, total diesel-range petroleum hydrocarbons (TPH-Dx; Method NWTPH-Dx); total gasoline-range hydrocarbons (TPH-Gx; Method NWTPH-Gx); total heavy oil range hydrocarbons (TPH-HORH; Method NWTPH-ORH); total PPL metals via EPA Methods Series 6000/7000; and PCBs via EPA Method 8082. good

Selected soil samples were also analyzed for total organic carbon (TOC; EPA Modified Method 9060), and two composite soil samples were collected for waste characterization and submitted for TCLP analysis of VOCs, SVOCs, and metals via EPA Method 1311; TPH-Dx (Method NWTPH-Dx); and TPH-Gx (Method NWTPH-Gx). Additional details on soil boring installation and sampling are provided in Section 4.3.

Four of the nine soil borings were converted into ground-water monitoring wells. Details on monitoring well installation and development, and ground-water quality sampling are provided in Section 4.4. Following monitoring well development (development water samples were collected for purposes of waste characterization), liquid-level data were collected and ground-water samples were collected from each of the new wells and analyzed for: VOCs via EPA Method 8260B; SVOCs (EPA Method 8270C), TPH-Dx (Method NWTPH-Dx); TPH-HORH (Method NWTPH-ORH); total and dissolved PPL metals (EPA Methods Series 6000/7000); and PCBs via (EPA Method 8082). Additional details on monitoring well installation, development, and sampling are discussed in Section 4.4.

### 3.1.3 Hydraulic Conductivity Testing

Two monitoring wells in the former landfill area (MW-11 & MW-12) were selected for hydraulic conductivity testing along with an upgradient well (MW-1). Testing was performed on August 25, 2004 by placing a combination pressure transducer/data logger unit (Solinst-brand LT-Levelogger) near the bottom of each well, and inserting a drop tube from a surface-mounted pump a minimum of four to 5 feet below the standing water level. Following well equilibration (approximately 5 to 10 minutes), static water levels were measured manually and via the pressure transducer.

After equilibration, the data logger was activated, and the well was pumped at a minimum flow rate of three to five gallons per minute (equivalent to "slug out"). Pumping continued until maximum drawdown was achieved, and the total pumping time was recorded. When pumping stopped, the water elevation in the well was allowed to recover (equivalent to a "rising head" test) and data logging continued until the water level reached 95 percent of its original elevation or a total elapsed recovery time of 45 minutes, whichever occurred first.

The surface pump and pressure transducer/data logger unit were decontaminated before placement in the first well, and after testing at each well, using an alconox/potable water wash, followed by a triple rinse with DI water. Decontamination water and water removed during hydraulic conductivity testing was temporarily containerized in 5-gallon buckets and subsequently transferred to the 55-gallon drum used to hold purge water generated as part of ground water sampling activities conducted in April 2004 by PNG Environmental. Hydraulic conductivity results are discussed in Section 4.5.

### 3.1.4 Dry Well Closures

A plan to decommission the dry wells was submitted to the DEQ in April 2003. The plan included the following steps:

1) Remove any sediment/materials present in the two dry wells and the dry well system and properly containerize until disposal characterization is completed;

2) Collect one soil sample via hand auger from 12 twelve inches into native (undisturbed soil) below the base of each dry well and analyze for: dioxin (via EPA Method 1613); total PPL metals plus cobalt and magnesium (via Methods Series 6000/7000); pesticides/PCBs (Methods 8081/8082); VOCs (Method 8260); SVOCs (Method 8270); cyanide (Method 9010); and asbestos (PCM), and compare to appropriate clean-up ARARs;

3) Following verification that soil samples meet applicable standards, permanently close the dry wells by lining each dry well with a poly bladder, backfilling with stone, and sealing with cement; and

4) Install a new catch basin in the general area of the former dry wells that will collect surface water drainage and direct it to an oil/water separator for treatment prior to discharge.

Additional details on the dry well closures are provided in Section 5.1. A copy of the Dry Well Closure Report is provided as Appendix B.

## 3.2 Correspondence with the DEQ

On June 25, 2003, FES, on behalf of CertainTeed, submitted a response to a September 10, 2002 correspondence from the DEQ, which included an outline of the scope of work for an XPA (preliminary site characterization). Saint-Gobain Corporation also submitted an Intent to Participate in the Voluntary Cleanup Program Independent Cleanup Pathway to the DEQ on June 25, 2003.

Electronic status reports were submitted to the DEQ on November 20, 2003, and February 6 & June 30, 2004. Soil and ground-water data obtained during the preliminary site characterization activities (XPA) were attached to the latter two reports, respectively.

A plan to decommission the two former dry wells was submitted to the DEQ by CertainTeed on April 29, 2003. Dry well confirmatory soil sampling results were submitted to DEQ on February 26, 2004. DEQ provided approval for closure of the dry wells on March 4, 2004 via electronic mail.

## 3.3 ARARs

Potentially impacted media and possible exposure pathways at the site were reviewed to determine Applicable or Relevant and Appropriate Requirements (ARARs) associated with soil and ground-water clean up at the site. A potential exposure pathway matrix is included as Table 3-1. Current environmental data were compared with these ARARs (see Section 5.0) to: 1) screen compounds of potential concern (COCs); 2) screen AOCs; and 3) identify areas requiring additional data/investigation (see Section 6.0).

### 3.3.1 Soil

Given that: 1) the surface of the site is essentially covered by asphalt except for riparian areas along Saltzman Creek and the Willamette River; and 2) the current and foreseeable future use of the property is industrial; potential exposure pathways via surface soil are minimal. Human-health pathways via surface soils and deeper subsurface soils are limited to potential exposure to on-site construction/excavation workers (see Table 3-1). Therefore, petroleum hydrocarbon (PHC) soil quality data were screened by comparison to DEQ (September 2003) risked-based soil ingestion/dermal contact/inhalation concentrations for construction/excavation workers ($RBC_{SS}$), and non-petroleum hydrocarbon (non-PHC) soil quality data (metals and PCBs) were screened by comparison to EPA Region 9 (October 2002) industrial soil ingestion/dermal contact/inhalation Primary Remediation Goal (PRG) concentrations.

The asphalt cover present at the site in effect environmentally isolates any residual soil impact from surface water infiltration and thus potential impact to ground water. However, to be conservative, PHC soil quality data were screened by comparison to DEQ (September 2003) occupational scenario soil leaching to ground water concentrations ($RBC_{SW}$), and non-PHC soil quality data were screened by comparison to EPA (October 2002) soil screening levels (SSLs) for migration to ground water (at a dilution attenuation factor of 20 [$DAF_{20}$]).

Ecological risk from soil impact is limited to potential soil ingestion/uptake by terrestrial plants and animals in the unpaved riverbank areas along Saltzman Creek and the Willamette River, and potential sediment ingestion/uptake by aquatic plants and animals in Saltzman Creek and the Willamette River (see Table 3-1). Riverbank soil and river sediment quality data were not available for screening in this report.

### 3.3.2 Ground Water

Human-health pathways via ground water are again limited to potential exposure to on-site construction/excavation workers (see Table 3-1). PHC ground-water quality data were screened by comparison to DEQ (September 2003) occupational scenario ground-water ingestion/inhalation concentrations ($RBC_{tw}$) and construction/excavation worker ground water in excavation concentrations ($RBC_{we}$). Although ground water at the site and vicinity is not utilized for drinking water purposes, and there are no resident adults or children (see Table 3-1), to be conservative PHC and non-PHC ground-water concentrations were also screened by comparison to EPA (Winter 2004) drinking water Maximum Contaminant Levels (MCLs).

### 3.3.3 Surface Water

Possible human-health exposure pathways associated with surface water include dermal contact and ingestion/inhalation via recreational use of Saltzman Creek and the Willamette River by adults and children (see Table 3-1). PHC and non-PHC ground-water concentrations were screened by comparison to the EPA (Winter 2004) drinking water MCLs.

Additional human-health exposure pathways associated with surface water could possibly include the consumption of fish/aquatic organisms from the Willamette River by adults and children (see Table 3-1). Ground-water quality data were screened by comparison to the May 2004 OAR 340, Division 041, Water Quality Criteria (WQC) and/or Water Quality Guidance Values (WQGVs) for protection of human health.

Possible surface water exposure pathways for ecological risks include direct impact to terrestrial and aquatic plants and animals, and indirect impact to terrestrial and aquatic animals via fish/organism consumption (see Table 3-1). Ground-water quality data were screened by

comparison to: 1) the May 2004 OAR 340, Division 041, acute and chronic WQC and/or WQGVs for protection of freshwater aquatic life; and 2) the DEQ (December 2001) Level II surface water ecological risk screening level values (SLVs) for freshwater receptors.

As discussed in Section 2.3, there is an active NPDES permit at the GS Roofing site. The applicable ARARs are the permit discharge limits (see Table 3-1).

# SECTION 4.0

# PRELIMINARY SITE CHARACTERIZATION DATA COLLECTION

## 4.1 Dry Well Closure Soil Sampling

The dry well closure sampling was conducted on November 12, 2003. Following excavation of approximately 1 foot of accumulated sediment from the base of Dry Well No. 1, a hand auger sample was collected at a depth of 2.8 feet below grade. Accumulated sediment, crushed stone, and soil were excavated from Dry Well No. 2 to a depth of approximately 6.5 feet below grade before undisturbed (native) soils were encountered and a hand auger sample was collected. All material excavated from the dry wells was containerized in new 55-gallon drums (soil disposal is discussed in Section 4.7).

The dry well soil samples collected were submitted to North Creek Analytical, Inc. (NCA) of Portland, Oregon for analysis of the following constituents: VOCs by EPA Method 8260B, SVOCs by Method 8270B, PCBs by Method 8082, Gasoline Hydrocarbons by Method NWTPH-Gx, Diesel and Heavy Range Hydrocarbons by Method NWTPH-DX and PPL list metals by EPA 6000/7000 Series Methods. Sediments were also characterized for grain size, moisture content, color, etc., and boring logs were prepared. Boring logs are provided in Appendix C.

Sampling equipment was decontaminated before and between sample collection with a manual scrub using non-phosphate soap and potable water, thorough rinse with potable water, and triple rinse with distilled water. Water from equipment decontamination was containerized in 55-gallon drums. Disposal of these drums is discussed in Section 4.7.

Soil data tables and the laboratory data package for the two dry well samples were submitted to the DEQ Case Manger, Ms. Alicia Voss, on February 26, 2004 for review and verification that residual concentrations were below the applicable cleanup levels. Ms. Voss provided approval for closure on March 4, 2004 via e-mail. Both dry well systems were permanently closed during the last week of April, 2004 in the following manner: 1) each dry well was lined with a poly bladder; 2) backfilled with 1 to 1.25-inch stone; and 3) sealed with the same thickness of cement as the current slab (i.e., 12 inches thick). In addition, a sealer was applied to the opening before filling with cement to assure a watertight seal.

### 4.2 Geophysical Investigation

The purpose of the geophysical investigation conducted by Northwest Geophysical Associates, Inc. (NGA) on September 16, 2003 was to: 1) locate a potential bunker fuel 5,000-gallon UST; 2) delineate the vertical and lateral extent of the former landfill area; and 3) determine the structure of native soils beneath the fill. Additional details on the geophysical investigation are available in the NGA report dated October 27, 2003 (submitted to DEQ on February 6, 2004). Selected figures from the October 2003 report are provided in Appendix A.

The geophysical investigation in the vicinity of the potential 5,000-gallon bunker fuel UST, consisted of ten (10) GPR transects on a north-south/east-west grid with a spacing of approximately 5 feet to identify potential buried metallic objects/utilities (see Figure 3, NGA 2003 Report, Appendix A). The field survey revealed a number of anomalies (see Figure 4, NGA 2003 Report, Appendix A). GPR Anomaly A1 was a disturbed soil area that may be indicative of a removed UST. Anomaly U1 was characteristic of a UST or large buried utility, and Anomaly A2 included several disturbed areas and distinct reflectors that were interpreted to be possible indicators of a former UST locations.

The geophysical investigations in the vicinity of the former landfill included 17 electromagnetic (EM) conductivity transects to determine the lateral extent of the fill, and four electrical resistivity (ER) soundings to determine the vertical extent and structure of native soils beneath the fill (see Figure 3, NGA 2003 Report, Appendix A). Based on the EM transects and ER soundings, NGA identified a possible fill layer that slopes west from R-2 (near the center of the landfill area) towards sounding R-4 (near former well MW-10). The layer could not be identified by NGA to the west of former monitoring well MW-10. The landfill layer was interpreted by NGA to extend from approximately 8 feet bgs to 16 feet bgs (8 feet total thickness) at sounding R-2, and from approximately 16 to 20 feet bgs (4 feet total thickness) at its western margin (see Figure 5, NGA 2003 Report, Appendix A).

### 4.3 Soil Boring Installation and Soil Sample Collection

In November 2003, nine soil borings (four of which were completed as monitoring wells) were installed in the former landfill area at the GS Roofing facility. The soil borings were installed by Geo-Tech Explorations, Inc. by hand auger for the first four feet, and then via hollow-stem auger drilling method with a boring diameter of 10 inches to a depth of approximately 30 feet bgs. Boring logs are attached as Appendix C. Soil cuttings were containerized in 55-gallon drums (disposal information is discussed in Section 4.7).

14 BORE LOGS IN APP. C LOGS ARE NOT FROM LANDFILL

IS THERE A MAP?

Soil samples were collected with split-spoon samplers at five-foot intervals. The samples were field screened with a MiniRAE 2000 Photoionization Detector (PID). The worst-case samples were submitted for laboratory analysis from each boring by FES based on field judgement using the following criteria: 1) sample interval is visibly stained; 2) results from field screening activities including PID readings; 3) change in lithology; or 4) intervals corresponding to the estimated depth of the water table.

The soils samples were submitted for the following analyses: VOCs (via EPA Method 8260), SVOCs (Method 8270), PCBs (Method 8082), total PPL metals (Method Series 6000/7000), and TPH-DRO, TPH-GRH & TPH-HORH (Methods NWTPH-Dx & NWTPH-Gx). Copies of the laboratory analytical data packages are provided in Attachment I.

A total of 16 samples were collected from soil borings SB-1 through SB-5. SB-1 through SB-4 were installed to investigate the former landfill area, and SB-5 was installed to investigate a potential 5,000 gallon bunker fuel UST (see Figure 3-1 for boring locations). Samples were collected from SB-1, installed east of the shipping building and NE of the roof paper storage, at 10, 11, 13, 18.5, 18.75, 20 & 20-21.5 feet bgs. SB-2, located at the southwest end of the upper loading dock, was sampled at 15, 17 & 17-18.5 feet bgs (and as a duplicate, SB-13, at 17 & 17-18.5 feet bgs). SB-3, located in the northern end of the upper loading dock area, was sampled at 17 feet bgs. SB-4 was sampled at 16.5-18, 17.5 & 18 feet bgs, and was located west of the loading dock. SB-5 was located about 20 feet east of the potential bunker fuel UST, and was sampled at 13.5 feet bgs.

A total of 6 samples were collected during the drilling of monitoring wells MW-11 through MW-14, which were installed in the former fill area (see Figure 3-1 for monitoring well locations). MW-11 was sampled at 11.25 & 26.25 feet bgs, MW-12 was sampled at 20.5 feet bgs, MW-13 was sampled at 15 & 25 feet bgs, and MW-14 was sampled at 16 feet bgs.

### 4.4 Monitoring Well Installation/Development – Former Landfill Area

Four of the nine soil borings were completed as 2-inch monitoring wells by backfilling the boreholes with bentonite to approximately 20 feet. Monitoring wells MW-11 & MW-12 were installed on November 11, 2003 to a total depth of 20 feet. Monitoring wells MW-13 & MW-14 were installed on November 12, 2003 to a total depth of 22 feet.

FIG. ?

NO LOGS INDICATE LANDFILL BOUNDARY.

Each monitoring well was constructed of 2-inch, threaded, schedule 40 PVC, with fifteen feet of 0.010 slot well screen, and five to seven feet of 2-inch PVC riser pipe. A sand pack extending a minimum of one foot above the top of the screened interval was installed, followed by a 2-foot thick bentonite pellet seal. The remaining well annulus was filled with a grout composed by weight of 20 parts cement, up to 1 part bentonite, with a maximum of 8 gallons of water per 94 pound bag of cement. The wells were capped with a lockable churney plug and installed with flush-mount vaults secured by concrete skirts. The driller provided keyed-alike pad locks for each well. Monitoring well construction diagrams are provided as Appendix D.

A lined decontamination pad was constructed by the drilling subcontractor for decontaminating drill rods, auger flights, rods, and well materials. The pad was sloped to collect rinse water, which was placed in DOT-approved, 55-gallon drums. All drilling equipment was steam cleaned before on-site arrival followed by steam cleaning on-site with potable water. All well materials (screens, casings) were steam cleaned before installation.

Wells MW-11 & MW-12 were developed using a surge and purge method (wells MW-13 & MW-14 did not have enough water for development). Purge water (approximately 100 gallons) was collected in two 55-gallon drums. Water from decontamination activities filled 6 55-gallon drums. Disposal of these drums is discussed in Section 4.7. During January 2004, Chase Jones surveyed the four new monitoring wells (MW-11, MW-12, MW-13 & MW-14) and existing monitoring well MW-1 to establish horizontal location and vertical elevation.

## 4.5 Liquid-Level Gauging and Ground-Water Quality Sampling

Synoptic rounds of liquid-level data were collected on December 12, 2003, and February 20, March 17, April 26 & August 24, 2004 using a water-level indicator probe capable of detecting SPH. Gauging results are discussed in Section 5.1

In April 2004, PNG Environmental, Inc. (PNG) sampled four of the on-site monitoring wells: MW-1, MW-11, MW-12 & MW-14. A duplicate sample of MW-11 was collected as MW-50. The laboratory batch QC was used, so no MS/MSD (matrix spike/matrix spike duplicate) samples were collected in the field. MW-13 was not sampled because the well was dry at the time of the sampling event.

The wells were purged prior to sampling by removing three casing volumes of water with a peristaltic pump (MW-14 was purged until dry). Purge water was containerized for future disposal (disposal of purge water is discussed in Section 4.7). Field parameters pH, conductivity, and temperature were recorded during wells purging. Water samples were collected using a new disposable polyethylene bailer for each well, and then the water was carefully transferred to laboratory provided sampling containers. Samples were placed in an iced cooler and delivered to NCA along with chain-of-custody documentation. Sample results are discussed in Section 5.5, and copies of the laboratory analytical data packages are provided in Attachment I.

## 4.6 Hydraulic Conductivity Testing

Each of the three test wells (MW-1, MW-11 & MW-12) was pumped for approximately one minute until maximum drawdown was obtained and the pump was turned off (equivalent to slug out). The presence of less than four feet of standing water limited pumping and drawdown at well MW-1, and the presence of floating asphalt globules interfered with pumping at well MW-11, where the drawdown was less than one foot. Maximum drawdown (8.94 feet) was obtained at monitoring well MW-12 after approximately one minute of pumping.

Transducer data were downloaded, graphed, and analyzed via the Bouwer & Rice method for unconfined aquifers. Hydraulic conductivity testing results and analyses are summarized in Table 4-1; raw data and summary graphs are provided in Appendix E.

The MW-12 slug test required approximately seven minutes to achieve 95% recovery. The large drawdown and long recovery time indicate that any sand pack effects on well recharge were probably limited. The calculated local hydraulic conductivity (K) value for MW-12 is approximately 0.24 feet per day, typical for silty clay and/or silts.

In contrast, rapid water level recovery occurred during hydraulic conductivity testing at MW-1 & MW-11, and the calculated local K values were 2.33 and 1.69 feet per day, respectively. Drawdown was extremely limited during the MW-11 test, and it is possible that sand pack effects were significant and increased the apparent K value. The MW-11 test was also
10-in borehole & 2-in wellscreen
compromised by technical difficulties during pumping.

Test drawdown was also limited during the MW-1 test, but the higher calculated K value is consistent with this well's location within a former surface water channel or slough northwest of the GS Roofing site that extended from the area of present day Doane Lake towards Saltzman Creek (see KHM, December 2002, Figure 5). Fill material placed in the former channel may serve as a preferential ground-water pathway due to its higher permeability.

## 4.7 Characterization of Investigation Derived Wastes

In conjunction with the development of monitor wells MW-11 & MW-12, approximately 100 gallons (two 55-gallon drums) of development water was generated. A water sample was collected from each well to assess the chemistry of the development water for disposal. The

water samples were subjected to laboratory analysis for VOCs (EPA Method 8260), SVOCs (Method 8270), and total metals (6000/7000 Series). The results of these analyses are summarized in Table 4-2; copies of the laboratory analytical data packages are provided in Attachment I.

Analytical results demonstrated maximum VOC concentrations in the development water obtained from well MW-12. Detected compounds in the MW-12 development water sample included BTEX, methyl tertiary butyl ether (MTBE), naphthalene, trimethylbenzenes, alkyl benzenes, and chloromethane. In the MW-11 development water sample, detected compounds included toluene, ethylbenzene, total xylenes, naphthalene, alkyl benzenes, trimethylbenzenes, cis-1,2-dichloroethene, and chloroform. With the exception of naphthalene, dimethyl phthalate, and bis(2-ethyl-hexyl) phthalate, no SVOCs were detected in the development water samples. Due to the presence of significant quantities of suspended sediments, these well development water samples were intended for waste characterization purposes only and are not representative of ground-water quality at the site. As previously noted, additional analyses were later performed on water samples from these wells in order to assess ground-water chemistry.

In conjunction with the installation of the soil borings and monitoring wells, 27 drums of drill cuttings and 5 drums of decontamination water were generated. Two composite samples were collected from the drummed soil cuttings in order to facilitate their disposal. These samples were subjected to analysis for: NWTPH-Gx, NWTPH-Dx, SVOCs (Method 8270), and PCBs (Method 8082). The results of the soil analyses are summarized in Table 4-3.

No SVOC or PCB analytes were detected in the two composite soil samples. TPH-HORH was detected in the two composite samples with a maximum of 1,420 mg/kg of TPH-HORH observed in composite sample 1 (see Table 4-3). TPH-DRO & TPH-GRH were also detected in composite sample 1. None of the detected TPH concentrations exceeded potentially applicable standards/guidelines set forth by DEQ and/or EPA Region 9.

Removal and disposal of the investigation derived wastes were subcontracted to Clean Harbors of Clackamus, Oregon. A total of 34 drums were removed from the site on June 28, 2004 for proper disposal. A copy of the waste manifest is provided as Appendix F.

## SECTION 5.0

## SITE ENVIRONMENTAL CONDITIONS

SEE FIG 5-1 FOR BORING LOCS. WGB-5 = "PORTLAND EXPLORATORY WELL"

### 5.1 Site Hydrogeology

Surficial materials at the GS Roofing site consist of fill, including dredge spoils and building debris (e.g., crushed rock, brick, concrete, and wood) underlain by Holocene alluvial channel and overbank deposits. An exploratory boring (WGB-5) installed east of MW-13 & MW-14 (see Figure 2-1) as part of a pipeline river crossing feasibility study conducted by the City of Portland, indicated that the fill layer, which consisted of silty sand with gravel, and silty clayey gravels, is approximately 25 feet thick. The underlying alluvial deposits included 55 feet of poorly graded sands and silty sands, and minor layers (three feet or less) of silts, silty clays, and clays, followed by a 10-foot thick basal layer of silty gravel. Depth to bedrock (Miocene-Age Columbia River Basalt) was approximately 90 feet. A copy of the soil boring log is provided in Appendix A.

NONE OF THESE FEATURES IS SHOWN ON FIG. 2-1

SITE SPECIFIC.

In conjunction with the November 2003 preliminary site investigation, nine soil borings were installed to a total depth of approximately 30 feet (see Section 4.2). Except for soil boring MW-13, fill materials, which generally consisted of poorly sorted sands and silty sands (and included wood, brick, concrete), extended from the surface to a depth of 15 to 20 feet at each boring, and were consistently underlain by a dense silt (see Appendix C for boring logs). Silty sands (and/or fill materials such as wood and glass) were also noted at the same depth on the boring logs for former wells MW-6 through MW-10 (prepared by OMNI & De Minimis, see Appendix A); however, a basal silt (maximum sampling depth in all borings was 20 feet) was noted only at well MW-10.

Shingle aggregate was identified in the fill at borings SB-1 through SB-4, and MW-10 through MW-12. These borings are located within the presumed former shingle "landfill" area (see Figure 1-3). At boring MW-13, fill materials extended only to a depth of 10 feet, and the monitoring well installed at this location (total depth 20 feet) was dry during all subsequent gauging events. Minimal ground water is also present at monitoring well MW-14 where the fill material was characterized as clay and clayey sand. The fill material present at wells MW-13 & MW-14 (surface elevation is also approximately ten feet higher) is clearly different than the fill present at borings installed in the former landfill area to the west.

Recent liquid-level data are summarized in Table 5-1 (see Appendix A for historical liquid-level data tables). Depth to ground water at the site ranges from approximately 7 to 12 feet (except at MW-14, due to the higher surface elevation) with an average annual variability of approximately 3.4 feet. Deeper ground-water levels are generally present during the drier fall months. Virtually the entire surface of the GS Roofing site is covered by asphalt, so there is very little potential for direct ground-water recharge on the property.

Based on recent gauging data, shallow ground-water flow at the GS Roofing Site is east-southeast towards Saltzman Creek and the Willamette River (ground-water discharge points) at an approximate hydraulic gradient of 0.015. A generalized ground-water flow map for the site based on the April 2004 data is presented as Figure 5-1. This map is in general agreement with an idealized interpretation of the regional ground-water flow regime presented as Figure 5-2 that incorporates data from the adjacent upgradient ATOFINA and Willbridge Facility properties. As discussed previously, fill in the former surface water channel that followed the course of Saltzman Creek (see Figure 5, KHM, December 2002, Appendix A), and backfill around the Saltzman Creek culvert/channel may serve as a preferential ground-water pathway due to its higher permeability.

## 5.2 Dry Wells

The dry well soil samples were field-screened with a PID. Both borings demonstrated results less than 1 part per million by volume (ppmv). Two soil samples were collected from the dry wells to characterize the quality of the underlying native soils. Detected VOCs included benzene, total xylenes, naphthalene, 1,2,4-trimethylbenzene, tetrachloroethene (PCE), and trichloroethene (TCE). Additionally, Dry Well sample No. 1 had detections of toluene, p-isopropyltoluene, and carbon disulfide, and acetone was detected in Dry Well sample No. 2. A summary of the VOC data is provided in Table 1 of Appendix B.

The highest detected VOC concentration was acetone at 53.0 µg/kg. All other VOC concentrations were less than 2 µg/kg. DEQ has not published a risk-based cleanup concentration for acetone, therefore the detected concentration was compared against the EPA Region 9 PRG value for direct contact in an industrial setting (6,000 mg/kg) and migration to ground water (800 µg/kg, DAF 1). The detected concentration was at least an order of magnitude less than the most conservative PRG value.

TABLES NOT FOUND

Dry well soil samples No. 1 and No. 2 both demonstrated non-detectable concentrations of SVOCs (Table 2, Appendix ~~B~~ A), PCBs (Table 3, Appendix ~~B~~ A), and TPH-GRH (see Table 1, Appendix ~~B~~ A). TPH-DRO & TPH-HORH were detected in sample Dry Well No. 1 at concentrations of 123 mg/kg and 518 mg/kg, respectively, but were ND in sample Dry Well No. 2. The TPH concentrations detected in sample Dry Well No. 1 were more than two orders of magnitude below the generic TPH RBCs for direct contact in an occupational scenario and leaching to ground water specified in the DEQ *Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites* (September 23, 2003) guidance document.

NO TABLES HAVE THESE NUMBERS

A total of eleven metals were detected in the two dry well samples. Detected total metal concentrations (Table 4, Appendix B) were compared to the respective EPA Region 9 PRG values for direct contact in an industrial setting and migration to ground water. No results exceeded these values except arsenic, which was detected at concentrations that were within the range for regional background (see discussion in Section 5.4).

In summary, dry well soil sample analytical results were evaluated with respect to RBCs specified in Appendix A of the DEQ September 23, 2003 guidance document and the October 2002 EPA Region 9 PRG Table. No data exceed applicable RBCs, therefore the analytical results verify that the soil conditions in the dry wells did not pose a threat to human health or the environment and remedial measures were not necessary.

COMPARE AGAINST CURRENT SCREENING LEVELS
REQUEST SCREENING AGAINST USCS
IF APPLICABLE WHAT IS SC. RISK?

## 5.3 Soil Quality in the Potential Bunker Fuel UST Area

Soil boring SB-5 was installed to investigate a potential 5,000-gallon bunker fuel UST. Soil boring and monitoring well locations are depicted in Figure 3-1. Soil samples were field-screened with a PID MiniRAE 2000, which indicated readings of 11.3 ppmv at a depth of 5 feet bgs, 0 ppmv (10 to 15 feet bgs), 0.6 ppmv (20 feet bgs), and 0 ppmv (25-30 feet bgs). Odor was noted in soil cuttings from 5 to 15 feet bgs. A soil sample was collected for laboratory analysis at 13.5 feet bgs.

Soil quality data are summarized in Table 5-2 (VOCs), Table 5-3 (SVOCs), and Table 5-4 (PCBs), and Table 5-5 (metals). Analytes detected through VOC analysis include benzene (0.340 J µg/kg), total xylenes (0.210 J µg/kg), PCE (0.210 J µg/kg), and carbon disulfide (0.540 J µg/kg). No SVOC or PCB analyte concentrations were reported above their respective method detection limits (MDLs). Detected metals included: arsenic (3.15 mg/kg), chromium (19.4 mg/kg), copper (19.8 mg/kg), lead (3.11 mg/kg), nickel (22.2 mg/kg), and zinc (60.7 mg/kg).

WAS THE SB BUNKER UST FOUND? NO
(20K BUNKER UST AT (9) ON FIGS)

## 5.4 Soil Quality in the Former Landfill Area

The soil samples were field-screened with a PID MiniRAE 2000. PID readings from borings MW-13, MW-14, SB-1, SB-3 & SB-4 were all less than 10 ppmv. The highest PID readings from borings SB-2 were obtained at depths of approximately 17 feet bgs (19.7 ppmv) and 20 feet bgs (38.2 ppmv). The highest PID readings for boring MW-11 were: 31 ppmv at 7 feet bgs (however, there is a note on the log that the PID is responding to moisture so the PID reading may not directly correspond to actual VOC concentrations); 30.8 ppmv (12 feet bgs); and 46.5 ppmv (30 feet bgs). PID readings from MW-12 were highest at approximately 11 feet bgs (220 ppmv), and 16 feet bgs (68.1 ppmv).

Ten soil samples were submitted for analysis of VOCs. A total of 19 VOC analytes were detected including BTEX, alkyl benzenes, naphthalene, and trimethylbenzenes (see Table 5-2). Generally, the highest VOC concentrations were reported in the sample from well MW-12 (depth 20.5 feet), which was the only sample demonstrating analyte concentrations exceeding 1.0 mg/kg (nine VOCs). VOC analyte concentrations exceeding 1.0 µg/kg were generally limited to samples from borings MW-11 (11.25 feet) & MW-12 (20.5 feet).

NWTPH-Dx analysis indicated detections in 6 of 10 soil samples (see Table 5-2) with concentrations ranging from 35.0 mg/kg to 6,780 mg/kg (SB-2; 17 feet). NWTPH-Gx analysis indicated detections in 3 samples at concentrations ranging from 4.44 mg/kg to 155 mg/kg (MW-12; 20.5 feet). NWTPH-HORH analysis indicated detections in 7 samples with concentrations ranging from 51.5 to 21,500 mg/kg (MW-12; 20.5 feet). All TPH analytes were ND in samples MW-11 (11.25 feet), MW-13 (25 feet) & SB-1 (18.75 feet).

Multiple SVOC analytes were detected at concentrations below 1.0 ppm in 4 of the 10 soil samples (see Table 5-3): MW-12 (at 20.5 feet bgs), SB-1 (10 feet), SB-3 (17 feet), and SB-4 (17.5 feet). SVOCs detected at concentrations greater than 1.0 ppm were limited to:

benzo(a)anthracene (1,300 μg/kg), benzo(a)pyrene (1,170 μg/kg), chrysene (1,450 μg/kg), fluoranthene (2,320 μg/kg), phenanthrene (1,820 μg/kg), and pyrene (3,440 μg/kg) in sample SB-3 (17 feet); and pyrene (1,160 μg/kg) in sample SB-1 (10 feet). PCBs (Aroclor 1016, 1221, 1232, 1242, 1248, 1254 and 1260) were not detected above their respective MDLs in any of the 10 analyzed samples (see Table 5-4).

Ten soil samples from the former landfill area were submitted for metals analysis (see Table 5-5). Antimony, beryllium, mercury, selenium, and silver were detected at concentrations less than 1.0 mg/kg in multiple samples. Six metals were detected in each of the 10 samples at concentrations greater than 1.0 mg/kg. Maximum reported concentrations were as follows: arsenic 8.57 mg/kg (MW-14; 16 feet bgs), chromium 46.7 mg/kg (MW-12; 20.5 feet), copper 43.7 mg/kg (MW-12; 20.5 feet), lead 131 mg/kg (MW-14; 16 feet); nickel 34.5 mg/kg (MW-12; 20.5 feet), and zinc 135 mg/kg (MW-14; 16 feet). The MW-12 & MW-14 soil samples were collected in fill material. The maximum detected arsenic concentration (8.57 mg/kg) is within the regional background range of 4.3 mg/kg to 10.3 mg/kg (see L.R. Curtis & B.W. Smith, Heavy Metals in Fertilizers: Considerations for Setting Regulation in Oregon, Oregon Department of Agriculture, August 2, 2002).

Eight selected soil samples from the borings in the former landfill area were submitted for TOC analysis via EPA Modified Method 9060. TOC results, presented in Table 5-6, ranged from less than 1,000 mg/kg in samples MW-11 (depth 11.25 feet) & MW-13 (15 feet) to 41,900 mg/kg in sample MW-11 (26.25 feet).

## 5.5 Ground-Water Quality In and Proximal To the Former Landfill Area

As previously noted, ground-water samples were collected from four site monitoring wells (MW-1, MW-11, MW-12 & MW-14) in April 2004 and subjected to laboratory analysis for VOCs and TPH (see Table 5-7), SVOCs (see Table 5-8), PCBs (see Table 5-9), total and dissolved metals (see Table 5-10), and selected water quality indicator parameters (carbon dioxide, nitrate, and sulfate; see Table 5-11). Neither TPH-DRO nor TPH-HORH was detected in the ground-water samples collected in April 2004. TPH-GRH was detected in three of the four monitoring wells sampled in April 2004 (see Table 5-7) at concentrations ranging from 0.118 mg/L at upgradient monitoring well MW-1 to 0.265 mg/L (sample MW-50; a duplicate of MW-11) at former landfill well MW-11. TPH-GRH was ND downgradient of the former landfill in well MW-14.

Seven VOC analytes: xylenes, naphthalene, alkyl benzenes, and trimethylbenzene were detected in the April 2004 ground-water samples (see Table 5-7). The only VOCs detected at upgradient well MW-1 were isopropyl benzene (3.23 μg/L) and n-propylbenzene (5.80 μg/L). Maximum concentrations for total xylenes (3.54 μg/L), naphthalene (14.8 μg/L), sec-butyl benzene (2.10 μg/L), and total trimethylbenzene (36.1 μg/L) were detected at upgradient landfill well MW-11, where n-propylbenzene (3.52 μg/L) was also detected. Naphthalene (2.98 μg/L) and trimethylbenzenes (6.24 μg/L) were detected at former landfill well MW-12. All VOC analytes were ND downgradient of the former landfill in well MW-14.

Merely ND for VOC

SVOCs (see Table 5-8), and PCBs (see Table 5-9) were not detected in the April 2004 ground-water samples. Twelve metals were detected when the April 2004 samples were analyzed for <u>total</u> metals, but beryllium (detected at MW-14), chromium (MW-12 & MW-14), and lead (MW-11, MW-12 & MW-14) were ND when the samples were analyzed for <u>dissolved</u>

METALS TOTAL VS. DISS DATA

metals (see Table 5-10). Other detected total metals concentrations were less than one mg/L except total iron, which ranged from 8.32 mg/L (MW-11 duplicate) to 33.8 mg/L (MW-12), and total manganese, which ranged from 2.44 mg/L (MW-1) to 8.43 mg/L (MW-14).

Dissolved metals concentrations (see Table 5-10) were: 1) generally lower than the corresponding total metals concentrations; and 2) less than one mg/L, except for iron, which ranged from 0.129 mg/L (MW-14) to 5.80 mg/L (MW-12), and manganese, which ranged from 2.32 mg/L (MW-1) to 8.24 mg/L (MW-14). Other dissolved metals concentrations were as follows: antimony, detected in 3 samples at concentrations ranging from 0.270 μg/L (MW-14) to 0.380 μg/L (MW-12); arsenic, detected in 5 samples at concentrations ranging from 1.35 μg/L (MW-11 duplicate) to 6.32 μg/L (MW-1); copper, detected in 4 samples at concentrations ranging from 0.270 μg/L (MW-14) to 0.500 μg/L (MW-11); nickel, detected in 4 samples at concentrations ranging from 1.25 μg/L (MW-11) to 8.31 μg/L (MW-14); selenium, detected at concentrations of 0.660 μg/L (MW-14) & 0.670 μg/L (MW-12); thallium detected at concentrations of 0.060 μg/L (MW-1) & 0.310 μg/L (MW-14); and zinc, detected in 4 samples at concentrations ranging from 1.44 μg/L (MW-14) to 4.51 μg/L (MW-1);

Regional and/or site-specific background concentrations were not available for comparison, but the reported dissolved metals concentrations are well below EPA MCLs except for arsenic, iron, and manganese. Elevated arsenic concentrations are present at upgradient well MW-1 (see below) and the Willbridge Facility (see Section 5.7), indicating a probable source or a regional ground-water chemistry issue.

Analysis of the selected general ground-water quality parameters (see Table 5-11) demonstrated all samples were ND for nitrates at the MDL of 0.100 mg/L. Carbon dioxide concentrations ranged from 57.1 mg/L (MW-11) to 195 mg/L (MW-14), and sulfate concentrations ranged from less than 1.00 mg/L (MW-12) to 15.7 mg/L (MW-14).

## 5.6 Comparison of Site-Related COCs to Applicable ARARs

Soil and ground-water results obtained in conjunction with the preliminary site characterization were compared with the site specific ARARs discussed in Sections 3.3.1 & 3.3.2, respectively.

### 5.6.1 Soil

VOCs detected in soil samples during the recent investigation in the former landfill area (see Table 5-2) included BTEX, naphthalene, several alkyl benzenes, trimethylbenzene, PCE, and TCE; however, detected concentrations were generally less than one µg/kg. Nine VOCs were detected at concentrations greater than 1.0 mg/kg but less than potentially applicable ARARs in the 20.5 foot sample from MW-12 (all soils samples were collected in the former landfill area unless otherwise qualified); however, TCE exhibited a concentration of 76.9 µg/kg, which exceeded the leaching to ground water $RBC_{SW}$ of 9.9 µg/kg.

The TPH-Gx concentration in the 20.5 foot sample from MW-12 (155 mg/kg) also slightly exceeded the applicable $RBC_{SW}$ of 110 mg/kg (see Table 5-2). All other soil sample TPH-Gx, TPH-Dx, and TPH-HORH concentrations were well below human health and leaching to ground water ARARs.

Sixteen SVOCs were detected in the soil samples collected in conjunction with the preliminary site characterization (see Table 5-3). Detected SVOC concentrations in soil were less generally than 1.0 mg/kg. The only SVOCs detected at concentrations greater than 1.0 mg/kg (but less than potentially applicable ARARs) were in sample SB-3 (collected at a depth of 17 feet) as follows: benzo(a)anthracene (1,300 µg/kg, $RBC_{SW}$ >18,700); benzo(a)pyrene (1,170 µg/kg, $RBC_{SS}$ 2,100); chrysene (1,450 µg/kg, $RBC_{SS}$ >3,180); fluoranthene (2,320 µg/kg,

$RBC_{SW}$ >110,000); phenanthrene (1,820 μg/kg, no RBC); and pyrene (3,440 μg/kg, $RBC_{SW}$ >70,900). The pyrene concentration also exceeded 1.0 mg/kg (1,160 μg/kg) in sample SB-1 (depth 10 feet).

No PCBs were detected in the soil samples collected in conjunction with the preliminary site characterization (see Table 5-4). Eleven metals were detected in the soil samples (see Table 5-5), but concentrations were generally less than 1.0 mg/kg and well below potentially applicable ARARs except as discussed below. The lead concentration in one soil sample (MW-14, depth 16 feet; 131 mg/kg) exceeded the leaching to ground water $RBC_{SW}$ (30 mg/kg), and the total chromium concentration in one soil sample (MW-12, depth 20.5 feet; 46.7 mg/kg) slightly exceeded the migration to ground water SSL (38 mg/kg).

Arsenic concentrations in the soil samples ranged from 2.02 mg/kg (SB-2, depth 17 feet) to 8.57 mg/kg (MW-14, depth 16 feet); these concentrations exceed the cancer endpoint Industrial soil PRG for ingestion/dermal contact/inhalation of 1.6 mg/kg (the non-cancer endpoint Industrial soil PRG is 260 mg/kg). However, elevated arsenic concentrations are also present in soil at the upgradient Willbridge Facility (see Section 5.7) indicating a possible source or a regional background issue. Moreover, the depth of burial of these soils precludes direct contact without significant excavation. Further, as noted previously, the detected arsenic concentrations are within the regional background range of 4.3 mg/kg to 10.3 mg/kg (see Curtis & Smith, 2002).

VOCs detected in soil boring sample SB-5 (depth 13-14.5 feet), located in the potential 5,000-gallon bunker fuel UST AOC (see Table 5-2), consisted of benzene, xylenes, carbon disulfide, and PCE; however, all concentrations were less than one μg/kg and well below potentially applicable ARARs. TPH-Gx, TPH-Dx, and TPH-HORH (see Table 5-2), SVOCs (see Table 5-3), and PCBs (see Table 5-4) were ND in sample SB-5 (depth 13.5 feet).

Nine metals were detected in soil sample SB-5 (depth 13.5 feet) but detected beryllium, mercury, and silver concentrations were less than 1.0 mg/kg (see Table 5-5), and well below potentially applicable ARARs. The detected lead concentration of 3.11 mg/kg is below the leaching to ground water $RBC_{SW}$ (30 mg/kg), and the reported nickel and chromium concentrations (22.2 mg/kg & 19.4 mg/kg, respectively) are below their corresponding migration to ground water SSLs of 130 mg/kg & 38 mg/kg, respectively. Copper and zinc, detected at concentrations of 19.8 mg/kg & 60.7 mg/kg, respectively, are below their corresponding Industrial soil ingestion/dermal contact/inhalation PRGs of 41,000 mg/kg & 10,000 mg/kg, respectively.

The arsenic concentration reported for sample SB-1 (depth 13.5 feet) of 3.15 mg/kg exceeds the cancer endpoint Industrial soil PRG for ingestion/dermal contact/inhalation of 1.6 mg/kg (the non-cancer endpoint Industrial soil PRG is 260 mg/kg). However, elevated arsenic concentrations are also present in soil at the upgradient Willbridge Facility (see Section 5.7) indicating a possible source or a regional background issue. Again, the depth of burial of these soils precludes direct contact without significant excavation.

### 5.6.2 Ground Water

VOCs detected in ground-water samples at upgradient well MW-1 during the current investigation (see Table 5-7) were limited to isopropylbenzene and n-propylbenzene at concentrations of 3.23 µg/L & 5.80 µg/L, well below their respective ingestion/inhalation $RBC_{tw}$ values of 2,600 µg/L & 970 µg/L. TPH-DRO and TPH-HORH were not detected in the ground-water samples collected in April 2004, and the TPH-GRH concentration of 0.118 mg/L was below the potentially applicable inhalation $RBC_{tw}$ value of 0.400 mg/L.

No SVOCs or PCBs were detected in the ground-water samples collected from MW-1 in conjunction with the preliminary site characterization (see Tables 5-8 & 5-9, respectively). Five metals were detected when the ground-water samples were analyzed for total metals, and eight metals were present when the samples were analyzed for dissolved metals (see Table 5-10). Dissolved metals concentrations were generally less than one mg/L and well below potentially applicable ARARs except for the three metals discussed below.

Iron and manganese concentrations (2.04 mg/L & 2.32 mg/L, respectively) in the MW-1 April 2004 sample exceeded their corresponding freshwater and human-health WQCs, and surface water SLVs (manganese also exceeded its tap water PRG); however, the concentrations present appear to be consistent with regional background ground-water quality.

The highest arsenic concentration observed in a ground-water sample at the GS Roofing site (6.32 μg/L) was obtained at the upgradient well (MW-1). This concentration exceeds the tap water PRG of 0.0045 μg/L, and the human-health WQC of 0.018 μg/L. Elevated arsenic concentrations are also present at the upgradient Willbridge Facility (see Section 5.7) indicating a probable source or a regional ground-water chemistry issue.

VOCs detections in ground-water samples collected from newly installed monitoring wells in the former landfill area (see Table 5-7) were limited to xylenes, naphthalene, several alkyl benzenes, and trimethylbenzenes. Maximum detected total xylenes (3.54 μg/L) and naphthalene (14.8 μg/L) concentrations were below their respective surface water ecological SLVs of 13 μg/L and 620 μg/L, and below their respective ingestion/inhalation $RBC_{tw}$ values of 820 μg/L and 25 μg/L. Maximum detected 1,2,4-trimethylbenzene (30.1 μg/L) and 1,3,5-trimethylbenzene (6.04 μg/L) concentrations were below the ingestion/inhalation $RBC_{tw}$ of 49 μg/L, and detected alkyl benzene concentrations were also below potentially applicable ARARs.

TPH-DRO and TPH-HORH were not detected in the ground-water samples collected from newly installed monitoring wells in the former landfill area in April 2004 (see Table 5-7). TPH-GRH concentrations in the April 2004 samples were below potentially applicable ARARs.

No SVOCs or PCBs were detected in the ground-water samples collected from monitoring wells in the former landfill area in conjunction with the preliminary site characterization (see Tables 5-8 & 5-9, respectively). Twelve metals were detected when the ground-water samples were analyzed for total metals, but only nine were present when the samples were analyzed for dissolved metals (see Table 5-10). Dissolved metals concentrations were generally less than one mg/L and well below potentially applicable ARARs except for the four metals discussed below.

Iron and manganese concentrations in ground-water samples from the former landfill area, which ranged from 0.129 mg/L to 5.80 mg/L, and from 3.43 mg/L to 8.24 mg/L, respectively, exceeded their corresponding freshwater and human-health WQCs, and surface water SLVs (manganese also exceeded its tap water PRG); however, the concentrations present appear to be consistent with regional ground-water chemistry. The thallium concentration of 0.310 μg/L at MW-14 slightly exceeded the human-health WQC of 0.240 μg/L.

Arsenic concentrations in the ground-water samples from the landfill area ranged from 1.35 μg/L (MW-11 duplicate) to 4.87 μg/L (MW-12); these concentrations exceed the tap water PRG of 0.0045 μg/L, and the human-health WQC of 0.018 μg/L. However, elevated arsenic concentrations are also present at upgradient well MW-1 (see above) and the Willbridge Facility (see Section 5.7), indicating a probable source or a regional ground-water chemistry issue.

### 5.6.3 Summary

Based on soil and ground-water sampling results from the preliminary site characterization, the following compounds and metals exceeded potentially applicable ARARs in the former landfill AOC: TCE (soil), TPH-Gx (soil), lead (soil), chromium (soil), iron and magnesium (ground water), thallium (ground water), and arsenic (soil and ground water). SPH was detected in the form of asphaltic oil at MW-11 & MW-12 during ground-water monitoring activities (and a sheen was noted in the SB-2 soil sample). VOCs (except TCE), SVOCs, and PCBs were eliminated as potential site-specific COCs in the AOCs sampled as part of the current investigation. The only soil analyte that exceeded potentially applicable ARARs in the potential 5,000-gallon bunker fuel UST AOC was arsenic. As discussed previously, the arsenic concentrations present are consistent with regional background soil quality. Therefore, the potential 5,000-gallon bunker fuel area was eliminated as an AOC at the GS Roofing site.

NOTE TCE CHROME CANNOT BURN?

DID GEOPHYS. FIND 5K BUNKER UST? NO SOIL BORINGS FOUND NO SOIL AT 8-12 FT BGS.

## 5.7 Mobility of Site-Related COCs

Although TPH-Gx and gasoline VOCs are relatively mobile as evidenced by the migration of a PHC plume onto the Site from the southwest, the TPH-Gx exceedance at MW-12 was limited to soil, suggesting that the PHCs (PETROLEUM HYDROCARBONS) are present as residual mass in silty or clay-rich fill and are relatively immobile. The SPH present at the GS Roofing site, is an extremely viscous asphaltic oil that is relatively insoluble and has little potential for migration to possible receptors along the banks of Saltzman Creek and the Willamette River.

Although lead was detected in one soil sample at a concentration exceeding potentially applicable ARARs, lead in soil is relatively immobile and has little potential for migration to Saltzman Creek and the Willamette River. Chromium was also detected in one soil sample at a

NO Cr IN GW!

concentration exceeding potentially applicable ARARs. Neither lead or chromium were detected in the dissolved ground-water samples collected at the Site, indicating that to the extent they are present, they exhibit little potential for migration.

Arsenic exceeded potentially applicable soil ARARs, but is also known to be present in soil and ground water at similar or higher concentrations upgradient (see Section 5.8). Iron, magnesium, and arsenic exceeded potentially applicable ground-water ARARs and are potentially mobile; however, detected concentrations appear to be indicative of regional ground-water chemistry.

Thallium was not detected in soil but exceeded its ground-water ARAR at one downgradient sampling location (MW-14). The potential for thallium migration at the Site cannot be determined at this time.

## 5.8 Contribution of COCs from Upgradient Sources

As previously discussed, the TPH-Gx exceedance of the soil ARARs was limited to the MW-12 sample (depth 20.5 feet), which also exhibited the highest soil concentrations of BTEX, alkyl benzene, naphthalene, and trimethylbenzenes. MW-12 is located in the former landfill area (see Figures 1-3 & 3-1), downgradient from former monitoring wells (MW-6, MW-9, & MW-10) that were used, in part, to document the presence of a petroleum hydrocarbon (PHC) plume that had migrated onto the site from the Willbridge Facility.

Elevated concentrations of arsenic (i.e., greater than potentially applicable ARARs) have been documented beneath portions the Willbridge Facility located hydraulically upgradient of the GS Roofing site. Iron, magnesium, and thallium may also be present, but sampling data for these analytes from the Willbridge Facility were not available for review.

As MAY BE LIMITED IN REDUCING CONDITIONS

Although chromium was not detected at concentrations above the ARARs, a chromium plume has been documented on the adjacent ATOFINA site to the northwest. Available data suggest that a dissolved chromium plume (and possibly a perchlorate plume) extends from the ATOFINA site onto the eastern portion of the GS Roofing site.

## SECTION 6.0

## NECESSITY AND SCOPE OF PROPOSED PRELIMINARY REMEDIAL INVESTIGATION ASSESSMENT

As discussed herein, based on historical and current site uses, and available environmental sampling data, the following AOCs were initially identified at the Site (see Figure 1-3): 1) two former dry wells; 2) a "possible" 5,000-gallon capacity bunker fuel UST; 3) the historical asphalt "processing" area; 4) the storm drain/former process sewer system; 5) the former "landfill" area; and 6) riverbank soils and sediment in Saltzman Creek and the adjoining Willamette River. Environmental conditions in these site areas are reviewed in Section 5.0.

Based on the results obtained as part of this preliminary site investigation, the former dry wells (AOC #1) and the bunker fuel UST (AOC #2) have been eliminated as AOCs at the GS Roofing site. Additional investigation activities are necessary to: 1) evaluate the extent and potential significance of areas where COCs exceeded the screening ARARs during the preliminary site characterization; and 2) complete the screening evaluation of the remaining site AOCs. Therefore, a preliminary remedial investigation (pre-RI) assessment is proposed as outlined below. Proposed field locations associated with pre-RI assessment activities are depicted on Figure 6-1.

### 6.1 Historical Asphalt "Processing" Investigation

The production of asphalt through the distillation of petroleum oils has not been reported at the Site. However, asphalt processing whereby light volatile ends were removed from raw asphalt (asphalt "blowing") was reportedly conducted historically in the designated portion of the facility (see Figure 6-1) until no later than 1970.

Soil sampling at the two former dry wells, which are located within the boundaries of this AOC (see Figure 1-3), did not exhibit the presence of COCs exceeding potentially applicable ARARs, and the majority of the surface area in this AOC (see Figure 1-3) is now covered by the Warehouse Annex further reducing possible exposure to any potentially impact soil.

Petroleum hydrocarbons, if present in soil in this area, will be heavy-end compounds similar to asphalt and relatively immobile. Although the presence of the Warehouse Annex essentially isolates surface and subsurface soils from dermal exposure and mobility (potentially associated with precipitation infiltration), ground-water quality has not currently been evaluated. To this end, a soil boring/monitoring well is proposed at a downgradient location from this area and the existing AST farm (see Figure 6-1).

The soil boring would be installed via hollow-stem auger drilling methods with ASTM standard-penetration split-spoon sampling at 5-foot intervals to a total depth of approximately 20 feet. A minimum of one soil sample would be collected from the boring and analyzed for VOCs (via EPA Method 8260B), SVOCs (Method 8270B), PCBs (Method 8082), total PPL metals (Method Series 6000/7000), and diesel, gasoline, and heavy oil range hydrocarbons (Methods NWTPH-Dx & NWTPH-Gx).

Well construction would be similar to the monitoring wells installed during the preliminary site investigation. Following well development and an aquifer equilibration period, it is proposed that a ground-water sample would be collected via low flow methods (see Section 4.4) and analyzed for VOCs (via EPA Method 8260B), SVOCs (Method 8270B), PCBs (Method 8082), total and dissolved PPL metals (Method Series 6000/7000), and TPH-DRO, TPH-GRH & TPH-HORH (Methods NWTPH-Dx & NWTPH-Gx).

## 6.2 Storm Drain/Former Process Drain Investigation

The Storm Drain/Former Process Drain System has not previously been investigated at the site. The drainage system collects surface run-off that is directed to oil/water separators prior to discharging to Saltzman Creek via two outfalls (see Figure 1-2). Although NPDES sampling is regularly conducted at the two outfalls (see Section 2.2), portions of the drainage system historically received process flow, and the presence/absence of COCs in sediments contained in the drainage system and/or backfill sediments surrounding the system has not been fully evaluated. Investigation of the drainage system may also assist in identifying a source for the copper more recently detected during NPDES sampling at the Site.

To this end, it is proposed that accessible manholes be inspected for integrity and accumulated sediments. If present, a sediment sample would be collected from each manhole location and analyzed for VOCs (via EPA Method 8260B), SVOCs (Method 8270B), PCBs (Method 8082), chloride (Method 300), target analyte list (TAL) metals (Method Series 6000/7000), and TPH-DRO, TPH-GRH & TPH-HORH (Methods NWTPH-Dx & NWTPH-Gx). Additionally, a geoprobe rig would be used to install two borings in the backfill surrounding the drain system piping (see Figure 6-1 for proposed boring locations). It is proposed that backfill samples would be collected and submitted for the same analyte suite as the manhole sediments.

It is proposed that a geoprobe rig will also be used to install a one-inch diameter PVC "microwell" at the downflow (eastern) backfill boring location to a total depth of approximately 15 feet with a 10-foot screened interval. Following well development, a ground-water sample would be collected via low flow methods and analyzed for VOCs (via EPA Method 8260B), SVOCs (Method 8270B), chloride (Method 300), PCBs (Method 8082), total/dissolved TAL metals (Method Series 6000/7000), and TPH-DRO, TPH-GRH & TPH-HORH (Methods NWTPH-Dx & NWTPH-Gx).

## 6.3 Delineation of "Asphaltic Oil" Product and Metals (including Upgradient Sampling) in the Former Landfill Area

An additional soil boring/monitoring well is proposed in the former landfill area to delineate the asphaltic oil that has sporadically been present as SPH at MW-11 (and in soil boring MW-12) and characterize its potential mobility. The proposed soil boring/monitoring well (see Figure 6-1 for location) would also be used to further delineate the TCE and chromium detected in soil at MW-14. In addition, soil boring/monitoring wells are proposed (see Figure 6-1 for boring/well locations): 1) at an upgradient location northwest of MW-1 to monitor ground-water quality entering the GS Roofing site; and 2) midway between MW-13 & MW-14 to obtain downgradient ground-water quality and liquid-level data representative of the saturated zone in this area. Existing wells MW-13 & MW-14 are likely indicative of localized perched water conditions associated with the landfill area.

ATTACHED LAB DATA DO NOT INDICATE TCE OR Hg HITS IN MW14

Soil borings would be installed via hollow-stem auger drilling methods with ASTM standard-penetration split-spoon sampling at 5-foot intervals to a total depth of approximately 20 feet at the upgradient boring location, and approximately 25 to 30 feet at the three remaining boring locations. At least one soil sample will be collected from each boring and analyzed for VOCs (via EPA Method 8260B), SVOCs (Method 8270B), PCBs (Method 8082), total PPL metals (Method Series. 6000/7000), and TPH-DRO, TPH-GRH & TPH-HORH (Methods NWTPH-Dx & NWTPH-Gx).

The upgradient monitoring well would be installed to a total depth of 20 feet, and the three remaining wells would be installed to an approximate total depth of 25 to 30 feet. Other well construction details would be similar to the monitoring wells installed during the preliminary site investigation.

Following well development and an aquifer equilibration period, it is proposed that liquid-level data would be obtained and ground-water samples will be collected via low flow methods (see Section 4.4) from all existing site wells (i.e., MW-1, MW-11, MW-12, MW-14, and the new wells) and analyzed for VOCs (via EPA Method 8260B), SVOCs (Method 8270B), PCBs (Method 8082), total/dissolved PPL metals (Method Series 6000/7000), and TPH-DRO, TPH-GRH & TPH-HORH (Methods NWTPH-Dx & NWTPH-Gx). If present at any gauged wells, an SPH sample would be collected for chemical fingerprinting analysis.

## 6.4 Willamette River/Saltzman Creek Riverbank Investigation

Although the majority of the Willamette River banks bordering the GS Roofing site are covered by large concrete blocks and other fill materials, and the banks of Saltzman Creek are lined by dense overgrowth, these two areas are conservatively considered possible exposure areas in terms of human and terrestrial plants and animals (see Table 3-1). Therefore, soil samples are proposed at the base of the slope at two locations along each waterway (see Figure 6-1). Samples would be collected from at depth of approximately twelve inches below the surface and analyzed for VOCs (via EPA Method 8260B), SVOCs (Method 8270B), PCBs (Method 8082), total PPL metals (Method Series 6000/7000), and TPH-DRO, TPH-GRH & TPH-HORH (Methods NWTPH-Dx & NWTPH-Gx).

Although seeps were not noted along the riverbanks bordering the Site in November 2003, the riverbanks would be reexamined for evidence of ground-water discharge. If seeps are observed, water samples would be collected for analysis of VOCs (via EPA Method 8260B), SVOCs (Method 8270B), PCBs (Method 8082), total/dissolved PPL metals (Method Series 6000/7000), and TPH-DRO, TPH-GRH & TPH-HORH (Methods NWTPH-Dx & NWTPH-Gx).

## 6.5 Saltzman Creek Discharge and Sediment Investigation

Saltzman Creek flows northeast from Forest Park in the Tualatin Mountains, across portions of the Willbridge Facility, and emerges from a culvert in the southern portion of the GS Roofing property (see Figure 1-1). Although the creek flows across the Willbridge Facility in a concrete-lined channel, surface runoff and ground water from the Willbridge Facility are likely entering the channel.

Therefore, in order to characterize water quality entering the GS Roofing Site via Saltzman Creek, collection of a series of three surface water samples is proposed from the following locations (see Figure 6-1): 1) immediately upstream from NPDES Outfall 001; 2) midway between NPDES Outfalls 001 & 002; and 3) downstream from NPDES Outfall 002, and analyzed for VOCs (via EPA Method 8260B), SVOCs (Method 8270B), PCBs (Method 8082), total/dissolved PPL metals (Method Series 6000/7000), and TPH-DRO, TPH-GRH & TPH-HORH (Methods NWTPH-Dx & NWTPH-Gx). One set of surface water samples would be collected within 24 hours of a significant rainfall event (greater than ¼ inch), and a second set of surface water samples would follow at least 72 hours after any significant rainfall events (greater than ¼ inch) to characterize water quality during periods of high and low runoff.

Collection of three sediment samples from Saltzman Creek is also proposed at approximately the same locations as the surface water samples. Sediment samples would be submitted for analysis of VOCs (via EPA Method 8260B), SVOCs (Method 8270B), PCBs (Method 8082), total PPL metals (Method Series 6000/7000), and TPH-DRO, TPH-GRH & TPH-HORH (Methods NWTPH-Dx & NWTPH-Gx).

BIB?

APP. A

# TABLES

# Table 2-1
## Historical Monitoring Data - NPDES Discharge
## GS Roofing Products Site
## Portland, Oregon



| Sample Designation | Sample Date | Oil & Grease (mg/L) | HEM (mg/L) | SGT (mg/L) | Arsenic (mg/L) | Barium (mg/L) | Cad-mium (mg/L) | Chro-mium (mg/L) | Copper (mg/L) | Lead (mg/L) | Mercury (mg/L) | Nickel (mg/L) | Zinc (mg/L) | TSS (mg/L) | Temper-ature (°C) | pH (S.U.) | COD (mg/L) | TOC (mg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Outfall A | 11/30/93 | 0.9* | NA | NA | 0.025 | 0.15 | ND | 0.09 | NA | 0.099 | ND | NA | NA | 614 | NA | 8.6 | 258 | 15 |
| | 4/8/94 | 3.7 | NA | NA | 0.005 | 0.04 | <0.008 | 0.03 | NA | 0.026 | <0.0003 | NA | NA | 23 | NA | 7.5 | 78 | 9 |
| | 11/16/94 | 1.9 | NA | NA | 0.0036 | 0.034 | <0.008 | 0.011 | NA | 0.014 | <0.0002 | NA | NA | 22 | NA | 7.2 | 204 | 9.6 |
| | 6/23/95 | 5.3 | NA | NA | <0.005 | NA | <0.002 | <0.005 | <0.005 | <0.005 | <0.0002 | <0.005 | 0.008 | 6.0 | NA | 5.96 | <10 | <1.0 |
| | 12/29/95 | <0.5 | NA | NA | <0.01 | NA | <0.002 | <0.01 | <0.01 | <0.01 | <0.0002 | <0.1 | <0.1 | <5 | NA | 6.5 | <10 | 1.9 |
| | 5/14/96 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | 11/22/96 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | 12/17/96 | 1.6 | NA | NA | <0.005 | NA | <0.002 | 0.011 | 0.013 | 0.008 | <0.0002 | 0.008 | 0.19 | 87 | NA | 7.0 | <10 | 2.2 |
| | 12/16/97 | <5.0 | NA | NA | NA | NA | NA | NA | <0.02 | <0.15 | NA | NA | 0.15 | 23 | NA | 7.63 | NA | NA |
| | 3/23/98 | NA | <5 | <5 | NA | NA | NA | NA | 0.022 | 0.019 | NA | NA | 0.2 | 100 | NA | 7.35 | NA | NA |
| | 11/20/98 | NA | <5 | <5 | NA | NA | NA | NA | <0.1 | <0.05 | NA | NA | 0.12 | 32 | NA | 6.40 | NA | NA |
| | 5/7/99 | NA | <5 | NA | NA | NA | NA | NA | 0.03 | <0.05 | NA | NA | 0.665 | 15 | NA | 7.22 | NA | NA |
| | 12/2/99 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0.0353 | NA | NA | 7.13 | NA | NA |
| | 11/29/00 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0.0472 | NA | NA | 6.80 | NA | NA |
| | 3/26/01 | <5.00 | NA | NA | NA | NA | NA | NA | 0.0570 | <0.200 | NA | NA | 0.139 | <10.0 | 12.3 | 7.1 | NA | NA |
| | 10/10/01 | <5 | NA | NA | NA | NA | NA | NA | 0.076 | <0.20 | NA | NA | 0.719 | 45 | 12.8 | 6.7 | 58 | NA |
| | 12/11/01 | <5.00 | NA | NA | NA | NA | NA | NA | 0.00370 | <0.00100 | NA | NA | 0.0814 | 12.0 | 11.1 | 7.2 | NA | NA |
| | 5/28/02 | <5.00 | NA | NA | NA | NA | NA | NA | 0.141 | 0.0111 | NA | NA | 0.155 | 41.0 | 12.9 | 7.20 | NA | NA |
| | 11/13/02 | <5.00 | NA | NA | NA | NA | NA | NA | 0.0609 | <0.0100 | NA | NA | 0.189 | 48 | NA | 7.14 | NA | NA |
| | 4/3/03 | <5.00 | NA | NA | NA | NA | NA | NA | 0.124 | 0.0118 | NA | NA | 0.163 | 156 | 12.9 | 7.06 | NA | NA |
| | 11/19/03 | <5.00 | NA | NA | NA | NA | NA | NA | 0.379 | <0.0100 | NA | NA | 0.110 | 31.0 | NA | 7.64 | NA | NA |
| | 3/30/04 | 6.8 | NA | NA | NA | NA | NA | NA | 0.065 | 0.00638 | NA | NA | 0.335 | 60 | 12.1 | 7.2 | 50 | NA |
| | 5/26/04 | <5.00 | NA | NA | NA | NA | NA | NA | 0.167 | 0.00713 | NA | NA | 0.213 | 149 | NA | 7.53 | NA | NA |
| | 11/2/04 | <5.00 | NA | NA | NA | NA | NA | NA | 0.113 | 0.00686 | NA | NA | 0.158 | 82.0 | NA | 7.54 | NA | NA |
| SMH #1 | 7/19/96 | NA | 119 | <5 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 8.1 | NA | NA |
| | 10/22/96 | NA | 101 | 5.4 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 8.7 | NA | NA |
| | 1/27/97 | NA | 49 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 7.6 | NA | NA |
| *NPDES Benchmark* | | *10* | *10* | | — | — | — | — | *0.1* | *0.4* | — | — | *0.6* | *130* | — | *5.5 - 9.0* | — | — |

# Table 2-1
## Historical Monitoring Data - NPDES Discharge
## GS Roofing Products Site
## Portland, Oregon



| Sample Designation | Sample Date | Oil & Grease (mg/L) | HEM (mg/L) | SGT (mg/L) | Arsenic (mg/L) | Barium (mg/L) | Cad-mium (mg/L) | Chro-mium (mg/L) | Copper (mg/L) | Lead (mg/L) | Mercury (mg/L) | Nickel (mg/L) | Zinc (mg/L) | TSS (mg/L) | Temper-ature (°C) | pH (S.U.) | COD (mg/L) | TOC (mg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Outfall B | 11/30/93 | 1.4* | NA | NA | ND | ND | ND | ND | NA | 0.013 | ND | NA | NA | 34 | NA | 8.3 | 23 | 4 |
| | 4/8/94 | 1.8 | NA | NA | <0.001 | <0.01 | <0.008 | <0.01 | NA | <0.001 | <0.0003 | NA | NA | 5 | NA | 7.0 | <10 | 5 |
| | 11/16/94 | <0.5 | NA | NA | <0.001 | <0.01 | <0.008 | <0.01 | NA | <0.001 | <0.0002 | NA | NA | <1 | NA | 6.9 | <10 | <5 |
| | 6/23/95 | <0.5 | NA | NA | <0.005 | NA | <0.002 | <0.005 | <0.005 | <0.005 | <0.0002 | <0.005 | 0.013 | 27 | NA | 6.32 | 22.3 | 14.8 |
| | 12/29/95 | 4.2 | NA | NA | <0.01 | NA | <0.002 | <0.01 | 0.01 | 0.01 | <0.0002 | <0.1 | 0.2 | 33 | NA | 6.8 | 31 | 6.3 |
| | 5/14/96 | 4.1 | NA | NA | 0.008 | NA | <0.002 | 0.006 | 0.027 | 0.012 | <0.0002 | 0.008 | 0.40 | 56 | NA | 8.0 | 74.0 | 18 |
| | 11/22/96 | 1.0 | NA | NA | <0.005 | NA | <0.002 | <0.005 | 0.010 | <0.005 | <0.0002 | <0.005 | 0.140 | 10 | NA | 7.4 | 35 | 12 |
| | 12/17/96 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | 12/16/97 | 7.0 | NA | NA | NA | NA | NA | NA | <0.02 | <0.15 | NA | NA | 0.23 | 61.0 | NA | 7.91 | NA | NA |
| | 3/23/98 | NA | <5 | <5 | NA | NA | NA | NA | <0.02 | 0.02 | NA | NA | 0.2 | 82 | NA | 7.29 | NA | NA |
| | 11/20/98 | NA | <5 | <5 | NA | NA | NA | NA | <0.1 | <0.05 | NA | NA | 0.41 | 41 | NA | 7.00 | NA | NA |
| | 5/7/99 | NA | <5 | NA | NA | NA | NA | NA | 0.026 | <0.05 | NA | NA | 0.0857 | 16 | NA | 7.65 | NA | NA |
| | 12/2/99 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0.0332 | NA | NA | 8.08 | NA | NA |
| | 11/29/00 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0.659 | NA | NA | 7.00 | NA | NA |
| | 3/26/01 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | 10/10/01 | <5 | NA | NA | NA | NA | NA | NA | 0.092 | <0.20 | NA | NA | 0.266 | 64.5 | 11.4 | 6.5 | 160 | NA |
| | 12/11/01 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | 5/28/02 | <5.00 | NA | NA | NA | NA | NA | NA | 0.0247 | <0.0100 | NA | NA | 0.0863 | <10.0 | 11.1 | 7.4 | NA | NA |
| | 11/13/02 | <5.00 | NA | NA | NA | NA | NA | NA | 0.0408 | <0.0100 | NA | NA | 0.209 | 17.0 | 7.18 | NA | NA | NA |
| | 4/3/03 | <5.00 | NA | NA | NA | NA | NA | NA | 0.0536 | <0.0100 | NA | NA | <0.0500 | 96.0 | 13.5 | 7.20 | NA | NA |
| | 11/19/03 | <5.00 | NA | NA | NA | NA | NA | NA | 0.0953 | <0.0100 | NA | NA | 0.0753 | 30.0 | NA | 7.53 | NA | NA |
| | 3/30/04 | 22.1 | NA | NA | NA | NA | NA | NA | 0.0622 | 0.00385 | NA | NA | 0.0865 | 41 | 12.1 | 6.8 | 53 | NA |
| | 5/26/04 | <5.00 | NA | NA | NA | NA | NA | NA | 0.101 | 0.00562 | NA | NA | 0.256 | 31.0 | NA | 6.84 | NA | NA |
| | 11/2/04 | <5.00 | NA | NA | NA | NA | NA | NA | 0.0158 | 0.00204 | NA | NA | 0.0323 | <10.0 | NA | 7.51 | NA | NA |
| *NPDES Benchmark* | | *10* | *10* | | — | — | — | — | *0.1* | *0.4* | — | — | *0.6* | *130* | — | *5.5 - 9.0* | — | — |

Notes:

1. * Sample analyzed for fats and oils content.
2. HEM = total hexane extractable material; SGT = non-polar extractable material; TSS = total suspended solids; COD = chemical oxygen demand; TOC = total organic carbon; mg/L = milligrams per liter; S.U. = standard ph units; NA = not analyzed for the indicated parameter; ND = not detected.
3. < ("less than") = analyte concentration below the laboratory detection limit.
4. Oil & Grease analyzed via EPA Method 413.2 (1994-1997), via EPA Method 1664 (2001-2004).
5. Additional analytes: selenium and silver were ND at detection limits of 0.001 & 0.007, respectively, in the 11/30/93, 4/8/94 & 11/16/94 samples from Outfalls A & B.
6. The October 10, 2001 & March 30, 2004 samples were collected and analyzed by the City of Portland Bureau of Environmental Services.

**Table 3-1**
**Potential Exposure Pathway Matrix**
**GS Roofing Products Site**
**Portland, Oregon**

| Potential Population | Potential Exposure Pathway | | |
|---|---|---|---|
| | Surface Soil | Subsurface Soil | Saltzman Creek/Willamette River Sediments |
| **Human Health Risk** | | | |
| Resident Adult | No | No | No |
| Resident Child | No | No | No |
| On-Site Worker | No | No | No |
| On-Site Construction Worker | Yes (Dermal, Ingestion & Inhalation) | Yes (Dermal, Ingestion & Inhalation) | No |
| Recreational User (Adult) | No | No | Yes (Dermal, Ingestion) |
| Recreational User (Child) | No | No | Yes (Dermal, Ingestion) |
| **Ecological Risk** | | | |
| Terrestrial Plants | Yes (Uptake) | No | No |
| Terrestrial Animals | Yes (Ingestion) | No | No |
| Aquatic Plants | No | No | Yes |
| Aquatic Animals | No | No | Yes |

| Potential Population | Potential Exposure Pathway | | |
|---|---|---|---|
| | Ground Water | Saltzman Creek/Willamette River Surface Water | Willamette River Fish Consumption |
| **Human Health Risk** | | | |
| Resident Adult | *Yes (Ingestion, Dermal, Inhalation) | No | No |
| Resident Child | *Yes (Ingestion, Dermal, Inhalation) | No | No |
| On-Site Worker | No | No | No |
| On-Site Construction Worker | Yes (Dermal, Ingestion & Inhalation) | No | No |
| Recreational User (Adult) | No | Yes (Dermal, Ingestion, Inhalation) | Yes (Ingestion) |
| Recreational User (Child) | No | Yes (Dermal, Ingestion, Inhalation) | Yes (Ingestion) |
| **Ecological Risk** | | | |
| Terrestrial Plants | No | Yes | No |
| Terrestrial Animals | No | Yes | Yes |
| Aquatic Plants | No | Yes | No |
| Aquatic Animals | No | Yes | Yes |

SINGLE WELL K DETERMINATIONS
NOTE: MANY GENERALIZATIONS & ASSUMPTIONS

# Table 4-1
## Summary of Hydraulic Conductivity Testing Results
## GS Roofing Products Site
## Portland, Oregon

**SUMMARY OF FIELD DATA**



| Well Designation | Depth to Water (static) | Transducer Reading (start pump) | Total Pumping Time (minutes) | Total Drawdown (slug out) | Depth to Water (start) | Total Test Time (minutes) | Depth to Water (end) | % Slug Recovery |
|---|---|---|---|---|---|---|---|---|
| MW-1 | 11.04 | 3.72 | 1.03 | 1.47 | 12.51 | 1.35 | 11.06 | 99.5% |
| MW-11 | 10.64 | 9.26 | 0.58 | 0.88 | 11.52 | 2.77 | 10.66 | 99.8% |
| MW-12 | 10.06 | 9.85 | 1.10 | 8.94 | 19.00 | 7.00 | 10.51 | 95.4% |

**ANALYSIS - BOUWER & RICE UNCONFINED SLUG TEST METHOD**

| Well Designation | Depth to Water | Total Well Depth | Standing Water ($L_w$) | Saturated Thickness (H) | Casing Radius ($r_c$) | Well Radius ($r_w$) | Screen Length ($L_e$) | $L_e/r_w$ |
|---|---|---|---|---|---|---|---|---|
| MW-1 | 11.04 | 14.71 | 3.67 | *20* | 0.08 | 0.42 | 10 | 24 |
| MW-11 | 10.64 | 20.39 | 9.75 | *20* | 0.08 | 0.42 | 15 | 36 |
| MW-12 | 10.06 | 20.14 | 10.08 | *20* | 0.08 | 0.42 | 15 | 36 |
| **Well Designation** | **A Parameter** | **B Parameter** | **$\ln(R_e/r_w)$** | **$y_0$ (feet)** | **$y_t$ (feet)** | **t (minutes)** | **$[\ln(y_o/y_t)]/t$** | **K (ft/day)** |
| MW-1 | 2.30 | 0.35 | 1.527 | 0.23 | 0.050 | 0.5 | 3.052 | 2.33 |
| MW-11 | 2.60 | 0.40 | 2.190 | 0.60 | 0.059 | 1.0 | 2.319 | 1.69 |
| MW-12 | 2.60 | 0.40 | 2.209 | 4.35 | 0.600 | 6.0 | 0.330 | 0.24 |

VARIES BY ORDER OF MAG

Notes:

1. Start/End Depth to Water calculated from transducer readings.
2. All data presented in feet unless otherwise noted.
3. $L_w$ = standing water elevation in well.
4. H = saturated aquifer thickness (estimated).
5. $r_c$ = well radius.
6. $r_w$ = well radius plus gravel pack.
7. $L_e$ = length of screened interval.
8. $L_e/r_w$ = value used to determine A and B parameters.
9. A and B Parameter values from The Bower and Rice Slug Test - An Update, Figure 2.
10. $\ln(R_e/r_w) = [[1.1/\ln(L_w/r_w)] + [A + B \ln[(H-L_w)/r_w]]/L_e/r_w]-1$.
11. $y_0$ = drawdown at time "zero", $y_t$ = drawdown at time "t", values obtained from test plots.
12. t = time.
13. K = hydraulic conductivity = $[(r_c 2 \ln(R_e/r_w))2L_e]*[\ln(y_0/y_t)]/t$.

**Table 4-2**
**Summary of Ground-Water Investigation Derived Waste Samples**
**GS Roofing Products**
**Portland, Oregon**

**VOC analysis**

| Sample Designation | Date | Benzene (µg/L) | Toluene (µg/L) | Ethyl-benzene (µg/L) | Total Xylenes (µg/L) | Methyl-tert butyl ether (µg/L) | n-Butyl benzene (µg/L) | sec-Butyl benzene (µg/L) | tert-Butyl benzene (µg/L) | Isopropyl benzene (µg/L) | n-Propyl benzene (µg/L) | p-Isopropyl toluene (µg/L) | Naph-thalene (µg/L) | 1,2,4-TMB (µg/L) | 1,3,5-TMB (µg/L) | Acetone (µg/L) | cis-1,2-DCE (µg/L) | Chloro-form (µg/L) | Chloro-methane (µg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-11-PW | 11/14/03 | <1.00 | 0.660 J | 0.870 J | 5.75 | <1.00 | 1.26 J | 1.04 | <1.00 | 0.840 J | 1.57 | 1.13 J | 6.09 | 7.78 | 1.38 | <25.0 | 0.270 J | 0.340 J | <5.00 |
| MW-12-PW | 11/14/03 | 0.350 J | 8.38 | 5.89 | 34.5 | 0.540 J | 4.45 J | 2.86 | 0.350 J | 2.94 | 5.20 | 6.22 | 20.9 | 51.6 | 6.80 | <25.0 | <1.00 | <1.00 | 0.240 J |
| TCLP | | | | | | | | | | | | | | | | | | | |
| Comp-1 | 11/14/03 | <20.0 | <20.0 | <20.0 | <40.0 | <10,000 | <20.0 | <20.0 | <20.0 | <20.0 | <20.0 | <20.0 | <20.0 | <20.0 | <20.0 | <500 | <20.0 | <20.0 | <100 |
| Comp-2 | 11/14/03 | <20.0 | <20.0 | <20.0 | <40.0 | <10,000 | <20.0 | <20.0 | <20.0 | <20.0 | <20.0 | <20.0 | <20.0 | <20.0 | <20.0 | <500 | <20.0 | <20.0 | <100 |

**SVOC analysis**

| Sample Designation | Date | Acenaph-thene (µg/L) | Acenaph-thylene (µg/L) | Anthra-cene (µg/L) | Benzo (a) anthracene (µg/L) | Benzo (a) pyrene (µg/L) | Benzo (b) fluoranthene (µg/L) | Benzo (ghi) perylene (µg/L) | Benzo (k) fluoranthene (µg/L) | Chrysene (µg/L) | Dibenzo (a,h) anthracene (µg/L) | Fluoran-thene (µg/L) | Fluorene (µg/L) | Indeno (1,2,3-cd)pyrene (µg/L) | Naph-thalene (µg/L) | Phenan-threne (µg/L) | Pyrene (µg/L) | Dimethyl phthalate (µg/L) | Bis(2-ethyl-hexyl)phthalate (µg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-11-PW | 11/14/03 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | 5.70 | <5.00 | <5.00 | 101 | <10.0 |
| MW-12-PW | 11/14/03 | <5.88 | <5.88 | <5.88 | <5.88 | <5.88 | <5.88 | <5.88 | <5.88 | <5.88 | <5.88 | <5.88 | <5.88 | <5.88 | <5.88 | <5.88 | <5.88 | 34.8 | 17.3 |
| TCLP | | | | | | | | | | | | | | | | | | | |
| Comp-1 | 11/14/03 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 |
| Comp-2 | 11/14/03 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 |

**Metals analysis**

| Sample Designation | Date | Antimony (mg/L) | Arsenic (mg/L) | Barium (mg/L) | Beryllium (mg/L) | Cadmium (mg/L) | Chromium (mg/L) | Copper (mg/L) | Lead (mg/L) | Mercury (mg/L) | Nickel (mg/L) | Selenium (mg/L) | Silver (mg/L) | Thallium (mg/L) | Zinc (mg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Metals | | | | | | | | | | | | | | | |
| MW-11-PW | 11/14/03 | <0.0100 | 0.0175 | NA | 0.00140 | <0.0100 | 0.0109 | 0.0219 | 0.00500 | <0.000200 | 0.0116 | 0.00960 | 0.00100 | 0.00220 | 0.0448 |
| MW-12-PW | 11/14/03 | <0.0250 | 0.0806 | NA | 0.00240 | <0.00500 | 0.311 | 0.170 | 0.213 | <0.000200 | 0.128 | <0.0100 | 0.00135 | 0.000850 | 0.539 |
| Dissolved Metals | | | | | | | | | | | | | | | |
| MW-12-PW | 11/14/03 | <0.00100 | 0.00368 | NA | <0.00100 | <0.00100 | 0.000880 | <0.00200 | <0.00100 | 0.0000540 | 0.00200 | <0.00100 | <0.00100 | <0.00100 | 0.00426 |
| TCLP | | | | | | | | | | | | | | | |
| Comp-1 | 11/14/03 | NA | <0.100 | 1.07 | NA | <0.100 | <0.100 | NA | <0.100 | <0.000200 | NA | <0.100 | <0.100 | NA | NA |
| Comp-2 | 11/14/03 | NA | <0.100 | 2.03 | NA | <0.100 | <0.100 | NA | 0.219 | <0.000200 | NA | <0.100 | <0.100 | NA | NA |

Notes:

1. Semi-volatile organic compounds (SVOCs) analyzed via EPA Method 8270C; volatile organic compounds (VOCs) analyzed via EPA Method 8260B; and metals analyzed via EPA Methods 1311/6000/7000.
2. Concentrations in µg/L (micrograms per liter) or mg/L (milligrams per liter).
3. < ("less than") = analyte concentration below the laboratory detection limit.
4. J = estimated concentration, compound detected below the quantitation limit.
5. TMB = trimethylbenzene; DCE = dichloroethene
6. NA = not analyzed for the indicated parameter.

**Table 4-3**

**Summary of Soil Investigation Derived Waste Samples**

**GS Roofing Products**

**Portland, Oregon**

**SVOC analysis**



| Sample Designation | Date | Acenaph-thene (µg/Kg) | Acenaph-thylene (µg/Kg) | Anthra-cene (µg/Kg) | Benzo (a) anthracene (µg/Kg) | Benzo (a) pyrene (µg/Kg) | Benzo (b) fluoranthene (µg/Kg) | Benzo (ghi) perylene (µg/Kg) | Benzo (k) fluoranthene (µg/Kg) |
|---|---|---|---|---|---|---|---|---|---|
| Comp-1 | 11/14/03 | <1,650 | <1,650 | <1,650 | <1,650 | <1,650 | <1,650 | <1,650 | <1,650 |
| Comp-2 | 11/14/03 | <3,300 | <3,300 | <3,300 | <3,300 | <3,300 | <3,300 | <3,300 | <3,300 |

| Sample Designation | Date | Dibenzo (a,h) anthracene (µg/kg) | Chry-sene (µg/Kg) | Fluor-anthene (µg/kg) | Fluorene (µg/kg) | Indeno (1,2,3-cd) Pyrene (µg/kg) | Naph-thalene (µg/kg) | Phenan-threne (µg/kg) | Pyrene (µg/kg) |
|---|---|---|---|---|---|---|---|---|---|
| Comp-1 | 11/14/03 | <1,650 | <1,650 | <1,650 | <1,650 | <1,650 | <1,650 | <1,650 | <1,650 |
| Comp-2 | 11/14/03 | <3,300 | <3,300 | <3,300 | <3,300 | <3,300 | <3,300 | <3,300 | <3,300 |

**PCB analysis**

| Sample Designation | Date | Aroclor 1016 (µg/kg) | Aroclor 1221 (µg/kg) | Aroclor 1232 (µg/kg) | Aroclor 1242 (µg/kg) | Aroclor 1248 (µg/kg) | Aroclor 1254 (µg/kg) | Aroclor 1260 (µg/kg) |
|---|---|---|---|---|---|---|---|---|
| Comp-1 | 11/14/03 | <67.0 | <134 | <67.0 | <67.0 | <67.0 | <67.0 | <67.0 |
| Comp-2 | 11/14/03 | <67.0 | <134 | <67.0 | <67.0 | <67.0 | <67.0 | <67.0 |

**TPH analysis**

| Sample Designation | Date | TPH-DRO (mg/kg) | TPH-GRH (mg/kg) | TPH-HORH (mg/kg) |
|---|---|---|---|---|
| Comp-1 | 11/14/03 | 338 | 33.5 | 1,420 |
| Comp-2 | 11/14/03 | <250 | <4.00 | 765 |

Notes:

1. Concentrations in µg/kg (micrograms per kilogram) or mg/kg (milligrams per kilogram).
2. < ("less than") = analyte concentration below the laboratory detection limit.
3. TPH = total petroleum hydrocarbon, DRO = diesel range organics, GRH = gasoline range hydrocarbons, HORH = heavy oil range hydrocarbons
4. Semi-volatile organic compounds (SVOCs) analyzed via EPA Method 8270C; polychlorinated biphenyls (PCBs) analyzed via EPA Method 8082; TPH-DRO and TPH- HORH analyzed via NWTPH-Dx; and TPH-GRH analyzed via NWTPH-Gx.

**Table 5-1**
**Summary of Liquid-Level Data (2003-2004)**
**GS Roofing Products Site**
**Portland, Oregon**



| Well Designation (Screened Interval) | Date | TOC Elevation (feet) | Depth to Product (feet) | Depth to Water (feet) | Product Thickness (feet) | Ground-Water Elevation (feet) |
|---|---|---|---|---|---|---|
| **MW-1** | 12/12/03 | 33.73 | ND | 10.96 | 0.00 | 22.77 |
| (5 to 15 feet) | 2/20/04 | | ND | 9.20 | 0.00 | 24.53 |
| | 3/17/04 | | ND | 9.37 | 0.00 | 24.36 |
| | 4/26/04 | | ND | 9.80 | 0.00 | 23.93 |
| | 8/24/04 | | ND | 11.04 | 0.00 | 22.69 |
| **MW-11** | 12/12/03 | 31.03 | 10.42 | 10.52 | 0.10 | 20.61 |
| (5 to 20 feet) | 2/20/04 | | 9.03 | 9.04 | 0.01 | 22.00 |
| | 3/17/04 | | ND | 9.36 | 0.00 | 21.67 |
| | 4/26/04 | | ND | 9.68 | 0.00 | 21.35 |
| | 8/24/04 | | 10.63 | 10.64 | 0.01 | 20.40 |
| **MW-12** | 12/12/03 | 30.37 | 10.01 | 10.02 | 0.01 | 20.36 |
| (5 to 20 feet) | 2/20/04 | | ND | 8.65 | 0.00 | 21.72 |
| | 3/17/04 | | ND | 8.89 | 0.00 | 21.48 |
| | 4/26/04 | | ND | 9.18 | 0.00 | 21.19 |
| | 8/24/04 | | ND | 10.06 | 0.00 | 20.31 |
| **MW-13** | 12/12/03 | 37.11 | Dry | Dry | Dry | Dry |
| (7 to 22 feet) | 2/20/04 | | Dry | Dry | Dry | Dry |
| | 3/17/04 | | Dry | Dry | Dry | Dry |
| | 4/26/04 | | Dry | Dry | Dry | Dry |
| | 8/24/04 | | Dry | Dry | Dry | Dry |
| **MW-14** | 12/12/03 | 37.21 | Dry | Dry | Dry | Dry |
| (7 to 22 feet) | 2/20/04 | | ND | 21.24 | 0.00 | 15.97 |
| | 3/17/04 | | ND | 21.08 | 0.00 | 16.13 |
| | 4/26/04 | | ND | 21.13 | 0.00 | 16.08 |
| | 8/24/04 | | ND | 21.39 | 0.00 | 15.82 |

Notes:

1. ND = not detected.
2. TOC = top of casing.
3. A product specific gravity of 1.0 was used to calculate ground-water elevations.

**Table 5-2**
**Summary of Soil Analytical Data - VOCs**
**GS Roofing Products**
**Portland, Oregon**



| Sample Designation | Sample Depth | Sample Date | Benzene (µg/kg) | Toluene (µg/kg) | Ethyl-benzene (µg/kg) | Total Xylenes (µg/kg) | n-Butyl benzene (µg/kg) | sec-Butyl benzene (µg/kg) | Isopropyl benzene (µg/kg) | p-Isopropyl toluene (µg/kg) | Naph-thalene (µg/kg) | n-Propyl benzene (µg/kg) | 1,2,4-TMB (µg/kg) | 1,3,5-TMB (µg/kg) | Acetone (µg/kg) | Carbon disulfide (µg/kg) | 4-Methyl-2-pentanone (µg/kg) | PCE (µg/kg) | TCE (µg/kg) | TPH-DRO (mg/kg) | TPH-GRH (mg/kg) | TPH-HORH (mg/kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-11 | 11.25 | 11/11/03 | 0.783 | 6.08 | 8.23 | 75.2 | 14.5 | 9.14 | 6.78 | 13.6 | 24.6 | 14.0 | 140 | 40.6 | 27.2 | 10.3 | <20.0 | 0.565 | 0.745 | <25.0 | <4.00 | <50.0 |
| MW-12 | 20.5 | 11/11/03 | <100 | 948 | 1,690 | 12,370 | 2,740 | 1,490 | 1,190 | <200 | 7,380 | 2,530 | 28,200 | 6,020 | <2,500 | <1,000 | <500 | 21.8 | 76.9 | 1,960 | 155 | 3,410 |
| MW-13 | 15 | 11/12/03 | 0.544 | <5.00 | 0.193 | 1.20 | <5.00 | <5.00 | <5.00 | 6.10 | 1.65 | <5.00 | 0.623 | <5.00 | 68.1 | 1.17 | <20.0 | <5.00 | 0.703 | NA | NA | NA |
| MW-13 | 25 | 11/12/03 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | <25.0 | <4.00 | <50.0 |
| MW-14 | 16 | 11/12/03 | 0.631 | 0.783 | 0.189 | 1.04 | <5.00 | <5.00 | <5.00 | 0.518 | 6.78 | 0.189 | 1.24 | 0.341 | 53.8 | 0.758 | <20.0 | 0.442 | 0.783 | 35.0 | <4.00 | 205 |
| SB-1 | 11 | 11/13/03 | <100 | <100 | <100 | <300 | <500 | 12.0 | <200 | <200 | <200 | <100 | <100 | <100 | <2,500 | <1,000 | <500 | <100 | <100 | NA | NA | NA |
| SB-1 | 11 | 11/13/03 | 0.260 J | 0.340 J | 0.170 J | 1.00 J | 0.340 J | 0.430 J | <5.00 | <5.00 | 0.470 J | 0.280 J | 0.320 J | 0.170 J | 84.7 | 0.500 J | <20.0 | <5.00 | <5.00 | NA | NA | NA |
| SB-1 | 13 | 11/13/03 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 435 | 5.66 | 862 |
| SB-1 | 18.75 | 11/14/03 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | <25.0 | <4.00 | <50.0 |
| SB-1 | 20-21.5 | 11/14/03 | <100 | <100 | <100 | <300 | <500 | <100 | <200 | <200 | <200 | <100 | <100 | <100 | <2,500 | <1,000 | <500 | <100 | <100 | NA | NA | NA |
| SB-1 | 20-21.5 | 11/14/03 | 0.320 J | 0.330 J | <5.00 | 0.300 J | <5.00 | <5.00 | <5.00 | <5.00 | 0.490 J | <5.00 | <5.00 | <5.00 | 32.5 | <20.0 | <20.0 | 0.620 J | 1.50 J | NA | NA | NA |
| SB-2 | 17 | 11/13/03 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 6,780 | <4.00 | 21,500 |
| SB-2 | 17-18.5 | 11/13/03 | <100 | <100 | <100 | <300 | <500 | <100 | <200 | <200 | <200 | <100 | <100 | <100 | <2,500 | <1,000 | <500 | <100 | <100 | NA | NA | NA |
| SB-2 | 17-18.5 | 11/13/03 | 0.310 J | 0.480 J | 0.170 J | 0.560 J | <5.00 | <5.00 | <5.00 | 0.170 J | 0.840 J | <5.00 | 0.260 J | <5.00 | <20.0 | <20.0 | 4.42 J | 0.310 J | 0.730 J | NA | NA | NA |
| SB-13 | 17 | 11/13/03 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 3,980 | 4.44 | 10,500 |
| SB-13 | 17-18.5 | 11/13/03 | <100 | <100 | <100 | <300 | <500 | <100 | <200 | <200 | <200 | <100 | <100 | <100 | <2,500 | <1,000 | <500 | <100 | <100 | NA | NA | NA |
| SB-13 | 17-18.5 | 11/13/03 | 0.450 J | 0.410 J | <5.00 | 0.460 J | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | 0.290 J | <5.00 | <20.0 | 1.22 J | 5.13 J | <5.00 | <5.00 | NA | NA | NA |
| SB-3 | 17 | 11/13/03 | <100 | <100 | <100 | <300 | <500 | <100 | <200 | <200 | <200 | <100 | <100 | <100 | <2,500 | <1,000 | <500 | <100 | <100 | NA | NA | NA |
| SB-3 | 17 | 11/13/03 | 0.409 J | 0.409 J | 0.158 J | 0.343 J | <5.00 | <5.00 | <5.00 | <5.00 | 0.646 J | <5.00 | 0.211 J | <5.00 | <20.0 | <20.0 | <20.0 | <5.00 | 0.382 J | <25.0 | <4.00 | 51.5 |
| SB-4 | 16.5-18 | 11/14/03 | <100 | <100 | <100 | <300 | <500 | <100 | <200 | <200 | <200 | <100 | <100 | <100 | <2,500 | <1,000 | <500 | <100 | <100 | NA | NA | NA |
| SB-4 | 16.5-18 | 11/14/03 | 1.77 J | 1.13 J | <5.00 | 0.280 J | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | 0.180 J | <5.00 | <20.0 | 0.700 J | <20.0 | <5.00 | <5.00 | NA | NA | NA |
| SB-4 | 18 | 11/14/03 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 70.7 | <4.00 | 321 |
| SB-5 | 13-14.5 | 11/14/03 | <100 | <100 | <100 | <300 | <500 | <100 | <200 | <200 | <200 | <100 | <100 | <100 | <2,500 | <1,000 | <500 | <100 | <100 | NA | NA | NA |
| SB-5 | 13-14.5 | 11/14/03 | 0.340 J | <5.00 | <5.00 | 0.210 J | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <20.0 | 0.540 J | <20.0 | 0.210 J | <5.00 | NA | NA | NA |
| SB-5 | 13.5 | 11/14/03 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | <25.0 | <4.00 | <50.0 |
| Air Blank | NA | 11/14/03 | <100 | <100 | <100 | <300 | <500 | <100 | <200 | <200 | <200 | <100 | <100 | <100 | <2,500 | <1,000 | <500 | <100 | <100 | NA | NA | NA |
| Ingestion/Dermal Contact/Inhalation - RBC[1] | | | 340,000 | $3.9 \times 10^7$ | $2.8 \times 10^7$ | $1.9 \times 10^7$ | -- | -- | $2.4 \times 10^7$ | -- | 710,000 | $9.3 \times 10^6$ | $1.4 \times 10^6$ | $1.4 \times 10^6$ | -- | -- | -- | 40,000 | 41,000 | $2.3 \times 10^7$ | $1.3 \times 10^7$ | $2.3 \times 10^7$ |
| Leaching to Ground Water - $RBC_{SW}$[2] | | | 52 | 180,000 | >327,000 | 100,000 | -- | -- | >335,000 | -- | 15,000 | >198,000 | 55,000 | 12,000 | -- | -- | -- | 37 | 9.9 | >100,000 | 110 | >100,000 |

LANDFILL SAMPLES

LANDFILL AREA

LANDFILL SAMPLES

Notes:

1. Source: Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites, DEQ, September 22, 2003, Risk-Based Concentration (RBC); smallest value for Construction/Excavation Worker Receptor Scenarios.
2. Source: Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites, DEQ, September 22, 2003, Risk-Based Concentration (RBC), Occupational Receptor Scenario.
3. Sample depth in feet; concentration in µg/kg (micrograms per kilogram) or mg/kg (milligrams per kilogram).
4. TMB = trimethylbenzene; PCE = tetrachloroethene; TCE = trichloroethene; TPH = total petroleum hydrocarbons; DRO = diesel-range organics; GRH = gasoline range hydrocarbons; HORH = heavy oil range hydrocarbons.
5. Volatile organic compound (VOC) analysis via EPA Method 8260B or 5035/8260B, TPH-DRO & TPH-HORH analysis via NWTPH-Dx, TPH-GRH analysis via NWTPH-Gx.
6. < ("less than") = analyte concentration below the laboratory detection limit.
7. J = estimated concentration, compound detected below the quantitation limit.
8. NA = not analyzed for the indicated parameter.
9. Sample SB-13 is a duplicate sample of SB-2.
10. tert-Butylbenzene was detected in sample MW-11 (11.25) at a concentration of 1.00 µg/kg.
11. 1,2,3-Trichlorobenzene was detected in sample MW-12 (20.5) at a concentration of 24.7 µg/kg.

**Table 5-3**
**Summary of Soil Analytical Data - SVOCs**
**GS Roofing Products**
**Portland, Oregon**



| Sample Designation | Sample Depth | Sample Date | Acenaph-thene (µg/kg) | Acenaph-thylene (µg/kg) | Anthra-cene (µg/kg) | Benzo (a) anthracene (µg/kg) | Benzo (a) pyrene (µg/kg) | Benzo (b) fluoranthene (µg/kg) | Benzo (ghi) perylene (µg/kg) | Benzo (k) fluoranthene (µg/kg) | Chry-sene (µg/kg) | Dibenzo (a,h) anthracene (µg/kg) | Fluor-anthene (µg/kg) | Fluorene (µg/kg) | Indeno (1,2,3-cd)pyrene (µg/kg) | Naph-thalene (µg/kg) | Phenan-threne (µg/kg) | Pyrene (µg/kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-11 | 11.25 | 11/11/03 | <330 | <330 | <330 | <330 | <330 | <330 | <330 | <330 | <330 | <330 | <330 | <330 | <330 | <330 | <330 | <330 |
| MW-12 | 20.5 | 11/11/03 | <330 | <330 | <330 | <330 | <330 | <330 | <330 | <330 | <330 | <330 | <330 | <330 | <330 | 775 | 125 | 127 |
| MW-13 | 15 | 11/12/03 | <330 | <330 | <330 | <330 | <330 | <330 | <330 | <330 | <330 | <330 | <330 | <330 | <330 | <330 | <330 | <330 |
| MW-14 | 16 | 11/12/03 | <3,300 | <3,300 | <3,300 | <3,300 | <3,300 | <3,300 | <3,300 | <3,300 | <3,300 | <3,300 | <3,300 | <3,300 | <3,300 | <3,300 | <3,300 | <3,300 |
| SB-1 | 10 | 11/13/03 | <3,300 | <3,300 | <3,300 | <3,300 | <3,300 | <3,300 | <3,300 | <3,300 | <3,300 | <3,300 | <3,300 | <3,300 | <3,300 | <3,300 | <3,300 | <3,300 |
| SB-1 | 20 | 11/14/03 | <330 | <330 | 236 J | 485 | 419 | 200 J | 234 J | 347 | 545 | 84.1 J | 860 | <330 | 201 J | <330 | 514 | 1,160 |
| SB-2 | 17 | 11/13/03 | <33,000 | <33,000 | <33,000 | <33,000 | <33,000 | <33,000 | <33,000 | <33,000 | <33,000 | <33,000 | <33,000 | <33,000 | <33,000 | <33,000 | <33,000 | <33,000 |
| SB-13 | 17 | 11/13/03 | <4,950 | <4,950 | <4,950 | <4,950 | <4,950 | <4,950 | <4,950 | <4,950 | <4,950 | <4,950 | <4,950 | <4,950 | <4,950 | <4,950 | <4,950 | <4,950 |
| SB-3 | 17 | 11/13/03 | 86.2 J | 176 J | 522 | 1,300 | 1,170 | 600 | 845 | 858 | 1,450 | 206 J | 2,320 | 103 J | 665 | <330 | 1,820 | 3,440 |
| SB-4 | 17.5 | 11/14/03 | <330 | <330 | <330 | 419 | 339 | 190 J | 223 J | 269 J | 448 | 79.0 J | 388 | <330 | 166 J | <330 | 117 J | 645 |
| SB-5 | 13.5 | 11/14/03 | <330 | <330 | <330 | <330 | <330 | <330 | <330 | <330 | <330 | <330 | <330 | <330 | <330 | <330 | <330 | <330 |
| Ingestion/Dermal Contact/Inhalation - RBC[1] | | | $1.6 \times 10^7$ | -- | $9.0 \times 10^7$ | 21,000 | 2,100 | 21,000 | -- | 210,000 | $2.1 \times 10^6$ | 2,100 | $8.9 \times 10^6$ | $1.2 \times 10^7$ | 21,000 | 710,000 | -- | $6.7 \times 10^6$ |
| Leaching to Ground Water - $RBC_{SW}$[2] | | | >104,000 | -- | >6,400 | >18,700 | >8,260 | >9,230 | -- | >4,920 | >3,180 | >4,730 | >110,000 | >137,000 | >382 | 15,000 | -- | >70,900 |

Notes:

1. Source: Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites, DEQ, September 22, 2003, Risk-Based Concentration (RBC); smallest value for Construction/Excavation Worker Receptor Scenarios.
2. Source: Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites, DEQ, September 22, 2003, Risk-Based Concentration (RBC), Occupational Receptor Scenario.
3. Sample depth in feet; concentration in µg/kg (micrograms per kilogram).
4. < ("less than") = analyte concentration below the laboratory detection limit.
5. J = estimated concentration, compound detected below the quantitation limit.
6. Semi-volatile organic compound (SVOC) analysis via EPA Method 8270C.
7. Sample SB-13 is a duplicate sample of SB-2.

## Table 5-4
## Summary of Soil Analytical Data - PCBs
## GS Roofing Products
## Portland, Oregon



| Sample Designation | Sample Depth | Sample Date | Aroclor 1016 (µg/kg) | Aroclor 1221 (µg/kg) | Aroclor 1232 (µg/kg) | Aroclor 1242 (µg/kg) | Aroclor 1248 (µg/kg) | Aroclor 1254 (µg/kg) | Aroclor 1260 (µg/kg) |
|---|---|---|---|---|---|---|---|---|---|
| **MW-11** | 11.25 | 11/11/03 | <67.0 | <134 | <67.0 | <67.0 | <67.0 | <134 | <67.0 |
| **MW-12** | 20.5 | 11/11/03 | <67.0 | <134 | <67.0 | <67.0 | <67.0 | <134 | <67.0 |
| **MW-13** | 15 | 11/12/03 | <67.0 | <134 | <67.0 | <67.0 | <67.0 | <67.0 | <67.0 |
| **MW-14** | 16 | 11/12/03 | <67.0 | <134 | <67.0 | <67.0 | <67.0 | <134 | <67.0 |
| **SB-1** | 10 | 11/13/03 | <67.0 | <134 | <67.0 | <67.0 | <67.0 | <67.0 | <67.0 |
| **SB-1** | 20 | 11/14/03 | <67.0 | <134 | <67.0 | <67.0 | <67.0 | <67.0 | <67.0 |
| **SB-2** | 17 | 11/13/03 | <67.0 | <134 | <67.0 | <67.0 | <67.0 | <67.0 | <67.0 |
| **SB-13** | 17 | 11/13/03 | <67.0 | <134 | <67.0 | <67.0 | <67.0 | <67.0 | <67.0 |
| **SB-3** | 17 | 11/13/03 | <67.0 | <134 | <67.0 | <67.0 | <67.0 | <67.0 | <67.0 |
| **SB-4** | 17.5 | 11/14/03 | <67.0 | <134 | <67.0 | <67.0 | <67.0 | <67.0 | <67.0 |
| **SB-5** | 13.5 | 11/14/03 | <67.0 | <134 | <67.0 | <67.0 | <67.0 | <67.0 | <67.0 |
| **Ingestion/Dermal/Inhalation - PRG[1]** | | | 21,000 | 740 | 740 | 740 | 740 | 740 | 740 |
| **Migration to Ground Water - SSL[2]** | | | -- | -- | -- | -- | -- | -- | -- |

Notes:

1. Source: EPA Region 9, table dated 10/1/02, Preliminary Remediation Goals (PRGs); smallest value for combined ingestion/dermal/inhalation for Industrial Soil.
2. Source: EPA Region 9, table dated 10/1/02, Soil Screening Levels (SSLs), DAF 20.
3. Sample depth in feet; concentration in µg/kg (micrograms per kilogram).
4. < ("less than") = analyte concentration below the laboratory detection limit.
5. Samples analyzed for polychlorinated biphenyls (PCBs) via EPA Method 8082.
6. Sample SB-13 is a duplicate sample of SB-2.

## Table 5-6
## Summary of Soil Analytical Data - Total Organic Carbon
## GS Roofing Products
## Portland, Oregon



| Sample Designation | Sample Depth | Sample Date | TOC (mg/kg) |
|---|---|---|---|
| **MW-11** | 11.25 | 11/11/03 | <1,000 |
| **MW-11** | 26.25 | 11/11/03 | 41,900 |
| **MW-12** | 20.5 | 11/11/03 | 10,600 |
| **MW-13** | 15 | 11/12/03 | <1,000 |
| **MW-14** | 16 | 11/12/03 | 27,700 |
| **SB-1** | 18.5 | 11/14/03 | 1,770 |
| **SB-3** | 17 | 11/13/03 | 22,500 |
| **SB-4** | 18 | 11/14/03 | 9,960 |

Notes:

1. TOC = total organic carbon.
2. Sample depth in feet; concentration in mg/kg (milligrams per kilogram).
3. Samples analyzed via EPA Method APHA-EPA 9060 mod.
4. < ("less than") = analyte concentration below the laboratory detection limit.

GROUNDWATER

**Table 5-7**
**Summary of Ground-Water Analytical Data - VOCs**
**GS Roofing Products**
**Portland, Oregon**



| Sample Designation | Date | Benzene (µg/L) | Toluene (µg/L) | Ethyl-benzene (µg/L) | Total Xylenes (µg/L) | Methyl-tert butyl ether (µg/L) | n-Butyl benzene (µg/L) | sec-Butyl benzene (µg/L) | tert-Butyl benzene (µg/L) | Isopropyl benzene (µg/L) | p-Isopropyl toluene (µg/L) | Naph-thalene (µg/L) | n-Propyl benzene (µg/L) | 1,2,4-TMB (µg/L) | 1,3,5-TMB (µg/L) | Acetone (µg/L) | cis-1,2-DCE (µg/L) | Chloro-form (µg/L) | Chloro-methane (µg/L) | TPH DRO (mg/L) | TPH GRO (mg/L) | TPH HORH (mg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-1 | 4/26/04 | <1.00 | <1.00 | <1.00 | <3.0 | <1.00 | <5.00 | <1.00 | <1.00 | 3.23 | <2.00 | <2.00 | 5.80 | <1.00 | <1.00 | <25.0 | <1.00 | <1.00 | <5.00 | <0.250 | 0.118 | <0.500 |
| MW-11 | 4/26/04 | <1.00 | <1.00 | <1.00 | 3.54 | <1.00 | <5.00 | 2.10 | <1.00 | <2.00 | <2.00 | 14.8 | 3.52 | 30.1 | 6.04 | <25.0 | <1.00 | <1.00 | <5.00 | <0.250 | 0.232 | <0.500 |
| Dup. (MW-50) | 4/26/04 | <1.00 | <1.00 | <1.00 | <3.0 | <1.00 | <5.00 | 1.71 | <1.00 | <2.00 | <2.00 | 11.0 | 2.31 | 23.4 | 4.82 | <25.0 | <1.00 | <1.00 | <5.00 | <0.250 | 0.265 | <0.500 |
| MW-12 | 4/26/04 | <1.00 | <1.00 | <1.00 | <3.0 | <1.00 | <5.00 | <1.00 | <1.00 | <2.00 | <2.00 | 2.98 | <1.00 | 5.12 | 1.12 | <25.0 | <1.00 | <1.00 | <5.00 | <0.250 | 0.196 | <0.500 |
| MW-14 | 4/26/04 | <1.00 | <1.00 | <1.00 | <3.0 | <1.00 | <5.00 | <1.00 | <1.00 | <2.00 | <2.00 | <2.00 | <1.00 | <1.00 | <1.00 | <25.0 | <1.00 | <1.00 | <5.00 | <0.625 | <0.050 | <1.25 |
| **QA/QC Samples** | | | | | | | | | | | | | | | | | | | | | | |
| TB-042604 | 4/26/04 | <1.00 | <1.00 | <1.00 | <3.0 | <1.00 | <5.00 | <1.00 | <1.00 | <2.00 | <2.00 | <2.00 | <1.00 | <1.00 | <1.00 | <25.0 | <1.00 | <1.00 | <5.00 | NA | NA | NA |
| **Ingestion/Inhalation - $RBC_{TW}$[1]** | | 2.2 | 2,900 | 5,400 | 820 | 38 | -- | -- | -- | 2,600 | -- | 25 | 970 | 49 | 49 | -- | 240 | -- | -- | 0.350 | 0.400 | -- |
| **Maximum Contaminant Level[2]** | | 5 | 1,000 | 700 | 10,000 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 70 | 80 [12] | -- | -- | -- | -- |
| **GW in Excavation - $RBC_{WE}$[3]** | | 1,700 | 78,000 | 110,000 | 22,000 | 31,000 | -- | -- | -- | >30,000 | -- | 680 | >14,000 | 1,300 | 1,400 | -- | 7,600 | -- | -- | -- | 12,000 | -- |
| **WQC (WQGV*)[4] - Freshwater** | | 5,300* | 17,500* | 32,000* | -- | -- | -- | -- | -- | -- | -- | 620* | -- | -- | -- | -- | 11,600* | 1,240* | -- | -- | -- | -- |
| **WQC (WQGV*)[4] - Human Health** | | 2.2 | 1,300 | 530 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 330 | 5.7 | -- | -- | -- | -- |
| **Surface Water Level II SLV[5]** | | 130 | 9.8 | 7.3 | 13 | -- | -- | -- | -- | -- | -- | 620 | -- | -- | -- | 1,500 | 180 | 1,240 | -- | -- | -- | -- |

Notes:

1. Source: Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites, DEQ, September 22, 2003, Risk-Based Concentration (RBC); Occupational Scenario.
2. Source: EPA Federal Maximum Contaminant Levels (MCLs), Winter 2004.
3. Source: Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites, DEQ, September 22, 2003, Risk-Based Concentration (RBC); Construction and Excavation Worker Scenario.
4. Source: OAR 340, Division 041, Water Quality Criteria (WQC) and Water Quality Guidance Values (WQGV) adopted May 20, 2004; smallest value for Freshwater/Human Health Consumption.
5. Source: Level II Screening Level Values (SLVs), DEQ, December 2001; smallest value for Fresh Water Receptors.
6. Concentrations in µg/L (micrograms per liter) or mg/L (milligrams per liter).
7. < ("less than") = analyte concentration below the laboratory detection limit.
8. J = estimated concentration, compound detected below the quantitation limit.
9. NA = not analyzed for the indicated parameter.
10. TB = trip blank.
11. TMB = trimethylbenzene; TPH = total petroleum hydrocarbons; DRO = diesel-range organics; GRO = gasoline-range organics; HORH = heavy oil range hydrocarbons.
12. MCL for Total Trihalomethanes including chloroform, bromodichloromethane, dibromochloromethane, and bromoform.
13. Samples analyzed for volatile organic compounds (VOCs) via EPA Method 8260; TPH-DRO and TPH-HORH by NWTPH-Dx; TPH-GRH by NWTPH-Gx.

Table 5-8
Summary of Ground-Water Analytical Data - SVOCs / PAHs
GS Roofing Products
Portland, Oregon

Groundwater



| Sample Designation | Date | Acenaph-thene (µg/L) | Acenaph-thylene (µg/L) | Anthra-cene (µg/L) | Benzo (a) anthracene (µg/L) | Benzo (a) pyrene (µg/L) | Benzo (b) fluoranthene (µg/L) | Benzo (ghi) perylene (µg/L) | Benzo (k) fluoranthene (µg/L) | Chrysene (µg/L) | Dibenzo (a,h) anthracene (µg/L) | Fluoran-thene (µg/L) | Fluorene (µg/L) | Indeno (1,2,3-cd)Pyrene (µg/L) | Naph-thalene (µg/L) | Phenan-threne (µg/L) | Pyrene (µg/L) | Dimethyl phthalate (µg/L) | Bis(2-ethyl-hexyl)phthalate (µg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-1 | 4/26/04 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <10.0 |
| MW-11 | 4/26/04 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <10.0 |
| Dup. (MW-50) | 4/26/04 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <10.0 |
| MW-12 | 4/26/04 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <10.0 |
| MW-14 | 4/26/04 | <9.09 | <9.09 | <9.09 | <9.09 | <9.09 | <9.09 | <9.09 | <9.09 | <9.09 | <9.09 | <9.09 | <9.09 | <9.09 | <9.09 | <9.09 | <9.09 | <9.09 | <18.2 |
| QA/QC Samples | | | | | | | | | | | | | | | | | | | |
| EB-1 | 11/14/03 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | 14.9 |
| Ingestion/Inhalation - $RBC_{TW}$[1] | | 1,500 | -- | 7,300 | 0.56 | 0.056 | 0.56 | -- | 5.6 | 56 | 0.056 | 5,800 | 970 | 0.56 | 25 | -- | 4,400 | -- | -- |
| Maximum Contaminant Level[2] | | -- | -- | -- | -- | 0.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| GW in Excavation - $RBC_{WE}$[3] | | >4,240 | -- | >43.4 | >9.40 | >1.62 | >1.50 | -- | >0.800 | >1.60 | >0.249 | >206 | >1,980 | >0.022 | >31,000 | -- | >135 | -- | -- |
| WQC (WQGV*)[4] - Freshwater | | 520* | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 620* | -- | -- | -- | -- |
| WQC (WQGV*)[4] - Human Health | | 670 | -- | 8,300 | 0.0038 | 0.0038 | 0.0038 | -- | 0.0038 | 0.0038 | 0.0038 | 130/3,980* | 1,100 | 0.0038 | -- | -- | 830 | 270,000 | 1.2 |
| Surface Water Level II SLV[5] | | 520 | -- | 13 | 0.027 | 0.014 | -- | -- | -- | -- | -- | 6.16 | 3.9 | -- | 620 | 6.3 | -- | 3 | 3 |

Notes:

1. Source: Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites, DEQ, September 22, 2003, Risk-Based Concentration (RBC); Occupational Scenario.
2. Source: EPA Federal Maximum Contaminant Levels (MCLs), Winter 2004.
3. Source: Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites, DEQ, September 22, 2003, Risk-Based Concentration (RBC); Construction and Excavation Worker Scenario.
4. < ("less than") = analyte concentration below the laboratory detection limit.
5. J = estimated concentration, compound detected below the quantitation limit.
6. EB = equipment blank.
7. Concentrations in µg/L (micrograms per liter).
8. Samples analyzed for semi-volatile organic compounds (SVOCs) via EPA Method 8270.

## Table 5-11
## Summary of General Ground-Water Quality Analytical Data
## GS Roofing Products
## Portland, Oregon



| Sample Designation | Date | Carbon Dioxide (mg/L) | Nitrate (mg/L) | Sulfate (mg/L) |
|---|---|---|---|---|
| **MW-1** | 4/26/04 | 48.3 | <0.100 | 5.00 |
| **MW-11** | 4/26/04 | 57.1 | <0.100 | 2.95 |
| **Dup. (MW-50)** | 4/26/04 | 58.3 | <0.100 | 2.52 |
| **MW-12** | 4/26/04 | 94.7 | <0.100 | <1.00 |
| **MW-14** | 4/26/04 | 195 | <0.100 | 15.7 |

Notes:

1. mg/L = milligrams per liter.
2. Carbon dioxide analyzed via Method SM-4500-C; nitrate-nitrogen analyzed via EPA Method 300.0; sulfate analyzed via EPA Method 300.0.
3. < ("less than") = analyte concentration below the laboratory detection limit.

**Table 5-10**
**Summary of Ground-Water Analytical Data - Metals**
**GS Roofing Products**
**Portland, Oregon**

GROUNDWATER

<SLV

>SLV x 1.5



| Sample Designation | Date | Antimony (mg/L) | Arsenic (mg/L) | Beryllium (mg/L) | Cadmium (mg/L) | Chromium (mg/L) | Copper (mg/L) | Iron (mg/L) | Lead (mg/L) | Mercury (mg/L) | Manganese (mg/L) | Nickel (mg/L) | Selenium (mg/L) | Silver (mg/L) | Thallium (mg/L) | Zinc (mg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals** | | | | | | | | | | | | | | | | |
| **MW-1** | 4/26/04 | <0.00100 | 0.0117 | <0.00100 | <0.00100 | <0.00100 | 0.000440 | 11.8 | <0.00100 | <0.000200 | 2.44 | 0.00197 | <0.00100 | <0.00100 | <0.00100 | <0.00500 |
| **MW-11** | 4/26/04 | <0.00100 | 0.00312 | <0.00100 | <0.00100 | <0.00100 | 0.000280 | 8.65 | <0.00100 | <0.000200 | 4.21 | <0.00200 | <0.00100 | <0.00100 | <0.00100 | 0.00114 |
| **Dup. (MW-50)** | 4/26/04 | <0.00100 | 0.00351 | <0.00100 | <0.00100 | <0.00100 | 0.000500 | 8.32 | 0.000180 | <0.000200 | 4.19 | <0.00200 | 0.000730 | <0.00100 | <0.00100 | 0.00119 |
| **MW-12** | 4/26/04 | 0.000300 | 0.0315 | <0.00100 | <0.00100 | 0.00117 | 0.000610 | 33.8 | 0.000700 | <0.000200 | 3.45 | 0.00177 | <0.00100 | <0.00100 | 0.000110 | 0.00257 |
| **MW-14** | 4/26/04 | 0.000500 | 0.00961 | 0.000490 | <0.00100 | 0.00341 | 0.00804 | 18.8 | 0.00497 | <0.000200 | 8.43 | 0.0155 | 0.0104 | <0.00100 | 0.000240 | 0.0312 |
| **Dissolved Metals** | | | | | | | | | | | | | | | | |
| **MW-1** | 4/26/04 | 0.000290 | 0.00632 | <0.00100 | <0.00100 | <0.00100 | 0.000480 | 2.04 | <0.00100 | <0.000200 | 2.32 | 0.00257 | <0.00100 | <0.00100 | 0.0000600 | 0.00451 |
| **MW-11** | 4/26/04 | <0.00100 | 0.00153 | <0.00100 | <0.00100 | <0.00100 | 0.000500 | 1.54 | <0.00100 | <0.000200 | 4.14 | 0.00125 | <0.00100 | <0.00100 | <0.00100 | 0.00449 |
| **Dup. (MW-50)** | 4/26/04 | <0.00100 | 0.00135 | <0.00100 | <0.00100 | <0.00100 | <0.00200 | 1.17 | <0.00100 | <0.000200 | 4.43 | <0.00200 | <0.00100 | <0.00100 | <0.00100 | <0.00500 |
| **MW-12** | 4/26/04 | 0.000380 | 0.00487 | <0.00100 | <0.00100 | <0.00100 | 0.000410 | 5.80 | <0.00100 | <0.000200 | 3.43 | 0.00135 | 0.000670 | <0.00100 | <0.00100 | 0.00257 |
| **MW-14** | 4/26/04 | 0.000270 | 0.00344 | <0.00100 | <0.00100 | <0.00100 | 0.000270 | 0.129 | <0.00100 | <0.000200 | 8.24 | 0.00831 | 0.000660 | <0.00100 | 0.000310 | 0.00144 |
| **Tap Water PRG[1]** | | 0.015 | 0.000045 | 0.073 | 0.018 | 0.110 | 1.5 | 11.0 | 0.015 [5] | 0.011 | 0.880 | 0.730 | 0.180 | 0.180 | 0.0024 | 11.0 |
| **Maximum Contaminant Level[2]** | | 0.006 | 0.01 (0.50*) | 0.004 | 0.005 (0.010*) | 0.10 (0.050*) | 1.3 [2] | -- | 0.015 [2] (0.050*) | 0.002 | -- | 0.10 | 0.05 (0.010*) | (0.050*) | 0.002 | -- |
| **WQC (WQGV*)[3] - Freshwater** | | 0.0016* | 0.150/ 0.048* | 0.0053* | 0.00025 | 0.011 [6] | 0.012** | 1.0 | 0.0032** | 0.000012 | -- | 0.160** | 0.005 | 0.00012 | 0.040* | 0.110** |
| **WQC (WQGV*)[3] - Human Health** | | 0.0056 | 0.000018 | 0.0000068 | 0.010 | 0.05 [6] | 1.3 | 0.3 | -- | -- | 0.050 | 0.610 | 0.170 | -- | 0.00024 | 7.40 |
| **Surface Water Level II SLV[4]** | | 1 | 0.150 | 0.0053 | 0.0022 | 0.074 | 0.009 | 1 | 0.0025 | 0.00077 | 0.120 | 0.052 | 0.005 | 0.00012 | 0.040 | 0.120 |

** hardness dependent - 100 mg/L value used

Notes:

1. Source: EPA Region 9, table dated 10/1/02, Preliminary Remediation Goals (PRGs); tap water.
2. Source: EPA Federal Maximum Contaminant Levels (MCLs), Winter 2004, copper and lead values are action levels; or *MCLs in OAR 340, Division 041, Water Quality Criteria (WQC) and Water Quality Guidance Values (WQGV) adopted May 20, 2004.
3. Source: OAR 340, Division 041, Water Quality Criteria (WQC) and Water Quality Guidance Values (WQGV) adopted May 20, 2004; smallest value for Freshwater/Human Health Consumption.
4. Source: Level II Screening Level Values (SLVs), DEQ, December 2001; smallest value for Fresh Water Receptors.
5. Source: Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites, DEQ, September 22, 2003, Risk-Based Concentration (RBC); Ingestion & Inhalation from Tap Water, Occupational Scenario.
6. Chromium value based on $Cr^{+6}$; the $Cr^{+3}$ WQC are 0.210 mg/kg** and 0.170mg/kg.
7. < ("less than") = analyte concentration below the laboratory detection limit.
8. NA = not analyzed for the indicated parameter.

## Table 5-9
## Summary of Ground-Water Analytical Data - PCBs
## GS Roofing Products
## Portland, Oregon



| Sample Designation | Date | Aroclor 1016 (µg/L) | Aroclor 1221 (µg/L) | Aroclor 1232 (µg/L) | Aroclor 1242 (µg/L) | Aroclor 1248 (µg/L) | Aroclor 1254 (µg/L) | Aroclor 1260 (µg/L) |
|---|---|---|---|---|---|---|---|---|
| MW-1 | 4/26/04 | <0.500 | <1.00 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 |
| MW-11 | 4/26/04 | <0.500 | <1.00 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 |
| Dup. (MW-50) | 4/26/04 | <0.500 | <1.00 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 |
| MW-12 | 4/26/04 | <0.500 | <1.00 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 |
| MW-14 | 4/26/04 | <1.00 | <2.00 | <1.00 | <1.00 | <1.00 | <1.00 | <1.00 |
| Tap Water PRG[1] | | 0.96 | 0.034 | 0.034 | 0.034 | 0.034 | 0.034 | 0.034 |
| Maximum Contaminant Level[2] | | (total PCBs - 0.50) | | | | | | |
| WQC/WQGV[3] - Freshwater | | (total PCBs - 0.014) | | | | | | |
| WQC/WQGV[3] - Human Health | | (total PCBs - 6.4 X 10-5) | | | | | | |
| Surface Water Level II SLV[4] | | 13,000 | 0.28 | 0.58 | 0.053 | 0.081 | 0.033 | 94 |

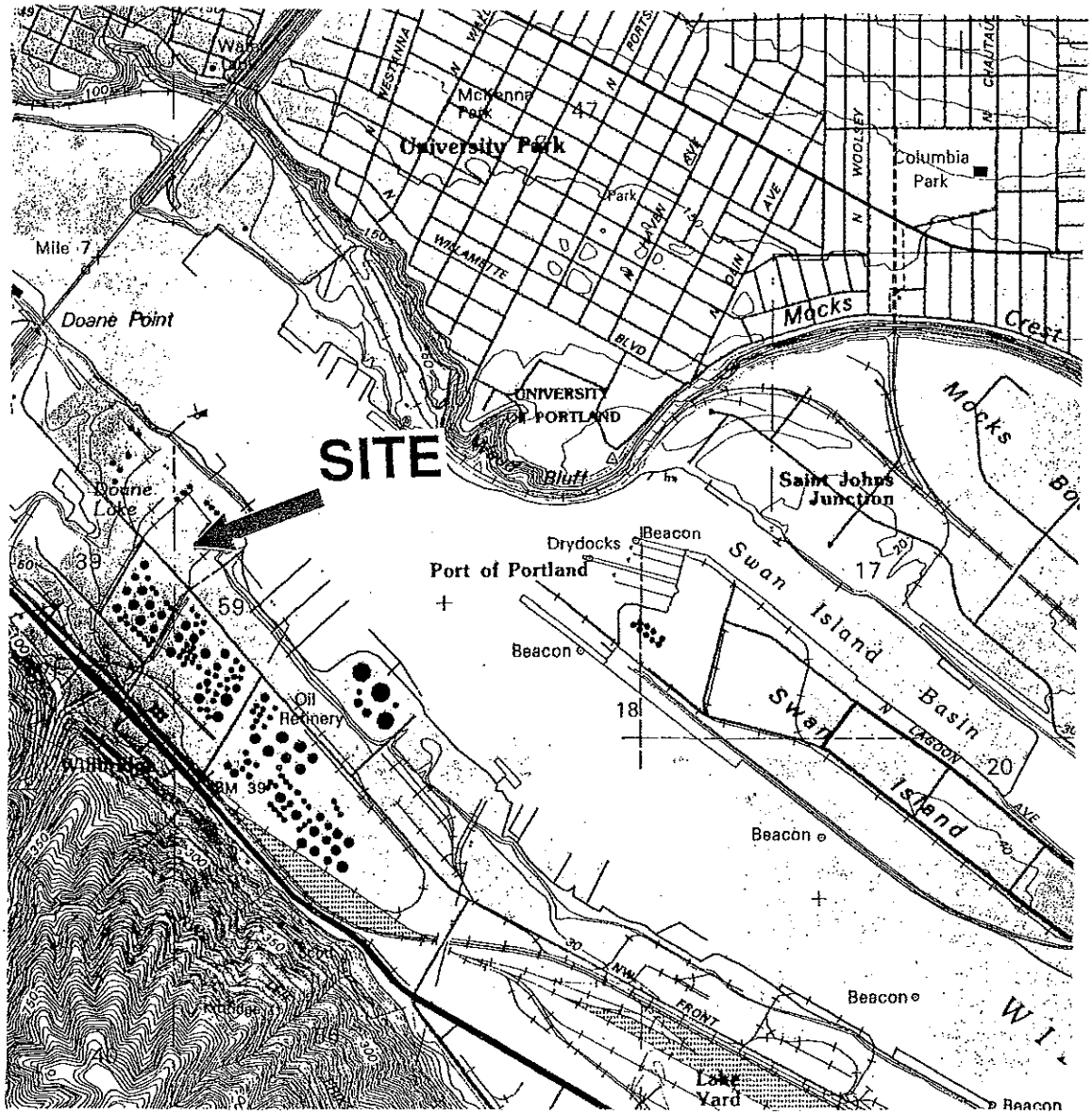
Notes:

1. Source: EPA Region 9, table dated 10/1/02, Preliminary Remediation Goals (PRGs); tap water.
2. Source: EPA Federal Maximum Contaminant Levels (MCLs), Winter 2004.
3. Source: OAR 340, Division 041, Water Quality Criteria (WQC) and Water Quality Guidance Values (WQGV) adopted May 20, 2004; smallest value for Freshwater/Human Health Consumption.
4. Source: Level II Screening Level Values (SLVs), DEQ, December 2001; smallest value for Fresh Water Receptors.
5. Concentrations in µg/L (micrograms per liter).
6. < ("less than") = analyte concentration below the laboratory detection limit.
7. Samples analyzed for polychlorinated biphenyls (PCBs) via EPA Method 8082.

APP. B

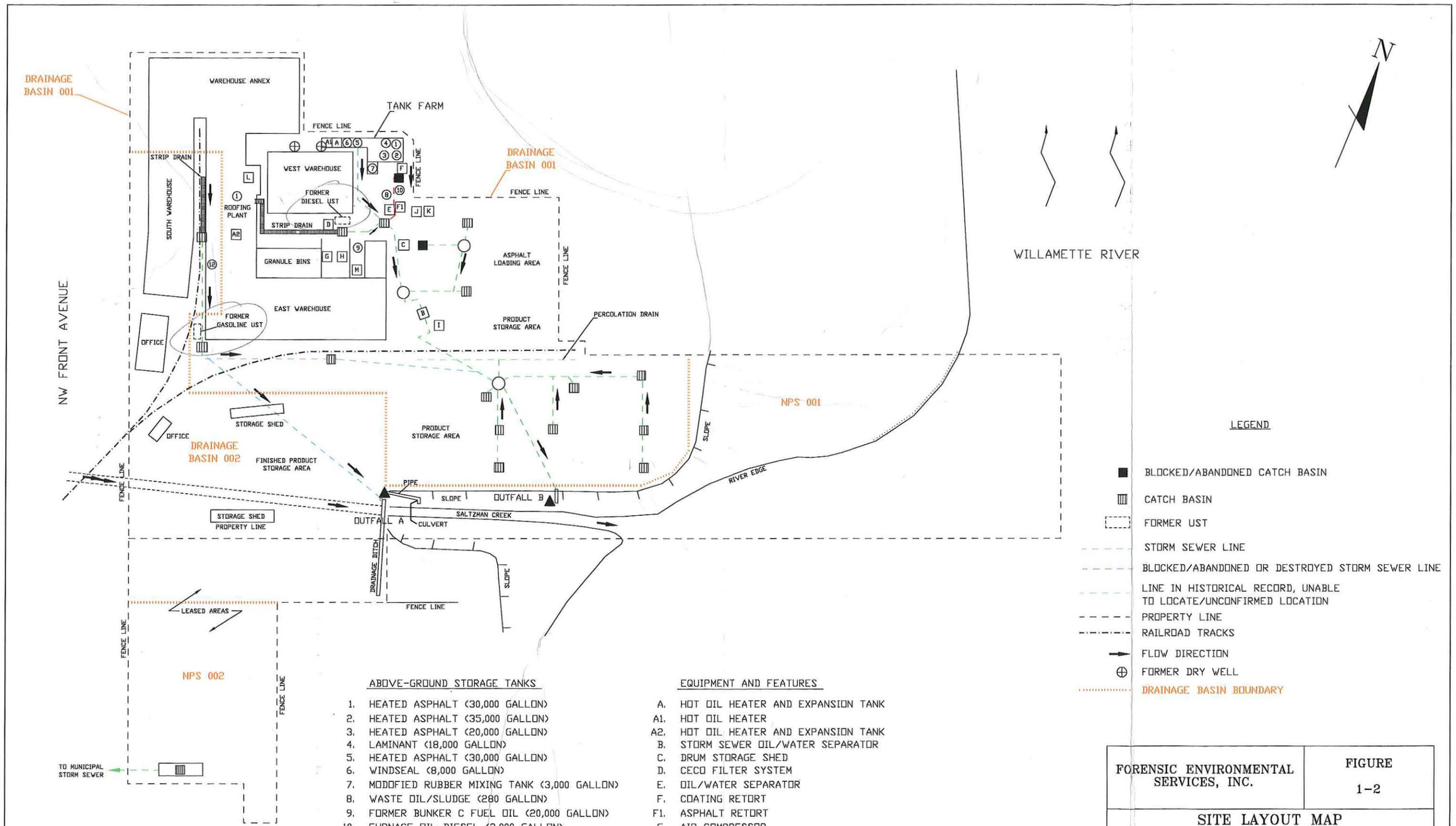
**FIGURES**

N




| FORENSIC ENVIRONMENTAL SERVICES, INC. | FIGURE 1-1 |
|---|---|
| SITE LOCATION MAP<br>GS ROOFING PRODUCTS<br>PORTLAND, OREGON | |
| 0 — 2000<br>APPROXIMATE SCALE IN FEET | DRAWN BY:<br>APPROVED BY: |

PORTTOPO.DWG




ABOVE-GROUND STORAGE TANKS

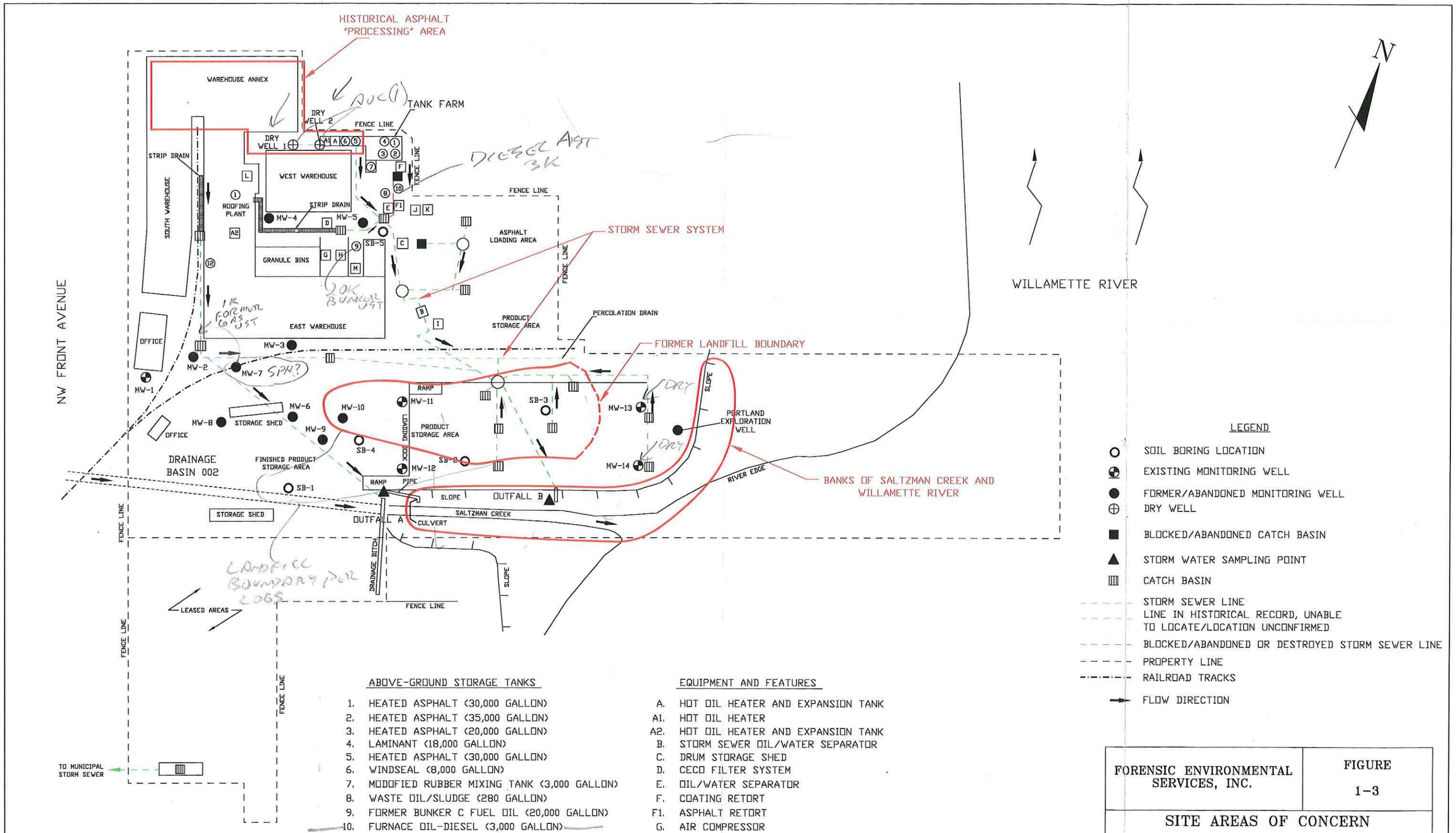
1. HEATED ASPHALT (30,000 GALLON)
2. HEATED ASPHALT (35,000 GALLON)
3. HEATED ASPHALT (20,000 GALLON)
4. LAMINANT (18,000 GALLON)
5. HEATED ASPHALT (30,000 GALLON)
6. WINDSEAL (8,000 GALLON)
7. MODOFIED RUBBER MIXING TANK (3,000 GALLON)
8. WASTE OIL/SLUDGE (280 GALLON)
9. FORMER BUNKER C FUEL OIL (20,000 GALLON)
10. FURNACE OIL-DIESEL (3,000 GALLON)
11. LIMESTONE STORAGE TANK (110 TON CAPACITY)
12. COATING "SURGE" MIXER TANK (1200 GALLONS)

EQUIPMENT AND FEATURES

A. HOT OIL HEATER AND EXPANSION TANK
A1. HOT OIL HEATER
A2. HOT OIL HEATER AND EXPANSION TANK
B. STORM SEWER OIL/WATER SEPARATOR
C. DRUM STORAGE SHED
D. CECO FILTER SYSTEM
E. OIL/WATER SEPARATOR
F. COATING RETORT
F1. ASPHALT RETORT
G. AIR COMPRESSOR
H. FORMER BAILER
I. SHUT-OFF VALVE
J. COOLING TOWER
K. PROPANE TANK
L. FILTER HEATER
M. WASTE WATER SETTLING POND

| FORENSIC ENVIRONMENTAL SERVICES, INC. | FIGURE 1-2 |
|---|---|
| SITE LAYOUT MAP<br>GS ROOFING PRODUCTS<br>PORTLAND, OREGON | |
| 0 — 120<br>SCALE IN FEET | DRAWN BY:<br>APPROVED BY: |

PORSITV2.DWG




## ABOVE-GROUND STORAGE TANKS

1. HEATED ASPHALT (30,000 GALLON)
2. HEATED ASPHALT (35,000 GALLON)
3. HEATED ASPHALT (20,000 GALLON)
4. LAMINANT (18,000 GALLON)
5. HEATED ASPHALT (30,000 GALLON)
6. WINDSEAL (8,000 GALLON)
7. MODOFIED RUBBER MIXING TANK (3,000 GALLON)
8. WASTE OIL/SLUDGE (280 GALLON)
9. FORMER BUNKER C FUEL OIL (20,000 GALLON)
10. FURNACE OIL-DIESEL (3,000 GALLON)
11. LIMESTONE STORAGE TANK (110 TON CAPACITY)
12. COATING "SURGE" MIXER TANK (1200 GALLONS)

## EQUIPMENT AND FEATURES

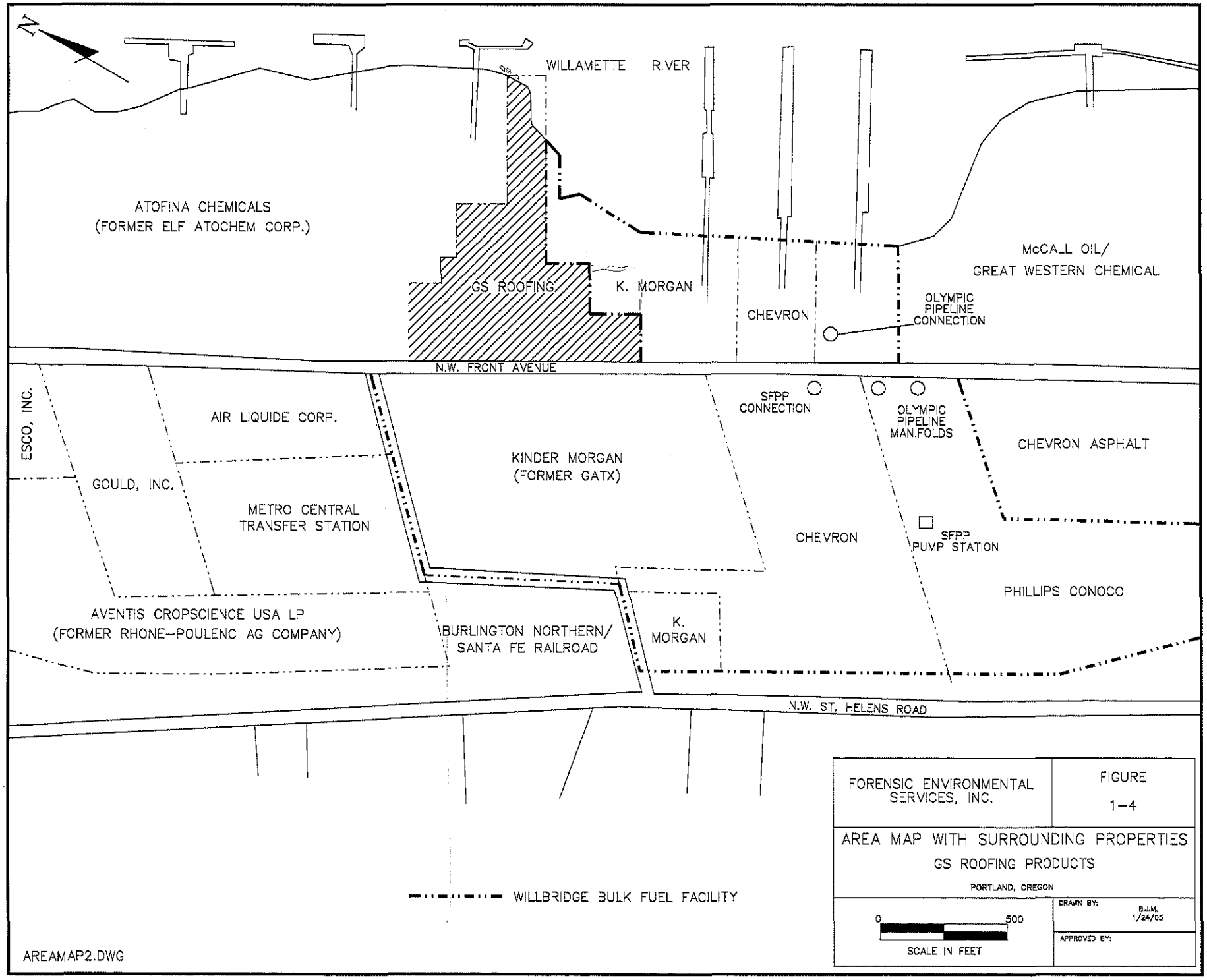
A. HOT OIL HEATER AND EXPANSION TANK
A1. HOT OIL HEATER
A2. HOT OIL HEATER AND EXPANSION TANK
B. STORM SEWER OIL/WATER SEPARATOR
C. DRUM STORAGE SHED
D. CECO FILTER SYSTEM
E. OIL/WATER SEPARATOR
F. COATING RETORT
F1. ASPHALT RETORT
G. AIR COMPRESSOR
H. FORMER BAILER
I. SHUT-OFF VALVE
J. COOLING TOWER
K. PROPANE TANK
L. FILTER HEATER
M. WASTE WATER SETTLING POND

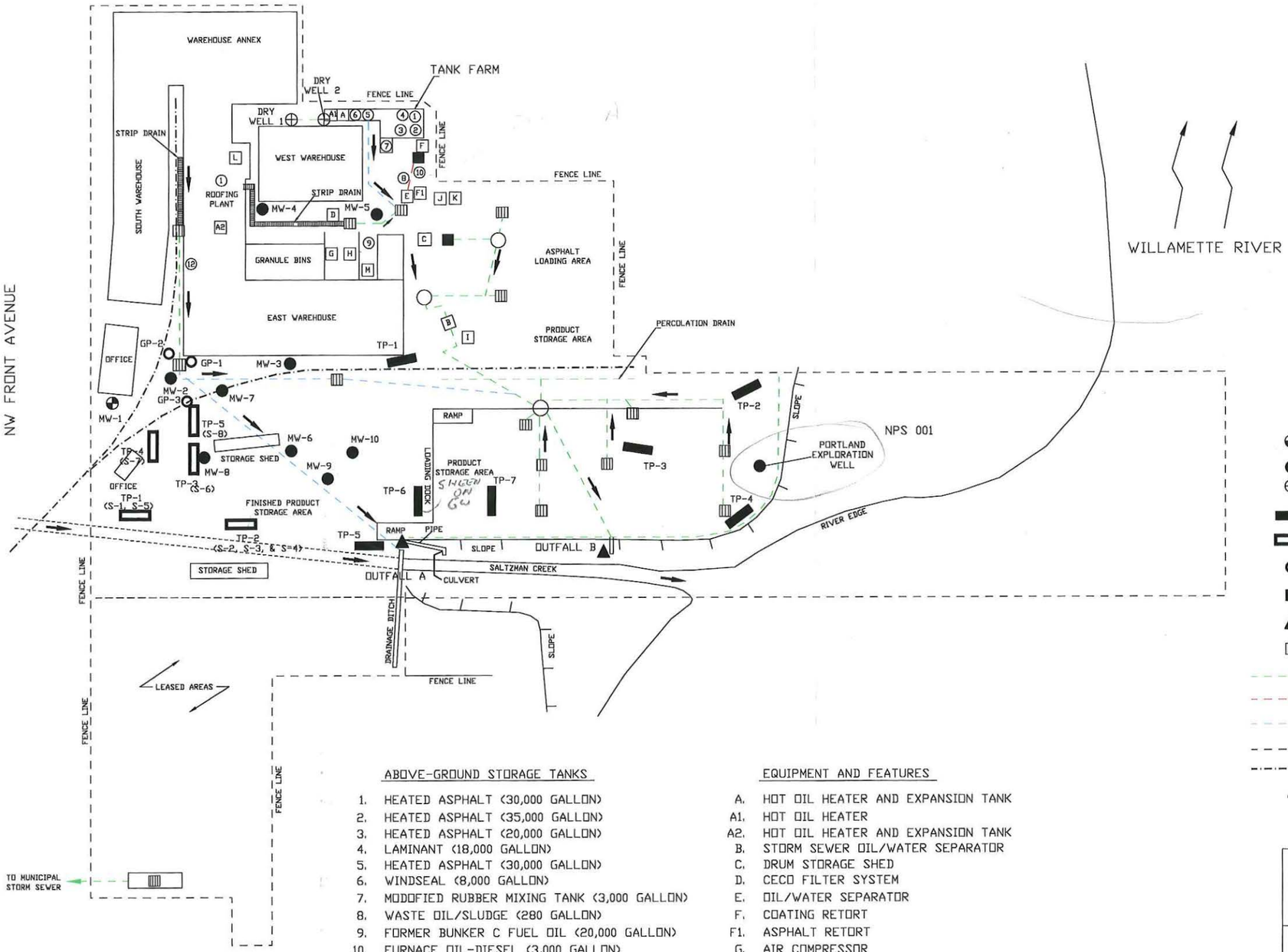
## LEGEND

- SOIL BORING LOCATION
- EXISTING MONITORING WELL
- FORMER/ABANDONED MONITORING WELL
- DRY WELL
- BLOCKED/ABANDONED CATCH BASIN
- STORM WATER SAMPLING POINT
- CATCH BASIN
- STORM SEWER LINE
- LINE IN HISTORICAL RECORD, UNABLE TO LOCATE/LOCATION UNCONFIRMED
- BLOCKED/ABANDONED OR DESTROYED STORM SEWER LINE
- PROPERTY LINE
- RAILROAD TRACKS
- FLOW DIRECTION

| FORENSIC ENVIRONMENTAL SERVICES, INC. | FIGURE 1-3 |
|---|---|
| SITE AREAS OF CONCERN<br>GS ROOFING PRODUCTS<br>PORTLAND, OREGON | |
| 0 — 120<br>SCALE IN FEET | DRAWN BY:<br>APPROVED BY: |

PORT-AOC.DWG


N
WILLAMETTE RIVER
ATOFINA CHEMICALS
(FORMER ELF ATOCHEM CORP.)
GS ROOFING
K. MORGAN
CHEVRON
OLYMPIC PIPELINE CONNECTION
McCALL OIL/
GREAT WESTERN CHEMICAL
N.W. FRONT AVENUE
ESCO, INC.
AIR LIQUIDE CORP.
GOULD, INC.
METRO CENTRAL TRANSFER STATION
KINDER MORGAN
(FORMER GATX)
SFPP CONNECTION
OLYMPIC PIPELINE MANIFOLDS
CHEVRON ASPHALT
CHEVRON
SFPP PUMP STATION
PHILLIPS CONOCO
AVENTIS CROPSCIENCE USA LP
(FORMER RHONE-POULENC AG COMPANY)
BURLINGTON NORTHERN/
SANTA FE RAILROAD
K. MORGAN
N.W. ST. HELENS ROAD
WILLBRIDGE BULK FUEL FACILITY
AREAMAP2.DWG
FORENSIC ENVIRONMENTAL SERVICES, INC.
FIGURE
1-4
AREA MAP WITH SURROUNDING PROPERTIES
GS ROOFING PRODUCTS
PORTLAND, OREGON
0
500
SCALE IN FEET
DRAWN BY:
B.J.M.
1/24/05
APPROVED BY:




## ABOVE-GROUND STORAGE TANKS

1. HEATED ASPHALT (30,000 GALLON)
2. HEATED ASPHALT (35,000 GALLON)
3. HEATED ASPHALT (20,000 GALLON)
4. LAMINANT (18,000 GALLON)
5. HEATED ASPHALT (30,000 GALLON)
6. WINDSEAL (8,000 GALLON)
7. MODOFIED RUBBER MIXING TANK (3,000 GALLON)
8. WASTE OIL/SLUDGE (280 GALLON)
9. FORMER BUNKER C FUEL OIL (20,000 GALLON)
10. FURNACE OIL-DIESEL (3,000 GALLON)
11. LIMESTONE STORAGE TANK (110 TON CAPACITY)
12. COATING 'SURGE' MIXER TANK (1200 GALLONS)

## EQUIPMENT AND FEATURES

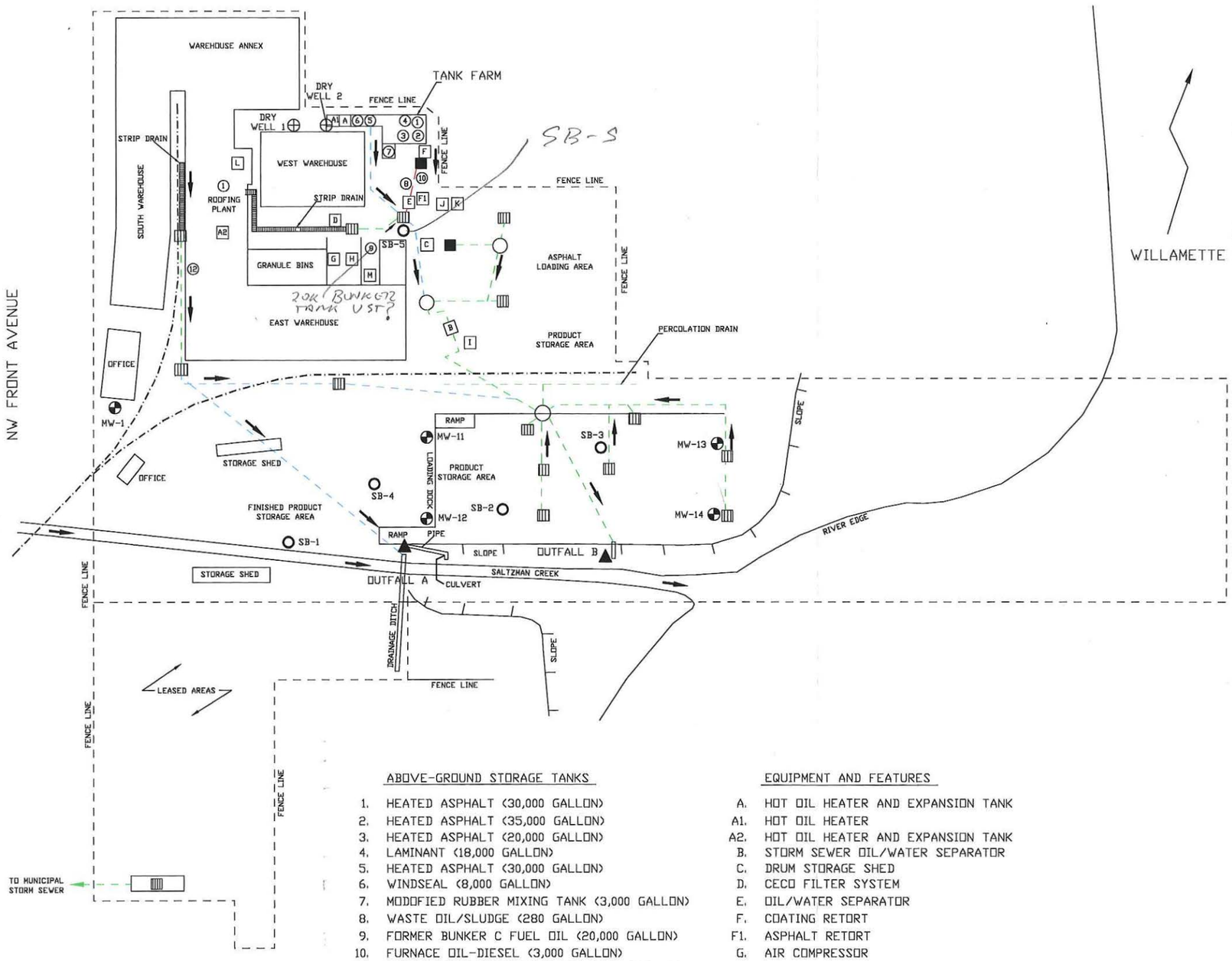
- A. HOT OIL HEATER AND EXPANSION TANK
- A1. HOT OIL HEATER
- A2. HOT OIL HEATER AND EXPANSION TANK
- B. STORM SEWER OIL/WATER SEPARATOR
- C. DRUM STORAGE SHED
- D. CECO FILTER SYSTEM
- E. OIL/WATER SEPARATOR
- F. COATING RETORT
- F1. ASPHALT RETORT
- G. AIR COMPRESSOR
- H. FORMER BAILER
- I. SHUT-OFF VALVE
- J. COOLING TOWER
- K. PROPANE TANK
- L. FILTER HEATER
- M. WASTE WATER SETTLING POND

## LEGEND

- EXISTING MONITORING WELL
- FORMER/ABANDONED MONITORING WELL
- DRY WELL
- TEST PIT LOCATION (APPLIED GEOTECHNOLOGY) 1992
- TEST PIT LOCATION (DE MINIMIS INC.)
- GEOPROBE SOIL BORING (IT CORP., OCTOBER 2000)
- BLOCKED/ABANDONED CATCH BASIN
- STORM WATER SAMPLING POINT
- CATCH BASIN
- STORM SEWER LINE
- BLOCKED/ABANDONED OR DESTROYED STORM SEWER LINE
- LINE IN HISTORICAL RECORD, UNABLE TO LOCATE/UNCONFIRMED LOCATION
- PROPERTY LINE
- RAILROAD TRACKS
- FLOW DIRECTION

| FORENSIC ENVIRONMENTAL SERVICES, INC. | FIGURE 2-1 |
|---|---|
| FORMER INVESTIGATIONS<br>GS ROOFING PRODUCTS<br>PORTLAND, OREGON | |
| 0 — 120<br>SCALE IN FEET | DRAWN BY:<br>APPROVED BY: |

HISTSAM2.DWG




## ABOVE-GROUND STORAGE TANKS

1. HEATED ASPHALT (30,000 GALLON)
2. HEATED ASPHALT (35,000 GALLON)
3. HEATED ASPHALT (20,000 GALLON)
4. LAMINANT (18,000 GALLON)
5. HEATED ASPHALT (30,000 GALLON)
6. WINDSEAL (8,000 GALLON)
7. MODOFIED RUBBER MIXING TANK (3,000 GALLON)
8. WASTE OIL/SLUDGE (280 GALLON)
9. FORMER BUNKER C FUEL OIL (20,000 GALLON)
10. FURNACE OIL-DIESEL (3,000 GALLON)
11. LIMESTONE STORAGE TANK (110 TON CAPACITY)
12. COATING "SURGE" MIXER TANK (1200 GALLONS)

? BUNKER C UST (5000 GAL)

## EQUIPMENT AND FEATURES

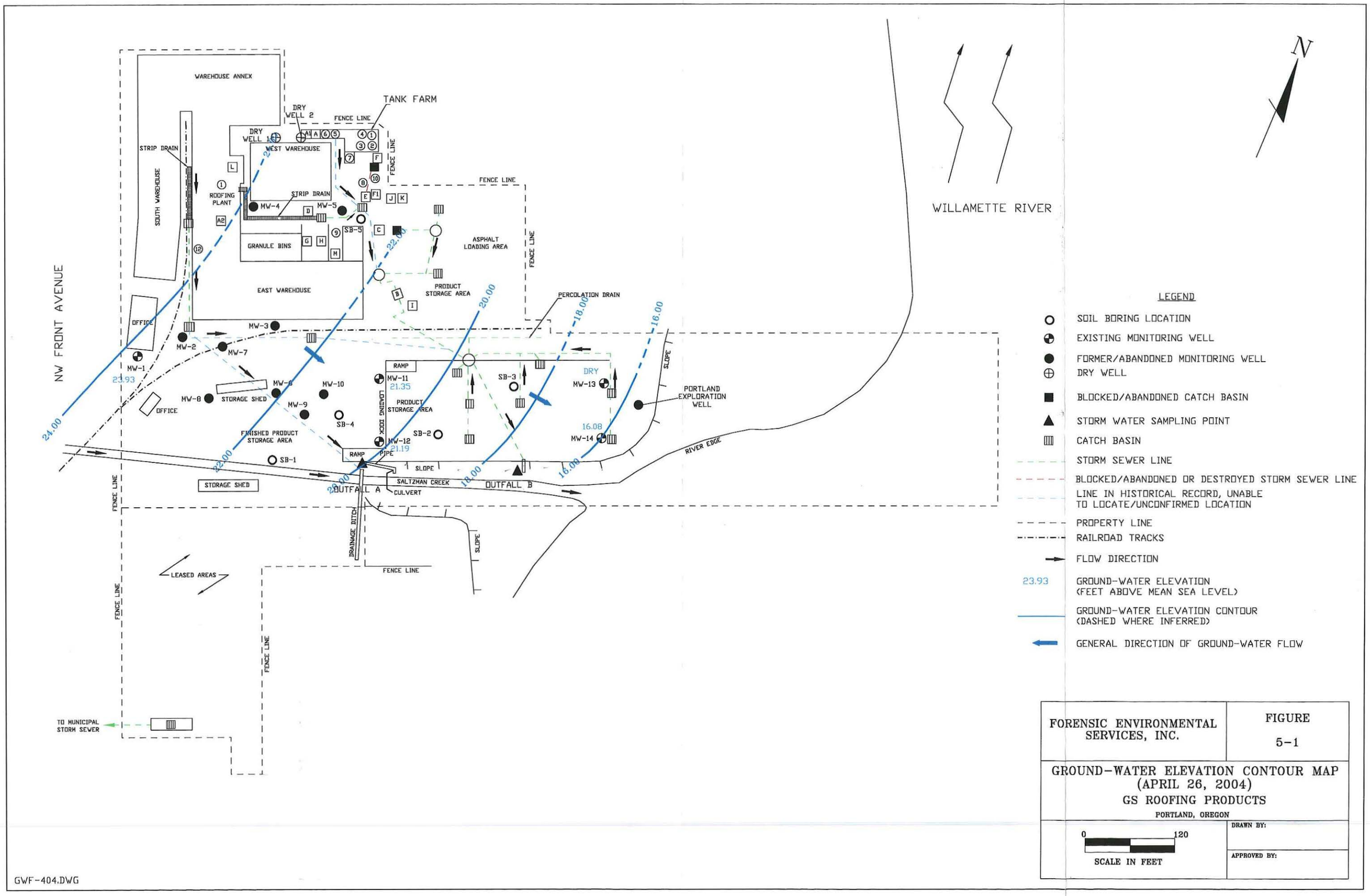
A. HOT OIL HEATER AND EXPANSION TANK
A1. HOT OIL HEATER
A2. HOT OIL HEATER AND EXPANSION TANK
B. STORM SEWER OIL/WATER SEPARATOR
C. DRUM STORAGE SHED
D. CECO FILTER SYSTEM
E. OIL/WATER SEPARATOR
F. COATING RETORT
F1. ASPHALT RETORT
G. AIR COMPRESSOR
H. FORMER BAILER
I. SHUT-OFF VALVE
J. COOLING TOWER
K. PROPANE TANK
L. FILTER HEATER
M. WASTE WATER SETTLING POND

## LEGEND

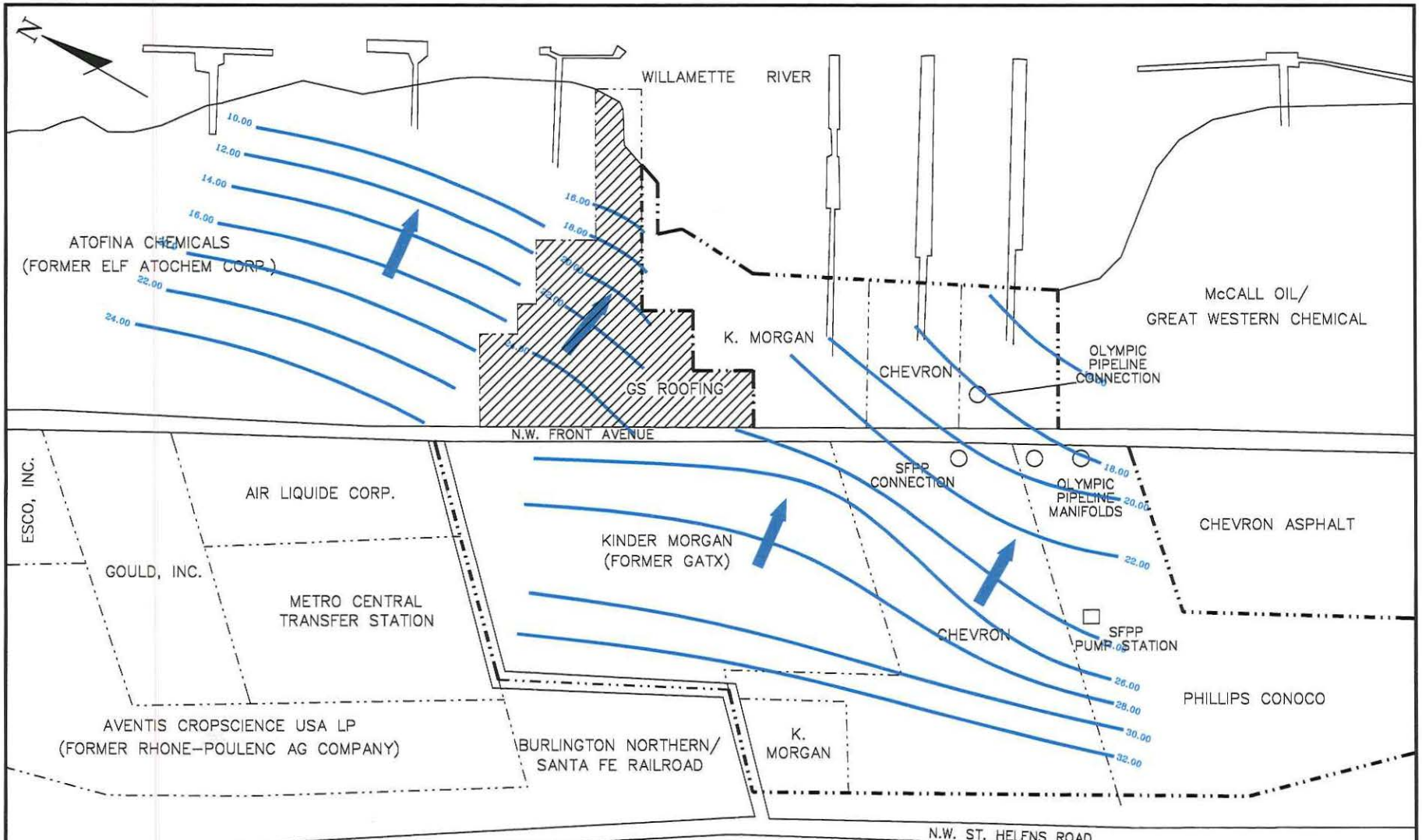
- SOIL BORING LOCATION
- EXISTING MONITORING WELL
- DRY WELL
- BLOCKED/ABANDONED CATCH BASIN
- STORM WATER SAMPLING POINT
- CATCH BASIN
- STORM SEWER LINE
- BLOCKED/ABANDONED OR DESTROYED STORM SEWER LINE
- LINE IN HISTORICAL RECORD, UNABLE TO LOCATE/LOCATION UNCONFIRMED
- PROPERTY LINE
- RAILROAD TRACKS
- FLOW DIRECTION

| FORENSIC ENVIRONMENTAL SERVICES, INC. | FIGURE 3-1 |
|---|---|
| SOIL BORING AND MONITORING WELL LOCATIONS (2003-2004)<br>GS ROOFING PRODUCTS<br>PORTLAND, OREGON | |
| 0 — 120<br>SCALE IN FEET | DRAWN BY:<br>APPROVED BY: |

PORTSBMW.DWG




| FORENSIC ENVIRONMENTAL SERVICES, INC. | FIGURE 5-1 |
|---|---|
| GROUND-WATER ELEVATION CONTOUR MAP (APRIL 26, 2004) GS ROOFING PRODUCTS PORTLAND, OREGON | |
| | DRAWN BY: |
| | APPROVED BY: |




WILLBRIDGE BULK FUEL FACILITY

GROUND-WATER ELEVATION CONTOUR

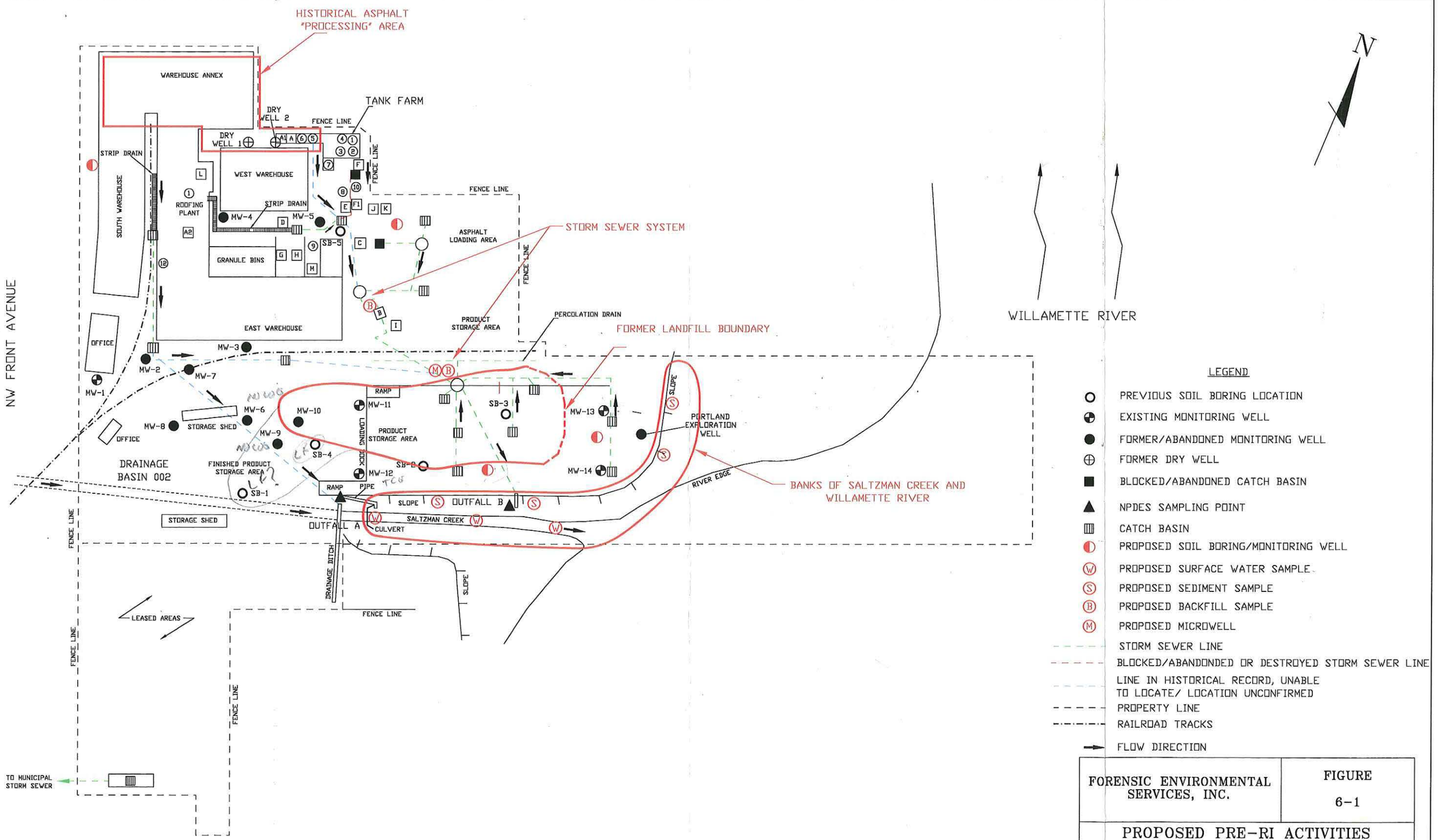
GENERAL DIRECTION OF GROUND-WATER FLOW

NOTES: GROUND-WATER ELEVATION DATA ARE NOT SYNOPTIC FROM SITE TO SITE. ATOFINA DATA (APRIL 2002); KINDER MORGAN/CHEVRON/ CONOCO PHILLIPS DATA (MARCH 2002); AND GS ROOFING DATA (APRIL 2004)

A DISCREPANCY APPEARS TO EXIST BETWEEN THE DATUMS FOR THE ATOFINA AND GS ROOFING SITES.

REG-GWF.DWG

| | |
|---|---|
| FORENSIC ENVIRONMENTAL SERVICES, INC. | FIGURE 5-2 |
| IDEALIZED REGIONAL GROUND-WATER FLOW MAP<br>GS ROOFING PRODUCTS<br>PORTLAND, OREGON | |
| NOT TO SCALE | DRAWN BY: B.J.M. 1/28/05<br>APPROVED BY: |




| FORENSIC ENVIRONMENTAL SERVICES, INC. | FIGURE 6-1 |
|---|---|
| PROPOSED PRE-RI ACTIVITIES<br>GS ROOFING PRODUCTS<br>PORTLAND, OREGON | |
| | DRAWN BY: |
| | APPROVED BY: |

# APPENDIX A

## COPIES OF SELECTED INFORMATION FROM HISTORICAL DOCUMENTS

# DRAFT

# REMEDIAL INVESTIGATION REPORT

## WILLBRIDGE FACILITY
## PORTLAND, OREGON

PREPARED FOR

OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY

DEQ FILE WMCSR-NWR-94-06

DECEMBER 2000

REVIEWED AND EDITED BY

KHM ENVIRONMENTAL MANAGEMENT, INC.
123 N.E. 3RD AVENUE, SUITE 300
PORTLAND, OREGON 97232

PROJECT B17-01D

Table 2
Site Release History
GATX Terminal

Willbridge Facility
Portland, Oregon

| | Date | Location | Estimated Volume | Product | Comment |
|---|---|---|---|---|---|
| 1 | Pre-1969 | Near Tank 63 | 25,200 | Xylene | 600bbl |
| 2 | Pre-1969 | Tank 67 | NA | Diesel | |
| 3 | 1969 | Rail Loading area | 8,400 | PCF | Tank Car |
| 4 | 1970 | Tank 93 | 853 | Cutter Stock | |
| 5 | 01/01/71 | Willamette River | Several hundred gallons | Gasoline | Cleaned up |
| 6 | 1972 | Tank 3 | 126,000 | Medium Aromatics | |
| 7 | 1973 | Buried line -rail loading area | 20,000 | Xylene | |
| 8 | 01/01/74 | Rail loading area | 6,000 | Toluene | Tank Car |
| 9 | 12/01/75 | Saltzman creek | 100 | Asphalt | Tank overflow |
| 10 | 06/01/76 | Willamette River | NA | Gasoline | |
| 11 | 05/01/78 | Truck loading area | 100 | Super Regular Gasoline | |
| 12 | 06/01/78 | Willamette River | NA | Gasoline | Cleaned up |
| 13 | 11/01/78 | Asphalt plant | 3,444 | AR 400 and WOR | |
| 14 | 11/01/78 | Asphalt plant | 84 | AR 2000 | |
| 15 | 07/01/79 | Asphalt plant | 11,361 | AR 4000 | |
| 16 | 07/01/79 | Asphalt plant | 420 | AR 4000 | |
| 17 | 10/01/79 | Willamette River | 70 | Aviation Gasoline | |
| 18 | 01/01/80 | NA | NA | NA | Pacific NW Bell |
| 19 | 02/01/80 | Yard | NA | NA | Tank overflow (Amoco) |
| 20 | 02/01/80 | Tank 95 | NA | Industrial Fuel | Leak |
| 21 | 03/01/80 | NA | NA | Industrial Fuel | Split Plug-a-Roo Valve |
| 22 | 03/01/80 | NA | NA | NA | Blending tank valve open |
| 23 | 03/01/80 | Warehouse | NA | NA | 400 gal bin (Klinski) |
| 24 | 03/01/80 | Lube oil fillstand | NA | NA | (Reddaway) |
| 25 | 04/01/80 | Willamette River | 2 | Lube oil | |
| 26 | 04/01/80 | Loading rack | NA | Tellus 46 | Truck overfill |
| 27 | 04/01/80 | Tank 111 | NA | CRS-2 | |
| 28 | 04/01/80 | Loading rack | NA | Alexia Oil 50 | Lilyblad truck |
| 29 | 04/01/80 | NA | NA | NA | Santa Paul hose connection |
| 30 | 04/01/80 | NA | NA | Diesel | O.C. diesel line |
| 31 | 08/01/80 | Loading rack | 80 | NA | Truck overfill |
| 32 | 09/01/80 | yard | 150 | NA | Blender tank overfill |
| 33 | 09/01/80 | NA | 100 | AR 2000 | Release during transfer |
| 34 | 09/01/80 | yard | 5 | Tergol 52/40 | Crack in tank |
| 35 | 12/01/80 | NA | 30 | 450 LVI | Blending kettle |
| 36 | 02/01/81 | NA | 2 | NA | Hose draining on to paving |
| 37 | 03/01/81 | Rail loading rack | 200 | Diesel | Car overfill |
| 38 | 04/01/81 | Saltzman Creek | 0 | Undocumented solvent | |
| 39 | 04/01/81 | NA | 55 | NA | Pallet of drums hit by driver |
| 40 | 05/01/81 | Rail loading rack | 40 | NA | Equipment failure |
| 41 | 05/01/81 | Rail Loading Rack | 20 | NA | Load Valve on Car # 1 Not Closed |

Table 2
Site Release History
GATX Terminal

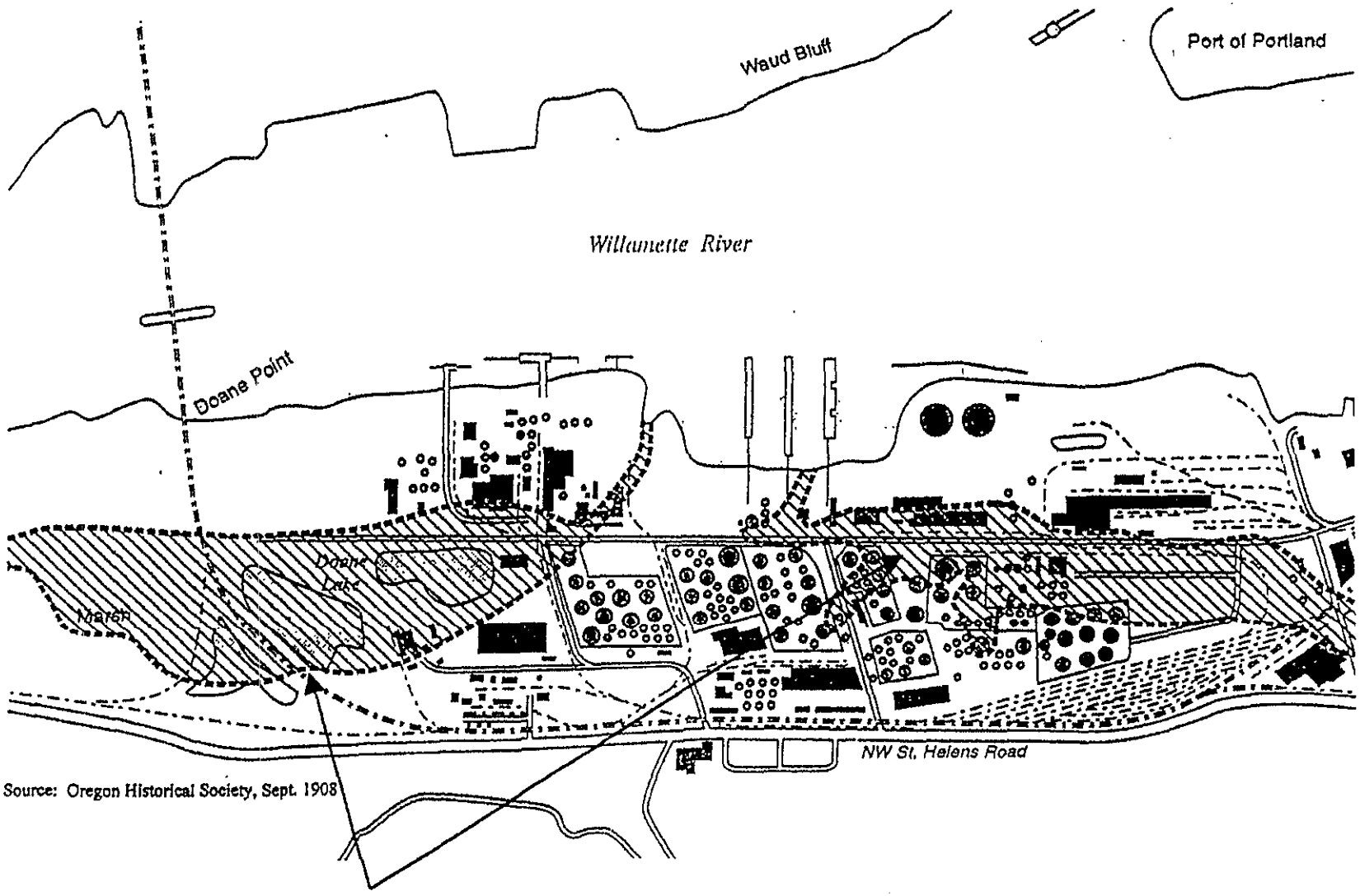
Willbridge Facility
Portland, Oregon

| | Date | Location | Estimated Volume | Product | Comment |
|---|---|---|---|---|---|
| 42 | 06/01/81 | Yard | 50 | NA | No gasket on manway cover |
| 43 | 06/01/81 | Loading rack | 20 | NA | Overfill by common carrier |
| 44 | 07/01/81 | NA | 50 | NA | Packing seal on SP pipeline broken |
| 45 | 08/01/81 | Tank 118 | 7 | Super Unleaded Gasoline | Spilled from vent holes |
| 46 | 08/01/81 | Tank 180 | 10 | CRS Emulsified Soap | Boil-over |
| 47 | 10/01/81 | NA | 2 | Alexia Oil-50 | Defective loading valve allowed drain bucket to overfill |
| 48 | 12/01/81 | Diked storage area | NA | Water & Gasoline | |
| 49 | 12/01/81 | Saltzman Creek | NA | Diesel line | Leak from drum on pickup |
| 50 | 03/01/82 | Saltzman Creek | NA | Oily water | Leak from weephole in flume wall |
| 51 | 05/01/82 | NA | 62 | Asphalt | Seam or weld failure on pump |
| 52 | 05/01/82 | NA | 25 | NA | leaking valve on Bird & Son line |
| 53 | 05/01/82 | Tank 98 | 175 | NA | Air pressure caused overflow |
| 54 | 07/01/82 | loading rack | 74 | NA | PIE truck overfill--failure of high-level float system |
| 55 | 07/01/82 | NA | 125 | NA | Nipple broken on Bird & Son product line |
| 56 | 09/01/82 | Tank 180 | 0 | Soap | Corrosion of steam coils--release to separator system |
| 57 | 09/01/82 | NA | 20 | NA | Blown pump gasket |
| 58 | 10/01/82 | NA | 30 | NA | Punctured drum |
| 59 | 12/01/82 | Sump drain Saltzman Creek | 90 | NA | Product released into sump drain and into Saltzman Creek |
| 60 | 02/01/83 | NA | 0 | JD Torq-gaurd | Pallet collapsed |
| 61 | 03/01/83 | NA | 2 cases | NA | Product fell off Cenex truck |
| 62 | 05/01/83 | Loading rack | 0 | 100 Octane Aviation Gas | Overfill of truck |
| 63 | 05/01/83 | NA | 0 | JD Plus 4-10/40 | Pallets collapsed |
| 64 | 06/01/83 | NA | 1 | NA | Service tank line driver spill |
| 65 | 07/01/83 | Loading rack | 1 | NA | Overflow of PIE truck |
| 66 | 07/01/83 | NA | 0 | NA | Failed heat exchange gasket on VRU |
| 67 | 07/01/83 | NA | 0 | NA | Failed heat exchange gasket on VRU |
| 68 | 08/01/83 | NA | 0 | Rich oil | Pump failed on VRU |
| 69 | 09/01/83 | Loading rack | 0 | NA | Common carrier (PTI) overfill |
| 70 | 09/01/83 | NA | 0 | NA | Blown gasket |
| 71 | 10/01/83 | NA | 15 | NA | Leaking flange |
| 72 | 12/01/83 | NA | 2 | NA | Leaking sampling nipple |
| 73 | 12/01/83 | Loading rack | 10 | NA | Overfill Carson Oil truck |
| 74 | 01/01/84 | NA | 4 | Marine Diesel oil | Leak at thermometer wells on unused asphalt discharge line |
| 75 | 01/01/84 | Loading rack | 3 | Regular Unleaded Gasoline | J. Wren Oil Co. |
| 76 | 01/01/84 | NA | 25 | HVI 150 Bright Stock | Gasket failure |
| 77 | 06/01/84 | NA | 1 | Undocumented | Keystoner scupper valve leak |
| 78 | 06/01/84 | NA | NA | Shell Unleaded gasoline | Juniper fuel spill |
| 79 | 08/01/84 | Wilamette River | NA | Black Oil | Seepage at Docking Facility |
| 80 | 09/04/84 | Willamette River | NA | Heavy hydrocarbon | Seepage at docking facility |
| 81 | 09/09/84 | Willamette River | NA | Heavy hydrocarbon | Seepage at docking facility |

Table 2
**Site Release History**
GATX Terminal

Willbridge Facility
Portland, Oregon

| | Date | Location | Estimated Volume | Product | Comment |
|---|---|---|---|---|---|
| 82 | 10/01/84 | Loading rack | 538 | Shell regular gasoline | Arrow truck spill |
| 83 | 06/01/85 | NA | 0 | Regular unleaded gasoline | |
| 84 | 06/01/86 | NA | 50 | Egaf. | |
| 85 | 08/01/86 | NA | 5 | Regular unleaded gasoline | |
| 86 | 09/01/86 | NA | 80 | ROT T-15/40 | |
| 87 | 01/01/88 | NA | 20 | Industrial fuel oil | |
| 88 | 04/01/88 | NA | 15 | Turbo 78 | |
| 89 | 06/01/88 | NA | 250 | Donax TD | |
| 90 | 06/01/88 | NA | 50 | Regular Unleaded gasoline | |
| 91 | 01/01/89 | NA | 5 | Diesel | |
| 92 | 01/01/89 | NA | 320 | Caprinus U-40 | |
| 93 | 02/01/89 | NA | 50 | LVI 100 | |
| 94 | 12/01/89 | NA | 250 | No. 6 Industrial Fuel | |
| 95 | 09/01/90 | NA | 100 | Kerosene 20020 | |
| 96 | 10/19/96 | Jet Fuel Filter | 500 | Jet Fuel (Kerosene) | Gasket Failure |
| | **Total** | | **205,750** | | |




Source: Oregon Historical Society, Sept. 1908

FORMER SURFACE WATER CHANNELS

NOT TO SCALE

| | | | |
|---|---|---|---|
| KHM ENVIRONMENTAL MANAGEMENT INC. | TITLE Historic Drainage Map | | |
| | **Willbridge Facility**<br>Remedial Investigation<br>Portland, Oregon | | |
| | DATE December 2000 | PROJECT B17-01D | FIGURE 5 |

ATOFINA

ATOFINA Chemicals, Inc.

# Quarterly Progress Report for July through September 2003
# Acid Plant Area Remedial Investigation and Feasibility Study
# *ATOFINA Chemicals Portland Plant*

October 8, 2003

Submitted to:

Oregon Department of Environmental Quality

Prepared by:

Environmental Resources Management
915 118th Avenue S.E.
Suite 130
Bellevue, Washington 98005
www.erm.com

DEPT OF ENVIRONMENTAL QUALITY
RECEIVED
OCT 13 2003
NORTHWEST REGION

ATOFINA Chemicals, Inc.
6400 NW Front Avenue
Portland, Oregon 97210
503-228-7655
www.AtofinaChemicals.com

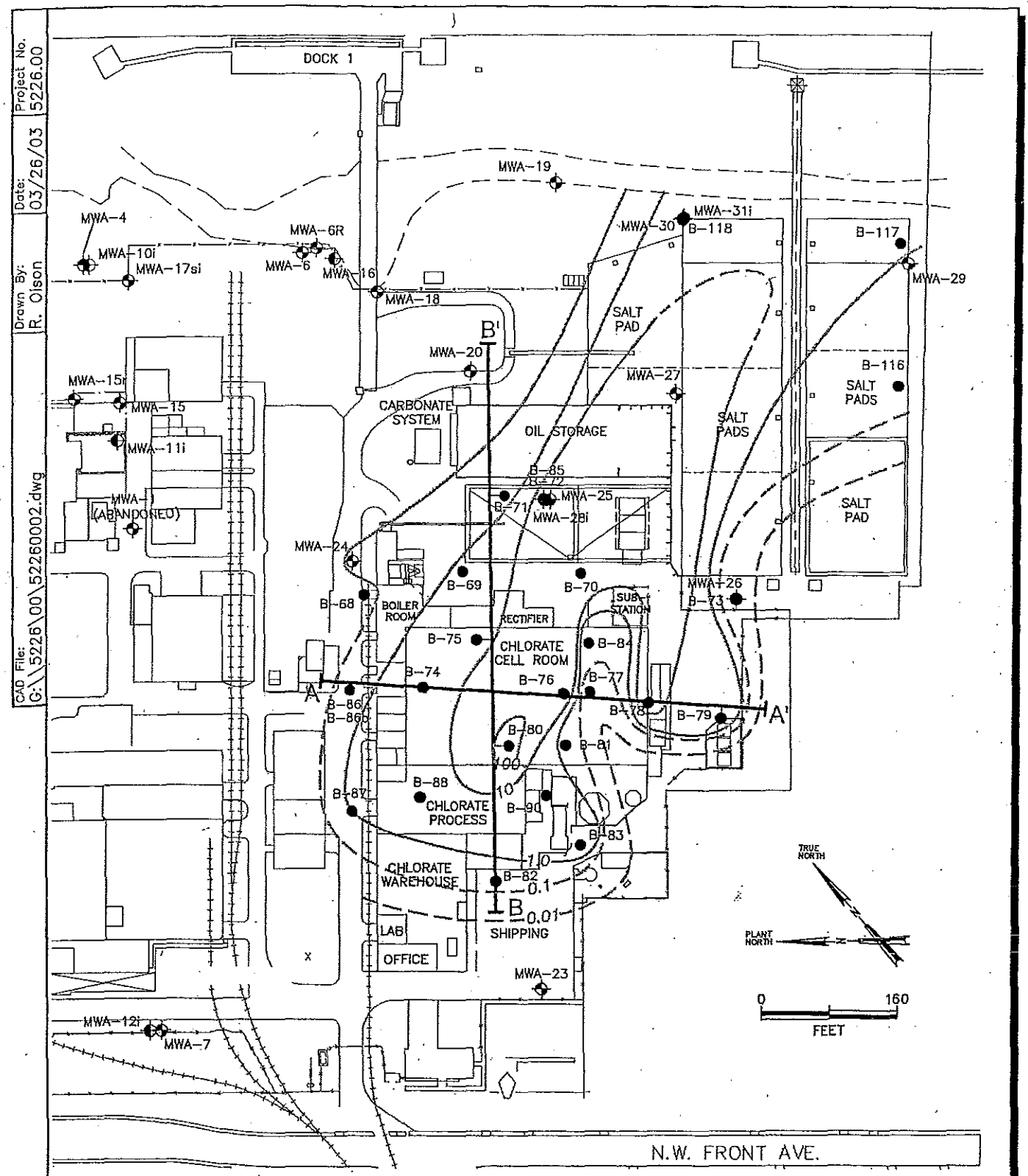



Figure 2
*Cross Section Location Map*
*ATOFINA Chemical, Inc.*
*Portland, Oregon*

BPM 03/03

**IT Corporation**
*15055 SW Sequoia Parkway, Suite 140*
*Portland, OR 97224-7155*
*Tel. 503.624.7200*
*Fax. 503.620.7658*

*A Member of The IT Group*

January 5, 2001
Project 812096

Mr. Henning Larsen
Oregon Department of Environmental Quality
2020 SW Fourth Avenue, Suite 400
Portland, Oregon 97201-4987

Re: Closure Report, CertainTeed Corporation, Portland, Oregon

Dear Mr. Larsen:

This letter documents additional site investigation and requests closure for two underground storage tanks (USTs) at the CertainTeed Corporation (CertainTeed) facility at 6350 NW Front Avenue in Portland, Oregon[1]. On September 22, 2000, representatives from Saint-Gobain Corporation (the parent corporation of CertainTeed) and IT Corporation (IT) met with Mr. Henning Larsen of the Oregon Department of Environmental Quality (DEQ). The purpose of the meeting was to (1) discuss petroleum hydrocarbon impacts to groundwater at the site and the results of groundwater sampling in late August, (2) review historical monitoring results and upgradient sources of petroleum hydrocarbons that affect groundwater quality in the area, and (3) outline steps needed to complete the process for achieving closure at the site. These steps included: conducting one additional quarter of groundwater monitoring, testing for petroleum hydrocarbon impacts in shallow soil at the site, and submitting a closure report.

The facility qualifies for closure as a low-impact site as defined by Oregon Administrative Rules (OAR) 340-122-0243. This report reviews the elements identified by the DEQ to evaluate current site conditions and to issue a low-impact site closure letter. The following sections of this report discuss the site background, describe recent field activities and evaluate the findings, provide the rationale for closure as a low-impact site, and recommend no further action.

## BACKGROUND

In 1990, a 1,000-gallon gasoline underground storage tank (UST) was decommissioned and removed from the site. Petroleum-impacted soil discovered at the time of decommissioning the UST was temporarily left in place because of the proximity of a natural-gas line. Approximately 80 cubic yards of contaminated soil associated with the former gasoline UST was excavated and removed from the site in August 1992. In 1991, a 1,000-gallon diesel UST was decommissioned and removed from a separate location at the site.

[1] The CertainTeed Roofing facility was formerly owned by GS Roofing Products, which is referenced in past reports.

# Table 2
## Summary of Groundwater Monitoring Data
## CertainTeed Corporation
## Portland, Oregon

| Well Number | Date Sampled | Top of Casing Elevation[a] (feet NGVD) | Depth to Water (feet) | Groundwater Elevation (feet NGVD) | Benzene (ppb) | Toluene (ppb) | Ethylbenzene (ppb) | Total Xylenes (ppb) | Gasoline Range (ppb) |
|---|---|---|---|---|---|---|---|---|---|
| MW-1 | 12/03/91 | 33.74 | 10.59 | 23.15 | ND | ND | ND | ND | |
| | 02/26/92 | | 9.68 | 24.06 | ND | ND | ND | ND | |
| | 05/07/92 | | 9.97 | 23.77 | ND | ND | ND | ND | |
| | 08/12/92 | | 10.82 | 22.92 | ND | 74 | ND | 53 | |
| | 11/04/92 | | 11.51 | 22.23 | ND | ND | ND | ND | |
| | 02/17/93 | | 10.02 | 23.72 | ND | ND | ND | ND | |
| | 05/24/93 | | 9.45 | 24.29 | ND | ND | ND | ND | |
| | 08/18/93 | | 10.23 | 23.51 | 8.2 | 0.5 | ND | ND | |
| | 11/10/93 | | 10.96 | 22.78 | 1.4 | 0.6 | 2.3 | 1.4 | |
| | 02/15/94 | | 10.10 | 23.64 | 0.8 | 2.3 | 0.9 | 2.4 | |
| | 05/25/94 | | 9.97 | 23.77 | ND | ND | 0.7 | 1.4 | |
| | 08/18/94 | | 10.44 | 23.30 | ND | ND | ND | 1.1 | |
| | 11/10/94 | | 10.50 | 23.24 | ND | ND | ND | ND | |
| | 02/21/95 | | 8.66 | 25.08 | 3.0 | ND | ND | 0.67 | |
| | 06/21/95 | | 9.66 | 24.08 | 3.4 | ND | ND | ND | |
| | 08/17/95 | | 10.34 | 23.40 | 1.1 | 0.65 | ND | 1.0 | |
| | 12/18/95 | | 9.91 | 23.83 | ND | ND | ND | ND | |
| | 02/29/96 | | 7.32 | 26.42 | ND | ND | ND | 1.1 | |
| | 05/22/96 | | 8.62 | 25.12 | 8.6 | ND | ND | ND | |
| | 08/13/96 | | 9.97 | 23.77 | 570 | 130 | 7.3 | 21 | |
| | 11/15/96 | | 10.18 | 23.56 | 260 | 50 | 13 | 51 | |
| | 03/13/97 | | 8.48 | 25.26 | 52 | 15 | ND | 12 | |
| | 06/27/97 | | 8.90 | 24.84 | ND | ND | ND | ND | |
| | 10/22/97 | | 10.29 | 23.45 | 210 | 44 | 63 | 52 | |
| | 10/30/97 | | 10.83 | 22.91 | 620 | 220 | 160 | 170 | |
| | 03/09/98 | | 8.75 | 24.99 | 60 | 9 | 19 | 47 | |
| | 08/30/00 | | 10.55 | 23.19 | 1.81 | 1.87 | ND | 1.85 | 207 |
| | 11/28/00 | | 11.00 | 22.74 | 13.1 | 2.05 | ND | 3.65 | 606 |
| MW-2 | 12/03/91 | 33.39 | 10.69 | 22.70 | 660 | 6,800 | 670 | 4,200 | |
| | 02/26/92 | | 9.77 | 23.62 | 2,400 | 17,000 | 2,000 | 10,000 | |
| | 05/07/92 | | 10.00 | 23.39 | 120 | 1,700 | 200 | 1,000 | |
| | 08/12/92 | | 10.82 | 22.57 | 130 | 2,500 | 310 | 1,700 | |
| | 11/04/92 | | 11.48 | 21.91 | 1,500 | 38,000 | 5,800 | 35,000 | |
| | 02/17/93 | | 9.82 | 23.57 | 500 | 8,900 | 1,000 | 5,300 | |

# Table 2
## Summary of Groundwater Monitoring Data
## CertainTeed Corporation
## Portland, Oregon

| Well Number | Date Sampled | Top of Casing Elevation[a] (feet NGVD) | Depth to Water (feet) | Groundwater Elevation (feet NGVD) | Benzene (ppb) | Toluene (ppb) | Ethylbenzene (ppb) | Total Xylenes (ppb) | Gasoline Range (ppb) |
|---|---|---|---|---|---|---|---|---|---|
| | 05/24/93 | | 9.25 | 24.14 | ND | 1,800 | 350 | 1,600 | |
| | 08/18/93 | | 10.01 | 23.38 | 120 | 3,400 | 660 | 3,300 | |
| | 11/10/93 | | 10.72 | 22.67 | 17 | 890 | 220 | 1,100 | |
| | 02/15/94 | | 9.86 | 23.53 | 390 | 9,000 | 2,000 | 13,000 | |
| | 05/25/94 | | 9.74 | 23.65 | 130 | 5,500 | 1,300 | 6,500 | |
| | 08/18/94 | | 10.23 | 23.16 | 51 | 3,900 | 1,300 | 6,800 | |
| | 11/10/94 | | 10.29 | 23.10 | 99 | 6,140 | 1,250 | 10,700 | |
| | 02/22/95 | | 8.50 | 24.89 | 140/128 | 2,400/2,200 | 910/860 | 5,100/4,700 | |
| | 06/21/95 | | 9.44 | 23.95 | 160 | 3,400 | 2,400 | 13,000 | |
| | 8/17-18/95 | | 10.12 | 23.27 | 22 | 220 | 250 | 1,200 | |
| | 12/18/95 | | 9.82 | 23.57 | 55 | 1,470 | 1,100 | 7,760 | |
| | 02/29/96 | | 7.01 | 26.38 | 70 | 620 | 1,600 | 9,000 | |
| | 05/22/96 | | 8.42 | 24.97 | 57 | 440 | 1,300 | 7,500 | |
| | 08/13/96 | | 9.76 | 23.63 | 50 | 440 | 1,700 | 8,300 | |
| | 11/15/96 | | 10.02 | 23.37 | 140 | 400 | 1,600 | 9,400 | |
| | 03/13/97 | | 8.30 | 25.09 | 440 | 120 | 1,100 | 5,300 | |
| | 06/27/97 | | 8.58 | 24.81 | 11 | 55 | 640 | 2,800 | |
| | 10/22/97 | | 10.08 | 23.31 | 4 | 3 | 44 | 200 | |
| | 10/30/97 | | 10.13 | 23.26 | 18 | 44 | 580 | 2,700 | |
| | 03/09/98 | | 8.55 | 24.84 | 27 | <50[b] | 570 | 2,900 | |
| | 08/30/00 | | 10.24 | 23.15 | ND | 9.15 | 498 | 2,180 | 10,000 |
| | 11/28/00 | | 10.77 | 22.62 | ND | ND | 202 | 886 | 5,560 |
| MW-3 | 12/03/91 | 33.11 | 10.43 | 22.68 | ND | ND | ND | ND | |
| | 02/26/92 | | 9.58 | 23.53 | 13.0 | ND | 2.1 | 4.2 | |
| | 05/07/92 | | 9.77 | 23.34 | 2.1 | ND | ND | ND | |
| | 08/12/92 | | 10.59 | 22.52 | ND | ND | ND | ND | |
| | 11/04/92 | | 11.25 | 21.86 | ND | ND | ND | ND | |
| | 02/17/93 | | 9.84 | 23.27 | 27.9 | 1.5 | 1.0 | 1.3 | |
| | 05/24/93 | | 9.28 | 23.83 | 8.7 | 1.2 | 2.0 | 1.7 | |
| | 08/18/93 | | 10.03 | 23.08 | 0.7 | 0.8 | ND | 1.6 | |
| | 11/10/93 | | 10.70 | 22.41 | ND | ND | ND | ND | |
| | 02/15/94 | | 9.86 | 23.25 | 1.2 | 6.6 | 1.6 | 10.7 | |
| | 05/25/94 | | 9.75 | 23.36 | ND | ND | ND | ND | |
| | 08/18/94 | | 10.30 | 22.81 | 0.5 | 1.0 | 0.6 | 2 | |
| | 11/10/94 | | 10.29 | 22.82 | 1.1 | ND | ND | ND | |
| | 02/22/95 | | 8.59 | 24.52 | 15.0 | 18.0 | 41.0 | 110 | |

# Table 2
## Summary of Groundwater Monitoring Data
## CertainTeed Corporation
## Portland, Oregon

| Well Number | Date Sampled | Top of Casing Elevation[a] (feet NGVD) | Depth to Water (feet) | Groundwater Elevation (feet NGVD) | Benzene (ppb) | Toluene (ppb) | Ethylbenzene (ppb) | Total Xylenes (ppb) | Gasoline Range (ppb) |
|---|---|---|---|---|---|---|---|---|---|
| | 06/21/95 | | 9.45 | 23.66 | 1.4 | ND | ND | ND | |
| | 8/17-18/95 | | 10.14 | 22.97 | 0.74 | 0.55 | ND | 0.93 | |
| | 12/18/95 | | 9.88 | 23.23 | ND | 1.5 | 1.3 | 11.5 | |
| | 02/29/96 | | 6.95 | 26.16 | 1.9 | 3.2 | 5.0 | 21 | |
| | 05/22/96 | | 8.89 | 24.22 | 2.3 | 0.78 | 5.4 | 3.8 | |
| | 08/13/96 | | 9.75 | 23.36 | 0.52 | ND | ND | ND | |
| | 11/15/96 | | 10.06 | 23.05 | ND | ND | ND | ND | |
| | 03/13/97 | | 8.40 | 24.71 | ND | ND | ND | ND | |
| | 06/27/97 | | 8.46 | 24.65 | ND | ND | ND | ND | |
| | 10/22/97 | | 10.12 | 22.99 | ND | ND | ND | ND | |
| | 10/30/97 | | 10.14 | 22.97 | ND | ND | ND | ND | |
| | 03/09/98 | | 8.65 | 24.46 | 0.6 | ND | ND | 4 | |
| | 08/30/00 | | 10.19 | 22.92 | ND | ND | ND | ND | ND |
| | 11/28/00 | | 10.75 | 22.36 | ND | ND | ND | ND | ND |
| MW-4 | 12/03/91 | 34.50 | 11.51 | 22.99 | ND | ND | ND | ND | |
| | 10/30/97 | | 11.21 | 23.29 | ND | ND | ND | ND | |
| | 03/09/98 | | 10.53 | 23.97 | ND | ND | ND | 4 | |
| | 08/30/00 | | 11.21 | 23.29 | ND | ND | ND | ND | ND |
| | 11/28/00 | | 11.82 | 22.68 | ND | ND | ND | ND | ND |
| | 11/28/00 | (field dup) | | | ND | ND | ND | ND | ND |
| MW-5 | 12/03/91 | 34.72 | 12.27 | 22.45 | ND | ND | ND | ND | |
| | 02/26/92 | | 11.48 | 23.24 | ND | ND | ND | 1.4 | |
| | 05/07/92 | | 11.64 | 23.08 | ND | ND | ND | ND | |
| | 08/12/92 | | 12.40 | 22.32 | ND | ND | ND | ND | |
| | 11/04/92 | | 13.05 | 21.67 | ND | ND | ND | ND | |
| | 10/30/97 | | 11.96 | 22.76 | ND | ND | ND | ND | |
| | 03/09/98 | | 9.62 | 25.10 | ND | ND | ND | 4 | |
| | 08/30/00 | | 11.85 | 22.87 | ND | ND | ND | ND | ND |
| | 11/28/00 | | 12.50 | 22.22 | — | — | — | — | — |
| MW-6 | 02/26/92 | 33.87 | 10.63 | 23.24 | ND | ND | ND | ND | |
| | 05/07/92 | | 10.82 | 23.05 | 23 | 2.4 | 10 | 24 | |
| | 08/12/92 | | 11.64 | 22.23 | 140 | 12 | 19 | 170 | |
| | 11/04/92 | | 12.23 | 21.64 | 26 | 2.8 | 5.2 | 24 | |
| | 02/17/93 | | 10.89 | 22.98 | 0.9 | ND | ND | ND | |
| | 05/24/93 | | 10.31 | 23.56 | 1.6 | ND | ND | ND | |

# Table 2
## Summary of Groundwater Monitoring Data
## CertainTeed Corporation
## Portland, Oregon

| Well Number | Date Sampled | Top of Casing Elevation[a] (feet NGVD) | Depth to Water (feet) | Groundwater Elevation (feet NGVD) | Benzene (ppb) | Toluene (ppb) | Ethylbenzene (ppb) | Total Xylenes (ppb) | Gasoline Range (ppb) |
|---|---|---|---|---|---|---|---|---|---|
| | 08/18/93 | | 11.08 | 22.79 | 80 | 7.0 | ND | 37 | |
| | 11/10/93 | | 11.73 | 22.14 | 88 | 23 | 57 | 16 | |
| | 02/15/94 | | 10.89 | 22.98 | 1.9 | 2.3 | 0.8 | 3.6 | |
| | 05/25/94 | | 10.79 | 23.08 | 14 | 5.8 | ND | 14 | |
| | 08/18/94 | | 11.34 | 22.53 | 29 | 2.7 | 0.5 | 80 | |
| | 11/10/94 | | 11.24 | 22.63 | 48 | 0.8 | 1.3 | 12.7 | |
| | 02/22/95 | | 9.65 | 24.22 | 6.6 | 1.1 | 0.6 | 2.6 | |
| | 06/21/95 | | 10.49 | 23.38 | 16 | 1.3 | 12 | 9.4 | |
| | 8/17-18/95 | | 11.18 | 22.69 | 32 | 23 | 6.2 | 87 | |
| | 12/18/95 | | 10.95 | 22.92 | 84 | 24 | 1.8 | 208 | |
| | 02/29/96 | | 8.96 | 24.91 | 22 | 1.6 | 4.9 | 67 | |
| | 05/22/96 | | 9.56 | 24.31 | 58 | 68 | 33 | 180 | |
| | 08/13/96 | | 10.81 | 23.06 | 12 | 25 | 38 | 260 | |
| | 11/15/96 | | 11.10 | 22.77 | 480 | 25 | 23 | 190 | |
| | 03/13/97 | | 9.48 | 24.39 | 250 | ND | ND | ND | |
| | 06/27/1997 | | 9.44 | 24.43 | 450 | 10 | 3 | 16 | |
| | 10/22/1997 | | 11.16 | 22.71 | 230 | 5 | 9 | 96 | |
| | 10/30/97 | | 11.16 | 22.71 | 180 | 5 | 2 | 58 | |
| | 03/09/98 | | 9.70 | 24.17 | 600 | 9 | 2 | 63 | |
| | 08/30/00 | | 11.18 | 22.69 | 2.90 | 2.52 | 7.69 | 2.52 | 517 |
| | 11/28/00 | | 11.76 | 22.11 | 5.47 | ND | ND | ND | 503 |
| MW-7 | 02/22/95 | 33.72 | 8.99 | 24.73 | 710 | 1,700 | 370 | 1,700 | |
| | 06/21/95 | | 9.93 | 23.79 | 620 | 1,200 | 280 | 1,100 | |
| | 8/17-18/95 | | 10.60 | 23.12 | 530 | 980 | 210 | 790 | |
| | 12/18/95 | | 10.32 | 23.40 | 650 | 1,930 | 430 | 1,670 | |
| | 02/29/96 | | 6.47 | 27.25 | 360 | 1,100 | 360 | 1,300 | |
| | 05/22/96 | | 8.94 | 24.78 | 1,600 | 8,700 | 1,800 | 7,900 | |
| | 08/13/96 | | 10.25 | 23.47 | 310 | 1,600 | 590 | 1,900 | |
| | 11/15/96 | | 10.50 | 23.22 | 520 | 3,400 | 850 | 3,400 | |
| | 03/13/97 | | 8.83 | 24.89 | 1,300 | 1,300 | 480 | 2,800 | |
| | 06/27/97 | | 9.02 | 24.70 | 1,020 | 230 | 120 | 430 | |
| | 10/22/97 | | 10.58 | 23.14 | 83 | 470 | 240 | 820 | |
| | 10/30/97 | | 10.61 | 23.11 | 170 | 1,700 | 530 | 2,000 | |
| | 03/09/98 | | 9.00 | 24.72 | 360 | 900 | 280 | 1,100 | |

# Table 2
## Summary of Groundwater Monitoring Data
## CertainTeed Corporation
## Portland, Oregon

| Well Number | Date Sampled | Top of Casing Elevation[a] (feet NGVD) | Depth to Water (feet) | Groundwater Elevation (feet NGVD) | Benzene (ppb) | Toluene (ppb) | Ethylbenzene (ppb) | Total Xylenes (ppb) | Gasoline Range (ppb) |
|---|---|---|---|---|---|---|---|---|---|
| | 08/30/00 | | 10.69 | 23.03 | 6.27 | 267 | 553 | 2,230 | 7,880 |
| | 08/30/00 | (field dup) | | | 6.13 | 255 | 532 | 2,120 | 7,500 |
| | 11/28/00 | | 11.23 | 22.49 | 11.80 | 508 | 598 | 2,580 | 12,500 |
| MW-8 | 02/22/95 | 34.53 | 9.91 | 24.62 | 2.5 | 3.6 | 1.0 | 5.1 | |
| | 06/21/95 | | 10.81 | 23.72 | 8.2 | ND | ND | ND | |
| | 8/17-18/95 | | 11.49 | 23.04 | 2.7 | ND | ND | ND | |
| | 12/18/95 | | 11.19 | 23.34 | 1.1 | 1.2 | 1.9 | 6.2 | |
| | 02/29/96 | | 8.36 | 26.17 | 1.8 | ND | ND | ND | |
| | 05/22/96 | | 9.84 | 24.69 | 0.62 | 1.2 | ND | 1.2 | |
| | 08/13/96 | | 11.13 | 23.40 | ND | ND | ND | ND | |
| | 11/15/96 | | 11.39 | 23.14 | 3 | ND | ND | ND | |
| | 03/13/97 | | 9.73 | 24.80 | 14 | ND | 1.0 | ND | |
| | 06/27/97 | | 9.90 | 24.63 | 1,200 | 14 | 110 | 170 | |
| | 10/22/97 | | 11.45 | 23.08 | 1,300 | 16 | 53 | 130 | |
| | 10/30/97 | | 11.48 | 23.05 | 1,000 | 9 | 38 | 81 | |
| | 03/09/98 | | 9.95 | 24.58 | ND | ND | ND | 2 | |
| | 08/30/00 | | 11.56 | 22.97 | ND | ND | ND | ND | 212 |
| | 11/28/00 | | 12.12 | 22.41 | 4.68 | ND | ND | ND | 325 |
| MW-9 | 02/22/95 | 32.26 | 10.96 | 21.30 | 2.6 | 0.73 | ND | 2 | |
| | 06/21/95 | | 11.57 | 20.69 | 2.4 | ND | ND | ND | |
| | 8/17-18/95 | | 12.01 | 20.25 | ND | ND | ND | ND | |
| | 12/18/95 | | 12.15 | 20.11 | ND | ND | ND | 1.2 | |
| | 02/29/96 | | 9.36 | 22.90 | ND | ND | ND | ND | |
| | 05/22/96 | | 11.07 | 21.19 | ND | ND | ND | ND | |
| | 08/13/96 | | Unk | Unk | ND | ND | ND | ND | |
| | 11/15/96 | | 12.06 | 20.20 | ND | ND | ND | ND | |
| | 03/13/97 | | 11.29 | 20.97 | ND | ND | ND | ND | |
| | 06/27/97 | | 11.13 | 21.13 | 5 | ND | ND | ND | |
| | 10/22/97 | | 12.02 | 20.24 | ND | ND | ND | ND | |
| | 10/30/97 | | 12.05 | 20.21 | ND | ND | ND | ND | |
| | 03/09/98 | | 11.34 | 20.92 | 7.3 | ND | 1 | 8 | |
| | 08/30/00 | | 12.11 | 20.15 | ND | ND | ND | ND | ND |
| | 11/28/00 | | 12.26 | 20.00 | ND | ND | ND | ND | ND |

# Table 2
## Summary of Groundwater Monitoring Data
## CertainTeed Corporation
## Portland, Oregon

| Well Number | Date Sampled | Top of Casing Elevation[a] (feet NGVD) | Depth to Water (feet) | Groundwater Elevation (feet NGVD) | Benzene (ppb) | Toluene (ppb) | Ethylbenzene (ppb) | Total Xylenes (ppb) | Gasoline Range (ppb) |
|---|---|---|---|---|---|---|---|---|---|
| MW-10 | 02/22/95 | 31.65 | 8.05 | 23.60 | 22.0 | ND | ND | 0.78 | |
| | 06/21/95 | | 8.86 | 22.79 | 5.5 | ND | ND | ND | |
| | 8/17-18/95 | | 9.58 | 22.07 | 3.7 | ND | ND | ND | |
| | 12/18/95 | | 9.31 | 22.34 | ND | 0.6 | 0.5 | 2.7 | |
| | 02/29/96 | | 6.31 | 25.34 | 2.3 | ND | ND | ND | |
| | 05/22/96 | | 11.97 | 19.68 | ND | ND | ND | ND | |
| | 08/13/96 | | 9.21 | 22.44 | 0.58 | ND | ND | 3.1 | |
| | 11/15/96 | | 9.51 | 22.14 | ND | ND | ND | ND | |
| | 03/13/97 | | 7.93 | 23.72 | 56 | ND | ND | ND | |
| | 06/27/97 | | 7.70 | 23.95 | 18 | ND | ND | ND | |
| | 10/22/97 | | 9.55 | 22.10 | 86 | ND | ND | ND | |
| | 10/30/97 | | 9.55 | 22.10 | 420 | 5 | 3 | 6 | |
| | 03/09/98 | | 8.15 | 23.50 | 17 | ND | 2 | 10 | |
| | 08/30/00 | | 9.56 | 22.09 | ND | ND | ND | ND | ND |
| | 11/28/00 | | 10.10 | 21.55 | ND | ND | ND | ND | 171 |
| MRLs | | | | | 0.5 | 1.0 | 1.0 | 1 | |
| DEQ Chronic Exposure Screening Benchmark Values | | | | | 130.0 | 9.8 | 6.16 | 13.0 | |
| DEQ - RBC Vapor Instrusion into Building (Occupational) | | | | | 1,200 | 530,000 | 170,000 | 180,000 | |

NOTE:

[a] Elevations surveyed December 12, 1997.

[b] The MRL is elevated because the sample required diluting.

ppb = parts per billion. ND = not detected. Unk = unknown. MRL = method reporting limit.

— = not sampled.

RBC screening values from Appendix A of DEQ's "Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites."

Northwest
Geophysical
Associates, Inc.
1600 SW Western Boulevard, Suite 200
PO Box 1063, Corvallis, OR 97339-1063
Phone: (541) 757-7231 FAX: (541) 757-7331
www.nga.com info@nga.com

October 27, 2003

Nicholas J. DeSalvo
Forensic Environmental Services, Inc.
113 John Robert Thomas Drive
The Commons At Lincoln Center
Exton, PA 19341

***Re:*** ***Geophysical Site Investigation***
***GS Roofing Products, Portland, OR***

Dear Mr. DeSalvo;

Northwest Geophysical Associates, Inc. (NGA) conducted a geophysical site survey at the GS Roofing Products site at 6350 NW Front Avenue, Portland, Oregon. The objectives of the survey were:

- locate a possible 5000-gallon UST,
- delineate the vertical and lateral extents of a previous landfill, and
- to determine the structure of native soils beneath the fill.

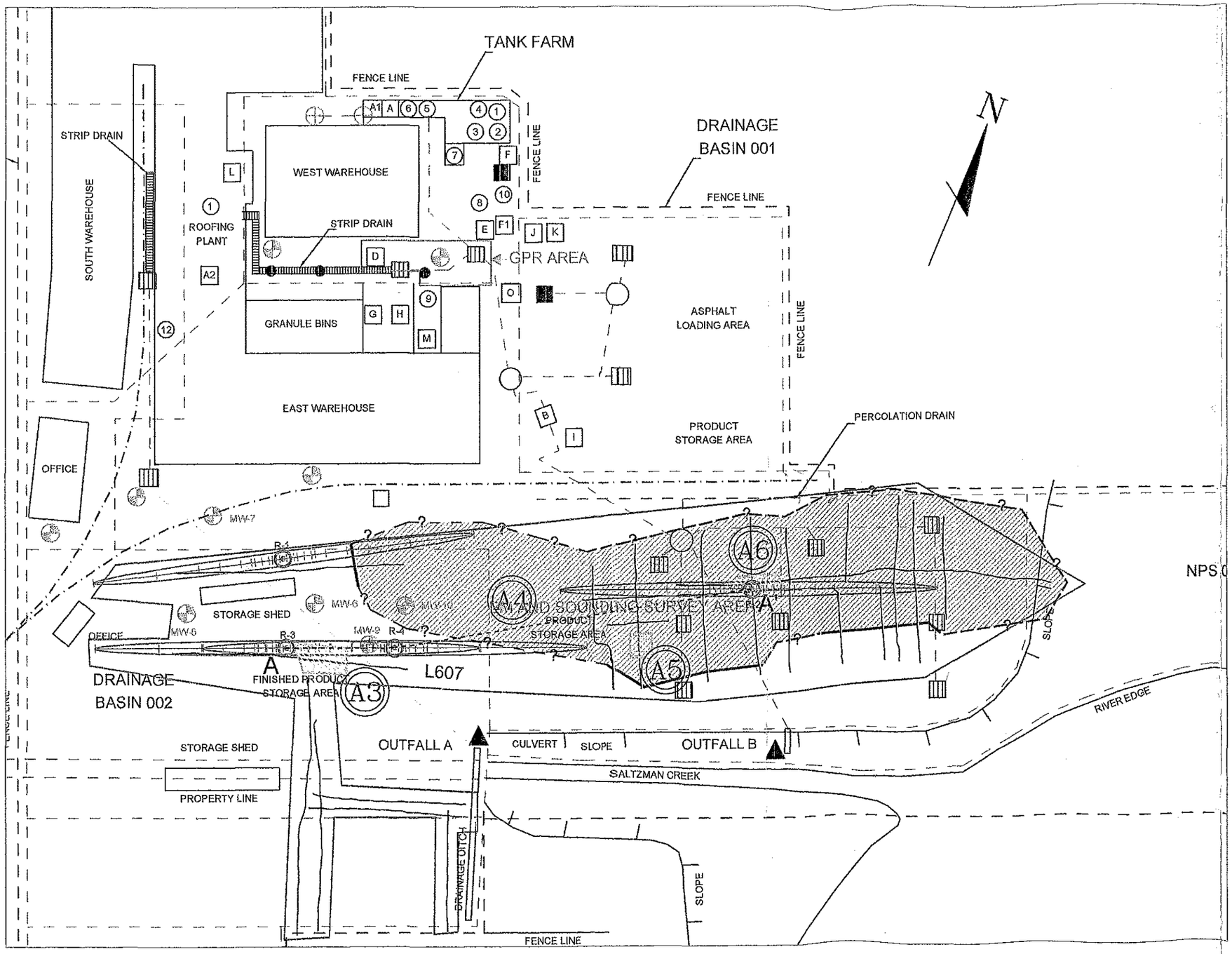
We initially visited the site during a pre-survey site visit on September 12, 2003 in order to test some of the equipment and to plan where geophysical transects would be located. The field survey took place on September 16, 2003. Figure 1 shows the location of the site. Figure 2 is an overview of the facility showing the areas surveyed with ground penetrating radar (GPR), EM31 terrain conductivity meter, and D.C. Resistivity Soundings. Figure 3 is a map showing the EM interpretations. Figure 4 is a map showing the GPR interpretations. Figure 5 is a cross section line, which transects west to east through the site.

GPR
CONDUCTIVITY
RESISTIVITY

Appendix A includes the EM data plots and the D.C. resistivity sounding plots. The GPR technique and the EM technique are described briefly in Appendix B. The D.C. resistivity technique is described briefly in Appendix C.

## FIELD SURVEY

NGA utilized a GPR system consisting of a Geophysical Survey Systems, Inc. (GSSI) SIR-2000 control unit with a 500 MHz antenna. Line locations are shown in the attached




# LEGEND

- R-2 — D.C. Resistivity Sounding Location
- Strong EM Anomaly
- Interpreted Landfill Boundary
- A3 — Geophysical Anomaly Discussed in Text
- EM Survey Lines
- A - - - A' — Cross Section Location

0 75 150

SCALE (feet)

FIGURE 3

GEOPHYSICAL INTERPRETATION SUMMARY

Geophysical Site Investigation
GS Roofing Products
Portland, OR

Prepared by:
Northwest Geophysical Associates, Inc.
P.O. Box 1063, Corvallis, Oregon 97339

NGA PROJECT #: 551 FILE: GSroofinggeophysicalsurveya.dwg DATE: SEPTEMBER 2003 REVISION: C-03-OCT-2003

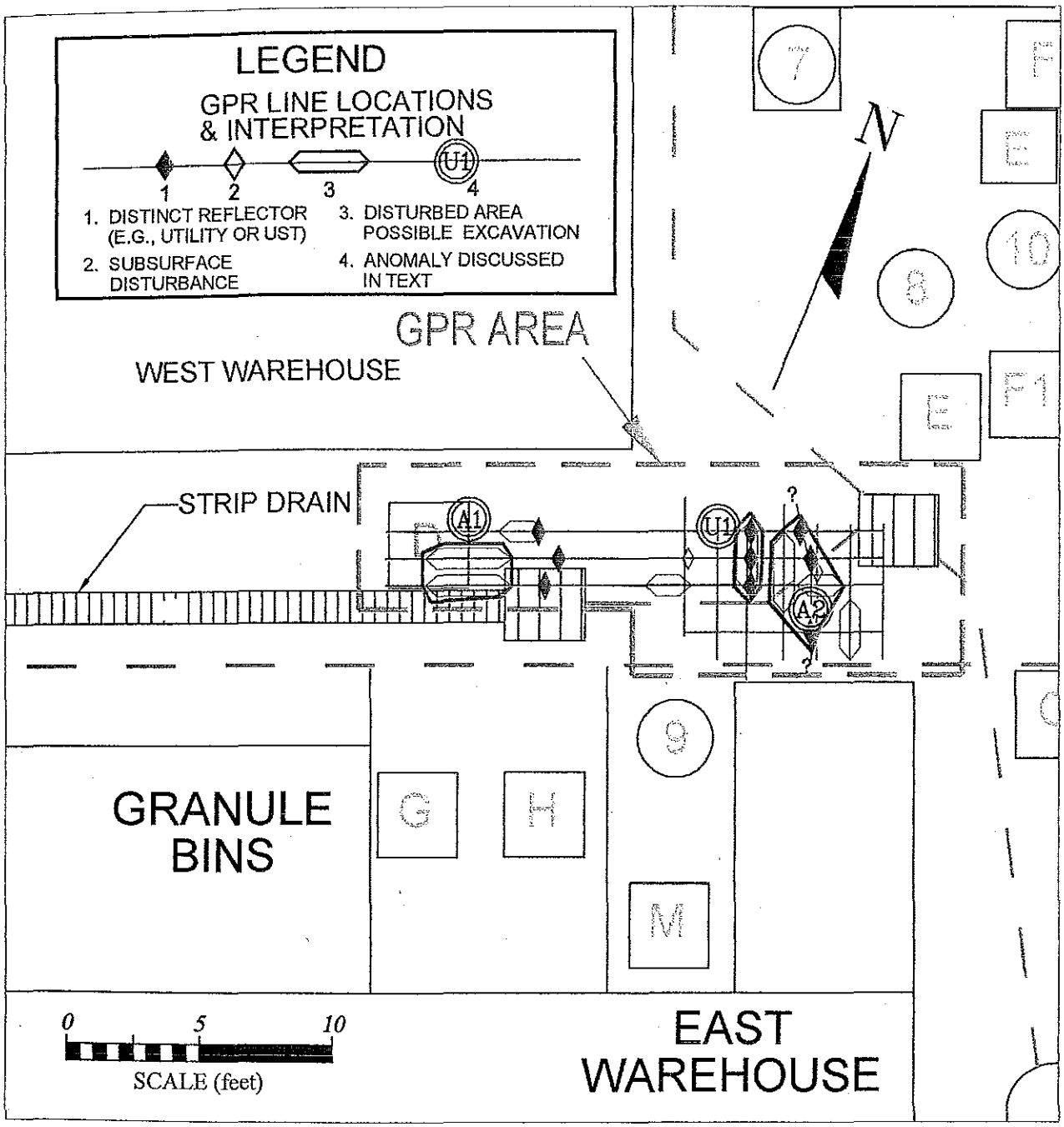



FIGURE 4

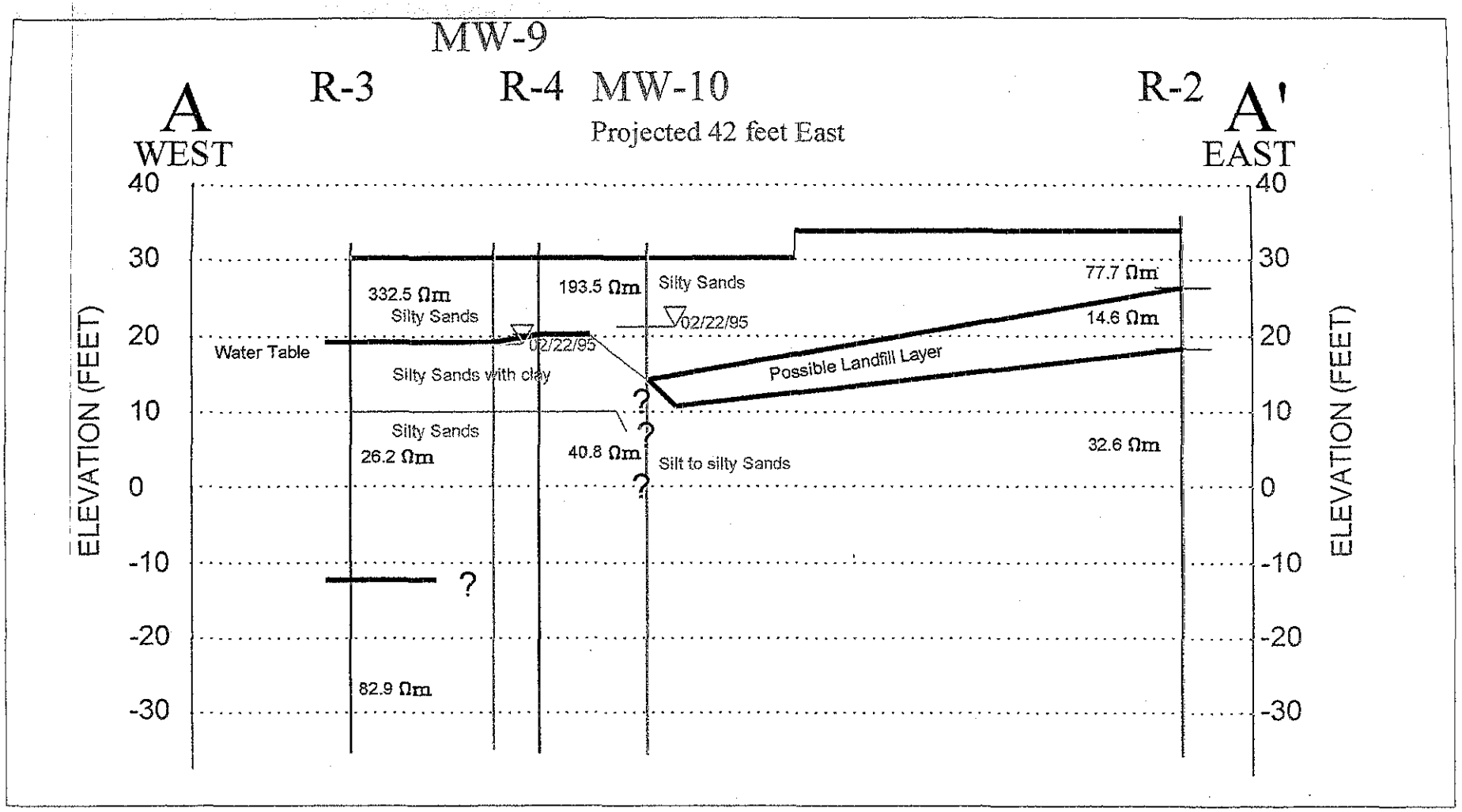
INTERPRETATIVE GPR MAP

Geophysical Site Investigation
GS Roofing Products
Portland, Oregon

Prepared by:
Northwest Geophysical Associates, Inc.
P.O. Box 1063, Corvallis, Oregon 97339

NGA Project #: 551
FILE: GS_Roofing_GPR_A
DATE: SEP 2003
REVISION: A-29-SEP-2003

NGA Project #: 551 FILE: Cross_Section_Line_AA.dwg DATE: September 2003 REVISION: B-13-OCT-03




1 INCH = 200 FEET
NO VERTICAL EXAGGERATION

LEGEND

Interpreted Geoelectric Boundary

Interpreted Soil/Water Boundary (Soil boundaries from boring logs)

? Unknown Boundary Direction

FIGURE 5

CROSS SECTION LINE A-A'

Geophysical Site Investigaton
GS Roofing Products
Portland, Oregon

Prepared by:
Northwest Geophysical Associates, Inc.
P.O. Box 1063, Corvallis, Oregon 97339

| Project: BES CSO Force Main<br>Project Location: Willamette River, Portland, Oregon<br>Project Number: 52.00040049.52 | Log of WGB-5<br>Sheet 1 of 7 |
|---|---|

| | | | | | |
|---|---|---|---|---|---|
| Date(s) Drilled | 11/14/2000-11/16/2000 | Logged By | NJG | Checked By (Date) | DBM |
| Drilling Method | Mud Rotary/Wire Line Coring | Drill Bit Size/Type | 4 1/4" Tri Cone / HQ Core | Total Depth Drilled (feet) | 104.5 |
| Drill Rig Type | CME 75 | Drilling Contractor | Geo-Tech Exporations, Inc. | Approximate Surface Elevation | 34 |
| Groundwater Level | 5.5 FT (MSL) | Location | Certain Teed | Inclination from Horizontal/Bearing | 90 |
| Borehole Completion | Backfilled with Cement/Bentonite Grout | | | Hammer Data | 300 lb Automatic Hammer |

| Elevation, feet | Depth, feet | ROCK CORE: Run No. | Box No. | Recovery, % | Fractures per Foot | R Q D, % | Fracture Drawing Number | Lithology | MATERIAL DESCRIPTION | SOIL SAMPLES: Type | Number | Blows / foot | Recovery, feet | Sample Length, inches | FIELD NOTES AND LAB TESTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 34 | 0 | | | | | | | | 6" ASPHALTIC CONCRETE | | | | | | |
| | 1 | | | | | | | | 12" AGGREGATE BASEROCK | | | | | | |
| 32 | 2 | | | | | | | | DARK GRAY TO BROWN SILTY GRAVEL (GM), loose, [moist], [FILL]. | | 1 | 10 | 0 | 0 | |
| | 3 | | | | | | | | | | | | | | MC=21.3%<br>57.1%>#4 sieve<br>16.7%<#200 sieve |
| 30 | 4 | | | | | | | | | | 2 | 7 | 0 | 0 | |
| | 5 | | | | | | | | | | 3 | 7 | 0.6 | 2 | |
| 28 | 6 | | | | | | | | *Large cobbles encountered.* | | | | | | |
| | 7 | | | | | | | | *Grades to very loose.* | | 4 | 3 | 0.5 | 1 | |
| 26 | 8 | | | | | | | | DARK GRAY SITLY SAND WITH GRAVEL (SM), loose, [moist], [FILL]. | | | | | | |
| | 9 | | | | | | | | | | 5 | 13 | 1.1 | 5 | |
| 24 | 10 | | | | | | | | DARK GRAY SILTY CLAYEY GRAVEL (GC-GM), medium dense, [moist], [FILL]. | | 6 | 42 | 1.1 | 5 | |
| | 11 | | | | | | | | | | | | | | MC=23.8%<br>61.8%>#4 sieve<br>22.2%<#200 sieve |
| 22 | 12 | | | | | | | | *Grades to loose.* | | 7 | 10 | 0.7 | 3 | Original boring terminated at 11.5 ft - moved 4 ft north |
| | 13 | | | | | | | | *Rubble and large cobbles encountered.* | | | | | | |

Report: GEO_CORE+SOIL_17B; File: BESCSO1.GPJ; 1/10/2001 WGB-5

URS

Project: BES CSO Force Main
Project Location: Willamette River, Portland, Oregon
Project Number: 52.00040049.52

# Log of WGB-5



| Elevation, feet | Depth, feet | ROCK CORE: Run No. | Box No. | Recovery, % | Fractures per Foot | R Q D, % | Fracture Drawing Number | Lithology | MATERIAL DESCRIPTION | SOIL SAMPLES: Type | Number | Blows / foot | Recovery, feet | Sample Length, inches | FIELD NOTES AND LAB TESTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 29 | | | | | | | | DARK BROWN POORLY GRADED SAND WITH SILT (SP-SM), loose, [wet]. | | | | | | |
| 4 | 30 | | | | | | | | | | | | | | |
| | 31 | | | | | | | | | | 13 | 13 | 0.5 | 1 | |
| 2 | 32 | | | | | | | | | | | | | | |
| | 33 | | | | | | | | | | | | | | |
| 0 | 34 | | | | | | | | | | 14 | 7 | 1.5 | 6 | |
| | 35 | | | | | | | | | | | | | | |
| -2 | 36 | | | | | | | | *Grades to dark brown and dark gray.* | | 15 | 11 | 1.5 | 6 | MC=35.6%<br>7.3%<#200 sieve |
| | 37 | | | | | | | | | | | | | | End of drilling at 37 ft on 11/14/00<br>Start of drilling on 11/15/00 |
| -4 | 38 | | | | | | | | *Grades to dark gray with trace organics (wood pieces).* | | | | | | |
| | 39 | | | | | | | | | | 16 | 8 | 1.5 | 6 | |
| -6 | 40 | | | | | | | | *Gravels encountered.* | | | | | | |
| | 41 | | | | | | | | *Grades to dark brown.* | | 17 | 10 | 1.5 | 6 | |
| -8 | 42 | | | | | | | | | | | | | | |
| | 43 | | | | | | | | | | | | | | |
| -10 | 44 | | | | | | | | | | 18 | 9 | 1.5 | 6 | |
| | 45 | | | | | | | | | | | | | | |



URS

Project: BES CSO Force Main
Project Location: Willamette River, Portland, Oregon
Project Number: 52.00040049.52

# Log of WGB-5



| Elevation, feet | Depth, feet | ROCK CORE: Run No. | Box No. | Recovery, % | Fractures per Foot | R Q D, % | Fracture Drawing Number | Lithology | MATERIAL DESCRIPTION | SOIL SAMPLES: Type | Number | Blows / foot | Recovery, feet | Sample Length, inches | FIELD NOTES AND LAB TESTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 61 | | | | | | | | BROWN SILTY SAND (SM), loose, [wet]. | | 23 | 8 | 1.5 | 8 | |
| -28 | 62 | | | | | | | | | | | | | | |
| | 63 | | | | | | | | *Grades to very loose.* | | 24 | 6 | 1.5 | 6 | |
| -30 | 64 | | | | | | | | | | | | | | |
| | 65 | | | | | | | | BROWN SILTY CLAY (CL-ML), medium stiff, [wet]. | | | | | | |
| -32 | 66 | | | | | | | | | | 25 | 6 | 1.5 | 6 | |
| | 67 | | | | | | | | | | | | | | |
| -34 | 68 | | | | | | | | BROWN SILTY SAND (SM), loose, (wet). | | | | | | |
| | 69 | | | | | | | | | | 26 | 7 | 1.5 | 6 | |
| -36 | 70 | | | | | | | | | | | | | | |
| | 71 | | | | | | | | *Grades to dark gray.* | | 27 | 10 | 1.5 | 6 | |
| -38 | 72 | | | | | | | | | | | | | | |
| | 73 | | | | | | | | | | | | | | |
| -40 | 74 | | | | | | | | DARK GRAY POORLY GRADED SAND (SP), loose, [wet]. | | 28 | 12 | 1.5 | 6 | |
| | 75 | | | | | | | | | | | | | | |
| -42 | 76 | | | | | | | | | | 29 | 12 | 1.5 | 6 | |
| | 77 | | | | | | | | | | | | | | |



URS

Project: BES CSO Force Main
Project Location: Willamette River, Portland, Oregon
Project Number: 52.00040049.52

# Log of WGB-5



| Elevation, feet | Depth, feet | ROCK CORE: Run No. | Box No. | Recovery, % | Fractures per Foot | R Q D, % | Fracture Drawing Number | Lithology | MATERIAL DESCRIPTION | SOIL SAMPLES: Type | Number | Blows / foot | Recovery, feet | Sample Length, inches | FIELD NOTES AND LAB TESTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 93 | 1 | 1 | 100 | | 49 | | | BASALT, fresh to slightly weathered, high strength, slightly vesicular. | | | | | | |
| | | | | | 7 | | 5 | | | | | | | | |
| -60 | 94 | | | | | | 5 5 6 | | 5: 25, J, VN, Ch, Su, 7, 8, 0.5<br>6: 65, J, VN, Ch, SP, 7, 7 | | | | | | |
| | | 2 | 2 | 96 | 0 | 40 | | | | | | | | | |
| | 95 | | | | | | | | | | | | | | |
| | | | | | 0 | | | | | | | | | | |
| -62 | 96 | | | | | | | | | | | | | | |
| | | | | | 0 | | | | | | | | | | |
| | 97 | | | | | | 1 | | 1: 10, J, N, Ch, Pa, 8, 8, 0.6 | | | | | | |
| | | | | | | | 2 | | 2: 45, J, T, No, No, 8, 8 | | | | | | |
| | | | | | 3 | | 1 | | | | | | | | |
| -64 | 98 | | | | | | 3 | | 3: 85, J, T, No, No, 5, 8 | | | | | | |
| | | | | | 3 | | | | | | | | | | |
| | 99 | | | | | | 4 4 5 6 | | 4: 15, J, N-T, Ch, Ca, Su-No, 8, 8, .3<br>5: 25, J, N, Ch, Fe, Su-Sp, 8, 8<br>6: 60, J, VN, Ca, Su, 7, 7 | | | | | | |
| | | | | | | | 7 | | 7: 40, J, VN, Ca, Su, 8, 8 | | | | | | |
| | | 3 | 3 | 96 | 3 | 46 | | | | | | | | | |
| -66 | 100 | | | | | | | | | | | | | | |
| | | | | | | | 1 1 2 3 2 | | 1: 5, J, T, No, No, 8, 8, 0.2<br>2: 45, J, T, Ch, Su, 8, 8<br>3: 30, J, VN, Ch, Su, 8, 8 | | | | | | |
| | | | | | 6 | | | | | | | | | | |
| | 101 | | | | | | | | | | | | | | |
| | | | | | 4 | | 4 4 | | 4: 30, J, N, Ch, Su, 8, 8, 0.1 | | | | | | |
| -68 | 102 | | | | | | | | | | | | | | |
| | | | | | 0 | | | | | | | | | | |
| | 103 | | | | | | | | | | | | | | |
| | | | | | 0 | | | | | | | | | | |
| -70 | 104 | | | | | | 5 | | 5: 30, J, N, Ch, Su, 1, 7 | | | | | | |
| | | | | | 1 | | | | Boring terminated at 104.5 feet BGS and grouted with cement/bentonite mix on 11/16/2000. | | | | | | |
| | 105 | | | | | | | | | | | | | | |
| -72 | 106 | | | | | | | | | | | | | | |
| | 107 | | | | | | | | | | | | | | |
| -74 | 108 | | | | | | | | | | | | | | |
| | 109 | | | | | | | | | | | | | | |



URS

# GS Roofing Products Company, Inc. Monitoring Well Installation

Prepared for: GS Roofing Products Company, Inc.
6350 NW Front Avenue
Portland, Oregon 97210

Prepared by: OMNI Environmental Services, Inc.
10074 Southwest Arctic Drive
Beaverton, Oregon 97005

March 6, 1992

60239-04

DRAFT

# Groundwater Monitoring Well Installation

## GS Roofing Products Co., Inc.
## 6350 N.W. Front Avenue
## Portland, Oregon 97210

Project # 00360-0195

Prepared For:

GS Roofing Products Company, Inc.
6350 N.W. Front Avenue
Portland, Oregon 97210

March 21, 1995

De Minimis Inc. Environmental Management
34 N.W. First Avenue • Suite 101 • Portland, Oregon • (503) 295-4074

# Test Boring/Well Construction Log

OMNI Environmental Services, Inc.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Project: | Monitoring Well Installation | | | | | | Project No. 60239.04 | |
| Client: | GS Roofing Products Company, Inc. | | | | | | | Boring/Well No. B-15/MW-6 |
| Drilling Contractor: | Geo-Tech Exploration, Inc. | | | | | | | |
| Purpose: | Subsurface Investigation | | | | | | | Sheet 1 of 1 |
| Driller: | Bill Colley | | Drill Method | Sample | Core | Well | Date: | 2/19/92 |
| Engineer: | Mike Greene | Type | Hollow Stem | SSS | Hollow | PVC | Started: | 2/19/92 |
| Proj. Mgr.: | John Baker | Diameter | 10" | 1 | 6.75" | 2" | Completed: | 2/19/92 |

Comments: Soils description based on Unifiid Systems of Classification ASTM.

| Depth (ft.) | Sample No. | Blows per 6" | Well Construction Diagram | Description | Soil Symbol | Remarks |
|---|---|---|---|---|---|---|
| | | | 0.5-3' Concrete; Flush mount cover; 0.35-9.55' 2" PVC Blank; 3-8.5' Bentonite | | | |
| 5 | MW6-1 | 5, 6, 5 | | Med. brown, moist, fine sand | SW | No visual or olfactory evidence of petroleum hydrocarbon contamination |
| | | | 8.5-21.5' Silica Sand (10-20); 9.55-19.55' 2" PVC Screen (0.10) | | | |
| 10 | MW6-2 | 1, 1, 1 | | Med. brown, moist, fine sand<br>(Bottom of split spoon sampler contained 2" of med. brown, moist, sandy clay) | SW<br>SC | No visual or olfactory evidence of petroleum hydrocarbon contamination |
| | No Sample | 42, 7, 5 | | Med. brown, saturated, fine sand<br>Encountered refusal of auger at 14.0', SSS was capable of penetrating, 5% or less recovery, wood particles | SW | Petroleum odor, visible sheen |
| 15 | | | | | | |
| 20 | MW6-3 | 7, 11, 11 | | Dark grayish-black, saturated, fine, sand<br>Droplets of black tar or asphalt | SW | Petroleum odor, visible sheen on water & soil |

Legend: Screen: Sand: Gravel: Soil Backfill: Bentonite: Cement Grout:

DRAFT

| DRILLING LOG | De Minimis Inc. Environmental Management | SHEET: 1 OF 1 |
|---|---|---|

1. Project Name: GS Roofing Products Co, Inc. Project #00360-0195
2. Location: 6350 N.W. Front Avenue Portland, OR 97210
3. Drilling Company: Crisman Drilling, Inc. (CDI)
4. Boring Number: MW-7 Start Card No. 75807
5. Driller/OWRD License: Randy L. Crisman/#10013
6. Direction of Boring
X Vertical Inclined _____ Deg. from vert.
7. Thickness of Overburden: 3" asphalt, 10" gravel
8. Total Depth of Boring: 20.0 ft.
9. Size & Type of Bit: 8-1/4-inch O.D. HSA
10. Relative Datum Elevation: 100.00 feet at MW-1
11. Manufacturer's Designation of Drill: Prospector MR-24
12. Depth to Groundwater: 8.99 feet on 02/21/95
13. Date Started: 02/14/95 Date Completed: 02/16/95
14. Well Casing Elevation (rel. to MW-1): 99.95 feet
15. Geologist/OWRD License: Dale L. Haar/#10343
16. Signature of Geologist: DRAFT

| Date / Time | Depth (feet) | Sample Number/ Location | Material Classification and Description | USCS | PID (ppm) | SPT (Blows/6") | Well Construction | Remarks |
|---|---|---|---|---|---|---|---|---|
| 02/14/95 | | | Asphalt - 3"<br>Gravel - 10" | GW | | | | Surface ambient PID reading, 0.0 ppm. |
| 1231 | 5 | S7-5 | Medium brown, silty, fine grain, micaceous sand (loose, moist) | SM | 0.2 | 5/4/4 | | No visual/olfactory evidence of contamination. |
| 1237 | 10* | S7-10** | Dark gray and medium brown, silty, fine to medium grain sand with occasional rounded gravel (medium dense, wet) | SM | 569 | 3/6/9 | | Appears visually contaminated, strong gasoline odor, and moderate sheen observed.<br>Heaving sands and mixed gravel from 11.5'-15' bgs. |
| 1352 | 15 | S7-15 | Dark gray, fine to medium grain sand with silt and occasional rounded gravel (loose, wet) | SM | 174 | 6/4/5 | | Appears visually contaminated, moderate gasoline odor, and no sheen observed. |
| 1403 | 20 | S7-20 | Dark gray, fine to medium grain sand with 1/2-inch wood fragment (loose, wet) | SW | 24.2 | 3/3/2 | | Slight gasoline odor, no sheen observed. |

* Groundwater measured at 9.8 feet bgs at 1415 on 02/14/95. Medium grayish-brown suspended silt with moderate gasoline odor and no sheen observed in groundwater sample MW-7 collected on 02/22/95.

** Soil sample S7-10 submitted for laboratory analyses.

OF OREGON
ING WELL REPORT
ORS 537.765 & OAR 690-240-095)
for completing this report are on the last page of this form.

Start Card # 75807

ER/PROJECT: WELL NO. MW #7
GS. Roofing
6350 NW Front Ave.
Portland State OR Zip 97209

(2) TYPE OF WORK:

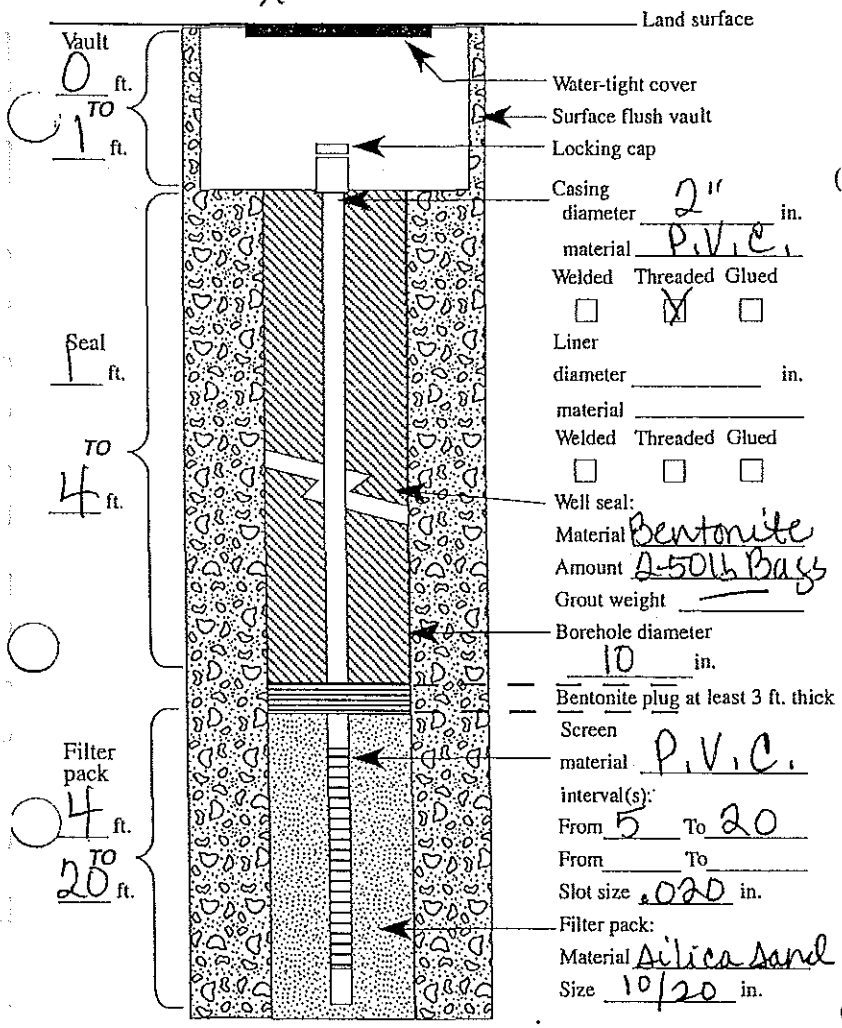
☒ New construction ☐ Alteration (Repair/Recondition)
☐ Conversion ☐ Deepening ☐ Abandonment

(3) DRILLING METHOD

☐ Rotary Air ☐ Rotary Mud ☐ Cable
☒ Hollow Stem Auger ☐ Other

(4) BORE HOLE CONSTRUCTION

Special Standards Yes ☐ No ☒ Depth of completed well 20 ft.




(5) WELL TEST:

☐ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian
Permeability Yield GPM
Conductivity PH
Temperature of water 14 °F/C Depth artesian flow found ft.
Was water analysis done? ☐ Yes ☐ No
By whom?
Depth of strata to be analyzed. From ft. to ft.
Remarks:

Name of supervising Geologist/Engineer Deminimis #1045

(6) LOCATION OF WELL By legal description

Well Location: County Multnomah
Township 1 (N or S) Range 1 (E or W) Section 13
1. NE 1/4 of SE 1/4 of above section.
2. Either Street address of well location 6350 NW Front Av.
or Tax lot number of well location
3. ATTACH MAP WITH LOCATION IDENTIFIED. Map shall include approximate scale and north arrow.

(7) STATIC WATER LEVEL:

8.99 Ft. below land surface. Date 2/21/95
Artesian Pressure lb/sq. in. Date

(8) WATER BEARING ZONES:

Depth at which water was first found

| From | To | Est. Flow Rate | SWL |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |

(9) WELL LOG: Ground elevation

| Material | From | To | SWL |
|---|---|---|---|
| Asphalt 3" Gravel -10" | 0' | 5' | |
| Medium brown, silty, fine grain, micaceous sand. | 5' | 10' | |
| Dark gray & medium brown, silty, fine to medium grain sand w/ occassional rounded gravel. | 10' | 15' | |
| Dark gray fine to medium grain sand w/ silt & occassional rounded gravel. | 15' | 20' | |
| Dark gray, fine to medium grain sand w/ 1/2" wood fragments. | 20' | 20' | |

Date started 2/14/95 Completed 2/14/95

(unbonded) Monitor Well Constructor Certification:
I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon well construction standards. Materials used and information reported above are true to the best knowledge and belief.
MWC Number
Signed Date

(bonded) Monitor Well Constructor Certification:
I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon well construction standards. This report is true to the best of my knowledge and belief.
MWC Number
Signed Randy L. Crisman Date 3/3/95

ORIGINAL & FIRST COPY-WATER RESOURCES DEPARTMENT SECOND COPY-CONSTRUCTOR THIRD COPY-CUSTOMER

DRAFT

| DRILLING LOG | De Minimis Inc. Environmental Management | SHEET: 1 OF 1 |
|---|---|---|

1. Project Name: GS Roofing Products Co, Inc. Project #00360-0195
2. Location: 6350 N.W. Front Avenue Portland, OR 97210
3. Drilling Company: Crisman Drilling, Inc. (CDI)
4. Boring Number: MW-8 Start Card No. 75808
5. Driller/OWRD License: Randy L. Crisman/#10013
6. Direction of Boring
X Vertical Inclined _____ Deg. from vert.
7. Thickness of Overburden: 3" asphalt, 9" gravel
8. Total Depth of Boring: 20.0 ft.
9. Size & Type of Bit: 8-1/4-inch O.D. HSA
10. Relative Datum Elevation: 100.00 feet at MW-1
11. Manufacturer's Designation of Drill: Prospector MR-24
12. Depth to Groundwater: 9.91 feet on 02/21/95
13. Date Started: 02/15/95 Date Completed: 02/16/95
14. Well Casing Elevation (rel. to MW-1): 100.78 feet
15. Geologist/OWRD License: Dale L. Haar/#10343
16. Signature of Geologist: DRAFT

| Date / Time | Depth (feet) | Sample Number/ Location | Material Classification and Description | USCS | PID (ppm) | SPT (Blows/6") | Well Construction | Remarks |
|---|---|---|---|---|---|---|---|---|
| 02/15/95 | | | Asphalt - 3"<br>Gravel - 9" | GW | | | | Surface ambient PID reading, 0.0 ppm. |
| 0947 | 5 | S8-5 | Medium brown, silty, fine to medium grain, micaceous sand (loose, moist) | SM | 0.5 | 6/4/4 | | No visual/olfactory evidence of contamination. |
| 0953 | * 10 | S8-10 | Medium brown, silty, fine to medium grain, micaceous sand (medium dense, moist) | SM | 0.0 | 7/7/4 | | No visual/olfactory evidence of contamination. |
| 0958 | 15 | S8-15** | Dark gray with tan, fine to coarse grain sand with silt (loose, wet) | SM | 0.0 | 7/5/4 | | No visual/olfactory evidence of contamination. No sheen. |
| 1039 | 20 | S8-20 | Dark gray with tan, fine to coarse grain sand with silt (loose, wet) | SM | 0.0 | 4/3/4 | | Heaving sands. No visual/olfactory evidence of contamination. No sheen. |

* Groundwater measured at 10.5 feet bgs at 1045 on 02/15/95. Medium grayish-brown suspended silt with very slight petroleum odor and no sheen observed in groundwater sample MW-8 collected on 02/22/95.

** Soil sample S8-15 submitted for laboratory analyses.

OF OREGON
NG WELL REPORT
RS 537.765 & OAR 690-240-095)
or completing this report are on the last page of this form.

Start Card # 75808

ER/PROJECT: WELL NO. MW # 8
S Roofing Products
6350 NW Front Ave.
Portland State OR Zip 97209

TYPE OF WORK:

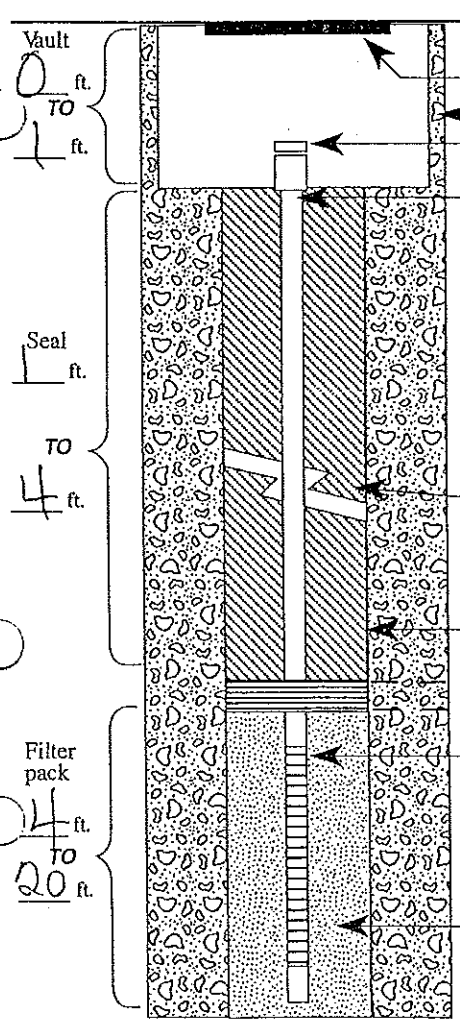
☒ New construction ☐ Alteration (Repair/Recondition)
☐ Conversion ☐ Deepening ☐ Abandonment

(6) LOCATION OF WELL By legal description
Well Location: County Multnomah
Township 1 (N or S) Range 1 (E or W) Section 13
1. NE 1/4 of SE 1/4 of above section.
2. Either Street address of well location 6350 NW Front Ave
or Tax lot number of well location
3. ATTACH MAP WITH LOCATION IDENTIFIED. Map shall include approximate scale and north arrow.

(3) DRILLING METHOD
☐ Rotary Air ☐ Rotary Mud ☐ Cable
☒ Hollow Stem Auger ☐ Other

(7) STATIC WATER LEVEL:
9.91 Ft. below land surface. Date 2/21/95
Artesian Pressure lb/sq. in. Date

(4) BORE HOLE CONSTRUCTION
Special Standards Yes ☐ No ☒ Depth of completed well 20 ft.




Casing diameter 2 in.
material P.V.C.
Welded ☐ Threaded ☒ Glued ☐
Liner diameter in.
material
Welded ☐ Threaded ☐ Glued ☐
Well seal:
Material Bentonite
Amount 2-50lb Bags
Grout weight
Borehole diameter 10 in.
Bentonite plug at least 3 ft. thick
Screen material P.V.C.
interval(s): From 5 To 20
From To
Slot size .020 in.
Filter pack:
Material Silica Sand
Size 10/20 in.

(8) WATER BEARING ZONES:
Depth at which water was first found

| From | To | Est. Flow Rate | SWL |
|---|---|---|---|
| | | | |

(9) WELL LOG: Ground elevation

| Material | From | To | SWL |
|---|---|---|---|
| Asphalt 3" | 0' | 5' | |
| Gravel 9" | | | |
| Medium brown, silty, fine to med. grain, micaceous sand. | 5' | 10' | |
| Medium brown, silty. Same as above. | 10' | 15' | |
| Dark gray w/tan, fine to coarse grain sand w/silt. | 15' | 20' | |
| Dark gray w/tan, fine to coarse grain sand w/silt. | 20' | 20' | |

Date started 2/15/95 Completed 2/16/95

(5) WELL TEST:
☐ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian
Permeability Yield GPM
Conductivity PH
Temperature of water 14 °F/C Depth artesian flow found ft.
Was water analysis done? ☐ Yes ☐ No
By whom?
Depth of strata to be analyzed. From ft. to ft.
Remarks:

(unbonded) Monitor Well Constructor Certification:
I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon well construction standards. Materials used and information reported above are true to the best knowledge and belief.
MWC Number
Signed Date

(bonded) Monitor Well Constructor Certification:
I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon well construction standards. This report is true to the best of my knowledge and belief.
MWC Number
Signed Randy L. Cisman Date 3/2/95

Name of supervising Geologist/Engineer De Minimis #1045

ORIGINAL & FIRST COPY-WATER RESOURCES DEPARTMENT SECOND COPY-CONSTRUCTOR THIRD COPY-CUSTOMER

DRAFT

| DRILLING LOG | De Minimis Inc. Environmental Management | SHEET: 1 OF 1 |
|---|---|---|

1. Project Name: GS Roofing Products Co, Inc. Project #00360-0195
2. Location: 6350 N.W. Front Avenue Portland, OR 97210
3. Drilling Company: Crisman Drilling, Inc. (CDI)
4. Boring Number: MW-9 Start Card No. 75809
5. Driller/OWRD License: Randy L. Crisman/#10013
6. Direction of Boring
X Vertical Inclined _____ Deg. from vert.
7. Thickness of Overburden: 4" asphalt, 8" gravel
8. Total Depth of Boring: 20.0 ft.
9. Size & Type of Bit: 8-1/4-inch O.D. HSA
10. Relative Datum Elevation: 100.00 feet at MW-1
11. Manufacturer's Designation of Drill: Prospector MR-24
12. Depth to Groundwater: 10.96 feet on 02/21/95
13. Date Started: 02/15/95 Date Completed: 02/16/95
14. Well Casing Elevation (rel. to MW-1): 98.53 feet
15. Geologist/OWRD License: Dale L. Haar/#10343
16. Signature of Geologist: DRAFT

| Date / Time | Depth (feet) | Sample Number/ Location | Material Classification and Description | USCS | PID (ppm) | SPT (Blows/6") | Well Construction | Remarks |
|---|---|---|---|---|---|---|---|---|
| 02/15/95 | | | Asphalt - 4"<br>Gravel - 8" | GW | | | | Surface ambient PID reading, 0.0 ppm. |
| 1326 | 5 | S9-5 | Medium brown, silty, fine to medium grain, micaceous sand (medium dense, moist) | SM | 0.0 | 7/12/13 | | No visual/olfactory evidence of contamination.<br>Gravel at 7.5-9 feet bgs. |
| 1332 | 10 * | S9-10 | Upper 3 inches: medium brown, silty, fine to medium grain, micaceous sand.<br>Lower 12 inches: medium to dark gray, silty, fine sand with clay (dense, moist) | SM | 0.5 | 10/20/17 | | Slight organic odor. Dark gray silty sand with clay appears organic.<br>Gravel at 14 feet bgs. |
| 1343 | 15 | S9-15 | Medium to dark gray, silty, fine sand with clay (medium dense, wet) | SM | 0.5 | 8/12/12 | | Very slight sheen at base of split-spoon sampler. Slight organic odor. Dark gray silty sand with clay appears organic. |
| 1411 | 20 | S9-20** | Dark gray silty, fine grain sand (loose, wet) | SM | 0.5 | 4/3/2 | | Slight petroleum odor. Moderate sheen. Dark gray sand does not appear visually contaminated. |

* Groundwater measured at 11.0 feet bgs at 1440 on 02/15/95. Medium grayish-brown suspended silt with slight petroleum odor and slight sheen observed in groundwater sample MW-9 collected on 02/22/95.

** Soil sample S9-20 submitted for laboratory analyses.

OF OREGON
ING WELL REPORT
ORS 537.765 & OAR 690-240-095)
for completing this report are on the last page of this form.

Start Card # 75909

NER/PROJECT: WELL NO. MW#9
GS Roofing Products
ess 6350 NW Front Ave.
Portland State OR Zip 97209

(2) TYPE OF WORK:

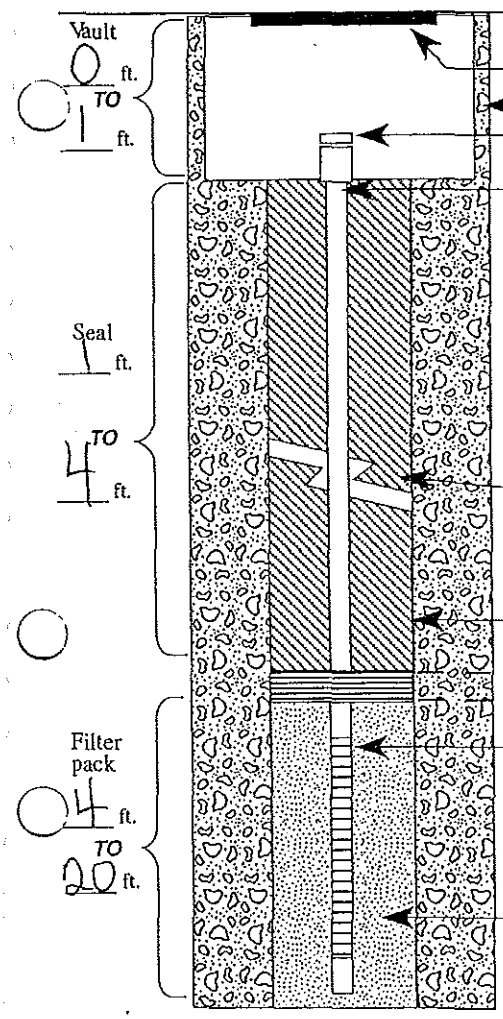
☒ New construction ☐ Alteration (Repair/Recondition)
☐ Conversion ☐ Deepening ☐ Abandonment

(3) DRILLING METHOD

☐ Rotary Air ☐ Rotary Mud ☐ Cable
☒ Hollow Stem Auger ☐ Other

(4) BORE HOLE CONSTRUCTION

Special Standards Yes ☐ No ☒ Depth of completed well 20 ft.




Casing diameter 2 in.
material P.V.C.
Welded ☐ Threaded ☒ Glued ☐
Liner diameter ____ in.
material ____
Welded ☐ Threaded ☐ Glued ☐
Well seal:
Material Bentonite
Amount 2-50 lb Bags
Grout weight ____
Borehole diameter 10 in.
Bentonite plug at least 3 ft. thick
Screen material P.V.C.
interval(s): From 5 To 20
From ____ To ____
Slot size .020 in.
Filter pack:
Material Silica sand
Size 10/20 in.

(5) WELL TEST:

☐ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian
Permeability ____ Yield ____ GPM
Conductivity ____ PH ____
Temperature of water 14 °F/C Depth artesian flow found ____ ft.
Was water analysis done? ☐ Yes ☐ No
By whom? ____
Depth of strata to be analyzed. From ____ ft. to ____ ft.
Remarks: ____

Name of supervising Geologist/Engineer DeMinimis #1045

(6) LOCATION OF WELL By legal description

Well Location: County Multnomah
Township 1 (N) or S) Range 1 (E or (W)) Section 13
1. NE 1/4 of SE 1/4 of above section.
2. Either Street address of well location 6350 NW Front Ave
or Tax lot number of well location ____
3. ATTACH MAP WITH LOCATION IDENTIFIED. Map shall include approximate scale and north arrow.

(7) STATIC WATER LEVEL:

10.96 Ft. below land surface. Date 2/19
Artesian Pressure ____ lb/sq. in. Date ____

(8) WATER BEARING ZONES:

Depth at which water was first found ____

| From | To | Est. Flow Rate | SWL |
|---|---|---|---|
| | | | |

(9) WELL LOG: Ground elevation ____

| Material | From | To | SWL |
|---|---|---|---|
| Asphalt - 4" | 0' | 5' | |
| Gravel - 8" | | | |
| Medium brown, silty fine to medium grain, micaceous sand. | 5' | 10' | |
| Upper 3": medium brown, silty, fine to medium grain micaceous sand. Lower 12" medium to dark gray, silty fine sand w/ clay. | 10' | 15' | |
| Medium to dark gray, silty, fine sand w/ clay. | 15' | 20' | |
| Dark gray silty, fine grained sand. | 20' | 20' | |

Date started 2/15/95 Completed 2/16/95

(unbonded) Monitor Well Constructor Certification:
I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon well construction standards. Materials used and information reported above are true to the best knowledge and belief.
MWC Number ____
Signed ____ Date ____

(bonded) Monitor Well Constructor Certification:
I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon well construction standards. This report is true to the best of my knowledge and belief.
MWC Number ____
Signed Randy L. Cloman Date 3/3/95

ORIGINAL & FIRST COPY-WATER RESOURCES DEPARTMENT SECOND COPY-CONSTRUCTOR THIRD COPY-CUSTOMER

DRAFT

| DRILLING LOG | De Minimis Inc. Environmental Management | SHEET: 1 OF 1 |
|---|---|---|

1. Project Name: GS Roofing Products Co, Inc. Project #00360-0195
2. Location: 6350 N.W. Front Avenue Portland, OR 97210
3. Drilling Company: Crisman Drilling, Inc. (CDI)
4. Boring Number: MW-10 Start Card No. 75810
5. Driller/OWRD License: Randy L. Crisman/#10013
6. Direction of Boring X Vertical Inclined _____ Deg. from vert.
7. Thickness of Overburden: 6" asphalt, 9" gravel
8. Total Depth of Boring: 20.0 ft.
9. Size & Type of Bit: 8-1/4-inch O.D. HSA
10. Relative Datum Elevation: 100.00 feet at MW-1
11. Manufacturer's Designation of Drill: Prospector MR-24
12. Depth to Groundwater: 8.05 feet on 02/21/95
13. Date Started: 02/15/95 Date Completed: 02/16/95
14. Well Casing Elevation (rel. to MW-1): 97.93 feet
15. Geologist/OWRD License: Dale L. Haar/#10343
16. Signature of Geologist: DRAFT

| Date / Time | Depth (feet) | Sample Number/ Location | Material Classification and Description | USCS | PID (ppm) | SPT (Blows/6") | Well Construction | Remarks |
|---|---|---|---|---|---|---|---|---|
| 02/15/95 | | | Asphalt - 3"<br>Gravel - 3"<br>Asphalt - 3"<br>Gravel - 6" | GW | | | | Surface ambient PID reading, 0.0 ppm. |
| 1607 | 5 | S10-5 | Medium brown, fine to medium grain sand with silt (medium dense, moist) | SM | 0.5 | 6/7/6 | | No visual/olfactory evidence of contamination. |
| | ▽* | | | | | | | |
| 1615 | 10 | S10-10 | Medium brown, fine to medium grain sand with silt (medium dense, moist to wet) | SM | 0.5 | 6/8/10 | | No visual/olfactory evidence of contamination. |
| 1624 | 15 | S10-15** | Upper 12 inches: Med. gray and brown, fine to medium grain sand with silt. Lower 5 inches: Med. gray, slightly silty, fine to med. grain sand with green, red, and blue shingle aggregate and glass fragments (medium dense, wet) | SM | 0.5 | 9/8/12 | | Slight petroleum hydrocarbon odor in lower 5 inches. No sheen observed. |
| 1647 | 20 | S10-20 | Medium gray, clayey, micaceous silt (medium stiff, wet) | MH | 0.5 | 4/3/2 | | No visual/olfactory evidence of contamination. |

* Groundwater measured at approximately 9.0 feet bgs at 1655 on 02/15/95. Medium grayish-brown suspended silt with slight petroleum odor and slight sheen observed in groundwater sample MW-10 collected on 02/22/95.

** Soil sample S10-15 submitted for laboratory analyses.

OF OREGON
RING WELL REPORT
ORS 537.765 & OAR 690-240-095)
for completing this report are on the last page of this form.

Start Card # 75810

NER/PROJECT: WELL NO. MW#10
GS Roofing Products
ss 6350 NW Front Ave.
Portland State OR Zip 97209

(2) TYPE OF WORK:

☒ New construction ☐ Alteration (Repair/Recondition)
☐ Conversion ☐ Deepening ☐ Abandonment

(6) LOCATION OF WELL By legal description

Well Location: County Multnomah
Township 1 (N or S) Range 1 (E or W) Section 13
1. NE 1/4 of SE 1/4 of above section.
2. Either Street address of well location 6350 NW Front Ave
or Tax lot number of well location
3. ATTACH MAP WITH LOCATION IDENTIFIED. Map shall include approximate scale and north arrow.

(3) DRILLING METHOD

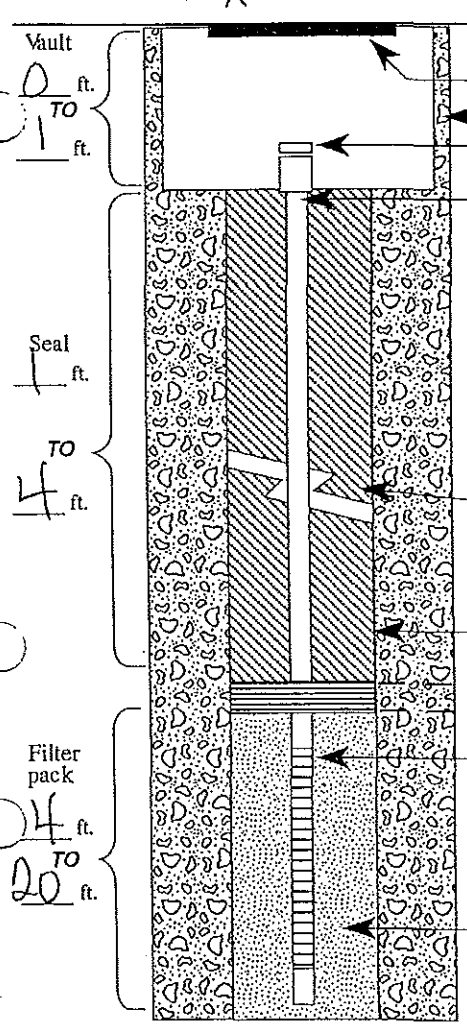
☐ Rotary Air ☐ Rotary Mud ☐ Cable
☒ Hollow Stem Auger ☐ Other

(7) STATIC WATER LEVEL:

8.05 Ft. below land surface. Date 2/21/95
Artesian Pressure lb/sq. in. Date

(4) BORE HOLE CONSTRUCTION

Special Standards Yes ☐ No ☒ Depth of completed well 20 ft.




Casing diameter 2 in.
material P.V.C.
Welded ☐ Threaded ☒ Glued ☐
Liner diameter in.
material
Welded ☐ Threaded ☐ Glued ☐
Well seal:
Material Bentonite
Amount 2-50lb Bag
Grout weight
Borehole diameter 10 in.
Bentonite plug at least 3 ft. thick
Screen material P.V.C.
interval(s):
From 5 To 20
From To
Slot size .020 in.
Filter pack:
Material Silica sand
Size 10/20 in.

(8) WATER BEARING ZONES:

Depth at which water was first found

| From | To | Est. Flow Rate | SWL |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

(9) WELL LOG: Ground elevation

| Material | From | To | SWL |
|---|---|---|---|
| Asphalt 3" Gravel 3' Asphalt 3" Gravel 6" | 0' | 5' | |
| Medium brown, fine to medium grain sand w/silt | 5' | 10' | |
| Medium brown, fine to medium grain sand w/silt. | 10' | 15' | |
| Medium gray & brown, fine to med grain w/silt | 15' | 16' | |
| Medium gray, slightly silty, fine to medium grain sand w/green, red & blue shiney aggregate & glass fragments | 16' | 16.5" | |
| med. gray clay, silt | 20' | 20' | |

Date started 2/15/95 Completed 2/16/95

(5) WELL TEST:

☐ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian
Permeability Yield GPM
Conductivity PH
Temperature of water 14 °F/C Depth artesian flow found ft.
Was water analysis done? ☐ Yes ☐ No
By whom?
Depth of strata to be analyzed. From ft. to ft.
Remarks:

Name of supervising Geologist/Engineer DeMinimis #1045

(unbonded) Monitor Well Constructor Certification:
I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon well construction standards. Materials used and information reported above are true to the best knowledge and belief.
MWC Number
Signed Date

(bonded) Monitor Well Constructor Certification:
I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon well construction standards. This report is true to the best of my knowledge and belief.
MWC Number
Signed Randy L. Cisman Date 3/3/95

ORIGINAL & FIRST COPY WATER RESOURCES DEPARTMENT SECOND COPY CONSTRUCTOR THIRD COPY CUSTOMER

# APPENDIX B

# DRY WELL CLOSURE REPORT

# CLOSURE OF UNDERGROUND INJECTION CONTROL SYSTEM

**GS Roofing Property**
**6350 NW Front Avenue**
**Portland, Oregon**

DRAFT

**JULY 2004**

**Prepared by:**


**Thomas F. Maguire, CPG, LSP**
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**(541) 387-4422**

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**GS Roofing Property**
**6350 NW Front Avenue**
**Portland Oregon**


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## 1.0 Introduction

Forensic Environmental Services (FES) is submitting this report, on behalf of Certain Teed Corporation, to document the activities performed in association with decommissioning two dry wells at the GS Roofing Property. The subject property is located at 6350 NW Front Avenue, Portland, Oregon in Section 18 of Township 1 North, Range 1 east, on tax lots 13, 19, and 31 (Figure 1). This industrial site is located on the west bank of the Willamette River and is bounded by NW Front Avenue and the Willbridge Terminal Facility to the west. Other industrial operations border the site to the north and south.

The locations of both dry wells are shown on Figure 2. GS Roofing Company registered both dry wells and received UIC Identification Numbers 11079-1 and 11079-2 on September 18, 2001 and May 2, 2003, respectively. A plan for decommissioning the dry wells along with a Class V Pre-Notification Form were submitted to the DEQ on April 29, 2003. The DEQ registration letter and pre-notification form are included as Attachment 1.

## 2.0 SUMP DECOMMISSIONING AND INVESTIGATION SAMPLING

Dry Well #1 was constructed of a 19-inch diameter concrete cylinder that extended to a depth of approximately 1.8 feet below grade. The cover for the dry well was at grade and consisted of a piece of square steel with drain holes for the collection of storm water. Two 4-inch PVC pipes were visible at the base of the dry well. One of the pipelines had been connected to a floor drain in the machine shop but was filled with concrete in fall of 1983 and abandoned. The second pipe line discharged liquids from Dry Well #1 into adjacent Dry Well #2. Following excavation of approximately 1 foot of accumulated sediment from the base of the sump, hand auger sample Dry Well #1 was collected at a depth of 2.8 feet.

Dry Well #2 was located approximately 44 feet east of Dry Well #1 and was similarly constructed of a 19-inch diameter concrete cylinder that extended to a depth of 2.5 feet below grade with a square steel cover. The 4-inch PVC pipe connecting Dry Well #1 to Dry Well #2

was visible at the base of the dry well and the end of the pipe was finished with a vertically oriented T-shaped fitting. The lateral extending up was approximately 2 feet long and open, while the bottom lateral extended approximately 1.4 feet down into a layer of crushed stone. Accumulated sediment, crushed stone, and soil were excavated to a depth of approximately 6.5 feet before hand auger sample Dry Well #2 was collected. All material excavated from both dry wells was containerized in new 55-gallon drums.

The dry well soil samples were collected on November 12, 2003 and submitted to North Creek Analytical of Portland, OR for analysis of the following constituents:

- Volatile Organic Compounds (VOCs) by EPA Method 8260B;
- Semi-Volatile Organic Compounds(SVOCs) by EPA Method 8270B;
- PCBs by Method EPA 8082;
- Gasoline Hydrocarbons by Method NW TPH-Gx;
- Diesel and Heavy Range Hydrocarbons by Method NW TPH-Dx; and
- Priority pollutant list metals by EPA Series Methods 6000/7000.

Sampling equipment was decontaminated before and between sample collection with a manual scrub with non-phosphate soap and potable water, thorough rinse with potable water, and triple rinse with distilled water.

## 3.0 CONFIRMATION SAMPLE RESULTS

Nine VOCs were detected in the Dry Well #1 sample: benzene, toluene, xylenes, naphthalene, p-isopropyltoluene, 1,2,4-trimethylbenzene, carbon disulfide, tetrachloroethene (PCE), and tetrachloroethene (TCE). VOC sampling results are summarized in Table 1. All reported VOC concentrations in the Dry Well #1 sample were less than 1.0 microgram per kilogram (µg/kg) except naphthalene (1.25 µg/kg), carbon disulfide (1.73 µg/kg), and PCE (1.87 µg/kg).

Seven VOCs were detected in the Dry Well #2 sample (see Table 1) benzene, xylenes, naphthalene, 1,2,4-trimethylbenzene, acetone, PCE, and TCE (see Table 1). All reported VOC concentrations in the Dry Well #2 sample were less than 1.0 µg/kg except naphthalene (1.33 µg/kg) and acetone (53.0 µg/kg).

All detected VOC concentrations in the two dry well samples were at least an order of magnitude below the generic risk-based concentration (RBCs) for ingestion/dermal contact/inhalation ($RBC_{ss}$) and vapor intrusion into buildings ($RBC_{si}$) in an occupational scenario, and leaching to ground water ($RBC_{sw}$) as specified in the DEQ *Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites* (September 23, 2003) guidance document. The RBCs represent the maximum allowable constituent concentrations determined by DEQ to be protective of human health and the environment. DEQ has not published RBCs for acetone or carbon disulfide; therefore, the detected concentrations were compared against the Region 9 Preliminary Remediation Goal (PRG) values for direct contact exposure in industrial soil and the Soil Screening Level (SSL) values for migration to ground water. The detected concentrations were at least an order of magnitude less than the most conservative PRG/SSL values.

Dry well soil samples #1 and #2 both demonstrated non-detectable concentrations of SVOCs (Table 2), PCBs (Table 3), and TPH-Gx (gasoline range). TPH-Dx (diesel range) and TPH-HORH (heavy oil range) were detected in sample Dry Well #1 at 123 milligrams per kilogram (mg/kg) and 518 mg/kg, respectively, and not detected in sample Dry Well #2 (see Table 1). The detected TPH-Dx & TPH-HORH concentrations were more than two orders of magnitude below the generic TPH RBCs for direct contact in an occupational scenario and leaching to ground water specified in the September 2003 DEQ guidance document.

Total metal concentrations detected in the dry well soil samples (Table 4) were compared against the respective EPA Region 9 direct contact in industrial soil PRG values and migration to ground water SSL values. No reported concentrations exceeded these values except arsenic (detected concentrations in Dry Well sample #1 & Dry Well sample #2 of 7.51 mg/kg & 2.84

mg/kg, respectively), which slightly exceeded the direct contact cancer PRG of 1.6 mg/kg (the non-cancer chronic PRG is 260 mg/kg). The maximum detected arsenic concentration (7.51 mg/kg) is within the regional background range for arsenic of 4.3 mg/kg to 10.3 mg/kg (see L.R. Curtis & B.W. Smith, Heavy Metals in Fertilizers: Considerations for Setting Regulation in Oregon, Oregon Department of Agriculture, August 2, 2002).

## 4.0 DRY WELL CLOSURE

Soil data tables and the laboratory data package for the two dry well samples were submitted to the DEQ Case Manger, Ms. Alicia Voss, on February 26, 2004 for review and verification that residual concentrations were below the applicable cleanup levels. Ms. Voss provided approval for closure on March 4, 2004 via e-mail. Both dry well systems were permanently closed during the last week of April, 2004 in the following manner: 1) each dry well was lined with a poly bladder; 2) backfilled with 1 to 1.25-inch stone; and 3) sealed with cement the same thickness as the current slab ( i.e., 12 inches thick). In addition, a sealer was applied to the opening before filling with cement to assure a watertight seal.

## 5.0 SITE RESTORATION

A new catch basin was installed during the first week of May 2004 in the general area of the former dry wells to manage surface water drainage. The catch basin is a pre-fabricated unit measuring 2 feet square and 2 feet deep with a steel grate cover. Storm water that accumulates in the catch basin is pumped into the Tank Farm containment area and then into the oil/water separator. The discharge from the oil/water separator is directed into the wastewater settling pond and ultimately empties into the sewer.

The materials excavated from the dry wells were stored in 55-gallon drums and staged along with other investigation-derived waste (IDW) generated as part of overall site investigation activities conducted concurrently with the dry well closure. A composite sample was submitted

for TCLP analysis to characterize the drum contents for disposal. TCLP VOC and SVOC results were all non-detect and TCLP metal concentrations were all below regulatory concentrations. GS Roofing is in the process of arranging with Clean Harbors for disposal of all drums at the time of preparation of this report.

## 6.0 CONCLUSION

Confirmation soil sample analytical results were evaluated with respect to risk-based concentrations specified in Appendix A of the DEQ *Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites* (September 23, 2003) guidance document and the EPA Region IX PRG Table (October 1, 2002). No data exceed applicable RBCs, therefore the analytical results verify that the soil conditions in the dry wells did not pose a threat to human health or the environment and remedial measures were not necessary.

# TABLES

## Table 1
## Summary of Volatile Organic Compound Analytical Data, Dry Well Soil Samples
## GS Roofing Products
## Portland, Oregon



| Sample Designation | Depth (feet) | Date | Benzene (µg/kg) | Toluene (µg/kg) | Ethyl-benzene (µg/kg) | Total Xylenes (µg/kg) | Naph-thalene (µg/kg) | NWTPH-Gx (mg/kg) | NWTPH-Dx (mg/kg) | NWTPH-HORH (mg/kg) |
|---|---|---|---|---|---|---|---|---|---|---|
| Ingestion, Contact, Inhalation | | | 34,000 | $6.8 \times 10^7$ | $7.4 \times 10^7$ | $2.4 \times 10^7$ | 770,000 | 22,000 | 70,000 | >70,000 |
| Vapor Intrusion into Buildings | | | 1,200 | >538,000 | >327,000 | >358,000 | >312,000 | >100,000 | >100,000 | >100,000 |
| Leaching to Ground Water | | | 52 | 180,000 | >327,000 | 100,000 | 15,000 | 110 | >100,000 | >100,000 |
| | | | | | | | | | | |
| Dry Well #1 | 3 | 11/12/03 | 0.534 | 0.343 | <5.00 | 0.458 | 1.25 | <4.00 | 123 | 518 |
| Dry Well #2 | 10 | 11/12/03 | 0.231 | <5.00 | <5.00 | 0.440 | 1.33 | <4.00 | <25.0 | <50.0 |

| Sample Designation | Depth (feet) | Date | Isopropyl benzene (µg/kg) | p-Isopropyl toluene (µg/kg) | 1,2,4-Trimethyl benzene (µg/kg) | 1,3,5-Trimethyl benzene (µg/kg) | Acetone (µg/kg) | Carbon Disulfide (µg/kg) | Tetrachloro-ethene (µg/kg) | Trichloro-ethene (µg/kg) |
|---|---|---|---|---|---|---|---|---|---|---|
| Ingestion, Contact, Inhalation | | | $5.1 \times 10^7$ | -- | $1.5 \times 10^6$ | $1.5 \times 10^6$ | -- | -- | 5,100 | 3,400 |
| Vapor Intrusion into Buildings | | | >335,000 | -- | 840,000 | 140,000 | -- | -- | 1,500 | 94 |
| Leaching to Ground Water | | | >335,000 | -- | 55,000 | 12,000 | -- | -- | 37 | 9.9 |
| | | | | | | | | | | |
| Dry Well #1 | 3 | 11/12/03 | <5.00 | 0.165 | 0.242 | <5.00 | <20.0 | 1.73 | 1.87 | 0.700 |
| Dry Well #2 | 10 | 11/12/03 | <5.00 | <5.00 | 0.286 | <5.00 | 53.0 | <20.0 | 0.352 | 0.440 |

Notes:

1. Source: Risk-Based Decision Making, DEQ, September 22, 2003, Occupational Receptor Scenario.
2. < = less than the detection limit.
3. µg/kg = micrograms per kilogram; mg/kg = milligrams per kilogram.

Table 2

Summary of Semi-Volatile Organic Compound Analytical Data, Dry Well Soil Samples

GS Roofing Products

Portland, Oregon



| Sample Designation | Sample Depth (feet) | Date | Acenaph-thene (µg/kg) | Anthra-cene (µg/kg) | Benzo(a) anthracene (µg/kg) | Benzo(a) pyrene (µg/kg) | Benzo(b) fluoranthene (µg/kg) | Benzo(ghi) perylene (µg/kg) | Benzo(k) fluoranthene (µg/kg) | Chrysene (µg/kg) |
|---|---|---|---|---|---|---|---|---|---|---|
| Ingestion, Contact, Inhalation | | | $4.1 \times 10^7$ | $>1.0 \times 10^8$ | 2,700 | 270 | 2,700 | -- | 27,000 | 270,000 |
| Vapor Intrusion into Buildings | | | >104,000 | >6,400 | >18,700 | >8,260 | >9,230 | -- | >4,920 | >3,180 |
| Leaching to Ground Water | | | >104,000 | >6,400 | >18,700 | >8,260 | >9,230 | -- | >4,920 | >3,180 |
| | | | | | | | | | | |
| Dry Well #1 | 3 | 11/12/03 | <990 | <990 | <990 | <990 | <990 | <990 | <990 | <990 |
| Dry Well #2 | 10 | 11/12/03 | <330 | <330 | <330 | <330 | <330 | <330 | <330 | <330 |

| Sample Designation | Sample Depth (feet) | Date | Dibenzo(a,h) anthracene (µg/kg) | Fluor-anthene (µg/kg) | Fluorene (µg/kg) | Indeno(1,2,3-cd)pyrene (µg/kg) | Naph-thalene (µg/kg) | Phenan-threne (µg/kg) | Pyrene (µg/kg) |
|---|---|---|---|---|---|---|---|---|---|
| Ingestion, Contact, Inhalation | | | 270 | $2.9 \times 10^7$ | $3.5 \times 10^7$ | 2,700 | 770,000 | -- | $2.1 \times 10^7$ |
| Vapor Intrusion into Buildings | | | >4,730 | >110,000 | >137,000 | >382 | >312,000 | -- | >70,900 |
| Leaching to Ground Water | | | >4,730 | >110,000 | >137,000 | >382 | 15,000 | -- | >70,900 |
| | | | | | | | | | |
| Dry Well #1 | 3 | 11/12/03 | <990 | <990 | <990 | <990 | <990 | <990 | <990 |
| Dry Well #2 | 10 | 11/12/03 | <330 | <330 | <330 | <330 | <330 | <330 | <330 |

Notes:

1. Source: Risk-Based Decision Making, DEQ, September 22, 2003, Occupational Receptor Scenario.
2. < = less than the detection limit.
3. µg/kg = micrograms per kilogram.

Table 3
Summary of PCB Analytical Data, Dry Well Soil Samples
GS Roofing Products
Portland, Oregon



| Sample Designation | Sample Depth (feet) | Date | Aroclor 1016 (µg/kg) | Aroclor 1221 (µg/kg) | Aroclor 1232 (µg/kg) | Aroclor 1242 (µg/kg) | Aroclor 1248 (µg/kg) | Aroclor 1254 (µg/kg) | Aroclor 1260 (µg/kg) |
|---|---|---|---|---|---|---|---|---|---|
| Industrial (Direct Contact Exposure) | | | 21,000 | 740 | 740 | 740 | 740 | 740 | 740 |
| Migration to Ground Water | | | -- | -- | -- | -- | -- | -- | -- |
| | | | | | | | | | |
| Dry Well #1 | 3 | 11/12/03 | <67.0 | <134 | <67.0 | <67.0 | <67.0 | <67.0 | <67.0 |
| Dry Well #2 | 10 | 11/12/03 | <67.0 | <134 | <67.0 | <67.0 | <67.0 | <67.0 | <67.0 |

Notes:

1. Source: EPA Region 9 PRGs, Industrial Soil, Table dated 10/1/02.
2. < = less than the detection limit.
3. µg/kg = micrograms per kilogram.

## Table 4
## Summary of Total Metals Analytical Data, Dry Well Soil Samples
## GS Roofing Products
## Portland, Oregon



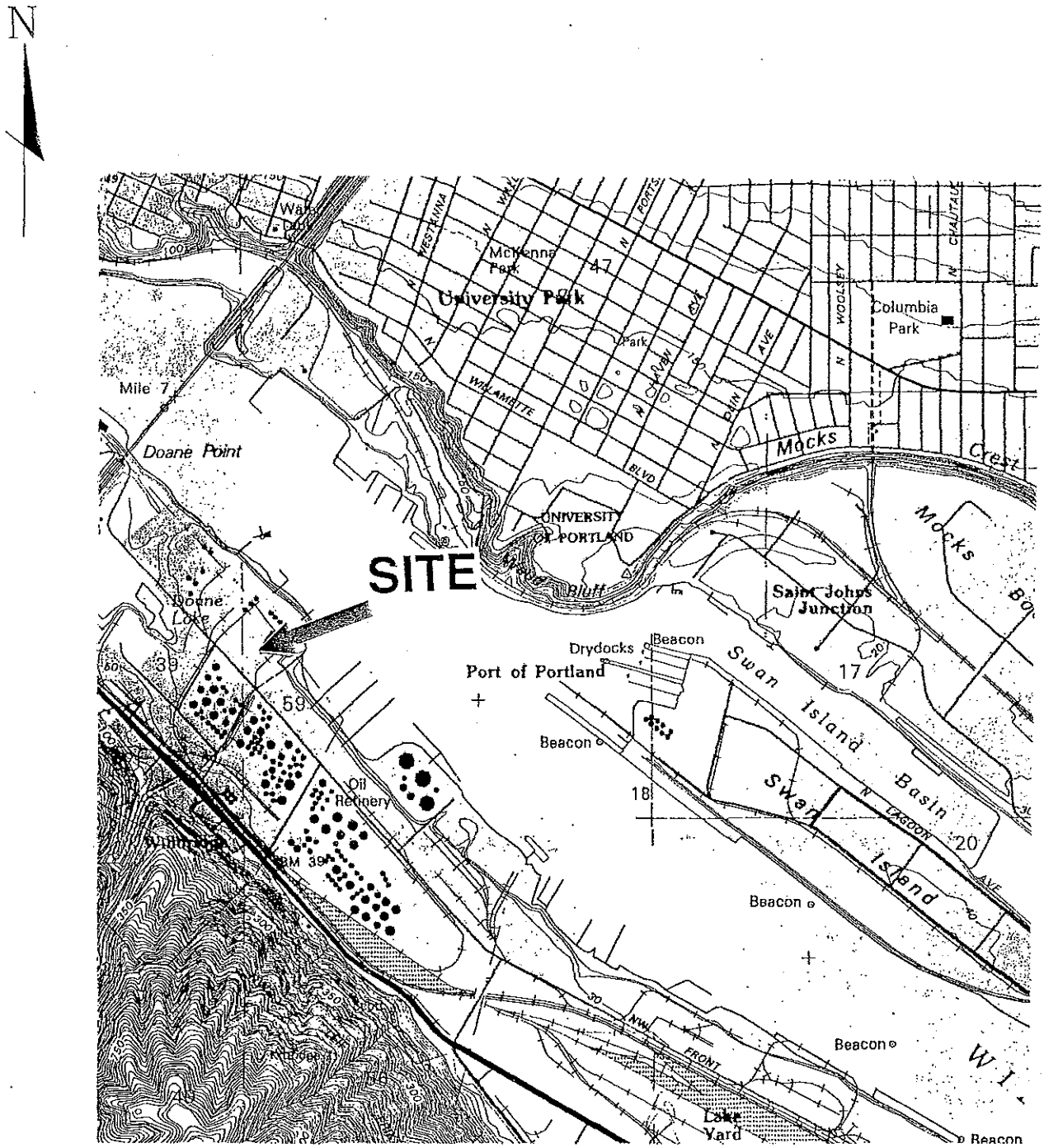
| Sample Designation | Sample Depth (feet) | Date | Antimony (mg/kg) | Arsenic (mg/kg) | Beryllium (mg/kg) | Cadmium (mg/kg) | Chromium (mg/kg) | Copper (mg/kg) | Lead (mg/kg) |
|---|---|---|---|---|---|---|---|---|---|
| Industrial (Direct Contact Exposure) | | | 410 | 1.6 [2] | 1,900 | 450 | 64 [3] | 41,000 | 750 |
| Migration to Ground Water (DAF 20) | | | 5.0 | 29 | 63 | 8.0 | 38 | -- | 30 [4] |
| | | | | | | | | | |
| Dry Well #1 | 3 | 11/12/03 | 0.493 | 7.51 | <0.500 | <2.36 | 34.3 | 30.8 | 10.8 |
| Dry Well #2 | 10 | 11/12/03 | 0.0699 | 2.84 | 0.253 | <1.82 | 13.9 | 14.2 | 2.21 |

| Sample Designation | Sample Depth (feet) | Date | Mercury (mg/kg) | Nickel (mg/kg) | Selenium (mg/kg) | Silver (mg/kg) | Thallium (mg/kg) | Zinc (mg/kg) |
|---|---|---|---|---|---|---|---|---|
| Industrial (Dermal Contact Exposure) | | | 310 | 20,000 | 5,100 | 5,100 | 67 | 100,000 |
| Migration to Ground Water (DAF 20) | | | -- | 130 | 5.0 | 34 | -- | 12,000 |
| | | | | | | | | |
| Dry Well #1 | 3 | 11/12/03 | 0.00848 | 82.9 | 0.586 | 0.0935 | <0.500 | 227 |
| Dry Well #2 | 10 | 11/12/03 | 0.164 | 17.7 | 0.363 | <0.397 | <0.397 | 44.3 |

Notes:

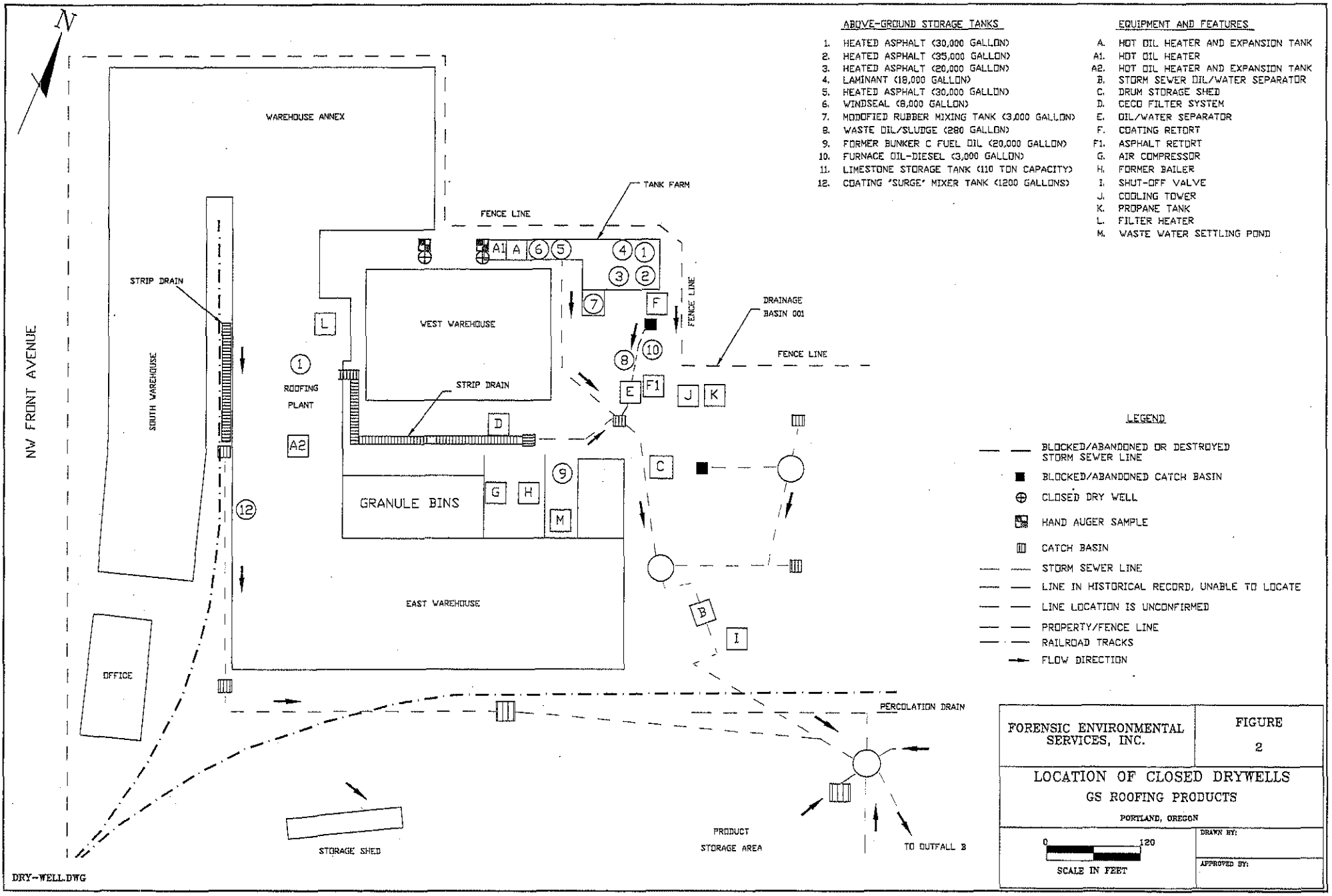
1. Source: EPA Region 9 PRGs, Industrial Soil, Table dated 10/1/02.
2. Arsenic values based on a cancer endpoint, the non-cancer endpoint Industrial PRG is 260 mg/kg.
3. Chromium values based on $Cr^{+6}$, the $Cr^{+3}$ Industrial PRG is 100,000 mg/kg.
4. Source: Risk-Based Decision Making, DEQ, September 22, 2003, Leaching to Ground Water, Occupational Receptor Scenario.
5. < = less than the detection limit.
6. mg/kg = milligrams per kilogram.

# FIGURES




| FORENSIC ENVIRONMENTAL SERVICES, INC. | FIGURE 1 |
|---|---|
| SITE LOCATION MAP<br>GS ROOFING PRODUCTS<br>PORTLAND, OREGON | |
| 0 — 2000<br>APPROXIMATE SCALE IN FEET | DRAWN BY:<br>APPROVED BY: |

PORTTOPO.DWG




FORENSIC ENVIRONMENTAL SERVICES, INC.

FIGURE 2

LOCATION OF CLOSED DRYWELLS
GS ROOFING PRODUCTS
PORTLAND, OREGON

DRAWN BY:

APPROVED BY:

# ATTACHMENT 1

# UIC-RELATED CORRESPONDENCE

Oregon
John A. Kitzhaber, M.D., Governor

Department of Environmental Quality
811 SW Sixth Avenue
Portland, OR 97204-1390
(503) 229-5696
TDD (503) 229-6993

September 18, 2001

Daniel Pofelski
G.S. Roofing Company/CertainTeed
6350 NW Front Ave.
Portland, OR 97210

Facility at: 6350 NW Front Avenue, Portland

Dear Mr. Pofelski:

Thank you for submitting a registration form for the Underground Injection Control (UIC) system at your facility. The following table shows your UIC identification number combined with the injection system information you submitted. Generally, each facility is issued one UIC number; the various injection systems at that facility are then identified sequentially -1, -2, -3, etc. Please reference this number in future correspondence and retain this letter, or a copy of it, on site should your facility be inspected.

| *Well #* | *Type Code* | *Status* | *Location* |
|---|---|---|---|
| 11079-1 | 5D2 | Active | West Warehouse |

Please note that you are required to do the following:

- Update registration information whenever a change of ownership, change of land use, or closure of your injection system takes place.
- Maintain and operate each injection system to provide protection of groundwater resources.
- If this facility is sold or rented, notify the next owner about the registered injection system.

In the event a substance is spilled which may contaminate groundwater, contact the closest DEQ regional office and ask for the duty officer at the Northwest Region office: (503) 229-5263.

Based on the information you have sent to DEQ, your injection system has qualified as rule authorized under OAR 340-44. If you have any questions about this letter, please contact Barbara Priest at (503) 229-5945, or toll free inside Oregon at 1-800-452-4011.

Sincerely,

Barbara Priest

Barbara Priest
UIC Program Coordinator, Water Quality Division

| DEQ USE ONLY |
|---|
| Registration #: |
| File #: |
| Mail ID #2/#9: |
| DOC Conf.: |
| Note: |

# UNDERGROUND INJECTION CONTROL REGISTRATION

## Storm Water Drainage Systems

DEQ

Oregon Department of Environmental Quality

(see pp. 3 - 4 for detailed instructions)

| DEQ USE ONLY |
|---|
| Received: |
| ☐ IND ☐ DOM ☐ UIC: |
| Notes: |

## A. FACILITY NAME, LOCATION & CONTACT

1. Legal Name: G.S.Roofing Company
2. Common Name: CertainTeed Corporation
3. Facility Physical Address: 6350 NW Front Ave
   City, State, Zip Code: Portland, OR 97210
4. Facility Mailing Address: 6350 NW Front Ave
   City, State, Zip Code: Portland, OR 97210
5. Latitude: 45 degrees 34 minutes 13N seconds Longitude: -122 degrees 44 minutes 37W seconds
6. Facility Contact Name: Anthony Aldridge
   Contact Telephone #: (503)243-5244
   Fax #: (503)248-9271
7. Responsible Official Name: Daniel Pofelski
   Address: 6350 NW Front Avenue
   City, State, Zip Code: Portland, OR 97210

## B. FACILITY DESCRIPTION (ATTACH DOCUMENTS AS NEEDED)

1. SIC code: 2952 or NAICS code: Secondary SIC/NAICS code:
2. Briefly describe the nature of business at this facility: Production of roofing products including asphalt based shingles and rolls.
3. Briefly describe the types of materials, products, and wastes handled at the facility: Heated asphalt, fiberglass rolls, crushed limestone, sand, and zinc. Oil & sludge is recycled.
4. Land use zoning of facility: ☒ Industrial ☐ Commercial ☐ Residential ☐ Other:
5. Drinking water source: Monthly average usage (gal./day): ____ ☒ Public water ☐ Private Well
6. Process water source: Monthly average usage (gal./day): ____ ☒ Public water ☐ Private Well ☐ Recycled or Reclaimed
7. Depth to winter high water table: ____ feet If not available, average depth to groundwater: 10 feet
8. Indicate if present: ☒ UIC spill prevention/response plan ☒ Employee training on spill plan ☐ Plug(s) or block(s) for UIC system
   ☒ Spill clean up supplies: Spill Response Kit ☒ Containment facilities: Berms, dikes, drip pans
9. Maintenance program and schedule for UIC system(s): Monthly maintence of engineering controls, regular cleaning of treatment measures, draining of runoff to systems
10. Does an adequate confinement barrier or filtration medium exist at the site to protect groundwater? ☒ YES ☐ NO ☐ DO NOT KNOW
    If "YES," attach relevant documentation. Roof stormwater drainage only
11. Is connection to or construction of a surface discharging storm sewer feasible? ☒ YES ☐ NO
    If "NO," briefly explain or attach relevant documentation:
12. List any other DEQ or public agency permits applied for or issued to this facility: NPDES #100-J regulating non-contact cooling water, NPDES 1200-Z

## C. UNDERGROUND INJECTION CONTROL INFORMATION – Go to page 2 of this form.

To expedite the registration of your facility, please fill out this form in its entirety.

## D. SIGNATURE OF LEGALLY AUTHORIZED REPRESENTATIVE

I hereby certify that the information contained in this registration is true and correct to the best of my knowledge and belief.

Daniel Pofelski — Name of Legally Authorized Representative (Type or Print)

Plant Operations Manager — Title

Daniel V Pofelski — Signature of Legally Authorized Representative

8/23/01 — Date

UIC REGISTRATION FOR STORM WATER DRAINAGE SYSTEMS

Oregon Department of Environmental Quality

(See pp. 3-4 for detailed instructions)

LEGAL NAME: G.S. Roofing Company

## C. UNDERGROUND INJECTION CONTROL INFORMATION

*Attach a facility map that clearly identifies the location of each UIC system by name or number.*
Provide the information requested below for each UIC storm water drainage system. Attach additional copies of this sheet if necessary.

UIC SYSTEM # or NAME: _____ INSTALLATION DATE: _____

1. Latitude: 45 degrees 34 minutes 13N seconds
   Longitude: -122 degrees 44 minutes 37W seconds
2. Type: ☒ Dry well/sump ☐ Drill hole ☐ Infiltration trench ☐ Other surface discharge
3. Drainage Area: ☒ Roof drain only ☐ Parking area only ☐ Other, specify: _____
4. Distance to nearest: Domestic/public water well: none w/in 100f setbacl
   Wetland: 1000y Surface water(s): 1000 yrd
5. Status: (see instructions for status definition)
   ☐ Planning stage ☐ Under construction ☒ Active ☐ Not in use ☐ Temporarily Abandoned ☐ Permanently Abandoned/Decommissioned (date & method): _____
6. Characteristics:
   Depth: 4 ft Diameter: 2.5 ft
   Design drainage rate: unknown(no design plans)
   Size of impervious area drained: appox. 200 ft. sq.
   Type of treatment prior to discharge: none

UIC SYSTEM # or NAME: _____ INSTALLATION DATE: _____

1. Latitude: ____ degrees ____ minutes ____ seconds
   Longitude: ____ degrees ____ minutes ____ seconds
2. Type: ☐ Dry well/sump ☐ Drill hole ☐ Infiltration trench ☐ Other surface discharge
3. Drainage Area: ☐ Roof drain only ☐ Parking area only ☐ Other, specify: _____
4. Distance to nearest: Domestic/public water well: _____
   Wetland: ____ Surface water(s): _____
5. Status: (see instructions for status definition)
   ☐ Planning stage ☐ Under construction ☐ Active ☐ Not in use ☐ Temporarily Abandoned ☐ Permanently Abandoned/Decommissioned (date & method): _____
6. Characteristics:
   Depth: ____ ft Diameter: ____ ft
   Design drainage rate: _____
   Size of impervious area drained: _____
   Type of treatment prior to discharge: _____

UIC SYSTEM # or NAME: _____ INSTALLATION DATE: _____

1. Latitude: ____ degrees ____ minutes ____ seconds
   Longitude: ____ degrees ____ minutes ____ seconds
2. Type: ☐ Dry well/sump ☐ Drill hole ☐ Infiltration trench ☐ Other surface discharge
3. Drainage Area: ☐ Roof drain only ☐ Parking area only ☐ Other, specify: _____
4. Distance to nearest: Domestic/public water well: _____
   Wetland: ____ Surface water(s): _____
5. Status: (see instructions for status definition)
   ☐ Planning stage ☐ Under construction ☐ Active ☐ Not in use ☐ Temporarily Abandoned ☐ Permanently Abandoned/Decommissioned (date & method): _____
6. Characteristics:
   Depth: ____ ft Diameter: ____ ft
   Design drainage rate: _____
   Size of impervious area drained: _____
   Type of treatment prior to discharge: _____

Oregon

Theodore R. Kulongoski, Governor

Department of Environmental Quality
811 SW Sixth Avenue
Portland, OR 97204-1390
503-229-5696
TTY 503-229-6993

May 2, 2003

Daniel Pofelski
Certainteed
6350 NW Front Avenue
Portland, Oregon 97210

UIC Registration for: G.S. Roofing

Dear Mr. Pofelski:

Thank you for submitting a registration form for the additional Underground Injection Control (UIC) system at your facility. The following table shows your UIC identification number combined with the injection system information you submitted. Generally, each facility is issued one UIC number; the various injection systems at that facility are then identified sequentially -1, -2, -3, etc. Please reference this number in future correspondence and retain this letter, or a copy of it, on site should your facility be inspected.

| UIC # | Type Code | Status | Location |
|---|---|---|---|
| 11079-1 | 5D2 (storm water) | Active | roof |
| 11079-2 | 5D2 | Active | roof |

Please note that you are required to do the following:

- Update registration information whenever a change of ownership, change of land use, or closure of your injection system takes place.
- Maintain and operate each injection system to provide protection of groundwater resources. Failure to do so could jeopardize rule authorized status.
- If this facility is sold or rented, notify the next owner about the registered injection system.

In the event a substance is spilled which may contaminate groundwater, contact the closest DEQ regional office and ask for the duty officer at the Northwest Region office: (503) 229-5263 and call Oregon Emergency Management at (503) 378-6377 or (800) 452-0311.

Based on the information you have sent to DEQ, your injection system has qualified as rule authorized under OAR 340-44. Please check with your local government to see if they have additional requirements. If you have any questions about this letter, please contact me at (503) 229-5945, or toll free inside Oregon at 1-800-452-4011.

Sincerely,

Barbara Priest

Barbara Priest, UIC Program Coordinator
Water Quality Division

cc: Neil Mullane, DEQ NWR
Anthony Aldridge, Certainteed

| DEQ USE ONLY |
|---|
| Registration #: |
| File #: |
| Mail ID #2/#9: |
| DOC Conf.: |
| Notes: |

DEQ

Oregon Department of Environmental Quality

| DEQ USE ONLY |
|---|
| Received: |
| ☐ INC. ☐ DOM. ☐ UIC: |
| Notes: |

# CLASS V PRE-CLOSURE NOTIFICATION FORM

| | |
|---|---|
| 1. Facility Legal Name: G.S. Roofing Company | 2. Common Name: CertainTeed Corporation |
| 3. Facility Physical Address: 6350 NW Front Avenue<br>City, State, Zip Code: Portland, OR 97210 | 4. Facility Mailing Address: 6350 NW Front Avenue<br>City, State, Zip Code: Portland, OR 97214 |
| 5. Name of Owner/Operator: Anthony Aldridge<br>Address: 6350 NW Front Avenue<br>City, State, Zip Code: Portland, OR 97210 | 6. Phone Number: (503)243-5244<br>Fax Number: (503)248-9271<br>e-mail address: anthony.n.aldridge@saint-gobain.com |

7. Legal Contact: Daniel Pofelski Phone Number: (503)243-5236

## FACILITY DESCRIPTION (ATTACH DOCUMENTS AS NEEDED)

1. Latitude: 45 degrees 34 minutes 13N seconds Longitude: -122 degrees 44 minutes 37W seconds
2. Type of UIC System: 502 (see list on page 2)
3. Injection/Disposal System Design (check all that apply):
   - ☒ Drywell or sump ☐ Auto floor drain ☐ Cesspool ☐ Sewer drill hole ☐ Septic tank/drainfield/leachfield ☐ Other
4. Number of injection systems: 1 (with 2 intakes)
5. Year of construction: approx. 1980 Proposed date of injection system closure: March 15, 2003
6. Average flow: * gallons/day *unknown, no design plans
7. Type of closure (check all that apply):
   - ☒ Sample Fluids/sediments
   - ☒ Appropriate disposal of remaining fluids/sediments
   - ☒ Remove contaminated soil
   - ☐ Conversion to other well type
   - ☐ Pump out/fill with rocks and seal
   - ☐ Attach to a municipal system
   - ☐ Clean out
   - ☐ Install permanent plug
   - ☒ Other (describe): Fill w/cement, install new intake system pumped to oil/water separator
8. Attach a brief description of how the injection system will be closed. A sampling plan is required for closures of systems serving auto drains or for industrial use.
   - ☒ Attached
9. List any other DEQ or public agency permits applied for or issued to this facility: NPDES 100-J regulating non-contact cooling water, NPDES 1200-Z

## SIGNATURE OF LEGALLY AUTHORIZED REPRESENTATIVE

I hereby certify that the information contained in this registration is true and correct to the best of my knowledge and belief.

| | |
|---|---|
| Daniel Pofelski | Plant Manager |
| Name of Legally Authorized Representative (type or print) | Title |
| Ø | |
| Signature of Legally Authorized Representative | Date |

April 29, 2003

Mr. Greg Geist
Oregon Department of Environmental Quality
2020 SW Fourth Avenue
Portland, Oregon 97201-4987

Subject: GS Roofing Manufacturing
Portland, Oregon

Dear Mr. Geist

Enclosed please find the Class V Pre-Closure Notification form, Site map, photos, and work plan outlining the closure of two dry wells at GS roofing Company in Portland, Oregon. The dry wells are currently registered with DEQ as two Underground Injection Control (UIC) systems, well identification number 11079-1

The proposed closure of the dry wells includes the following plan:

- Both catch basins to the dry wells and the entire dry well system will be emptied of all material and sediment. One composite sample will be collected from the material and profiled for disposal.

- All removed material will be stored at the Site in a 55-gallon drum until the waste profile can be determined. If the material is determined to contain hazardous waste, it will be removed by Onyx Environmental for proper disposal.

- One discrete soil sample will be collected from the native soils 12" below the base of each dry well (2 samples total) using a hand-operated soil auger. Each sample will be analyzed for thirteen Priority Pollutant metals plus cobalt and magnesium (method 6020), dioxin (method 1613), pesticides/PCB (method 8081/8082), asbestos (PCM), cyanide (method 9010), volatile organic compounds (method 8260), and semi-volatiles (method 82700) by North Creek Analytical. The results will be compared to Oregon DEQ Risk Based Cleanup Levels (OAR 340-122-0205 through -0360) and EPA Region 9 Preliminary Remediation Goals (PRGs). Soils with analytes that exceed applicable cleanup levels will be remediated by removal or other means before decommissioning the dry wells.

- Upon verification that soils beneath the dry wells meet the applicable cleanup levels, the entire dry well system will be filled with cement and closed permanently.

- A new catch basin will be installed in the adjacent area. This new catch basin will be independent of the current storm water collection system, and will be pumped to the oil/water separator to be treated.

- All laboratory analytical data and the drilling invoice will be forwarded to DEQ to document the closure of the dry well, along with a report signed by an Oregon registered Geologist documenting the closure of activities.

GS Roofing would like to begin the fieldwork related to the closure of the dry well by May15,2003. Mobilization will be initiated within one week of your authorization to proceed.

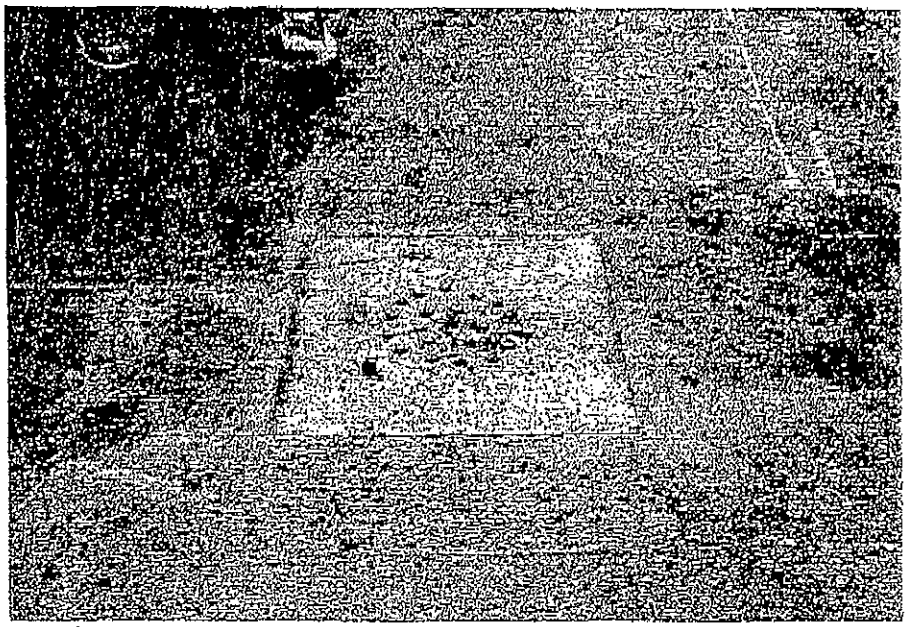
Please feel free to contact me at (503) 243-5244 with comments and questions you may have on the enclosed information.

Sincerely,

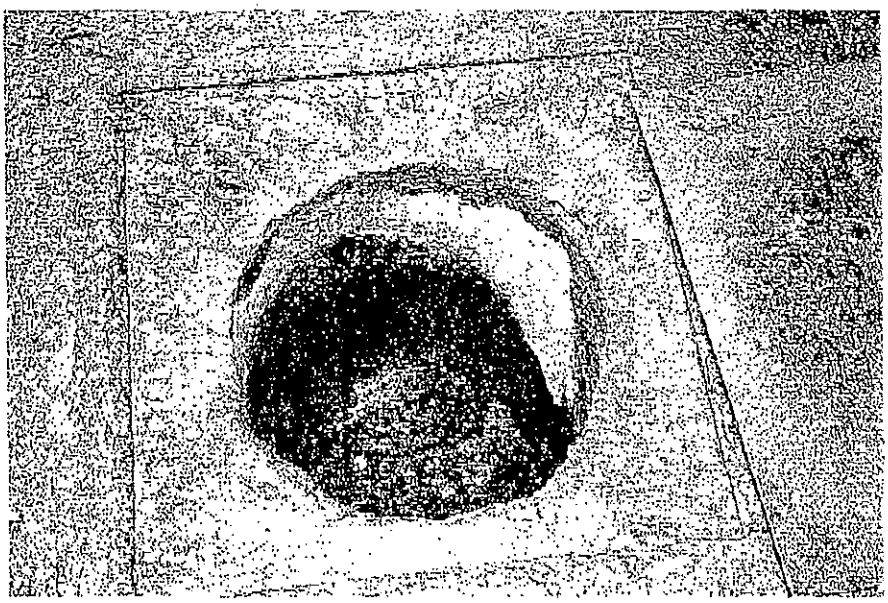
Anthony Aldridge
Safety, Quality, Environmental Manager

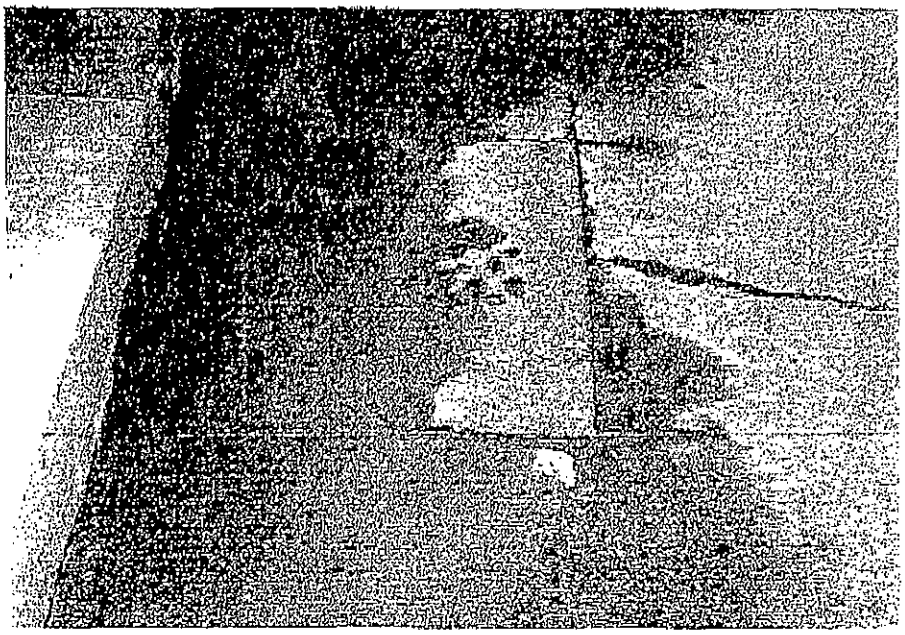
Enclosure

cc: Barbara Priest, UIC Program Coordinator

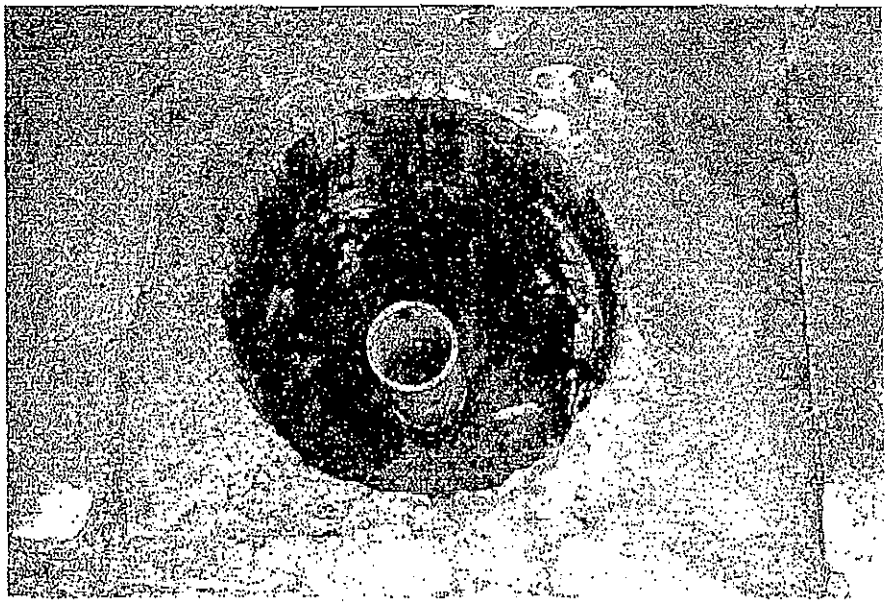


Dry well intake on the west side, with (above) and without (below) the lid on.





Dry well intake on the east side, with (above) and without (below) the lid on.



**forensic**

**rom:** VOSS Alicia <VOSS.Alicia@deq.state.or.us>
**To:** Thomas F. Maguire <forensic@chesco.com>
**Cc:** <Ronald.H.Sanders@saint-gobain.com>; <David.A.Labelle@saint-gobain.com>
**ent:** Friday, March 05, 2004 12:19 PM
**Subject:** RE: GS Roofing - Status Report II

Tom and Nick, received your phone message of yesterday. Go ahead with the UIC closure. The paperwork is fine.
Alicia Voss

-----Original Message-----
**From:** VOSS Alicia
**Sent:** Thursday, March 04, 2004 1:10 PM
**To:** 'Thomas F. Maguire'
**Cc:** 'Ronald.H.Sanders@saint-gobain.com'; 'David.A.Labelle@saint-gobain.com'; PUGH Mark
**Subject:** RE: GS Roofing - Status Report II

Tom, I received the data package for GS Roofing and it looks fine. Please move forward with a final UIC report and closing the dry well. Call with any questions. Thanks. Alicia Voss.

-----Original Message-----
**From:** VOSS Alicia
**Sent:** Wednesday, February 11, 2004 11:26 AM
**To:** 'Thomas F. Maguire'
**Cc:** Ronald.H.Sanders@saint-gobain.com; David.A.Labelle@saint-gobain.com; PUGH Mark
**Subject:** RE: GS Roofing - Status Report II

Tom, other comments on the status report.

Regarding the UIC closure: I'll need lab data with QA/QC discussion before being able to complete the review. The table data is good, but I have to be able to review the whole package before final closure. This should probably be included in UIC closure report. It will be good to keep this source area investigation separate from the rest of the site and a report gives me adequate documentation to complete the administrative closure in several DEQ program areas.

Regarding the site investigation: After taking a brief look at the data collected so far, it appears that site conditions may warrant closer DEQ involvement than what is currently happening. The approach that DEQ is taking for sites in the Portland Harbor has been that if soil/gw/sw contamination is documented that warrants a detailed investigation and exposure pathway assessment, that investigation is conducted under a formal agreement for an RI/FS. The existing site data indicates there are significant concentrations of contaminants in site soil/gw that warrant further investigation. What I suggest at this point is that you complete the gw sampling event/elevation survey and then report the findings. That may be a good time to negotiate the formal agreement, identify data gaps, and determine the next appropriate scope of work. The major items in a scope of work would be to develop information to conduct a source control determination based on ecological screening or risk assessment. Those steps can be confusing, so we want to be able to develop the data which will allow that to happen.

So, after you have collected the gw data, give me a call and we can discuss the next steps and schedule. Thanks. Alicia Voss. 503.229.5011.

-----Original Message-----
**From:** Thomas F. Maguire [mailto:forensic@chesco.com]
**Sent:** Friday, February 06, 2004 11:12 AM
**To:** VOSS Alicia
**Cc:** Ronald.H.Sanders@saint-gobain.com; David.A.Labelle@saint-gobain.com
**Subject:** GS Roofing - Status Report II

Alicia:

Please find attached our electronic status report for the period November 20, 2003 through February 6, 2004. You will notice that based upon our recent sampling, we are moving forward

to close the two dry wells on the site in accordance with applicable UIC regulations. I have two questions regarding the dry well closure: 1) would you like us to hold on abandoning the dry wells until you or the appropriate DEQ representative has an opportunity to review the attached data?; and 2) given the ongoing and prospective interchange between GS Roofing/FES and DEQ, will it be necessary for a Oregon Registered Geologist to sign off on the dry well closure report? Alternatively, I hold a national Professional Geologist Certification (AIPG), two state-specific PG certifications (Pennsylvania and Indiana), I am a Licensed Site Professional in the state of Massachusetts, a Licensed Environmental Professional in the state of Connecticut, a Licensed Subsurface Investigator in New Jersey, and a Certified Risk Assessor in the District of Columbia.

Please call me at (610) 594-3940 or e-mail any questions, comments and/or your response to the above-noted questions.

Sincerely,

Thomas Máguire

--

This message has been scanned for viruses and dangerous content by The CCIS.net MailScanner, and is believed to be clean.

# ATTACHMENT 2

# LABORATORY DATA PACKAGE

Note: Complete copies of the laboratory data packages associated with this report are included as ATTACHMENT I.

# APPENDIX C

# SOIL BORING LOGS

**ACTON • MICKELSON • ENVIRONMENTAL, INC.**

5175 Hillsdale Circle #100
El Dorado Hills, CA 95762

LOG OF BORING

# Dry Well 1

Facility: CertainTeed Roofing

Address: 6350 NW Front
Portland, Oregan

AME Project No.: 90055.01

Area No./ Description: Exterior driveway, adjacent to machine shop



| | | | |
|---|---|---|---|
| Drilling Company: | | Location (East/North): | |
| Drilled By: | Tom Maguire/Jeff Heglie | Ground Surface Elevation: | |
| Drilling Method: | Hand Auger | Water Depth (Date, Time): | |
| Boring Diameter: | 3.5" | Casing Elevation: | |
| Sampling Method: | Hand Auger | Total Depth (feet): | 9.5' BGS |
| | | Weather: | Cool, moist, overcast to fog |
| Drilling Started: | 11/12/03 0800 | Logged By: | J.R. Heglie, R.G., C.E.G. |
| Drilling Finished: | 11/12/03 1130 | Checked By: | J.R. Heglie, R.G., C.E.G. |
| Source: | Original field notes | PID/FID: | PID MiniRAE 2000 |

| DEPTH (feet) | SAMPLE: INTERVAL | SAMPLE: SAMPLE ID | BLOW COUNTS: BLOWS/6 IN. (N) | BLOW COUNTS: IN. REC'D | SOIL DESCRIPTION: SOIL NAME, COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, PARTICLE SIZE RANGE, OTHER | GRAPHIC LOG | SOIL CLASS | COMMENTS: DRILLING RATE AND CONDITIONS, WATER DEPTH, BACKFILL | FIELD PID/FID READING (ppm) |
|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | CONCRETE, open to 1.8'. | | | Open dry well sump to 1.8'. | |
| | | | | | SANDY SILT (ML), dark gayish brown, very loose, moist, 40% sand, 60% fines, 1" layer. | | ML/ | PID note: responding to moisture. | <1 |
| | ■ | | | | POORLY GRADED SAND (SP), dark olive brown (2.5Y 3/3), loose, moist, 100% fine to medium sand, sand upto 1mm, no fines, clean. | | SP | | <1 |
| 5 | | | | | | | | | |
| | | | | | | | | Total Depth = 9.5' | |

**ACTON • MICKELSON • ENVIRONMENTAL, INC.**

5175 Hillsdale Circle #100
El Dorado Hills, CA 95762

LOG OF BORING

# Dry Well 2

Facility: CertainTeed Roofing

Address: 6350 NW Front
Portland, Oregan

AME Project No.: 90055.01

Area No./ Description: Exterior walkway, adjacent to boiler



| | | | |
|---|---|---|---|
| Drilling Company: | | Location (East/North): | |
| Drilled By: | Tom Maguire/Jeff Heglie | Ground Surface Elevation: | |
| Drilling Method: | Hand Auger | Water Depth (Date, Time): | |
| Boring Diameter: | 3.5" | Casing Elevation: | |
| Sampling Method: | Hand Auger | Total Depth (feet): | 10' BGS |
| | | Weather: | Cool, moist, overcast to fog |
| Drilling Started: | 11/12/03 0800 | Logged By: | J.R. Heglie, R.G., C.E.G. |
| Drilling Finished: | 11/12/03 1230 | Checked By: | J.R. Heglie, R.G., C.E.G. |
| Source: | Original field notes | PID/FID: | PID MiniRAE 2000 |

| DEPTH (feet) | SAMPLE: INTERVAL | SAMPLE: SAMPLE ID | BLOW COUNTS: BLOWS/6 IN. (N) | BLOW COUNTS: IN. RECV'D | SOIL DESCRIPTION: SOIL NAME, COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, PARTICLE SIZE RANGE, OTHER | GRAPHIC LOG | SOIL CLASS | COMMENTS: DRILLING RATE AND CONDITIONS, WATER DEPTH, BACKFILL | FIELD PID/FID READING (ppm) |
|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | CONCRETE. | | | Open dry well sump to 3.9'. | |
| 5 | | | | | POORLY GRADED GRAVEL (GP), dark grayish brown (2.5Y 4/2), loose, moist, 90% coarse gravel, 5% fine sand, 5% fines, gravel 2-5cm, subangular to subrounded. | | GP | PID note: responding to moisture. | <1 |
| | | | | | POORLY GRADED SAND (SP), dark olive brown (2.5Y 3/3), loose, moist, 100% fine to medium sand, sand upto 1mm, no fines, clean. | | SP | | <1 |
| 10 | | | | | | | | Total Depth = 10' | |

LOG_OF_BORING 9005501.GPJ ACTON.GDT 12/12/03

**ACTON • MICKELSON • ENVIRONMENTAL, INC.**

5175 Hillsdale Circle #100
El Dorado Hills, CA 95762

# LOG OF BORING

# SB-1

Facility: CertainTeed Roofing

Address: 6350 NW Front
Portland, Oregan

AME Project No.: 90055.01

Area No./ Description: East of shipping building, NE of roof paper storage



| | | | |
|---|---|---|---|
| Drilling Company: | Geotech Exploration | Location (East/North): | |
| Drilled By: | Paul Smith | Ground Surface Elevation: | |
| Drilling Method: | Hollow Stem Auger | Water Depth (Date, Time): | |
| Boring Diameter: | 10" | Casing Elevation: | |
| Sampling Method: | Split Spoon Sampler | Total Depth (feet): | 31.5' BGS |
| | | Weather: | Cool, dusk |
| Drilling Started: | 11/13/03 1648 | Logged By: | B.A. Richardson |
| Drilling Finished: | 11/14/03 0819 | Checked By: | J.R. Heglie, R.G., C.E.G. |
| Source: | Original field notes | PID/FID: | PID MiniRAE 2000 |

| DEPTH (feet) | SAMPLE INTERVAL | SAMPLE ID | BLOW COUNTS BLOWS/6 IN. (N) | IN. RECV'D | SOIL DESCRIPTION: SOIL NAME, COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, PARTICLE SIZE RANGE, OTHER | GRAPHIC LOG | SOIL CLASS | COMMENTS: DRILLING RATE AND CONDITIONS, WATER DEPTH, BACKFILL | FIELD PID/FID READING (ppm) |
|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | ASPHALT. | | | Hand augered to 4 feet bgs. | |
| | | | | | POORLY GRADED GRAVEL (GP), aggregate base. | | GP | | |
| | | | | | NOT LOGGED. | | | | |
| 5 | X | | 7-26-34 (60) | 3 | SILTY SAND WITH GRAVEL (SM), dense, moist, 55-60% fine sand, 25-30% silt, 15-20% gravels angular with fresh fracture (possibly broken by auger and spoon), hydrocarbon odor, fining downward. | | SM | (Fill) | 7.8 |
| | X | | 4-6-10 (16) | 12 | | | | | 7.2 |
| | | | | | SANDY SILT (ML), wet, 55-60% silt, 30-35% fine to medium sand, trace gravel, plant fragments, hydrocarbon odor, (organic silt?). | | ML | (Fill) | |
| 10 | | | | | stiff, barbed wire came up with auger plug, 1 foot long. | | | | |
| | X | | 3-4-6 (10) | 17 | SILTY SAND (SM), wet, 70-75% fine sand, 15-20% silt, 10-15% clay, trace rounded gravel. | | SM | (Fill) | |
| | X | | | 16 | SANDY SILT (ML), stiff, 65-70% silt, 30-35% fine sand, charcoal. | | ML | (Fill) | |
| 15 | X | | 6-4-1 (5) | | SILTY SAND (SM), 70-75% fine sand, 20-25% silt, approximately 5% clay, multiple stiff silt layers <1" thick. | | SM | (Fill) | |
| | X | | 1-3-4 (7) | 18 | POORLY GRADED SAND (SP), dark gray (5Y 4/1), wet, 95% fine to medium sand (shingle aggregate is 15-20% of sand fraction), <5% silt, trace organics (root/twig). 3" silt layer. | | SP | (Fill) | 0.5 |
| 20 | | | | | | | | | |

**ACTON • MICKELSON • ENVIRONMENTAL, INC.**

5175 Hillsdale Circle #100
El Dorado Hills, CA 95762

LOG OF BORING

# SB-1

Facility: CertainTeed Roofing

Address: 6350 NW Front
Portland, Oregan

AME Project No.: 90055.01

Area No./ Description: East of shipping building, NE of roof paper storage



| DEPTH (feet) | SAMPLE INTERVAL | SAMPLE ID | BLOW COUNTS BLOWS/6 IN. (N) | IN. RECV'D | SOIL DESCRIPTION: SOIL NAME, COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, PARTICLE SIZE RANGE, OTHER | GRAPHIC LOG | SOIL CLASS | COMMENTS: DRILLING RATE AND CONDITIONS, WATER DEPTH, BACKFILL | FIELD PID/FID READING (ppm) |
|---|---|---|---|---|---|---|---|---|---|
| 20 | X | | 3-2-2 (4) | 18 | | | | | 0 |
| | | | | | SILT (ML/MH), very stiff, moist, 2 mm thick dark brown layer with high percentage of organics. white coating in fractures. soft. | | ML/MH | | |
| | | | | | wet, irridescent at contact. | | | | |
| 25 | X | | 3-2-2 (4) | | ELASTIC SILT (MH/ML), grayish brown (2.5Y 5/2), stiff, moist, >90% silt, <10% fine sand, trace clay, mottled 10YR 5/6. | | | | 0 |
| 30 | X | | 1-2-3 (5) | | dark gray (5Y 4/1), stiff, moist, small organic leaf stems/roots with white coating cast, charcoal, large wood fragments. | | | | 0 |
| | | | | | | | | Total Depth = 31.5' backfill with bentonite to 1.5' BGS, concrete to grade | |

**ACTON • MICKELSON • ENVIRONMENTAL, INC.**

5175 Hillsdale Circle #100
El Dorado Hills, CA 95762

# LOG OF BORING

# SB-2

Facility: CertainTeed Roofing

Address: 6350 NW Front
Portland, Oregan

AME Project No.: 90055.01

Area No./ Description: Upper loading dock, SW end



| | | | |
|---|---|---|---|
| Drilling Company: | Geotech Exploration | Location (East/North): | |
| Drilled By: | Paul Smith | Ground Surface Elevation: | |
| Drilling Method: | Hollow Stem Auger | Water Depth (Date, Time): | |
| Boring Diameter: | 10" | Casing Elevation: | |
| Sampling Method: | Split Spoon Sampler | Total Depth (feet): | 31.5' BGS |
| | | Weather: | Sunny, cool |
| Drilling Started: | 11/12/03 1617 | Logged By: | B.A. Richardson |
| Drilling Finished: | 11/13/03 1020 | Checked By: | J.R. Heglie, R.G., C.E.G. |
| Source: | Original field notes | PID/FID: | PID MiniRAE 2000 |

| DEPTH (feet) | SAMPLE INTERVAL | SAMPLE ID | BLOW COUNTS BLOWS/6 IN. (N) | IN. RECV'D | SOIL DESCRIPTION (SOIL NAME, COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, PARTICLE SIZE RANGE, OTHER) | GRAPHIC LOG | SOIL CLASS | COMMENTS (DRILLING RATE AND CONDITIONS, WATER DEPTH, BACKFILL) | FIELD PID/FID READING (ppm) |
|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | ASPHALT. | | | Hand augered to 4 feet bgs. | |
| | | | | | POORLY GRADED GRAVEL (GP), aggregate base. | | GP | | |
| | | | | | NOT LOGGED. | | | 1627 Augers catching. Gearbox breaks. | |
| 5 | | | 14-11-10 (21) | 0 | SILT (ML), black (5Y 2.5/1), gravels with chips of red brick. | | ML | (Fill) | |
| 10 | | | 2-6-8 (14) | 4 | SILTY GRAVEL (GM), mix of angular and rounded gravel with chunks of concrete and coarse sand, brown silt. | | GM | Auger chatter. (Fill) | 0.3 |
| | | | 4-5-2 (7) | 9 | layered sands, gravels, and silt as distinct 2-3" layers. | | | | 5.8 |
| 15 | | | | | SILT (ML), dark gray (5Y 4/1), wet. | | ML | | |
| | | | 6-6-7 (13) | 12 | 70-75% silt, 25-30% fine sand, odor from cuttings. | | | Sheen noted on wet silt. | 0.5 |
| | | SB-2-16.5 | | | POORLY GRADED SAND (SP), wet, 90-95% fine to medium sand, 5-10% fines. | | SP | | |
| | | SB-2-17 | 1-1-1 (2) | 15 | | | | | 19.7 |
| | | | 0 (18") | 18 | SILT (ML/MH), soft grades to medium stiff, wet, >95% silt, trace fine sand. | | ML/MH | | |
| 20 | | | | | | | | | |

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5175 Hillsdale Circle #100
El Dorado Hills, CA 95762

LOG OF BORING

# SB-2

Facility: CertainTeed Roofing

Address: 6350 NW Front
Portland, Oregan

AME Project No.: 90055.01

Area No./ Description: Upper loading dock, SW end



| DEPTH (feet) | SAMPLE INTERVAL | SAMPLE ID | BLOW COUNTS BLOWS/6 IN. (N) | IN. RECV'D | SOIL DESCRIPTION: SOIL NAME, COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, PARTICLE SIZE RANGE, OTHER | GRAPHIC LOG | SOIL CLASS | COMMENTS: DRILLING RATE AND CONDITIONS, WATER DEPTH, BACKFILL | FIELD PID/FID READING (ppm) |
|---|---|---|---|---|---|---|---|---|---|
| 20 | X | | 0 (18") | 18 | SILT (ML/MH), soft grades to medium stiff, wet, >95% silt, trace fine sand. | | | | 38.2 |
| 25 | X | | | 18 | gray (2.5Y 5/1), moist, gray mottled orange-brown. | | | | 0.8 |
| 30 | X | | | 18 | dark gray (2.5Y 4/1), not mottled. | | | | 0 |

Total Depth = 31.5'
backfill with bentonite to 1.5' BGS, concrete to grade

**ACTON • MICKELSON • ENVIRONMENTAL, INC.**

5175 Hillsdale Circle #100
El Dorado Hills, CA 95762

# LOG OF BORING

# SB-3

Facility: CertainTeed Roofing

Address: 6350 NW Front
Portland, Oregan

AME Project No.: 90055.01

Area No./ Description: Upper loading dock, Northern end centered east-west



| | | | |
|---|---|---|---|
| Drilling Company: | Geotech Exploration | Location (East/North): | |
| Drilled By: | Paul Smith | Ground Surface Elevation: | |
| Drilling Method: | Hollow Stem Auger | Water Depth (Date, Time): | |
| Boring Diameter: | 10" | Casing Elevation: | |
| Sampling Method: | Split Spoon Sampler | Total Depth (feet): | 31.5' BGS |
| | | Weather: | Sunny |
| Drilling Started: | 11/13/03 1355 | Logged By: | B.A. Richardson |
| Drilling Finished: | 11/13/03 1518 | Checked By: | J.R. Heglie, R.G., C.E.G. |
| Source: | Original field notes | PID/FID: | PID MiniRAE 2000 |

| DEPTH (feet) | SAMPLE INTERVAL | SAMPLE ID | BLOW COUNTS BLOWS/6 IN. (N) | IN. REC'D | SOIL DESCRIPTION: SOIL NAME, COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, PARTICLE SIZE RANGE, OTHER | GRAPHIC LOG | SOIL CLASS | COMMENTS: DRILLING RATE AND CONDITIONS, WATER DEPTH, BACKFILL | FIELD PID/FID READING (ppm) |
|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | ASPHALT. | | | Hand augered to 4 feet bgs. | |
| | | | | | POORLY GRADED GRAVEL (GP), aggregate base. | | GP | | |
| | | | | | NOT LOGGED. | | | | |
| | | | | | | | | Auger chatter. | |
| 5 | | | 3-12-50(4") | 10 | SANDY SILT (ML), black (5Y 2.5/1), moist, 55-60% silt, 25-30% fine to coarse sand, 10-15% gravels, rounded and angular. | | ML | Pea gravel in cuttings, chips of concrete in shoe. (Fill) | 0.1 |
| | | | | | | | | metal band labeled "Band-It" 1/2 i.e. 1/2" height band | |
| | | | | | 4" medium to coarse sand with chipped fine gravel stained (?) notably darker black pieces of red brick. | | | | |
| 10 | | | 8-9-7 (16) | 10 | | | | | 0.6 |
| | | | | | 2" medium to coarse sand with chipped fine gravel stained (?) notably darker black pieces of red brick. | | | | |
| | | | 12-10-9 (19) | 13 | POORLY GRADED SAND (SP), dark olive brown (2.5Y 3/3), >95% fine to medium sand, <5% fines. | | SP | (Fill) | 0.1 |
| 15 | | | | | black (5Y 2.5/1), 15% of sand fraction is red, green, and white shingle aggregate, asphalt blebs to 2" diameter. | | | | |
| | | | 29-5-4 (9) | 15 | dark olive brown (2.5Y 3/3). | | | | 0 |
| | | | 9-5-4 (9) | 14 | wet. | | | Sampler wet. | |
| | | | 7-2-2 (4) | 17 | SILTY SAND (SM), olive brown (2.5Y 4/3), loose, moist, 65-70% fine to medium sand, 30-35% silt, trace clay, roots, charcoal, fining downward. | | SM | | |
| 20 | | | | | | | | | |

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5175 Hillsdale Circle #100
El Dorado Hills, CA 95762

LOG OF BORING

# SB-3

Facility: CertainTeed Roofing

Address: 6350 NW Front
Portland, Oregan

AME Project No.: 90055.01

Area No./ Description: Upper loading dock, Northern end centered east-west



| DEPTH (feet) | SAMPLE INTERVAL | SAMPLE ID | BLOW COUNTS BLOWS/6 IN. (N) | IN. REC'D | SOIL DESCRIPTION: SOIL NAME, COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, PARTICLE SIZE RANGE, OTHER | GRAPHIC LOG | SOIL CLASS | COMMENTS: DRILLING RATE AND CONDITIONS, WATER DEPTH, BACKFILL | FIELD PID/FID READING (ppm) |
|---|---|---|---|---|---|---|---|---|---|
| 20 | X | | 2-2-3 (5) | 18 | SILT (ML), brown, 10-15% fine sand. | | | | 0 |
| | | | | | SILT WITH SAND (ML), dark gray (5Y 4/1), soft, 65-70% silt, 25-30% fine sand, <10% clay, mottled 5Y 4/4, micaceous. | | ML | | |
| | | | | | wet. | | | | |
| 25 | X | | 2-5-7 (12) | 15 | SILTY SAND (SM), olive brown (2.5Y 4/3), loose, wet, 65-70% fine sand, 25-30% silt, <5% clay, top 2" with gray alternations, charcoal, micaceous. | | SM | | 0 |
| | | | | | POORLY GRADED SAND (SP), very dark gray (5Y 3/1), wet, >95% fine to medium sand, <5% fines, micaceous. | | SP | | |
| 30 | X | | 1-2-2 (4) | | ELASTIC SILT (MH), olive brown (2.5Y 4/3), stiff, moist, 90-95% silt, 5% clay, trace fine sand, charcoal, micaceous. | | MH | | 0 |
| | | | | | dark gray (5Y 4/1), stiff, root (black). | | | Total Depth = 31.5' backfill with bentonite to 1.5' BGS, concrete to grade | |

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5175 Hillsdale Circle #100
El Dorado Hills, CA 95762

# LOG OF BORING

# SB-4

Facility: CertainTeed Roofing

Address: 6350 NW Front
Portland, Oregan

AME Project No.: 90055.01

Area No./ Description: West of loading dock



| | | | |
|---|---|---|---|
| Drilling Company: | Geotech Exploration | Location (East/North): | |
| Drilled By: | Paul Smith | Ground Surface Elevation: | |
| Drilling Method: | Hollow Stem Auger | Water Depth (Date, Time): | |
| Boring Diameter: | 10" | Casing Elevation: | |
| Sampling Method: | Split Spoon Sampler | Total Depth (feet): | 31.5' BGS |
| | | Weather: | Overcast, cool |
| Drilling Started: | 11/14/03 1254 | Logged By: | B.A. Richardson |
| Drilling Finished: | 11/14/03 1410 | Checked By: | J.R. Heglie, R.G., C.E.G. |
| Source: | Original field notes | PID/FID: | PID MiniRAE 2000 |

| DEPTH (feet) | SAMPLE: INTERVAL | SAMPLE: SAMPLE ID | BLOW COUNTS: BLOWS/6 IN. (N) | BLOW COUNTS: IN. RECV'D | SOIL DESCRIPTION: SOIL NAME, COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, PARTICLE SIZE RANGE, OTHER | GRAPHIC LOG | SOIL CLASS | COMMENTS: DRILLING RATE AND CONDITIONS, WATER DEPTH, BACKFILL | FIELD PID/FID READING (ppm) |
|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | ASPHALT. | | | Hand augered to 4 feet bgs. | |
| | | | | | POORLY GRADED GRAVEL (GP), aggregate base. | | GP | | |
| | | | | | NOT LOGGED. | | | | |
| 5 | X | | 13-10-9 (19) | 9 | POORLY GRADED SAND (SP), dark olive brown (2.5Y 3/3), dense, 90-95% fine tp medium sand, 5-10% silt, micaceous. | | SP | (Fill) | 0 |
| 10 | X | | 5-21-5 (26) | 5 | gravel to sand sized crushed concrete, asphaltic concrete and tar in shoe. | | | | |
| | X | | 5 | 0 | wet. | | | Sampler wet. | |
| | X | | 9-8-8 (16) | 0 | 5"x2" piece of sheet metal in cuttings. dark black sediment on top of wood in sampler. chunk of wood filling and sticking out of shoe. | | | sheen on sampler shoe | |
| 15 | X | | 5-5-5 (10) | 0 | | | | | |
| | X | | 2-2-2 (4) | 15 | wet, red, green, and white shingle aggregate is 20% of sand fraction, wood fragments and black residue on top of sample interval. | | | water with sheen inside sampler | |
| | X | | | | SILTY SAND (SM/ML), dark gray (2.5Y 4/1), 45-50% fine sand, 45-55% silt. | | SM/ML | | 0 |
| 20 | | | | | | | | | |

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5175 Hillsdale Circle #100
El Dorado Hills, CA 95762

LOG OF BORING

# SB-4

Facility: CertainTeed Roofing

Address: 6350 NW Front
Portland, Oregan

AME Project No.: 90055.01

Area No./ Description: West of loading dock



| DEPTH (feet) | SAMPLE INTERVAL | SAMPLE ID | BLOW COUNTS BLOWS/6 IN. (N) | IN. RECV'D | SOIL DESCRIPTION: SOIL NAME, COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, PARTICLE SIZE RANGE, OTHER | GRAPHIC LOG | SOIL CLASS | COMMENTS: DRILLING RATE AND CONDITIONS, WATER DEPTH, BACKFILL | FIELD PID/FID READING (ppm) |
|---|---|---|---|---|---|---|---|---|---|
| 20 | X | | 0-1-1 (2) | 18 | SILT (ML/MH), dark gray (2.5Y 4/1), stiff, moist, 90-95% silt, <10% fine sand, trace clay, intervals of dark gray alternations. <1" layer of fine sand. | | ML/MH | | |
| | | | | | 1" layer of fine sand. | | | | |
| 25 | X | | 0-1-1 (2) | 10 | moist, no dark gray alternations, micaceous. grayish brown (2.5Y 5/2), stiff, mottled with 10YR 5/6. | | | | |
| 30 | X | | 1-1-1 (2) | | wet interval with high percentage of fine sand. dark gray (2.5Y 4/1), stiff to very stiff, moist, rootlets, white coating as casts and fracture fill. | | | Total Depth = 31.5' backfill with bentonite to 1.5' BGS, concrete to grade | |

**ACTON • MICKELSON • ENVIRONMENTAL, INC.**

5175 Hillsdale Circle #100
El Dorado Hills, CA 95762

# LOG OF BORING

# SB-5

Facility: CertainTeed Roofing

Address: 6350 NW Front
Portland, Oregan

AME Project No.: 90055.01

Area No./ Description: Approximately 20' East of suspected underground storage tank



| | | | |
|---|---|---|---|
| Drilling Company: | Geotech Exploration | Location (East/North): | |
| Drilled By: | Paul Smith | Ground Surface Elevation: | |
| Drilling Method: | Hollow Stem Auger | Water Depth (Date, Time): | |
| Boring Diameter: | 10" | Casing Elevation: | |
| Sampling Method: | Split Spoon Sampler | Total Depth (feet): | 31.5' BGS |
| | | Weather: | Overcast, cool |
| Drilling Started: | 11/14/03 1005 | Logged By: | B.A. Richardson |
| Drilling Finished: | 11/14/03 1116 | Checked By: | J.R. Heglie, R.G., C.E.G. |
| Source: | Original field notes | PID/FID: | PID MiniRAE 2000 |

| DEPTH (feet) | SAMPLE: INTERVAL | SAMPLE: SAMPLE ID | BLOW COUNTS: BLOWS/6 IN. (N) | BLOW COUNTS: IN. REC'D | SOIL DESCRIPTION: SOIL NAME, COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, PARTICLE SIZE RANGE, OTHER | GRAPHIC LOG | SOIL CLASS | COMMENTS: DRILLING RATE AND CONDITIONS, WATER DEPTH, BACKFILL | FIELD PID/FID READING (ppm) |
|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | CONCRETE. | | | Hand augered to 4 feet bgs. | |
| | | | | | POORLY GRADED SAND (SP), dark olive brown (2.5Y 3/3), loose, 90-95% fine to medium sand, <10% fines. | | SP | (Fill). Logged from hand auger cuttings. | |
| 5 | X | | 4-2-2 (4) | 13 | | | | | 11.3 |
| | | | | | dark gray (5Y 4/1), moist. | | | Odor in gray fill. | |
| | | | | | micaceous. | | | | |
| 10 | X | | 1-3-3 (6) | 16 | | | | | 0 |
| | X | | 2-2-2 (4) | 14 | | | | Cuttings have odor. | 0 |
| | | | | | mostly wood in cuttings. | | | | |
| | X | | 2-3-5 (8) | 18 | dark olive brown (2.5Y 3/3), wet. | | | | 0 |
| 15 | X | | 1-4-4 (8) | | | | | | |
| 20 | | | | | | | | | |

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5175 Hillsdale Circle #100
El Dorado Hills, CA 95762

LOG OF BORING

# SB-5

Facility: CertainTeed Roofing

Address: 6350 NW Front
Portland, Oregan

AME Project No.: 90055.01

Area No./ Description: Approximately 20' East of suspected underground storage tank



| DEPTH (feet) | SAMPLE INTERVAL | SAMPLE ID | BLOW COUNTS BLOWS/6 IN. (N) | IN. RECV'D | SOIL DESCRIPTION: SOIL NAME, COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, PARTICLE SIZE RANGE, OTHER | GRAPHIC LOG | SOIL CLASS | COMMENTS: DRILLING RATE AND CONDITIONS, WATER DEPTH, BACKFILL | FIELD PID/FID READING (ppm) |
|---|---|---|---|---|---|---|---|---|---|
| 20 | X | | 2-8-13 (21) | | very dark gray (5Y 3/1), micaceous. | | | | 0.6 |
| | | | | | SILTY SAND (SM), olive brown (2.5Y 4/4), moist, 60-65% fine sand, 30-35% silt, <10% clay, rootlets, trace <2 mm diameter charcoal. | | SM | | |
| 25 | X | | 2-1-2 (3) | 4 | POORLY GRADED SAND (SP), wet. | | | Sampler wet. | 0 |
| 30 | X | | 0-2-2 (4) | 18 | SILT (ML/MH), olive brown (2.5Y 4/4), stiff, moist, 85-90% silt, 5-10% fine sand, <5% clay. gray mottled olive-gray. | | ML/MH | | 0 |
| | | | | | | | | Total Depth = 31.5' backfill with bentonite to 1.5' BGS, concrete to grade | |

**ACTON • MICKELSON • ENVIRONMENTAL, INC.**

5175 Hillsdale Circle #100
El Dorado Hills, CA 95762

# LOG OF BORING

# MW-11

Facility: CertainTeed Roofing

Address: 6350 NW Front
Portland, Oregan

AME Project No.: 90055.01

Area No./ Description: Loading dock



| | | | |
|---|---|---|---|
| Drilling Company: | Geotech Exploration | Location (East/North): | |
| Drilled By: | | Ground Surface Elevation: | |
| Drilling Method: | Hollow Stem Auger | Water Depth (Date, Time): | |
| Boring Diameter: | 10" | Casing Elevation: | |
| Sampling Method: | Split Spoon Sampler | Total Depth (feet): | 31.5' BGS |
| | | Weather: | Cool, cloudy |
| Drilling Started: | 11/11/03 1431 | Logged By: | B.A. Richardson |
| Drilling Finished: | 11/11/03 1600 | Checked By: | J.R. Heglie, R.G., C.E.G. |
| Source: | Original field notes | PID/FID: | PID MiniRAE 2000 |

| DEPTH (feet) | SAMPLE INTERVAL | SAMPLE ID | BLOWS/6 IN. (N) | IN. RECV'D | SOIL DESCRIPTION (SOIL NAME, COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, PARTICLE SIZE RANGE, OTHER) | GRAPHIC LOG | SOIL CLASS | COMMENTS (DRILLING RATE AND CONDITIONS, WATER DEPTH, BACKFILL) | FIELD PID/FID READING (ppm) |
|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | ASPHALT. | | | Hand augered to 4 feet bgs. | |
| | | | | | POORLY GRADED GRAVEL (GP), aggregate base. | | GP | | |
| | | | | | NOT LOGGED. | | | Shingle pieces in cuttings. | |
| 5 | X | | 8-12-25 (37) | 18 | SILTY SAND (SM), bluish black (10B 2.5/1), medium dense, 75-80% fine to medium sand, 15-20% silt, 5% clay, micaceous, 15-20% of sand fraction is red, green, and white shingle aggregate, shingle strips. | | SM | (Fill) | |
| | | | | | | | | Solid tar/asphalt. PID note: Responding to moisture. | 31 |
| 10 | X | | 5-6-8 (14) | 18 | | | | | 8.0 |
| | ■ | MW-11-11.25 | | | POORLY GRADED SAND (SP), bluish black (10B 2.5/1), loose, wet, fill, 90-95% fine to medium sand (15-20% of sand fraction is green, red, and white shingle aggregate), 5-10% fines, micaceous. wet. | | SP | | |
| | X | | 2-4-3 (7) | 18 | | | | (Fill) | 30.8 |
| 15 | X | | 3-7-5 (12) | 15 | | | | | 11.6 |
| 20 | | | | | | | | | |

**ACTON • MICKELSON • ENVIRONMENTAL, INC.**

5175 Hillsdale Circle #100
El Dorado Hills, CA 95762

LOG OF BORING

# MW-11

Facility: CertainTeed Roofing

Address: 6350 NW Front
Portland, Oregan

AME Project No.: 90055.01

Area No./ Description: Loading dock



| DEPTH (feet) | SAMPLE INTERVAL | SAMPLE ID | BLOW COUNTS BLOWS/6 IN. (N) | IN. REC'D | SOIL DESCRIPTION: SOIL NAME, COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, PARTICLE SIZE RANGE, OTHER | GRAPHIC LOG | SOIL CLASS | COMMENTS: DRILLING RATE AND CONDITIONS, WATER DEPTH, BACKFILL | FIELD PID/FID READING (ppm) |
|---|---|---|---|---|---|---|---|---|---|
| 20 | X | | 5-5-8 (13) | 1 | ELASTIC SILT (MH), dark yellowish brown (10YR 4/4) grades to grayish brown (10YR 5/2), stiff, slightly moist, 95-99% silt, slightly micaceous. mottled with reddish yellow (7.5YR 6/6). 2" sandy silt, wet. | | MH | | 3.6 |
| 25 | X | MW-11-26.25 | | 11 | SILT (ML), dark gray (5Y 4/1), soft, moist, 85-90% silt, 10% clay, trace fine sand, black poorly graded sand ball with orange brown rind, organics (roots). | | ML | | 5.6 |
| 30 | X | | 3-3-3 (6) | 11 | ELASTIC SILT (MH/ML), dark yellowish brown (10YR 4/4), soft, moist, 85-90% silt, 10% clay, trace fine sand. | | | | 46.5 |
| | | | | | POORLY GRADED SAND WITH SILT (SP-SM), 90% fine to medium sand, 10% fines. | | SP-SM | | |
| | | | | | SILT (ML), very dark gray (7.5YR 3/1), wet, 85-90% silt, 10-15% clay, trace fine sand. | | ML | Total Depth = 31.5' | |

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5175 Hillsdale Circle #100
El Dorado Hills, CA 95762

# LOG OF BORING

# MW-12

Facility: CertainTeed Roofing

Address: 6350 NW Front
Portland, Oregan

AME Project No.: 90055.01

Area No./ Description: Loading dock



| | | | |
|---|---|---|---|
| Drilling Company: | Geotech Exploration | Location (East/North): | |
| Drilled By: | | Ground Surface Elevation: | |
| Drilling Method: | Hollow Stem Auger | Water Depth (Date, Time): | |
| Boring Diameter: | 10" | Casing Elevation: | |
| Sampling Method: | Split Spoon Sampler | Total Depth (feet): | 33' BGS |
| | | Weather: | Overcast, cool, breezy |
| Drilling Started: | 11/11/03 1038 | Logged By: | B.A. Richardson |
| Drilling Finished: | 11/11/03 1145 | Checked By: | J.R. Heglie, R.G., C.E.G. |
| Source: | Original field notes | PID/FID: | PID MiniRAE 2000 |

| DEPTH (feet) | SAMPLE: INTERVAL | SAMPLE: SAMPLE ID | BLOW COUNTS: BLOWS/6 IN. (N) | BLOW COUNTS: IN. RECV'D | SOIL DESCRIPTION: SOIL NAME, COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, PARTICLE SIZE RANGE, OTHER | GRAPHIC LOG | SOIL CLASS | COMMENTS: DRILLING RATE AND CONDITIONS, WATER DEPTH, BACKFILL | FIELD PID/FID READING (ppm) |
|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | ASPHALT. | | | Hand augered to 4 feet bgs. | |
| | | | | | POORLY GRADED GRAVEL (GP), aggregate base. | | GP | | |
| | | | | | NOT LOGGED. | | | | |
| 5 | X | | 5-13-13 (26) | 18 | POORLY GRADED SAND (SP), bluish black (10B 2.5/1), moist, 90-95% sand, 5% silt, <5% clay, 30-40% of sand fraction is red, green, and white shingle aggregate, 2"x0.25" strips of shingles. | | SP | (Fill) PID note: Responding to moisture. | 2.4 |
| 10 | X | | 6-10-10 (20) | 18 | 8" clay lense. | | | | 220 |
| 15 | X | | 8-15-12 (27) | 8 | wet. | | | | 68.1 |
| 20 | | | | | | | | | |

LOG_OF_BORING 9005501.GPJ ACTON.GDT 12/12/03

**ACTON • MICKELSON • ENVIRONMENTAL, INC.**

5175 Hillsdale Circle #100
El Dorado Hills, CA 95762

LOG OF BORING

# MW-12

Facility: CertainTeed Roofing

Address: 6350 NW Front
Portland, Oregan

AME Project No.: 90055.01

Area No./ Description: Loading dock



| DEPTH (feet) | SAMPLE INTERVAL | SAMPLE ID | BLOW COUNTS BLOWS/6 IN. (N) | IN. RECV'D | SOIL DESCRIPTION: SOIL NAME, COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, PARTICLE SIZE RANGE, OTHER | GRAPHIC LOG | SOIL CLASS | COMMENTS: DRILLING RATE AND CONDITIONS, WATER DEPTH, BACKFILL | FIELD PID/FID READING (ppm) |
|---|---|---|---|---|---|---|---|---|---|
| 20 | | | 0-3-3 (6) | 18 | | | | | 20.3 |
| | | MW-12-20.5 | | | ELASTIC SILT (MH), brown (10YR 4/3), very soft, moist, >95% silt, micaceous. | | MH | | |
| 25 | | | 6-9-5 (14) | 3 | 80-85% clay, 10-15% silt, <5% fine sand. | | | | |
| 30 | | | 20-19-15 (34) | 0 | | | | Apparent slough in sampler. | |
| | | | 3-3-6 (9) | 13 | SILT (ML), olive gray (5Y 4/2), soft, wet, 85-95% silt, 10% clay, <5% fine sand, minor to trace roots and charcoal, wood fragments trace but throughout recovered sample interval. | | ML | Total Depth = 33' | 15 |

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5175 Hillsdale Circle #100
El Dorado Hills, CA 95762

# LOG OF BORING

# MW-13

Facility: CertainTeed Roofing

Address: 6350 NW Front
Portland, Oregan

AME Project No.: 90055.01

Area No./ Description: Upper loading dock, North side



| | | | |
|---|---|---|---|
| Drilling Company: | Geotech Exploration | Location (East/North): | |
| Drilled By: | Arturo | Ground Surface Elevation: | |
| Drilling Method: | Hollow Stem Auger | Water Depth (Date, Time): | |
| Boring Diameter: | 10" | Casing Elevation: | |
| Sampling Method: | Split Spoon Sampler | Total Depth (feet): | 34' BGS |
| | | Weather: | Sunny, Cool, ~55° F |
| Drilling Started: | 11/12/03 1340 | Logged By: | B.A. Richardson |
| Drilling Finished: | 11/12/03 1512 | Checked By: | J.R. Heglie, R.G., C.E.G. |
| Source: | Original field notes | PID/FID: | PID MiniRAE 2000 |

| DEPTH (feet) | SAMPLE INTERVAL | SAMPLE ID | BLOW COUNTS BLOWS/6 IN. (N) | IN. RECV'D | SOIL DESCRIPTION: SOIL NAME, COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, PARTICLE SIZE RANGE, OTHER | GRAPHIC LOG | SOIL CLASS | COMMENTS: DRILLING RATE AND CONDITIONS, WATER DEPTH, BACKFILL | FIELD PID/FID READING (ppm) |
|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | ASPHALT. | | | Hand augered to 4 feet bgs. | |
| | | | | | POORLY GRADED GRAVEL (GP), aggregate base. | | GP | | |
| | | | | | NOT LOGGED. | | | | |
| 5 | | | 7-5-2 (7) | 6 | POORLY GRADED GRAVEL WITH SAND (GP), very dark gray (2.5Y 3/1), loose, moist, 80-85% coarse sand, very angular, most likely broken by auger (fresh fracture), 5-10% gravels, 5-10% fines. | | GP | (Fill) | 0 |
| 10 | | | 0-1-2 (3) | 8 | SILT (ML), very dark gray (2.5Y 3/1), moist, 75-80% silt, 10-15% fine to medium sand, angular, trace gravel, flat and angular, <5% clay. | | ML | 1 blow first 12" | 0 |
| 15 | | MW-13-15 | 2-3-2 (5) | 10 | very soft, wet. | | | | |
| | | | 2-21-7 (28) | | | | | | |
| | | | | | POORLY GRADED SAND (SP), dark olive brown (2.5Y 3/3), loose, approximately 95% fine to medium sand, <5% fines, trace gravel. | | SP | | |
| 20 | | | | | | | | | |

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5175 Hillsdale Circle #100
El Dorado Hills, CA 95762

LOG OF BORING

# MW-13

Facility: CertainTeed Roofing

Address: 6350 NW Front
Portland, Oregan

AME Project No.: 90055.01

Area No./ Description: Upper loading dock, North side



| DEPTH (feet) | SAMPLE INTERVAL | SAMPLE ID | BLOW COUNTS BLOWS/6 IN. (N) | IN. RECV'D | SOIL DESCRIPTION: SOIL NAME, COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, PARTICLE SIZE RANGE, OTHER | GRAPHIC LOG | SOIL CLASS | COMMENTS: DRILLING RATE AND CONDITIONS, WATER DEPTH, BACKFILL | FIELD PID/FID READING (ppm) |
|---|---|---|---|---|---|---|---|---|---|
| 20 | X | | 4-7-5 (12) | | POORLY GRADED SAND (SP), dark olive brown (2.5Y 3/3), loose, approximately 95% fine to medium sand, <5% fines, trace gravel. | | | | 0 |
| 25 | ■ X | MW-13-25 | 4-6-7 (13) | | 4.5" silt lense. | | | | 0 |
| 30 | X | | 1-4-7 (11) | | | | | | 0 |
| | | | | | | | | Total Depth = 34' | |

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5175 Hillsdale Circle #100
El Dorado Hills, CA 95762

# LOG OF BORING

# MW-14

Facility: CertainTeed Roofing

Address: 6350 NW Front
Portland, Oregan

AME Project No.: 90055.01

Area No./ Description: Upper loading dock, Southern side



| | | | |
|---|---|---|---|
| Drilling Company: | Geotech Exploration | Location (East/North): | |
| Drilled By: | Paul Smith | Ground Surface Elevation: | |
| Drilling Method: | Hollow Stem Auger | Water Depth (Date, Time): | |
| Boring Diameter: | 10" | Casing Elevation: | |
| Sampling Method: | Split Spoon Sampler | Total Depth (feet): | 34' BGS |
| | | Weather: | Foggy, cool |
| Drilling Started: | 11/12/03 0951 | Logged By: | B.A. Richardson |
| Drilling Finished: | 11/12/03 1148 | Checked By: | J.R. Heglie, R.G., C.E.G. |
| Source: | Original field notes | PID/FID: | PID MiniRAE 2000 |

| DEPTH (feet) | SAMPLE INTERVAL | SAMPLE ID | BLOW COUNTS BLOWS/6 IN. (N) | IN. RECV'D | SOIL DESCRIPTION: SOIL NAME, COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, PARTICLE SIZE RANGE, OTHER | GRAPHIC LOG | SOIL CLASS | COMMENTS: DRILLING RATE AND CONDITIONS, WATER DEPTH, BACKFILL | FIELD PID/FID READING (ppm) |
|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | ASPHALT. | | | Hand augered to 4 feet bgs. | |
| | | | | | POORLY GRADED GRAVEL (GP), aggregate base. | | GP | | |
| | | | | | NOT LOGGED. | | | | |
| 5 | | | 3-2-2 (4) | 3 | LEAN CLAY (CL), black (5Y 2.5/1) grades to dark gray (5Y 4/1), very soft, moist, 95% clay, trace fine sand, trace silt. | | CL | (Fill) | 9.8 |
| | | | | | CLAYEY SAND (SC), cuttings show mixture of coarse sands, gravels, chunks of broken concrete, approximately 45% gray/black clay. | | SC | Rig jumping on fill material. | |
| 10 | | | 7-38-6 (44) | 8 | | | | | 1.2 |
| | | | | | concrete chips in tip of shoe. | | | Auger jumping on fill material. | |
| 15 | | MW-14-15 | 5-2-3 (5) | 6 | wet. | | | Free water on outside of sampler. | |
| | | | | | fill becoming less prevalent, silt and clay predominant. | | | | |
| | | MW-14-16 | | | soft. | | | | |
| | | MW-14-16.5 | 10-8-11 (19) | 9 | wood fragments. | | | | |
| | | MW-14-18 | | | | | | | |
| | | | | | ELASTIC SILT (MH), very dark gray (5Y 3/1), soft, 85-90% silt, approximately 10% clay, trace well rounded gravel, micaceous. | | MH | | |
| 20 | | | | | | | | | |

LOG_OF_BORING 9005501.GPJ ACTON.GDT 12/17/03

**ACTON • MICKELSON • ENVIRONMENTAL, INC.**

5175 Hillsdale Circle #100
El Dorado Hills, CA 95762

LOG OF BORING

# MW-14

Facility: CertainTeed Roofing

Address: 6350 NW Front
Portland, Oregan

AME Project No.: 90055.01

Area No./ Description: Upper loading dock, Southern side



| DEPTH (feet) | SAMPLE INTERVAL | SAMPLE ID | BLOW COUNTS BLOWS/6 IN. (N) | IN. RECV'D | SOIL DESCRIPTION: SOIL NAME, COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, PARTICLE SIZE RANGE, OTHER | GRAPHIC LOG | SOIL CLASS | COMMENTS: DRILLING RATE AND CONDITIONS, WATER DEPTH, BACKFILL | FIELD PID/FID READING (ppm) |
|---|---|---|---|---|---|---|---|---|---|
| 20 | | | | | ELASTIC SILT (MH), very dark gray (5Y 3/1), soft, 85-90% silt, approximately 10% clay, trace well rounded gravel, micaceous. | | | Drilling is steady and smooth, no evidence of fill by auger chatter/jumping. | |
| 25 | X | | 3-2-2 (4) | 9 | dark grayish brown (10YR 4/2), stiff, moist, approximately 90% silt, approximately 10% medium to coarse sand, coarse sands subangular to rounded, micaceous. | | | | 0 |
| | | | | | SILTY SAND (SM), dark olive brown (2.5Y 3/3), loose, wet, 75-80% fine to medium sand, 15-20% silt. | | SM | | |
| 30 | X | | 4-5-7 (12) | 14 | POORLY GRADED SAND (SP), dark olive brown (2.5Y 3/3), loose, wet, clean sand. | | SP | | 0 |
| | X | | 2-4-6 (10) | 18 | | | | | 0 |
| | | | | | | | | Total Depth = 34' | |

# APPENDIX D

# MONITORING WELL CONSTRUCTION DIAGRAMS

# MONITORING WELL CONSTRUCTION DIAGRAM

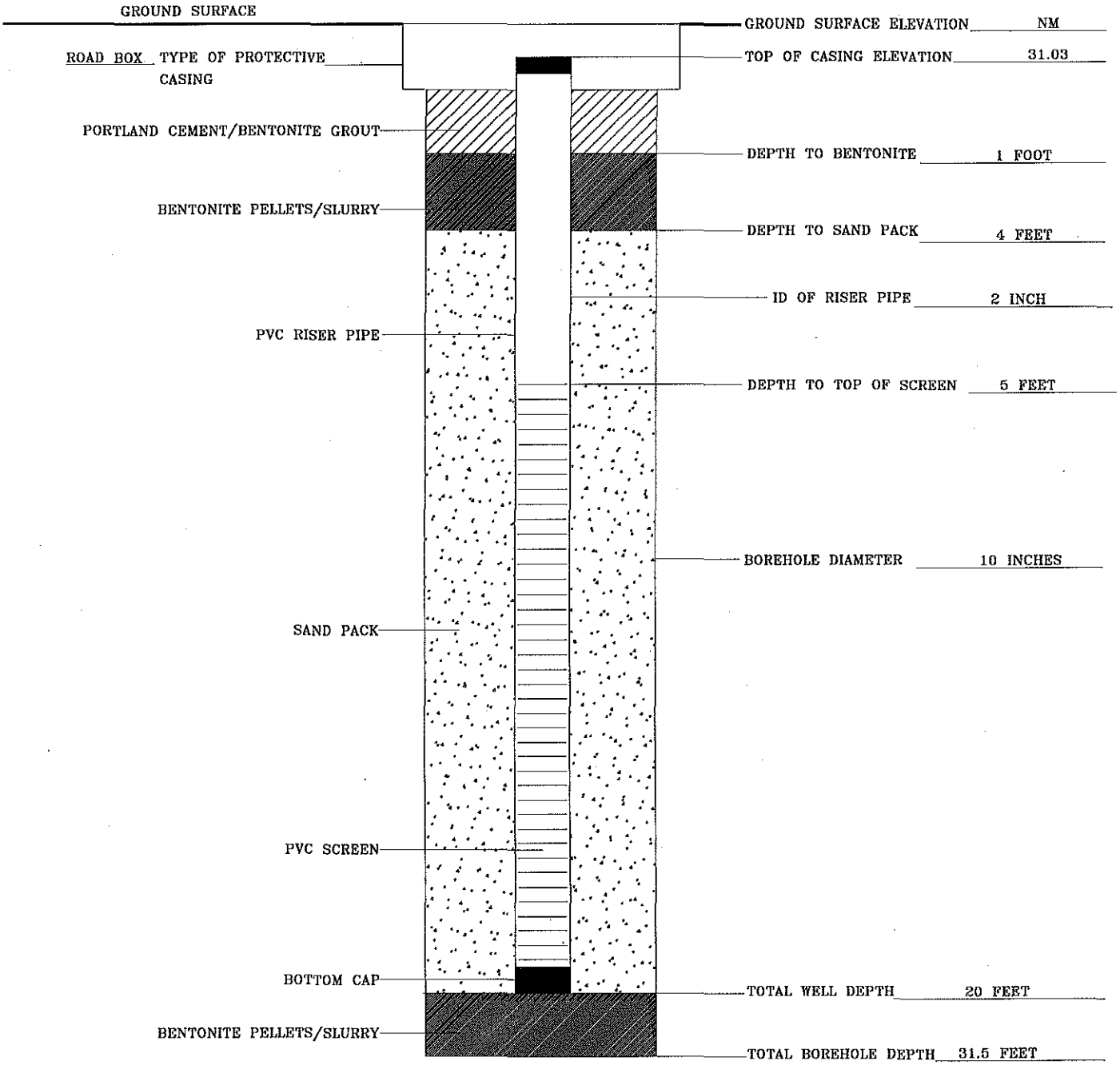
GS ROOFING PRODUCTS
PORTLAND, OREGON

DATE OF INSTALLATION: NOVEMBER 11, 2003

DRILLING COMPANY: GEOTECH EXPLORATION

WELL DESIGNATION: MW-11

WELL DESCRIPTION: GROUND-WATER MONITORING




MW-11.DWG

# MONITORING WELL CONSTRUCTION DIAGRAM

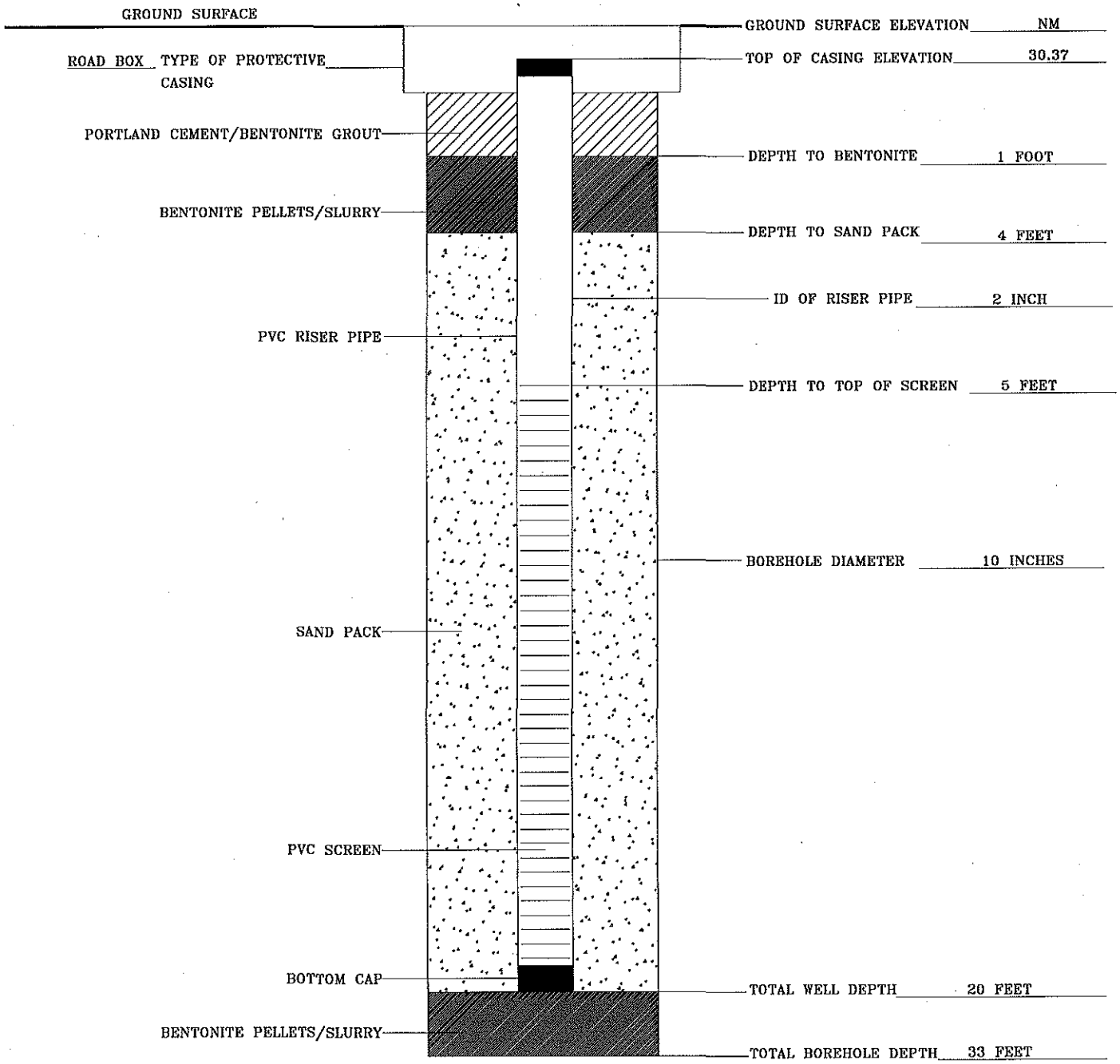
GS ROOFING PRODUCTS
PORTLAND, OREGON

DATE OF INSTALLATION: NOVEMBER 11, 2003

DRILLING COMPANY: GEOTECH EXPLORATION

WELL DESIGNATION: MW-12

WELL DESCRIPTION: GROUND-WATER MONITORING




MW-12.DWG

# MONITORING WELL CONSTRUCTION DIAGRAM

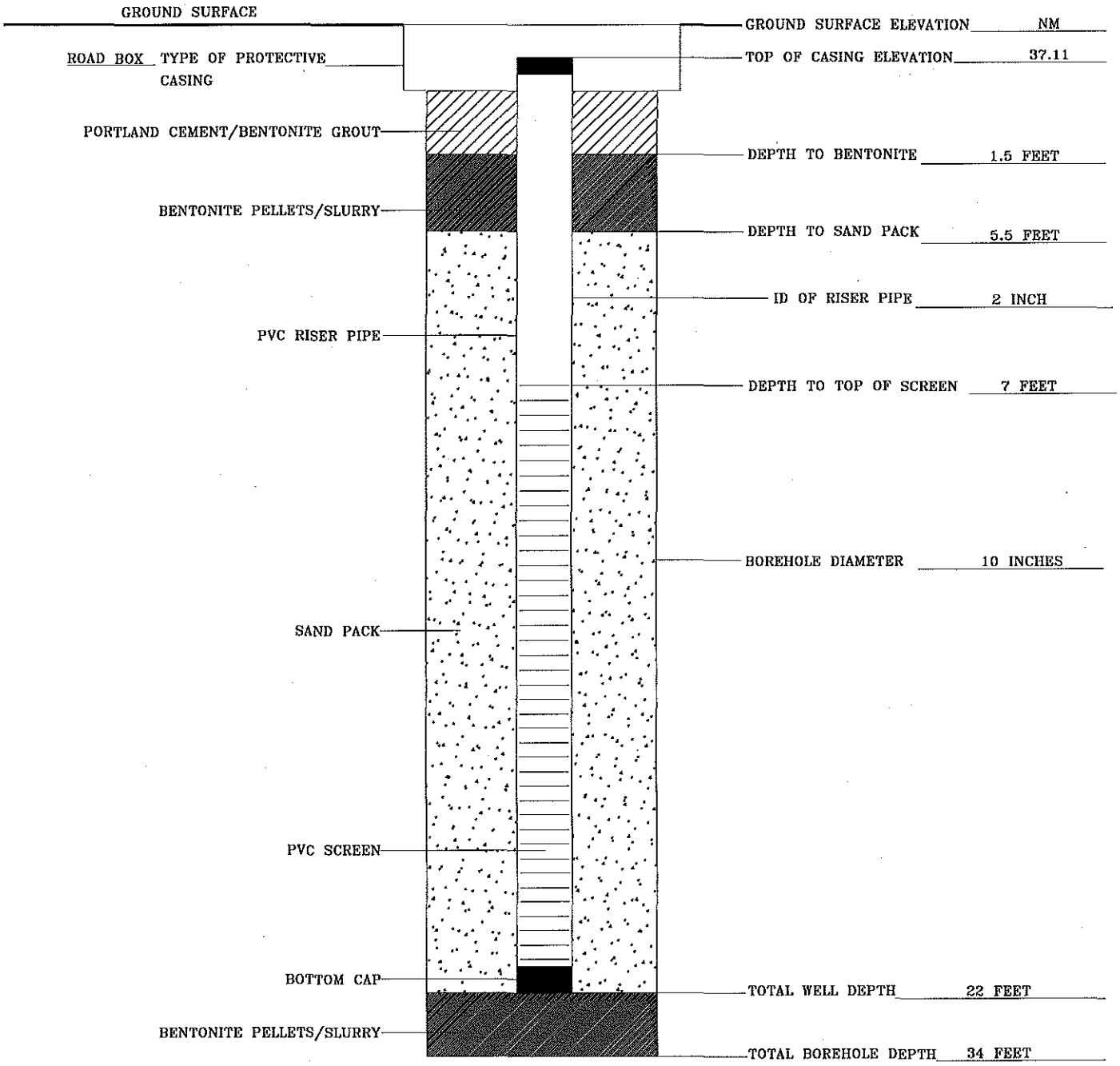
GS ROOFING PRODUCTS
PORTLAND, OREGON

DATE OF INSTALLATION: NOVEMBER 12, 2003

DRILLING COMPANY: GEOTECH EXPLORATION

WELL DESIGNATION: MW-13

WELL DESCRIPTION: GROUND-WATER MONITORING




MW-13.DWG

# MONITORING WELL CONSTRUCTION DIAGRAM

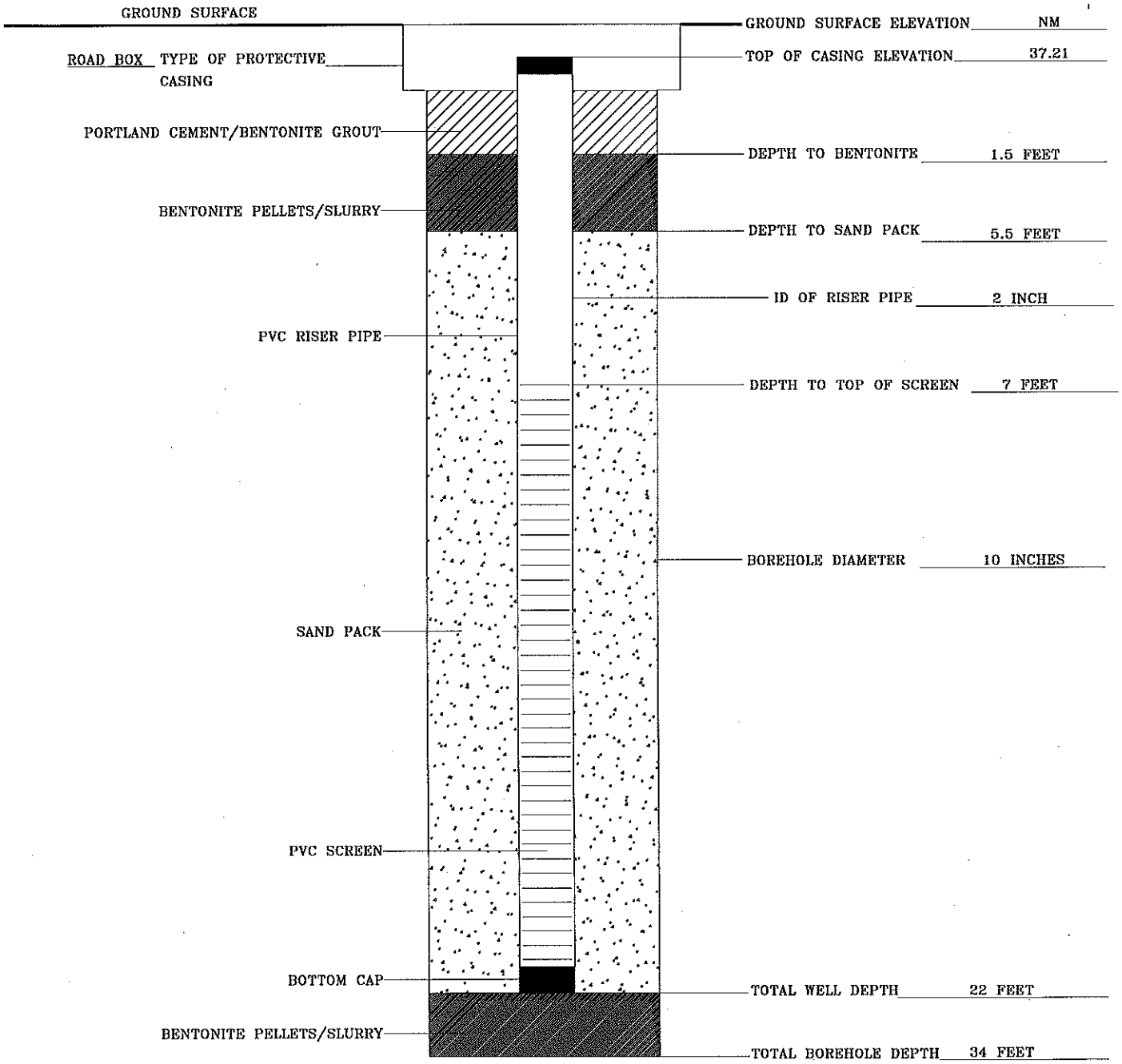
GS ROOFING PRODUCTS
PORTLAND, OREGON

DATE OF INSTALLATION: NOVEMBER 12, 2003

DRILLING COMPANY: GEOTECH EXPLORATION

WELL DESIGNATION: MW-14

WELL DESCRIPTION: GROUND-WATER MONITORING




MW-14.DWG

# APPENDIX E

# HYDRAULIC CONDUCTIVITY DATA AND SUMMARY GRAPHS

# SLUG TEST

**MW-1** date: 8/25/04

| START PUMP (SLUG OUT) Time | Transducer Reading (feet) | Elasped Time (min) | Draw down (feet) |
|---|---|---|---|
| 11:28:58 | 3.72 | | |
| 11:30:00 | 2.25 | 0.58 | 1.47 |

| START TEST Time | Transducer Reading (feet) | Elasped Time (min) | Draw down (feet) |
|---|---|---|---|
| 11:30:00 | 2.25 | 0.00 | 1.47 |
| 11:30:01 | 2.80 | 0.02 | 0.92 |
| 11:30:02 | 3.09 | 0.03 | 0.63 |
| 11:30:03 | 3.27 | 0.05 | 0.45 |
| 11:30:04 | 3.39 | 0.07 | 0.33 |
| 11:30:05 | 3.46 | 0.08 | 0.26 |
| 11:30:06 | 3.49 | 0.10 | 0.23 |
| 11:30:07 | 3.52 | 0.12 | 0.20 |
| 11:30:08 | 3.55 | 0.13 | 0.17 |
| 11:30:09 | 3.56 | 0.15 | 0.16 |
| 11:30:10 | 3.57 | 0.17 | 0.15 |
| 11:30:11 | 3.59 | 0.18 | 0.13 |
| 11:30:12 | 3.60 | 0.20 | 0.12 |
| 11:30:13 | 3.61 | 0.22 | 0.11 |
| 11:30:14 | 3.62 | 0.23 | 0.10 |
| 11:30:15 | 3.62 | 0.25 | 0.10 |
| 11:30:16 | 3.63 | 0.27 | 0.09 |
| 11:30:17 | 3.62 | 0.28 | 0.10 |
| 11:30:18 | 3.64 | 0.30 | 0.08 |
| 11:30:19 | 3.64 | 0.32 | 0.08 |
| 11:30:20 | 3.64 | 0.33 | 0.08 |
| 11:30:21 | 3.64 | 0.35 | 0.08 |
| 11:30:22 | 3.64 | 0.37 | 0.08 |
| 11:30:23 | 3.65 | 0.38 | 0.07 |
| 11:30:24 | 3.66 | 0.40 | 0.06 |
| 11:30:25 | 3.66 | 0.42 | 0.06 |
| 11:30:26 | 3.66 | 0.43 | 0.06 |
| 11:30:27 | 3.66 | 0.45 | 0.06 |
| 11:30:28 | 3.66 | 0.47 | 0.06 |
| 11:30:29 | 3.66 | 0.48 | 0.06 |
| 11:30:30 | 3.66 | 0.50 | 0.06 |
| 11:30:31 | 3.67 | 0.52 | 0.05 |
| 11:30:32 | 3.66 | 0.53 | 0.06 |
| 11:30:33 | 3.67 | 0.55 | 0.05 |
| 11:30:34 | 3.67 | 0.57 | 0.05 |
| 11:30:35 | 3.68 | 0.58 | 0.04 |
| 11:30:36 | 3.68 | 0.60 | 0.04 |
| 11:30:37 | 3.67 | 0.62 | 0.05 |
| 11:30:38 | 3.66 | 0.63 | 0.06 |
| 11:30:39 | 3.66 | 0.65 | 0.06 |
| 11:30:40 | 3.68 | 0.67 | 0.04 |

| TEST (cont.) Time | Transducer Reading (feet) | Elasped Time (min) | Draw down (feet) |
|---|---|---|---|
| 11:30:41 | 3.67 | 0.68 | 0.05 |
| 11:30:42 | 3.67 | 0.70 | 0.05 |
| 11:30:43 | 3.67 | 0.72 | 0.05 |
| 11:30:44 | 3.68 | 0.73 | 0.04 |
| 11:30:45 | 3.69 | 0.75 | 0.03 |
| 11:30:46 | 3.67 | 0.77 | 0.05 |
| 11:30:47 | 3.67 | 0.78 | 0.05 |
| 11:30:48 | 3.69 | 0.80 | 0.03 |
| 11:30:49 | 3.68 | 0.82 | 0.04 |
| 11:30:50 | 3.68 | 0.83 | 0.04 |
| 11:30:51 | 3.68 | 0.85 | 0.04 |
| 11:30:52 | 3.67 | 0.87 | 0.05 |
| 11:30:53 | 3.69 | 0.88 | 0.03 |
| 11:30:54 | 3.68 | 0.90 | 0.04 |
| 11:30:55 | 3.69 | 0.92 | 0.03 |
| 11:30:56 | 3.68 | 0.93 | 0.04 |
| 11:30:57 | 3.69 | 0.95 | 0.03 |
| 11:30:58 | 3.69 | 0.97 | 0.03 |
| 11:30:59 | 3.68 | 0.98 | 0.04 |
| 11:31:00 | 3.69 | 1.00 | 0.03 |
| 11:31:01 | 3.69 | 1.02 | 0.03 |
| 11:31:02 | 3.69 | 1.03 | 0.03 |
| 11:31:03 | 3.69 | 1.05 | 0.03 |
| 11:31:04 | 3.69 | 1.07 | 0.03 |
| 11:31:05 | 3.69 | 1.08 | 0.03 |
| 11:31:06 | ~~3.14~~ | 1.10 | |
| 11:31:07 | 3.68 | 1.12 | 0.04 |
| 11:31:08 | 3.69 | 1.13 | 0.03 |
| 11:31:09 | 3.69 | 1.15 | 0.03 |
| 11:31:10 | 3.68 | 1.17 | 0.04 |
| 11:31:11 | 3.69 | 1.18 | 0.03 |
| 11:31:12 | 3.69 | 1.20 | 0.03 |
| 11:31:13 | 3.68 | 1.22 | 0.04 |
| 11:31:14 | 3.69 | 1.23 | 0.03 |
| 11:31:15 | 3.69 | 1.25 | 0.03 |
| 11:31:16 | 3.69 | 1.27 | 0.03 |
| 11:31:17 | 3.70 | 1.28 | 0.02 |
| 11:31:18 | 3.69 | 1.30 | 0.03 |
| 11:31:19 | 3.69 | 1.32 | 0.03 |
| 11:31:20 | 3.69 | 1.33 | 0.03 |
| 11:31:21 | 3.70 | 1.35 | 0.02 |

END TEST

# SLUG TEST

**MW-11** date: 8/25/04

| START PUMP (SLUG OUT) Time | Transducer Reading (feet) | Elasped Time (min) | Draw down (feet) |
|---|---|---|---|
| 13:01:58 | 9.26 | | |
| 13:02:33 | 8.38 | 0.58 | 0.88 |

| START TEST Time | Transducer Reading (feet) | Elasped Time (min) | Draw down (feet) |
|---|---|---|---|
| 13:02:33 | 8.38 | 0.00 | 0.88 |
| 13:02:34 | 8.46 | 0.02 | 0.80 |
| 13:02:35 | 8.68 | 0.03 | 0.58 |
| 13:02:36 | 8.83 | 0.05 | 0.43 |
| 13:02:37 | 8.85 | 0.07 | 0.41 |
| 13:02:38 | 8.89 | 0.08 | 0.37 |
| 13:02:39 | 8.91 | 0.10 | 0.35 |
| 13:02:40 | 8.92 | 0.12 | 0.34 |
| 13:02:41 | 8.93 | 0.13 | 0.33 |
| 13:02:42 | 8.94 | 0.15 | 0.32 |
| 13:02:43 | 8.96 | 0.17 | 0.30 |
| 13:02:44 | 8.96 | 0.18 | 0.30 |
| 13:02:45 | 8.98 | 0.20 | 0.28 |
| 13:02:46 | 8.99 | 0.22 | 0.27 |
| 13:02:47 | 9.00 | 0.23 | 0.26 |
| 13:02:48 | 9.00 | 0.25 | 0.26 |
| 13:02:49 | 9.02 | 0.27 | 0.24 |
| 13:02:50 | 9.01 | 0.28 | 0.25 |
| 13:02:51 | 9.03 | 0.30 | 0.23 |
| 13:02:52 | 9.06 | 0.32 | 0.20 |
| 13:02:53 | 9.06 | 0.33 | 0.20 |
| 13:02:54 | 9.06 | 0.35 | 0.20 |
| 13:02:55 | 9.06 | 0.37 | 0.20 |
| 13:02:56 | 9.07 | 0.38 | 0.19 |
| 13:02:57 | 9.07 | 0.40 | 0.19 |
| 13:02:58 | 9.08 | 0.42 | 0.18 |
| 13:02:59 | 9.09 | 0.43 | 0.17 |
| 13:03:00 | 9.07 | 0.45 | 0.19 |
| 13:03:01 | 9.09 | 0.47 | 0.17 |
| 13:03:02 | 9.09 | 0.48 | 0.17 |
| 13:03:03 | 9.10 | 0.50 | 0.16 |
| 13:03:04 | 9.10 | 0.52 | 0.16 |
| 13:03:05 | 9.10 | 0.53 | 0.16 |
| 13:03:06 | 9.11 | 0.55 | 0.15 |
| 13:03:07 | 9.11 | 0.57 | 0.15 |
| 13:03:08 | 9.12 | 0.58 | 0.14 |
| 13:03:09 | 9.12 | 0.60 | 0.14 |
| 13:03:10 | 9.12 | 0.62 | 0.14 |
| 13:03:11 | 9.13 | 0.63 | 0.13 |
| 13:03:12 | 9.14 | 0.65 | 0.12 |

| TEST (cont.) Time | Transducer Reading (feet) | Elasped Time (min) | Draw down (feet) |
|---|---|---|---|
| 13:03:13 | 9.13 | 0.67 | 0.13 |
| 13:03:14 | 9.14 | 0.68 | 0.12 |
| 13:03:15 | 9.15 | 0.70 | 0.11 |
| 13:03:16 | 9.15 | 0.72 | 0.11 |
| 13:03:17 | 9.16 | 0.73 | 0.10 |
| 13:03:18 | 9.15 | 0.75 | 0.11 |
| 13:03:19 | 9.15 | 0.77 | 0.11 |
| 13:03:20 | 9.16 | 0.78 | 0.10 |
| 13:03:21 | 9.17 | 0.80 | 0.09 |
| 13:03:22 | 9.16 | 0.82 | 0.10 |
| 13:03:23 | 9.17 | 0.83 | 0.09 |
| 13:03:24 | 9.17 | 0.85 | 0.09 |
| 13:03:25 | 9.17 | 0.87 | 0.09 |
| 13:03:26 | 9.17 | 0.88 | 0.09 |
| 13:03:27 | 9.17 | 0.90 | 0.09 |
| 13:03:28 | 9.18 | 0.92 | 0.08 |
| 13:03:29 | 9.18 | 0.93 | 0.08 |
| 13:03:30 | 9.19 | 0.95 | 0.07 |
| 13:03:31 | 9.18 | 0.97 | 0.08 |
| 13:03:32 | 9.18 | 0.98 | 0.08 |
| 13:03:33 | 9.18 | 1.00 | 0.08 |
| 13:03:34 | 9.19 | 1.02 | 0.07 |
| 13:03:35 | 9.19 | 1.03 | 0.07 |
| 13:03:36 | 9.20 | 1.05 | 0.06 |
| 13:03:37 | 9.19 | 1.07 | 0.07 |
| 13:03:38 | 9.20 | 1.08 | 0.06 |
| 13:03:39 | 9.20 | 1.10 | 0.06 |
| 13:03:40 | 9.21 | 1.12 | 0.05 |
| 13:03:41 | 9.20 | 1.13 | 0.06 |
| 13:03:42 | 9.20 | 1.15 | 0.06 |
| 13:03:43 | 9.21 | 1.17 | 0.05 |
| 13:03:44 | 9.22 | 1.18 | 0.04 |
| 13:03:45 | 9.20 | 1.20 | 0.06 |
| 13:03:46 | 9.21 | 1.22 | 0.05 |
| 13:03:47 | 9.21 | 1.23 | 0.05 |
| 13:03:48 | 9.21 | 1.25 | 0.05 |
| 13:03:49 | 9.20 | 1.27 | 0.06 |
| 13:03:50 | 9.20 | 1.28 | 0.06 |
| 13:03:51 | 9.21 | 1.30 | 0.05 |
| 13:03:52 | 9.21 | 1.32 | 0.05 |

**SLUG TEST**

**MW-11** date: 8/25/04

| TEST (cont.) Time | Transducer Reading (feet) | Elasped Time (min) | Draw down (feet) |
|---|---|---|---|
| 13:03:53 | 9.22 | 1.33 | 0.04 |
| 13:03:54 | 9.20 | 1.35 | 0.06 |
| 13:03:55 | 9.20 | 1.37 | 0.06 |
| 13:03:56 | 9.20 | 1.38 | 0.06 |
| 13:03:57 | 9.21 | 1.40 | 0.05 |
| 13:03:58 | 9.21 | 1.42 | 0.05 |
| 13:03:59 | 9.22 | 1.43 | 0.04 |
| 13:04:00 | 9.22 | 1.45 | 0.04 |
| 13:04:01 | 9.22 | 1.47 | 0.04 |
| 13:04:02 | 9.21 | 1.48 | 0.05 |
| 13:04:03 | 9.21 | 1.50 | 0.05 |
| 13:04:04 | 9.22 | 1.52 | 0.04 |
| 13:04:05 | 9.22 | 1.53 | 0.04 |
| 13:04:06 | 9.22 | 1.55 | 0.04 |
| 13:04:07 | 9.21 | 1.57 | 0.05 |
| 13:04:08 | 9.23 | 1.58 | 0.03 |
| 13:04:09 | 9.22 | 1.60 | 0.04 |
| 13:04:10 | 9.22 | 1.62 | 0.04 |
| 13:04:11 | 9.22 | 1.63 | 0.04 |
| 13:04:12 | 9.22 | 1.65 | 0.04 |
| 13:04:13 | 9.22 | 1.67 | 0.04 |
| 13:04:14 | 9.22 | 1.68 | 0.04 |
| 13:04:15 | 9.22 | 1.70 | 0.04 |
| 13:04:16 | 9.24 | 1.72 | 0.02 |
| 13:04:17 | 9.23 | 1.73 | 0.03 |
| 13:04:18 | 9.24 | 1.75 | 0.02 |
| 13:04:19 | 9.24 | 1.77 | 0.02 |
| 13:04:20 | 9.25 | 1.78 | 0.01 |
| 13:04:21 | 9.23 | 1.80 | 0.03 |
| 13:04:22 | 9.24 | 1.82 | 0.02 |
| 13:04:23 | 9.23 | 1.83 | 0.03 |
| 13:04:24 | 9.24 | 1.85 | 0.02 |
| 13:04:25 | 9.23 | 1.87 | 0.03 |
| 13:04:26 | 9.24 | 1.88 | 0.02 |
| 13:04:27 | 9.24 | 1.90 | 0.02 |
| 13:04:28 | 9.23 | 1.92 | 0.03 |
| 13:04:29 | 9.24 | 1.93 | 0.02 |
| 13:04:30 | 9.24 | 1.95 | 0.02 |
| 13:04:31 | 9.23 | 1.97 | 0.03 |
| 13:04:32 | 9.25 | 1.98 | 0.01 |
| 13:04:33 | 9.24 | 2.00 | 0.02 |
| 13:04:34 | 9.25 | 2.02 | 0.01 |
| 13:04:35 | 9.24 | 2.03 | 0.02 |
| 13:04:36 | 9.23 | 2.05 | 0.03 |
| 13:04:37 | 9.23 | 2.07 | 0.03 |
| 13:04:38 | 9.24 | 2.08 | 0.02 |

| TEST (cont.) Time | Transducer Reading (feet) | Elasped Time (min) | Draw down (feet) |
|---|---|---|---|
| 13:04:39 | 9.24 | 2.10 | 0.02 |
| 13:04:40 | 9.24 | 2.12 | 0.02 |
| 13:04:41 | 9.24 | 2.13 | 0.02 |
| 13:04:42 | 9.24 | 2.15 | 0.02 |
| 13:04:43 | 9.24 | 2.17 | 0.02 |
| 13:04:44 | 9.23 | 2.18 | 0.03 |
| 13:04:45 | 9.23 | 2.20 | 0.03 |
| 13:04:46 | 9.24 | 2.22 | 0.02 |
| 13:04:47 | 9.23 | 2.23 | 0.03 |
| 13:04:48 | 9.24 | 2.25 | 0.02 |
| 13:04:49 | 9.24 | 2.27 | 0.02 |
| 13:04:50 | 9.24 | 2.28 | 0.02 |
| 13:04:51 | 9.23 | 2.30 | 0.03 |
| 13:04:52 | 9.24 | 2.32 | 0.02 |
| 13:04:53 | 9.24 | 2.33 | 0.02 |
| 13:04:54 | 9.24 | 2.35 | 0.02 |
| 13:04:55 | 9.24 | 2.37 | 0.02 |
| 13:04:56 | 9.24 | 2.38 | 0.02 |
| 13:04:57 | 9.24 | 2.40 | 0.02 |
| 13:04:58 | 9.23 | 2.42 | 0.03 |
| 13:04:59 | 9.23 | 2.43 | 0.03 |
| 13:05:00 | 9.23 | 2.45 | 0.03 |
| 13:05:01 | 9.25 | 2.47 | 0.01 |
| 13:05:02 | 9.24 | 2.48 | 0.02 |
| 13:05:03 | 9.24 | 2.50 | 0.02 |
| 13:05:04 | 9.24 | 2.52 | 0.02 |
| 13:05:05 | 9.24 | 2.53 | 0.02 |
| 13:05:06 | 9.23 | 2.55 | 0.03 |
| 13:05:07 | 9.23 | 2.57 | 0.03 |
| 13:05:08 | 9.24 | 2.58 | 0.02 |
| 13:05:09 | 9.23 | 2.60 | 0.03 |
| 13:05:10 | 9.23 | 2.62 | 0.03 |
| 13:05:11 | 9.24 | 2.63 | 0.02 |
| 13:05:12 | 9.24 | 2.65 | 0.02 |
| 13:05:13 | 9.24 | 2.67 | 0.02 |
| 13:05:14 | 9.23 | 2.68 | 0.03 |
| 13:05:15 | 9.23 | 2.70 | 0.03 |
| 13:05:16 | 9.24 | 2.72 | 0.02 |
| 13:05:17 | 9.24 | 2.73 | 0.02 |
| 13:05:18 | 9.23 | 2.75 | 0.03 |
| 13:05:19 | 9.24 | 2.77 | 0.02 |

**END TEST**

# SLUG TEST

**MW-12** date: 8/25/04

| START PUMP (SLUG OUT) Time | Transducer Reading (feet) | Elasped Time (min) | Draw down (feet) |
|---|---|---|---|
| 12:17:00 | 9.85 | | |
| 12:18:06 | 0.91 | 1.10 | 8.94 |

| START TEST Time | Transducer Reading (feet) | Elasped Time (min) | Draw down (feet) |
|---|---|---|---|
| 12:18:07 | 0.91 | 0.00 | 8.94 |
| 12:18:08 | 1.21 | 0.02 | 8.64 |
| 12:18:09 | 1.55 | 0.03 | 8.30 |
| 12:18:10 | 1.88 | 0.05 | 7.97 |
| 12:18:11 | 2.17 | 0.07 | 7.68 |
| 12:18:12 | 2.43 | 0.08 | 7.42 |
| 12:18:13 | 2.73 | 0.10 | 7.12 |
| 12:18:14 | 2.94 | 0.12 | 6.91 |
| 12:18:15 | 3.15 | 0.13 | 6.70 |
| 12:18:16 | 3.38 | 0.15 | 6.47 |
| 12:18:17 | 3.55 | 0.17 | 6.30 |
| 12:18:18 | 3.75 | 0.18 | 6.10 |
| 12:18:19 | 3.95 | 0.20 | 5.90 |
| 12:18:20 | 4.14 | 0.22 | 5.71 |
| 12:18:21 | 4.29 | 0.23 | 5.56 |
| 12:18:22 | 4.43 | 0.25 | 5.42 |
| 12:18:23 | 4.53 | 0.27 | 5.32 |
| 12:18:24 | 4.63 | 0.28 | 5.22 |
| 12:18:25 | 4.73 | 0.30 | 5.12 |
| 12:18:26 | 4.81 | 0.32 | 5.04 |
| 12:18:27 | 4.91 | 0.33 | 4.94 |
| 12:18:28 | 4.98 | 0.35 | 4.87 |
| 12:18:29 | 5.04 | 0.37 | 4.81 |
| 12:18:30 | 5.09 | 0.38 | 4.76 |
| 12:18:31 | 5.16 | 0.40 | 4.69 |
| 12:18:32 | 5.22 | 0.42 | 4.63 |
| 12:18:33 | 5.26 | 0.43 | 4.59 |
| 12:18:34 | 5.34 | 0.45 | 4.51 |
| 12:18:35 | 5.40 | 0.47 | 4.45 |
| 12:18:36 | 5.44 | 0.48 | 4.41 |
| 12:18:37 | 5.50 | 0.50 | 4.35 |
| 12:18:38 | 5.55 | 0.52 | 4.30 |
| 12:18:39 | 5.60 | 0.53 | 4.25 |
| 12:18:40 | 5.64 | 0.55 | 4.21 |
| 12:18:41 | 5.69 | 0.57 | 4.16 |
| 12:18:42 | 5.73 | 0.58 | 4.12 |
| 12:18:43 | 5.78 | 0.60 | 4.07 |
| 12:18:44 | 5.82 | 0.62 | 4.03 |
| 12:18:45 | 5.87 | 0.63 | 3.98 |
| 12:18:46 | 5.92 | 0.65 | 3.93 |

| TEST (cont.) Time | Transducer Reading (feet) | Elasped Time (min) | Draw down (feet) |
|---|---|---|---|
| 12:18:47 | 5.97 | 0.67 | 3.88 |
| 12:18:48 | 6.01 | 0.68 | 3.84 |
| 12:18:49 | 6.06 | 0.70 | 3.79 |
| 12:18:50 | 6.10 | 0.72 | 3.75 |
| 12:18:51 | 6.14 | 0.73 | 3.71 |
| 12:18:52 | 6.17 | 0.75 | 3.68 |
| 12:18:53 | 6.20 | 0.77 | 3.65 |
| 12:18:54 | 6.25 | 0.78 | 3.60 |
| 12:18:55 | 6.28 | 0.80 | 3.57 |
| 12:18:56 | 6.32 | 0.82 | 3.53 |
| 12:18:57 | 6.35 | 0.83 | 3.50 |
| 12:18:58 | 6.38 | 0.85 | 3.47 |
| 12:18:59 | 6.41 | 0.87 | 3.44 |
| 12:19:00 | 6.45 | 0.88 | 3.40 |
| 12:19:01 | 6.49 | 0.90 | 3.36 |
| 12:19:02 | 6.51 | 0.92 | 3.34 |
| 12:19:03 | 6.55 | 0.93 | 3.30 |
| 12:19:04 | 6.58 | 0.95 | 3.27 |
| 12:19:05 | 6.60 | 0.97 | 3.25 |
| 12:19:06 | 6.62 | 0.98 | 3.23 |
| 12:19:07 | 6.66 | 1.00 | 3.19 |
| 12:19:08 | 6.69 | 1.02 | 3.16 |
| 12:19:09 | 6.73 | 1.03 | 3.12 |
| 12:19:10 | 6.75 | 1.05 | 3.10 |
| 12:19:11 | 6.77 | 1.07 | 3.08 |
| 12:19:12 | 6.80 | 1.08 | 3.05 |
| 12:19:13 | 6.83 | 1.10 | 3.02 |
| 12:19:14 | 6.85 | 1.12 | 3.00 |
| 12:19:15 | 6.88 | 1.13 | 2.97 |
| 12:19:16 | 6.90 | 1.15 | 2.95 |
| 12:19:17 | 6.93 | 1.17 | 2.92 |
| 12:19:18 | 6.96 | 1.18 | 2.89 |
| 12:19:19 | 6.97 | 1.20 | 2.88 |
| 12:19:20 | 7.00 | 1.22 | 2.85 |
| 12:19:21 | 7.02 | 1.23 | 2.83 |
| 12:19:22 | 7.04 | 1.25 | 2.81 |
| 12:19:23 | 7.06 | 1.27 | 2.79 |
| 12:19:24 | 7.08 | 1.28 | 2.77 |
| 12:19:25 | 7.10 | 1.30 | 2.75 |
| 12:19:26 | 7.11 | 1.32 | 2.74 |

**SLUG TEST**

**MW-12** date: 8/25/04

| TEST (cont.) Time | Transducer Reading (feet) | Elasped Time (min) | Draw down (feet) |
|---|---|---|---|
| 12:19:27 | 7.13 | 1.33 | 2.72 |
| 12:19:28 | 7.16 | 1.35 | 2.69 |
| 12:19:29 | 7.18 | 1.37 | 2.67 |
| 12:19:30 | 7.19 | 1.38 | 2.66 |
| 12:19:31 | 7.21 | 1.40 | 2.64 |
| 12:19:32 | 7.23 | 1.42 | 2.62 |
| 12:19:33 | 7.25 | 1.43 | 2.60 |
| 12:19:34 | 7.28 | 1.45 | 2.57 |
| 12:19:35 | 7.31 | 1.47 | 2.54 |
| 12:19:36 | 7.31 | 1.48 | 2.54 |
| 12:19:37 | 7.34 | 1.50 | 2.51 |
| 12:19:38 | 7.35 | 1.52 | 2.50 |
| 12:19:39 | 7.36 | 1.53 | 2.49 |
| 12:19:40 | 7.39 | 1.55 | 2.46 |
| 12:19:41 | 7.41 | 1.57 | 2.44 |
| 12:19:42 | 7.42 | 1.58 | 2.43 |
| 12:19:43 | 7.46 | 1.60 | 2.39 |
| 12:19:44 | 7.46 | 1.62 | 2.39 |
| 12:19:45 | 7.47 | 1.63 | 2.38 |
| 12:19:46 | 7.49 | 1.65 | 2.36 |
| 12:19:47 | 7.51 | 1.67 | 2.34 |
| 12:19:48 | 7.53 | 1.68 | 2.32 |
| 12:19:49 | 7.55 | 1.70 | 2.30 |
| 12:19:50 | 7.56 | 1.72 | 2.29 |
| 12:19:51 | 7.59 | 1.73 | 2.26 |
| 12:19:52 | 7.60 | 1.75 | 2.25 |
| 12:19:53 | 7.62 | 1.77 | 2.23 |
| 12:19:54 | 7.62 | 1.78 | 2.23 |
| 12:19:55 | 7.64 | 1.80 | 2.21 |
| 12:19:56 | 7.65 | 1.82 | 2.20 |
| 12:19:57 | 7.67 | 1.83 | 2.18 |
| 12:19:58 | 7.67 | 1.85 | 2.18 |
| 12:19:59 | 7.70 | 1.87 | 2.15 |
| 12:20:00 | 7.71 | 1.88 | 2.14 |
| 12:20:01 | 7.72 | 1.90 | 2.13 |
| 12:20:02 | 7.75 | 1.92 | 2.10 |
| 12:20:03 | 7.75 | 1.93 | 2.10 |
| 12:20:04 | 7.77 | 1.95 | 2.08 |
| 12:20:05 | 7.79 | 1.97 | 2.06 |
| 12:20:06 | 7.79 | 1.98 | 2.06 |
| 12:20:07 | 7.81 | 2.00 | 2.04 |
| 12:20:08 | 7.82 | 2.02 | 2.03 |
| 12:20:09 | 7.83 | 2.03 | 2.02 |
| 12:20:10 | 7.84 | 2.05 | 2.01 |
| 12:20:11 | 7.87 | 2.07 | 1.98 |
| 12:20:12 | 7.86 | 2.08 | 1.99 |

| TEST (cont.) Time | Transducer Reading (feet) | Elasped Time (min) | Draw down (feet) |
|---|---|---|---|
| 12:20:13 | 7.88 | 2.10 | 1.97 |
| 12:20:14 | 7.89 | 2.12 | 1.96 |
| 12:20:15 | 7.91 | 2.13 | 1.94 |
| 12:20:16 | 7.93 | 2.15 | 1.92 |
| 12:20:17 | 7.94 | 2.17 | 1.91 |
| 12:20:18 | 7.95 | 2.18 | 1.90 |
| 12:20:19 | 7.95 | 2.20 | 1.90 |
| 12:20:20 | 7.96 | 2.22 | 1.89 |
| 12:20:21 | 7.98 | 2.23 | 1.87 |
| 12:20:22 | 7.98 | 2.25 | 1.87 |
| 12:20:23 | 8.00 | 2.27 | 1.85 |
| 12:20:24 | 8.02 | 2.28 | 1.83 |
| 12:20:25 | 8.02 | 2.30 | 1.83 |
| 12:20:26 | 8.03 | 2.32 | 1.82 |
| 12:20:27 | 8.05 | 2.33 | 1.80 |
| 12:20:28 | 8.05 | 2.35 | 1.80 |
| 12:20:29 | 8.07 | 2.37 | 1.78 |
| 12:20:30 | 8.09 | 2.38 | 1.76 |
| 12:20:31 | 8.10 | 2.40 | 1.75 |
| 12:20:32 | 8.10 | 2.42 | 1.75 |
| 12:20:33 | 8.12 | 2.43 | 1.73 |
| 12:20:34 | 8.12 | 2.45 | 1.73 |
| 12:20:35 | 8.12 | 2.47 | 1.73 |
| 12:20:36 | 8.15 | 2.48 | 1.70 |
| 12:20:37 | 8.15 | 2.50 | 1.70 |
| 12:20:38 | 8.16 | 2.52 | 1.69 |
| 12:20:39 | 8.17 | 2.53 | 1.68 |
| 12:20:40 | 8.18 | 2.55 | 1.67 |
| 12:20:41 | 8.18 | 2.57 | 1.67 |
| 12:20:42 | 8.20 | 2.58 | 1.65 |
| 12:20:43 | 8.21 | 2.60 | 1.64 |
| 12:20:44 | 8.23 | 2.62 | 1.62 |
| 12:20:45 | 8.23 | 2.63 | 1.62 |
| 12:20:46 | 8.24 | 2.65 | 1.61 |
| 12:20:47 | 8.25 | 2.67 | 1.60 |
| 12:20:48 | 8.27 | 2.68 | 1.58 |
| 12:20:49 | 8.26 | 2.70 | 1.59 |
| 12:20:50 | 8.27 | 2.72 | 1.58 |
| 12:20:51 | 8.29 | 2.73 | 1.56 |
| 12:20:52 | 8.30 | 2.75 | 1.55 |
| 12:20:53 | 8.30 | 2.77 | 1.55 |
| 12:20:54 | 8.32 | 2.78 | 1.53 |
| 12:20:55 | 8.33 | 2.80 | 1.52 |
| 12:20:56 | 8.33 | 2.82 | 1.52 |
| 12:20:57 | 8.33 | 2.83 | 1.52 |
| 12:20:58 | 8.35 | 2.85 | 1.50 |

**SLUG TEST**

**MW-12** date: 8/25/04

| TEST (cont.) Time | Transducer Reading (feet) | Elasped Time (min) | Draw down (feet) |
|---|---|---|---|
| 12:20:59 | 8.37 | 2.87 | 1.48 |
| 12:21:00 | 8.37 | 2.88 | 1.48 |
| 12:21:01 | 8.38 | 2.90 | 1.47 |
| 12:21:02 | 8.38 | 2.92 | 1.47 |
| 12:21:03 | 8.41 | 2.93 | 1.44 |
| 12:21:04 | 8.39 | 2.95 | 1.46 |
| 12:21:05 | 8.41 | 2.97 | 1.44 |
| 12:21:06 | 8.41 | 2.98 | 1.44 |
| 12:21:07 | 8.43 | 3.00 | 1.42 |
| 12:21:08 | 8.44 | 3.02 | 1.41 |
| 12:21:09 | 8.44 | 3.03 | 1.41 |
| 12:21:10 | 8.45 | 3.05 | 1.40 |
| 12:21:11 | 8.47 | 3.07 | 1.38 |
| 12:21:12 | 8.46 | 3.08 | 1.39 |
| 12:21:13 | 8.47 | 3.10 | 1.38 |
| 12:21:14 | 8.48 | 3.12 | 1.37 |
| 12:21:15 | 8.48 | 3.13 | 1.37 |
| 12:21:16 | 8.49 | 3.15 | 1.36 |
| 12:21:17 | 8.50 | 3.17 | 1.35 |
| 12:21:18 | 8.51 | 3.18 | 1.34 |
| 12:21:19 | 8.51 | 3.20 | 1.34 |
| 12:21:20 | 8.52 | 3.22 | 1.33 |
| 12:21:21 | 8.54 | 3.23 | 1.31 |
| 12:21:22 | 8.54 | 3.25 | 1.31 |
| 12:21:23 | 8.55 | 3.27 | 1.30 |
| 12:21:24 | 8.54 | 3.28 | 1.31 |
| 12:21:25 | 8.57 | 3.30 | 1.28 |
| 12:21:26 | 8.57 | 3.32 | 1.28 |
| 12:21:27 | 8.57 | 3.33 | 1.28 |
| 12:21:28 | 8.58 | 3.35 | 1.27 |
| 12:21:29 | 8.58 | 3.37 | 1.27 |
| 12:21:30 | 8.60 | 3.38 | 1.25 |
| 12:21:31 | 8.61 | 3.40 | 1.24 |
| 12:21:32 | 8.60 | 3.42 | 1.25 |
| 12:21:33 | 8.61 | 3.43 | 1.24 |
| 12:21:34 | 8.62 | 3.45 | 1.23 |
| 12:21:35 | 8.64 | 3.47 | 1.21 |
| 12:21:36 | 8.64 | 3.48 | 1.21 |
| 12:21:37 | 8.65 | 3.50 | 1.20 |
| 12:21:38 | 8.66 | 3.52 | 1.19 |
| 12:21:39 | 8.66 | 3.53 | 1.19 |
| 12:21:40 | 8.67 | 3.55 | 1.18 |
| 12:21:41 | 8.67 | 3.57 | 1.18 |
| 12:21:42 | 8.67 | 3.58 | 1.18 |
| 12:21:43 | 8.68 | 3.60 | 1.17 |
| 12:21:44 | 8.68 | 3.62 | 1.17 |

| TEST (cont.) Time | Transducer Reading (feet) | Elasped Time (min) | Draw down (feet) |
|---|---|---|---|
| 12:21:45 | 8.71 | 3.63 | 1.14 |
| 12:21:46 | 8.69 | 3.65 | 1.16 |
| 12:21:47 | 8.70 | 3.67 | 1.15 |
| 12:21:48 | 8.73 | 3.68 | 1.12 |
| 12:21:49 | 8.72 | 3.70 | 1.13 |
| 12:21:50 | 8.71 | 3.72 | 1.14 |
| 12:21:51 | 8.73 | 3.73 | 1.12 |
| 12:21:52 | 8.72 | 3.75 | 1.13 |
| 12:21:53 | 8.74 | 3.77 | 1.11 |
| 12:21:54 | 8.75 | 3.78 | 1.10 |
| 12:21:55 | 8.75 | 3.80 | 1.10 |
| 12:21:56 | 8.75 | 3.82 | 1.10 |
| 12:21:57 | 8.75 | 3.83 | 1.10 |
| 12:21:58 | 8.76 | 3.85 | 1.09 |
| 12:21:59 | 8.76 | 3.87 | 1.09 |
| 12:22:00 | 8.77 | 3.88 | 1.08 |
| 12:22:01 | 8.78 | 3.90 | 1.07 |
| 12:22:02 | 8.78 | 3.92 | 1.07 |
| 12:22:03 | 8.79 | 3.93 | 1.06 |
| 12:22:04 | 8.79 | 3.95 | 1.06 |
| 12:22:05 | 8.78 | 3.97 | 1.07 |
| 12:22:06 | 8.80 | 3.98 | 1.05 |
| 12:22:07 | 8.81 | 4.00 | 1.04 |
| 12:22:08 | 8.80 | 4.02 | 1.05 |
| 12:22:09 | 8.81 | 4.03 | 1.04 |
| 12:22:10 | 8.81 | 4.05 | 1.04 |
| 12:22:11 | 8.82 | 4.07 | 1.03 |
| 12:22:12 | 8.82 | 4.08 | 1.03 |
| 12:22:13 | 8.83 | 4.10 | 1.02 |
| 12:22:14 | 8.84 | 4.12 | 1.01 |
| 12:22:15 | 8.84 | 4.13 | 1.01 |
| 12:22:16 | 8.85 | 4.15 | 1.00 |
| 12:22:17 | 8.86 | 4.17 | 0.99 |
| 12:22:18 | 8.86 | 4.18 | 0.99 |
| 12:22:19 | 8.87 | 4.20 | 0.98 |
| 12:22:20 | 8.86 | 4.22 | 0.99 |
| 12:22:21 | 8.86 | 4.23 | 0.99 |
| 12:22:22 | 8.88 | 4.25 | 0.97 |
| 12:22:23 | 8.89 | 4.27 | 0.96 |
| 12:22:24 | 8.89 | 4.28 | 0.96 |
| 12:22:25 | 8.89 | 4.30 | 0.96 |
| 12:22:26 | 8.89 | 4.32 | 0.96 |
| 12:22:27 | 8.91 | 4.33 | 0.94 |
| 12:22:28 | 8.91 | 4.35 | 0.94 |
| 12:22:29 | 8.91 | 4.37 | 0.94 |
| 12:22:30 | 8.92 | 4.38 | 0.93 |

**SLUG TEST**

**MW-12** date: 8/25/04

| TEST (cont.) Time | Transducer Reading (feet) | Elasped Time (min) | Draw down (feet) |
|---|---|---|---|
| 12:22:31 | 8.92 | 4.40 | 0.93 |
| 12:22:32 | 8.93 | 4.42 | 0.92 |
| 12:22:33 | 8.93 | 4.43 | 0.92 |
| 12:22:34 | 8.94 | 4.45 | 0.91 |
| 12:22:35 | 8.93 | 4.47 | 0.92 |
| 12:22:36 | 8.95 | 4.48 | 0.90 |
| 12:22:37 | 8.95 | 4.50 | 0.90 |
| 12:22:38 | 8.96 | 4.52 | 0.89 |
| 12:22:39 | 8.95 | 4.53 | 0.90 |
| 12:22:40 | 8.95 | 4.55 | 0.90 |
| 12:22:41 | 8.96 | 4.57 | 0.89 |
| 12:22:42 | 8.96 | 4.58 | 0.89 |
| 12:22:43 | 8.96 | 4.60 | 0.89 |
| 12:22:44 | 8.97 | 4.62 | 0.88 |
| 12:22:45 | 8.98 | 4.63 | 0.87 |
| 12:22:46 | 9.00 | 4.65 | 0.85 |
| 12:22:47 | 8.99 | 4.67 | 0.86 |
| 12:22:48 | 8.99 | 4.68 | 0.86 |
| 12:22:49 | 9.00 | 4.70 | 0.85 |
| 12:22:50 | 8.99 | 4.72 | 0.86 |
| 12:22:51 | 8.99 | 4.73 | 0.86 |
| 12:22:52 | 9.00 | 4.75 | 0.85 |
| 12:22:53 | 9.00 | 4.77 | 0.85 |
| 12:22:54 | 9.01 | 4.78 | 0.84 |
| 12:22:55 | 9.02 | 4.80 | 0.83 |
| 12:22:56 | 9.02 | 4.82 | 0.83 |
| 12:22:57 | 9.01 | 4.83 | 0.84 |
| 12:22:58 | 9.02 | 4.85 | 0.83 |
| 12:22:59 | 9.02 | 4.87 | 0.83 |
| 12:23:00 | 9.03 | 4.88 | 0.82 |
| 12:23:01 | 9.03 | 4.90 | 0.82 |
| 12:23:02 | 9.03 | 4.92 | 0.82 |
| 12:23:03 | 9.04 | 4.93 | 0.81 |
| 12:23:04 | 9.05 | 4.95 | 0.80 |
| 12:23:05 | 9.04 | 4.97 | 0.81 |
| 12:23:06 | 9.05 | 4.98 | 0.80 |
| 12:23:07 | 9.05 | 5.00 | 0.80 |
| 12:23:08 | 9.06 | 5.02 | 0.79 |
| 12:23:09 | 9.07 | 5.03 | 0.78 |
| 12:23:10 | 9.07 | 5.05 | 0.78 |
| 12:23:11 | 9.09 | 5.07 | 0.76 |
| 12:23:12 | 9.09 | 5.08 | 0.76 |
| 12:23:13 | 9.09 | 5.10 | 0.76 |
| 12:23:14 | 9.08 | 5.12 | 0.77 |
| 12:23:15 | 9.09 | 5.13 | 0.76 |
| 12:23:16 | 9.09 | 5.15 | 0.76 |

| TEST (cont.) Time | Transducer Reading (feet) | Elasped Time (min) | Draw down (feet) |
|---|---|---|---|
| 12:23:17 | 9.10 | 5.17 | 0.75 |
| 12:23:18 | 9.10 | 5.18 | 0.75 |
| 12:23:19 | 9.10 | 5.20 | 0.75 |
| 12:23:20 | 9.10 | 5.22 | 0.75 |
| 12:23:21 | 9.11 | 5.23 | 0.74 |
| 12:23:22 | 9.11 | 5.25 | 0.74 |
| 12:23:23 | 9.12 | 5.27 | 0.73 |
| 12:23:24 | 9.12 | 5.28 | 0.73 |
| 12:23:25 | 9.13 | 5.30 | 0.72 |
| 12:23:26 | 9.12 | 5.32 | 0.73 |
| 12:23:27 | 9.14 | 5.33 | 0.71 |
| 12:23:28 | 9.13 | 5.35 | 0.72 |
| 12:23:29 | 9.13 | 5.37 | 0.72 |
| 12:23:30 | 9.13 | 5.38 | 0.72 |
| 12:23:31 | 9.14 | 5.40 | 0.71 |
| 12:23:32 | 9.14 | 5.42 | 0.71 |
| 12:23:33 | 9.15 | 5.43 | 0.70 |
| 12:23:34 | 9.16 | 5.45 | 0.69 |
| 12:23:35 | 9.16 | 5.47 | 0.69 |
| 12:23:36 | 9.18 | 5.48 | 0.67 |
| 12:23:37 | 9.16 | 5.50 | 0.69 |
| 12:23:38 | 9.16 | 5.52 | 0.69 |
| 12:23:39 | 9.17 | 5.53 | 0.68 |
| 12:23:40 | 9.17 | 5.55 | 0.68 |
| 12:23:41 | 9.17 | 5.57 | 0.68 |
| 12:23:42 | 9.17 | 5.58 | 0.68 |
| 12:23:43 | 9.17 | 5.60 | 0.68 |
| 12:23:44 | 9.18 | 5.62 | 0.67 |
| 12:23:45 | 9.19 | 5.63 | 0.66 |
| 12:23:46 | 9.20 | 5.65 | 0.65 |
| 12:23:47 | 9.20 | 5.67 | 0.65 |
| 12:23:48 | 9.19 | 5.68 | 0.66 |
| 12:23:49 | 9.20 | 5.70 | 0.65 |
| 12:23:50 | 9.19 | 5.72 | 0.66 |
| 12:23:51 | 9.20 | 5.73 | 0.65 |
| 12:23:52 | 9.20 | 5.75 | 0.65 |
| 12:23:53 | 9.20 | 5.77 | 0.65 |
| 12:23:54 | 9.22 | 5.78 | 0.63 |
| 12:23:55 | 9.21 | 5.80 | 0.64 |
| 12:23:56 | 9.21 | 5.82 | 0.64 |
| 12:23:57 | 9.22 | 5.83 | 0.63 |
| 12:23:58 | 9.22 | 5.85 | 0.63 |
| 12:23:59 | 9.22 | 5.87 | 0.63 |
| 12:24:00 | 9.23 | 5.88 | 0.62 |
| 12:24:01 | 9.23 | 5.90 | 0.62 |
| 12:24:02 | 9.24 | 5.92 | 0.61 |

# SLUG TEST

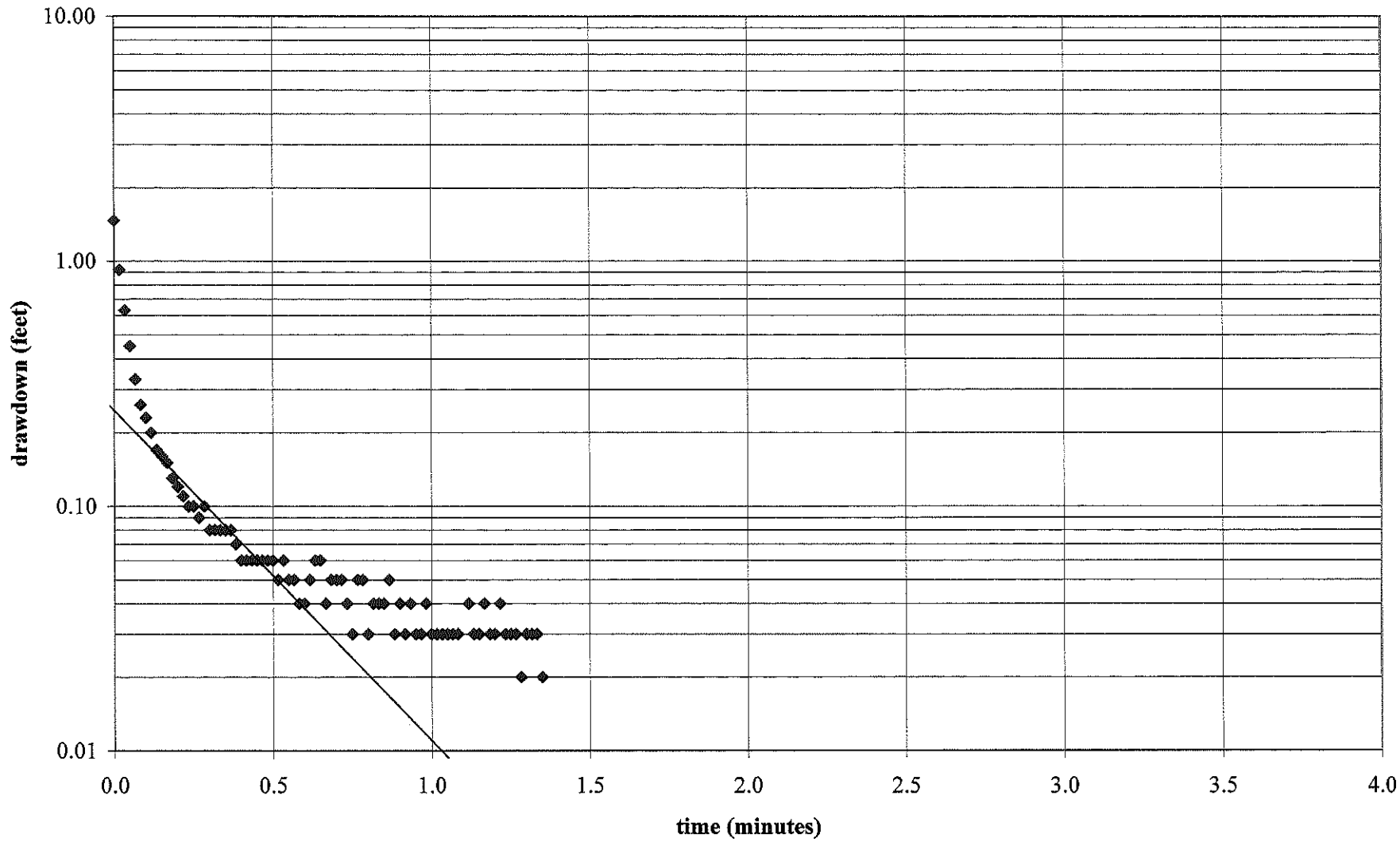
**MW-12** date: 8/25/04

| TEST (cont.) Time | Transducer Reading (feet) | Elasped Time (min) | Draw down (feet) |
|---|---|---|---|
| 12:24:03 | 9.23 | 5.93 | 0.62 |
| 12:24:04 | 9.24 | 5.95 | 0.61 |
| 12:24:05 | 9.27 | 5.97 | 0.58 |
| 12:24:06 | 9.24 | 5.98 | 0.61 |
| 12:24:07 | 9.25 | 6.00 | 0.60 |
| 12:24:08 | 9.25 | 6.02 | 0.60 |
| 12:24:09 | 9.24 | 6.03 | 0.61 |
| 12:24:10 | 9.25 | 6.05 | 0.60 |
| 12:24:11 | 9.25 | 6.07 | 0.60 |
| 12:24:12 | 9.26 | 6.08 | 0.59 |
| 12:24:13 | 9.27 | 6.10 | 0.58 |
| 12:24:14 | 9.27 | 6.12 | 0.58 |
| 12:24:15 | 9.27 | 6.13 | 0.58 |
| 12:24:16 | 9.27 | 6.15 | 0.58 |
| 12:24:17 | 9.28 | 6.17 | 0.57 |
| 12:24:18 | 9.28 | 6.18 | 0.57 |
| 12:24:19 | 9.27 | 6.20 | 0.58 |
| 12:24:20 | 9.28 | 6.22 | 0.57 |
| 12:24:21 | 9.26 | 6.23 | 0.59 |
| 12:24:22 | 9.27 | 6.25 | 0.58 |
| 12:24:23 | 9.29 | 6.27 | 0.56 |
| 12:24:24 | 9.27 | 6.28 | 0.58 |
| 12:24:25 | 9.29 | 6.30 | 0.56 |
| 12:24:26 | 9.29 | 6.32 | 0.56 |
| 12:24:27 | 9.30 | 6.33 | 0.55 |
| 12:24:28 | 9.30 | 6.35 | 0.55 |
| 12:24:29 | 9.30 | 6.37 | 0.55 |
| 12:24:30 | 9.30 | 6.38 | 0.55 |
| 12:24:31 | 9.29 | 6.40 | 0.56 |
| 12:24:32 | 9.31 | 6.42 | 0.54 |
| 12:24:33 | 9.31 | 6.43 | 0.54 |
| 12:24:34 | 9.30 | 6.45 | 0.55 |
| 12:24:35 | 9.31 | 6.47 | 0.54 |
| 12:24:36 | 9.31 | 6.48 | 0.54 |
| 12:24:37 | 9.31 | 6.50 | 0.54 |
| 12:24:38 | 9.31 | 6.52 | 0.54 |
| 12:24:39 | 9.31 | 6.53 | 0.54 |
| 12:24:40 | 9.31 | 6.55 | 0.54 |
| 12:24:41 | 9.33 | 6.57 | 0.52 |
| 12:24:42 | 9.33 | 6.58 | 0.52 |
| 12:24:43 | 9.32 | 6.60 | 0.53 |
| 12:24:44 | 9.33 | 6.62 | 0.52 |
| 12:24:45 | 9.33 | 6.63 | 0.52 |
| 12:24:46 | 9.33 | 6.65 | 0.52 |
| 12:24:47 | 9.33 | 6.67 | 0.52 |
| 12:24:48 | 9.33 | 6.68 | 0.52 |

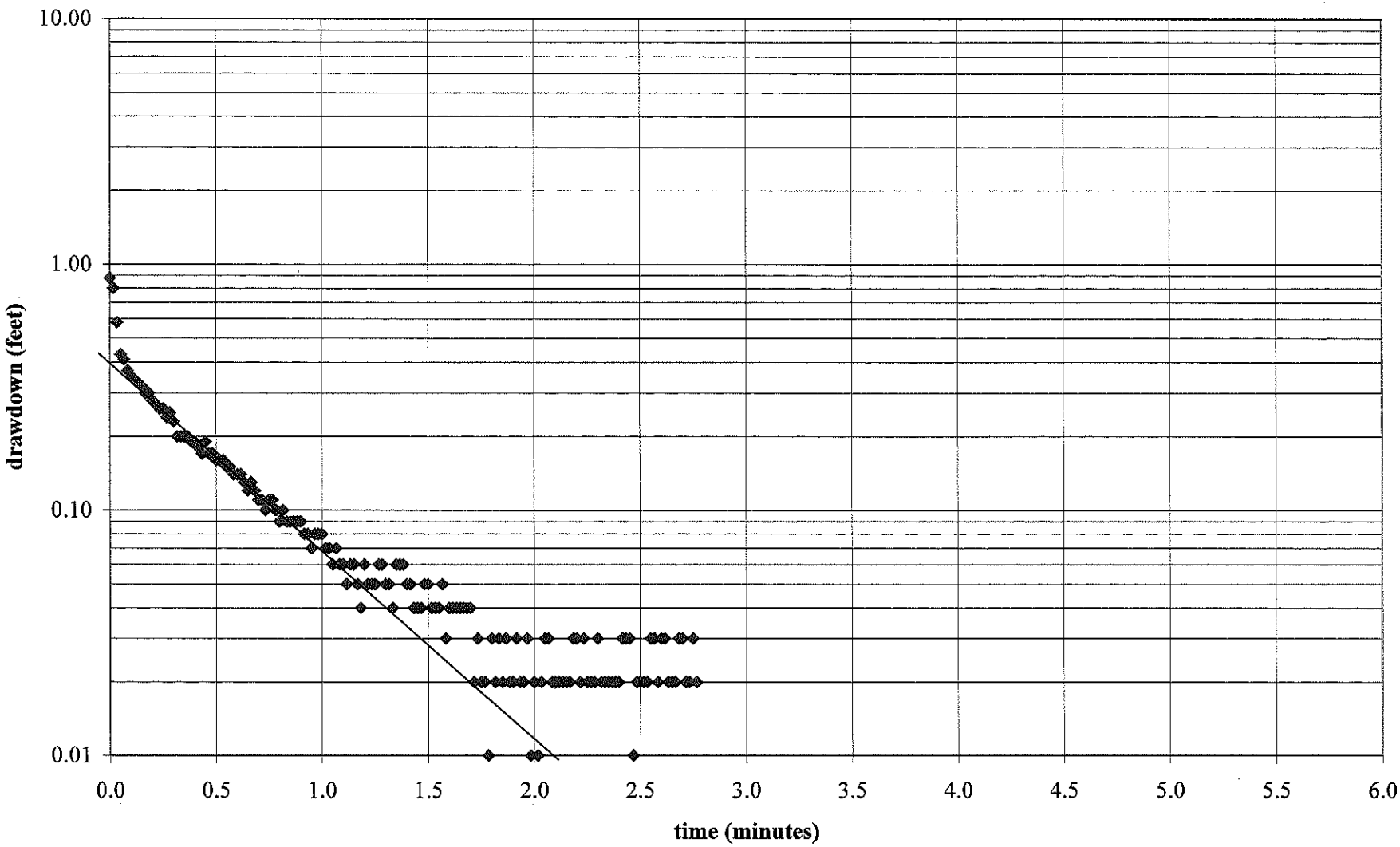
| TEST (cont.) Time | Transducer Reading (feet) | Elasped Time (min) | Draw down (feet) |
|---|---|---|---|
| 12:24:49 | 9.34 | 6.70 | 0.51 |
| 12:24:50 | 9.33 | 6.72 | 0.52 |
| 12:24:51 | 9.34 | 6.73 | 0.51 |
| 12:24:52 | 9.34 | 6.75 | 0.51 |
| 12:24:53 | 9.34 | 6.77 | 0.51 |
| 12:24:54 | 9.36 | 6.78 | 0.49 |
| 12:24:55 | 9.34 | 6.80 | 0.51 |
| 12:24:56 | 9.35 | 6.82 | 0.50 |
| 12:24:57 | 9.37 | 6.83 | 0.48 |
| 12:24:58 | 9.36 | 6.85 | 0.49 |
| 12:24:59 | 9.36 | 6.87 | 0.49 |
| 12:25:04 | 9.36 | 6.88 | 0.49 |
| 12:25:09 | 9.36 | 6.90 | 0.49 |
| 12:25:14 | 9.36 | 6.92 | 0.49 |
| 12:25:19 | 9.38 | 6.93 | 0.47 |
| 12:25:24 | 9.39 | 6.95 | 0.46 |
| 12:25:29 | 9.40 | 6.97 | 0.45 |
| 12:25:34 | 9.40 | 6.98 | 0.45 |
| 12:25:39 | 9.40 | 7.00 | 0.45 |

**END TEST**

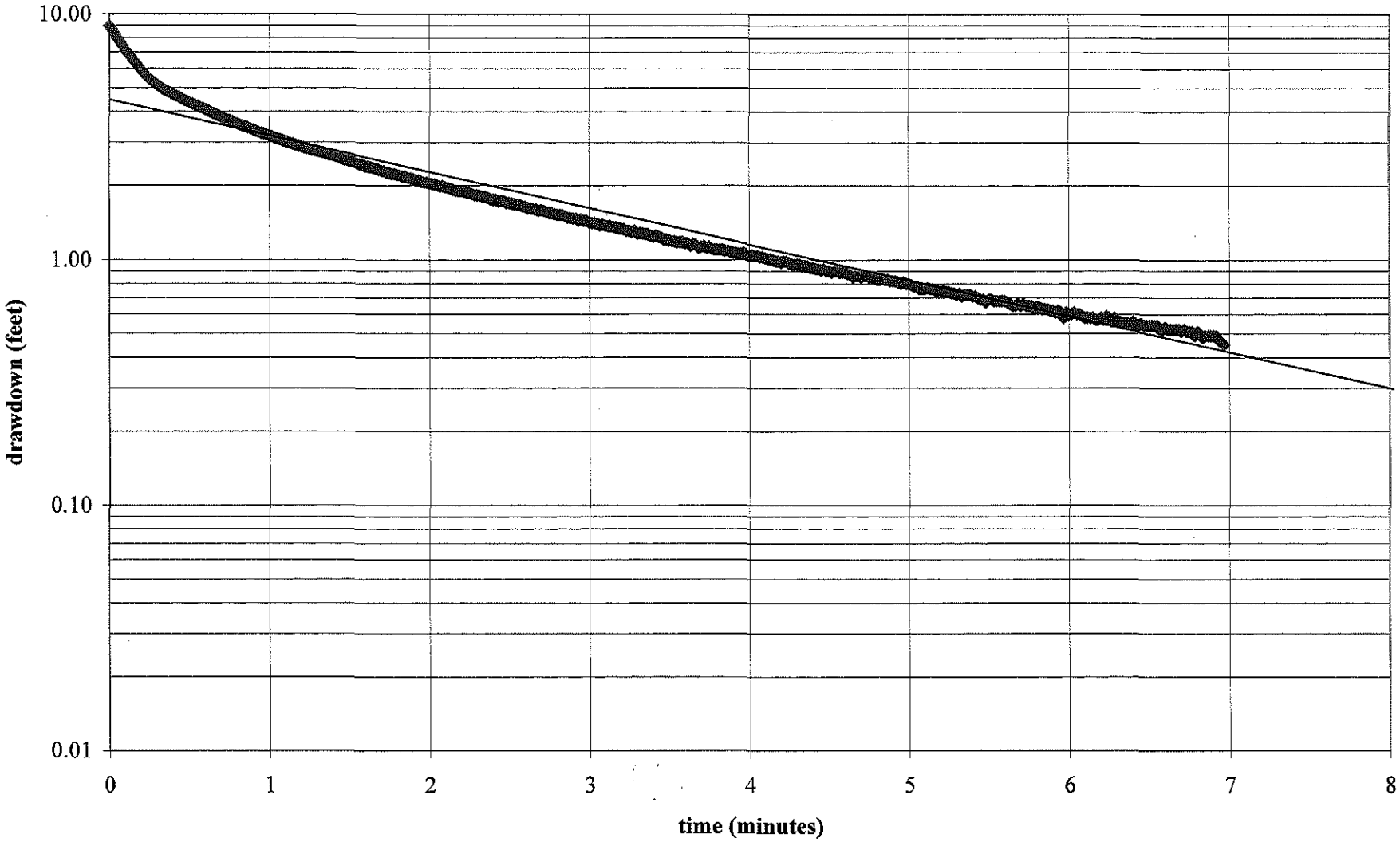
# DRAWDOWN vs. TIME (MW-1)



## DRAWDOWN vs. TIME (MW-11)



## DRAWDOWN vs. TIME (MW-12)



# APPENDIX F

# COPY OF WASTE MANIFEST

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) 01807468

Form Approved. OMB No. 2050-0039.

# UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. / Manifest Document No.: ORD046770005074 58

2. Page 1 of 2

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
Saint Gobain Perf Plastics
8350 NW Front Ave
Portland, OR 97210

4. Generator's Phone ( 503 ) 243-5246

A. State Manifest Document Number

B. State Generator's ID: SAME

5. Transporter 1 Company Name: Clean Harbors Env Services Inc

6. US EPA ID Number: MAD039322250

C. State Transporter's ID

D. Transporter's Phone: (781) 849-1800

7. Transporter 2 Company Name: Clean Harbors Env Services Inc

8. US EPA ID Number: MAD039322250

E. State Transporter's ID

F. Transporter's Phone: (781) 849-1800

9. Designated Facility Name and Site Address
Clean Harbors Aragonite LLC
11600 North Aptus Road
Aragonite, UT 84029

10. US EPA ID Number: UTD981562177

G. State Facility's ID

H. Facility's Phone: (801) 323-8100

GENERATOR

| | 11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number) | HM | 12. Containers No. | Type | 13. Total Quantity | 14. Unit Wt/Vol | I. Waste No. |
|---|---|---|---|---|---|---|---|
| a. | NON DOT REGULATED MATERIAL, NON DOT HAZARDOUS, NONE | | 006 | DM | 0285.0 | P | NONE |
| b. | NON DOT REGULATED MATERIAL, NON DOT HAZARDOUS, NONE | | 002 | DM | 0850 | P | NONE |
| c. | NON DOT REGULATED MATERIAL, NON DOT HAZARDOUS, NONE | | 026 | DM | 1755.0 | P | NONE |
| d. | | | | | | | |

J. Additional Descriptions for Materials Listed Above
11a. (L) DECON WATER ASSOCIATED WITH CLE
11c. (S) DRILL CUTTINGS ASSOCIATED WITH INS
11b. (L) PURGE WATER REMOVED FROM WELL I

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
11a: CH70372 11b: CH70422 11c: CH70423

24 HOUR EMERGENCY # (800) 483 - 3718

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: [illegible] | Signature: [illegible] | Month Day Year

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Scott Tyson | Signature: [illegible] | Month Day Year: 0 6 2 8 0 4

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name | Signature | Month Day Year

Clean Harbors has the appropriate permits for and will accept the waste the generator is shipping.



PRINTED ON RECYCLED PAPER USING SOYBEAN INK PRINTED WITH SOY INK

GENERATOR COPY

# ATTACHMENT I

## COPIES OF LABORATORY ANALYTICAL DATA REPORTS – SOIL AND GROUND-WATER SAMPLES

"PORTLAND GT PORATION WELL"
AT GS ROOFING

| | |
|---|---|
| Project: BES CSO Force Main<br>Project Location: Willamette River, Portland, Oregon<br>Project Number: 52.00040049.52 | **Log of WGB-5**<br>Sheet 1 of 7 |

| | | | | | |
|---|---|---|---|---|---|
| Date(s) Drilled | 11/14/2000-11/16/2000 | Logged By | NJG | Checked By (Date) | DBM |
| Drilling Method | Mud Rotary/Wire Line Coring | Drill Bit Size/Type | 4 1/4" Tri Cone / HQ Core | Total Depth Drilled (feet) | 104.5 |
| Drill Rig Type | CME 75 | Drilling Contractor | Geo-Tech Exporations, Inc. | Approximate Surface Elevation | 34 |
| Groundwater Level | 5.5 FT (MSL) | Location | Certain Teed | Inclination from Horizontal/Bearing | 90 |
| Borehole Completion | Backfilled with Cement/Bentonite Grout | | | Hammer Data | 300 lb Automatic Hammer |

| Elevation, feet | Depth, feet | ROCK CORE: Run No. | Box No. | Recovery, % | Fractures per Foot | R Q D, % | Fracture Drawing Number | Lithology | MATERIAL DESCRIPTION | SOIL SAMPLES: Type | Number | Blows / foot | Recovery, feet | Sample Length, inches | FIELD NOTES AND LAB TESTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 34 | 0 | | | | | | | | 6" ASPHALTIC CONCRETE | | | | | | |
| | 1 | | | | | | | | 12" AGGREGATE BASEROCK | | | | | | |
| 32 | 2 | | | | | | | | DARK GRAY TO BROWN SILTY GRAVEL (GM), loose, [moist], [FILL]. | | 1 | 10 | 0 | 0 | |
| | 3 | | | | | | | | | | | | | | MC=21.3%<br>57.1%>#4 sieve<br>16.7%<#200 sieve |
| 30 | 4 | | | | | | | | | | 2 | 7 | 0 | 0 | |
| | 5 | | | | | | | | | | 3 | 7 | 0.6 | 2 | |
| 28 | 6 | | | | | | | | *Large cobbles encountered.* | | | | | | |
| | 7 | | | | | | | | *Grades to very loose.* | | 4 | 3 | 0.5 | 1 | |
| 26 | 8 | | | | | | | | DARK GRAY SITLY SAND WITH GRAVEL (SM), loose, [moist], [FILL]. | | 5 | 13 | 1.1 | 5 | |
| 24 | 10 | | | | | | | | DARK GRAY SILTY CLAYEY GRAVEL (GC-GM), medium dense, [moist], [FILL]. | | 6 | 42 | 1.1 | 5 | |
| | 11 | | | | | | | | | | | | | | MC=23.8%<br>61.8%>#4 sieve<br>22.2%<#200 sieve<br>Original boring terminated at 11.5 ft - moved 4 ft north |
| 22 | 12 | | | | | | | | *Grades to loose.* | | 7 | 10 | 0.7 | 3 | |
| | 13 | | | | | | | | *Rubble and large cobbles encountered.* | | | | | | |

Report: GEO_CORE+SOIL_178; File: BESCSO1.GPJ; 1/10/2001 WGB-5

URS

Project: BES CSO Force Main
Project Location: Willamette River, Portland, Oregon
Project Number: 52.00040049.52

# Log of WGB-5



| Elevation, feet | Depth, feet | ROCK CORE: Run No. | Box No. | Recovery, % | Fractures per Foot | R Q D, % | Fracture Drawing Number | Lithology | MATERIAL DESCRIPTION | SOIL SAMPLES: Type | Number | Blows / foot | Recovery, feet | Sample Length, inches | FIELD NOTES AND LAB TESTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 13 | | | | | | | | DARK GRAY SILTY CLAYEY GRAVEL (GC-GM), loose, [moist], (FILL). | | | | | | |
| 20 | 14 | | | | | | | | *Grades to very loose.* | | | 4 | 0 | 0 | |
| 18 | 15 | | | | | | | | | | | | | | |
| | 16 | | | | | | | | | | 8 | 3 | 1.1 | 5 | |
| 16 | 17 | | | | | | | | | | | | | | |
| | 18 | | | | | | | | | | | | | | |
| 14 | 19 | | | | | | | | | | | 4 | 0 | 0 | |
| | 20 | | | | | | | | | | | | | | |
| 12 | 21 | | | | | | | | | | 9 | 3 | 1 | 4 | |
| | 22 | | | | | | | | | | | | | | |
| 10 | 23 | | | | | | | | *Grades to medium dense and wet.* | | 10 | 29 | 1.2 | 5 | |
| | 24 | | | | | | | | | | | | | | |
| 8 | 25 | | | | | | | | DARK GRAY SILT (ML), medium stiff, [wet]. | | 11 | 7 | 1.5 | 6 | MC=41.0%<br>98.6%<#200 sieve<br>HA: 96% silt |
| 6 | 26 | | | | | | | | | | | | | | |
| | 27 | | | | | | | | DARK BROWN POORLY GRADED SAND WITH SILT (SP-SM), loose, [wet]. | | | | | | |
| | 28 | | | | | | | | | | 12 | 12 | 1.5 | 6 | |
| | 29 | | | | | | | | | | | | | | |



URS

Project: BES CSO Force Main
Project Location: Willamette River, Portland, Oregon
Project Number: 52.00040049.52

# Log of WGB-5



| Elevation, feet | Depth, feet | ROCK CORE: Run No. | Box No. | Recovery, % | Fractures per Foot | R Q D, % | Fracture Drawing Number | Lithology | MATERIAL DESCRIPTION | SOIL SAMPLES: Type | Number | Blows / foot | Recovery, feet | Sample Length, inches | FIELD NOTES AND LAB TESTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 29 | | | | | | | | DARK BROWN POORLY GRADED SAND WITH SILT (SP-SM), loose, [wet]. | | | | | | |
| 4 | 30 | | | | | | | | | | | | | | |
| | 31 | | | | | | | | | | 13 | 13 | 0.5 | 1 | |
| 2 | 32 | | | | | | | | | | | | | | |
| | 33 | | | | | | | | | | | | | | |
| 0 | 34 | | | | | | | | | | 14 | 7 | 1.5 | 6 | |
| | 35 | | | | | | | | | | | | | | |
| -2 | 36 | | | | | | | | *Grades to dark brown and dark gray.* | | 15 | 11 | 1.5 | 6 | MC=35.6% 7.3%<#200 sieve |
| | 37 | | | | | | | | | | | | | | End of drilling at 37 ft on 11/14/00 Start of drilling on 11/15/00 |
| -4 | 38 | | | | | | | | *Grades to dark gray with trace organics (wood pieces).* | | | | | | |
| | 39 | | | | | | | | | | 16 | 8 | 1.5 | 6 | |
| -6 | 40 | | | | | | | | *Gravels encountered.* | | | | | | |
| | 41 | | | | | | | | *Grades to dark brown.* | | 17 | 10 | 1.5 | 6 | |
| -8 | 42 | | | | | | | | | | | | | | |
| | 43 | | | | | | | | | | | | | | |
| -10 | 44 | | | | | | | | | | 18 | 9 | 1.5 | 6 | |
| | 45 | | | | | | | | | | | | | | |



URS

Project: BES CSO Force Main
Project Location: Willamette River, Portland, Oregon
Project Number: 52.00040049.52

# Log of WGB-5



| Elevation, feet | Depth, feet | ROCK CORE: Run No. | Box No. | Recovery, % | Fractures per Foot | R Q D, % | Fracture Drawing Number | Lithology | MATERIAL DESCRIPTION | SOIL SAMPLES: Type | Number | Blows / foot | Recovery, feet | Sample Length, inches | FIELD NOTES AND LAB TESTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 45 | | | | | | | | DARK BROWN POORLY GRADED SAND WITH SILT (SP-SM), loose, [wet]. | | | | | | |
| -12 | 46 | | | | | | | | | | | 11 | 0 | 0 | |
| | 47 | | | | | | | | | | | | | | |
| | | | | | | | | | REDDISH-BROWN TO OLIVE GRAY SILTY CLAY (CL-ML), medium stiff, [wet]. | | | | | | |
| -14 | 48 | | | | | | | | | | | | | | |
| | 49 | | | | | | | | | | 19 | 6 | 1.5 | 5 | |
| -16 | 50 | | | | | | | | | | | | | | |
| | | | | | | | | | *Grades to olive gray.* | | | | | | MC=37.7% 99.3%<#200 sieve |
| | 51 | | | | | | | | | | 20 | 4 | 1.5 | 6 | |
| -18 | 52 | | | | | | | | | | | | | | |
| | 53 | | | | | | | | | | | | | | |
| -20 | 54 | | | | | | | | | | 21 | 5 | 1.5 | 6 | |
| | 55 | | | | | | | | | | | | | | |
| -22 | 56 | | | | | | | | | | | 4 | 0 | 0 | |
| | 57 | | | | | | | | | | | | | | |
| | | | | | | | | | OLIVE GRAY CLAY (CL), medium stiff, trace sand, [wet]. | | | | | | |
| -24 | 58 | | | | | | | | | | | | | | |
| | 59 | | | | | | | | | | 22 | 6 | 1.1 | 5 | |
| -26 | 60 | | | | | | | | BROWN SILTY SAND (SM), loose, [wet]. | | | | | | |
| | 61 | | | | | | | | | | | | | | |



URS

Project: BES CSO Force Main
Project Location: Willamette River, Portland, Oregon
Project Number: 52.00040049.52

# Log of WGB-5



| Elevation, feet | Depth, feet | ROCK CORE: Run No. | Box No. | Recovery, % | Fractures per Foot | R Q D, % | Fracture Drawing Number | Lithology | MATERIAL DESCRIPTION | SOIL SAMPLES: Type | Number | Blows / foot | Recovery, feet | Sample Length, inches | FIELD NOTES AND LAB TESTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 61 | | | | | | | | BROWN SILTY SAND (SM), loose, [wet]. | | 23 | 8 | 1.5 | 8 | |
| -28 | 62 | | | | | | | | | | | | | | |
| | 63 | | | | | | | | *Grades to very loose.* | | | | | | |
| -30 | 64 | | | | | | | | | | 24 | 6 | 1.5 | 6 | |
| | 65 | | | | | | | | BROWN SILTY CLAY (CL-ML), medium stiff, [wet]. | | | | | | |
| -32 | 66 | | | | | | | | | | 25 | 6 | 1.5 | 6 | |
| | 67 | | | | | | | | | | | | | | |
| -34 | 68 | | | | | | | | BROWN SILTY SAND (SM), loose, (wet). | | | | | | |
| | 69 | | | | | | | | | | 26 | 7 | 1.5 | 6 | |
| -36 | 70 | | | | | | | | | | | | | | |
| | 71 | | | | | | | | *Grades to dark gray.* | | 27 | 10 | 1.5 | 6 | |
| -38 | 72 | | | | | | | | | | | | | | |
| | 73 | | | | | | | | | | 28 | 12 | 1.5 | 6 | |
| -40 | 74 | | | | | | | | DARK GRAY POORLY GRADED SAND (SP), loose, [wet]. | | | | | | |
| | 75 | | | | | | | | | | | | | | |
| -42 | 76 | | | | | | | | | | 29 | 12 | 1.5 | 6 | |
| | 77 | | | | | | | | | | | | | | |



URS

Project: BES CSO Force Main
Project Location: Willamette River, Portland, Oregon
Project Number: 52.00040049.52

# Log of WGB-5



| Elevation, feet | Depth, feet | ROCK CORE: Run No. | Box No. | Recovery, % | Fractures per Foot | R Q D, % | Fracture Drawing Number | Lithology | MATERIAL DESCRIPTION | SOIL SAMPLES: Type | Number | Blows / foot | Recovery, feet | Sample Length, inches | FIELD NOTES AND LAB TESTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 77 | | | | | | | | DARK GRAY POORLY GRADED SAND (SP), loose, [wet]. | | | | | | |
| -44 | 78 | | | | | | | | DARK GRAY SILTY CLAY (CL-ML), medium stiff, [wet]. | | | | | | |
| | 79 | | | | | | | | | | 30 | 11 | 1.5 | 6 | |
| -46 | 80 | | | | | | | | DARK GRAY SILTY GRAVEL WITH SAND (GM), very loose, cobbles evident, [wet]. | | | | | | |
| | 81 | | | | | | | | | | | 5 | 0 | 0 | |
| -48 | 82 | | | | | | | | | | | | | | |
| | 83 | | | | | | | | | | | | | | |
| -50 | 84 | | | | | | | | | | | 6 | 0 | 0 | |
| | 85 | | | | | | | | | | | | | | |
| -52 | 86 | | | | | | | | *Grades to loose.* | | | 15 | 0 | 0 | |
| | 87 | | | | | | | | | | | | | | |
| -54 | 88 | | | | | | | | | | | | | | |
| | 89 | | | | | | | | | | | | | | End drilling at 89 ft on 11/15/00<br>Start drilling on 11/16/00 |
| -56 | 90 | 1 | 1 | 100 | | 49 | | | BASALT, fresh to slightly weathered, high strength, slightly vesicular. | | | | | | |
| | | | | | 5 | | 1<br>1<br>2<br>3 | | 1: 10, J, N, No+Ch, Su, 7, 7, 0.3<br>2: 10, J, VN, Ch, Su, 4, 7 | | | | | | |
| | 91 | | | | | | 3 | | 3: 70, J, VN, Ch, Sp, 7, 7, 0.2 | | | | | | |
| | | | | | 3 | | | | | | | | | | |
| -58 | 92 | | | | | | 4 | | 4: 75, J, VN, Ch, Su, 7, 8 | | | | | | |
| | | | | | 1 | | 5 | | 5: 25, J, VN, Ch, Su, 7, 8, 0.5 | | | | | | |
| | 93 | | | | | | | | | | | | | | |

Report: GEO_CORE+SOIL_17B; File: BESCSO1.GPJ; 1/10/2001 WGB-5

URS

Project: BES CSO Force Main
Project Location: Willamette River, Portland, Oregon
Project Number: 52.00040049.52

# Log of WGB-5



| Elevation, feet | Depth, feet | ROCK CORE: Run No. | Box No. | Recovery, % | Fractures per Foot | R Q D, % | Fracture Drawing Number | Lithology | MATERIAL DESCRIPTION | SOIL SAMPLES: Type | Number | Blows / foot | Recovery, feet | Sample Length, inches | FIELD NOTES AND LAB TESTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 93 | 1 | 1 | 100 | | 49 | | | BASALT, fresh to slightly weathered, high strength, slightly vesicular. | | | | | | |
| | | | | | 7 | | 5 | | | | | | | | |
| | | | | | | | 5 | | 5: 25, J, VN, Ch, Su, 7, 8, 0.5 | | | | | | |
| -60 | 94 | | | | | | 5 | | | | | | | | |
| | | | | | | | 6 | | 6: 65, J, VN, Ch, SP, 7, 7 | | | | | | |
| | | 2 | 2 | 96 | 0 | 40 | | | | | | | | | |
| | 95 | | | | | | | | | | | | | | |
| | | | | | 0 | | | | | | | | | | |
| -62 | 96 | | | | | | | | | | | | | | |
| | | | | | 0 | | | | | | | | | | |
| | 97 | | | | | | 1 | | 1: 10, J, N, Ch, Pa, 8, 8, 0.6 | | | | | | |
| | | | | | | | | | 2: 45, J, T, No, No, 8, 8 | | | | | | |
| | | | | | | | 2 | | | | | | | | |
| | | | | | 3 | | 1 | | | | | | | | |
| -64 | 98 | | | | | | 3 | | 3: 85, J, T, No, No, 5, 8 | | | | | | |
| | | | | | 3 | | | | | | | | | | |
| | | | | | | | 4 | | 4: 15, J, N-T, Ch, Ca, Su-No, 8, 8, .3 | | | | | | |
| | 99 | | | | | | 4 | | 5: 25, J, N, Ch, Fe, Su-Sp, 8, 8 | | | | | | |
| | | | | | | | 5 | | | | | | | | |
| | | | | | | | 6 | | 6: 60, J, VN, Ca, Su, 7, 7 | | | | | | |
| | | | | | | | 7 | | 7: 40, J, VN, Ca, Su, 8, 8 | | | | | | |
| | | 3 | 3 | 96 | 3 | 46 | | | | | | | | | |
| -66 | 100 | | | | | | | | | | | | | | |
| | | | | | | | 1 | | 1: 5, J, T, No, No, 8, 8, 0.2 | | | | | | |
| | | | | | 6 | | 1 | | | | | | | | |
| | | | | | | | 2 | | 2: 45, J, T, Ch, Su, 8, 8 | | | | | | |
| | | | | | | | 3 | | 3: 30, J, VN, Ch, Su, 8, 8 | | | | | | |
| | 101 | | | | | | 2 | | | | | | | | |
| | | | | | | | 4 | | 4: 30, J, N, Ch, Su, 8, 8, 0.1 | | | | | | |
| | | | | | 4 | | 4 | | | | | | | | |
| -68 | 102 | | | | | | | | | | | | | | |
| | | | | | 0 | | | | | | | | | | |
| | 103 | | | | | | | | | | | | | | |
| | | | | | 0 | | | | | | | | | | |
| -70 | 104 | | | | | | 5 | | 5: 30, J, N, Ch, Su, 1, 7 | | | | | | |
| | | | | | 1 | | | | Boring terminated at 104.5 feet BGS and grouted with cement/bentonite mix on 11/16/2000. | | | | | | |
| | 105 | | | | | | | | | | | | | | |
| -72 | 106 | | | | | | | | | | | | | | |
| | 107 | | | | | | | | | | | | | | |
| -74 | 108 | | | | | | | | | | | | | | |
| | 109 | | | | | | | | | | | | | | |



URS

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907.563.9200 fax 907.563.9210

| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

## ANALYTICAL REPORT FOR SAMPLES

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| SB-1-10 | P3K0433-01 | Soil | 11/13/03 17:05 | 11/14/03 17:00 |
| SB-1-13 | P3K0433-02 | Soil | 11/13/03 17:12 | 11/14/03 17:00 |
| TB-3 | P3K0433-03 | Water | 11/13/03 17:00 | 11/14/03 17:00 |
| SB-1-11 | P3K0433-04 | Soil | 11/13/03 17:50 | 11/14/03 17:00 |
| SB-1-20-21.5 | P3K0433-05 | Soil | 11/14/03 08:38 | 11/14/03 17:00 |
| SB-1-18.5 | P3K0433-06 | Soil | 11/14/03 08:24 | 11/14/03 17:00 |
| SB-1-18.75 | P3K0433-07 | Soil | 11/14/03 08:25 | 11/14/03 17:00 |
| SB-1-20 | P3K0433-08 | Soil | 11/14/03 08:30 | 11/14/03 17:00 |
| SB-5-13.5 | P3K0433-09 | Soil | 11/14/03 10:45 | 11/14/03 17:00 |
| Air Blank | P3K0433-10 | Soil | 11/14/03 10:45 | 11/14/03 17:00 |
| SB-5-13-14.5 | P3K0433-11 | Soil | 11/14/03 10:57 | 11/14/03 17:00 |
| SB-4-17.5 | P3K0433-12 | Soil | 11/14/03 14:08 | 11/14/03 17:00 |
| SB-4-18 | P3K0433-13 | Soil | 11/14/03 14:10 | 11/14/03 17:00 |
| SB-4-16.5-18 | P3K0433-14 | Soil | 11/14/03 14:20 | 11/14/03 17:00 |
| MW-11-PW | P3K0433-15 | Water | 11/14/03 14:45 | 11/14/03 17:00 |
| MW-12-PW | P3K0433-16 | Water | 11/14/03 15:53 | 11/14/03 17:00 |
| Comp-1 | P3K0433-17 | Soil | 11/14/03 15:55 | 11/14/03 17:00 |
| Comp-2 | P3K0433-18 | Soil | 11/14/03 16:05 | 11/14/03 17:00 |
| EB-1 | P3K0433-19 | Water | 11/14/03 16:00 | 11/14/03 17:00 |



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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907.563.9200 fax 907.563.9210

| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Gasoline Hydrocarbons per NW TPH-Gx Method
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-1-13 (P3K0433-02RE1) Soil** | **Sampled: 11/13/03 17:12** | | **Received: 11/14/03 17:00** | | | | | | | |
| **Gasoline Range Hydrocarbons** | **5.66** | | 4.00 | mg/kg dry | 1 | 3110680 | 11/20/03 | 11/21/03 | NW TPH-Gx | |
| *Surrogate: a,a,a-TFT* | | *91.3 %* | *50-150* | | | " | " | " | " | |
| **SB-1-18.75 (P3K0433-07RE1) Soil** | **Sampled: 11/14/03 08:25** | | **Received: 11/14/03 17:00** | | | | | | | |
| Gasoline Range Hydrocarbons | ND | | 4.00 | mg/kg dry | 1 | 3110680 | 11/20/03 | 11/21/03 | NW TPH-Gx | U |
| *Surrogate: a,a,a-TFT* | | *68.0 %* | *50-150* | | | " | " | " | " | |
| **SB-5-13.5 (P3K0433-09RE1) Soil** | **Sampled: 11/14/03 10:45** | | **Received: 11/14/03 17:00** | | | | | | | |
| Gasoline Range Hydrocarbons | ND | | 4.00 | mg/kg dry | 1 | 3110680 | 11/20/03 | 11/21/03 | NW TPH-Gx | U |
| *Surrogate: a,a,a-TFT* | | *74.4 %* | *50-150* | | | " | " | " | " | |
| **SB-4-18 (P3K0433-13RE1) Soil** | **Sampled: 11/14/03 14:10** | | **Received: 11/14/03 17:00** | | | | | | | |
| Gasoline Range Hydrocarbons | ND | | 4.00 | mg/kg dry | 1 | 3110680 | 11/20/03 | 11/21/03 | NW TPH-Gx | U |
| *Surrogate: a,a,a-TFT* | | *93.8 %* | *50-150* | | | " | " | " | " | |
| **Comp-1 (P3K0433-17RE1) Soil** | **Sampled: 11/14/03 15:55** | | **Received: 11/14/03 17:00** | | | | | | | |
| **Gasoline Range Hydrocarbons** | **33.5** | | 4.00 | mg/kg dry | 1 | 3110680 | 11/20/03 | 11/21/03 | NW TPH-Gx | |
| *Surrogate: a,a,a-TFT* | | *83.8 %* | *50-150* | | | " | " | " | " | |
| **Comp-2 (P3K0433-18RE1) Soil** | **Sampled: 11/14/03 16:05** | | **Received: 11/14/03 17:00** | | | | | | | |
| Gasoline Range Hydrocarbons | ND | | 4.00 | mg/kg dry | 1 | 3110680 | 11/20/03 | 11/22/03 | NW TPH-Gx | U |
| *Surrogate: a,a,a-TFT* | | *86.3 %* | *50-150* | | | " | " | " | " | |



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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907.563.9200 fax 907.563.9210

| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Diesel and Heavy Range Hydrocarbons per NWTPH-Dx Method
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-1-13 (P3K0433-02) Soil Sampled: 11/13/03 17:12 Received: 11/14/03 17:00** | | | | | | | | | | |
| **Diesel Range Organics** | **435** | | 50.0 | mg/kg dry | 2 | 3110532 | 11/18/03 | 11/18/03 | NWTPH-Dx | |
| **Heavy Oil Range Hydrocarbons** | **862** | | 100 | " | " | " | " | " | " | |
| *Surrogate: 1-Chlorooctadecane* | | *96.3 %* | *50-150* | | | " | " | " | " | |
| **SB-1-18.75 (P3K0433-07) Soil Sampled: 11/14/03 08:25 Received: 11/14/03 17:00** | | | | | | | | | | |
| Diesel Range Organics | ND | | 25.0 | mg/kg dry | 1 | 3110532 | 11/18/03 | 11/18/03 | NWTPH-Dx | U |
| Heavy Oil Range Hydrocarbons | ND | | 50.0 | " | " | " | " | " | " | U |
| *Surrogate: 1-Chlorooctadecane* | | *87.7 %* | *50-150* | | | " | " | " | " | |
| **SB-5-13.5 (P3K0433-09) Soil Sampled: 11/14/03 10:45 Received: 11/14/03 17:00** | | | | | | | | | | |
| Diesel Range Organics | ND | | 25.0 | mg/kg dry | 1 | 3110532 | 11/18/03 | 11/18/03 | NWTPH-Dx | U |
| Heavy Oil Range Hydrocarbons | ND | | 50.0 | " | " | " | " | " | " | U |
| *Surrogate: 1-Chlorooctadecane* | | *88.7 %* | *50-150* | | | " | " | " | " | |
| **SB-4-18 (P3K0433-13) Soil Sampled: 11/14/03 14:10 Received: 11/14/03 17:00** | | | | | | | | | | |
| **Diesel Range Organics** | **70.7** | | 25.0 | mg/kg dry | 1 | 3110532 | 11/18/03 | 11/18/03 | NWTPH-Dx | D-15 |
| **Heavy Oil Range Hydrocarbons** | **321** | | 50.0 | " | " | " | " | " | " | |
| *Surrogate: 1-Chlorooctadecane* | | *110 %* | *50-150* | | | " | " | " | " | |
| **Comp-1 (P3K0433-17) Soil Sampled: 11/14/03 15:55 Received: 11/14/03 17:00** | | | | | | | | | | |
| **Diesel Range Organics** | **338** | | 250 | mg/kg dry | 10 | 3110532 | 11/18/03 | 11/18/03 | NWTPH-Dx | |
| **Heavy Oil Range Hydrocarbons** | **1420** | | 500 | " | " | " | " | " | " | |
| *Surrogate: 1-Chlorooctadecane* | | *90.4 %* | *50-150* | | | " | " | " | " | |
| **Comp-2 (P3K0433-18) Soil Sampled: 11/14/03 16:05 Received: 11/14/03 17:00** | | | | | | | | | | |
| Diesel Range Organics | ND | | 250 | mg/kg dry | 10 | 3110532 | 11/18/03 | 11/18/03 | NWTPH-Dx | R-05, U |
| **Heavy Oil Range Hydrocarbons** | **765** | | 500 | " | " | " | " | " | " | |
| *Surrogate: 1-Chlorooctadecane* | | *89.2 %* | *50-150* | | | " | " | " | " | |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Total Metals per EPA 6000/7000 Series Methods
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-1-10 (P3K0433-01) Soil Sampled: 11/13/03 17:05 Received: 11/14/03 17:00** | | | | | | | | | | |
| **Silver** | **0.113** | 0.0369 | 0.500 | mg/kg dry | 1 | 3110783 | 11/24/03 | 11/26/03 | EPA 6020 | J |
| **Arsenic** | **4.24** | 0.427 | 0.500 | " | " | " | " | " | " | |
| **Beryllium** | **0.423** | 0.210 | 0.500 | " | " | " | " | " | " | J |
| Cadmium | ND | 1.23 | 3.07 | " | 6.15 | " | " | 11/26/03 | " | D, U |
| **Chromium** | **20.3** | 0.498 | 0.500 | " | 1 | " | " | 11/26/03 | " | |
| **Copper** | **19.9** | 0.955 | 2.00 | " | " | " | " | " | " | |
| **Mercury** | **0.00836** | 0.00264 | 0.0532 | " | " | 3110642 | 11/20/03 | 11/20/03 | EPA 7471A | J, D |
| **Nickel** | **23.8** | 0.213 | 1.00 | " | " | 3110783 | 11/24/03 | 11/26/03 | EPA 6020 | |
| **Lead** | **28.4** | 0.106 | 0.500 | " | " | " | " | " | " | |
| Antimony | ND | 0.0659 | 0.500 | " | " | " | " | " | " | U |
| Selenium | ND | 0.409 | 0.500 | " | " | " | " | " | " | U |
| Thallium | ND | 0.246 | 0.500 | " | " | " | " | " | " | U |
| **Zinc** | **87.6** | 0.630 | 2.00 | " | " | " | " | " | " | |
| **SB-1-20 (P3K0433-08) Soil Sampled: 11/14/03 08:30 Received: 11/14/03 17:00** | | | | | | | | | | |
| **Silver** | **0.0555** | 0.0335 | 0.455 | mg/kg dry | 1 | 3110783 | 11/24/03 | 11/26/03 | EPA 6020 | J, D |
| **Arsenic** | **2.90** | 0.388 | 0.455 | " | " | " | " | " | " | D |
| **Beryllium** | **0.389** | 0.191 | 0.455 | " | " | " | " | " | " | J, D |
| Cadmium | ND | 1.09 | 2.72 | " | 5.99 | " | " | 11/26/03 | " | D, U |
| **Chromium** | **18.3** | 0.453 | 0.455 | " | 1 | " | " | 11/26/03 | " | D |
| **Copper** | **18.2** | 0.868 | 1.82 | " | " | " | " | " | " | D |
| **Mercury** | **0.0109** | 0.00442 | 0.0893 | " | " | 3110642 | 11/20/03 | 11/20/03 | EPA 7471A | J, D |
| **Nickel** | **22.1** | 0.194 | 0.909 | " | " | 3110783 | 11/24/03 | 11/26/03 | EPA 6020 | D |
| **Lead** | **6.38** | 0.0964 | 0.455 | " | " | " | " | " | " | D |
| Antimony | ND | 0.0599 | 0.455 | " | " | " | " | " | " | D, U |
| Selenium | ND | 0.372 | 0.455 | " | " | " | " | " | " | D, U |
| Thallium | ND | 0.224 | 0.455 | " | " | " | " | " | " | D, U |
| **Zinc** | **57.3** | 0.573 | 1.82 | " | " | " | " | " | " | D |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Total Metals per EPA 6000/7000 Series Methods
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-5-13.5 (P3K0433-09) Soil Sampled: 11/14/03 10:45 Received: 11/14/03 17:00** | | | | | | | | | | |
| **Silver** | **0.0615** | 0.0369 | 0.500 | mg/kg dry | 1 | 3110783 | 11/24/03 | 11/26/03 | EPA 6020 | J |
| **Arsenic** | **3.15** | 0.427 | 0.500 | " | " | " | " | " | " | |
| **Beryllium** | **0.425** | 0.210 | 0.500 | " | " | " | " | " | " | J |
| Cadmium | ND | 1.25 | 3.12 | " | 6.24 | " | " | 11/26/03 | " | D, U |
| **Chromium** | **19.4** | 0.498 | 0.500 | " | 1 | " | " | 11/26/03 | " | |
| **Copper** | **19.8** | 0.955 | 2.00 | " | " | " | " | " | " | |
| **Mercury** | **0.0442** | 0.00387 | 0.0781 | " | " | 3110642 | 11/20/03 | 11/20/03 | EPA 7471A | J, D |
| **Nickel** | **22.2** | 0.213 | 1.00 | " | " | 3110783 | 11/24/03 | 11/26/03 | EPA 6020 | |
| **Lead** | **3.11** | 0.106 | 0.500 | " | " | " | " | " | " | |
| Antimony | ND | 0.0659 | 0.500 | " | " | " | " | " | " | U |
| Selenium | ND | 0.409 | 0.500 | " | " | " | " | " | " | U |
| Thallium | ND | 0.246 | 0.500 | " | " | " | " | " | " | U |
| **Zinc** | **60.7** | 0.630 | 2.00 | " | " | " | " | " | " | |
| **SB-4-17.5 (P3K0433-12) Soil Sampled: 11/14/03 14:08 Received: 11/14/03 17:00** | | | | | | | | | | |
| **Silver** | **0.112** | 0.0308 | 0.417 | mg/kg dry | 1 | 3110783 | 11/24/03 | 11/26/03 | EPA 6020 | J, D |
| **Arsenic** | **2.76** | 0.356 | 0.417 | " | " | " | " | " | " | D |
| **Beryllium** | **0.473** | 0.175 | 0.417 | " | " | " | " | " | " | D |
| Cadmium | ND | 1.03 | 2.58 | " | 6.18 | " | " | 11/26/03 | " | D, U |
| **Chromium** | **28.3** | 0.415 | 0.417 | " | 1 | " | " | 11/26/03 | " | D |
| **Copper** | **28.0** | 0.796 | 1.67 | " | " | " | " | " | " | D |
| **Mercury** | **0.100** | 0.00387 | 0.0781 | " | " | 3110642 | 11/20/03 | 11/20/03 | EPA 7471A | D |
| **Nickel** | **27.7** | 0.178 | 0.833 | " | " | 3110783 | 11/24/03 | 11/26/03 | EPA 6020 | D |
| **Lead** | **9.37** | 0.0883 | 0.417 | " | " | " | " | " | " | D |
| Antimony | ND | 0.0549 | 0.417 | " | " | " | " | " | " | D, U |
| Selenium | ND | 0.341 | 0.417 | " | " | " | " | " | " | D, U |
| Thallium | ND | 0.205 | 0.417 | " | " | " | " | " | " | D, U |
| **Zinc** | **67.9** | 0.525 | 1.67 | " | " | " | " | " | " | D |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Total Metals per EPA 6000/7000 Series Methods
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **MW-11-PW (P3K0433-15) Water Sampled: 11/14/03 14:45 Received: 11/14/03 17:00** | | | | | | | | | | |
| **Silver** | **0.00100** | 0.000460 | 0.0100 | mg/l | 1 | 3110621 | 11/19/03 | 11/20/03 | EPA 6020 | J, D |
| **Arsenic** | **0.0175** | 0.00964 | 0.0100 | " | " | " | " | " | " | D |
| **Beryllium** | **0.00140** | 0.000790 | 0.0100 | " | " | " | " | " | " | J, D |
| Cadmium | ND | 0.00178 | 0.0100 | " | " | " | " | " | " | D, U |
| **Chromium** | **0.0109** | 0.00791 | 0.0100 | " | " | " | " | " | " | D |
| **Copper** | **0.0219** | 0.00259 | 0.0200 | " | " | 3110772 | 11/24/03 | 11/26/03 | " | D |
| Mercury | ND | 0.0000358 | 0.000200 | " | " | 3110663 | 11/20/03 | 11/20/03 | EPA 7470A | U |
| **Nickel** | **0.0116** | 0.00826 | 0.0200 | " | " | 3110621 | 11/19/03 | 11/20/03 | EPA 6020 | J, D |
| **Lead** | **0.00500** | 0.000870 | 0.0200 | " | " | " | " | " | " | J, D |
| Antimony | ND | 0.00126 | 0.0100 | " | " | " | " | " | " | D, U |
| **Selenium** | **0.00960** | 0.00566 | 0.0100 | " | " | " | " | " | " | J, D |
| **Thallium** | **0.00220** | 0.000310 | 0.0100 | " | " | " | " | " | " | J, D |
| **Zinc** | **0.0448** | 0.0102 | 0.0500 | " | " | 3110772 | 11/24/03 | 11/26/03 | " | J, D |
| **MW-12-PW (P3K0433-16) Water Sampled: 11/14/03 15:53 Received: 11/14/03 17:00** | | | | | | | | | | |
| **Silver** | **0.00135** | 0.000230 | 0.00500 | mg/l | 1 | 3110772 | 11/24/03 | 11/26/03 | EPA 6020 | J, D |
| **Arsenic** | **0.0806** | 0.00482 | 0.00500 | " | " | " | " | " | " | D |
| **Beryllium** | **0.00240** | 0.000395 | 0.00500 | " | " | " | " | " | " | J, D |
| Cadmium | ND | 0.000890 | 0.00500 | " | " | " | " | " | " | D, U |
| **Chromium** | **0.311** | 0.00396 | 0.00500 | " | " | " | " | " | " | D |
| **Copper** | **0.170** | 0.00130 | 0.0100 | " | " | " | 11/24/03 | " | " | D |
| Mercury | ND | 0.0000358 | 0.000200 | " | " | 3110663 | 11/20/03 | 11/20/03 | EPA 7470A | U |
| **Nickel** | **0.128** | 0.00413 | 0.0100 | " | " | 3110772 | 11/24/03 | 11/26/03 | EPA 6020 | D |
| **Lead** | **0.213** | 0.000435 | 0.00500 | " | " | " | " | " | " | D |
| Antimony | ND | 0.000630 | 0.0250 | " | " | " | " | " | " | D, U |
| Selenium | ND | 0.00283 | 0.0100 | " | " | " | " | " | " | D, U |
| **Thallium** | **0.000850** | 0.000155 | 0.00500 | " | " | " | " | " | " | J, D |
| **Zinc** | **0.539** | 0.00512 | 0.0250 | " | " | " | 11/24/03 | " | " | D |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Dissolved Metals per EPA 6000/7000 Series Methods
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **MW-12-PW (P3K0433-16) Water Sampled: 11/14/03 15:53 Received: 11/14/03 17:00** | | | | | | | | | | |
| Silver | ND | 0.0000460 | 0.00100 | mg/l | 1 | 3110713 | 11/21/03 | 11/21/03 | EPA 6020 | M-04, U |
| **Arsenic** | **0.00368** | 0.000964 | 0.00100 | " | " | " | " | " | " | M-04 |
| Beryllium | ND | 0.0000790 | 0.00100 | " | " | " | " | " | " | M-04, U |
| Cadmium | ND | 0.0000730 | 0.00100 | " | " | " | " | " | " | M-04, U |
| **Chromium** | **0.000880** | 0.000791 | 0.00100 | " | " | " | " | " | " | M-04, J |
| Copper | ND | 0.000259 | 0.00200 | " | " | " | " | " | " | M-04, U |
| **Mercury** | **0.0000540** | 0.0000358 | 0.000200 | " | " | 3110799 | 11/24/03 | 11/24/03 | EPA 7470A | J |
| **Nickel** | **0.00200** | 0.000242 | 0.00200 | " | " | 3110713 | 11/21/03 | 11/21/03 | EPA 6020 | M-04 |
| Lead | ND | 0.0000870 | 0.00100 | " | " | " | " | " | " | M-04, U |
| Antimony | ND | 0.000126 | 0.00100 | " | " | " | " | " | " | M-04, U |
| Selenium | ND | 0.000566 | 0.00100 | " | " | " | " | " | " | M-04, U |
| Thallium | ND | 0.0000310 | 0.00100 | " | " | " | " | " | " | M-04, U |
| **Zinc** | **0.00426** | 0.00102 | 0.00500 | " | " | " | " | " | " | M-04, J |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# TCLP Metals per EPA 1311/6000/7000 Series Methods
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Comp-1 (P3K0433-17) Soil Sampled: 11/14/03 15:55 Received: 11/14/03 17:00** | | | | | | | | | | |
| Mercury | ND | 0.0000230 | 0.000200 | mg/l | 1 | 3120049 | 12/01/03 | 12/01/03 | 1311/7470A | U |
| Arsenic | ND | 0.0522 | 0.100 | " | 0.5 | 3120136 | 12/03/03 | 12/03/03 | 1311/6020 | D, U |
| **Barium** | **1.07** | 0.00882 | 0.100 | " | " | " | " | " | " | D |
| Cadmium | ND | 0.00728 | 0.100 | " | " | " | " | " | " | D, U |
| Chromium | ND | 0.0791 | 0.100 | " | " | " | " | " | " | D, U |
| Lead | ND | 0.00768 | 0.100 | " | " | " | " | " | " | D, U |
| Selenium | ND | 0.0269 | 0.100 | " | " | " | " | " | " | D, U |
| Silver | ND | 0.00378 | 0.100 | " | " | " | " | " | " | D, U |
| **Comp-2 (P3K0433-18) Soil Sampled: 11/14/03 16:05 Received: 11/14/03 17:00** | | | | | | | | | | |
| Mercury | ND | 0.0000230 | 0.000200 | mg/l | 1 | 3120049 | 12/01/03 | 12/01/03 | 1311/7470A | U |
| Arsenic | ND | 0.0522 | 0.100 | " | 0.5 | 3120136 | 12/03/03 | 12/03/03 | 1311/6020 | D, U |
| **Barium** | **2.03** | 0.00882 | 0.100 | " | " | " | " | " | " | D |
| Cadmium | ND | 0.00728 | 0.100 | " | " | " | " | " | " | D, U |
| Chromium | ND | 0.0791 | 0.100 | " | " | " | " | " | " | D, U |
| **Lead** | **0.219** | 0.00768 | 0.100 | " | " | " | " | " | " | D |
| Selenium | ND | 0.0269 | 0.100 | " | " | " | " | " | " | D, U |
| Silver | ND | 0.00378 | 0.100 | " | " | " | " | " | " | D, U |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Polychlorinated Biphenyls per EPA Method 8082
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-1-10 (P3K0433-01) Soil Sampled: 11/13/03 17:05 Received: 11/14/03 17:00** | | | | | | | | | | |
| Aroclor 1016 | ND | 11.1 | 67.0 | ug/kg dry | 1 | 3110698 | 11/21/03 | 11/24/03 | EPA 8082 | U |
| Aroclor 1221 | ND | 12.7 | 134 | " | " | " | " | " | " | U |
| Aroclor 1232 | ND | 11.1 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1242 | ND | 11.1 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1248 | ND | 3.87 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1254 | ND | 6.10 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1260 | ND | 11.5 | 67.0 | " | " | " | " | " | " | U |
| *Surrogate: 2,4,5,6-Tetrachloro-m-xylene* | | *86.2 %* | *36-140* | | | " | " | " | " | |
| *Surrogate: Decachlorobiphenyl* | | *65.5 %* | *16-149* | | | " | " | " | " | |
| **SB-1-20 (P3K0433-08) Soil Sampled: 11/14/03 08:30 Received: 11/14/03 17:00** | | | | | | | | | | |
| Aroclor 1016 | ND | 11.1 | 67.0 | ug/kg dry | 1 | 3110698 | 11/21/03 | 11/21/03 | EPA 8082 | U |
| Aroclor 1221 | ND | 12.7 | 134 | " | " | " | " | " | " | U |
| Aroclor 1232 | ND | 11.1 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1242 | ND | 11.1 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1248 | ND | 3.87 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1254 | ND | 6.10 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1260 | ND | 11.5 | 67.0 | " | " | " | " | " | " | U |
| *Surrogate: 2,4,5,6-Tetrachloro-m-xylene* | | *103 %* | *36-140* | | | " | " | " | " | |
| *Surrogate: Decachlorobiphenyl* | | *84.7 %* | *16-149* | | | " | " | " | " | |
| **SB-5-13.5 (P3K0433-09) Soil Sampled: 11/14/03 10:45 Received: 11/14/03 17:00** | | | | | | | | | | |
| Aroclor 1016 | ND | 11.1 | 67.0 | ug/kg dry | 1 | 3110698 | 11/21/03 | 11/24/03 | EPA 8082 | U |
| Aroclor 1221 | ND | 12.7 | 134 | " | " | " | " | " | " | U |
| Aroclor 1232 | ND | 11.1 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1242 | ND | 11.1 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1248 | ND | 3.87 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1254 | ND | 6.10 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1260 | ND | 11.5 | 67.0 | " | " | " | " | " | " | U |
| *Surrogate: 2,4,5,6-Tetrachloro-m-xylene* | | *105 %* | *36-140* | | | " | " | " | " | |
| *Surrogate: Decachlorobiphenyl* | | *86.9 %* | *16-149* | | | " | " | " | " | |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Polychlorinated Biphenyls per EPA Method 8082
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-4-17.5 (P3K0433-12) Soil Sampled: 11/14/03 14:08 Received: 11/14/03 17:00** | | | | | | | | | | |
| Aroclor 1016 | ND | 11.1 | 67.0 | ug/kg dry | 1 | 3110698 | 11/21/03 | 11/24/03 | EPA 8082 | U |
| Aroclor 1221 | ND | 12.7 | 134 | " | " | " | " | " | " | U |
| Aroclor 1232 | ND | 11.1 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1242 | ND | 11.1 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1248 | ND | 3.87 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1254 | ND | 6.10 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1260 | ND | 11.5 | 67.0 | " | " | " | " | " | " | U |
| *Surrogate: 2,4,5,6-Tetrachloro-m-xylene* | | *112 %* | *36-140* | | | " | " | " | " | |
| *Surrogate: Decachlorobiphenyl* | | *87.3 %* | *16-149* | | | " | " | " | " | |
| **Comp-1 (P3K0433-17) Soil Sampled: 11/14/03 15:55 Received: 11/14/03 17:00** | | | | | | | | | | |
| Aroclor 1016 | ND | 11.1 | 67.0 | ug/kg dry | 1 | 3110698 | 11/21/03 | 11/24/03 | EPA 8082 | U |
| Aroclor 1221 | ND | 12.7 | 134 | " | " | " | " | " | " | U |
| Aroclor 1232 | ND | 11.1 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1242 | ND | 11.1 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1248 | ND | 3.87 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1254 | ND | 6.10 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1260 | ND | 11.5 | 67.0 | " | " | " | " | " | " | U |
| *Surrogate: 2,4,5,6-Tetrachloro-m-xylene* | | *95.7 %* | *36-140* | | | " | " | " | " | |
| *Surrogate: Decachlorobiphenyl* | | *56.2 %* | *16-149* | | | " | " | " | " | |
| **Comp-2 (P3K0433-18) Soil Sampled: 11/14/03 16:05 Received: 11/14/03 17:00** | | | | | | | | | | |
| Aroclor 1016 | ND | 11.1 | 67.0 | ug/kg dry | 1 | 3110698 | 11/21/03 | 11/24/03 | EPA 8082 | U |
| Aroclor 1221 | ND | 12.7 | 134 | " | " | " | " | " | " | U |
| Aroclor 1232 | ND | 11.1 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1242 | ND | 11.1 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1248 | ND | 3.87 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1254 | ND | 6.10 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1260 | ND | 11.5 | 67.0 | " | " | " | " | " | " | U |
| *Surrogate: 2,4,5,6-Tetrachloro-m-xylene* | | *99.7 %* | *36-140* | | | " | " | " | " | |
| *Surrogate: Decachlorobiphenyl* | | *53.6 %* | *16-149* | | | " | " | " | " | |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Volatile Organic Compounds per EPA Method 8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **TB-3 (P3K0433-03) Water Sampled: 11/13/03 17:00 Received: 11/14/03 17:00** | | | | | | | | | | |
| Acetone | ND | 2.34 | 25.0 | ug/l | 1 | 3110611 | 11/19/03 | 11/19/03 | EPA 8260B | U |
| Benzene | ND | 0.147 | 1.00 | " | " | " | " | " | " | U |
| Bromobenzene | ND | 0.333 | 1.00 | " | " | " | " | " | " | U |
| Bromochloromethane | ND | 0.266 | 1.00 | " | " | " | " | " | " | U |
| Bromodichloromethane | ND | 0.183 | 1.00 | " | " | " | " | " | " | U |
| Bromoform | ND | 0.174 | 1.00 | " | " | " | " | " | " | U |
| Bromomethane | ND | 0.282 | 5.00 | " | " | " | " | " | " | U |
| 2-Butanone | ND | 1.60 | 10.0 | " | " | " | " | " | " | U |
| n-Butylbenzene | ND | 0.183 | 5.00 | " | " | " | " | " | " | U |
| sec-Butylbenzene | ND | 0.193 | 1.00 | " | " | " | " | " | " | U |
| tert-Butylbenzene | ND | 0.206 | 1.00 | " | " | " | " | " | " | U |
| Carbon disulfide | ND | 0.233 | 10.0 | " | " | " | " | " | " | U |
| Carbon tetrachloride | ND | 0.140 | 1.00 | " | " | " | " | " | " | U |
| Chlorobenzene | ND | 0.136 | 1.00 | " | " | " | " | " | " | U |
| Chloroethane | ND | 0.327 | 1.00 | " | " | " | " | " | " | U |
| Chloroform | ND | 0.143 | 1.00 | " | " | " | " | " | " | U |
| Chloromethane | ND | 0.159 | 5.00 | " | " | " | " | " | " | U |
| 2-Chlorotoluene | ND | 0.110 | 1.00 | " | " | " | " | " | " | U |
| 4-Chlorotoluene | ND | 0.120 | 1.00 | " | " | " | " | " | " | U |
| 1,2-Dibromo-3-chloropropane | ND | 0.405 | 5.00 | " | " | " | " | " | " | U |
| Dibromochloromethane | ND | 0.133 | 1.00 | " | " | " | " | " | " | U |
| 1,2-Dibromoethane | ND | 0.187 | 1.00 | " | " | " | " | " | " | U |
| Dibromomethane | ND | 0.117 | 1.00 | " | " | " | " | " | " | U |
| 1,2-Dichlorobenzene | ND | 0.0859 | 1.00 | " | " | " | " | " | " | U |
| 1,3-Dichlorobenzene | ND | 0.132 | 1.00 | " | " | " | " | " | " | U |
| 1,4-Dichlorobenzene | ND | 0.187 | 1.00 | " | " | " | " | " | " | U |
| Dichlorodifluoromethane | ND | 0.312 | 5.00 | " | " | " | " | " | " | U |
| 1,1-Dichloroethane | ND | 0.157 | 1.00 | " | " | " | " | " | " | U |
| 1,2-Dichloroethane | ND | 0.142 | 1.00 | " | " | " | " | " | " | U |
| 1,1-Dichloroethene | ND | 0.197 | 1.00 | " | " | " | " | " | " | U |
| cis-1,2-Dichloroethene | ND | 0.170 | 1.00 | " | " | " | " | " | " | U |
| trans-1,2-Dichloroethene | ND | 0.175 | 1.00 | " | " | " | " | " | " | U |
| 1,2-Dichloropropane | ND | 0.266 | 1.00 | " | " | " | " | " | " | U |
| 1,3-Dichloropropane | ND | 0.151 | 1.00 | " | " | " | " | " | " | U |
| 2,2-Dichloropropane | ND | 0.104 | 1.00 | " | " | " | " | " | " | U |
| 1,1-Dichloropropene | ND | 0.149 | 1.00 | " | " | " | " | " | " | U |
| cis-1,3-Dichloropropene | ND | 0.128 | 1.00 | " | " | " | " | " | " | U |
| trans-1,3-Dichloropropene | ND | 0.152 | 1.00 | " | " | " | " | " | " | U |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Volatile Organic Compounds per EPA Method 8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **TB-3 (P3K0433-03) Water Sampled: 11/13/03 17:00 Received: 11/14/03 17:00** | | | | | | | | | | |
| Ethylbenzene | ND | 0.110 | 1.00 | ug/l | 1 | 3110611 | 11/19/03 | 11/19/03 | EPA 8260B | U |
| Hexachlorobutadiene | ND | 0.878 | 2.00 | " | " | " | " | " | " | U |
| 2-Hexanone | ND | 1.10 | 10.0 | " | " | " | " | " | " | U |
| Isopropylbenzene | ND | 0.107 | 2.00 | " | " | " | " | " | " | U |
| p-Isopropyltoluene | ND | 0.149 | 2.00 | " | " | " | " | " | " | U |
| 4-Methyl-2-pentanone | ND | 1.49 | 5.00 | " | " | " | " | " | " | U |
| Methyl tert-butyl ether | ND | 0.0865 | 1.00 | " | " | " | " | " | " | U |
| Methylene chloride | ND | 2.50 | 5.00 | " | " | " | " | " | " | U |
| Naphthalene | ND | 0.0989 | 2.00 | " | " | " | " | " | " | U |
| n-Propylbenzene | ND | 0.138 | 1.00 | " | " | " | " | " | " | U |
| Styrene | ND | 0.0723 | 1.00 | " | " | " | " | " | " | U |
| 1,1,1,2-Tetrachloroethane | ND | 0.148 | 1.00 | " | " | " | " | " | " | U |
| 1,1,2,2-Tetrachloroethane | ND | 0.294 | 1.00 | " | " | " | " | " | " | U |
| Tetrachloroethene | ND | 0.109 | 1.00 | " | " | " | " | " | " | U |
| Toluene | ND | 0.155 | 1.00 | " | " | " | " | " | " | U |
| 1,2,3-Trichlorobenzene | ND | 0.219 | 1.00 | " | " | " | " | " | " | U |
| 1,2,4-Trichlorobenzene | ND | 0.213 | 1.00 | " | " | " | " | " | " | U |
| 1,1,1-Trichloroethane | ND | 0.0859 | 1.00 | " | " | " | " | " | " | U |
| 1,1,2-Trichloroethane | ND | 0.301 | 1.00 | " | " | " | " | " | " | U |
| Trichloroethene | ND | 0.241 | 1.00 | " | " | " | " | " | " | U |
| Trichlorofluoromethane | ND | 0.160 | 1.00 | " | " | " | " | " | " | U |
| 1,2,3-Trichloropropane | ND | 0.365 | 1.00 | " | " | " | " | " | " | U |
| 1,2,4-Trimethylbenzene | ND | 0.0884 | 1.00 | " | " | " | " | " | " | U |
| 1,3,5-Trimethylbenzene | ND | 0.157 | 1.00 | " | " | " | " | " | " | U |
| Vinyl chloride | ND | 0.152 | 1.00 | " | " | " | " | " | " | U |
| o-Xylene | ND | 0.187 | 1.00 | " | " | " | " | " | " | U |
| m,p-Xylene | ND | 0.295 | 2.00 | " | " | " | " | " | " | U |
| *Surrogate: 4-BFB* | | *89.5 %* | *75-120* | | | " | " | " | " | |
| *Surrogate: 1,2-DCA-d4* | | *104 %* | *77-129* | | | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *100 %* | *80-121* | | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *97.5 %* | *80-120* | | | " | " | " | " | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Volatile Organic Compounds per EPA Method 8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-1-11 (P3K0433-04) Soil Sampled: 11/13/03 17:50 Received: 11/14/03 17:00** | | | | | | | | | | **P-02** |
| Acetone | ND | 144 | 2500 | ug/kg wet | 1 | 3110486 | 11/17/03 | 11/18/03 | EPA 8260B | U |
| Benzene | ND | 4.44 | 100 | " | " | " | " | " | " | U |
| Bromobenzene | ND | 12.2 | 100 | " | " | " | " | " | " | U |
| Bromochloromethane | ND | 16.4 | 100 | " | " | " | " | " | " | U |
| Bromodichloromethane | ND | 10.2 | 100 | " | " | " | " | " | " | U |
| Bromoform | ND | 15.8 | 100 | " | " | " | " | " | " | U |
| Bromomethane | ND | 5.09 | 500 | " | " | " | " | " | " | U |
| 2-Butanone | ND | 148 | 1000 | " | " | " | " | " | " | U |
| n-Butylbenzene | ND | 11.3 | 500 | " | " | " | " | " | " | U |
| **sec-Butylbenzene** | **12.0** | 7.45 | 100 | " | " | " | " | " | " | J |
| tert-Butylbenzene | ND | 15.2 | 100 | " | " | " | " | " | " | U |
| Carbon disulfide | ND | 7.19 | 1000 | " | " | " | " | " | " | U |
| Carbon tetrachloride | ND | 7.64 | 100 | " | " | " | " | " | " | U |
| Chlorobenzene | ND | 8.09 | 100 | " | " | " | " | " | " | U |
| Chloroethane | ND | 10.7 | 100 | " | " | " | " | " | " | U |
| Chloroform | ND | 7.26 | 100 | " | " | " | " | " | " | U |
| Chloromethane | ND | 6.72 | 500 | " | " | " | " | " | " | U |
| 2-Chlorotoluene | ND | 11.0 | 100 | " | " | " | " | " | " | U |
| 4-Chlorotoluene | ND | 10.4 | 100 | " | " | " | " | " | " | U |
| 1,2-Dibromo-3-chloropropane | ND | 26.0 | 500 | " | " | " | " | " | " | U |
| Dibromochloromethane | ND | 11.2 | 100 | " | " | " | " | " | " | U |
| 1,2-Dibromoethane | ND | 11.6 | 100 | " | " | " | " | " | " | U |
| Dibromomethane | ND | 14.7 | 100 | " | " | " | " | " | " | U |
| 1,2-Dichlorobenzene | ND | 14.4 | 100 | " | " | " | " | " | " | U |
| 1,3-Dichlorobenzene | ND | 5.86 | 100 | " | " | " | " | " | " | U |
| 1,4-Dichlorobenzene | ND | 14.9 | 100 | " | " | " | " | " | " | U |
| Dichlorodifluoromethane | ND | 11.8 | 500 | " | " | " | " | " | " | U |
| 1,1-Dichloroethane | ND | 11.9 | 100 | " | " | " | " | " | " | U |
| 1,2-Dichloroethane | ND | 11.2 | 100 | " | " | " | " | " | " | U |
| 1,1-Dichloroethene | ND | 11.9 | 100 | " | " | " | " | " | " | U |
| cis-1,2-Dichloroethene | ND | 12.6 | 100 | " | " | " | " | " | " | U |
| trans-1,2-Dichloroethene | ND | 8.97 | 100 | " | " | " | " | " | " | U |
| 1,2-Dichloropropane | ND | 7.45 | 100 | " | " | " | " | " | " | U |
| 1,3-Dichloropropane | ND | 17.4 | 100 | " | " | " | " | " | " | U |
| 2,2-Dichloropropane | ND | 8.09 | 100 | " | " | " | " | " | " | U |
| 1,1-Dichloropropene | ND | 10.9 | 100 | " | " | " | " | " | " | U |
| cis-1,3-Dichloropropene | ND | 4.95 | 100 | " | " | " | " | " | " | U |
| trans-1,3-Dichloropropene | ND | 8.29 | 100 | " | " | " | " | " | " | U |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Volatile Organic Compounds per EPA Method 8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-1-11 (P3K0433-04) Soil Sampled: 11/13/03 17:50 Received: 11/14/03 17:00** | | | | | | | | | | **P-02** |
| Ethylbenzene | ND | 9.40 | 100 | ug/kg wet | 1 | 3110486 | 11/17/03 | 11/18/03 | EPA 8260B | U |
| Hexachlorobutadiene | ND | 69.4 | 200 | " | " | " | " | " | " | U |
| 2-Hexanone | ND | 57.2 | 1000 | " | " | " | " | " | " | U |
| Isopropylbenzene | ND | 9.55 | 200 | " | " | " | " | " | " | U |
| p-Isopropyltoluene | ND | 9.68 | 200 | " | " | " | " | " | " | U |
| 4-Methyl-2-pentanone | ND | 117 | 500 | " | " | " | " | " | " | U |
| Methyl tert-butyl ether | ND | 11.9 | 100 | " | " | " | " | " | " | U |
| Methylene chloride | ND | 250 | 500 | " | " | " | " | " | " | U |
| Naphthalene | ND | 14.1 | 200 | " | " | " | " | " | " | U |
| n-Propylbenzene | ND | 9.89 | 100 | " | " | " | " | " | " | U |
| Styrene | ND | 8.89 | 100 | " | " | " | " | " | " | U |
| 1,1,1,2-Tetrachloroethane | ND | 9.25 | 100 | " | " | " | " | " | " | U |
| 1,1,2,2-Tetrachloroethane | ND | 21.1 | 100 | " | " | " | " | " | " | U |
| Tetrachloroethene | ND | 16.9 | 100 | " | " | " | " | " | " | U |
| Toluene | ND | 6.29 | 100 | " | " | " | " | " | " | U |
| 1,2,3-Trichlorobenzene | ND | 16.9 | 100 | " | " | " | " | " | " | U |
| 1,2,4-Trichlorobenzene | ND | 21.4 | 100 | " | " | " | " | " | " | U |
| 1,1,1-Trichloroethane | ND | 6.13 | 100 | " | " | " | " | " | " | U |
| 1,1,2-Trichloroethane | ND | 18.1 | 100 | " | " | " | " | " | " | U |
| Trichloroethene | ND | 12.0 | 100 | " | " | " | " | " | " | U |
| Trichlorofluoromethane | ND | 8.97 | 100 | " | " | " | " | " | " | U |
| 1,2,3-Trichloropropane | ND | 49.2 | 100 | " | " | " | " | " | " | U |
| 1,2,4-Trimethylbenzene | ND | 6.75 | 100 | " | " | " | " | " | " | U |
| 1,3,5-Trimethylbenzene | ND | 9.33 | 100 | " | " | " | " | " | " | U |
| Vinyl chloride | ND | 5.74 | 100 | " | " | " | " | " | " | U |
| o-Xylene | ND | 11.6 | 100 | " | " | " | " | " | " | U |
| m,p-Xylene | ND | 11.4 | 200 | " | " | " | " | " | " | U |
| *Surrogate: 4-BFB* | | *100 %* | *42.6-130* | | | " | " | " | " | |
| *Surrogate: 1,2-DCA-d4* | | *90.5 %* | *57.3-144* | | | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *90.0 %* | *45.5-130* | | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *102 %* | *42.1-144* | | | " | " | " | " | |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Volatile Organic Compounds per EPA Method 8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-1-20-21.5 (P3K0433-05) Soil Sampled: 11/14/03 08:38 Received: 11/14/03 17:00** | | | | | | | | | | **P-02** |
| Acetone | ND | 144 | 2500 | ug/kg wet | 1 | 3110486 | 11/17/03 | 11/18/03 | EPA 8260B | U |
| Benzene | ND | 4.44 | 100 | " | " | " | " | " | " | U |
| Bromobenzene | ND | 12.2 | 100 | " | " | " | " | " | " | U |
| Bromochloromethane | ND | 16.4 | 100 | " | " | " | " | " | " | U |
| Bromodichloromethane | ND | 10.2 | 100 | " | " | " | " | " | " | U |
| Bromoform | ND | 15.8 | 100 | " | " | " | " | " | " | U |
| Bromomethane | ND | 5.09 | 500 | " | " | " | " | " | " | U |
| 2-Butanone | ND | 148 | 1000 | " | " | " | " | " | " | U |
| n-Butylbenzene | ND | 11.3 | 500 | " | " | " | " | " | " | U |
| sec-Butylbenzene | ND | 7.45 | 100 | " | " | " | " | " | " | U |
| tert-Butylbenzene | ND | 15.2 | 100 | " | " | " | " | " | " | U |
| Carbon disulfide | ND | 7.19 | 1000 | " | " | " | " | " | " | U |
| Carbon tetrachloride | ND | 7.64 | 100 | " | " | " | " | " | " | U |
| Chlorobenzene | ND | 8.09 | 100 | " | " | " | " | " | " | U |
| Chloroethane | ND | 10.7 | 100 | " | " | " | " | " | " | U |
| Chloroform | ND | 7.26 | 100 | " | " | " | " | " | " | U |
| Chloromethane | ND | 6.72 | 500 | " | " | " | " | " | " | U |
| 2-Chlorotoluene | ND | 11.0 | 100 | " | " | " | " | " | " | U |
| 4-Chlorotoluene | ND | 10.4 | 100 | " | " | " | " | " | " | U |
| 1,2-Dibromo-3-chloropropane | ND | 26.0 | 500 | " | " | " | " | " | " | U |
| Dibromochloromethane | ND | 11.2 | 100 | " | " | " | " | " | " | U |
| 1,2-Dibromoethane | ND | 11.6 | 100 | " | " | " | " | " | " | U |
| Dibromomethane | ND | 14.7 | 100 | " | " | " | " | " | " | U |
| 1,2-Dichlorobenzene | ND | 14.4 | 100 | " | " | " | " | " | " | U |
| 1,3-Dichlorobenzene | ND | 5.86 | 100 | " | " | " | " | " | " | U |
| 1,4-Dichlorobenzene | ND | 14.9 | 100 | " | " | " | " | " | " | U |
| Dichlorodifluoromethane | ND | 11.8 | 500 | " | " | " | " | " | " | U |
| 1,1-Dichloroethane | ND | 11.9 | 100 | " | " | " | " | " | " | U |
| 1,2-Dichloroethane | ND | 11.2 | 100 | " | " | " | " | " | " | U |
| 1,1-Dichloroethene | ND | 11.9 | 100 | " | " | " | " | " | " | U |
| cis-1,2-Dichloroethene | ND | 12.6 | 100 | " | " | " | " | " | " | U |
| trans-1,2-Dichloroethene | ND | 8.97 | 100 | " | " | " | " | " | " | U |
| 1,2-Dichloropropane | ND | 7.45 | 100 | " | " | " | " | " | " | U |
| 1,3-Dichloropropane | ND | 17.4 | 100 | " | " | " | " | " | " | U |
| 2,2-Dichloropropane | ND | 8.09 | 100 | " | " | " | " | " | " | U |
| 1,1-Dichloropropene | ND | 10.9 | 100 | " | " | " | " | " | " | U |
| cis-1,3-Dichloropropene | ND | 4.95 | 100 | " | " | " | " | " | " | U |
| trans-1,3-Dichloropropene | ND | 8.29 | 100 | " | " | " | " | " | " | U |



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907.563.9200 fax 907.563.9210

| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Volatile Organic Compounds per EPA Method 8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-1-20-21.5 (P3K0433-05) Soil Sampled: 11/14/03 08:38 Received: 11/14/03 17:00** | | | | | | | | | | **P-02** |
| Ethylbenzene | ND | 9.40 | 100 | ug/kg wet | 1 | 3110486 | 11/17/03 | 11/18/03 | EPA 8260B | U |
| Hexachlorobutadiene | ND | 69.4 | 200 | " | " | " | " | " | " | U |
| 2-Hexanone | ND | 57.2 | 1000 | " | " | " | " | " | " | U |
| Isopropylbenzene | ND | 9.55 | 200 | " | " | " | " | " | " | U |
| p-Isopropyltoluene | ND | 9.68 | 200 | " | " | " | " | " | " | U |
| 4-Methyl-2-pentanone | ND | 117 | 500 | " | " | " | " | " | " | U |
| Methyl tert-butyl ether | ND | 11.9 | 100 | " | " | " | " | " | " | U |
| Methylene chloride | ND | 250 | 500 | " | " | " | " | " | " | U |
| Naphthalene | ND | 14.1 | 200 | " | " | " | " | " | " | U |
| n-Propylbenzene | ND | 9.89 | 100 | " | " | " | " | " | " | U |
| Styrene | ND | 8.89 | 100 | " | " | " | " | " | " | U |
| 1,1,1,2-Tetrachloroethane | ND | 9.25 | 100 | " | " | " | " | " | " | U |
| 1,1,2,2-Tetrachloroethane | ND | 21.1 | 100 | " | " | " | " | " | " | U |
| Tetrachloroethene | ND | 16.9 | 100 | " | " | " | " | " | " | U |
| Toluene | ND | 6.29 | 100 | " | " | " | " | " | " | U |
| 1,2,3-Trichlorobenzene | ND | 16.9 | 100 | " | " | " | " | " | " | U |
| 1,2,4-Trichlorobenzene | ND | 21.4 | 100 | " | " | " | " | " | " | U |
| 1,1,1-Trichloroethane | ND | 6.13 | 100 | " | " | " | " | " | " | U |
| 1,1,2-Trichloroethane | ND | 18.1 | 100 | " | " | " | " | " | " | U |
| Trichloroethene | ND | 12.0 | 100 | " | " | " | " | " | " | U |
| Trichlorofluoromethane | ND | 8.97 | 100 | " | " | " | " | " | " | U |
| 1,2,3-Trichloropropane | ND | 49.2 | 100 | " | " | " | " | " | " | U |
| 1,2,4-Trimethylbenzene | ND | 6.75 | 100 | " | " | " | " | " | " | U |
| 1,3,5-Trimethylbenzene | ND | 9.33 | 100 | " | " | " | " | " | " | U |
| Vinyl chloride | ND | 5.74 | 100 | " | " | " | " | " | " | U |
| o-Xylene | ND | 11.6 | 100 | " | " | " | " | " | " | U |
| m,p-Xylene | ND | 11.4 | 200 | " | " | " | " | " | " | U |
| *Surrogate: 4-BFB* | | *102 %* | *42.6-130* | | | " | " | " | " | |
| *Surrogate: 1,2-DCA-d4* | | *92.0 %* | *57.3-144* | | | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *91.5 %* | *45.5-130* | | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *101 %* | *42.1-144* | | | " | " | " | " | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Volatile Organic Compounds per EPA Method 8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Air Blank (P3K0433-10) Soil Sampled: 11/14/03 10:45 Received: 11/14/03 17:00** | | | | | | | | | | **P-02** |
| Acetone | ND | 144 | 2500 | ug/kg wet | 1 | 3110486 | 11/17/03 | 11/18/03 | EPA 8260B | U |
| Benzene | ND | 4.44 | 100 | " | " | " | " | " | " | U |
| Bromobenzene | ND | 12.2 | 100 | " | " | " | " | " | " | U |
| Bromochloromethane | ND | 16.4 | 100 | " | " | " | " | " | " | U |
| Bromodichloromethane | ND | 10.2 | 100 | " | " | " | " | " | " | U |
| Bromoform | ND | 15.8 | 100 | " | " | " | " | " | " | U |
| Bromomethane | ND | 5.09 | 500 | " | " | " | " | " | " | U |
| 2-Butanone | ND | 148 | 1000 | " | " | " | " | " | " | U |
| n-Butylbenzene | ND | 11.3 | 500 | " | " | " | " | " | " | U |
| sec-Butylbenzene | ND | 7.45 | 100 | " | " | " | " | " | " | U |
| tert-Butylbenzene | ND | 15.2 | 100 | " | " | " | " | " | " | U |
| Carbon disulfide | ND | 7.19 | 1000 | " | " | " | " | " | " | U |
| Carbon tetrachloride | ND | 7.64 | 100 | " | " | " | " | " | " | U |
| Chlorobenzene | ND | 8.09 | 100 | " | " | " | " | " | " | U |
| Chloroethane | ND | 10.7 | 100 | " | " | " | " | " | " | U |
| Chloroform | ND | 7.26 | 100 | " | " | " | " | " | " | U |
| Chloromethane | ND | 6.72 | 500 | " | " | " | " | " | " | U |
| 2-Chlorotoluene | ND | 11.0 | 100 | " | " | " | " | " | " | U |
| 4-Chlorotoluene | ND | 10.4 | 100 | " | " | " | " | " | " | U |
| 1,2-Dibromo-3-chloropropane | ND | 26.0 | 500 | " | " | " | " | " | " | U |
| Dibromochloromethane | ND | 11.2 | 100 | " | " | " | " | " | " | U |
| 1,2-Dibromoethane | ND | 11.6 | 100 | " | " | " | " | " | " | U |
| Dibromomethane | ND | 14.7 | 100 | " | " | " | " | " | " | U |
| 1,2-Dichlorobenzene | ND | 14.4 | 100 | " | " | " | " | " | " | U |
| 1,3-Dichlorobenzene | ND | 5.86 | 100 | " | " | " | " | " | " | U |
| 1,4-Dichlorobenzene | ND | 14.9 | 100 | " | " | " | " | " | " | U |
| Dichlorodifluoromethane | ND | 11.8 | 500 | " | " | " | " | " | " | U |
| 1,1-Dichloroethane | ND | 11.9 | 100 | " | " | " | " | " | " | U |
| 1,2-Dichloroethane | ND | 11.2 | 100 | " | " | " | " | " | " | U |
| 1,1-Dichloroethene | ND | 11.9 | 100 | " | " | " | " | " | " | U |
| cis-1,2-Dichloroethene | ND | 12.6 | 100 | " | " | " | " | " | " | U |
| trans-1,2-Dichloroethene | ND | 8.97 | 100 | " | " | " | " | " | " | U |
| 1,2-Dichloropropane | ND | 7.45 | 100 | " | " | " | " | " | " | U |
| 1,3-Dichloropropane | ND | 17.4 | 100 | " | " | " | " | " | " | U |
| 2,2-Dichloropropane | ND | 8.09 | 100 | " | " | " | " | " | " | U |
| 1,1-Dichloropropene | ND | 10.9 | 100 | " | " | " | " | " | " | U |
| cis-1,3-Dichloropropene | ND | 4.95 | 100 | " | " | " | " | " | " | U |
| trans-1,3-Dichloropropene | ND | 8.29 | 100 | " | " | " | " | " | " | U |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Volatile Organic Compounds per EPA Method 8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Air Blank (P3K0433-10) Soil Sampled: 11/14/03 10:45 Received: 11/14/03 17:00** | | | | | | | | | | **P-02** |
| Ethylbenzene | ND | 9.40 | 100 | ug/kg wet | 1 | 3110486 | 11/17/03 | 11/18/03 | EPA 8260B | U |
| Hexachlorobutadiene | ND | 69.4 | 200 | " | " | " | " | " | " | U |
| 2-Hexanone | ND | 57.2 | 1000 | " | " | " | " | " | " | U |
| Isopropylbenzene | ND | 9.55 | 200 | " | " | " | " | " | " | U |
| p-Isopropyltoluene | ND | 9.68 | 200 | " | " | " | " | " | " | U |
| 4-Methyl-2-pentanone | ND | 117 | 500 | " | " | " | " | " | " | U |
| Methyl tert-butyl ether | ND | 11.9 | 100 | " | " | " | " | " | " | U |
| Methylene chloride | ND | 250 | 500 | " | " | " | " | " | " | U |
| Naphthalene | ND | 14.1 | 200 | " | " | " | " | " | " | U |
| n-Propylbenzene | ND | 9.89 | 100 | " | " | " | " | " | " | U |
| Styrene | ND | 8.89 | 100 | " | " | " | " | " | " | U |
| 1,1,1,2-Tetrachloroethane | ND | 9.25 | 100 | " | " | " | " | " | " | U |
| 1,1,2,2-Tetrachloroethane | ND | 21.1 | 100 | " | " | " | " | " | " | U |
| Tetrachloroethene | ND | 16.9 | 100 | " | " | " | " | " | " | U |
| Toluene | ND | 6.29 | 100 | " | " | " | " | " | " | U |
| 1,2,3-Trichlorobenzene | ND | 16.9 | 100 | " | " | " | " | " | " | U |
| 1,2,4-Trichlorobenzene | ND | 21.4 | 100 | " | " | " | " | " | " | U |
| 1,1,1-Trichloroethane | ND | 6.13 | 100 | " | " | " | " | " | " | U |
| 1,1,2-Trichloroethane | ND | 18.1 | 100 | " | " | " | " | " | " | U |
| Trichloroethene | ND | 12.0 | 100 | " | " | " | " | " | " | U |
| Trichlorofluoromethane | ND | 8.97 | 100 | " | " | " | " | " | " | U |
| 1,2,3-Trichloropropane | ND | 49.2 | 100 | " | " | " | " | " | " | U |
| 1,2,4-Trimethylbenzene | ND | 6.75 | 100 | " | " | " | " | " | " | U |
| 1,3,5-Trimethylbenzene | ND | 9.33 | 100 | " | " | " | " | " | " | U |
| Vinyl chloride | ND | 5.74 | 100 | " | " | " | " | " | " | U |
| o-Xylene | ND | 11.6 | 100 | " | " | " | " | " | " | U |
| m,p-Xylene | ND | 11.4 | 200 | " | " | " | " | " | " | U |
| *Surrogate: 4-BFB* | | *100 %* | *42.6-130* | | | " | " | " | " | |
| *Surrogate: 1,2-DCA-d4* | | *89.5 %* | *57.3-144* | | | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *89.0 %* | *45.5-130* | | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *102 %* | *42.1-144* | | | " | " | " | " | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Volatile Organic Compounds per EPA Method 8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-5-13-14.5 (P3K0433-11) Soil Sampled: 11/14/03 10:57 Received: 11/14/03 17:00** | | | | | | | | | | **P-02** |
| Acetone | ND | 144 | 2500 | ug/kg wet | 1 | 3110486 | 11/17/03 | 11/18/03 | EPA 8260B | U |
| Benzene | ND | 4.44 | 100 | " | " | " | " | " | " | U |
| Bromobenzene | ND | 12.2 | 100 | " | " | " | " | " | " | U |
| Bromochloromethane | ND | 16.4 | 100 | " | " | " | " | " | " | U |
| Bromodichloromethane | ND | 10.2 | 100 | " | " | " | " | " | " | U |
| Bromoform | ND | 15.8 | 100 | " | " | " | " | " | " | U |
| Bromomethane | ND | 5.09 | 500 | " | " | " | " | " | " | U |
| 2-Butanone | ND | 148 | 1000 | " | " | " | " | " | " | U |
| n-Butylbenzene | ND | 11.3 | 500 | " | " | " | " | " | " | U |
| sec-Butylbenzene | ND | 7.45 | 100 | " | " | " | " | " | " | U |
| tert-Butylbenzene | ND | 15.2 | 100 | " | " | " | " | " | " | U |
| Carbon disulfide | ND | 7.19 | 1000 | " | " | " | " | " | " | U |
| Carbon tetrachloride | ND | 7.64 | 100 | " | " | " | " | " | " | U |
| Chlorobenzene | ND | 8.09 | 100 | " | " | " | " | " | " | U |
| Chloroethane | ND | 10.7 | 100 | " | " | " | " | " | " | U |
| Chloroform | ND | 7.26 | 100 | " | " | " | " | " | " | U |
| Chloromethane | ND | 6.72 | 500 | " | " | " | " | " | " | U |
| 2-Chlorotoluene | ND | 11.0 | 100 | " | " | " | " | " | " | U |
| 4-Chlorotoluene | ND | 10.4 | 100 | " | " | " | " | " | " | U |
| 1,2-Dibromo-3-chloropropane | ND | 26.0 | 500 | " | " | " | " | " | " | U |
| Dibromochloromethane | ND | 11.2 | 100 | " | " | " | " | " | " | U |
| 1,2-Dibromoethane | ND | 11.6 | 100 | " | " | " | " | " | " | U |
| Dibromomethane | ND | 14.7 | 100 | " | " | " | " | " | " | U |
| 1,2-Dichlorobenzene | ND | 14.4 | 100 | " | " | " | " | " | " | U |
| 1,3-Dichlorobenzene | ND | 5.86 | 100 | " | " | " | " | " | " | U |
| 1,4-Dichlorobenzene | ND | 14.9 | 100 | " | " | " | " | " | " | U |
| Dichlorodifluoromethane | ND | 11.8 | 500 | " | " | " | " | " | " | U |
| 1,1-Dichloroethane | ND | 11.9 | 100 | " | " | " | " | " | " | U |
| 1,2-Dichloroethane | ND | 11.2 | 100 | " | " | " | " | " | " | U |
| 1,1-Dichloroethene | ND | 11.9 | 100 | " | " | " | " | " | " | U |
| cis-1,2-Dichloroethene | ND | 12.6 | 100 | " | " | " | " | " | " | U |
| trans-1,2-Dichloroethene | ND | 8.97 | 100 | " | " | " | " | " | " | U |
| 1,2-Dichloropropane | ND | 7.45 | 100 | " | " | " | " | " | " | U |
| 1,3-Dichloropropane | ND | 17.4 | 100 | " | " | " | " | " | " | U |
| 2,2-Dichloropropane | ND | 8.09 | 100 | " | " | " | " | " | " | U |
| 1,1-Dichloropropene | ND | 10.9 | 100 | " | " | " | " | " | " | U |
| cis-1,3-Dichloropropene | ND | 4.95 | 100 | " | " | " | " | " | " | U |
| trans-1,3-Dichloropropene | ND | 8.29 | 100 | " | " | " | " | " | " | U |



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907.563.9200 fax 907.563.9210

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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Volatile Organic Compounds per EPA Method 8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-5-13-14.5 (P3K0433-11) Soil Sampled: 11/14/03 10:57 Received: 11/14/03 17:00** | | | | | | | | | | **P-02** |
| Ethylbenzene | ND | 9.40 | 100 | ug/kg wet | 1 | 3110486 | 11/17/03 | 11/18/03 | EPA 8260B | U |
| Hexachlorobutadiene | ND | 69.4 | 200 | " | " | " | " | " | " | U |
| 2-Hexanone | ND | 57.2 | 1000 | " | " | " | " | " | " | U |
| Isopropylbenzene | ND | 9.55 | 200 | " | " | " | " | " | " | U |
| p-Isopropyltoluene | ND | 9.68 | 200 | " | " | " | " | " | " | U |
| 4-Methyl-2-pentanone | ND | 117 | 500 | " | " | " | " | " | " | U |
| Methyl tert-butyl ether | ND | 11.9 | 100 | " | " | " | " | " | " | U |
| Methylene chloride | ND | 250 | 500 | " | " | " | " | " | " | U |
| Naphthalene | ND | 14.1 | 200 | " | " | " | " | " | " | U |
| n-Propylbenzene | ND | 9.89 | 100 | " | " | " | " | " | " | U |
| Styrene | ND | 8.89 | 100 | " | " | " | " | " | " | U |
| 1,1,1,2-Tetrachloroethane | ND | 9.25 | 100 | " | " | " | " | " | " | U |
| 1,1,2,2-Tetrachloroethane | ND | 21.1 | 100 | " | " | " | " | " | " | U |
| Tetrachloroethene | ND | 16.9 | 100 | " | " | " | " | " | " | U |
| Toluene | ND | 6.29 | 100 | " | " | " | " | " | " | U |
| 1,2,3-Trichlorobenzene | ND | 16.9 | 100 | " | " | " | " | " | " | U |
| 1,2,4-Trichlorobenzene | ND | 21.4 | 100 | " | " | " | " | " | " | U |
| 1,1,1-Trichloroethane | ND | 6.13 | 100 | " | " | " | " | " | " | U |
| 1,1,2-Trichloroethane | ND | 18.1 | 100 | " | " | " | " | " | " | U |
| Trichloroethene | ND | 12.0 | 100 | " | " | " | " | " | " | U |
| Trichlorofluoromethane | ND | 8.97 | 100 | " | " | " | " | " | " | U |
| 1,2,3-Trichloropropane | ND | 49.2 | 100 | " | " | " | " | " | " | U |
| 1,2,4-Trimethylbenzene | ND | 6.75 | 100 | " | " | " | " | " | " | U |
| 1,3,5-Trimethylbenzene | ND | 9.33 | 100 | " | " | " | " | " | " | U |
| Vinyl chloride | ND | 5.74 | 100 | " | " | " | " | " | " | U |
| o-Xylene | ND | 11.6 | 100 | " | " | " | " | " | " | U |
| m,p-Xylene | ND | 11.4 | 200 | " | " | " | " | " | " | U |
| *Surrogate: 4-BFB* | | *101 %* | *42.6-130* | | | " | " | " | " | |
| *Surrogate: 1,2-DCA-d4* | | *92.0 %* | *57.3-144* | | | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *89.0 %* | *45.5-130* | | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *103 %* | *42.1-144* | | | " | " | " | " | |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Volatile Organic Compounds per EPA Method 8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-4-16.5-18 (P3K0433-14) Soil Sampled: 11/14/03 14:20 Received: 11/14/03 17:00** | | | | | | | | | | **P-02** |
| Acetone | ND | 144 | 2500 | ug/kg wet | 1 | 3110486 | 11/17/03 | 11/18/03 | EPA 8260B | U |
| Benzene | ND | 4.44 | 100 | " | " | " | " | " | " | U |
| Bromobenzene | ND | 12.2 | 100 | " | " | " | " | " | " | U |
| Bromochloromethane | ND | 16.4 | 100 | " | " | " | " | " | " | U |
| Bromodichloromethane | ND | 10.2 | 100 | " | " | " | " | " | " | U |
| Bromoform | ND | 15.8 | 100 | " | " | " | " | " | " | U |
| Bromomethane | ND | 5.09 | 500 | " | " | " | " | " | " | U |
| 2-Butanone | ND | 148 | 1000 | " | " | " | " | " | " | U |
| n-Butylbenzene | ND | 11.3 | 500 | " | " | " | " | " | " | U |
| sec-Butylbenzene | ND | 7.45 | 100 | " | " | " | " | " | " | U |
| tert-Butylbenzene | ND | 15.2 | 100 | " | " | " | " | " | " | U |
| Carbon disulfide | ND | 7.19 | 1000 | " | " | " | " | " | " | U |
| Carbon tetrachloride | ND | 7.64 | 100 | " | " | " | " | " | " | U |
| Chlorobenzene | ND | 8.09 | 100 | " | " | " | " | " | " | U |
| Chloroethane | ND | 10.7 | 100 | " | " | " | " | " | " | U |
| Chloroform | ND | 7.26 | 100 | " | " | " | " | " | " | U |
| Chloromethane | ND | 6.72 | 500 | " | " | " | " | " | " | U |
| 2-Chlorotoluene | ND | 11.0 | 100 | " | " | " | " | " | " | U |
| 4-Chlorotoluene | ND | 10.4 | 100 | " | " | " | " | " | " | U |
| 1,2-Dibromo-3-chloropropane | ND | 26.0 | 500 | " | " | " | " | " | " | U |
| Dibromochloromethane | ND | 11.2 | 100 | " | " | " | " | " | " | U |
| 1,2-Dibromoethane | ND | 11.6 | 100 | " | " | " | " | " | " | U |
| Dibromomethane | ND | 14.7 | 100 | " | " | " | " | " | " | U |
| 1,2-Dichlorobenzene | ND | 14.4 | 100 | " | " | " | " | " | " | U |
| 1,3-Dichlorobenzene | ND | 5.86 | 100 | " | " | " | " | " | " | U |
| 1,4-Dichlorobenzene | ND | 14.9 | 100 | " | " | " | " | " | " | U |
| Dichlorodifluoromethane | ND | 11.8 | 500 | " | " | " | " | " | " | U |
| 1,1-Dichloroethane | ND | 11.9 | 100 | " | " | " | " | " | " | U |
| 1,2-Dichloroethane | ND | 11.2 | 100 | " | " | " | " | " | " | U |
| 1,1-Dichloroethene | ND | 11.9 | 100 | " | " | " | " | " | " | U |
| cis-1,2-Dichloroethene | ND | 12.6 | 100 | " | " | " | " | " | " | U |
| trans-1,2-Dichloroethene | ND | 8.97 | 100 | " | " | " | " | " | " | U |
| 1,2-Dichloropropane | ND | 7.45 | 100 | " | " | " | " | " | " | U |
| 1,3-Dichloropropane | ND | 17.4 | 100 | " | " | " | " | " | " | U |
| 2,2-Dichloropropane | ND | 8.09 | 100 | " | " | " | " | " | " | U |
| 1,1-Dichloropropene | ND | 10.9 | 100 | " | " | " | " | " | " | U |
| cis-1,3-Dichloropropene | ND | 4.95 | 100 | " | " | " | " | " | " | U |
| trans-1,3-Dichloropropene | ND | 8.29 | 100 | " | " | " | " | " | " | U |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Volatile Organic Compounds per EPA Method 8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-4-16.5-18 (P3K0433-14) Soil Sampled: 11/14/03 14:20 Received: 11/14/03 17:00** | | | | | | | | | | **P-02** |
| Ethylbenzene | ND | 9.40 | 100 | ug/kg wet | 1 | 3110486 | 11/17/03 | 11/18/03 | EPA 8260B | U |
| Hexachlorobutadiene | ND | 69.4 | 200 | " | " | " | " | " | " | U |
| 2-Hexanone | ND | 57.2 | 1000 | " | " | " | " | " | " | U |
| Isopropylbenzene | ND | 9.55 | 200 | " | " | " | " | " | " | U |
| p-Isopropyltoluene | ND | 9.68 | 200 | " | " | " | " | " | " | U |
| 4-Methyl-2-pentanone | ND | 117 | 500 | " | " | " | " | " | " | U |
| Methyl tert-butyl ether | ND | 11.9 | 100 | " | " | " | " | " | " | U |
| Methylene chloride | ND | 250 | 500 | " | " | " | " | " | " | U |
| Naphthalene | ND | 14.1 | 200 | " | " | " | " | " | " | U |
| n-Propylbenzene | ND | 9.89 | 100 | " | " | " | " | " | " | U |
| Styrene | ND | 8.89 | 100 | " | " | " | " | " | " | U |
| 1,1,1,2-Tetrachloroethane | ND | 9.25 | 100 | " | " | " | " | " | " | U |
| 1,1,2,2-Tetrachloroethane | ND | 21.1 | 100 | " | " | " | " | " | " | U |
| Tetrachloroethene | ND | 16.9 | 100 | " | " | " | " | " | " | U |
| Toluene | ND | 6.29 | 100 | " | " | " | " | " | " | U |
| 1,2,3-Trichlorobenzene | ND | 16.9 | 100 | " | " | " | " | " | " | U |
| 1,2,4-Trichlorobenzene | ND | 21.4 | 100 | " | " | " | " | " | " | U |
| 1,1,1-Trichloroethane | ND | 6.13 | 100 | " | " | " | " | " | " | U |
| 1,1,2-Trichloroethane | ND | 18.1 | 100 | " | " | " | " | " | " | U |
| Trichloroethene | ND | 12.0 | 100 | " | " | " | " | " | " | U |
| Trichlorofluoromethane | ND | 8.97 | 100 | " | " | " | " | " | " | U |
| 1,2,3-Trichloropropane | ND | 49.2 | 100 | " | " | " | " | " | " | U |
| 1,2,4-Trimethylbenzene | ND | 6.75 | 100 | " | " | " | " | " | " | U |
| 1,3,5-Trimethylbenzene | ND | 9.33 | 100 | " | " | " | " | " | " | U |
| Vinyl chloride | ND | 5.74 | 100 | " | " | " | " | " | " | U |
| o-Xylene | ND | 11.6 | 100 | " | " | " | " | " | " | U |
| m,p-Xylene | ND | 11.4 | 200 | " | " | " | " | " | " | U |
| *Surrogate: 4-BFB* | | *98.0 %* | *42.6-130* | | | " | " | " | " | |
| *Surrogate: 1,2-DCA-d4* | | *91.0 %* | *57.3-144* | | | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *88.0 %* | *45.5-130* | | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *102 %* | *42.1-144* | | | " | " | " | " | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Volatile Organic Compounds per EPA Method 8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **MW-11-PW (P3K0433-15) Water Sampled: 11/14/03 14:45 Received: 11/14/03 17:00** | | | | | | | | | | |
| Acetone | ND | 2.34 | 25.0 | ug/l | 1 | 3110611 | 11/19/03 | 11/19/03 | EPA 8260B | U |
| Benzene | ND | 0.147 | 1.00 | " | " | " | " | " | " | U |
| Bromobenzene | ND | 0.333 | 1.00 | " | " | " | " | " | " | U |
| Bromochloromethane | ND | 0.266 | 1.00 | " | " | " | " | " | " | U |
| Bromodichloromethane | ND | 0.183 | 1.00 | " | " | " | " | " | " | U |
| Bromoform | ND | 0.174 | 1.00 | " | " | " | " | " | " | U |
| Bromomethane | ND | 0.282 | 5.00 | " | " | " | " | " | " | U |
| 2-Butanone | ND | 1.60 | 10.0 | " | " | " | " | " | " | U |
| **n-Butylbenzene** | **1.26** | 0.183 | 5.00 | " | " | " | " | " | " | J |
| **sec-Butylbenzene** | **1.04** | 0.193 | 1.00 | " | " | " | " | " | " | |
| tert-Butylbenzene | ND | 0.206 | 1.00 | " | " | " | " | " | " | U |
| Carbon disulfide | ND | 0.233 | 10.0 | " | " | " | " | " | " | U |
| Carbon tetrachloride | ND | 0.140 | 1.00 | " | " | " | " | " | " | U |
| Chlorobenzene | ND | 0.136 | 1.00 | " | " | " | " | " | " | U |
| Chloroethane | ND | 0.327 | 1.00 | " | " | " | " | " | " | U |
| **Chloroform** | **0.340** | 0.143 | 1.00 | " | " | " | " | " | " | J |
| Chloromethane | ND | 0.159 | 5.00 | " | " | " | " | " | " | U |
| 2-Chlorotoluene | ND | 0.110 | 1.00 | " | " | " | " | " | " | U |
| 4-Chlorotoluene | ND | 0.120 | 1.00 | " | " | " | " | " | " | U |
| 1,2-Dibromo-3-chloropropane | ND | 0.405 | 5.00 | " | " | " | " | " | " | U |
| Dibromochloromethane | ND | 0.133 | 1.00 | " | " | " | " | " | " | U |
| 1,2-Dibromoethane | ND | 0.187 | 1.00 | " | " | " | " | " | " | U |
| Dibromomethane | ND | 0.117 | 1.00 | " | " | " | " | " | " | U |
| 1,2-Dichlorobenzene | ND | 0.0859 | 1.00 | " | " | " | " | " | " | U |
| 1,3-Dichlorobenzene | ND | 0.132 | 1.00 | " | " | " | " | " | " | U |
| 1,4-Dichlorobenzene | ND | 0.187 | 1.00 | " | " | " | " | " | " | U |
| Dichlorodifluoromethane | ND | 0.312 | 5.00 | " | " | " | " | " | " | U |
| 1,1-Dichloroethane | ND | 0.157 | 1.00 | " | " | " | " | " | " | U |
| 1,2-Dichloroethane | ND | 0.142 | 1.00 | " | " | " | " | " | " | U |
| 1,1-Dichloroethene | ND | 0.197 | 1.00 | " | " | " | " | " | " | U |
| **cis-1,2-Dichloroethene** | **0.270** | 0.170 | 1.00 | " | " | " | " | " | " | J |
| trans-1,2-Dichloroethene | ND | 0.175 | 1.00 | " | " | " | " | " | " | U |
| 1,2-Dichloropropane | ND | 0.266 | 1.00 | " | " | " | " | " | " | U |
| 1,3-Dichloropropane | ND | 0.151 | 1.00 | " | " | " | " | " | " | U |
| 2,2-Dichloropropane | ND | 0.104 | 1.00 | " | " | " | " | " | " | U |
| 1,1-Dichloropropene | ND | 0.149 | 1.00 | " | " | " | " | " | " | U |
| cis-1,3-Dichloropropene | ND | 0.128 | 1.00 | " | " | " | " | " | " | U |
| trans-1,3-Dichloropropene | ND | 0.152 | 1.00 | " | " | " | " | " | " | U |



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| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Volatile Organic Compounds per EPA Method 8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **MW-11-PW (P3K0433-15) Water Sampled: 11/14/03 14:45 Received: 11/14/03 17:00** | | | | | | | | | | |
| **Ethylbenzene** | **0.870** | 0.110 | 1.00 | ug/l | 1 | 3110611 | 11/19/03 | 11/19/03 | EPA 8260B | J |
| Hexachlorobutadiene | ND | 0.878 | 2.00 | " | " | " | " | " | " | U |
| 2-Hexanone | ND | 1.10 | 10.0 | " | " | " | " | " | " | U |
| **Isopropylbenzene** | **0.840** | 0.107 | 2.00 | " | " | " | " | " | " | J |
| **p-Isopropyltoluene** | **1.13** | 0.149 | 2.00 | " | " | " | " | " | " | J |
| 4-Methyl-2-pentanone | ND | 1.49 | 5.00 | " | " | " | " | " | " | U |
| Methyl tert-butyl ether | ND | 0.0865 | 1.00 | " | " | " | " | " | " | U |
| Methylene chloride | ND | 2.50 | 5.00 | " | " | " | " | " | " | U |
| **Naphthalene** | **6.09** | 0.0989 | 2.00 | " | " | " | " | " | " | |
| **n-Propylbenzene** | **1.57** | 0.138 | 1.00 | " | " | " | " | " | " | |
| Styrene | ND | 0.0723 | 1.00 | " | " | " | " | " | " | U |
| 1,1,1,2-Tetrachloroethane | ND | 0.148 | 1.00 | " | " | " | " | " | " | U |
| 1,1,2,2-Tetrachloroethane | ND | 0.294 | 1.00 | " | " | " | " | " | " | U |
| Tetrachloroethene | ND | 0.109 | 1.00 | " | " | " | " | " | " | U |
| **Toluene** | **0.660** | 0.155 | 1.00 | " | " | " | " | " | " | J |
| 1,2,3-Trichlorobenzene | ND | 0.219 | 1.00 | " | " | " | " | " | " | U |
| 1,2,4-Trichlorobenzene | ND | 0.213 | 1.00 | " | " | " | " | " | " | U |
| 1,1,1-Trichloroethane | ND | 0.0859 | 1.00 | " | " | " | " | " | " | U |
| 1,1,2-Trichloroethane | ND | 0.301 | 1.00 | " | " | " | " | " | " | U |
| Trichloroethene | ND | 0.241 | 1.00 | " | " | " | " | " | " | U |
| Trichlorofluoromethane | ND | 0.160 | 1.00 | " | " | " | " | " | " | U |
| 1,2,3-Trichloropropane | ND | 0.365 | 1.00 | " | " | " | " | " | " | U |
| **1,2,4-Trimethylbenzene** | **7.78** | 0.0884 | 1.00 | " | " | " | " | " | " | |
| **1,3,5-Trimethylbenzene** | **1.38** | 0.157 | 1.00 | " | " | " | " | " | " | |
| Vinyl chloride | ND | 0.152 | 1.00 | " | " | " | " | " | " | U |
| **o-Xylene** | **2.22** | 0.187 | 1.00 | " | " | " | " | " | " | |
| **m,p-Xylene** | **3.53** | 0.295 | 2.00 | " | " | " | " | " | " | |
| *Surrogate: 4-BFB* | | *97.5 %* | *75-120* | | | " | " | " | " | |
| *Surrogate: 1,2-DCA-d4* | | *108 %* | *77-129* | | | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *105 %* | *80-121* | | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *96.0 %* | *80-120* | | | " | " | " | " | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Volatile Organic Compounds per EPA Method 8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **MW-12-PW (P3K0433-16) Water Sampled: 11/14/03 15:53 Received: 11/14/03 17:00** | | | | | | | | | | |
| Acetone | ND | 2.34 | 25.0 | ug/l | 1 | 3110611 | 11/19/03 | 11/19/03 | EPA 8260B | U |
| **Benzene** | **0.350** | 0.147 | 1.00 | " | " | " | " | " | " | J |
| Bromobenzene | ND | 0.333 | 1.00 | " | " | " | " | " | " | U |
| Bromochloromethane | ND | 0.266 | 1.00 | " | " | " | " | " | " | U |
| Bromodichloromethane | ND | 0.183 | 1.00 | " | " | " | " | " | " | U |
| Bromoform | ND | 0.174 | 1.00 | " | " | " | " | " | " | U |
| Bromomethane | ND | 0.282 | 5.00 | " | " | " | " | " | " | U |
| 2-Butanone | ND | 1.60 | 10.0 | " | " | " | " | " | " | U |
| **n-Butylbenzene** | **4.45** | 0.183 | 5.00 | " | " | " | " | " | " | J |
| **sec-Butylbenzene** | **2.86** | 0.193 | 1.00 | " | " | " | " | " | " | |
| **tert-Butylbenzene** | **0.350** | 0.206 | 1.00 | " | " | " | " | " | " | J |
| Carbon disulfide | ND | 0.233 | 10.0 | " | " | " | " | " | " | U |
| Carbon tetrachloride | ND | 0.140 | 1.00 | " | " | " | " | " | " | U |
| Chlorobenzene | ND | 0.136 | 1.00 | " | " | " | " | " | " | U |
| Chloroethane | ND | 0.327 | 1.00 | " | " | " | " | " | " | U |
| Chloroform | ND | 0.143 | 1.00 | " | " | " | " | " | " | U |
| **Chloromethane** | **0.240** | 0.159 | 5.00 | " | " | " | " | " | " | J |
| 2-Chlorotoluene | ND | 0.110 | 1.00 | " | " | " | " | " | " | U |
| 4-Chlorotoluene | ND | 0.120 | 1.00 | " | " | " | " | " | " | U |
| 1,2-Dibromo-3-chloropropane | ND | 0.405 | 5.00 | " | " | " | " | " | " | U |
| Dibromochloromethane | ND | 0.133 | 1.00 | " | " | " | " | " | " | U |
| 1,2-Dibromoethane | ND | 0.187 | 1.00 | " | " | " | " | " | " | U |
| Dibromomethane | ND | 0.117 | 1.00 | " | " | " | " | " | " | U |
| 1,2-Dichlorobenzene | ND | 0.0859 | 1.00 | " | " | " | " | " | " | U |
| 1,3-Dichlorobenzene | ND | 0.132 | 1.00 | " | " | " | " | " | " | U |
| 1,4-Dichlorobenzene | ND | 0.187 | 1.00 | " | " | " | " | " | " | U |
| Dichlorodifluoromethane | ND | 0.312 | 5.00 | " | " | " | " | " | " | U |
| 1,1-Dichloroethane | ND | 0.157 | 1.00 | " | " | " | " | " | " | U |
| 1,2-Dichloroethane | ND | 0.142 | 1.00 | " | " | " | " | " | " | U |
| 1,1-Dichloroethene | ND | 0.197 | 1.00 | " | " | " | " | " | " | U |
| cis-1,2-Dichloroethene | ND | 0.170 | 1.00 | " | " | " | " | " | " | U |
| trans-1,2-Dichloroethene | ND | 0.175 | 1.00 | " | " | " | " | " | " | U |
| 1,2-Dichloropropane | ND | 0.266 | 1.00 | " | " | " | " | " | " | U |
| 1,3-Dichloropropane | ND | 0.151 | 1.00 | " | " | " | " | " | " | U |
| 2,2-Dichloropropane | ND | 0.104 | 1.00 | " | " | " | " | " | " | U |
| 1,1-Dichloropropene | ND | 0.149 | 1.00 | " | " | " | " | " | " | U |
| cis-1,3-Dichloropropene | ND | 0.128 | 1.00 | " | " | " | " | " | " | U |
| trans-1,3-Dichloropropene | ND | 0.152 | 1.00 | " | " | " | " | " | " | U |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Volatile Organic Compounds per EPA Method 8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **MW-12-PW (P3K0433-16) Water** | **Sampled: 11/14/03 15:53** | | **Received: 11/14/03 17:00** | | | | | | | |
| **Ethylbenzene** | **5.89** | 0.110 | 1.00 | ug/l | 1 | 3110611 | 11/19/03 | 11/19/03 | EPA 8260B | |
| Hexachlorobutadiene | ND | 0.878 | 2.00 | " | " | " | " | " | " | U |
| 2-Hexanone | ND | 1.10 | 10.0 | " | " | " | " | " | " | U |
| **Isopropylbenzene** | **2.94** | 0.107 | 2.00 | " | " | " | " | " | " | |
| **p-Isopropyltoluene** | **6.22** | 0.149 | 2.00 | " | " | " | " | " | " | |
| 4-Methyl-2-pentanone | ND | 1.49 | 5.00 | " | " | " | " | " | " | U |
| **Methyl tert-butyl ether** | **0.540** | 0.0865 | 1.00 | " | " | " | " | " | " | J |
| Methylene chloride | ND | 2.50 | 5.00 | " | " | " | " | " | " | U |
| **Naphthalene** | **20.9** | 0.0989 | 2.00 | " | " | " | " | " | " | |
| **n-Propylbenzene** | **5.20** | 0.138 | 1.00 | " | " | " | " | " | " | |
| Styrene | ND | 0.0723 | 1.00 | " | " | " | " | " | " | U |
| 1,1,1,2-Tetrachloroethane | ND | 0.148 | 1.00 | " | " | " | " | " | " | U |
| 1,1,2,2-Tetrachloroethane | ND | 0.294 | 1.00 | " | " | " | " | " | " | U |
| Tetrachloroethene | ND | 0.109 | 1.00 | " | " | " | " | " | " | U |
| **Toluene** | **8.38** | 0.155 | 1.00 | " | " | " | " | " | " | |
| 1,2,3-Trichlorobenzene | ND | 0.219 | 1.00 | " | " | " | " | " | " | U |
| 1,2,4-Trichlorobenzene | ND | 0.213 | 1.00 | " | " | " | " | " | " | U |
| 1,1,1-Trichloroethane | ND | 0.0859 | 1.00 | " | " | " | " | " | " | U |
| 1,1,2-Trichloroethane | ND | 0.301 | 1.00 | " | " | " | " | " | " | U |
| Trichloroethene | ND | 0.241 | 1.00 | " | " | " | " | " | " | U |
| Trichlorofluoromethane | ND | 0.160 | 1.00 | " | " | " | " | " | " | U |
| 1,2,3-Trichloropropane | ND | 0.365 | 1.00 | " | " | " | " | " | " | U |
| **1,2,4-Trimethylbenzene** | **51.6** | 0.0884 | 1.00 | " | " | " | " | " | " | |
| **1,3,5-Trimethylbenzene** | **6.80** | 0.157 | 1.00 | " | " | " | " | " | " | |
| Vinyl chloride | ND | 0.152 | 1.00 | " | " | " | " | " | " | U |
| **o-Xylene** | **12.4** | 0.187 | 1.00 | " | " | " | " | " | " | |
| **m,p-Xylene** | **22.1** | 0.295 | 2.00 | " | " | " | " | " | " | |
| *Surrogate: 4-BFB* | | *97.0 %* | *75-120* | | | " | " | " | " | |
| *Surrogate: 1,2-DCA-d4* | | *106 %* | *77-129* | | | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *103 %* | *80-121* | | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *97.5 %* | *80-120* | | | " | " | " | " | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Volatile Organic Compounds per EPA Method 8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **EB-1 (P3K0433-19) Water Sampled: 11/14/03 16:00 Received: 11/14/03 17:00** | | | | | | | | | | |
| **Acetone** | **2.93** | 2.34 | 25.0 | ug/l | 1 | 3110611 | 11/19/03 | 11/19/03 | EPA 8260B | J |
| Benzene | ND | 0.147 | 1.00 | " | " | " | " | " | " | U |
| Bromobenzene | ND | 0.333 | 1.00 | " | " | " | " | " | " | U |
| Bromochloromethane | ND | 0.266 | 1.00 | " | " | " | " | " | " | U |
| Bromodichloromethane | ND | 0.183 | 1.00 | " | " | " | " | " | " | U |
| Bromoform | ND | 0.174 | 1.00 | " | " | " | " | " | " | U |
| Bromomethane | ND | 0.282 | 5.00 | " | " | " | " | " | " | U |
| 2-Butanone | ND | 1.60 | 10.0 | " | " | " | " | " | " | U |
| n-Butylbenzene | ND | 0.183 | 5.00 | " | " | " | " | " | " | U |
| sec-Butylbenzene | ND | 0.193 | 1.00 | " | " | " | " | " | " | U |
| tert-Butylbenzene | ND | 0.206 | 1.00 | " | " | " | " | " | " | U |
| Carbon disulfide | ND | 0.233 | 10.0 | " | " | " | " | " | " | U |
| Carbon tetrachloride | ND | 0.140 | 1.00 | " | " | " | " | " | " | U |
| Chlorobenzene | ND | 0.136 | 1.00 | " | " | " | " | " | " | U |
| Chloroethane | ND | 0.327 | 1.00 | " | " | " | " | " | " | U |
| Chloroform | ND | 0.143 | 1.00 | " | " | " | " | " | " | U |
| Chloromethane | ND | 0.159 | 5.00 | " | " | " | " | " | " | U |
| 2-Chlorotoluene | ND | 0.110 | 1.00 | " | " | " | " | " | " | U |
| 4-Chlorotoluene | ND | 0.120 | 1.00 | " | " | " | " | " | " | U |
| 1,2-Dibromo-3-chloropropane | ND | 0.405 | 5.00 | " | " | " | " | " | " | U |
| Dibromochloromethane | ND | 0.133 | 1.00 | " | " | " | " | " | " | U |
| 1,2-Dibromoethane | ND | 0.187 | 1.00 | " | " | " | " | " | " | U |
| Dibromomethane | ND | 0.117 | 1.00 | " | " | " | " | " | " | U |
| 1,2-Dichlorobenzene | ND | 0.0859 | 1.00 | " | " | " | " | " | " | U |
| 1,3-Dichlorobenzene | ND | 0.132 | 1.00 | " | " | " | " | " | " | U |
| 1,4-Dichlorobenzene | ND | 0.187 | 1.00 | " | " | " | " | " | " | U |
| Dichlorodifluoromethane | ND | 0.312 | 5.00 | " | " | " | " | " | " | U |
| 1,1-Dichloroethane | ND | 0.157 | 1.00 | " | " | " | " | " | " | U |
| 1,2-Dichloroethane | ND | 0.142 | 1.00 | " | " | " | " | " | " | U |
| 1,1-Dichloroethene | ND | 0.197 | 1.00 | " | " | " | " | " | " | U |
| cis-1,2-Dichloroethene | ND | 0.170 | 1.00 | " | " | " | " | " | " | U |
| trans-1,2-Dichloroethene | ND | 0.175 | 1.00 | " | " | " | " | " | " | U |
| 1,2-Dichloropropane | ND | 0.266 | 1.00 | " | " | " | " | " | " | U |
| 1,3-Dichloropropane | ND | 0.151 | 1.00 | " | " | " | " | " | " | U |
| 2,2-Dichloropropane | ND | 0.104 | 1.00 | " | " | " | " | " | " | U |
| 1,1-Dichloropropene | ND | 0.149 | 1.00 | " | " | " | " | " | " | U |
| cis-1,3-Dichloropropene | ND | 0.128 | 1.00 | " | " | " | " | " | " | U |
| trans-1,3-Dichloropropene | ND | 0.152 | 1.00 | " | " | " | " | " | " | U |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Volatile Organic Compounds per EPA Method 8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **EB-1 (P3K0433-19) Water Sampled: 11/14/03 16:00 Received: 11/14/03 17:00** | | | | | | | | | | |
| Ethylbenzene | ND | 0.110 | 1.00 | ug/l | 1 | 3110611 | 11/19/03 | 11/19/03 | EPA 8260B | U |
| Hexachlorobutadiene | ND | 0.878 | 2.00 | " | " | " | " | " | " | U |
| 2-Hexanone | ND | 1.10 | 10.0 | " | " | " | " | " | " | U |
| Isopropylbenzene | ND | 0.107 | 2.00 | " | " | " | " | " | " | U |
| p-Isopropyltoluene | ND | 0.149 | 2.00 | " | " | " | " | " | " | U |
| 4-Methyl-2-pentanone | ND | 1.49 | 5.00 | " | " | " | " | " | " | U |
| Methyl tert-butyl ether | ND | 0.0865 | 1.00 | " | " | " | " | " | " | U |
| Methylene chloride | ND | 2.50 | 5.00 | " | " | " | " | " | " | U |
| Naphthalene | ND | 0.0989 | 2.00 | " | " | " | " | " | " | U |
| n-Propylbenzene | ND | 0.138 | 1.00 | " | " | " | " | " | " | U |
| Styrene | ND | 0.0723 | 1.00 | " | " | " | " | " | " | U |
| 1,1,1,2-Tetrachloroethane | ND | 0.148 | 1.00 | " | " | " | " | " | " | U |
| 1,1,2,2-Tetrachloroethane | ND | 0.294 | 1.00 | " | " | " | " | " | " | U |
| Tetrachloroethene | ND | 0.109 | 1.00 | " | " | " | " | " | " | U |
| Toluene | ND | 0.155 | 1.00 | " | " | " | " | " | " | U |
| 1,2,3-Trichlorobenzene | ND | 0.219 | 1.00 | " | " | " | " | " | " | U |
| 1,2,4-Trichlorobenzene | ND | 0.213 | 1.00 | " | " | " | " | " | " | U |
| 1,1,1-Trichloroethane | ND | 0.0859 | 1.00 | " | " | " | " | " | " | U |
| 1,1,2-Trichloroethane | ND | 0.301 | 1.00 | " | " | " | " | " | " | U |
| Trichloroethene | ND | 0.241 | 1.00 | " | " | " | " | " | " | U |
| Trichlorofluoromethane | ND | 0.160 | 1.00 | " | " | " | " | " | " | U |
| 1,2,3-Trichloropropane | ND | 0.365 | 1.00 | " | " | " | " | " | " | U |
| 1,2,4-Trimethylbenzene | ND | 0.0884 | 1.00 | " | " | " | " | " | " | U |
| 1,3,5-Trimethylbenzene | ND | 0.157 | 1.00 | " | " | " | " | " | " | U |
| Vinyl chloride | ND | 0.152 | 1.00 | " | " | " | " | " | " | U |
| o-Xylene | ND | 0.187 | 1.00 | " | " | " | " | " | " | U |
| m,p-Xylene | ND | 0.295 | 2.00 | " | " | " | " | " | " | U |
| *Surrogate: 4-BFB* | | *91.5 %* | *75-120* | | | " | " | " | " | |
| *Surrogate: 1,2-DCA-d4* | | *108 %* | *77-129* | | | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *105 %* | *80-121* | | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *98.5 %* | *80-120* | | | " | " | " | " | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Volatile Organic Compounds per EPA Methods 5035/8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-1-11 (P3K0433-04) Soil Sampled: 11/13/03 17:50 Received: 11/14/03 17:00** | | | | | | | | | | |
| **Acetone** | **84.7** | 4.25 | 20.0 | ug/kg wet | 1 | 3110271 | 11/18/03 | 11/20/03 | EPA 8260B | |
| **Benzene** | **0.260** | 0.147 | 5.00 | " | " | " | " | " | " | J |
| Bromobenzene | ND | 0.152 | 5.00 | " | " | " | " | " | " | U |
| Bromochloromethane | ND | 0.277 | 5.00 | " | " | " | " | " | " | U |
| Bromodichloromethane | ND | 0.388 | 5.00 | " | " | " | " | " | " | U |
| Bromoform | ND | 0.169 | 5.00 | " | " | " | " | " | " | U |
| Bromomethane | ND | 0.309 | 20.0 | " | " | " | " | " | " | U |
| 2-Butanone | ND | 15.4 | 20.0 | " | " | " | " | " | " | U |
| **n-Butylbenzene** | **0.340** | 0.181 | 5.00 | " | " | " | " | " | " | J |
| **sec-Butylbenzene** | **0.430** | 0.160 | 5.00 | " | " | " | " | " | " | J |
| tert-Butylbenzene | ND | 0.195 | 5.00 | " | " | " | " | " | " | U |
| **Carbon disulfide** | **0.500** | 0.420 | 20.0 | " | " | " | " | " | " | J |
| Carbon tetrachloride | ND | 0.202 | 5.00 | " | " | " | " | " | " | U |
| Chlorobenzene | ND | 0.276 | 5.00 | " | " | " | " | " | " | U |
| Chloroethane | ND | 0.353 | 10.0 | " | " | " | " | " | " | U |
| Chloroform | ND | 0.174 | 5.00 | " | " | " | " | " | " | U |
| Chloromethane | ND | 0.513 | 10.0 | " | " | " | " | " | " | U |
| 2-Chlorotoluene | ND | 0.236 | 5.00 | " | " | " | " | " | " | U |
| 4-Chlorotoluene | ND | 0.108 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dibromo-3-chloropropane | ND | 0.213 | 10.0 | " | " | " | " | " | " | U |
| Dibromochloromethane | ND | 0.270 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dibromoethane | ND | 0.386 | 5.00 | " | " | " | " | " | " | U |
| Dibromomethane | ND | 0.302 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dichlorobenzene | ND | 0.169 | 5.00 | " | " | " | " | " | " | U |
| 1,3-Dichlorobenzene | ND | 0.329 | 5.00 | " | " | " | " | " | " | U |
| 1,4-Dichlorobenzene | ND | 0.162 | 5.00 | " | " | " | " | " | " | U |
| Dichlorodifluoromethane | ND | 0.280 | 10.0 | " | " | " | " | " | " | U |
| 1,1-Dichloroethane | ND | 0.0975 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dichloroethane | ND | 0.236 | 5.00 | " | " | " | " | " | " | U |
| 1,1-Dichloroethene | ND | 0.180 | 5.00 | " | " | " | " | " | " | U |
| cis-1,2-Dichloroethene | ND | 0.202 | 5.00 | " | " | " | " | " | " | U |
| trans-1,2-Dichloroethene | ND | 0.195 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dichloropropane | ND | 0.191 | 5.00 | " | " | " | " | " | " | U |
| 1,3-Dichloropropane | ND | 0.353 | 5.00 | " | " | " | " | " | " | U |
| 2,2-Dichloropropane | ND | 0.224 | 5.00 | " | " | " | " | " | " | U |
| 1,1-Dichloropropene | ND | 0.234 | 5.00 | " | " | " | " | " | " | U |
| cis-1,3-Dichloropropene | ND | 0.141 | 5.00 | " | " | " | " | " | " | U |
| trans-1,3-Dichloropropene | ND | 0.372 | 5.00 | " | " | " | " | " | " | U |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Volatile Organic Compounds per EPA Methods 5035/8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-1-11 (P3K0433-04) Soil Sampled: 11/13/03 17:50 Received: 11/14/03 17:00** | | | | | | | | | | |
| **Ethylbenzene** | **0.170** | 0.143 | 5.00 | ug/kg wet | 1 | 3110271 | 11/18/03 | 11/20/03 | EPA 8260B | J |
| Hexachlorobutadiene | ND | 0.739 | 5.00 | " | " | " | " | " | " | U |
| 2-Hexanone | ND | 2.14 | 20.0 | " | " | " | " | " | " | U |
| Isopropylbenzene | ND | 0.202 | 5.00 | " | " | " | " | " | " | U |
| p-Isopropyltoluene | ND | 0.133 | 5.00 | " | " | " | " | " | " | U |
| 4-Methyl-2-pentanone | ND | 2.06 | 20.0 | " | " | " | " | " | " | U |
| Methylene chloride | ND | 10.0 | 25.0 | " | " | " | " | " | " | U |
| **Naphthalene** | **0.470** | 0.345 | 5.00 | " | " | " | " | " | " | J |
| **n-Propylbenzene** | **0.280** | 0.174 | 5.00 | " | " | " | " | " | " | J |
| Styrene | ND | 0.154 | 5.00 | " | " | " | " | " | " | U |
| 1,1,1,2-Tetrachloroethane | ND | 0.297 | 5.00 | " | " | " | " | " | " | U |
| 1,1,2,2-Tetrachloroethane | ND | 0.257 | 5.00 | " | " | " | " | " | " | U |
| Tetrachloroethene | ND | 0.145 | 5.00 | " | " | " | " | " | " | U |
| **Toluene** | **0.340** | 0.299 | 5.00 | " | " | " | " | " | " | J |
| 1,2,3-Trichlorobenzene | ND | 0.318 | 5.00 | " | " | " | " | " | " | U |
| 1,2,4-Trichlorobenzene | ND | 0.393 | 5.00 | " | " | " | " | " | " | U |
| 1,1,1-Trichloroethane | ND | 0.228 | 5.00 | " | " | " | " | " | " | U |
| 1,1,2-Trichloroethane | ND | 0.701 | 5.00 | " | " | " | " | " | " | U |
| Trichloroethene | ND | 0.221 | 5.00 | " | " | " | " | " | " | U |
| Trichlorofluoromethane | ND | 0.281 | 5.00 | " | " | " | " | " | " | U |
| 1,2,3-Trichloropropane | ND | 0.962 | 5.00 | " | " | " | " | " | " | U |
| **1,2,4-Trimethylbenzene** | **0.320** | 0.0800 | 5.00 | " | " | " | " | " | " | J |
| **1,3,5-Trimethylbenzene** | **0.170** | 0.154 | 5.00 | " | " | " | " | " | " | J |
| Vinyl chloride | ND | 0.305 | 10.0 | " | " | " | " | " | " | U |
| **o-Xylene** | **0.450** | 0.199 | 5.00 | " | " | " | " | " | " | J |
| **m,p-Xylene** | **0.550** | 0.208 | 10.0 | " | " | " | " | " | " | J |
| *Surrogate: 4-BFB* | | *100 %* | *42.6-130* | | | " | " | " | " | |
| *Surrogate: 1,2-DCA-d4* | | *98.5 %* | *57.3-144* | | | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *94.5 %* | *45.5-130* | | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *99.0 %* | *42.1-144* | | | " | " | " | " | |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Volatile Organic Compounds per EPA Methods 5035/8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-1-20-21.5 (P3K0433-05) Soil Sampled: 11/14/03 08:38 Received: 11/14/03 17:00** | | | | | | | | | | |
| **Acetone** | **32.5** | 4.25 | 20.0 | ug/kg wet | 1 | 3110271 | 11/18/03 | 11/20/03 | EPA 8260B | |
| **Benzene** | **0.320** | 0.147 | 5.00 | " | " | " | " | " | " | J |
| Bromobenzene | ND | 0.152 | 5.00 | " | " | " | " | " | " | U |
| Bromochloromethane | ND | 0.277 | 5.00 | " | " | " | " | " | " | U |
| Bromodichloromethane | ND | 0.388 | 5.00 | " | " | " | " | " | " | U |
| Bromoform | ND | 0.169 | 5.00 | " | " | " | " | " | " | U |
| Bromomethane | ND | 0.309 | 20.0 | " | " | " | " | " | " | U |
| 2-Butanone | ND | 15.4 | 20.0 | " | " | " | " | " | " | U |
| n-Butylbenzene | ND | 0.181 | 5.00 | " | " | " | " | " | " | U |
| sec-Butylbenzene | ND | 0.160 | 5.00 | " | " | " | " | " | " | U |
| tert-Butylbenzene | ND | 0.195 | 5.00 | " | " | " | " | " | " | U |
| Carbon disulfide | ND | 0.420 | 20.0 | " | " | " | " | " | " | U |
| Carbon tetrachloride | ND | 0.202 | 5.00 | " | " | " | " | " | " | U |
| Chlorobenzene | ND | 0.276 | 5.00 | " | " | " | " | " | " | U |
| Chloroethane | ND | 0.353 | 10.0 | " | " | " | " | " | " | U |
| Chloroform | ND | 0.174 | 5.00 | " | " | " | " | " | " | U |
| Chloromethane | ND | 0.513 | 10.0 | " | " | " | " | " | " | U |
| 2-Chlorotoluene | ND | 0.236 | 5.00 | " | " | " | " | " | " | U |
| 4-Chlorotoluene | ND | 0.108 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dibromo-3-chloropropane | ND | 0.213 | 10.0 | " | " | " | " | " | " | U |
| Dibromochloromethane | ND | 0.270 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dibromoethane | ND | 0.386 | 5.00 | " | " | " | " | " | " | U |
| Dibromomethane | ND | 0.302 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dichlorobenzene | ND | 0.169 | 5.00 | " | " | " | " | " | " | U |
| 1,3-Dichlorobenzene | ND | 0.329 | 5.00 | " | " | " | " | " | " | U |
| 1,4-Dichlorobenzene | ND | 0.162 | 5.00 | " | " | " | " | " | " | U |
| Dichlorodifluoromethane | ND | 0.280 | 10.0 | " | " | " | " | " | " | U |
| 1,1-Dichloroethane | ND | 0.0975 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dichloroethane | ND | 0.236 | 5.00 | " | " | " | " | " | " | U |
| 1,1-Dichloroethene | ND | 0.180 | 5.00 | " | " | " | " | " | " | U |
| cis-1,2-Dichloroethene | ND | 0.202 | 5.00 | " | " | " | " | " | " | U |
| trans-1,2-Dichloroethene | ND | 0.195 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dichloropropane | ND | 0.191 | 5.00 | " | " | " | " | " | " | U |
| 1,3-Dichloropropane | ND | 0.353 | 5.00 | " | " | " | " | " | " | U |
| 2,2-Dichloropropane | ND | 0.224 | 5.00 | " | " | " | " | " | " | U |
| 1,1-Dichloropropene | ND | 0.234 | 5.00 | " | " | " | " | " | " | U |
| cis-1,3-Dichloropropene | ND | 0.141 | 5.00 | " | " | " | " | " | " | U |
| trans-1,3-Dichloropropene | ND | 0.372 | 5.00 | " | " | " | " | " | " | U |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Volatile Organic Compounds per EPA Methods 5035/8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-1-20-21.5 (P3K0433-05) Soil Sampled: 11/14/03 08:38 Received: 11/14/03 17:00** | | | | | | | | | | |
| Ethylbenzene | ND | 0.143 | 5.00 | ug/kg wet | 1 | 3110271 | 11/18/03 | 11/20/03 | EPA 8260B | U |
| Hexachlorobutadiene | ND | 0.739 | 5.00 | " | " | " | " | " | " | U |
| 2-Hexanone | ND | 2.14 | 20.0 | " | " | " | " | " | " | U |
| Isopropylbenzene | ND | 0.202 | 5.00 | " | " | " | " | " | " | U |
| p-Isopropyltoluene | ND | 0.133 | 5.00 | " | " | " | " | " | " | U |
| 4-Methyl-2-pentanone | ND | 2.06 | 20.0 | " | " | " | " | " | " | U |
| Methylene chloride | ND | 10.0 | 25.0 | " | " | " | " | " | " | U |
| **Naphthalene** | **0.490** | 0.345 | 5.00 | " | " | " | " | " | " | J |
| n-Propylbenzene | ND | 0.174 | 5.00 | " | " | " | " | " | " | U |
| Styrene | ND | 0.154 | 5.00 | " | " | " | " | " | " | U |
| 1,1,1,2-Tetrachloroethane | ND | 0.297 | 5.00 | " | " | " | " | " | " | U |
| 1,1,2,2-Tetrachloroethane | ND | 0.257 | 5.00 | " | " | " | " | " | " | U |
| **Tetrachloroethene** | **0.620** | 0.145 | 5.00 | " | " | " | " | " | " | J |
| **Toluene** | **0.330** | 0.299 | 5.00 | " | " | " | " | " | " | J |
| 1,2,3-Trichlorobenzene | ND | 0.318 | 5.00 | " | " | " | " | " | " | U |
| 1,2,4-Trichlorobenzene | ND | 0.393 | 5.00 | " | " | " | " | " | " | U |
| 1,1,1-Trichloroethane | ND | 0.228 | 5.00 | " | " | " | " | " | " | U |
| 1,1,2-Trichloroethane | ND | 0.701 | 5.00 | " | " | " | " | " | " | U |
| **Trichloroethene** | **1.50** | 0.221 | 5.00 | " | " | " | " | " | " | J |
| Trichlorofluoromethane | ND | 0.281 | 5.00 | " | " | " | " | " | " | U |
| 1,2,3-Trichloropropane | ND | 0.962 | 5.00 | " | " | " | " | " | " | U |
| 1,2,4-Trimethylbenzene | ND | 0.0800 | 5.00 | " | " | " | " | " | " | U |
| 1,3,5-Trimethylbenzene | ND | 0.154 | 5.00 | " | " | " | " | " | " | U |
| Vinyl chloride | ND | 0.305 | 10.0 | " | " | " | " | " | " | U |
| o-Xylene | ND | 0.199 | 5.00 | " | " | " | " | " | " | U |
| **m,p-Xylene** | **0.300** | 0.208 | 10.0 | " | " | " | " | " | " | J |
| *Surrogate: 4-BFB* | | *94.5 %* | *42.6-130* | | | " | " | " | " | |
| *Surrogate: 1,2-DCA-d4* | | *102 %* | *57.3-144* | | | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *96.0 %* | *45.5-130* | | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *94.0 %* | *42.1-144* | | | " | " | " | " | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Volatile Organic Compounds per EPA Methods 5035/8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-5-13-14.5 (P3K0433-11) Soil Sampled: 11/14/03 10:57 Received: 11/14/03 17:00** | | | | | | | | | | |
| Acetone | ND | 4.25 | 20.0 | ug/kg wet | 1 | 3110271 | 11/18/03 | 11/21/03 | EPA 8260B | U |
| **Benzene** | **0.340** | 0.147 | 5.00 | " | " | " | " | " | " | J |
| Bromobenzene | ND | 0.152 | 5.00 | " | " | " | " | " | " | U |
| Bromochloromethane | ND | 0.277 | 5.00 | " | " | " | " | " | " | U |
| Bromodichloromethane | ND | 0.388 | 5.00 | " | " | " | " | " | " | U |
| Bromoform | ND | 0.169 | 5.00 | " | " | " | " | " | " | U |
| Bromomethane | ND | 0.309 | 20.0 | " | " | " | " | " | " | U |
| 2-Butanone | ND | 15.4 | 20.0 | " | " | " | " | " | " | U |
| n-Butylbenzene | ND | 0.181 | 5.00 | " | " | " | " | " | " | U |
| sec-Butylbenzene | ND | 0.160 | 5.00 | " | " | " | " | " | " | U |
| tert-Butylbenzene | ND | 0.195 | 5.00 | " | " | " | " | " | " | U |
| **Carbon disulfide** | **0.540** | 0.420 | 20.0 | " | " | " | " | " | " | J |
| Carbon tetrachloride | ND | 0.202 | 5.00 | " | " | " | " | " | " | U |
| Chlorobenzene | ND | 0.276 | 5.00 | " | " | " | " | " | " | U |
| Chloroethane | ND | 0.353 | 10.0 | " | " | " | " | " | " | U |
| Chloroform | ND | 0.174 | 5.00 | " | " | " | " | " | " | U |
| Chloromethane | ND | 0.513 | 10.0 | " | " | " | " | " | " | U |
| 2-Chlorotoluene | ND | 0.236 | 5.00 | " | " | " | " | " | " | U |
| 4-Chlorotoluene | ND | 0.108 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dibromo-3-chloropropane | ND | 0.213 | 10.0 | " | " | " | " | " | " | U |
| Dibromochloromethane | ND | 0.270 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dibromoethane | ND | 0.386 | 5.00 | " | " | " | " | " | " | U |
| Dibromomethane | ND | 0.302 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dichlorobenzene | ND | 0.169 | 5.00 | " | " | " | " | " | " | U |
| 1,3-Dichlorobenzene | ND | 0.329 | 5.00 | " | " | " | " | " | " | U |
| 1,4-Dichlorobenzene | ND | 0.162 | 5.00 | " | " | " | " | " | " | U |
| Dichlorodifluoromethane | ND | 0.280 | 10.0 | " | " | " | " | " | " | U |
| 1,1-Dichloroethane | ND | 0.0975 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dichloroethane | ND | 0.236 | 5.00 | " | " | " | " | " | " | U |
| 1,1-Dichloroethene | ND | 0.180 | 5.00 | " | " | " | " | " | " | U |
| cis-1,2-Dichloroethene | ND | 0.202 | 5.00 | " | " | " | " | " | " | U |
| trans-1,2-Dichloroethene | ND | 0.195 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dichloropropane | ND | 0.191 | 5.00 | " | " | " | " | " | " | U |
| 1,3-Dichloropropane | ND | 0.353 | 5.00 | " | " | " | " | " | " | U |
| 2,2-Dichloropropane | ND | 0.224 | 5.00 | " | " | " | " | " | " | U |
| 1,1-Dichloropropene | ND | 0.234 | 5.00 | " | " | " | " | " | " | U |
| cis-1,3-Dichloropropene | ND | 0.141 | 5.00 | " | " | " | " | " | " | U |
| trans-1,3-Dichloropropene | ND | 0.372 | 5.00 | " | " | " | " | " | " | U |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Volatile Organic Compounds per EPA Methods 5035/8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-5-13-14.5 (P3K0433-11) Soil Sampled: 11/14/03 10:57 Received: 11/14/03 17:00** | | | | | | | | | | |
| Ethylbenzene | ND | 0.143 | 5.00 | ug/kg wet | 1 | 3110271 | 11/18/03 | 11/21/03 | EPA 8260B | U |
| Hexachlorobutadiene | ND | 0.739 | 5.00 | " | " | " | " | " | " | U |
| 2-Hexanone | ND | 2.14 | 20.0 | " | " | " | " | " | " | U |
| Isopropylbenzene | ND | 0.202 | 5.00 | " | " | " | " | " | " | U |
| p-Isopropyltoluene | ND | 0.133 | 5.00 | " | " | " | " | " | " | U |
| 4-Methyl-2-pentanone | ND | 2.06 | 20.0 | " | " | " | " | " | " | U |
| Methylene chloride | ND | 10.0 | 25.0 | " | " | " | " | " | " | U |
| Naphthalene | ND | 0.345 | 5.00 | " | " | " | " | " | " | U |
| n-Propylbenzene | ND | 0.174 | 5.00 | " | " | " | " | " | " | U |
| Styrene | ND | 0.154 | 5.00 | " | " | " | " | " | " | U |
| 1,1,1,2-Tetrachloroethane | ND | 0.297 | 5.00 | " | " | " | " | " | " | U |
| 1,1,2,2-Tetrachloroethane | ND | 0.257 | 5.00 | " | " | " | " | " | " | U |
| **Tetrachloroethene** | **0.210** | 0.145 | 5.00 | " | " | " | " | " | " | J |
| Toluene | ND | 0.299 | 5.00 | " | " | " | " | " | " | U |
| 1,2,3-Trichlorobenzene | ND | 0.318 | 5.00 | " | " | " | " | " | " | U |
| 1,2,4-Trichlorobenzene | ND | 0.393 | 5.00 | " | " | " | " | " | " | U |
| 1,1,1-Trichloroethane | ND | 0.228 | 5.00 | " | " | " | " | " | " | U |
| 1,1,2-Trichloroethane | ND | 0.701 | 5.00 | " | " | " | " | " | " | U |
| Trichloroethene | ND | 0.221 | 5.00 | " | " | " | " | " | " | U |
| Trichlorofluoromethane | ND | 0.281 | 5.00 | " | " | " | " | " | " | U |
| 1,2,3-Trichloropropane | ND | 0.962 | 5.00 | " | " | " | " | " | " | U |
| 1,2,4-Trimethylbenzene | ND | 0.0800 | 5.00 | " | " | " | " | " | " | U |
| 1,3,5-Trimethylbenzene | ND | 0.154 | 5.00 | " | " | " | " | " | " | U |
| Vinyl chloride | ND | 0.305 | 10.0 | " | " | " | " | " | " | U |
| o-Xylene | ND | 0.199 | 5.00 | " | " | " | " | " | " | U |
| **m,p-Xylene** | **0.210** | 0.208 | 10.0 | " | " | " | " | " | " | J |
| *Surrogate: 4-BFB* | | *97.5 %* | *42.6-130* | | | " | " | " | " | |
| *Surrogate: 1,2-DCA-d4* | | *99.0 %* | *57.3-144* | | | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *94.5 %* | *45.5-130* | | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *98.5 %* | *42.1-144* | | | " | " | " | " | |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Volatile Organic Compounds per EPA Methods 5035/8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-4-16.5-18 (P3K0433-14) Soil Sampled: 11/14/03 14:20 Received: 11/14/03 17:00** | | | | | | | | | | |
| Acetone | ND | 4.25 | 20.0 | ug/kg wet | 1 | 3110271 | 11/18/03 | 11/21/03 | EPA 8260B | U |
| **Benzene** | **1.77** | 0.147 | 5.00 | " | " | " | " | " | " | J |
| Bromobenzene | ND | 0.152 | 5.00 | " | " | " | " | " | " | U |
| Bromochloromethane | ND | 0.277 | 5.00 | " | " | " | " | " | " | U |
| Bromodichloromethane | ND | 0.388 | 5.00 | " | " | " | " | " | " | U |
| Bromoform | ND | 0.169 | 5.00 | " | " | " | " | " | " | U |
| Bromomethane | ND | 0.309 | 20.0 | " | " | " | " | " | " | U |
| 2-Butanone | ND | 15.4 | 20.0 | " | " | " | " | " | " | U |
| n-Butylbenzene | ND | 0.181 | 5.00 | " | " | " | " | " | " | U |
| sec-Butylbenzene | ND | 0.160 | 5.00 | " | " | " | " | " | " | U |
| tert-Butylbenzene | ND | 0.195 | 5.00 | " | " | " | " | " | " | U |
| **Carbon disulfide** | **0.700** | 0.420 | 20.0 | " | " | " | " | " | " | J |
| Carbon tetrachloride | ND | 0.202 | 5.00 | " | " | " | " | " | " | U |
| Chlorobenzene | ND | 0.276 | 5.00 | " | " | " | " | " | " | U |
| Chloroethane | ND | 0.353 | 10.0 | " | " | " | " | " | " | U |
| Chloroform | ND | 0.174 | 5.00 | " | " | " | " | " | " | U |
| Chloromethane | ND | 0.513 | 10.0 | " | " | " | " | " | " | U |
| 2-Chlorotoluene | ND | 0.236 | 5.00 | " | " | " | " | " | " | U |
| 4-Chlorotoluene | ND | 0.108 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dibromo-3-chloropropane | ND | 0.213 | 10.0 | " | " | " | " | " | " | U |
| Dibromochloromethane | ND | 0.270 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dibromoethane | ND | 0.386 | 5.00 | " | " | " | " | " | " | U |
| Dibromomethane | ND | 0.302 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dichlorobenzene | ND | 0.169 | 5.00 | " | " | " | " | " | " | U |
| 1,3-Dichlorobenzene | ND | 0.329 | 5.00 | " | " | " | " | " | " | U |
| 1,4-Dichlorobenzene | ND | 0.162 | 5.00 | " | " | " | " | " | " | U |
| Dichlorodifluoromethane | ND | 0.280 | 10.0 | " | " | " | " | " | " | U |
| 1,1-Dichloroethane | ND | 0.0975 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dichloroethane | ND | 0.236 | 5.00 | " | " | " | " | " | " | U |
| 1,1-Dichloroethene | ND | 0.180 | 5.00 | " | " | " | " | " | " | U |
| cis-1,2-Dichloroethene | ND | 0.202 | 5.00 | " | " | " | " | " | " | U |
| trans-1,2-Dichloroethene | ND | 0.195 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dichloropropane | ND | 0.191 | 5.00 | " | " | " | " | " | " | U |
| 1,3-Dichloropropane | ND | 0.353 | 5.00 | " | " | " | " | " | " | U |
| 2,2-Dichloropropane | ND | 0.224 | 5.00 | " | " | " | " | " | " | U |
| 1,1-Dichloropropene | ND | 0.234 | 5.00 | " | " | " | " | " | " | U |
| cis-1,3-Dichloropropene | ND | 0.141 | 5.00 | " | " | " | " | " | " | U |
| trans-1,3-Dichloropropene | ND | 0.372 | 5.00 | " | " | " | " | " | " | U |



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Volatile Organic Compounds per EPA Methods 5035/8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-4-16.5-18 (P3K0433-14) Soil Sampled: 11/14/03 14:20 Received: 11/14/03 17:00** | | | | | | | | | | |
| Ethylbenzene | ND | 0.143 | 5.00 | ug/kg wet | 1 | 3110271 | 11/18/03 | 11/21/03 | EPA 8260B | U |
| Hexachlorobutadiene | ND | 0.739 | 5.00 | " | " | " | " | " | " | U |
| 2-Hexanone | ND | 2.14 | 20.0 | " | " | " | " | " | " | U |
| Isopropylbenzene | ND | 0.202 | 5.00 | " | " | " | " | " | " | U |
| p-Isopropyltoluene | ND | 0.133 | 5.00 | " | " | " | " | " | " | U |
| 4-Methyl-2-pentanone | ND | 2.06 | 20.0 | " | " | " | " | " | " | U |
| Methylene chloride | ND | 10.0 | 25.0 | " | " | " | " | " | " | U |
| Naphthalene | ND | 0.345 | 5.00 | " | " | " | " | " | " | U |
| n-Propylbenzene | ND | 0.174 | 5.00 | " | " | " | " | " | " | U |
| Styrene | ND | 0.154 | 5.00 | " | " | " | " | " | " | U |
| 1,1,1,2-Tetrachloroethane | ND | 0.297 | 5.00 | " | " | " | " | " | " | U |
| 1,1,2,2-Tetrachloroethane | ND | 0.257 | 5.00 | " | " | " | " | " | " | U |
| Tetrachloroethene | ND | 0.145 | 5.00 | " | " | " | " | " | " | U |
| **Toluene** | **1.13** | 0.299 | 5.00 | " | " | " | " | " | " | J |
| 1,2,3-Trichlorobenzene | ND | 0.318 | 5.00 | " | " | " | " | " | " | U |
| 1,2,4-Trichlorobenzene | ND | 0.393 | 5.00 | " | " | " | " | " | " | U |
| 1,1,1-Trichloroethane | ND | 0.228 | 5.00 | " | " | " | " | " | " | U |
| 1,1,2-Trichloroethane | ND | 0.701 | 5.00 | " | " | " | " | " | " | U |
| Trichloroethene | ND | 0.221 | 5.00 | " | " | " | " | " | " | U |
| Trichlorofluoromethane | ND | 0.281 | 5.00 | " | " | " | " | " | " | U |
| 1,2,3-Trichloropropane | ND | 0.962 | 5.00 | " | " | " | " | " | " | U |
| **1,2,4-Trimethylbenzene** | **0.180** | 0.0800 | 5.00 | " | " | " | " | " | " | J |
| 1,3,5-Trimethylbenzene | ND | 0.154 | 5.00 | " | " | " | " | " | " | U |
| Vinyl chloride | ND | 0.305 | 10.0 | " | " | " | " | " | " | U |
| o-Xylene | ND | 0.199 | 5.00 | " | " | " | " | " | " | U |
| **m,p-Xylene** | **0.280** | 0.208 | 10.0 | " | " | " | " | " | " | J |
| *Surrogate: 4-BFB* | | *97.0 %* | *42.6-130* | | | " | " | " | " | |
| *Surrogate: 1,2-DCA-d4* | | *97.0 %* | *57.3-144* | | | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *93.5 %* | *45.5-130* | | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *96.5 %* | *42.1-144* | | | " | " | " | " | |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Semivolatile Organic Compounds per EPA Method 8270C
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-1-10 (P3K0433-01) Soil Sampled: 11/13/03 17:05 Received: 11/14/03 17:00** | | | | | | | | | | **R-05** |
| Acenaphthene | ND | 0.700 | 3.30 | mg/kg dry | 1 | 3110653 | 11/20/03 | 11/24/03 | EPA 8270C | D, U |
| Acenaphthylene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Anthracene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Benzo (a) anthracene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Benzo (a) pyrene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Benzo (b) fluoranthene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Benzo (ghi) perylene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Benzo (k) fluoranthene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Benzoic Acid | ND | 5.00 | 10.0 | " | " | " | " | " | " | D, U |
| Benzyl alcohol | ND | 1.65 | 3.30 | " | " | " | " | " | " | D, U |
| 4-Bromophenyl phenyl ether | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Butyl benzyl phthalate | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 4-Chloro-3-methylphenol | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 4-Chloroaniline | ND | 1.65 | 20.0 | " | " | " | " | " | " | D, U |
| Bis(2-chloroethoxy)methane | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Bis(2-chloroethyl)ether | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Bis(2-chloroisopropyl)ether | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 2-Chloronaphthalene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 2-Chlorophenol | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 4-Chlorophenyl phenyl ether | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Chrysene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Di-n-butyl phthalate | ND | 5.00 | 10.0 | " | " | " | " | " | " | D, U |
| Di-n-octyl phthalate | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Dibenzo (a,h) anthracene | ND | 0.600 | 3.30 | " | " | " | " | " | " | D, U |
| Dibenzofuran | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 1,2-Dichlorobenzene | ND | 5.00 | 10.0 | " | " | " | " | " | " | D, U |
| 1,3-Dichlorobenzene | ND | 5.00 | 10.0 | " | " | " | " | " | " | D, U |
| 1,4-Dichlorobenzene | ND | 5.00 | 10.0 | " | " | " | " | " | " | D, U |
| 3,3'-Dichlorobenzidine | ND | 5.00 | 10.0 | " | " | " | " | " | " | D, U |
| 2,4-Dichlorophenol | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Diethyl phthalate | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 2,4-Dimethylphenol | ND | 5.00 | 10.0 | " | " | " | " | " | " | D, U |
| Dimethyl phthalate | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 4,6-Dinitro-2-methylphenol | ND | 5.00 | 10.0 | " | " | " | " | " | " | D, U |
| 2,4-Dinitrophenol | ND | 20.0 | 20.0 | " | " | " | " | " | " | D, U |
| 2,4-Dinitrotoluene | ND | 5.00 | 5.00 | " | " | " | " | " | " | D, U |
| 2,6-Dinitrotoluene | ND | 0.700 | 5.00 | " | " | " | " | " | " | D, U |
| Bis(2-ethylhexyl)phthalate | ND | 20.0 | 20.0 | " | " | " | " | " | " | D, U |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Semivolatile Organic Compounds per EPA Method 8270C
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-1-10 (P3K0433-01) Soil Sampled: 11/13/03 17:05 Received: 11/14/03 17:00** | | | | | | | | | | **R-05** |
| Fluoranthene | ND | 0.700 | 3.30 | mg/kg dry | 1 | 3110653 | 11/20/03 | 11/24/03 | EPA 8270C | D, U |
| Fluorene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Hexachlorobenzene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Hexachlorobutadiene | ND | 5.00 | 10.0 | " | " | " | " | " | " | D, U |
| Hexachlorocyclopentadiene | ND | 5.00 | 10.0 | " | " | " | " | " | " | D, U |
| Hexachloroethane | ND | 5.00 | 10.0 | " | " | " | " | " | " | D, U |
| Indeno (1,2,3-cd) pyrene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Isophorone | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 2-Methylnaphthalene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 2-Methylphenol | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 3-,4-Methylphenol | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Naphthalene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 2-Nitroaniline | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 3-Nitroaniline | ND | 5.00 | 10.0 | " | " | " | " | " | " | D, U |
| 4-Nitroaniline | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Nitrobenzene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 2-Nitrophenol | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 4-Nitrophenol | ND | 5.00 | 10.0 | " | " | " | " | " | " | D, U |
| N-Nitrosodi-n-propylamine | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| N-Nitrosodiphenylamine | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Pentachlorophenol | ND | 5.00 | 10.0 | " | " | " | " | " | " | D, U |
| Phenanthrene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Phenol | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Pyrene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 1,2,4-Trichlorobenzene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 2,4,5-Trichlorophenol | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 2,4,6-Trichlorophenol | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| *Surrogate: 2-Fluorobiphenyl* | | *134 %* | *44-146* | | | " | " | " | " | *D* |
| *Surrogate: 2-Fluorophenol* | | *112 %* | *42-126* | | | " | " | " | " | *D* |
| *Surrogate: Nitrobenzene-d5* | | *119 %* | *42-126* | | | " | " | " | " | *D* |
| *Surrogate: Phenol-d6* | | *110 %* | *42-131* | | | " | " | " | " | *D* |
| *Surrogate: p-Terphenyl-d14* | | *129 %* | *49-150* | | | " | " | " | " | *D* |
| *Surrogate: 2,4,6-Tribromophenol* | | *103 %* | *48-119* | | | " | " | " | " | *D* |

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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Semivolatile Organic Compounds per EPA Method 8270C
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-1-20 (P3K0433-08) Soil Sampled: 11/14/03 08:30 Received: 11/14/03 17:00** | | | | | | | | | | |
| Acenaphthene | ND | 0.0700 | 0.330 | mg/kg dry | 1 | 3110653 | 11/20/03 | 11/24/03 | EPA 8270C | U |
| Acenaphthylene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| **Anthracene** | **0.236** | 0.0700 | 0.330 | " | " | " | " | " | " | J |
| **Benzo (a) anthracene** | **0.485** | 0.0700 | 0.330 | " | " | " | " | " | " | |
| **Benzo (a) pyrene** | **0.419** | 0.0700 | 0.330 | " | " | " | " | " | " | |
| **Benzo (b) fluoranthene** | **0.200** | 0.0700 | 0.330 | " | " | " | " | " | " | J |
| **Benzo (ghi) perylene** | **0.234** | 0.0700 | 0.330 | " | " | " | " | " | " | J |
| **Benzo (k) fluoranthene** | **0.347** | 0.0700 | 0.330 | " | " | " | " | " | " | |
| Benzoic Acid | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Benzyl alcohol | ND | 0.165 | 0.330 | " | " | " | " | " | " | U |
| 4-Bromophenyl phenyl ether | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Butyl benzyl phthalate | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 4-Chloro-3-methylphenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 4-Chloroaniline | ND | 0.165 | 2.00 | " | " | " | " | " | " | U |
| Bis(2-chloroethoxy)methane | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Bis(2-chloroethyl)ether | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Bis(2-chloroisopropyl)ether | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Chloronaphthalene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Chlorophenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 4-Chlorophenyl phenyl ether | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| **Chrysene** | **0.545** | 0.0700 | 0.330 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Di-n-octyl phthalate | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| **Dibenzo (a,h) anthracene** | **0.0841** | 0.0600 | 0.330 | " | " | " | " | " | " | J |
| Dibenzofuran | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 1,2-Dichlorobenzene | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 1,3-Dichlorobenzene | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 1,4-Dichlorobenzene | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 3,3'-Dichlorobenzidine | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 2,4-Dichlorophenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Diethyl phthalate | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2,4-Dimethylphenol | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Dimethyl phthalate | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 4,6-Dinitro-2-methylphenol | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 2,4-Dinitrophenol | ND | 2.00 | 2.00 | " | " | " | " | " | " | U |
| 2,4-Dinitrotoluene | ND | 0.500 | 0.500 | " | " | " | " | " | " | U |
| 2,6-Dinitrotoluene | ND | 0.0700 | 0.500 | " | " | " | " | " | " | U |
| Bis(2-ethylhexyl)phthalate | ND | 2.00 | 2.00 | " | " | " | " | " | " | U |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Semivolatile Organic Compounds per EPA Method 8270C
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-1-20 (P3K0433-08) Soil Sampled: 11/14/03 08:30 Received: 11/14/03 17:00** | | | | | | | | | | |
| **Fluoranthene** | **0.860** | 0.0700 | 0.330 | mg/kg dry | 1 | 3110653 | 11/20/03 | 11/24/03 | EPA 8270C | |
| Fluorene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Hexachlorobenzene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Hexachlorobutadiene | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Hexachlorocyclopentadiene | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Hexachloroethane | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| **Indeno (1,2,3-cd) pyrene** | **0.201** | 0.0700 | 0.330 | " | " | " | " | " | " | J |
| Isophorone | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Methylnaphthalene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Methylphenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 3-,4-Methylphenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Naphthalene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Nitroaniline | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 3-Nitroaniline | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 4-Nitroaniline | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Nitrobenzene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Nitrophenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 4-Nitrophenol | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| N-Nitrosodi-n-propylamine | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| N-Nitrosodiphenylamine | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Pentachlorophenol | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| **Phenanthrene** | **0.514** | 0.0700 | 0.330 | " | " | " | " | " | " | |
| Phenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| **Pyrene** | **1.16** | 0.0700 | 0.330 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2,4,5-Trichlorophenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2,4,6-Trichlorophenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| *Surrogate: 2-Fluorobiphenyl* | | *114 %* | *44-146* | | | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *103 %* | *42-126* | | | " | " | *11/22/03* | " | *D* |
| *Surrogate: Nitrobenzene-d5* | | *110 %* | *42-126* | | | " | " | *11/24/03* | " | |
| *Surrogate: Phenol-d6* | | *95.0 %* | *42-131* | | | " | " | " | " | |
| *Surrogate: p-Terphenyl-d14* | | *130 %* | *49-150* | | | " | " | " | " | |
| *Surrogate: 2,4,6-Tribromophenol* | | *110 %* | *48-119* | | | " | " | " | " | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Semivolatile Organic Compounds per EPA Method 8270C
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-5-13.5 (P3K0433-09) Soil Sampled: 11/14/03 10:45 Received: 11/14/03 17:00** | | | | | | | | | | |
| Acenaphthene | ND | 0.0700 | 0.330 | mg/kg dry | 1 | 3110653 | 11/20/03 | 11/22/03 | EPA 8270C | U |
| Acenaphthylene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Anthracene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Benzo (a) anthracene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Benzo (a) pyrene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Benzo (b) fluoranthene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Benzo (ghi) perylene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Benzo (k) fluoranthene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Benzoic Acid | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Benzyl alcohol | ND | 0.165 | 0.330 | " | " | " | " | " | " | U |
| 4-Bromophenyl phenyl ether | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Butyl benzyl phthalate | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 4-Chloro-3-methylphenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 4-Chloroaniline | ND | 0.165 | 2.00 | " | " | " | " | " | " | U |
| Bis(2-chloroethoxy)methane | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Bis(2-chloroethyl)ether | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Bis(2-chloroisopropyl)ether | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Chloronaphthalene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Chlorophenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 4-Chlorophenyl phenyl ether | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Chrysene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Di-n-butyl phthalate | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Di-n-octyl phthalate | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Dibenzo (a,h) anthracene | ND | 0.0600 | 0.330 | " | " | " | " | " | " | U |
| Dibenzofuran | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 1,2-Dichlorobenzene | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 1,3-Dichlorobenzene | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 1,4-Dichlorobenzene | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 3,3'-Dichlorobenzidine | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 2,4-Dichlorophenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Diethyl phthalate | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2,4-Dimethylphenol | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Dimethyl phthalate | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 4,6-Dinitro-2-methylphenol | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 2,4-Dinitrophenol | ND | 2.00 | 2.00 | " | " | " | " | " | " | U |
| 2,4-Dinitrotoluene | ND | 0.500 | 0.500 | " | " | " | " | " | " | U |
| 2,6-Dinitrotoluene | ND | 0.0700 | 0.500 | " | " | " | " | " | " | U |
| Bis(2-ethylhexyl)phthalate | ND | 2.00 | 2.00 | " | " | " | " | " | " | U |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Semivolatile Organic Compounds per EPA Method 8270C
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-5-13.5 (P3K0433-09) Soil Sampled: 11/14/03 10:45 Received: 11/14/03 17:00** | | | | | | | | | | |
| Fluoranthene | ND | 0.0700 | 0.330 | mg/kg dry | 1 | 3110653 | 11/20/03 | 11/22/03 | EPA 8270C | U |
| Fluorene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Hexachlorobenzene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Hexachlorobutadiene | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Hexachlorocyclopentadiene | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Hexachloroethane | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Indeno (1,2,3-cd) pyrene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Isophorone | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Methylnaphthalene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Methylphenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 3-,4-Methylphenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Naphthalene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Nitroaniline | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 3-Nitroaniline | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 4-Nitroaniline | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Nitrobenzene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Nitrophenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 4-Nitrophenol | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| N-Nitrosodi-n-propylamine | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| N-Nitrosodiphenylamine | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Pentachlorophenol | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Phenanthrene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Phenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Pyrene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 1,2,4-Trichlorobenzene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2,4,5-Trichlorophenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2,4,6-Trichlorophenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| *Surrogate: 2-Fluorobiphenyl* | | *117 %* | *44-146* | | | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *112 %* | *42-126* | | | " | " | *11/24/03* | " | *D* |
| *Surrogate: Nitrobenzene-d5* | | *116 %* | *42-126* | | | " | " | *11/22/03* | " | |
| *Surrogate: Phenol-d6* | | *104 %* | *42-131* | | | " | " | " | " | |
| *Surrogate: p-Terphenyl-d14* | | *169 %* | *49-150* | | | " | " | " | " | *S-08* |
| *Surrogate: 2,4,6-Tribromophenol* | | *111 %* | *48-119* | | | " | " | *11/24/03* | " | *D* |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Semivolatile Organic Compounds per EPA Method 8270C
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-4-17.5 (P3K0433-12) Soil Sampled: 11/14/03 14:08 Received: 11/14/03 17:00** | | | | | | | | | | |
| Acenaphthene | ND | 0.0700 | 0.330 | mg/kg dry | 1 | 3110653 | 11/20/03 | 11/27/03 | EPA 8270C | U |
| Acenaphthylene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Anthracene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| **Benzo (a) anthracene** | **0.419** | 0.0700 | 0.330 | " | " | " | " | " | " | |
| **Benzo (a) pyrene** | **0.339** | 0.0700 | 0.330 | " | " | " | " | " | " | |
| **Benzo (b) fluoranthene** | **0.190** | 0.0700 | 0.330 | " | " | " | " | " | " | J |
| **Benzo (ghi) perylene** | **0.223** | 0.0700 | 0.330 | " | " | " | " | " | " | J |
| **Benzo (k) fluoranthene** | **0.269** | 0.0700 | 0.330 | " | " | " | " | " | " | J |
| Benzoic Acid | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Benzyl alcohol | ND | 0.165 | 0.330 | " | " | " | " | " | " | U |
| 4-Bromophenyl phenyl ether | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Butyl benzyl phthalate | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 4-Chloro-3-methylphenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 4-Chloroaniline | ND | 0.165 | 2.00 | " | " | " | " | " | " | U |
| Bis(2-chloroethoxy)methane | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Bis(2-chloroethyl)ether | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Bis(2-chloroisopropyl)ether | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Chloronaphthalene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Chlorophenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 4-Chlorophenyl phenyl ether | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| **Chrysene** | **0.448** | 0.0700 | 0.330 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Di-n-octyl phthalate | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| **Dibenzo (a,h) anthracene** | **0.0790** | 0.0700 | 0.330 | " | " | " | " | " | " | J |
| Dibenzofuran | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 1,2-Dichlorobenzene | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 1,3-Dichlorobenzene | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 1,4-Dichlorobenzene | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 3,3'-Dichlorobenzidine | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 2,4-Dichlorophenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Diethyl phthalate | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2,4-Dimethylphenol | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Dimethyl phthalate | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 4,6-Dinitro-2-methylphenol | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 2,4-Dinitrophenol | ND | 2.00 | 2.00 | " | " | " | " | " | " | U |
| 2,4-Dinitrotoluene | ND | 0.500 | 0.500 | " | " | " | " | " | " | U |
| 2,6-Dinitrotoluene | ND | 0.500 | 0.500 | " | " | " | " | " | " | U |
| Bis(2-ethylhexyl)phthalate | ND | 2.00 | 2.00 | " | " | " | " | " | " | U |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Semivolatile Organic Compounds per EPA Method 8270C
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-4-17.5 (P3K0433-12) Soil Sampled: 11/14/03 14:08 Received: 11/14/03 17:00** | | | | | | | | | | |
| **Fluoranthene** | **0.388** | 0.0700 | 0.330 | mg/kg dry | 1 | 3110653 | 11/20/03 | 11/27/03 | EPA 8270C | |
| Fluorene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Hexachlorobenzene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Hexachlorobutadiene | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Hexachlorocyclopentadiene | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Hexachloroethane | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| **Indeno (1,2,3-cd) pyrene** | **0.166** | 0.0700 | 0.330 | " | " | " | " | " | " | J |
| Isophorone | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Methylnaphthalene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Methylphenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 3-,4-Methylphenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Naphthalene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Nitroaniline | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 3-Nitroaniline | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 4-Nitroaniline | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Nitrobenzene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Nitrophenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 4-Nitrophenol | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| N-Nitrosodi-n-propylamine | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| N-Nitrosodiphenylamine | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Pentachlorophenol | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| **Phenanthrene** | **0.117** | 0.0700 | 0.330 | " | " | " | " | " | " | J |
| Phenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| **Pyrene** | **0.645** | 0.0700 | 0.330 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2,4,5-Trichlorophenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2,4,6-Trichlorophenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| *Surrogate: 2-Fluorobiphenyl* | | *82.0 %* | *44-146* | | | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *80.8 %* | *42-126* | | | " | " | " | " | |
| *Surrogate: Nitrobenzene-d5* | | *74.9 %* | *42-126* | | | " | " | " | " | |
| *Surrogate: Phenol-d6* | | *64.3 %* | *42-131* | | | " | " | " | " | |
| *Surrogate: p-Terphenyl-d14* | | *106 %* | *49-150* | | | " | " | " | " | |
| *Surrogate: 2,4,6-Tribromophenol* | | *83.4 %* | *48-119* | | | " | " | " | " | |

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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Semivolatile Organic Compounds per EPA Method 8270C
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **MW-11-PW (P3K0433-15) Water Sampled: 11/14/03 14:45 Received: 11/14/03 17:00** | | | | | | | | | | |
| Acenaphthene | ND | 3.00 | 5.00 | ug/l | 1 | 3110600 | 11/19/03 | 11/25/03 | EPA 8270C | U |
| Acenaphthylene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| Anthracene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| Benzo (a) anthracene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| Benzo (a) pyrene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| Benzo (b) fluoranthene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| Benzo (ghi) perylene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| Benzo (k) fluoranthene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| Benzoic Acid | ND | 25.0 | 50.0 | " | " | " | " | " | " | U |
| Benzyl alcohol | ND | 5.00 | 10.0 | " | " | " | " | " | " | U |
| 4-Bromophenyl phenyl ether | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| Butyl benzyl phthalate | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| 4-Chloro-3-methylphenol | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| 4-Chloroaniline | ND | 5.00 | 20.0 | " | " | " | " | " | " | U |
| Bis(2-chloroethoxy)methane | ND | 5.00 | 10.0 | " | " | " | " | " | " | U |
| Bis(2-chloroethyl)ether | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| Bis(2-chloroisopropyl)ether | ND | 5.00 | 10.0 | " | " | " | " | " | " | U |
| 2-Chloronaphthalene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| 2-Chlorophenol | ND | 5.00 | 5.00 | " | " | " | " | " | " | U |
| 4-Chlorophenyl phenyl ether | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| Chrysene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| Di-n-butyl phthalate | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| Di-n-octyl phthalate | ND | 5.00 | 5.00 | " | " | " | " | " | " | U |
| Dibenzo (a,h) anthracene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| Dibenzofuran | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dichlorobenzene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| 1,3-Dichlorobenzene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| 1,4-Dichlorobenzene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| 3,3'-Dichlorobenzidine | ND | 5.00 | 5.00 | " | " | " | " | " | " | U |
| 2,4-Dichlorophenol | ND | 5.00 | 5.00 | " | " | " | " | " | " | U |
| Diethyl phthalate | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| 2,4-Dimethylphenol | ND | 10.0 | 10.0 | " | " | " | " | " | " | U |
| **Dimethyl phthalate** | **101** | 3.00 | 5.00 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 5.00 | 10.0 | " | " | " | " | " | " | U |
| 2,4-Dinitrophenol | ND | 15.0 | 25.0 | " | " | " | " | " | " | U |
| 2,4-Dinitrotoluene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| 2,6-Dinitrotoluene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| Bis(2-ethylhexyl)phthalate | ND | 10.0 | 10.0 | " | " | " | " | " | " | U |



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Semivolatile Organic Compounds per EPA Method 8270C
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **MW-11-PW (P3K0433-15) Water Sampled: 11/14/03 14:45 Received: 11/14/03 17:00** | | | | | | | | | | |
| Fluoranthene | ND | 3.00 | 5.00 | ug/l | 1 | 3110600 | 11/19/03 | 11/25/03 | EPA 8270C | U |
| Fluorene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| Hexachlorobenzene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| Hexachlorobutadiene | ND | 5.00 | 10.0 | " | " | " | " | " | " | U |
| Hexachlorocyclopentadiene | ND | 5.00 | 10.0 | " | " | " | " | " | " | U |
| Hexachloroethane | ND | 5.00 | 10.0 | " | " | " | " | " | " | U |
| Indeno (1,2,3-cd) pyrene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| Isophorone | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| 2-Methylnaphthalene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| 2-Methylphenol | ND | 5.00 | 10.0 | " | " | " | " | " | " | U |
| 3-,4-Methylphenol | ND | 5.00 | 5.00 | " | " | " | " | " | " | U |
| **Naphthalene** | **5.70** | 3.00 | 5.00 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| 3-Nitroaniline | ND | 5.00 | 10.0 | " | " | " | " | " | " | U |
| 4-Nitroaniline | ND | 5.00 | 10.0 | " | " | " | " | " | " | U |
| Nitrobenzene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| 2-Nitrophenol | ND | 5.00 | 5.00 | " | " | " | " | " | " | U |
| 4-Nitrophenol | ND | 10.0 | 25.0 | " | " | " | " | " | " | U |
| N-Nitrosodi-n-propylamine | ND | 3.00 | 10.0 | " | " | " | " | " | " | U |
| N-Nitrosodiphenylamine | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| Pentachlorophenol | ND | 5.00 | 10.0 | " | " | " | " | " | " | U |
| Phenanthrene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| Phenol | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| Pyrene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| 1,2,4-Trichlorobenzene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| 2,4,5-Trichlorophenol | ND | 5.00 | 5.00 | " | " | " | " | " | " | U |
| 2,4,6-Trichlorophenol | ND | 5.00 | 5.00 | " | " | " | " | " | " | U |
| *Surrogate: 2-Fluorobiphenyl* | | *75.5 %* | *26-135* | | | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *33.8 %* | *6-124* | | | " | " | " | " | |
| *Surrogate: Nitrobenzene-d5* | | *87.4 %* | *23-147* | | | " | " | " | " | |
| *Surrogate: Phenol-d6* | | *20.6 %* | *11-130* | | | " | " | " | " | |
| *Surrogate: p-Terphenyl-d14* | | *105 %* | *38-149* | | | " | " | " | " | |
| *Surrogate: 2,4,6-Tribromophenol* | | *83.2 %* | *19-126* | | | " | " | " | " | |



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Semivolatile Organic Compounds per EPA Method 8270C
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **MW-12-PW (P3K0433-16) Water Sampled: 11/14/03 15:53 Received: 11/14/03 17:00** | | | | | | | | | | |
| Acenaphthene | ND | 3.53 | 5.88 | ug/l | 1 | 3110600 | 11/19/03 | 11/25/03 | EPA 8270C | D, U |
| Acenaphthylene | ND | 3.53 | 5.88 | " | " | " | " | " | " | D, U |
| Anthracene | ND | 3.53 | 5.88 | " | " | " | " | " | " | D, U |
| Benzo (a) anthracene | ND | 3.53 | 5.88 | " | " | " | " | " | " | D, U |
| Benzo (a) pyrene | ND | 3.53 | 5.88 | " | " | " | " | " | " | D, U |
| Benzo (b) fluoranthene | ND | 3.53 | 5.88 | " | " | " | " | " | " | D, U |
| Benzo (ghi) perylene | ND | 3.53 | 5.88 | " | " | " | " | " | " | D, U |
| Benzo (k) fluoranthene | ND | 3.53 | 5.88 | " | " | " | " | " | " | D, U |
| Benzoic Acid | ND | 29.4 | 58.8 | " | " | " | " | " | " | D, U |
| Benzyl alcohol | ND | 5.88 | 11.8 | " | " | " | " | " | " | D, U |
| 4-Bromophenyl phenyl ether | ND | 3.53 | 5.88 | " | " | " | " | " | " | D, U |
| Butyl benzyl phthalate | ND | 3.53 | 5.88 | " | " | " | " | " | " | D, U |
| 4-Chloro-3-methylphenol | ND | 3.53 | 5.88 | " | " | " | " | " | " | D, U |
| 4-Chloroaniline | ND | 5.88 | 23.5 | " | " | " | " | " | " | D, U |
| Bis(2-chloroethoxy)methane | ND | 5.88 | 11.8 | " | " | " | " | " | " | D, U |
| Bis(2-chloroethyl)ether | ND | 3.53 | 5.88 | " | " | " | " | " | " | D, U |
| Bis(2-chloroisopropyl)ether | ND | 5.88 | 11.8 | " | " | " | " | " | " | D, U |
| 2-Chloronaphthalene | ND | 3.53 | 5.88 | " | " | " | " | " | " | D, U |
| 2-Chlorophenol | ND | 5.88 | 5.88 | " | " | " | " | " | " | D, U |
| 4-Chlorophenyl phenyl ether | ND | 3.53 | 5.88 | " | " | " | " | " | " | D, U |
| Chrysene | ND | 3.53 | 5.88 | " | " | " | " | " | " | D, U |
| Di-n-butyl phthalate | ND | 3.53 | 5.88 | " | " | " | " | " | " | D, U |
| Di-n-octyl phthalate | ND | 5.88 | 5.88 | " | " | " | " | " | " | D, U |
| Dibenzo (a,h) anthracene | ND | 3.53 | 5.88 | " | " | " | " | " | " | D, U |
| Dibenzofuran | ND | 3.53 | 5.88 | " | " | " | " | " | " | D, U |
| 1,2-Dichlorobenzene | ND | 3.53 | 5.88 | " | " | " | " | " | " | D, U |
| 1,3-Dichlorobenzene | ND | 3.53 | 5.88 | " | " | " | " | " | " | D, U |
| 1,4-Dichlorobenzene | ND | 3.53 | 5.88 | " | " | " | " | " | " | D, U |
| 3,3'-Dichlorobenzidine | ND | 5.88 | 5.88 | " | " | " | " | " | " | D, U |
| 2,4-Dichlorophenol | ND | 5.88 | 5.88 | " | " | " | " | " | " | D, U |
| Diethyl phthalate | ND | 3.53 | 5.88 | " | " | " | " | " | " | D, U |
| 2,4-Dimethylphenol | ND | 11.8 | 11.8 | " | " | " | " | " | " | D, U |
| **Dimethyl phthalate** | **34.8** | 3.53 | 5.88 | " | " | " | " | " | " | D |
| 4,6-Dinitro-2-methylphenol | ND | 5.88 | 11.8 | " | " | " | " | " | " | D, U |
| 2,4-Dinitrophenol | ND | 17.6 | 29.4 | " | " | " | " | " | " | D, U |
| 2,4-Dinitrotoluene | ND | 3.53 | 5.88 | " | " | " | " | " | " | D, U |
| 2,6-Dinitrotoluene | ND | 3.53 | 5.88 | " | " | " | " | " | " | D, U |
| **Bis(2-ethylhexyl)phthalate** | **17.3** | 11.8 | 11.8 | " | " | " | " | " | " | D |



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907.563.9200 fax 907.563.9210

| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Semivolatile Organic Compounds per EPA Method 8270C
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **MW-12-PW (P3K0433-16) Water Sampled: 11/14/03 15:53 Received: 11/14/03 17:00** | | | | | | | | | | |
| Fluoranthene | ND | 3.53 | 5.88 | ug/l | 1 | 3110600 | 11/19/03 | 11/25/03 | EPA 8270C | D, U |
| Fluorene | ND | 3.53 | 5.88 | " | " | " | " | " | " | D, U |
| Hexachlorobenzene | ND | 3.53 | 5.88 | " | " | " | " | " | " | D, U |
| Hexachlorobutadiene | ND | 5.88 | 11.8 | " | " | " | " | " | " | D, U |
| Hexachlorocyclopentadiene | ND | 5.88 | 11.8 | " | " | " | " | " | " | D, U |
| Hexachloroethane | ND | 5.88 | 11.8 | " | " | " | " | " | " | D, U |
| Indeno (1,2,3-cd) pyrene | ND | 3.53 | 5.88 | " | " | " | " | " | " | D, U |
| Isophorone | ND | 3.53 | 5.88 | " | " | " | " | " | " | D, U |
| 2-Methylnaphthalene | ND | 3.53 | 5.88 | " | " | " | " | " | " | D, U |
| 2-Methylphenol | ND | 5.88 | 11.8 | " | " | " | " | " | " | D, U |
| 3-,4-Methylphenol | ND | 5.88 | 5.88 | " | " | " | " | " | " | D, U |
| Naphthalene | ND | 3.53 | 5.88 | " | " | " | " | " | " | D, U |
| 2-Nitroaniline | ND | 3.53 | 5.88 | " | " | " | " | " | " | D, U |
| 3-Nitroaniline | ND | 5.88 | 11.8 | " | " | " | " | " | " | D, U |
| 4-Nitroaniline | ND | 5.88 | 11.8 | " | " | " | " | " | " | D, U |
| Nitrobenzene | ND | 3.53 | 5.88 | " | " | " | " | " | " | D, U |
| 2-Nitrophenol | ND | 5.88 | 5.88 | " | " | " | " | " | " | D, U |
| 4-Nitrophenol | ND | 11.8 | 29.4 | " | " | " | " | " | " | D, U |
| N-Nitrosodi-n-propylamine | ND | 3.53 | 11.8 | " | " | " | " | " | " | D, U |
| N-Nitrosodiphenylamine | ND | 3.53 | 5.88 | " | " | " | " | " | " | D, U |
| Pentachlorophenol | ND | 5.88 | 11.8 | " | " | " | " | " | " | D, U |
| Phenanthrene | ND | 3.53 | 5.88 | " | " | " | " | " | " | D, U |
| Phenol | ND | 3.53 | 5.88 | " | " | " | " | " | " | D, U |
| Pyrene | ND | 3.53 | 5.88 | " | " | " | " | " | " | D, U |
| 1,2,4-Trichlorobenzene | ND | 3.53 | 5.88 | " | " | " | " | " | " | D, U |
| 2,4,5-Trichlorophenol | ND | 5.88 | 5.88 | " | " | " | " | " | " | D, U |
| 2,4,6-Trichlorophenol | ND | 5.88 | 5.88 | " | " | " | " | " | " | D, U |
| *Surrogate: 2-Fluorobiphenyl* | | *113 %* | *26-135* | | | " | " | " | " | *D* |
| *Surrogate: 2-Fluorophenol* | | *83.5 %* | *6-124* | | | " | " | " | " | *D* |
| *Surrogate: Nitrobenzene-d5* | | *128 %* | *23-147* | | | " | " | " | " | *D* |
| *Surrogate: Phenol-d6* | | *47.9 %* | *11-130* | | | " | " | " | " | *D* |
| *Surrogate: p-Terphenyl-d14* | | *149 %* | *38-149* | | | " | " | " | " | *D* |
| *Surrogate: 2,4,6-Tribromophenol* | | *132 %* | *19-126* | | | " | " | " | " | *A-01, D* |



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Semivolatile Organic Compounds per EPA Method 8270C
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Comp-1 (P3K0433-17) Soil Sampled: 11/14/03 15:55 Received: 11/14/03 17:00** | | | | | | | | | | **R-05** |
| Acenaphthene | ND | 0.350 | 1.65 | mg/kg dry | 1 | 3110653 | 11/20/03 | 11/24/03 | EPA 8270C | D, U |
| Acenaphthylene | ND | 0.350 | 1.65 | " | " | " | " | " | " | D, U |
| Anthracene | ND | 0.350 | 1.65 | " | " | " | " | " | " | D, U |
| Benzo (a) anthracene | ND | 0.350 | 1.65 | " | " | " | " | " | " | D, U |
| Benzo (a) pyrene | ND | 0.350 | 1.65 | " | " | " | " | " | " | D, U |
| Benzo (b) fluoranthene | ND | 0.350 | 1.65 | " | " | " | " | " | " | D, U |
| Benzo (ghi) perylene | ND | 0.350 | 1.65 | " | " | " | " | " | " | D, U |
| Benzo (k) fluoranthene | ND | 0.350 | 1.65 | " | " | " | " | " | " | D, U |
| Benzoic Acid | ND | 2.50 | 5.00 | " | " | " | " | " | " | D, U |
| Benzyl alcohol | ND | 0.825 | 1.65 | " | " | " | " | " | " | D, U |
| 4-Bromophenyl phenyl ether | ND | 0.350 | 1.65 | " | " | " | " | " | " | D, U |
| Butyl benzyl phthalate | ND | 0.350 | 1.65 | " | " | " | " | " | " | D, U |
| 4-Chloro-3-methylphenol | ND | 0.350 | 1.65 | " | " | " | " | " | " | D, U |
| 4-Chloroaniline | ND | 0.825 | 10.0 | " | " | " | " | " | " | D, U |
| Bis(2-chloroethoxy)methane | ND | 0.350 | 1.65 | " | " | " | " | " | " | D, U |
| Bis(2-chloroethyl)ether | ND | 0.350 | 1.65 | " | " | " | " | " | " | D, U |
| Bis(2-chloroisopropyl)ether | ND | 0.350 | 1.65 | " | " | " | " | " | " | D, U |
| 2-Chloronaphthalene | ND | 0.350 | 1.65 | " | " | " | " | " | " | D, U |
| 2-Chlorophenol | ND | 0.350 | 1.65 | " | " | " | " | " | " | D, U |
| 4-Chlorophenyl phenyl ether | ND | 0.350 | 1.65 | " | " | " | " | " | " | D, U |
| Chrysene | ND | 0.350 | 1.65 | " | " | " | " | " | " | D, U |
| Di-n-butyl phthalate | ND | 2.50 | 5.00 | " | " | " | " | " | " | D, U |
| Di-n-octyl phthalate | ND | 0.350 | 1.65 | " | " | " | " | " | " | D, U |
| Dibenzo (a,h) anthracene | ND | 0.300 | 1.65 | " | " | " | " | " | " | D, U |
| Dibenzofuran | ND | 0.350 | 1.65 | " | " | " | " | " | " | D, U |
| 1,2-Dichlorobenzene | ND | 2.50 | 5.00 | " | " | " | " | " | " | D, U |
| 1,3-Dichlorobenzene | ND | 2.50 | 5.00 | " | " | " | " | " | " | D, U |
| 1,4-Dichlorobenzene | ND | 2.50 | 5.00 | " | " | " | " | " | " | D, U |
| 3,3'-Dichlorobenzidine | ND | 2.50 | 5.00 | " | " | " | " | " | " | D, U |
| 2,4-Dichlorophenol | ND | 0.350 | 1.65 | " | " | " | " | " | " | D, U |
| Diethyl phthalate | ND | 0.350 | 1.65 | " | " | " | " | " | " | D, U |
| 2,4-Dimethylphenol | ND | 2.50 | 5.00 | " | " | " | " | " | " | D, U |
| Dimethyl phthalate | ND | 0.350 | 1.65 | " | " | " | " | " | " | D, U |
| 4,6-Dinitro-2-methylphenol | ND | 2.50 | 5.00 | " | " | " | " | " | " | D, U |
| 2,4-Dinitrophenol | ND | 10.0 | 10.0 | " | " | " | " | " | " | D, U |
| 2,4-Dinitrotoluene | ND | 2.50 | 2.50 | " | " | " | " | " | " | D, U |
| 2,6-Dinitrotoluene | ND | 0.350 | 2.50 | " | " | " | " | " | " | D, U |
| Bis(2-ethylhexyl)phthalate | ND | 10.0 | 10.0 | " | " | " | " | " | " | D, U |



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Semivolatile Organic Compounds per EPA Method 8270C
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Comp-1 (P3K0433-17) Soil Sampled: 11/14/03 15:55 Received: 11/14/03 17:00** | | | | | | | | | | **R-05** |
| Fluoranthene | ND | 0.350 | 1.65 | mg/kg dry | 1 | 3110653 | 11/20/03 | 11/24/03 | EPA 8270C | D, U |
| Fluorene | ND | 0.350 | 1.65 | " | " | " | " | " | " | D, U |
| Hexachlorobenzene | ND | 0.350 | 1.65 | " | " | " | " | " | " | D, U |
| Hexachlorobutadiene | ND | 2.50 | 5.00 | " | " | " | " | " | " | D, U |
| Hexachlorocyclopentadiene | ND | 2.50 | 5.00 | " | " | " | " | " | " | D, U |
| Hexachloroethane | ND | 2.50 | 5.00 | " | " | " | " | " | " | D, U |
| Indeno (1,2,3-cd) pyrene | ND | 0.350 | 1.65 | " | " | " | " | " | " | D, U |
| Isophorone | ND | 0.350 | 1.65 | " | " | " | " | " | " | D, U |
| 2-Methylnaphthalene | ND | 0.350 | 1.65 | " | " | " | " | " | " | D, U |
| 2-Methylphenol | ND | 0.350 | 1.65 | " | " | " | " | " | " | D, U |
| 3-,4-Methylphenol | ND | 0.350 | 1.65 | " | " | " | " | " | " | D, U |
| Naphthalene | ND | 0.350 | 1.65 | " | " | " | " | " | " | D, U |
| 2-Nitroaniline | ND | 0.350 | 1.65 | " | " | " | " | " | " | D, U |
| 3-Nitroaniline | ND | 2.50 | 5.00 | " | " | " | " | " | " | D, U |
| 4-Nitroaniline | ND | 0.350 | 1.65 | " | " | " | " | " | " | D, U |
| Nitrobenzene | ND | 0.350 | 1.65 | " | " | " | " | " | " | D, U |
| 2-Nitrophenol | ND | 0.350 | 1.65 | " | " | " | " | " | " | D, U |
| 4-Nitrophenol | ND | 2.50 | 5.00 | " | " | " | " | " | " | D, U |
| N-Nitrosodi-n-propylamine | ND | 0.350 | 1.65 | " | " | " | " | " | " | D, U |
| N-Nitrosodiphenylamine | ND | 0.350 | 1.65 | " | " | " | " | " | " | D, U |
| Pentachlorophenol | ND | 2.50 | 5.00 | " | " | " | " | " | " | D, U |
| Phenanthrene | ND | 0.350 | 1.65 | " | " | " | " | " | " | D, U |
| Phenol | ND | 0.350 | 1.65 | " | " | " | " | " | " | D, U |
| Pyrene | ND | 0.350 | 1.65 | " | " | " | " | " | " | D, U |
| 1,2,4-Trichlorobenzene | ND | 0.350 | 1.65 | " | " | " | " | " | " | D, U |
| 2,4,5-Trichlorophenol | ND | 0.350 | 1.65 | " | " | " | " | " | " | D, U |
| 2,4,6-Trichlorophenol | ND | 0.350 | 1.65 | " | " | " | " | " | " | D, U |
| *Surrogate: 2-Fluorobiphenyl* | | *132 %* | *44-146* | | | " | " | " | " | *D* |
| *Surrogate: 2-Fluorophenol* | | *117 %* | *42-126* | | | " | " | " | " | *D* |
| *Surrogate: Nitrobenzene-d5* | | *114 %* | *42-126* | | | " | " | " | " | *D* |
| *Surrogate: Phenol-d6* | | *101 %* | *42-131* | | | " | " | " | " | *D* |
| *Surrogate: p-Terphenyl-d14* | | *140 %* | *49-150* | | | " | " | " | " | *D* |
| *Surrogate: 2,4,6-Tribromophenol* | | *117 %* | *48-119* | | | " | " | " | " | *D* |

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907.563.9200 fax 907.563.9210

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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Semivolatile Organic Compounds per EPA Method 8270C
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Comp-2 (P3K0433-18) Soil Sampled: 11/14/03 16:05 Received: 11/14/03 17:00** | | | | | | | | | | **R-05** |
| Acenaphthene | ND | 0.700 | 3.30 | mg/kg dry | 1 | 3110653 | 11/20/03 | 11/24/03 | EPA 8270C | D, U |
| Acenaphthylene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Anthracene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Benzo (a) anthracene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Benzo (a) pyrene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Benzo (b) fluoranthene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Benzo (ghi) perylene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Benzo (k) fluoranthene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Benzoic Acid | ND | 5.00 | 10.0 | " | " | " | " | " | " | D, U |
| Benzyl alcohol | ND | 1.65 | 3.30 | " | " | " | " | " | " | D, U |
| 4-Bromophenyl phenyl ether | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Butyl benzyl phthalate | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 4-Chloro-3-methylphenol | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 4-Chloroaniline | ND | 1.65 | 20.0 | " | " | " | " | " | " | D, U |
| Bis(2-chloroethoxy)methane | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Bis(2-chloroethyl)ether | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Bis(2-chloroisopropyl)ether | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 2-Chloronaphthalene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 2-Chlorophenol | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 4-Chlorophenyl phenyl ether | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Chrysene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Di-n-butyl phthalate | ND | 5.00 | 10.0 | " | " | " | " | " | " | D, U |
| Di-n-octyl phthalate | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Dibenzo (a,h) anthracene | ND | 0.600 | 3.30 | " | " | " | " | " | " | D, U |
| Dibenzofuran | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 1,2-Dichlorobenzene | ND | 5.00 | 10.0 | " | " | " | " | " | " | D, U |
| 1,3-Dichlorobenzene | ND | 5.00 | 10.0 | " | " | " | " | " | " | D, U |
| 1,4-Dichlorobenzene | ND | 5.00 | 10.0 | " | " | " | " | " | " | D, U |
| 3,3'-Dichlorobenzidine | ND | 5.00 | 10.0 | " | " | " | " | " | " | D, U |
| 2,4-Dichlorophenol | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Diethyl phthalate | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 2,4-Dimethylphenol | ND | 5.00 | 10.0 | " | " | " | " | " | " | D, U |
| Dimethyl phthalate | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 4,6-Dinitro-2-methylphenol | ND | 5.00 | 10.0 | " | " | " | " | " | " | D, U |
| 2,4-Dinitrophenol | ND | 20.0 | 20.0 | " | " | " | " | " | " | D, U |
| 2,4-Dinitrotoluene | ND | 5.00 | 5.00 | " | " | " | " | " | " | D, U |
| 2,6-Dinitrotoluene | ND | 0.700 | 5.00 | " | " | " | " | " | " | D, U |
| Bis(2-ethylhexyl)phthalate | ND | 20.0 | 20.0 | " | " | " | " | " | " | D, U |



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Semivolatile Organic Compounds per EPA Method 8270C
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Comp-2 (P3K0433-18) Soil Sampled: 11/14/03 16:05 Received: 11/14/03 17:00** | | | | | | | | | | **R-05** |
| Fluoranthene | ND | 0.700 | 3.30 | mg/kg dry | 1 | 3110653 | 11/20/03 | 11/24/03 | EPA 8270C | D, U |
| Fluorene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Hexachlorobenzene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Hexachlorobutadiene | ND | 5.00 | 10.0 | " | " | " | " | " | " | D, U |
| Hexachlorocyclopentadiene | ND | 5.00 | 10.0 | " | " | " | " | " | " | D, U |
| Hexachloroethane | ND | 5.00 | 10.0 | " | " | " | " | " | " | D, U |
| Indeno (1,2,3-cd) pyrene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Isophorone | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 2-Methylnaphthalene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 2-Methylphenol | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 3-,4-Methylphenol | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Naphthalene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 2-Nitroaniline | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 3-Nitroaniline | ND | 5.00 | 10.0 | " | " | " | " | " | " | D, U |
| 4-Nitroaniline | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Nitrobenzene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 2-Nitrophenol | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 4-Nitrophenol | ND | 5.00 | 10.0 | " | " | " | " | " | " | D, U |
| N-Nitrosodi-n-propylamine | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| N-Nitrosodiphenylamine | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Pentachlorophenol | ND | 5.00 | 10.0 | " | " | " | " | " | " | D, U |
| Phenanthrene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Phenol | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Pyrene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 1,2,4-Trichlorobenzene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 2,4,5-Trichlorophenol | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 2,4,6-Trichlorophenol | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| *Surrogate: 2-Fluorobiphenyl* | | *131 %* | *44-146* | | | " | " | " | " | *D* |
| *Surrogate: 2-Fluorophenol* | | *118 %* | *42-126* | | | " | " | " | " | *D* |
| *Surrogate: Nitrobenzene-d5* | | *121 %* | *42-126* | | | " | " | " | " | *D* |
| *Surrogate: Phenol-d6* | | *115 %* | *42-131* | | | " | " | " | " | *D* |
| *Surrogate: p-Terphenyl-d14* | | *129 %* | *49-150* | | | " | " | " | " | *D* |
| *Surrogate: 2,4,6-Tribromophenol* | | *102 %* | *48-119* | | | " | " | " | " | *D* |

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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Semivolatile Organic Compounds per EPA Method 8270C
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **EB-1 (P3K0433-19) Water Sampled: 11/14/03 16:00 Received: 11/14/03 17:00** | | | | | | | | | | |
| Acenaphthene | ND | 3.00 | 5.00 | ug/l | 1 | 3110600 | 11/19/03 | 11/23/03 | EPA 8270C | U |
| Acenaphthylene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| Anthracene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| Benzo (a) anthracene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| Benzo (a) pyrene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| Benzo (b) fluoranthene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| Benzo (ghi) perylene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| Benzo (k) fluoranthene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| Benzoic Acid | ND | 25.0 | 50.0 | " | " | " | " | " | " | U |
| Benzyl alcohol | ND | 5.00 | 10.0 | " | " | " | " | " | " | U |
| 4-Bromophenyl phenyl ether | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| Butyl benzyl phthalate | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| 4-Chloro-3-methylphenol | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| 4-Chloroaniline | ND | 5.00 | 20.0 | " | " | " | " | " | " | U |
| Bis(2-chloroethoxy)methane | ND | 5.00 | 10.0 | " | " | " | " | " | " | U |
| Bis(2-chloroethyl)ether | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| Bis(2-chloroisopropyl)ether | ND | 5.00 | 10.0 | " | " | " | " | " | " | U |
| 2-Chloronaphthalene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| 2-Chlorophenol | ND | 5.00 | 5.00 | " | " | " | " | " | " | U |
| 4-Chlorophenyl phenyl ether | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| Chrysene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| Di-n-butyl phthalate | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| Di-n-octyl phthalate | ND | 5.00 | 5.00 | " | " | " | " | " | " | U |
| Dibenzo (a,h) anthracene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| Dibenzofuran | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dichlorobenzene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| 1,3-Dichlorobenzene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| 1,4-Dichlorobenzene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| 3,3'-Dichlorobenzidine | ND | 5.00 | 5.00 | " | " | " | " | " | " | U |
| 2,4-Dichlorophenol | ND | 5.00 | 5.00 | " | " | " | " | " | " | U |
| Diethyl phthalate | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| 2,4-Dimethylphenol | ND | 10.0 | 10.0 | " | " | " | " | " | " | U |
| Dimethyl phthalate | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| 4,6-Dinitro-2-methylphenol | ND | 5.00 | 10.0 | " | " | " | " | " | " | U |
| 2,4-Dinitrophenol | ND | 15.0 | 25.0 | " | " | " | " | " | " | U |
| 2,4-Dinitrotoluene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| 2,6-Dinitrotoluene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| **Bis(2-ethylhexyl)phthalate** | **14.9** | 10.0 | 10.0 | " | " | " | " | " | " | |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Semivolatile Organic Compounds per EPA Method 8270C
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **EB-1 (P3K0433-19) Water Sampled: 11/14/03 16:00 Received: 11/14/03 17:00** | | | | | | | | | | |
| Fluoranthene | ND | 3.00 | 5.00 | ug/l | 1 | 3110600 | 11/19/03 | 11/23/03 | EPA 8270C | U |
| Fluorene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| Hexachlorobenzene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| Hexachlorobutadiene | ND | 5.00 | 10.0 | " | " | " | " | " | " | U |
| Hexachlorocyclopentadiene | ND | 5.00 | 10.0 | " | " | " | " | " | " | U |
| Hexachloroethane | ND | 5.00 | 10.0 | " | " | " | " | " | " | U |
| Indeno (1,2,3-cd) pyrene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| Isophorone | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| 2-Methylnaphthalene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| 2-Methylphenol | ND | 5.00 | 10.0 | " | " | " | " | " | " | U |
| 3-,4-Methylphenol | ND | 5.00 | 5.00 | " | " | " | " | " | " | U |
| Naphthalene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| 2-Nitroaniline | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| 3-Nitroaniline | ND | 5.00 | 10.0 | " | " | " | " | " | " | U |
| 4-Nitroaniline | ND | 5.00 | 10.0 | " | " | " | " | " | " | U |
| Nitrobenzene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| 2-Nitrophenol | ND | 5.00 | 5.00 | " | " | " | " | " | " | U |
| 4-Nitrophenol | ND | 10.0 | 25.0 | " | " | " | " | " | " | U |
| N-Nitrosodi-n-propylamine | ND | 3.00 | 10.0 | " | " | " | " | " | " | U |
| N-Nitrosodiphenylamine | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| Pentachlorophenol | ND | 5.00 | 10.0 | " | " | " | " | " | " | U |
| Phenanthrene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| Phenol | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| Pyrene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| 1,2,4-Trichlorobenzene | ND | 3.00 | 5.00 | " | " | " | " | " | " | U |
| 2,4,5-Trichlorophenol | ND | 5.00 | 5.00 | " | " | " | " | " | " | U |
| 2,4,6-Trichlorophenol | ND | 5.00 | 5.00 | " | " | " | " | " | " | U |
| *Surrogate: 2-Fluorobiphenyl* | | *116 %* | *26-135* | | | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *77.5 %* | *6-124* | | | " | " | " | " | |
| *Surrogate: Nitrobenzene-d5* | | *128 %* | *23-147* | | | " | " | " | " | |
| *Surrogate: Phenol-d6* | | *37.4 %* | *11-130* | | | " | " | " | " | |
| *Surrogate: p-Terphenyl-d14* | | *145 %* | *38-149* | | | " | " | *11/24/03* | " | *D* |
| *Surrogate: 2,4,6-Tribromophenol* | | *120 %* | *19-126* | | | " | " | " | " | *D* |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# TCLP Volatile Organic Compounds per EPA Method 1311/8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Comp-1 (P3K0433-17) Soil Sampled: 11/14/03 15:55 Received: 11/14/03 17:00** | | | | | | | | | | |
| Acetone | ND | 0.250 | 0.500 | mg/l | 1 | 3110881 | 12/01/03 | 12/02/03 | 1311/8260B | U |
| Benzene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| Bromobenzene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| Bromochloromethane | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| Bromodichloromethane | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| Bromoform | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| Bromomethane | ND | 0.0500 | 0.100 | " | " | " | " | " | " | U |
| n-Butylbenzene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| sec-Butylbenzene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| tert-Butylbenzene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| Carbon Tetrachloride | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| Chlorobenzene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| Chloroethane | ND | 0.00250 | 0.0500 | " | " | " | " | " | " | U |
| Chloroform | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| Chloromethane | ND | 0.0500 | 0.100 | " | " | " | " | " | " | U |
| 2-Chlorotoluene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| 4-Chlorotoluene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| 1,2-Dibromo-3-chloropropane | ND | 0.0250 | 0.0500 | " | " | " | " | " | " | U |
| Dibromochloromethane | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| 1,2-Dibromoethane | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| Dibromomethane | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| 1,2-Dichlorobenzene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| 1,3-Dichlorobenzene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| 1,4-Dichlorobenzene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| Dichlorodifluoromethane | ND | 0.0500 | 0.100 | " | " | " | " | " | " | U |
| 1,1-Dichloroethane | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| 1,2-Dichloroethane | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| 1,1-Dichloroethene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| cis-1,2-Dichloroethene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| trans-1,2-Dichloroethene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| 1,2-Dichloropropane | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| 1,3-Dichloropropane | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| 2,2-Dichloropropane | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| 1,1-Dichloropropene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| cis-1,3-Dichloropropene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| trans-1,3-Dichloropropene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| Ethylbenzene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| Hexachlorobutadiene | ND | 0.0250 | 0.0500 | " | " | " | " | " | " | U |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# TCLP Volatile Organic Compounds per EPA Method 1311/8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Comp-1 (P3K0433-17) Soil Sampled: 11/14/03 15:55 Received: 11/14/03 17:00** | | | | | | | | | | |
| 2-Hexanone | ND | 0.0500 | 0.100 | mg/l | 1 | 3110881 | 12/01/03 | 12/02/03 | 1311/8260B | U |
| Isopropylbenzene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| p-Isopropyltoluene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| 4-Methyl-2-pentanone | ND | 0.100 | 0.200 | " | " | " | " | " | " | U |
| Methyl Ethyl Ketone | ND | 0.0250 | 0.500 | " | " | " | " | " | " | U |
| Methylene chloride | ND | 0.250 | 0.500 | " | " | " | " | " | " | U |
| Methyl tert-butyl ether | ND | 0.865 | 10.0 | " | " | " | " | " | " | U |
| Naphthalene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| n-Propylbenzene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| Styrene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| 1,1,1,2-Tetrachloroethane | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| 1,1,2,2-Tetrachloroethane | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| Tetrachloroethene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| Toluene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| 1,2,3-Trichlorobenzene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| 1,2,4-Trichlorobenzene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| 1,1,1-Trichloroethane | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| 1,1,2-Trichloroethane | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| Trichloroethene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| Trichlorofluoromethane | ND | 0.0250 | 0.0500 | " | " | " | " | " | " | U |
| 1,2,3-Trichloropropane | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| 1,2,4-Trimethylbenzene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| 1,3,5-Trimethylbenzene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| Vinyl chloride | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| o-Xylene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| m,p-Xylene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| *Surrogate: 4-BFB* | | *99.5 %* | *75-130* | | | " | " | " | " | *D* |
| *Surrogate: Dibromofluoromethane* | | *93.0 %* | *75-130* | | | " | " | " | " | *D* |
| *Surrogate: Toluene-d8* | | *97.5 %* | *75-130* | | | " | " | " | " | *D* |
| *Surrogate: 1,2-DCA-d4* | | *95.0 %* | *79-123* | | | " | " | " | " | *D* |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# TCLP Volatile Organic Compounds per EPA Method 1311/8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Comp-2 (P3K0433-18) Soil Sampled: 11/14/03 16:05 Received: 11/14/03 17:00** | | | | | | | | | | |
| Acetone | ND | 0.250 | 0.500 | mg/l | 1 | 3110881 | 12/01/03 | 12/02/03 | 1311/8260B | U |
| Benzene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| Bromobenzene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| Bromochloromethane | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| Bromodichloromethane | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| Bromoform | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| Bromomethane | ND | 0.0500 | 0.100 | " | " | " | " | " | " | U |
| n-Butylbenzene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| sec-Butylbenzene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| tert-Butylbenzene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| Carbon Tetrachloride | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| Chlorobenzene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| Chloroethane | ND | 0.00250 | 0.0500 | " | " | " | " | " | " | U |
| Chloroform | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| Chloromethane | ND | 0.0500 | 0.100 | " | " | " | " | " | " | U |
| 2-Chlorotoluene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| 4-Chlorotoluene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| 1,2-Dibromo-3-chloropropane | ND | 0.0250 | 0.0500 | " | " | " | " | " | " | U |
| Dibromochloromethane | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| 1,2-Dibromoethane | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| Dibromomethane | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| 1,2-Dichlorobenzene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| 1,3-Dichlorobenzene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| 1,4-Dichlorobenzene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| Dichlorodifluoromethane | ND | 0.0500 | 0.100 | " | " | " | " | " | " | U |
| 1,1-Dichloroethane | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| 1,2-Dichloroethane | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| 1,1-Dichloroethene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| cis-1,2-Dichloroethene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| trans-1,2-Dichloroethene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| 1,2-Dichloropropane | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| 1,3-Dichloropropane | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| 2,2-Dichloropropane | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| 1,1-Dichloropropene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| cis-1,3-Dichloropropene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| trans-1,3-Dichloropropene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| Ethylbenzene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| Hexachlorobutadiene | ND | 0.0250 | 0.0500 | " | " | " | " | " | " | U |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# TCLP Volatile Organic Compounds per EPA Method 1311/8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Comp-2 (P3K0433-18) Soil Sampled: 11/14/03 16:05 Received: 11/14/03 17:00** | | | | | | | | | | |
| 2-Hexanone | ND | 0.0500 | 0.100 | mg/l | 1 | 3110881 | 12/01/03 | 12/02/03 | 1311/8260B | U |
| Isopropylbenzene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| p-Isopropyltoluene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| 4-Methyl-2-pentanone | ND | 0.100 | 0.200 | " | " | " | " | " | " | U |
| Methyl Ethyl Ketone | ND | 0.0250 | 0.500 | " | " | " | " | " | " | U |
| Methylene chloride | ND | 0.250 | 0.500 | " | " | " | " | " | " | U |
| Methyl tert-butyl ether | ND | 0.865 | 10.0 | " | " | " | " | " | " | U |
| Naphthalene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| n-Propylbenzene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| Styrene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| 1,1,1,2-Tetrachloroethane | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| 1,1,2,2-Tetrachloroethane | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| Tetrachloroethene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| Toluene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| 1,2,3-Trichlorobenzene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| 1,2,4-Trichlorobenzene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| 1,1,1-Trichloroethane | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| 1,1,2-Trichloroethane | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| Trichloroethene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| Trichlorofluoromethane | ND | 0.0250 | 0.0500 | " | " | " | " | " | " | U |
| 1,2,3-Trichloropropane | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| 1,2,4-Trimethylbenzene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| 1,3,5-Trimethylbenzene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| Vinyl chloride | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| o-Xylene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| m,p-Xylene | ND | 0.0100 | 0.0200 | " | " | " | " | " | " | U |
| *Surrogate: 4-BFB* | | *106 %* | *75-130* | | | " | " | " | " | *D* |
| *Surrogate: Dibromofluoromethane* | | *102 %* | *75-130* | | | " | " | " | " | *D* |
| *Surrogate: Toluene-d8* | | *103 %* | *75-130* | | | " | " | " | " | *D* |
| *Surrogate: 1,2-DCA-d4* | | *98.5 %* | *79-123* | | | " | " | " | " | *D* |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# TCLP Semivolatiles per EPA Method 1311/8270
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Comp-1 (P3K0433-17) Soil Sampled: 11/14/03 15:55 Received: 11/14/03 17:00** | | | | | | | | | | |
| Acenaphthene | ND | 0.0500 | 0.0500 | mg/l | 1 | 3120009 | 12/01/03 | 12/01/03 | 1311/8270 | U |
| Acenaphthylene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Anthracene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Benzo (a) anthracene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Benzo (b) fluoranthene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Benzo (k) fluoranthene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Benzo (ghi) perylene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Benzo (a) pyrene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Benzoic acid | ND | 0.200 | 0.200 | " | " | " | " | " | " | U |
| Benzyl alcohol | ND | 0.200 | 0.200 | " | " | " | " | " | " | U |
| Bis(2-chloroethoxy)methane | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Bis(2-chloroethyl)ether | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Bis(2-chloroisopropyl)ether | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Bis(2-ethylhexyl)phthalate | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| 4-Bromophenyl phenyl ether | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| 4-Chloro-3-methylphenol | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| 2-Chloronaphthalene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| 4-Chlorophenyl phenyl ether | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| 2-Chlorophenol | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Chrysene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Dibenzo (a,h) anthracene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Dibenzofuran | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Di-n-butyl phthalate | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| 1,2-Dichlorobenzene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| 1,3-Dichlorobenzene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| 1,4-Dichlorobenzene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| 3,3'-Dichlorobenzidine | ND | 0.200 | 0.200 | " | " | " | " | " | " | U |
| 2,4-Dichlorophenol | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Diethyl phthalate | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| 2,4-Dimethylphenol | ND | 0.100 | 0.100 | " | " | " | " | " | " | U |
| Dimethyl phthalate | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| 4,6-Dinitro-2-methylphenol | ND | 0.200 | 0.200 | " | " | " | " | " | " | U |
| 2,4-Dinitrophenol | ND | 0.200 | 0.200 | " | " | " | " | " | " | U |
| 2,4-Dinitrotoluene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| 2,6-Dinitrotoluene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Di-n-octyl phthalate | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Fluoranthene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Fluorene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# TCLP Semivolatiles per EPA Method 1311/8270
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Comp-1 (P3K0433-17) Soil Sampled: 11/14/03 15:55 Received: 11/14/03 17:00** | | | | | | | | | | |
| Hexachlorobenzene | ND | 0.0500 | 0.0500 | mg/l | 1 | 3120009 | 12/01/03 | 12/01/03 | 1311/8270 | U |
| Hexachlorobutadiene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Hexachlorocyclopentadiene | ND | 0.200 | 0.200 | " | " | " | " | " | " | U |
| Hexachloroethane | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Indeno (1,2,3-cd) pyrene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Isophorone | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| 2-Methylnaphthalene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Naphthalene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| 2-Nitroaniline | ND | 0.200 | 0.200 | " | " | " | " | " | " | U |
| 3-Nitroaniline | ND | 0.200 | 0.200 | " | " | " | " | " | " | U |
| 4-Nitroaniline | ND | 0.200 | 0.200 | " | " | " | " | " | " | U |
| Nitrobenzene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| 2-Nitrophenol | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| 4-Nitrophenol | ND | 0.200 | 0.200 | " | " | " | " | " | " | U |
| N-Nitrosodiphenylamine | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| N-Nitrosodi-n-propylamine | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Pentachlorophenol | ND | 0.100 | 0.100 | " | " | " | " | " | " | U |
| Phenanthrene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Phenol | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Pyrene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Pyridine | ND | 0.200 | 0.200 | " | " | " | " | " | " | U |
| Total Cresols | ND | 0.100 | 0.100 | " | " | " | " | " | " | U |
| 1,2,4-Trichlorobenzene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| 2,4,5-Trichlorophenol | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| 2,4,6-Trichlorophenol | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Butyl benzyl phthalate | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| 4-Chloroaniline | ND | 0.100 | 0.100 | " | " | " | " | " | " | U |
| *Surrogate: 2-Fluorobiphenyl* | | *72.0 %* | *20-150* | | | " | " | " | " | |
| *Surrogate: Nitrobenzene-d5* | | *75.0 %* | *20-150* | | | " | " | " | " | |
| *Surrogate: Phenol-d6* | | *22.8 %* | *10-150* | | | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *44.5 %* | *10-150* | | | " | " | " | " | |
| *Surrogate: p-Terphenyl-d14* | | *88.3 %* | *20-150* | | | " | " | " | " | |
| *Surrogate: 2,4,6-Tribromophenol* | | *86.0 %* | *10-150* | | | " | " | " | " | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# TCLP Semivolatiles per EPA Method 1311/8270
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Comp-2 (P3K0433-18) Soil Sampled: 11/14/03 16:05 Received: 11/14/03 17:00** | | | | | | | | | | |
| Acenaphthene | ND | 0.0500 | 0.0500 | mg/l | 1 | 3120009 | 12/01/03 | 12/01/03 | 1311/8270 | U |
| Acenaphthylene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Anthracene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Benzo (a) anthracene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Benzo (b) fluoranthene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Benzo (k) fluoranthene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Benzo (ghi) perylene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Benzo (a) pyrene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Benzoic acid | ND | 0.200 | 0.200 | " | " | " | " | " | " | U |
| Benzyl alcohol | ND | 0.200 | 0.200 | " | " | " | " | " | " | U |
| Bis(2-chloroethoxy)methane | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Bis(2-chloroethyl)ether | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Bis(2-chloroisopropyl)ether | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Bis(2-ethylhexyl)phthalate | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| 4-Bromophenyl phenyl ether | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| 4-Chloro-3-methylphenol | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| 2-Chloronaphthalene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| 4-Chlorophenyl phenyl ether | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| 2-Chlorophenol | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Chrysene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Dibenzo (a,h) anthracene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Dibenzofuran | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Di-n-butyl phthalate | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| 1,2-Dichlorobenzene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| 1,3-Dichlorobenzene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| 1,4-Dichlorobenzene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| 3,3'-Dichlorobenzidine | ND | 0.200 | 0.200 | " | " | " | " | " | " | U |
| 2,4-Dichlorophenol | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Diethyl phthalate | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| 2,4-Dimethylphenol | ND | 0.100 | 0.100 | " | " | " | " | " | " | U |
| Dimethyl phthalate | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| 4,6-Dinitro-2-methylphenol | ND | 0.200 | 0.200 | " | " | " | " | " | " | U |
| 2,4-Dinitrophenol | ND | 0.200 | 0.200 | " | " | " | " | " | " | U |
| 2,4-Dinitrotoluene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| 2,6-Dinitrotoluene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Di-n-octyl phthalate | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Fluoranthene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Fluorene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |



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907.563.9200 fax 907.563.9210

| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# TCLP Semivolatiles per EPA Method 1311/8270
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Comp-2 (P3K0433-18) Soil Sampled: 11/14/03 16:05 Received: 11/14/03 17:00** | | | | | | | | | | |
| Hexachlorobenzene | ND | 0.0500 | 0.0500 | mg/l | 1 | 3120009 | 12/01/03 | 12/01/03 | 1311/8270 | U |
| Hexachlorobutadiene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Hexachlorocyclopentadiene | ND | 0.200 | 0.200 | " | " | " | " | " | " | U |
| Hexachloroethane | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Indeno (1,2,3-cd) pyrene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Isophorone | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| 2-Methylnaphthalene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Naphthalene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| 2-Nitroaniline | ND | 0.200 | 0.200 | " | " | " | " | " | " | U |
| 3-Nitroaniline | ND | 0.200 | 0.200 | " | " | " | " | " | " | U |
| 4-Nitroaniline | ND | 0.200 | 0.200 | " | " | " | " | " | " | U |
| Nitrobenzene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| 2-Nitrophenol | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| 4-Nitrophenol | ND | 0.200 | 0.200 | " | " | " | " | " | " | U |
| N-Nitrosodiphenylamine | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| N-Nitrosodi-n-propylamine | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Pentachlorophenol | ND | 0.100 | 0.100 | " | " | " | " | " | " | U |
| Phenanthrene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Phenol | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Pyrene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Pyridine | ND | 0.200 | 0.200 | " | " | " | " | " | " | U |
| Total Cresols | ND | 0.100 | 0.100 | " | " | " | " | " | " | U |
| 1,2,4-Trichlorobenzene | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| 2,4,5-Trichlorophenol | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| 2,4,6-Trichlorophenol | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| Butyl benzyl phthalate | ND | 0.0500 | 0.0500 | " | " | " | " | " | " | U |
| 4-Chloroaniline | ND | 0.100 | 0.100 | " | " | " | " | " | " | U |
| *Surrogate: 2-Fluorobiphenyl* | | *73.7 %* | *20-150* | | | " | " | " | " | |
| *Surrogate: Nitrobenzene-d5* | | *74.0 %* | *20-150* | | | " | " | " | " | |
| *Surrogate: Phenol-d6* | | *22.8 %* | *10-150* | | | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *42.8 %* | *10-150* | | | " | " | " | " | |
| *Surrogate: p-Terphenyl-d14* | | *90.0 %* | *20-150* | | | " | " | " | " | |
| *Surrogate: 2,4,6-Tribromophenol* | | *84.7 %* | *10-150* | | | " | " | " | " | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Percent Dry Weight (Solids) per Standard Methods
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-1-10 (P3K0433-01) Soil Sampled: 11/13/03 17:05 Received: 11/14/03 17:00** | | | | | | | | | | |
| **% Solids** | **85.2** | | 1.00 | % by Weight | 1 | 3110677 | 11/20/03 | 11/21/03 | NCA SOP | |
| **SB-1-13 (P3K0433-02) Soil Sampled: 11/13/03 17:12 Received: 11/14/03 17:00** | | | | | | | | | | |
| **% Solids** | **84.0** | | 1.00 | % by Weight | 1 | 3110677 | 11/20/03 | 11/21/03 | NCA SOP | |
| **SB-1-18.75 (P3K0433-07) Soil Sampled: 11/14/03 08:25 Received: 11/14/03 17:00** | | | | | | | | | | |
| **% Solids** | **72.6** | | 1.00 | % by Weight | 1 | 3110677 | 11/20/03 | 11/21/03 | NCA SOP | |
| **SB-1-20 (P3K0433-08) Soil Sampled: 11/14/03 08:30 Received: 11/14/03 17:00** | | | | | | | | | | |
| **% Solids** | **73.7** | | 1.00 | % by Weight | 1 | 3110677 | 11/20/03 | 11/21/03 | NCA SOP | |
| **SB-5-13.5 (P3K0433-09) Soil Sampled: 11/14/03 10:45 Received: 11/14/03 17:00** | | | | | | | | | | |
| **% Solids** | **75.2** | | 1.00 | % by Weight | 1 | 3110677 | 11/20/03 | 11/21/03 | NCA SOP | |
| **SB-4-17.5 (P3K0433-12) Soil Sampled: 11/14/03 14:08 Received: 11/14/03 17:00** | | | | | | | | | | |
| **% Solids** | **70.5** | | 1.00 | % by Weight | 1 | 3110677 | 11/20/03 | 11/21/03 | NCA SOP | |
| **SB-4-18 (P3K0433-13) Soil Sampled: 11/14/03 14:10 Received: 11/14/03 17:00** | | | | | | | | | | |
| **% Solids** | **74.0** | | 1.00 | % by Weight | 1 | 3110677 | 11/20/03 | 11/21/03 | NCA SOP | |
| **Comp-1 (P3K0433-17) Soil Sampled: 11/14/03 15:55 Received: 11/14/03 17:00** | | | | | | | | | | |
| **% Solids** | **70.9** | | 1.00 | % by Weight | 1 | 3110677 | 11/20/03 | 11/21/03 | NCA SOP | |
| **Comp-2 (P3K0433-18) Soil Sampled: 11/14/03 16:05 Received: 11/14/03 17:00** | | | | | | | | | | |
| **% Solids** | **83.4** | | 1.00 | % by Weight | 1 | 3110677 | 11/20/03 | 11/21/03 | NCA SOP | |



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| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Conventional Chemistry Parameters by APHA/EPA Methods
## North Creek Analytical - Bothell

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-1-18.5 (P3K0433-06) Soil Sampled: 11/14/03 08:24 Received: 11/14/03 17:00** | | | | | | | | | | |
| **Total Organic Carbon** | **1770** | | 1000 | mg/kg dry | 1 | 3K21004 | 11/19/03 | 11/20/03 | EPA 9060 mod. | |
| **SB-4-18 (P3K0433-13) Soil Sampled: 11/14/03 14:10 Received: 11/14/03 17:00** | | | | | | | | | | |
| **Total Organic Carbon** | **9960** | | 1000 | mg/kg dry | 1 | 3K21004 | 11/19/03 | 11/20/03 | EPA 9060 mod. | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Physical Parameters by APHA/ASTM/EPA Methods
## North Creek Analytical - Bothell

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-1-18.5 (P3K0433-06) Soil Sampled: 11/14/03 08:24 Received: 11/14/03 17:00** | | | | | | | | | | |
| **Dry Weight** | **78.3** | | 1.00 | % | 1 | 3L01062 | 12/01/03 | 12/02/03 | BSOPSPL003 R08 | |
| **SB-4-18 (P3K0433-13) Soil Sampled: 11/14/03 14:10 Received: 11/14/03 17:00** | | | | | | | | | | |
| **Dry Weight** | **65.9** | | 1.00 | % | 1 | 3L01062 | 12/01/03 | 12/02/03 | BSOPSPL003 R08 | |



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| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Gasoline Hydrocarbons per NW TPH-Gx Method - Quality Control
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110680 - EPA 5035** | | | | | | | | | | | |
| **Blank (3110680-BLK1)** | | | | | Prepared & Analyzed: 11/20/03 | | | | | | |
| Gasoline Range Hydrocarbons | ND | | 4.00 | mg/kg | | | | | | | U |
| *Surrogate: a,a,a-TFT* | *2.24* | | | " | *2.50* | | *89.6* | *50-150* | | | |
| **LCS (3110680-BS1)** | | | | | Prepared: 11/20/03 Analyzed: 11/21/03 | | | | | | |
| Gasoline Range Hydrocarbons | 58.7 | | 4.00 | mg/kg | 62.5 | | 93.9 | 70-130 | | | |
| *Surrogate: a,a,a-TFT* | *2.58* | | | " | *2.50* | | *103* | *50-150* | | | |
| **LCS (3110680-BS2)** | | | | | Prepared & Analyzed: 11/21/03 | | | | | | |
| Gasoline Range Hydrocarbons | 49.9 | | 4.00 | mg/kg | 62.5 | | 79.8 | 70-130 | | | |
| *Surrogate: a,a,a-TFT* | *2.45* | | | " | *2.50* | | *98.0* | *50-150* | | | |
| **Duplicate (3110680-DUP1)** | | **Source: P3K0392-01RE2** | | | Prepared & Analyzed: 11/20/03 | | | | | | |
| Gasoline Range Hydrocarbons | 537 | | 40.0 | mg/kg dry | | 768 | | | 35.4 | 40 | |
| *Surrogate: a,a,a-TFT* | *3.31* | | | " | *3.28* | | *101* | *50-150* | | | |
| **Duplicate (3110680-DUP2)** | | **Source: P3K0392-02RE2** | | | Prepared & Analyzed: 11/20/03 | | | | | | |
| Gasoline Range Hydrocarbons | 3880 | | 80.0 | mg/kg dry | | 2400 | | | 47.1 | 40 | Q-14 |
| *Surrogate: a,a,a-TFT* | *3.56* | | | " | *3.20* | | *111* | *50-150* | | | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Diesel and Heavy Range Hydrocarbons per NWTPH-Dx Method - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110532 - EPA 3550 Fuels** | | | | | | | | | | | |
| **Blank (3110532-BLK1)** | | | | | Prepared & Analyzed: 11/18/03 | | | | | | |
| Diesel Range Organics | ND | | 25.0 | mg/kg | | | | | | | U |
| Heavy Oil Range Hydrocarbons | ND | | 50.0 | " | | | | | | | U |
| *Surrogate: 1-Chlorooctadecane* | *4.43* | | | " | *4.80* | | *92.3* | *50-150* | | | |
| **LCS (3110532-BS1)** | | | | | Prepared & Analyzed: 11/18/03 | | | | | | |
| Diesel Range Organics | 106 | | 25.0 | mg/kg | 125 | | 84.8 | 50-150 | | | |
| Heavy Oil Range Hydrocarbons | 72.3 | | 50.0 | " | 75.0 | | 96.4 | 50-150 | | | |
| *Surrogate: 1-Chlorooctadecane* | *4.47* | | | " | *4.80* | | *93.1* | *50-150* | | | |
| **Duplicate (3110532-DUP1)** | | **Source: P3K0375-42** | | | Prepared & Analyzed: 11/18/03 | | | | | | |
| Diesel Range Organics | ND | | 25.0 | mg/kg dry | | ND | | | | 50 | U |
| Heavy Oil Range Hydrocarbons | ND | | 50.0 | " | | ND | | | | 50 | U |
| *Surrogate: 1-Chlorooctadecane* | *5.61* | | | " | *6.40* | | *87.7* | *50-150* | | | |
| **Duplicate (3110532-DUP2)** | | **Source: P3K0375-47** | | | Prepared & Analyzed: 11/18/03 | | | | | | |
| Diesel Range Organics | ND | | 61.6 | mg/kg dry | | ND | | | | 50 | U |
| Heavy Oil Range Hydrocarbons | ND | | 123 | " | | ND | | | | 50 | U |
| *Surrogate: 1-Chlorooctadecane* | *11.0* | | | " | *11.8* | | *93.2* | *50-150* | | | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Total Metals per EPA 6000/7000 Series Methods - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110621 - EPA 200/3005** | | | | | | | | | | | |
| **Blank (3110621-BLK1)** | | | | | Prepared: 11/19/03 Analyzed: 11/20/03 | | | | | | |
| Antimony | ND | 0.000126 | 0.00100 | mg/l | | | | | | | U |
| Arsenic | ND | 0.000964 | 0.00100 | " | | | | | | | U |
| Beryllium | ND | 0.0000790 | 0.00100 | " | | | | | | | U |
| Cadmium | ND | 0.000178 | 0.00100 | " | | | | | | | U |
| Chromium | ND | 0.000791 | 0.00100 | " | | | | | | | U |
| Lead | 0.00195 | 0.0000870 | 0.00200 | " | | | | | | | J |
| Nickel | ND | 0.000826 | 0.00200 | " | | | | | | | U |
| Selenium | ND | 0.000566 | 0.00100 | " | | | | | | | U |
| Silver | ND | 0.0000460 | 0.00100 | " | | | | | | | U |
| Thallium | 0.0000600 | 0.0000310 | 0.00100 | " | | | | | | | J |
| **LCS (3110621-BS1)** | | | | | Prepared: 11/19/03 Analyzed: 11/20/03 | | | | | | |
| Antimony | 0.0488 | 0.000126 | 0.00100 | mg/l | 0.0500 | | 97.6 | 80-120 | | | |
| Arsenic | 0.196 | 0.000964 | 0.00100 | " | 0.200 | | 98.0 | 80-120 | | | |
| Beryllium | 0.194 | 0.0000790 | 0.00100 | " | 0.200 | | 97.0 | 80-120 | | | |
| Cadmium | 0.198 | 0.000178 | 0.00100 | " | 0.200 | | 99.0 | 80-120 | | | |
| Chromium | 0.204 | 0.000791 | 0.00100 | " | 0.200 | | 102 | 80-120 | | | |
| Lead | 0.202 | 0.0000870 | 0.00200 | " | 0.200 | | 101 | 80-120 | | | |
| Nickel | 0.200 | 0.000826 | 0.00200 | " | 0.200 | | 100 | 80-120 | | | |
| Selenium | 0.186 | 0.000566 | 0.00100 | " | 0.200 | | 93.0 | 80-120 | | | |
| Silver | 0.0507 | 0.0000460 | 0.00100 | " | 0.0500 | | 101 | 80-120 | | | |
| Thallium | 0.0488 | 0.0000310 | 0.00100 | " | 0.0500 | | 97.6 | 80-120 | | | |
| **Duplicate (3110621-DUP1)** | | **Source: P3K0416-02** | | | Prepared: 11/19/03 Analyzed: 11/20/03 | | | | | | |
| Antimony | 0.00130 | 0.000126 | 0.00100 | mg/l | | 0.00113 | | | 14.0 | 20 | |
| Arsenic | 0.00547 | 0.000964 | 0.00100 | " | | 0.00492 | | | 10.6 | 20 | |
| Beryllium | 0.000420 | 0.0000790 | 0.00100 | " | | 0.000440 | | | 4.65 | 20 | J |
| Cadmium | ND | 0.00119 | 0.00669 | " | | ND | | | | 20 | D, U |
| Chromium | 0.0218 | 0.000791 | 0.00100 | " | | 0.0213 | | | 2.32 | 20 | |
| Lead | 0.00308 | 0.0000870 | 0.00200 | " | | 0.00278 | | | 10.2 | 20 | |
| Nickel | 0.0460 | 0.000826 | 0.00200 | " | | 0.0401 | | | 13.7 | 20 | |
| Selenium | 0.0107 | 0.000566 | 0.00100 | " | | 0.00944 | | | 12.5 | 20 | |
| Silver | 0.0507 | 0.0000460 | 0.00100 | " | | 0.0300 | | | 51.3 | 20 | Q-14 |



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| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Total Metals per EPA 6000/7000 Series Methods - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110621 - EPA 200/3005** | | | | | | | | | | | |
| **Duplicate (3110621-DUP1)** | | | **Source: P3K0416-02** | | Prepared: 11/19/03 | Analyzed: 11/20/03 | | | | | |
| Thallium | 0.0000500 | 0.0000310 | 0.00100 | mg/l | | 0.000100 | | | 66.7 | 20 | Q-06, J |
| **Matrix Spike (3110621-MS1)** | | | **Source: P3K0416-02** | | Prepared: 11/19/03 | Analyzed: 11/20/03 | | | | | |
| Antimony | 0.0546 | 0.000126 | 0.00100 | mg/l | 0.0500 | 0.00113 | 107 | 75-125 | | | |
| Arsenic | 0.113 | 0.000964 | 0.00100 | " | 0.100 | 0.00492 | 108 | 75-125 | | | |
| Beryllium | 0.0852 | 0.0000790 | 0.00100 | " | 0.100 | 0.000440 | 84.8 | 75-125 | | | |
| Cadmium | 0.0958 | 0.000178 | 0.00100 | " | 0.100 | ND | 95.8 | 75-125 | | | |
| Chromium | 0.132 | 0.000791 | 0.00100 | " | 0.100 | 0.0213 | 111 | 75-125 | | | |
| Lead | 0.100 | 0.0000870 | 0.00200 | " | 0.100 | 0.00278 | 97.2 | 75-125 | | | |
| Nickel | 0.139 | 0.000826 | 0.00200 | " | 0.100 | 0.0401 | 98.9 | 75-125 | | | |
| Selenium | 0.110 | 0.000566 | 0.00100 | " | 0.100 | 0.00944 | 101 | 75-125 | | | |
| Silver | 0.102 | 0.0000460 | 0.00100 | " | 0.0500 | 0.0300 | 144 | 75-125 | | | Q-14 |
| Thallium | 0.0448 | 0.0000310 | 0.00100 | " | 0.0500 | 0.000100 | 89.4 | 75-125 | | | |
| **Matrix Spike (3110621-MS2)** | | | **Source: P3K0417-02** | | Prepared: 11/19/03 | Analyzed: 11/20/03 | | | | | |
| Antimony | 0.0511 | 0.000126 | 0.00100 | mg/l | 0.0500 | 0.000760 | 101 | 75-125 | | | |
| Arsenic | 0.106 | 0.000964 | 0.00100 | " | 0.100 | 0.00395 | 102 | 75-125 | | | |
| Beryllium | 0.0984 | 0.0000790 | 0.00100 | " | 0.100 | 0.000100 | 98.3 | 75-125 | | | |
| Cadmium | 0.100 | 0.000178 | 0.00100 | " | 0.100 | ND | 100 | 75-125 | | | |
| Chromium | 0.124 | 0.000791 | 0.00100 | " | 0.100 | 0.0133 | 111 | 75-125 | | | |
| Lead | 0.100 | 0.0000870 | 0.00200 | " | 0.100 | 0.00161 | 98.4 | 75-125 | | | |
| Nickel | 0.132 | 0.000826 | 0.00200 | " | 0.100 | 0.0216 | 110 | 75-125 | | | |
| Selenium | 0.108 | 0.000566 | 0.00100 | " | 0.100 | 0.0119 | 96.1 | 75-125 | | | |
| Silver | 0.0745 | 0.0000460 | 0.00100 | " | 0.0500 | 0.00976 | 129 | 75-125 | | | Q-14 |
| Thallium | 0.0468 | 0.0000310 | 0.00100 | " | 0.0500 | 0.000130 | 93.3 | 75-125 | | | |
| **Batch 3110642 - EPA 7471A** | | | | | | | | | | | |
| **Blank (3110642-BLK1)** | | | | | Prepared & Analyzed: 11/20/03 | | | | | | |
| Mercury | ND | 0.00496 | 0.100 | mg/kg | | | | | | | U |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Total Metals per EPA 6000/7000 Series Methods - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110642 - EPA 7471A** | | | | | | | | | | | |
| **LCS (3110642-BS1)** | | | | | Prepared & Analyzed: 11/20/03 | | | | | | |
| Mercury | 1.08 | 0.00496 | 0.100 | mg/kg | 1.00 | | 108 | 80-120 | | | |
| **Duplicate (3110642-DUP1)** | | | **Source: P3K0375-51** | | Prepared & Analyzed: 11/20/03 | | | | | | |
| Mercury | 0.0364 | 0.00234 | 0.0472 | mg/kg dry | | 0.0409 | | | 11.6 | 40 | J, D |
| **Matrix Spike (3110642-MS1)** | | | **Source: P3K0375-51** | | Prepared & Analyzed: 11/20/03 | | | | | | |
| Mercury | 1.21 | 0.00310 | 0.0625 | mg/kg dry | 1.08 | 0.0409 | 108 | 75-125 | | | D |
| **Matrix Spike (3110642-MS2)** | | | **Source: P3K0375-52** | | Prepared & Analyzed: 11/20/03 | | | | | | |
| Mercury | 0.719 | 0.00248 | 0.0500 | mg/kg dry | 0.613 | 0.0333 | 112 | 75-125 | | | D |
| **Batch 3110663 - EPA 7470** | | | | | | | | | | | |
| **Blank (3110663-BLK1)** | | | | | Prepared & Analyzed: 11/20/03 | | | | | | |
| Mercury | ND | 0.0000358 | 0.000200 | mg/l | | | | | | | U |
| **LCS (3110663-BS1)** | | | | | Prepared & Analyzed: 11/20/03 | | | | | | |
| Mercury | 0.00499 | 0.0000358 | 0.000200 | mg/l | 0.00500 | | 99.8 | 85-115 | | | |
| **Duplicate (3110663-DUP1)** | | | **Source: P3K0362-01** | | Prepared & Analyzed: 11/20/03 | | | | | | |
| Mercury | 0.000385 | 0.0000358 | 0.000200 | mg/l | | ND | | | | 20 | |
| **Matrix Spike (3110663-MS1)** | | | **Source: P3K0362-01** | | Prepared & Analyzed: 11/20/03 | | | | | | |
| Mercury | 0.00478 | 0.0000358 | 0.000200 | mg/l | 0.00500 | ND | 95.6 | 75-125 | | | |
| **Matrix Spike (3110663-MS2)** | | | **Source: P3K0362-02** | | Prepared & Analyzed: 11/20/03 | | | | | | |
| Mercury | 0.00518 | 0.0000358 | 0.000200 | mg/l | 0.00500 | ND | 104 | 75-125 | | | |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Total Metals per EPA 6000/7000 Series Methods - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110772 - EPA 200/3005** | | | | | | | | | | | |
| **Blank (3110772-BLK1)** | | | | | Prepared: 11/24/03 Analyzed: 11/26/03 | | | | | | |
| Antimony | ND | 0.000126 | 0.00200 | mg/l | | | | | | | U |
| Arsenic | ND | 0.000964 | 0.00100 | " | | | | | | | U |
| Beryllium | ND | 0.0000790 | 0.00100 | " | | | | | | | U |
| Cadmium | ND | 0.000178 | 0.00100 | " | | | | | | | U |
| Chromium | ND | 0.000791 | 0.00100 | " | | | | | | | U |
| Copper | ND | 0.000259 | 0.00200 | " | | | | | | | U |
| Lead | 0.000190 | 0.0000870 | 0.00100 | " | | | | | | | J |
| Nickel | ND | 0.000826 | 0.00200 | " | | | | | | | U |
| Selenium | ND | 0.000566 | 0.00200 | " | | | | | | | U |
| Silver | ND | 0.0000460 | 0.00100 | " | | | | | | | U |
| Thallium | ND | 0.0000310 | 0.00100 | " | | | | | | | U |
| Zinc | ND | 0.00102 | 0.00500 | " | | | | | | | U |
| **LCS (3110772-BS1)** | | | | | Prepared: 11/24/03 Analyzed: 11/26/03 | | | | | | |
| Antimony | 0.0491 | 0.000126 | 0.00200 | mg/l | 0.0500 | | 98.2 | 80-120 | | | |
| Arsenic | 0.0977 | 0.000964 | 0.00100 | " | 0.100 | | 97.7 | 80-120 | | | |
| Beryllium | 0.0920 | 0.0000790 | 0.00100 | " | 0.100 | | 92.0 | 80-120 | | | |
| Cadmium | 0.100 | 0.000178 | 0.00100 | " | 0.100 | | 100 | 80-120 | | | |
| Chromium | 0.109 | 0.000791 | 0.00100 | " | 0.100 | | 109 | 80-120 | | | |
| Copper | 0.107 | 0.000259 | 0.00200 | " | 0.100 | | 107 | 80-120 | | | |
| Lead | 0.109 | 0.0000870 | 0.00100 | " | 0.100 | | 109 | 80-120 | | | |
| Nickel | 0.108 | 0.000826 | 0.00200 | " | 0.100 | | 108 | 80-120 | | | |
| Selenium | 0.0960 | 0.000566 | 0.00200 | " | 0.100 | | 96.0 | 80-120 | | | |
| Silver | 0.0532 | 0.0000460 | 0.00100 | " | 0.0500 | | 106 | 80-120 | | | |
| Thallium | 0.0515 | 0.0000310 | 0.00100 | " | 0.0500 | | 103 | 80-120 | | | |
| Zinc | 0.102 | 0.00102 | 0.00500 | " | 0.100 | | 102 | 80-120 | | | |
| **Duplicate (3110772-DUP1)** | | | **Source: P3K0416-05** | | Prepared: 11/24/03 Analyzed: 11/26/03 | | | | | | |
| Antimony | ND | 0.000126 | 0.00500 | mg/l | | ND | | | | 20 | U |
| Arsenic | 0.00306 | 0.000964 | 0.00100 | " | | 0.00337 | | | 9.64 | 20 | |
| Beryllium | ND | 0.0000790 | 0.00100 | " | | ND | | | | 20 | U |
| Cadmium | ND | 0.000178 | 0.00100 | " | | ND | | | | 20 | U |
| Chromium | 0.00240 | 0.000791 | 0.00100 | " | | 0.00409 | | | 52.1 | 20 | Q-06 |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Total Metals per EPA 6000/7000 Series Methods - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110772 - EPA 200/3005** | | | | | | | | | | | |
| **Duplicate (3110772-DUP1)** | | **Source: P3K0416-05** | | Prepared: 11/24/03 Analyzed: 11/26/03 | | | | | | | |
| Copper | 0.0462 | 0.000259 | 0.00200 | mg/l | | 0.0497 | | | 7.30 | 20 | |
| Lead | 0.00160 | 0.0000870 | 0.00100 | " | | 0.00160 | | | 0.00 | 20 | |
| Nickel | 0.00550 | 0.000826 | 0.00200 | " | | 0.00985 | | | 56.7 | 20 | Q-06 |
| Selenium | 0.00755 | 0.000566 | 0.00200 | " | | 0.00842 | | | 10.9 | 20 | |
| Silver | 0.0676 | 0.0000460 | 0.00100 | " | | 0.0765 | | | 12.4 | 20 | |
| Thallium | ND | 0.0000310 | 0.00100 | " | | ND | | | | 20 | U |
| Zinc | 0.0210 | 0.00102 | 0.00500 | " | | 0.0206 | | | 1.92 | 20 | |
| **Matrix Spike (3110772-MS1)** | | **Source: P3K0416-05** | | Prepared: 11/24/03 Analyzed: 11/26/03 | | | | | | | |
| Antimony | 0.0517 | 0.000126 | 0.00500 | mg/l | 0.0500 | ND | 103 | 75-125 | | | |
| Arsenic | 0.110 | 0.000964 | 0.00100 | " | 0.100 | 0.00337 | 107 | 75-125 | | | |
| Beryllium | 0.104 | 0.0000790 | 0.00100 | " | 0.100 | ND | 104 | 75-125 | | | |
| Cadmium | 0.105 | 0.000178 | 0.00100 | " | 0.100 | ND | 105 | 75-125 | | | |
| Chromium | 0.118 | 0.000791 | 0.00100 | " | 0.100 | 0.00409 | 114 | 75-125 | | | |
| Copper | 0.157 | 0.000259 | 0.00200 | " | 0.100 | 0.0497 | 107 | 75-125 | | | |
| Lead | 0.110 | 0.0000870 | 0.00100 | " | 0.100 | 0.00160 | 108 | 75-125 | | | |
| Nickel | 0.121 | 0.000826 | 0.00200 | " | 0.100 | 0.00985 | 111 | 75-125 | | | |
| Selenium | 0.112 | 0.000566 | 0.00200 | " | 0.100 | 0.00842 | 104 | 75-125 | | | |
| Silver | 0.130 | 0.0000460 | 0.00100 | " | 0.0500 | 0.0765 | 107 | 75-125 | | | |
| Thallium | 0.0515 | 0.0000310 | 0.00100 | " | 0.0500 | ND | 103 | 75-125 | | | |
| Zinc | 0.129 | 0.00102 | 0.00500 | " | 0.100 | 0.0206 | 108 | 75-125 | | | |
| **Matrix Spike (3110772-MS2)** | | **Source: P3K0417-02** | | Prepared: 11/24/03 Analyzed: 11/26/03 | | | | | | | |
| Antimony | 0.0533 | 0.000126 | 0.00500 | mg/l | 0.0500 | ND | 107 | 75-125 | | | |
| Arsenic | 0.114 | 0.000964 | 0.00100 | " | 0.100 | 0.00727 | 107 | 75-125 | | | |
| Beryllium | 0.0991 | 0.0000790 | 0.00100 | " | 0.100 | 0.000110 | 99.0 | 75-125 | | | |
| Cadmium | 0.105 | 0.000178 | 0.00100 | " | 0.100 | ND | 105 | 75-125 | | | |
| Chromium | 0.130 | 0.000791 | 0.00100 | " | 0.100 | 0.0218 | 108 | 75-125 | | | |
| Copper | 0.350 | 0.000259 | 0.00200 | " | 0.100 | 0.260 | 90.0 | 75-125 | | | |
| Lead | 0.107 | 0.0000870 | 0.00100 | " | 0.100 | 0.00174 | 105 | 75-125 | | | |
| Nickel | 0.132 | 0.000826 | 0.00200 | " | 0.100 | 0.0417 | 90.3 | 75-125 | | | |
| Selenium | 0.120 | 0.000566 | 0.00200 | " | 0.100 | 0.0194 | 101 | 75-125 | | | |
| Silver | 0.0772 | 0.0000460 | 0.00100 | " | 0.0500 | 0.0264 | 102 | 75-125 | | | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Total Metals per EPA 6000/7000 Series Methods - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110772 - EPA 200/3005** | | | | | | | | | | | |
| **Matrix Spike (3110772-MS2)** | | | **Source: P3K0417-02** | | Prepared: 11/24/03 | Analyzed: 11/26/03 | | | | | |
| Thallium | 0.0503 | 0.0000310 | 0.00100 | mg/l | 0.0500 | 0.0000400 | 101 | 75-125 | | | |
| Zinc | 0.186 | 0.00102 | 0.00500 | " | 0.100 | 0.0846 | 101 | 75-125 | | | |
| **Batch 3110783 - EPA 3050** | | | | | | | | | | | |
| **Blank (3110783-BLK2)** | | | | | Prepared: 11/24/03 | Analyzed: 11/26/03 | | | | | |
| Antimony | ND | 0.0659 | 0.500 | mg/kg | | | | | | | U |
| Arsenic | ND | 0.427 | 0.500 | " | | | | | | | U |
| Beryllium | ND | 0.210 | 0.500 | " | | | | | | | U |
| Cadmium | ND | 0.200 | 0.500 | " | | | | | | | U |
| Chromium | ND | 0.498 | 0.500 | " | | | | | | | U |
| Copper | ND | 0.955 | 2.00 | " | | | | | | | U |
| Lead | ND | 0.106 | 0.500 | " | | | | | | | U |
| Nickel | ND | 0.213 | 1.00 | " | | | | | | | U |
| Selenium | ND | 0.409 | 0.500 | " | | | | | | | U |
| Silver | ND | 0.0369 | 0.500 | " | | | | | | | U |
| Thallium | ND | 0.246 | 0.500 | " | | | | | | | U |
| Zinc | ND | 0.630 | 2.00 | " | | | | | | | U |
| **LCS (3110783-BS2)** | | | | | Prepared: 11/24/03 | Analyzed: 11/26/03 | | | | | |
| Antimony | 4.82 | 0.0659 | 0.500 | mg/kg | 5.00 | | 96.4 | 80-120 | | | |
| Arsenic | 9.52 | 0.427 | 0.500 | " | 10.0 | | 95.2 | 80-120 | | | |
| Beryllium | 9.50 | 0.210 | 0.500 | " | 10.0 | | 95.0 | 80-120 | | | |
| Cadmium | 9.64 | 0.200 | 0.500 | " | 10.0 | | 96.4 | 80-120 | | | |
| Chromium | 9.70 | 0.498 | 0.500 | " | 10.0 | | 97.0 | 80-120 | | | |
| Copper | 9.42 | 0.955 | 2.00 | " | 10.0 | | 94.2 | 80-120 | | | |
| Lead | 9.80 | 0.106 | 0.500 | " | 10.0 | | 98.0 | 80-120 | | | |
| Nickel | 9.28 | 0.213 | 1.00 | " | 10.0 | | 92.8 | 80-120 | | | |
| Selenium | 9.54 | 0.409 | 0.500 | " | 10.0 | | 95.4 | 80-120 | | | |
| Silver | 5.04 | 0.0369 | 0.500 | " | 5.00 | | 101 | 80-120 | | | |
| Thallium | 4.61 | 0.246 | 0.500 | " | 5.00 | | 92.2 | 80-120 | | | |
| Zinc | 9.68 | 0.630 | 2.00 | " | 10.0 | | 96.8 | 80-120 | | | |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Total Metals per EPA 6000/7000 Series Methods - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110783 - EPA 3050** | | | | | | | | | | | |
| **Duplicate (3110783-DUP1)** | | **Source: P3K0331-40** | | Prepared: 11/24/03 Analyzed: 11/26/03 | | | | | | | |
| Antimony | ND | 0.0573 | 0.435 | mg/kg dry | | ND | | | | 40 | D, U |
| Arsenic | 3.27 | 0.371 | 0.435 | " | | 2.91 | | | 11.7 | 40 | D |
| Beryllium | 0.437 | 0.183 | 0.435 | " | | 0.422 | | | 3.49 | 40 | D |
| Cadmium | ND | 1.07 | 2.66 | " | | ND | | | | 40 | D, U |
| Chromium | 15.6 | 0.433 | 0.435 | " | | 15.2 | | | 2.60 | 40 | D |
| Copper | 21.8 | 0.830 | 1.74 | " | | 20.3 | | | 7.13 | 40 | D |
| Lead | 7.56 | 0.0922 | 0.435 | " | | 6.87 | | | 9.56 | 40 | D |
| Nickel | 21.5 | 0.185 | 0.870 | " | | 20.7 | | | 3.79 | 40 | D |
| Selenium | ND | 0.356 | 0.435 | " | | ND | | | | 40 | D, U |
| Silver | 0.107 | 0.0321 | 0.435 | " | | 0.112 | | | 4.57 | 40 | J, D |
| Thallium | ND | 0.214 | 0.435 | " | | ND | | | | 40 | D, U |
| Zinc | 80.8 | 0.548 | 1.74 | " | | 72.1 | | | 11.4 | 40 | D |
| **Matrix Spike (3110783-MS1)** | | **Source: P3K0331-40** | | Prepared: 11/24/03 Analyzed: 11/26/03 | | | | | | | |
| Antimony | 2.12 | 0.0659 | 0.500 | mg/kg dry | 5.56 | ND | 38.1 | 75-125 | | | Q-02 |
| Arsenic | 14.8 | 0.427 | 0.500 | " | 11.1 | 2.91 | 107 | 75-125 | | | |
| Beryllium | 12.0 | 0.210 | 0.500 | " | 11.1 | 0.422 | 104 | 75-125 | | | |
| Cadmium | 10.4 | 0.200 | 0.500 | " | 11.1 | ND | 93.7 | 75-125 | | | |
| Chromium | 25.9 | 0.498 | 0.500 | " | 11.1 | 15.2 | 96.4 | 75-125 | | | |
| Copper | 32.2 | 0.955 | 2.00 | " | 11.1 | 20.3 | 107 | 75-125 | | | |
| Lead | 19.0 | 0.106 | 0.500 | " | 11.1 | 6.87 | 109 | 75-125 | | | |
| Nickel | 31.7 | 0.213 | 1.00 | " | 11.1 | 20.7 | 99.1 | 75-125 | | | |
| Selenium | 11.7 | 0.409 | 0.500 | " | 11.1 | ND | 105 | 75-125 | | | |
| Silver | 6.31 | 0.0369 | 0.500 | " | 5.56 | 0.112 | 111 | 75-125 | | | |
| Thallium | 5.38 | 0.246 | 0.500 | " | 5.56 | ND | 96.8 | 75-125 | | | |
| Zinc | 81.4 | 0.630 | 2.00 | " | 11.1 | 72.1 | 83.8 | 75-125 | | | Q-02 |
| **Matrix Spike (3110783-MS2)** | | **Source: P3K0331-44** | | Prepared: 11/24/03 Analyzed: 11/26/03 | | | | | | | |
| Antimony | 2.02 | 0.0659 | 0.500 | mg/kg dry | 6.00 | ND | 33.7 | 75-125 | | | Q-02 |
| Arsenic | 15.5 | 0.427 | 0.500 | " | 12.0 | 2.97 | 104 | 75-125 | | | |
| Beryllium | 12.6 | 0.210 | 0.500 | " | 12.0 | 0.522 | 101 | 75-125 | | | |
| Cadmium | 11.8 | 0.200 | 0.500 | " | 12.0 | ND | 98.3 | 75-125 | | | |
| Chromium | 34.7 | 0.498 | 0.500 | " | 12.0 | 20.8 | 116 | 75-125 | | | |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Total Metals per EPA 6000/7000 Series Methods - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110783 - EPA 3050** | | | | | | | | | | | |
| **Matrix Spike (3110783-MS2)** | | **Source: P3K0331-44** | | Prepared: 11/24/03 Analyzed: 11/26/03 | | | | | | | |
| Copper | 35.0 | 0.955 | 2.00 | mg/kg dry | 12.0 | 21.0 | 117 | 75-125 | | | |
| Lead | 30.6 | 0.106 | 0.500 | " | 12.0 | 18.0 | 105 | 75-125 | | | |
| Nickel | 32.6 | 0.213 | 1.00 | " | 12.0 | 19.1 | 112 | 75-125 | | | |
| Selenium | 12.0 | 0.409 | 0.500 | " | 12.0 | ND | 100 | 75-125 | | | |
| Silver | 6.49 | 0.0369 | 0.500 | " | 6.00 | 0.108 | 106 | 75-125 | | | |
| Thallium | 5.71 | 0.246 | 0.500 | " | 6.00 | ND | 95.2 | 75-125 | | | |
| Zinc | 88.9 | 0.630 | 2.00 | " | 12.0 | 79.4 | 79.2 | 75-125 | | | |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Dissolved Metals per EPA 6000/7000 Series Methods - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110713 - EPA 200/3005 Diss** | | | | | | | | | | | |
| **Blank (3110713-BLK1)** | | | | | Prepared & Analyzed: 11/21/03 | | | | | | |
| Antimony | ND | 0.000126 | 0.00100 | mg/l | | | | | | | U |
| Arsenic | ND | 0.000964 | 0.00100 | " | | | | | | | U |
| Beryllium | ND | 0.0000790 | 0.00100 | " | | | | | | | U |
| Cadmium | ND | 0.0000730 | 0.00100 | " | | | | | | | U |
| Chromium | ND | 0.000791 | 0.00100 | " | | | | | | | U |
| Copper | 0.000880 | 0.000259 | 0.00200 | " | | | | | | | J |
| Lead | ND | 0.0000870 | 0.00100 | " | | | | | | | U |
| Nickel | ND | 0.000242 | 0.00200 | " | | | | | | | U |
| Selenium | ND | 0.000566 | 0.00100 | " | | | | | | | U |
| Silver | ND | 0.0000460 | 0.00100 | " | | | | | | | U |
| Thallium | 0.000140 | 0.0000310 | 0.00100 | " | | | | | | | J |
| Zinc | ND | 0.00102 | 0.00500 | " | | | | | | | U |
| **LCS (3110713-BS1)** | | | | | Prepared & Analyzed: 11/21/03 | | | | | | |
| Antimony | 0.0458 | 0.000126 | 0.00100 | mg/l | 0.0500 | | 91.6 | 80-120 | | | |
| Arsenic | 0.100 | 0.000964 | 0.00100 | " | 0.100 | | 100 | 80-120 | | | |
| Beryllium | 0.100 | 0.0000790 | 0.00100 | " | 0.100 | | 100 | 80-120 | | | |
| Cadmium | 0.100 | 0.0000730 | 0.00100 | " | 0.100 | | 100 | 80-120 | | | |
| Chromium | 0.102 | 0.000791 | 0.00100 | " | 0.100 | | 102 | 80-120 | | | |
| Copper | 0.103 | 0.000259 | 0.00200 | " | 0.100 | | 103 | 80-120 | | | |
| Lead | 0.102 | 0.0000870 | 0.00100 | " | 0.100 | | 102 | 80-120 | | | |
| Nickel | 0.100 | 0.000242 | 0.00200 | " | 0.100 | | 100 | 80-120 | | | |
| Selenium | 0.102 | 0.000566 | 0.00100 | " | 0.100 | | 102 | 80-120 | | | |
| Silver | 0.0498 | 0.0000460 | 0.00100 | " | 0.0500 | | 99.6 | 80-120 | | | |
| Thallium | 0.0495 | 0.0000310 | 0.00100 | " | 0.0500 | | 99.0 | 80-120 | | | |
| Zinc | 0.100 | 0.00102 | 0.00500 | " | 0.100 | | 100 | 80-120 | | | |
| **Duplicate (3110713-DUP1)** | | | **Source: P3J0383-10** | | Prepared & Analyzed: 11/21/03 | | | | | | |
| Antimony | ND | 0.000126 | 0.00100 | mg/l | | ND | | | | 20 | U |
| Arsenic | 0.0286 | 0.000964 | 0.00100 | " | | 0.0290 | | | 1.39 | 20 | |
| Beryllium | ND | 0.000790 | 0.0100 | " | | ND | | | | 20 | R-03, D, U |
| Cadmium | ND | 0.0000730 | 0.00100 | " | | ND | | | | 20 | U |
| Chromium | ND | 0.000791 | 0.00100 | " | | ND | | | | 20 | U |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Dissolved Metals per EPA 6000/7000 Series Methods - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110713 - EPA 200/3005 Diss** | | | | | | | | | | | |
| **Duplicate (3110713-DUP1)** | | **Source: P3J0383-10** | | Prepared & Analyzed: 11/21/03 | | | | | | | |
| Copper | 0.00141 | 0.000259 | 0.00200 | mg/l | | 0.00181 | | | 24.8 | 20 | Q-06, J |
| Lead | 0.000110 | 0.0000870 | 0.00100 | " | | 0.000230 | | | 70.6 | 20 | Q-06, J |
| Nickel | 0.00262 | 0.000242 | 0.00200 | " | | 0.00262 | | | 0.00 | 20 | |
| Selenium | 0.000750 | 0.000566 | 0.00100 | " | | 0.00101 | | | 29.5 | 20 | Q-06, J |
| Silver | ND | 0.0000460 | 0.00100 | " | | ND | | | | 20 | U |
| Thallium | 0.0000500 | 0.0000310 | 0.00100 | " | | 0.000130 | | | 88.9 | 20 | Q-06, J |
| Zinc | 0.00227 | 0.00102 | 0.00500 | " | | 0.00319 | | | 33.7 | 20 | Q-06, J |
| **Matrix Spike (3110713-MS1)** | | **Source: P3J0383-10** | | Prepared & Analyzed: 11/21/03 | | | | | | | |
| Antimony | 0.0486 | 0.000126 | 0.00100 | mg/l | 0.0500 | ND | 97.2 | 75-125 | | | |
| Arsenic | 0.131 | 0.000964 | 0.00100 | " | 0.100 | 0.0290 | 102 | 75-125 | | | |
| Beryllium | 0.114 | 0.000790 | 0.0100 | " | 0.100 | ND | 114 | 75-125 | | | R-03, D |
| Cadmium | 0.102 | 0.0000730 | 0.00100 | " | 0.100 | ND | 102 | 75-125 | | | |
| Chromium | 0.104 | 0.000791 | 0.00100 | " | 0.100 | ND | 104 | 75-125 | | | |
| Copper | 0.102 | 0.000259 | 0.00200 | " | 0.100 | 0.00181 | 100 | 75-125 | | | |
| Lead | 0.0939 | 0.0000870 | 0.00100 | " | 0.100 | 0.000230 | 93.7 | 75-125 | | | |
| Nickel | 0.102 | 0.000242 | 0.00200 | " | 0.100 | 0.00262 | 99.4 | 75-125 | | | |
| Selenium | 0.104 | 0.000566 | 0.00100 | " | 0.100 | 0.00101 | 103 | 75-125 | | | |
| Silver | 0.0473 | 0.0000460 | 0.00100 | " | 0.0500 | ND | 94.6 | 75-125 | | | |
| Thallium | 0.0461 | 0.0000310 | 0.00100 | " | 0.0500 | 0.000130 | 91.9 | 75-125 | | | |
| Zinc | 0.0990 | 0.00102 | 0.00500 | " | 0.100 | 0.00319 | 95.8 | 75-125 | | | |
| **Matrix Spike (3110713-MS2)** | | **Source: P3J0383-20** | | Prepared & Analyzed: 11/21/03 | | | | | | | |
| Antimony | 0.0458 | 0.000126 | 0.00100 | mg/l | 0.0500 | ND | 91.6 | 75-125 | | | |
| Arsenic | 0.146 | 0.000964 | 0.00100 | " | 0.100 | 0.0421 | 104 | 75-125 | | | |
| Beryllium | 0.119 | 0.000790 | 0.0100 | " | 0.100 | ND | 119 | 75-125 | | | R-03, D |
| Cadmium | 0.0987 | 0.0000730 | 0.00100 | " | 0.100 | ND | 98.7 | 75-125 | | | |
| Chromium | 0.107 | 0.000791 | 0.00100 | " | 0.100 | 0.00128 | 106 | 75-125 | | | |
| Copper | 0.101 | 0.000259 | 0.00200 | " | 0.100 | 0.00218 | 98.8 | 75-125 | | | |
| Lead | 0.0941 | 0.0000870 | 0.00100 | " | 0.100 | 0.000120 | 94.0 | 75-125 | | | |
| Nickel | 0.156 | 0.000242 | 0.00200 | " | 0.100 | 0.0563 | 99.7 | 75-125 | | | |
| Selenium | 0.106 | 0.000566 | 0.00100 | " | 0.100 | 0.000630 | 105 | 75-125 | | | |
| Silver | 0.0476 | 0.0000460 | 0.00100 | " | 0.0500 | ND | 95.2 | 75-125 | | | |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Dissolved Metals per EPA 6000/7000 Series Methods - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110713 - EPA 200/3005 Diss** | | | | | | | | | | | |
| **Matrix Spike (3110713-MS2)** | | | **Source: P3J0383-20** | | Prepared & Analyzed: 11/21/03 | | | | | | |
| Thallium | 0.0468 | 0.0000310 | 0.00100 | mg/l | 0.0500 | 0.0000500 | 93.5 | 75-125 | | | |
| Zinc | 0.0987 | 0.00102 | 0.00500 | " | 0.100 | 0.00236 | 96.3 | 75-125 | | | |
| **Batch 3110799 - EPA 7470A** | | | | | | | | | | | |
| **Blank (3110799-BLK1)** | | | | | Prepared & Analyzed: 11/24/03 | | | | | | |
| Mercury | ND | 0.0000358 | 0.000200 | mg/l | | | | | | | U |
| **LCS (3110799-BS1)** | | | | | Prepared & Analyzed: 11/24/03 | | | | | | |
| Mercury | 0.00510 | 0.0000358 | 0.000200 | mg/l | 0.00500 | | 102 | 85-115 | | | |
| **Duplicate (3110799-DUP1)** | | | **Source: P3K0433-16** | | Prepared & Analyzed: 11/24/03 | | | | | | |
| Mercury | 0.000111 | 0.0000358 | 0.000200 | mg/l | | 0.0000540 | | | 69.1 | 20 | Q-06, J |
| **Matrix Spike (3110799-MS1)** | | | **Source: P3K0433-16** | | Prepared & Analyzed: 11/24/03 | | | | | | |
| Mercury | 0.00553 | 0.0000358 | 0.000200 | mg/l | 0.00500 | 0.0000540 | 110 | 75-125 | | | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# TCLP Metals per EPA 1311/6000/7000 Series Methods - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3120049 - EPA 7470** | | | | | | | | | | | |
| **Blank (3120049-BLK1)** | | | | | Prepared & Analyzed: 12/01/03 | | | | | | |
| Mercury | ND | 0.0000230 | 0.000200 | mg/l | | | | | | | U |
| **LCS (3120049-BS1)** | | | | | Prepared & Analyzed: 12/01/03 | | | | | | |
| Mercury | 0.00508 | 0.0000230 | 0.000200 | mg/l | 0.00500 | | 102 | 75-125 | | | |
| **Matrix Spike (3120049-MS1)** | | | Source: P3K0421-02 | | Prepared & Analyzed: 12/01/03 | | | | | | |
| Mercury | 0.00490 | 0.0000230 | 0.000200 | mg/l | 0.00500 | ND | 98.0 | 50-150 | | | |
| **Matrix Spike (3120049-MS2)** | | | Source: P3K0433-17 | | Prepared & Analyzed: 12/01/03 | | | | | | |
| Mercury | 0.00480 | 0.0000230 | 0.000200 | mg/l | 0.00500 | ND | 96.0 | 50-150 | | | |
| **Matrix Spike (3120049-MS3)** | | | Source: P3K0433-18 | | Prepared & Analyzed: 12/01/03 | | | | | | |
| Mercury | 0.00499 | 0.0000230 | 0.000200 | mg/l | 0.00500 | ND | 99.8 | 50-150 | | | |
| **Matrix Spike (3120049-MS4)** | | | Source: P3K0709-02 | | Prepared & Analyzed: 12/01/03 | | | | | | |
| Mercury | 0.00498 | 0.0000230 | 0.000200 | mg/l | 0.00500 | ND | 99.6 | 50-150 | | | |
| **Batch 3120136 - EPA 1311/3005** | | | | | | | | | | | |
| **Blank (3120136-BLK1)** | | | | | Prepared & Analyzed: 12/03/03 | | | | | | |
| Arsenic | ND | 0.0522 | 0.100 | mg/l | | | | | | | D, U |
| Barium | ND | 0.00882 | 0.100 | " | | | | | | | D, U |
| Cadmium | ND | 0.00728 | 0.100 | " | | | | | | | D, U |
| Chromium | ND | 0.0791 | 0.100 | " | | | | | | | D, U |
| Lead | ND | 0.00768 | 0.100 | " | | | | | | | D, U |
| Selenium | ND | 0.0269 | 0.100 | " | | | | | | | D, U |
| Silver | ND | 0.00378 | 0.100 | " | | | | | | | D, U |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# TCLP Metals per EPA 1311/6000/7000 Series Methods - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3120136 - EPA 1311/3005** | | | | | | | | | | | |
| **LCS (3120136-BS1)** | | | | | Prepared & Analyzed: 12/03/03 | | | | | | |
| Arsenic | 10.9 | 0.104 | 0.200 | mg/l | 10.0 | | 109 | 75-125 | | | D |
| Barium | 20.5 | 0.0176 | 0.200 | " | 20.0 | | 102 | 75-125 | | | D |
| Cadmium | 2.21 | 0.0146 | 0.200 | " | 2.00 | | 110 | 75-125 | | | D |
| Chromium | 10.7 | 0.158 | 0.200 | " | 10.0 | | 107 | 75-125 | | | D |
| Lead | 10.3 | 0.0154 | 0.200 | " | 10.0 | | 103 | 75-125 | | | D |
| Selenium | 4.78 | 0.0538 | 0.200 | " | 4.00 | | 120 | 75-125 | | | D |
| Silver | 2.00 | 0.00756 | 0.200 | " | 2.00 | | 100 | 75-125 | | | D |
| **Matrix Spike (3120136-MS1)** | | **Source: P3K0504-09** | | | Prepared & Analyzed: 12/03/03 | | | | | | |
| Arsenic | 10.2 | 0.104 | 0.200 | mg/l | 10.0 | ND | 102 | 50-150 | | | D |
| Barium | 20.2 | 0.0176 | 0.200 | " | 20.0 | 1.56 | 93.2 | 50-150 | | | D |
| Cadmium | 2.08 | 0.0146 | 0.200 | " | 2.00 | ND | 104 | 50-150 | | | D |
| Chromium | 10.1 | 0.158 | 0.200 | " | 10.0 | ND | 101 | 50-150 | | | D |
| Lead | 9.52 | 0.0154 | 0.200 | " | 10.0 | ND | 95.2 | 50-150 | | | D |
| Selenium | 4.34 | 0.0538 | 0.200 | " | 4.00 | ND | 108 | 50-150 | | | D |
| Silver | 1.85 | 0.00756 | 0.200 | " | 2.00 | ND | 92.5 | 50-150 | | | D |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Polychlorinated Biphenyls per EPA Method 8082 - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110698 - EPA 3550** | | | | | | | | | | | |
| **Blank (3110698-BLK1)** | | | | | Prepared & Analyzed: 11/21/03 | | | | | | |
| Aroclor 1016 | ND | 11.1 | 67.0 | ug/kg | | | | | | | U |
| Aroclor 1221 | ND | 12.7 | 134 | " | | | | | | | U |
| Aroclor 1232 | ND | 11.1 | 67.0 | " | | | | | | | U |
| Aroclor 1242 | ND | 11.1 | 67.0 | " | | | | | | | U |
| Aroclor 1248 | ND | 3.87 | 67.0 | " | | | | | | | U |
| Aroclor 1254 | ND | 6.10 | 67.0 | " | | | | | | | U |
| Aroclor 1260 | ND | 11.5 | 67.0 | " | | | | | | | U |
| *Surrogate: 2,4,5,6-Tetrachloro-m-xylene* | *36.6* | | | " | *33.3* | | *110* | *36-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *34.1* | | | " | *33.3* | | *102* | *16-149* | | | |
| **LCS (3110698-BS1)** | | | | | Prepared & Analyzed: 11/21/03 | | | | | | |
| Aroclor 1016 | 301 | 11.1 | 67.0 | ug/kg | 333 | | 90.4 | 57-135 | | | |
| Aroclor 1260 | 310 | 11.5 | 67.0 | " | 333 | | 93.1 | 60-135 | | | |
| *Surrogate: 2,4,5,6-Tetrachloro-m-xylene* | *35.0* | | | " | *33.3* | | *105* | *36-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *33.9* | | | " | *33.3* | | *102* | *16-149* | | | |
| **Matrix Spike (3110698-MS1)** | | **Source: P3K0433-08** | | | Prepared & Analyzed: 11/21/03 | | | | | | |
| Aroclor 1016 | 362 | 11.1 | 67.0 | ug/kg dry | 452 | ND | 80.1 | 37-145 | | | |
| Aroclor 1260 | 344 | 11.5 | 67.0 | " | 452 | ND | 76.1 | 25-144 | | | |
| *Surrogate: 2,4,5,6-Tetrachloro-m-xylene* | *43.7* | | | " | *45.2* | | *96.7* | *36-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *37.5* | | | " | *45.2* | | *83.0* | *16-149* | | | |
| **Matrix Spike Dup (3110698-MSD1)** | | **Source: P3K0433-08** | | | Prepared & Analyzed: 11/21/03 | | | | | | |
| Aroclor 1016 | 361 | 11.1 | 67.0 | ug/kg dry | 452 | ND | 79.9 | 37-145 | 0.277 | 26 | |
| Aroclor 1260 | 343 | 11.5 | 67.0 | " | 452 | ND | 75.9 | 25-144 | 0.291 | 30 | |
| *Surrogate: 2,4,5,6-Tetrachloro-m-xylene* | *44.4* | | | " | *45.2* | | *98.2* | *36-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *36.0* | | | " | *45.2* | | *79.6* | *16-149* | | | |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Volatile Organic Compounds per EPA Method 8260B - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110486 - EPA 5035** | | | | | | | | | | | |
| **Blank (3110486-BLK1)** | | | | | Prepared: 11/17/03 Analyzed: 11/18/03 | | | | | | |
| Acetone | ND | 144 | 2500 | ug/kg | | | | | | | U |
| Benzene | ND | 4.44 | 100 | " | | | | | | | U |
| Bromobenzene | ND | 12.2 | 100 | " | | | | | | | U |
| Bromochloromethane | ND | 16.4 | 100 | " | | | | | | | U |
| Bromodichloromethane | ND | 10.2 | 100 | " | | | | | | | U |
| Bromoform | ND | 15.8 | 100 | " | | | | | | | U |
| Bromomethane | 17.0 | 5.09 | 500 | " | | | | | | | J |
| 2-Butanone | ND | 148 | 1000 | " | | | | | | | U |
| n-Butylbenzene | 12.0 | 11.3 | 500 | " | | | | | | | J |
| sec-Butylbenzene | ND | 7.45 | 100 | " | | | | | | | U |
| tert-Butylbenzene | ND | 15.2 | 100 | " | | | | | | | U |
| Carbon disulfide | ND | 7.19 | 1000 | " | | | | | | | U |
| Carbon tetrachloride | ND | 7.64 | 100 | " | | | | | | | U |
| Chlorobenzene | ND | 8.09 | 100 | " | | | | | | | U |
| Chloroethane | ND | 10.7 | 100 | " | | | | | | | U |
| Chloroform | ND | 7.26 | 100 | " | | | | | | | U |
| Chloromethane | ND | 6.72 | 500 | " | | | | | | | U |
| 2-Chlorotoluene | ND | 11.0 | 100 | " | | | | | | | U |
| 4-Chlorotoluene | ND | 10.4 | 100 | " | | | | | | | U |
| 1,2-Dibromo-3-chloropropane | ND | 26.0 | 500 | " | | | | | | | U |
| Dibromochloromethane | ND | 11.2 | 100 | " | | | | | | | U |
| 1,2-Dibromoethane | ND | 11.6 | 100 | " | | | | | | | U |
| Dibromomethane | ND | 14.7 | 100 | " | | | | | | | U |
| 1,2-Dichlorobenzene | ND | 14.4 | 100 | " | | | | | | | U |
| 1,3-Dichlorobenzene | ND | 5.86 | 100 | " | | | | | | | U |
| 1,4-Dichlorobenzene | ND | 14.9 | 100 | " | | | | | | | U |
| Dichlorodifluoromethane | ND | 11.8 | 500 | " | | | | | | | U |
| 1,1-Dichloroethane | ND | 11.9 | 100 | " | | | | | | | U |
| 1,2-Dichloroethane | ND | 11.2 | 100 | " | | | | | | | U |
| 1,1-Dichloroethene | ND | 11.9 | 100 | " | | | | | | | U |
| cis-1,2-Dichloroethene | ND | 12.6 | 100 | " | | | | | | | U |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Volatile Organic Compounds per EPA Method 8260B - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110486 - EPA 5035** | | | | | | | | | | | |
| **Blank (3110486-BLK1)** | | | | | Prepared: 11/17/03 Analyzed: 11/18/03 | | | | | | |
| trans-1,2-Dichloroethene | ND | 8.97 | 100 | ug/kg | | | | | | | U |
| 1,2-Dichloropropane | ND | 7.45 | 100 | " | | | | | | | U |
| 1,3-Dichloropropane | ND | 17.4 | 100 | " | | | | | | | U |
| 2,2-Dichloropropane | ND | 8.09 | 100 | " | | | | | | | U |
| 1,1-Dichloropropene | ND | 10.9 | 100 | " | | | | | | | U |
| cis-1,3-Dichloropropene | ND | 4.95 | 100 | " | | | | | | | U |
| trans-1,3-Dichloropropene | ND | 8.29 | 100 | " | | | | | | | U |
| Ethylbenzene | ND | 9.40 | 100 | " | | | | | | | U |
| Hexachlorobutadiene | ND | 69.4 | 200 | " | | | | | | | U |
| 2-Hexanone | ND | 57.2 | 1000 | " | | | | | | | U |
| Isopropylbenzene | ND | 9.55 | 200 | " | | | | | | | U |
| p-Isopropyltoluene | ND | 9.68 | 200 | " | | | | | | | U |
| 4-Methyl-2-pentanone | ND | 117 | 500 | " | | | | | | | U |
| Methyl tert-butyl ether | ND | 11.9 | 100 | " | | | | | | | U |
| Methylene chloride | ND | 250 | 500 | " | | | | | | | U |
| Naphthalene | 25.0 | 14.1 | 200 | " | | | | | | | J |
| n-Propylbenzene | ND | 9.89 | 100 | " | | | | | | | U |
| Styrene | ND | 8.89 | 100 | " | | | | | | | U |
| 1,1,1,2-Tetrachloroethane | ND | 9.25 | 100 | " | | | | | | | U |
| 1,1,2,2-Tetrachloroethane | ND | 21.1 | 100 | " | | | | | | | U |
| Tetrachloroethene | ND | 16.9 | 100 | " | | | | | | | U |
| Toluene | ND | 6.29 | 100 | " | | | | | | | U |
| 1,2,3-Trichlorobenzene | 23.0 | 16.9 | 100 | " | | | | | | | J |
| 1,2,4-Trichlorobenzene | 26.0 | 21.4 | 100 | " | | | | | | | J |
| 1,1,1-Trichloroethane | ND | 6.13 | 100 | " | | | | | | | U |
| 1,1,2-Trichloroethane | ND | 18.1 | 100 | " | | | | | | | U |
| Trichloroethene | ND | 12.0 | 100 | " | | | | | | | U |
| Trichlorofluoromethane | ND | 8.97 | 100 | " | | | | | | | U |
| 1,2,3-Trichloropropane | ND | 49.2 | 100 | " | | | | | | | U |
| 1,2,4-Trimethylbenzene | 13.0 | 6.75 | 100 | " | | | | | | | J |
| 1,3,5-Trimethylbenzene | ND | 9.33 | 100 | " | | | | | | | U |
| Vinyl chloride | ND | 5.74 | 100 | " | | | | | | | U |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Volatile Organic Compounds per EPA Method 8260B - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110486 - EPA 5035** | | | | | | | | | | | |
| **Blank (3110486-BLK1)** | | | | | Prepared: 11/17/03 Analyzed: 11/18/03 | | | | | | |
| o-Xylene | ND | 11.6 | 100 | ug/kg | | | | | | | U |
| m,p-Xylene | ND | 11.4 | 200 | " | | | | | | | U |
| *Surrogate: 4-BFB* | *2040* | | | " | *2000* | | *102* | *42.6-130* | | | |
| *Surrogate: 1,2-DCA-d4* | *2290* | | | " | *2000* | | *114* | *57.3-144* | | | |
| *Surrogate: Dibromofluoromethane* | *2170* | | | " | *2000* | | *108* | *45.5-130* | | | |
| *Surrogate: Toluene-d8* | *2330* | | | " | *2000* | | *116* | *42.1-144* | | | |
| **LCS (3110486-BS1)** | | | | | Prepared: 11/17/03 Analyzed: 11/18/03 | | | | | | |
| Benzene | 2010 | 4.44 | 100 | ug/kg | 2000 | | 100 | 81.9-125 | | | |
| Chlorobenzene | 1950 | 8.09 | 100 | " | 2000 | | 97.5 | 79.2-125 | | | |
| 1,1-Dichloroethene | 1870 | 11.9 | 100 | " | 2000 | | 93.5 | 66.1-125 | | | |
| Toluene | 1980 | 6.29 | 100 | " | 2000 | | 99.0 | 80-125 | | | |
| Trichloroethene | 2040 | 12.0 | 100 | " | 2000 | | 102 | 76-125 | | | |
| *Surrogate: 4-BFB* | *1870* | | | " | *2000* | | *93.5* | *42.6-130* | | | |
| *Surrogate: 1,2-DCA-d4* | *2200* | | | " | *2000* | | *110* | *57.3-144* | | | |
| *Surrogate: Dibromofluoromethane* | *2120* | | | " | *2000* | | *106* | *45.5-130* | | | |
| *Surrogate: Toluene-d8* | *2060* | | | " | *2000* | | *103* | *42.1-144* | | | |
| **Matrix Spike (3110486-MS1)** | | **Source: P3K0392-01** | | | Prepared: 11/17/03 Analyzed: 11/18/03 | | | | | | |
| Benzene | 2770 | 4.44 | 100 | ug/kg dry | 2620 | ND | 106 | 68.5-125 | | | |
| Chlorobenzene | 2670 | 8.09 | 100 | " | 2620 | ND | 102 | 65.9-125 | | | |
| 1,1-Dichloroethene | 2710 | 11.9 | 100 | " | 2620 | ND | 103 | 55.8-125 | | | |
| Toluene | 3000 | 6.29 | 100 | " | 2620 | 676 | 88.7 | 70.3-125 | | | |
| Trichloroethene | 2700 | 12.0 | 100 | " | 2620 | ND | 103 | 65.5-125 | | | |
| *Surrogate: 4-BFB* | *2780* | | | " | *2620* | | *106* | *42.6-130* | | | |
| *Surrogate: 1,2-DCA-d4* | *2830* | | | " | *2620* | | *108* | *57.3-144* | | | |
| *Surrogate: Dibromofluoromethane* | *2700* | | | " | *2620* | | *103* | *45.5-130* | | | |
| *Surrogate: Toluene-d8* | *2590* | | | " | *2620* | | *98.9* | *42.1-144* | | | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Volatile Organic Compounds per EPA Method 8260B - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110486 - EPA 5035** | | | | | | | | | | | |
| **Matrix Spike Dup (3110486-MSD1)** | | **Source: P3K0392-01** | | Prepared: 11/17/03 Analyzed: 11/18/03 | | | | | | | |
| Benzene | 2610 | 4.44 | 100 | ug/kg dry | 2620 | ND | 99.6 | 68.5-125 | 5.95 | 25 | |
| Chlorobenzene | 2480 | 8.09 | 100 | " | 2620 | ND | 94.7 | 65.9-125 | 7.38 | 25 | |
| 1,1-Dichloroethene | 2600 | 11.9 | 100 | " | 2620 | ND | 99.2 | 55.8-125 | 4.14 | 25 | |
| Toluene | 2890 | 6.29 | 100 | " | 2620 | 676 | 84.5 | 70.3-125 | 3.74 | 25 | |
| Trichloroethene | 2600 | 12.0 | 100 | " | 2620 | ND | 99.2 | 65.5-125 | 3.77 | 25 | |
| *Surrogate: 4-BFB* | *2930* | | | " | *2620* | | *112* | *42.6-130* | | | |
| *Surrogate: 1,2-DCA-d4* | *2720* | | | " | *2620* | | *104* | *57.3-144* | | | |
| *Surrogate: Dibromofluoromethane* | *2610* | | | " | *2620* | | *99.6* | *45.5-130* | | | |
| *Surrogate: Toluene-d8* | *2580* | | | " | *2620* | | *98.5* | *42.1-144* | | | |
| **Batch 3110611 - EPA 5030B** | | | | | | | | | | | |
| **Blank (3110611-BLK1)** | | | | Prepared & Analyzed: 11/19/03 | | | | | | | |
| Acetone | ND | 2.34 | 25.0 | ug/l | | | | | | | U |
| Benzene | ND | 0.147 | 1.00 | " | | | | | | | U |
| Bromobenzene | ND | 0.333 | 1.00 | " | | | | | | | U |
| Bromochloromethane | ND | 0.266 | 1.00 | " | | | | | | | U |
| Bromodichloromethane | ND | 0.183 | 1.00 | " | | | | | | | U |
| Bromoform | ND | 0.174 | 1.00 | " | | | | | | | U |
| Bromomethane | ND | 0.282 | 5.00 | " | | | | | | | U |
| 2-Butanone | ND | 1.60 | 10.0 | " | | | | | | | U |
| n-Butylbenzene | ND | 0.183 | 5.00 | " | | | | | | | U |
| sec-Butylbenzene | ND | 0.193 | 1.00 | " | | | | | | | U |
| tert-Butylbenzene | ND | 0.206 | 1.00 | " | | | | | | | U |
| Carbon disulfide | ND | 0.233 | 10.0 | " | | | | | | | U |
| Carbon tetrachloride | ND | 0.140 | 1.00 | " | | | | | | | U |
| Chlorobenzene | ND | 0.136 | 1.00 | " | | | | | | | U |
| Chloroethane | ND | 0.327 | 1.00 | " | | | | | | | U |
| Chloroform | ND | 0.143 | 1.00 | " | | | | | | | U |
| Chloromethane | ND | 0.159 | 5.00 | " | | | | | | | U |
| 2-Chlorotoluene | ND | 0.110 | 1.00 | " | | | | | | | U |
| 4-Chlorotoluene | ND | 0.120 | 1.00 | " | | | | | | | U |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Volatile Organic Compounds per EPA Method 8260B - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110611 - EPA 5030B** | | | | | | | | | | | |
| **Blank (3110611-BLK1)** | | | | | Prepared & Analyzed: 11/19/03 | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 0.405 | 5.00 | ug/l | | | | | | | U |
| Dibromochloromethane | ND | 0.133 | 1.00 | " | | | | | | | U |
| 1,2-Dibromoethane | ND | 0.187 | 1.00 | " | | | | | | | U |
| Dibromomethane | ND | 0.117 | 1.00 | " | | | | | | | U |
| 1,2-Dichlorobenzene | ND | 0.0859 | 1.00 | " | | | | | | | U |
| 1,3-Dichlorobenzene | ND | 0.132 | 1.00 | " | | | | | | | U |
| 1,4-Dichlorobenzene | ND | 0.187 | 1.00 | " | | | | | | | U |
| Dichlorodifluoromethane | ND | 0.312 | 5.00 | " | | | | | | | U |
| 1,1-Dichloroethane | ND | 0.157 | 1.00 | " | | | | | | | U |
| 1,2-Dichloroethane | ND | 0.142 | 1.00 | " | | | | | | | U |
| 1,1-Dichloroethene | ND | 0.197 | 1.00 | " | | | | | | | U |
| cis-1,2-Dichloroethene | ND | 0.170 | 1.00 | " | | | | | | | U |
| trans-1,2-Dichloroethene | ND | 0.175 | 1.00 | " | | | | | | | U |
| 1,2-Dichloropropane | ND | 0.266 | 1.00 | " | | | | | | | U |
| 1,3-Dichloropropane | ND | 0.151 | 1.00 | " | | | | | | | U |
| 2,2-Dichloropropane | ND | 0.104 | 1.00 | " | | | | | | | U |
| 1,1-Dichloropropene | ND | 0.149 | 1.00 | " | | | | | | | U |
| cis-1,3-Dichloropropene | ND | 0.128 | 1.00 | " | | | | | | | U |
| trans-1,3-Dichloropropene | ND | 0.152 | 1.00 | " | | | | | | | U |
| Ethylbenzene | ND | 0.110 | 1.00 | " | | | | | | | U |
| Hexachlorobutadiene | ND | 0.878 | 2.00 | " | | | | | | | U |
| 2-Hexanone | ND | 1.10 | 10.0 | " | | | | | | | U |
| Isopropylbenzene | ND | 0.107 | 2.00 | " | | | | | | | U |
| p-Isopropyltoluene | ND | 0.149 | 2.00 | " | | | | | | | U |
| 4-Methyl-2-pentanone | ND | 1.49 | 5.00 | " | | | | | | | U |
| Methyl tert-butyl ether | ND | 0.0865 | 1.00 | " | | | | | | | U |
| Methylene chloride | ND | 2.50 | 5.00 | " | | | | | | | U |
| Naphthalene | ND | 0.0989 | 2.00 | " | | | | | | | U |
| n-Propylbenzene | ND | 0.138 | 1.00 | " | | | | | | | U |
| Styrene | ND | 0.0723 | 1.00 | " | | | | | | | U |
| 1,1,1,2-Tetrachloroethane | ND | 0.148 | 1.00 | " | | | | | | | U |
| 1,1,2,2-Tetrachloroethane | ND | 0.294 | 1.00 | " | | | | | | | U |



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| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Volatile Organic Compounds per EPA Method 8260B - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110611 - EPA 5030B** | | | | | | | | | | | |
| **Blank (3110611-BLK1)** | | | | | Prepared & Analyzed: 11/19/03 | | | | | | |
| Tetrachloroethene | ND | 0.109 | 1.00 | ug/l | | | | | | | U |
| Toluene | ND | 0.155 | 1.00 | " | | | | | | | U |
| 1,2,3-Trichlorobenzene | ND | 0.219 | 1.00 | " | | | | | | | U |
| 1,2,4-Trichlorobenzene | ND | 0.213 | 1.00 | " | | | | | | | U |
| 1,1,1-Trichloroethane | ND | 0.0859 | 1.00 | " | | | | | | | U |
| 1,1,2-Trichloroethane | ND | 0.301 | 1.00 | " | | | | | | | U |
| Trichloroethene | ND | 0.241 | 1.00 | " | | | | | | | U |
| Trichlorofluoromethane | ND | 0.160 | 1.00 | " | | | | | | | U |
| 1,2,3-Trichloropropane | ND | 0.365 | 1.00 | " | | | | | | | U |
| 1,2,4-Trimethylbenzene | ND | 0.0884 | 1.00 | " | | | | | | | U |
| 1,3,5-Trimethylbenzene | ND | 0.157 | 1.00 | " | | | | | | | U |
| Vinyl chloride | ND | 0.152 | 1.00 | " | | | | | | | U |
| o-Xylene | ND | 0.187 | 1.00 | " | | | | | | | U |
| m,p-Xylene | ND | 0.295 | 2.00 | " | | | | | | | U |
| *Surrogate: 4-BFB* | *18.6* | | | " | *20.0* | | *93.0* | *75-120* | | | |
| *Surrogate: 1,2-DCA-d4* | *21.4* | | | " | *20.0* | | *107* | *77-129* | | | |
| *Surrogate: Dibromofluoromethane* | *20.7* | | | " | *20.0* | | *104* | *80-121* | | | |
| *Surrogate: Toluene-d8* | *20.1* | | | " | *20.0* | | *100* | *80-120* | | | |
| **LCS (3110611-BS1)** | | | | | Prepared & Analyzed: 11/19/03 | | | | | | |
| Benzene | 20.8 | 0.147 | 1.00 | ug/l | 20.0 | | 104 | 80-120 | | | |
| Chlorobenzene | 21.6 | 0.136 | 1.00 | " | 20.0 | | 108 | 80-124 | | | |
| 1,1-Dichloroethene | 19.5 | 0.197 | 1.00 | " | 20.0 | | 97.5 | 78-120 | | | |
| Toluene | 21.0 | 0.155 | 1.00 | " | 20.0 | | 105 | 80-124 | | | |
| Trichloroethene | 20.8 | 0.241 | 1.00 | " | 20.0 | | 104 | 80-132 | | | |
| *Surrogate: 4-BFB* | *19.6* | | | " | *20.0* | | *98.0* | *75-120* | | | |
| *Surrogate: 1,2-DCA-d4* | *20.7* | | | " | *20.0* | | *104* | *77-129* | | | |
| *Surrogate: Dibromofluoromethane* | *20.4* | | | " | *20.0* | | *102* | *80-121* | | | |
| *Surrogate: Toluene-d8* | *20.1* | | | " | *20.0* | | *100* | *80-120* | | | |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Volatile Organic Compounds per EPA Method 8260B - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110611 - EPA 5030B** | | | | | | | | | | | |
| **Matrix Spike (3110611-MS1)** | | **Source: P3K0433-15** | | Prepared & Analyzed: 11/19/03 | | | | | | | |
| Benzene | 20.4 | 0.147 | 1.00 | ug/l | 20.0 | ND | 102 | 80-124 | | | |
| Chlorobenzene | 20.9 | 0.136 | 1.00 | " | 20.0 | ND | 104 | 72.9-134 | | | |
| 1,1-Dichloroethene | 19.4 | 0.197 | 1.00 | " | 20.0 | ND | 97.0 | 79.3-127 | | | |
| Toluene | 18.3 | 0.155 | 1.00 | " | 20.0 | 0.660 | 88.2 | 79.7-131 | | | |
| Trichloroethene | 20.1 | 0.241 | 1.00 | " | 20.0 | ND | 100 | 68.4-130 | | | |
| *Surrogate: 4-BFB* | *19.8* | | | " | *20.0* | | *99.0* | *75-120* | | | |
| *Surrogate: 1,2-DCA-d4* | *21.2* | | | " | *20.0* | | *106* | *77-129* | | | |
| *Surrogate: Dibromofluoromethane* | *20.9* | | | " | *20.0* | | *104* | *80-121* | | | |
| *Surrogate: Toluene-d8* | *19.0* | | | " | *20.0* | | *95.0* | *80-120* | | | |
| **Matrix Spike Dup (3110611-MSD1)** | | **Source: P3K0433-15** | | Prepared & Analyzed: 11/19/03 | | | | | | | |
| Benzene | 20.5 | 0.147 | 1.00 | ug/l | 20.0 | ND | 102 | 80-124 | 0.489 | 25 | |
| Chlorobenzene | 21.3 | 0.136 | 1.00 | " | 20.0 | ND | 106 | 72.9-134 | 1.90 | 25 | |
| 1,1-Dichloroethene | 19.2 | 0.197 | 1.00 | " | 20.0 | ND | 96.0 | 79.3-127 | 1.04 | 25 | |
| Toluene | 18.2 | 0.155 | 1.00 | " | 20.0 | 0.660 | 87.7 | 79.7-131 | 0.548 | 25 | |
| Trichloroethene | 19.9 | 0.241 | 1.00 | " | 20.0 | ND | 99.5 | 68.4-130 | 1.00 | 25 | |
| *Surrogate: 4-BFB* | *19.8* | | | " | *20.0* | | *99.0* | *75-120* | | | |
| *Surrogate: 1,2-DCA-d4* | *20.8* | | | " | *20.0* | | *104* | *77-129* | | | |
| *Surrogate: Dibromofluoromethane* | *20.9* | | | " | *20.0* | | *104* | *80-121* | | | |
| *Surrogate: Toluene-d8* | *19.3* | | | " | *20.0* | | *96.5* | *80-120* | | | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Volatile Organic Compounds per EPA Methods 5035/8260B - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110271 - EPA 5035** | | | | | | | | | | | |
| **Blank (3110271-BLK1)** | | | | | Prepared: 11/18/03 Analyzed: 11/20/03 | | | | | | |
| Acetone | ND | 4.25 | 20.0 | ug/kg | | | | | | | U |
| Benzene | ND | 0.147 | 5.00 | " | | | | | | | U |
| Bromobenzene | ND | 0.152 | 5.00 | " | | | | | | | U |
| Bromochloromethane | ND | 0.277 | 5.00 | " | | | | | | | U |
| Bromodichloromethane | ND | 0.388 | 5.00 | " | | | | | | | U |
| Bromoform | ND | 0.169 | 5.00 | " | | | | | | | U |
| Bromomethane | ND | 0.309 | 20.0 | " | | | | | | | U |
| 2-Butanone | ND | 15.4 | 20.0 | " | | | | | | | U |
| n-Butylbenzene | ND | 0.181 | 5.00 | " | | | | | | | U |
| sec-Butylbenzene | ND | 0.160 | 5.00 | " | | | | | | | U |
| tert-Butylbenzene | ND | 0.195 | 5.00 | " | | | | | | | U |
| Carbon disulfide | ND | 0.420 | 20.0 | " | | | | | | | U |
| Carbon tetrachloride | ND | 0.202 | 5.00 | " | | | | | | | U |
| Chlorobenzene | ND | 0.276 | 5.00 | " | | | | | | | U |
| Chloroethane | ND | 0.353 | 10.0 | " | | | | | | | U |
| Chloroform | ND | 0.174 | 5.00 | " | | | | | | | U |
| Chloromethane | ND | 0.513 | 10.0 | " | | | | | | | U |
| 2-Chlorotoluene | ND | 0.236 | 5.00 | " | | | | | | | U |
| 4-Chlorotoluene | ND | 0.108 | 5.00 | " | | | | | | | U |
| 1,2-Dibromo-3-chloropropane | ND | 0.213 | 10.0 | " | | | | | | | U |
| Dibromochloromethane | ND | 0.270 | 5.00 | " | | | | | | | U |
| 1,2-Dibromoethane | ND | 0.386 | 5.00 | " | | | | | | | U |
| Dibromomethane | ND | 0.302 | 5.00 | " | | | | | | | U |
| 1,2-Dichlorobenzene | ND | 0.169 | 5.00 | " | | | | | | | U |
| 1,3-Dichlorobenzene | ND | 0.329 | 5.00 | " | | | | | | | U |
| 1,4-Dichlorobenzene | ND | 0.162 | 5.00 | " | | | | | | | U |
| Dichlorodifluoromethane | ND | 0.280 | 10.0 | " | | | | | | | U |
| 1,1-Dichloroethane | ND | 0.0975 | 5.00 | " | | | | | | | U |
| 1,2-Dichloroethane | ND | 0.236 | 5.00 | " | | | | | | | U |
| 1,1-Dichloroethene | ND | 0.180 | 5.00 | " | | | | | | | U |
| cis-1,2-Dichloroethene | ND | 0.202 | 5.00 | " | | | | | | | U |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Volatile Organic Compounds per EPA Methods 5035/8260B - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110271 - EPA 5035** | | | | | | | | | | | |
| **Blank (3110271-BLK1)** | | | | | Prepared: 11/18/03 Analyzed: 11/20/03 | | | | | | |
| trans-1,2-Dichloroethene | ND | 0.195 | 5.00 | ug/kg | | | | | | | U |
| 1,2-Dichloropropane | ND | 0.191 | 5.00 | " | | | | | | | U |
| 1,3-Dichloropropane | ND | 0.353 | 5.00 | " | | | | | | | U |
| 2,2-Dichloropropane | ND | 0.224 | 5.00 | " | | | | | | | U |
| 1,1-Dichloropropene | ND | 0.234 | 5.00 | " | | | | | | | U |
| cis-1,3-Dichloropropene | ND | 0.141 | 5.00 | " | | | | | | | U |
| trans-1,3-Dichloropropene | ND | 0.372 | 5.00 | " | | | | | | | U |
| Ethylbenzene | 0.250 | 0.143 | 5.00 | " | | | | | | | J |
| Hexachlorobutadiene | ND | 0.739 | 5.00 | " | | | | | | | U |
| 2-Hexanone | ND | 2.14 | 20.0 | " | | | | | | | U |
| Isopropylbenzene | ND | 0.202 | 5.00 | " | | | | | | | U |
| p-Isopropyltoluene | 0.250 | 0.133 | 5.00 | " | | | | | | | J |
| 4-Methyl-2-pentanone | ND | 2.06 | 20.0 | " | | | | | | | U |
| Methylene chloride | ND | 10.0 | 25.0 | " | | | | | | | U |
| Naphthalene | 1.36 | 0.345 | 5.00 | " | | | | | | | J |
| n-Propylbenzene | ND | 0.174 | 5.00 | " | | | | | | | U |
| Styrene | ND | 0.154 | 5.00 | " | | | | | | | U |
| 1,1,1,2-Tetrachloroethane | ND | 0.297 | 5.00 | " | | | | | | | U |
| 1,1,2,2-Tetrachloroethane | ND | 0.257 | 5.00 | " | | | | | | | U |
| Tetrachloroethene | ND | 0.145 | 5.00 | " | | | | | | | U |
| Toluene | ND | 0.299 | 5.00 | " | | | | | | | U |
| 1,2,3-Trichlorobenzene | ND | 0.318 | 5.00 | " | | | | | | | U |
| 1,2,4-Trichlorobenzene | ND | 0.393 | 5.00 | " | | | | | | | U |
| 1,1,1-Trichloroethane | ND | 0.228 | 5.00 | " | | | | | | | U |
| 1,1,2-Trichloroethane | ND | 0.701 | 5.00 | " | | | | | | | U |
| Trichloroethene | ND | 0.221 | 5.00 | " | | | | | | | U |
| Trichlorofluoromethane | ND | 0.281 | 5.00 | " | | | | | | | U |
| 1,2,3-Trichloropropane | ND | 0.962 | 5.00 | " | | | | | | | U |
| 1,2,4-Trimethylbenzene | 0.350 | 0.0800 | 5.00 | " | | | | | | | J |
| 1,3,5-Trimethylbenzene | ND | 0.154 | 5.00 | " | | | | | | | U |
| Vinyl chloride | ND | 0.305 | 10.0 | " | | | | | | | U |
| o-Xylene | 0.230 | 0.199 | 5.00 | " | | | | | | | J |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Volatile Organic Compounds per EPA Methods 5035/8260B - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110271 - EPA 5035** | | | | | | | | | | | |
| **Blank (3110271-BLK1)** | | | | | Prepared: 11/18/03 Analyzed: 11/20/03 | | | | | | |
| m,p-Xylene | 0.800 | 0.208 | 10.0 | ug/kg | | | | | | | J |
| *Surrogate: 4-BFB* | *19.5* | | | " | *20.0* | | *97.5* | *42.6-130* | | | |
| *Surrogate: 1,2-DCA-d4* | *18.6* | | | " | *20.0* | | *93.0* | *57.3-144* | | | |
| *Surrogate: Dibromofluoromethane* | *18.9* | | | " | *20.0* | | *94.5* | *45.5-130* | | | |
| *Surrogate: Toluene-d8* | *19.4* | | | " | *20.0* | | *97.0* | *42.1-144* | | | |
| **LCS (3110271-BS1)** | | | | | Prepared: 11/18/03 Analyzed: 11/20/03 | | | | | | |
| Benzene | 18.3 | 0.147 | 5.00 | ug/kg | 20.0 | | 91.5 | 78-129 | | | |
| Chlorobenzene | 18.7 | 0.276 | 5.00 | " | 20.0 | | 93.5 | 62.8-140 | | | |
| 1,1-Dichloroethene | 15.5 | 0.180 | 5.00 | " | 20.0 | | 77.5 | 68.2-133 | | | |
| Toluene | 19.0 | 0.299 | 5.00 | " | 20.0 | | 95.0 | 66.8-137 | | | |
| Trichloroethene | 20.5 | 0.221 | 5.00 | " | 20.0 | | 102 | 76.2-132 | | | |
| *Surrogate: 4-BFB* | *19.6* | | | " | *20.0* | | *98.0* | *42.6-130* | | | |
| *Surrogate: 1,2-DCA-d4* | *18.6* | | | " | *20.0* | | *93.0* | *57.3-144* | | | |
| *Surrogate: Dibromofluoromethane* | *18.7* | | | " | *20.0* | | *93.5* | *45.5-130* | | | |
| *Surrogate: Toluene-d8* | *19.3* | | | " | *20.0* | | *96.5* | *42.1-144* | | | |
| **Matrix Spike (3110271-MS1)** | | **Source: P3K0194-01** | | | Prepared: 11/18/03 Analyzed: 11/20/03 | | | | | | |
| Benzene | 1050 | 8.22 | 279 | ug/kg dry | 1120 | ND | 93.8 | 60-140 | | | |
| Chlorobenzene | 1040 | 15.4 | 279 | " | 1120 | 32.4 | 90.0 | 60-140 | | | |
| 1,1-Dichloroethene | 948 | 10.1 | 279 | " | 1120 | ND | 84.6 | 60-140 | | | |
| Toluene | 1220 | 16.7 | 279 | " | 1120 | 226 | 88.8 | 60-140 | | | |
| Trichloroethene | 1010 | 12.4 | 279 | " | 1120 | 117 | 79.7 | 60-140 | | | |
| *Surrogate: 4-BFB* | *1030* | | | " | *1120* | | *92.0* | *42.6-130* | | | |
| *Surrogate: 1,2-DCA-d4* | *902* | | | " | *1120* | | *80.5* | *57.3-144* | | | |
| *Surrogate: Dibromofluoromethane* | *988* | | | " | *1120* | | *88.2* | *45.5-130* | | | |
| *Surrogate: Toluene-d8* | *1090* | | | " | *1120* | | *97.3* | *42.1-144* | | | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Volatile Organic Compounds per EPA Methods 5035/8260B - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110271 - EPA 5035** | | | | | | | | | | | |
| **Matrix Spike Dup (3110271-MSD1)** | | **Source: P3K0194-01** | | | Prepared: 11/18/03 | Analyzed: 11/20/03 | | | | | |
| Benzene | 979 | 8.22 | 279 | ug/kg dry | 1120 | ND | 87.4 | 60-140 | 7.00 | 25 | |
| Chlorobenzene | 962 | 15.4 | 279 | " | 1120 | 32.4 | 83.0 | 60-140 | 7.79 | 25 | |
| 1,1-Dichloroethene | 956 | 10.1 | 279 | " | 1120 | ND | 85.4 | 60-140 | 0.840 | 25 | |
| Toluene | 1140 | 16.7 | 279 | " | 1120 | 226 | 81.6 | 60-140 | 6.78 | 25 | |
| Trichloroethene | 1080 | 12.4 | 279 | " | 1120 | 117 | 86.0 | 60-140 | 6.70 | 25 | |
| *Surrogate: 4-BFB* | *1020* | | | *"* | *1120* | | *91.1* | *42.6-130* | | | |
| *Surrogate: 1,2-DCA-d4* | *937* | | | *"* | *1120* | | *83.7* | *57.3-144* | | | |
| *Surrogate: Dibromofluoromethane* | *1040* | | | *"* | *1120* | | *92.9* | *45.5-130* | | | |
| *Surrogate: Toluene-d8* | *1070* | | | *"* | *1120* | | *95.5* | *42.1-144* | | | |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Semivolatile Organic Compounds per EPA Method 8270C - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110600 - EPA 3510/600 Series** | | | | | | | | | | | |
| **Blank (3110600-BLK1)** | | | | | Prepared: 11/19/03 Analyzed: 11/23/03 | | | | | | |
| Acenaphthene | ND | 3.00 | 5.00 | ug/l | | | | | | | U |
| Acenaphthylene | ND | 3.00 | 5.00 | " | | | | | | | U |
| Anthracene | ND | 3.00 | 5.00 | " | | | | | | | U |
| Benzo (a) anthracene | ND | 3.00 | 5.00 | " | | | | | | | U |
| Benzo (a) pyrene | ND | 3.00 | 5.00 | " | | | | | | | U |
| Benzo (b) fluoranthene | ND | 3.00 | 5.00 | " | | | | | | | U |
| Benzo (ghi) perylene | ND | 3.00 | 5.00 | " | | | | | | | U |
| Benzo (k) fluoranthene | ND | 3.00 | 5.00 | " | | | | | | | U |
| Benzoic Acid | ND | 25.0 | 50.0 | " | | | | | | | U |
| Benzyl alcohol | ND | 5.00 | 10.0 | " | | | | | | | U |
| 4-Bromophenyl phenyl ether | ND | 3.00 | 5.00 | " | | | | | | | U |
| Butyl benzyl phthalate | ND | 3.00 | 5.00 | " | | | | | | | U |
| 4-Chloro-3-methylphenol | ND | 3.00 | 5.00 | " | | | | | | | U |
| 4-Chloroaniline | ND | 5.00 | 20.0 | " | | | | | | | U |
| Bis(2-chloroethoxy)methane | ND | 5.00 | 10.0 | " | | | | | | | U |
| Bis(2-chloroethyl)ether | ND | 3.00 | 5.00 | " | | | | | | | U |
| Bis(2-chloroisopropyl)ether | ND | 5.00 | 10.0 | " | | | | | | | U |
| 2-Chloronaphthalene | ND | 3.00 | 5.00 | " | | | | | | | U |
| 2-Chlorophenol | ND | 5.00 | 5.00 | " | | | | | | | U |
| 4-Chlorophenyl phenyl ether | ND | 3.00 | 5.00 | " | | | | | | | U |
| Chrysene | ND | 3.00 | 5.00 | " | | | | | | | U |
| Di-n-butyl phthalate | ND | 3.00 | 5.00 | " | | | | | | | U |
| Di-n-octyl phthalate | ND | 5.00 | 5.00 | " | | | | | | | U |
| Dibenzo (a,h) anthracene | ND | 3.00 | 5.00 | " | | | | | | | U |
| Dibenzofuran | ND | 3.00 | 5.00 | " | | | | | | | U |
| 1,2-Dichlorobenzene | ND | 3.00 | 5.00 | " | | | | | | | U |
| 1,3-Dichlorobenzene | ND | 3.00 | 5.00 | " | | | | | | | U |
| 1,4-Dichlorobenzene | ND | 3.00 | 5.00 | " | | | | | | | U |
| 3,3'-Dichlorobenzidine | ND | 5.00 | 5.00 | " | | | | | | | U |
| 2,4-Dichlorophenol | ND | 5.00 | 5.00 | " | | | | | | | U |
| Diethyl phthalate | ND | 3.00 | 5.00 | " | | | | | | | U |



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907.563.9200 fax 907.563.9210

| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Semivolatile Organic Compounds per EPA Method 8270C - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110600 - EPA 3510/600 Series** | | | | | | | | | | | |
| **Blank (3110600-BLK1)** | | | | | Prepared: 11/19/03 Analyzed: 11/23/03 | | | | | | |
| 2,4-Dimethylphenol | ND | 10.0 | 10.0 | ug/l | | | | | | | U |
| Dimethyl phthalate | ND | 3.00 | 5.00 | " | | | | | | | U |
| 4,6-Dinitro-2-methylphenol | ND | 5.00 | 10.0 | " | | | | | | | U |
| 2,4-Dinitrophenol | ND | 15.0 | 25.0 | " | | | | | | | U |
| 2,4-Dinitrotoluene | ND | 3.00 | 5.00 | " | | | | | | | U |
| 2,6-Dinitrotoluene | ND | 3.00 | 5.00 | " | | | | | | | U |
| Bis(2-ethylhexyl)phthalate | ND | 10.0 | 10.0 | " | | | | | | | U |
| Fluoranthene | ND | 3.00 | 5.00 | " | | | | | | | U |
| Fluorene | ND | 3.00 | 5.00 | " | | | | | | | U |
| Hexachlorobenzene | ND | 3.00 | 5.00 | " | | | | | | | U |
| Hexachlorobutadiene | ND | 5.00 | 10.0 | " | | | | | | | U |
| Hexachlorocyclopentadiene | ND | 5.00 | 10.0 | " | | | | | | | U |
| Hexachloroethane | ND | 5.00 | 10.0 | " | | | | | | | U |
| Indeno (1,2,3-cd) pyrene | ND | 3.00 | 5.00 | " | | | | | | | U |
| Isophorone | ND | 3.00 | 5.00 | " | | | | | | | U |
| 2-Methylnaphthalene | ND | 3.00 | 5.00 | " | | | | | | | U |
| 2-Methylphenol | ND | 5.00 | 10.0 | " | | | | | | | U |
| 3-,4-Methylphenol | ND | 5.00 | 5.00 | " | | | | | | | U |
| Naphthalene | ND | 3.00 | 5.00 | " | | | | | | | U |
| 2-Nitroaniline | ND | 3.00 | 5.00 | " | | | | | | | U |
| 3-Nitroaniline | ND | 5.00 | 10.0 | " | | | | | | | U |
| 4-Nitroaniline | ND | 5.00 | 10.0 | " | | | | | | | U |
| Nitrobenzene | ND | 3.00 | 5.00 | " | | | | | | | U |
| 2-Nitrophenol | ND | 5.00 | 5.00 | " | | | | | | | U |
| 4-Nitrophenol | ND | 10.0 | 25.0 | " | | | | | | | U |
| N-Nitrosodi-n-propylamine | ND | 3.00 | 10.0 | " | | | | | | | U |
| N-Nitrosodiphenylamine | ND | 3.00 | 5.00 | " | | | | | | | U |
| Pentachlorophenol | ND | 5.00 | 10.0 | " | | | | | | | U |
| Phenanthrene | ND | 3.00 | 5.00 | " | | | | | | | U |
| Phenol | ND | 3.00 | 5.00 | " | | | | | | | U |
| Pyrene | ND | 3.00 | 5.00 | " | | | | | | | U |
| 1,2,4-Trichlorobenzene | ND | 3.00 | 5.00 | " | | | | | | | U |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Semivolatile Organic Compounds per EPA Method 8270C - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110600 - EPA 3510/600 Series** | | | | | | | | | | | |
| **Blank (3110600-BLK1)** | | | | | Prepared: 11/19/03 Analyzed: 11/23/03 | | | | | | |
| 2,4,5-Trichlorophenol | ND | 5.00 | 5.00 | ug/l | | | | | | | U |
| 2,4,6-Trichlorophenol | ND | 5.00 | 5.00 | " | | | | | | | U |
| *Surrogate: 2-Fluorobiphenyl* | *86.0* | | | " | *75.0* | | *115* | *26-135* | | | |
| *Surrogate: 2-Fluorophenol* | *88.8* | | | " | *150* | | *59.2* | *6-124* | | | |
| *Surrogate: Nitrobenzene-d5* | *94.7* | | | " | *75.0* | | *126* | *23-147* | | | |
| *Surrogate: Phenol-d6* | *49.4* | | | " | *150* | | *32.9* | *11-130* | | | |
| *Surrogate: p-Terphenyl-d14* | *111* | | | " | *75.0* | | *148* | *38-149* | | | *D* |
| *Surrogate: 2,4,6-Tribromophenol* | *184* | | | " | *150* | | *123* | *19-126* | | | *D* |
| **LCS (3110600-BS1)** | | | | | Prepared: 11/19/03 Analyzed: 11/21/03 | | | | | | |
| Acenaphthene | 68.5 | 3.00 | 5.00 | ug/l | 75.0 | | 91.3 | 40-110 | | | |
| 4-Chloro-3-methylphenol | 133 | 3.00 | 5.00 | " | 150 | | 88.7 | 40-110 | | | |
| 2-Chlorophenol | 144 | 5.00 | 5.00 | " | 150 | | 96.0 | 40-110 | | | |
| 1,4-Dichlorobenzene | 47.6 | 3.00 | 5.00 | " | 75.0 | | 63.5 | 20-90 | | | |
| 2,4-Dinitrotoluene | 70.5 | 3.00 | 5.00 | " | 75.0 | | 94.0 | 50-110 | | | |
| 4-Nitrophenol | 48.2 | 10.0 | 25.0 | " | 150 | | 32.1 | 15-100 | | | |
| N-Nitrosodi-n-propylamine | 73.6 | 3.00 | 10.0 | " | 75.0 | | 98.1 | 40-110 | | | |
| Pentachlorophenol | 85.1 | 5.00 | 10.0 | " | 150 | | 56.7 | 30-120 | | | |
| Phenol | 43.8 | 3.00 | 5.00 | " | 150 | | 29.2 | 15-110 | | | |
| Pyrene | 80.6 | 3.00 | 5.00 | " | 75.0 | | 107 | 40-110 | | | |
| 1,2,4-Trichlorobenzene | 52.1 | 3.00 | 5.00 | " | 75.0 | | 69.5 | 25-100 | | | |
| *Surrogate: 2-Fluorobiphenyl* | *73.1* | | | " | *75.0* | | *97.5* | *26-135* | | | |
| *Surrogate: 2-Fluorophenol* | *84.8* | | | " | *150* | | *56.5* | *6-124* | | | |
| *Surrogate: Nitrobenzene-d5* | *81.1* | | | " | *75.0* | | *108* | *23-147* | | | |
| *Surrogate: Phenol-d6* | *47.7* | | | " | *150* | | *31.8* | *11-130* | | | |
| *Surrogate: p-Terphenyl-d14* | *92.1* | | | " | *75.0* | | *123* | *38-149* | | | |
| *Surrogate: 2,4,6-Tribromophenol* | *185* | | | " | *150* | | *123* | *19-126* | | | |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Semivolatile Organic Compounds per EPA Method 8270C - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110600 - EPA 3510/600 Series** | | | | | | | | | | | |
| **LCS Dup (3110600-BSD1)** | | | | | Prepared: 11/19/03 Analyzed: 11/21/03 | | | | | | |
| Acenaphthene | 70.2 | 3.00 | 5.00 | ug/l | 75.0 | | 93.6 | 40-110 | 2.45 | 36 | |
| 4-Chloro-3-methylphenol | 136 | 3.00 | 5.00 | " | 150 | | 90.7 | 40-110 | 2.23 | 43 | |
| 2-Chlorophenol | 143 | 5.00 | 5.00 | " | 150 | | 95.3 | 40-110 | 0.697 | 38 | |
| 1,4-Dichlorobenzene | 49.7 | 3.00 | 5.00 | " | 75.0 | | 66.3 | 20-90 | 4.32 | 43 | |
| 2,4-Dinitrotoluene | 72.4 | 3.00 | 5.00 | " | 75.0 | | 96.5 | 50-110 | 2.66 | 31 | |
| 4-Nitrophenol | 48.0 | 10.0 | 25.0 | " | 150 | | 32.0 | 15-100 | 0.416 | 36 | |
| N-Nitrosodi-n-propylamine | 77.4 | 3.00 | 10.0 | " | 75.0 | | 103 | 40-110 | 5.03 | 37 | |
| Pentachlorophenol | 88.7 | 5.00 | 10.0 | " | 150 | | 59.1 | 30-120 | 4.14 | 40 | |
| Phenol | 42.2 | 3.00 | 5.00 | " | 150 | | 28.1 | 15-110 | 3.72 | 36 | |
| Pyrene | 79.6 | 3.00 | 5.00 | " | 75.0 | | 106 | 40-110 | 1.25 | 31 | |
| 1,2,4-Trichlorobenzene | 53.7 | 3.00 | 5.00 | " | 75.0 | | 71.6 | 25-100 | 3.02 | 42 | |
| *Surrogate: 2-Fluorobiphenyl* | *72.7* | | | " | *75.0* | | *96.9* | *26-135* | | | |
| *Surrogate: 2-Fluorophenol* | *84.7* | | | " | *150* | | *56.5* | *6-124* | | | |
| *Surrogate: Nitrobenzene-d5* | *82.0* | | | " | *75.0* | | *109* | *23-147* | | | |
| *Surrogate: Phenol-d6* | *47.4* | | | " | *150* | | *31.6* | *11-130* | | | |
| *Surrogate: p-Terphenyl-d14* | *90.1* | | | " | *75.0* | | *120* | *38-149* | | | |
| *Surrogate: 2,4,6-Tribromophenol* | *184* | | | " | *150* | | *123* | *19-126* | | | |
| **Batch 3110653 - EPA 3550** | | | | | | | | | | | |
| **Blank (3110653-BLK1)** | | | | | Prepared: 11/20/03 Analyzed: 11/22/03 | | | | | | |
| Acenaphthene | ND | 0.0700 | 0.330 | mg/kg | | | | | | | U |
| Acenaphthylene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Anthracene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Benzo (a) anthracene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Benzo (a) pyrene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Benzo (b) fluoranthene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Benzo (ghi) perylene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Benzo (k) fluoranthene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Benzoic Acid | ND | 0.500 | 1.00 | " | | | | | | | U |
| Benzyl alcohol | ND | 0.165 | 0.330 | " | | | | | | | U |
| 4-Bromophenyl phenyl ether | ND | 0.0700 | 0.330 | " | | | | | | | U |



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907.563.9200 fax 907.563.9210

| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Semivolatile Organic Compounds per EPA Method 8270C - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110653 - EPA 3550** | | | | | | | | | | | |
| **Blank (3110653-BLK1)** | | | | | Prepared: 11/20/03 Analyzed: 11/22/03 | | | | | | |
| Butyl benzyl phthalate | ND | 0.0700 | 0.330 | mg/kg | | | | | | | U |
| 4-Chloro-3-methylphenol | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 4-Chloroaniline | ND | 0.165 | 2.00 | " | | | | | | | U |
| Bis(2-chloroethoxy)methane | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Bis(2-chloroethyl)ether | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Bis(2-chloroisopropyl)ether | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 2-Chloronaphthalene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 2-Chlorophenol | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 4-Chlorophenyl phenyl ether | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Chrysene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Di-n-butyl phthalate | ND | 0.500 | 1.00 | " | | | | | | | U |
| Di-n-octyl phthalate | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Dibenzo (a,h) anthracene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Dibenzofuran | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 1,2-Dichlorobenzene | ND | 0.500 | 1.00 | " | | | | | | | U |
| 1,3-Dichlorobenzene | ND | 0.500 | 1.00 | " | | | | | | | U |
| 1,4-Dichlorobenzene | ND | 0.500 | 1.00 | " | | | | | | | U |
| 3,3'-Dichlorobenzidine | ND | 0.500 | 1.00 | " | | | | | | | U |
| 2,4-Dichlorophenol | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Diethyl phthalate | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 2,4-Dimethylphenol | ND | 0.500 | 1.00 | " | | | | | | | U |
| Dimethyl phthalate | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 4,6-Dinitro-2-methylphenol | ND | 0.500 | 1.00 | " | | | | | | | U |
| 2,4-Dinitrophenol | ND | 2.00 | 2.00 | " | | | | | | | U |
| 2,4-Dinitrotoluene | ND | 0.500 | 0.500 | " | | | | | | | U |
| 2,6-Dinitrotoluene | ND | 0.500 | 0.500 | " | | | | | | | U |
| Bis(2-ethylhexyl)phthalate | ND | 2.00 | 2.00 | " | | | | | | | U |
| Fluoranthene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Fluorene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Hexachlorobenzene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Hexachlorobutadiene | ND | 0.500 | 1.00 | " | | | | | | | U |
| Hexachlorocyclopentadiene | ND | 0.500 | 1.00 | " | | | | | | | U |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Semivolatile Organic Compounds per EPA Method 8270C - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110653 - EPA 3550** | | | | | | | | | | | |
| **Blank (3110653-BLK1)** | | | | | Prepared: 11/20/03 Analyzed: 11/22/03 | | | | | | |
| Hexachloroethane | ND | 0.500 | 1.00 | mg/kg | | | | | | | U |
| Indeno (1,2,3-cd) pyrene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Isophorone | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 2-Methylnaphthalene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 2-Methylphenol | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 3-,4-Methylphenol | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Naphthalene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 2-Nitroaniline | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 3-Nitroaniline | ND | 0.500 | 1.00 | " | | | | | | | U |
| 4-Nitroaniline | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Nitrobenzene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 2-Nitrophenol | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 4-Nitrophenol | ND | 0.500 | 1.00 | " | | | | | | | U |
| N-Nitrosodi-n-propylamine | ND | 0.0700 | 0.330 | " | | | | | | | U |
| N-Nitrosodiphenylamine | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Pentachlorophenol | ND | 0.500 | 1.00 | " | | | | | | | U |
| Phenanthrene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Phenol | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Pyrene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 1,2,4-Trichlorobenzene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 2,4,5-Trichlorophenol | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 2,4,6-Trichlorophenol | ND | 0.0700 | 0.330 | " | | | | | | | U |
| *Surrogate: 2-Fluorobiphenyl* | *3.02* | | | " | *2.50* | | *121* | *44-146* | | | |
| *Surrogate: 2-Fluorophenol* | *3.56* | | | " | *5.00* | | *71.2* | *42-126* | | | *D* |
| *Surrogate: Nitrobenzene-d5* | *2.95* | | | " | *2.50* | | *118* | *42-126* | | | |
| *Surrogate: Phenol-d6* | *5.23* | | | " | *5.00* | | *105* | *42-131* | | | |
| *Surrogate: p-Terphenyl-d14* | *3.58* | | | " | *2.50* | | *143* | *49-150* | | | |
| *Surrogate: 2,4,6-Tribromophenol* | *5.82* | | | " | *5.00* | | *116* | *48-119* | | | |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Semivolatile Organic Compounds per EPA Method 8270C - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110653 - EPA 3550** | | | | | | | | | | | |
| **LCS (3110653-BS1)** | | | | | Prepared: 11/20/03 Analyzed: 11/26/03 | | | | | | |
| Acenaphthene | 1.70 | | 0.660 | mg/kg | 2.50 | | 68.0 | 30-115 | | | D |
| 4-Chloro-3-methylphenol | 3.33 | | 0.660 | " | 5.00 | | 66.6 | 40-110 | | | D |
| 2-Chlorophenol | 3.34 | | 0.660 | " | 5.00 | | 66.8 | 40-100 | | | D |
| 1,4-Dichlorobenzene | 1.48 | | 2.00 | " | 2.50 | | 59.2 | 10-100 | | | D |
| 2,4-Dinitrotoluene | 1.68 | | 1.00 | " | 2.50 | | 67.2 | 30-110 | | | D |
| 4-Nitrophenol | 3.12 | | 2.00 | " | 5.00 | | 62.4 | 30-130 | | | D |
| N-Nitrosodi-n-propylamine | 1.54 | | 0.660 | " | 2.50 | | 61.6 | 30-110 | | | D |
| Pentachlorophenol | 2.73 | | 2.00 | " | 5.00 | | 54.6 | 14-120 | | | D |
| Phenol | 2.75 | | 0.660 | " | 5.00 | | 55.0 | 35-100 | | | D |
| Pyrene | 2.08 | | 0.660 | " | 2.50 | | 83.2 | 30-115 | | | D |
| 1,2,4-Trichlorobenzene | 1.73 | | 0.660 | " | 2.50 | | 69.2 | 18-100 | | | D |
| *Surrogate: 2-Fluorobiphenyl* | *2.04* | | | " | *2.50* | | *81.6* | *44-146* | | | *D* |
| *Surrogate: 2-Fluorophenol* | *3.74* | | | " | *5.00* | | *74.8* | *42-126* | | | *D* |
| *Surrogate: Nitrobenzene-d5* | *1.78* | | | " | *2.50* | | *71.2* | *42-126* | | | *D* |
| *Surrogate: Phenol-d6* | *3.27* | | | " | *5.00* | | *65.4* | *42-131* | | | *D* |
| *Surrogate: p-Terphenyl-d14* | *2.34* | | | " | *2.50* | | *93.6* | *49-150* | | | *D* |
| *Surrogate: 2,4,6-Tribromophenol* | *4.50* | | | " | *5.00* | | *90.0* | *48-119* | | | *D* |
| **Matrix Spike (3110653-MS1)** | | **Source: P3K0433-01** | | | Prepared: 11/20/03 Analyzed: 11/26/03 | | | | | | **R-05** |
| Acenaphthene | 2.08 | | 3.30 | mg/kg dry | 2.93 | ND | 71.0 | 40-110 | | | D |
| 4-Chloro-3-methylphenol | 3.59 | | 3.30 | " | 5.87 | ND | 61.2 | 40-110 | | | D |
| 2-Chlorophenol | 3.61 | | 3.30 | " | 5.87 | ND | 61.5 | 40-100 | | | D |
| 1,4-Dichlorobenzene | 1.69 | | 10.0 | " | 2.93 | ND | 57.7 | 10-100 | | | J, D |
| 2,4-Dinitrotoluene | 1.89 | | 5.00 | " | 2.93 | ND | 64.5 | 40-110 | | | J, D |
| 4-Nitrophenol | 3.55 | | 10.0 | " | 5.87 | ND | 60.5 | 40-125 | | | J, D |
| N-Nitrosodi-n-propylamine | 2.06 | | 3.30 | " | 2.93 | ND | 70.3 | 30-110 | | | D |
| Pentachlorophenol | 2.94 | | 10.0 | " | 5.87 | ND | 50.1 | 25-110 | | | J, D |
| Phenol | 4.66 | | 3.30 | " | 5.87 | ND | 79.4 | 35-100 | | | D |
| Pyrene | 2.63 | | 3.30 | " | 2.93 | ND | 89.8 | 40-110 | | | D |
| 1,2,4-Trichlorobenzene | 2.27 | | 3.30 | " | 2.93 | ND | 77.5 | 30-101 | | | D |
| *Surrogate: 2-Fluorobiphenyl* | *2.52* | | | " | *2.93* | | *86.0* | *44-146* | | | *D* |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Semivolatile Organic Compounds per EPA Method 8270C - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110653 - EPA 3550** | | | | | | | | | | | |
| **Matrix Spike (3110653-MS1)** | | **Source: P3K0433-01** | | | Prepared: 11/20/03 | Analyzed: 11/26/03 | | | | | **R-05** |
| *Surrogate: 2-Fluorophenol* | *4.11* | | | *mg/kg dry* | *5.87* | | *70.0* | *42-126* | | | *D* |
| *Surrogate: Nitrobenzene-d5* | *2.13* | | | *"* | *2.93* | | *72.7* | *42-126* | | | *D* |
| *Surrogate: Phenol-d6* | *5.06* | | | *"* | *5.87* | | *86.2* | *42-131* | | | *D* |
| *Surrogate: p-Terphenyl-d14* | *2.68* | | | *"* | *2.93* | | *91.5* | *49-150* | | | *D* |
| *Surrogate: 2,4,6-Tribromophenol* | *4.40* | | | *"* | *5.87* | | *75.0* | *48-119* | | | *D* |
| **Matrix Spike Dup (3110653-MSD1)** | | **Source: P3K0433-01** | | | Prepared: 11/20/03 | Analyzed: 11/26/03 | | | | | **R-05** |
| Acenaphthene | 2.08 | | 3.30 | mg/kg dry | 2.93 | ND | 71.0 | 40-110 | 0.00 | 40 | D |
| 4-Chloro-3-methylphenol | 3.64 | | 3.30 | " | 5.87 | ND | 62.0 | 40-110 | 1.38 | 40 | D |
| 2-Chlorophenol | 3.68 | | 3.30 | " | 5.87 | ND | 62.7 | 40-100 | 1.92 | 40 | D |
| 1,4-Dichlorobenzene | 1.47 | | 10.0 | " | 2.93 | ND | 50.2 | 10-100 | 13.9 | 60 | J, D |
| 2,4-Dinitrotoluene | 1.74 | | 5.00 | " | 2.93 | ND | 59.4 | 40-110 | 8.26 | 40 | J, D |
| 4-Nitrophenol | 3.57 | | 10.0 | " | 5.87 | ND | 60.8 | 40-125 | 0.562 | 40 | J, D |
| N-Nitrosodi-n-propylamine | 1.87 | | 3.30 | " | 2.93 | ND | 63.8 | 30-110 | 9.67 | 40 | J, D |
| Pentachlorophenol | 2.79 | | 10.0 | " | 5.87 | ND | 47.5 | 25-110 | 5.24 | 60 | J, D |
| Phenol | 4.58 | | 3.30 | " | 5.87 | ND | 78.0 | 35-100 | 1.73 | 40 | D |
| Pyrene | 2.93 | | 3.30 | " | 2.93 | ND | 100 | 40-110 | 10.8 | 40 | D |
| 1,2,4-Trichlorobenzene | 2.09 | | 3.30 | " | 2.93 | ND | 71.3 | 30-101 | 8.26 | 60 | D |
| *Surrogate: 2-Fluorobiphenyl* | *2.44* | | | *"* | *2.93* | | *83.3* | *44-146* | | | *D* |
| *Surrogate: 2-Fluorophenol* | *3.83* | | | *"* | *5.87* | | *65.2* | *42-126* | | | *D* |
| *Surrogate: Nitrobenzene-d5* | *2.11* | | | *"* | *2.93* | | *72.0* | *42-126* | | | *D* |
| *Surrogate: Phenol-d6* | *4.97* | | | *"* | *5.87* | | *84.7* | *42-131* | | | *D* |
| *Surrogate: p-Terphenyl-d14* | *2.78* | | | *"* | *2.93* | | *94.9* | *49-150* | | | *D* |
| *Surrogate: 2,4,6-Tribromophenol* | *4.28* | | | *"* | *5.87* | | *72.9* | *48-119* | | | *D* |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# TCLP Volatile Organic Compounds per EPA Method 1311/8260B - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110881 - EPA 5030B** | | | | | | | | | | | |
| **Blank (3110881-BLK1)** | | | | | Prepared: 12/01/03 Analyzed: 12/02/03 | | | | | | |
| Acetone | ND | 0.250 | 0.500 | mg/l | | | | | | | U |
| Benzene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| Bromobenzene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| Bromochloromethane | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| Bromodichloromethane | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| Bromoform | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| Bromomethane | ND | 0.0500 | 0.100 | " | | | | | | | U |
| n-Butylbenzene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| sec-Butylbenzene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| tert-Butylbenzene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| Carbon Tetrachloride | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| Chlorobenzene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| Chloroethane | ND | 0.00250 | 0.0500 | " | | | | | | | U |
| Chloroform | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| Chloromethane | ND | 0.0500 | 0.100 | " | | | | | | | U |
| 2-Chlorotoluene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| 4-Chlorotoluene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| 1,2-Dibromo-3-chloropropane | ND | 0.0250 | 0.0500 | " | | | | | | | U |
| Dibromochloromethane | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| 1,2-Dibromoethane | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| Dibromomethane | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| 1,2-Dichlorobenzene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| 1,3-Dichlorobenzene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| 1,4-Dichlorobenzene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| Dichlorodifluoromethane | ND | 0.0500 | 0.100 | " | | | | | | | U |
| 1,1-Dichloroethane | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| 1,2-Dichloroethane | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| 1,1-Dichloroethene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| cis-1,2-Dichloroethene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| trans-1,2-Dichloroethene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| 1,2-Dichloropropane | ND | 0.0100 | 0.0200 | " | | | | | | | U |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# TCLP Volatile Organic Compounds per EPA Method 1311/8260B - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110881 - EPA 5030B** | | | | | | | | | | | |
| **Blank (3110881-BLK1)** | | | | | Prepared: 12/01/03 Analyzed: 12/02/03 | | | | | | |
| 1,3-Dichloropropane | ND | 0.0100 | 0.0200 | mg/l | | | | | | | U |
| 2,2-Dichloropropane | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| 1,1-Dichloropropene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| cis-1,3-Dichloropropene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| trans-1,3-Dichloropropene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| Ethylbenzene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| Hexachlorobutadiene | ND | 0.0250 | 0.0500 | " | | | | | | | U |
| 2-Hexanone | ND | 0.0500 | 0.100 | " | | | | | | | U |
| Isopropylbenzene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| p-Isopropyltoluene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| 4-Methyl-2-pentanone | ND | 0.100 | 0.200 | " | | | | | | | U |
| Methyl Ethyl Ketone | ND | 0.0250 | 0.500 | " | | | | | | | U |
| Methylene chloride | ND | 0.250 | 0.500 | " | | | | | | | U |
| Methyl tert-butyl ether | ND | 0.865 | 10.0 | " | | | | | | | U |
| Naphthalene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| n-Propylbenzene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| Styrene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| 1,1,1,2-Tetrachloroethane | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| 1,1,2,2-Tetrachloroethane | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| Tetrachloroethene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| Toluene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| 1,2,3-Trichlorobenzene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| 1,2,4-Trichlorobenzene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| 1,1,1-Trichloroethane | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| 1,1,2-Trichloroethane | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| Trichloroethene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| Trichlorofluoromethane | ND | 0.0250 | 0.0500 | " | | | | | | | U |
| 1,2,3-Trichloropropane | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| 1,2,4-Trimethylbenzene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| 1,3,5-Trimethylbenzene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| Vinyl chloride | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| o-Xylene | ND | 0.0100 | 0.0200 | " | | | | | | | U |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# TCLP Volatile Organic Compounds per EPA Method 1311/8260B - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110881 - EPA 5030B** | | | | | | | | | | | |
| **Blank (3110881-BLK1)** | | | | | Prepared: 12/01/03 Analyzed: 12/02/03 | | | | | | |
| m,p-Xylene | ND | 0.0100 | 0.0200 | mg/l | | | | | | | U |
| *Surrogate: 4-BFB* | *0.0200* | | | " | *0.0200* | | *100* | *75-130* | | | *D* |
| *Surrogate: Dibromofluoromethane* | *0.0193* | | | " | *0.0200* | | *96.5* | *75-130* | | | *D* |
| *Surrogate: Toluene-d8* | *0.0200* | | | " | *0.0200* | | *100* | *75-130* | | | *D* |
| *Surrogate: 1,2-DCA-d4* | *0.0183* | | | " | *0.0200* | | *91.5* | *79-123* | | | *D* |
| **Blank (3110881-BLK2)** | | | | | Prepared: 12/01/03 Analyzed: 12/02/03 | | | | | | |
| Acetone | ND | 0.250 | 0.500 | mg/l | | | | | | | U |
| Benzene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| Bromobenzene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| Bromochloromethane | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| Bromodichloromethane | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| Bromoform | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| Bromomethane | ND | 0.0500 | 0.100 | " | | | | | | | U |
| n-Butylbenzene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| sec-Butylbenzene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| tert-Butylbenzene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| Carbon Tetrachloride | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| Chlorobenzene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| Chloroethane | ND | 0.00250 | 0.0500 | " | | | | | | | U |
| Chloroform | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| Chloromethane | ND | 0.0500 | 0.100 | " | | | | | | | U |
| 2-Chlorotoluene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| 4-Chlorotoluene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| 1,2-Dibromo-3-chloropropane | ND | 0.0250 | 0.0500 | " | | | | | | | U |
| Dibromochloromethane | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| 1,2-Dibromoethane | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| Dibromomethane | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| 1,2-Dichlorobenzene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| 1,3-Dichlorobenzene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| 1,4-Dichlorobenzene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| Dichlorodifluoromethane | ND | 0.0500 | 0.100 | " | | | | | | | U |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# TCLP Volatile Organic Compounds per EPA Method 1311/8260B - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110881 - EPA 5030B** | | | | | | | | | | | |
| **Blank (3110881-BLK2)** | | | | | Prepared: 12/01/03 Analyzed: 12/02/03 | | | | | | |
| 1,1-Dichloroethane | ND | 0.0100 | 0.0200 | mg/l | | | | | | | U |
| 1,2-Dichloroethane | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| 1,1-Dichloroethene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| cis-1,2-Dichloroethene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| trans-1,2-Dichloroethene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| 1,2-Dichloropropane | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| 1,3-Dichloropropane | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| 2,2-Dichloropropane | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| 1,1-Dichloropropene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| cis-1,3-Dichloropropene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| trans-1,3-Dichloropropene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| Ethylbenzene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| Hexachlorobutadiene | ND | 0.0250 | 0.0500 | " | | | | | | | U |
| 2-Hexanone | ND | 0.0500 | 0.100 | " | | | | | | | U |
| Isopropylbenzene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| p-Isopropyltoluene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| 4-Methyl-2-pentanone | ND | 0.100 | 0.200 | " | | | | | | | U |
| Methyl Ethyl Ketone | ND | 0.0250 | 0.500 | " | | | | | | | U |
| Methylene chloride | ND | 0.250 | 0.500 | " | | | | | | | U |
| Methyl tert-butyl ether | ND | 0.865 | 10.0 | " | | | | | | | U |
| Naphthalene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| n-Propylbenzene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| Styrene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| 1,1,1,2-Tetrachloroethane | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| 1,1,2,2-Tetrachloroethane | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| Tetrachloroethene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| Toluene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| 1,2,3-Trichlorobenzene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| 1,2,4-Trichlorobenzene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| 1,1,1-Trichloroethane | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| 1,1,2-Trichloroethane | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| Trichloroethene | ND | 0.0100 | 0.0200 | " | | | | | | | U |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# TCLP Volatile Organic Compounds per EPA Method 1311/8260B - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110881 - EPA 5030B** | | | | | | | | | | | |
| **Blank (3110881-BLK2)** | | | | | Prepared: 12/01/03 Analyzed: 12/02/03 | | | | | | |
| Trichlorofluoromethane | ND | 0.0250 | 0.0500 | mg/l | | | | | | | U |
| 1,2,3-Trichloropropane | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| 1,2,4-Trimethylbenzene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| 1,3,5-Trimethylbenzene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| Vinyl chloride | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| o-Xylene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| m,p-Xylene | ND | 0.0100 | 0.0200 | " | | | | | | | U |
| *Surrogate: 4-BFB* | *0.0196* | | | " | *0.0200* | | *98.0* | *75-130* | | | *D* |
| *Surrogate: Dibromofluoromethane* | *0.0192* | | | " | *0.0200* | | *96.0* | *75-130* | | | *D* |
| *Surrogate: Toluene-d8* | *0.0203* | | | " | *0.0200* | | *102* | *75-130* | | | *D* |
| *Surrogate: 1,2-DCA-d4* | *0.0191* | | | " | *0.0200* | | *95.5* | *79-123* | | | *D* |
| **LCS (3110881-BS1)** | | | | | Prepared: 12/01/03 Analyzed: 12/02/03 | | | | | | |
| Benzene | 0.207 | 0.0100 | 0.0200 | mg/l | 0.200 | | 104 | 66-142 | | | |
| Carbon Tetrachloride | 0.205 | 0.0100 | 0.0200 | " | 0.200 | | 102 | 50-150 | | | |
| Chlorobenzene | 0.215 | 0.0100 | 0.0200 | " | 0.200 | | 108 | 60-133 | | | |
| Chloroform | 0.203 | 0.0100 | 0.0200 | " | 0.200 | | 102 | 50-150 | | | |
| 1,4-Dichlorobenzene | 0.219 | 0.0100 | 0.0200 | " | 0.200 | | 110 | 50-150 | | | |
| 1,2-Dichloroethane | 0.201 | 0.0100 | 0.0200 | " | 0.200 | | 100 | 50-150 | | | |
| 1,1-Dichloroethene | 0.188 | 0.0100 | 0.0200 | " | 0.200 | | 94.0 | 59-172 | | | |
| Methyl Ethyl Ketone | 0.470 | 0.0250 | 0.500 | " | 0.400 | | 118 | 40-180 | | | J |
| Tetrachloroethene | 0.218 | 0.0100 | 0.0200 | " | 0.200 | | 109 | 50-150 | | | |
| Trichloroethene | 0.195 | 0.0100 | 0.0200 | " | 0.200 | | 97.5 | 62-137 | | | |
| Vinyl chloride | 0.208 | 0.0100 | 0.0200 | " | 0.200 | | 104 | 40-180 | | | |
| *Surrogate: 4-BFB* | *0.0203* | | | " | *0.0200* | | *102* | *75-130* | | | *D* |
| *Surrogate: Dibromofluoromethane* | *0.0197* | | | " | *0.0200* | | *98.5* | *75-130* | | | *D* |
| *Surrogate: Toluene-d8* | *0.0206* | | | " | *0.0200* | | *103* | *75-130* | | | *D* |
| *Surrogate: 1,2-DCA-d4* | *0.0190* | | | " | *0.0200* | | *95.0* | *79-123* | | | *D* |



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| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# TCLP Volatile Organic Compounds per EPA Method 1311/8260B - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110881 - EPA 5030B** | | | | | | | | | | | |
| **Matrix Spike (3110881-MS1)** | | **Source: P3K0433-17** | | | Prepared: 12/01/03 | Analyzed: 12/02/03 | | | | | |
| Benzene | 0.201 | 0.0100 | 0.0200 | mg/l | 0.200 | ND | 100 | 66-142 | | | |
| Carbon Tetrachloride | 0.203 | 0.0100 | 0.0200 | " | 0.200 | ND | 102 | 50-150 | | | |
| Chlorobenzene | 0.200 | 0.0100 | 0.0200 | " | 0.200 | ND | 100 | 60-133 | | | |
| Chloroform | 0.193 | 0.0100 | 0.0200 | " | 0.200 | ND | 96.5 | 50-150 | | | |
| 1,4-Dichlorobenzene | 0.200 | 0.0100 | 0.0200 | " | 0.200 | ND | 100 | 50-150 | | | |
| 1,2-Dichloroethane | 0.192 | 0.0100 | 0.0200 | " | 0.200 | ND | 96.0 | 50-150 | | | |
| 1,1-Dichloroethene | 0.194 | 0.0100 | 0.0200 | " | 0.200 | ND | 97.0 | 59-172 | | | |
| Methyl Ethyl Ketone | 0.418 | 0.0250 | 0.500 | " | 0.400 | ND | 104 | 40-180 | | | J |
| Tetrachloroethene | 0.197 | 0.0100 | 0.0200 | " | 0.200 | ND | 98.5 | 50-150 | | | |
| Trichloroethene | 0.187 | 0.0100 | 0.0200 | " | 0.200 | ND | 93.5 | 62-137 | | | |
| Vinyl chloride | 0.200 | 0.0100 | 0.0200 | " | 0.200 | ND | 100 | 40-180 | | | |
| *Surrogate: 4-BFB* | *0.0203* | | | " | *0.0200* | | *102* | *75-130* | | | *D* |
| *Surrogate: Dibromofluoromethane* | *0.0187* | | | " | *0.0200* | | *93.5* | *75-130* | | | *D* |
| *Surrogate: Toluene-d8* | *0.0198* | | | " | *0.0200* | | *99.0* | *75-130* | | | *D* |
| *Surrogate: 1,2-DCA-d4* | *0.0188* | | | " | *0.0200* | | *94.0* | *79-123* | | | *D* |
| **Matrix Spike Dup (3110881-MSD1)** | | **Source: P3K0433-17** | | | Prepared: 12/01/03 | Analyzed: 12/02/03 | | | | | |
| Benzene | 0.204 | 0.0100 | 0.0200 | mg/l | 0.200 | ND | 102 | 66-142 | 1.48 | 21 | |
| Carbon Tetrachloride | 0.198 | 0.0100 | 0.0200 | " | 0.200 | ND | 99.0 | 50-150 | 2.49 | 40 | |
| Chlorobenzene | 0.204 | 0.0100 | 0.0200 | " | 0.200 | ND | 102 | 60-133 | 1.98 | 21 | |
| Chloroform | 0.199 | 0.0100 | 0.0200 | " | 0.200 | ND | 99.5 | 50-150 | 3.06 | 40 | |
| 1,4-Dichlorobenzene | 0.204 | 0.0100 | 0.0200 | " | 0.200 | ND | 102 | 50-150 | 1.98 | 40 | |
| 1,2-Dichloroethane | 0.185 | 0.0100 | 0.0200 | " | 0.200 | ND | 92.5 | 50-150 | 3.71 | 40 | |
| 1,1-Dichloroethene | 0.193 | 0.0100 | 0.0200 | " | 0.200 | ND | 96.5 | 59-172 | 0.517 | 22 | |
| Methyl Ethyl Ketone | 0.393 | 0.0250 | 0.500 | " | 0.400 | ND | 98.2 | 40-180 | 6.17 | 50 | J |
| Tetrachloroethene | 0.201 | 0.0100 | 0.0200 | " | 0.200 | ND | 100 | 50-150 | 2.01 | 50 | |
| Trichloroethene | 0.189 | 0.0100 | 0.0200 | " | 0.200 | ND | 94.5 | 62-137 | 1.06 | 24 | |
| Vinyl chloride | 0.204 | 0.0100 | 0.0200 | " | 0.200 | ND | 102 | 40-180 | 1.98 | 50 | |
| *Surrogate: 4-BFB* | *0.0205* | | | " | *0.0200* | | *102* | *75-130* | | | *D* |
| *Surrogate: Dibromofluoromethane* | *0.0193* | | | " | *0.0200* | | *96.5* | *75-130* | | | *D* |
| *Surrogate: Toluene-d8* | *0.0204* | | | " | *0.0200* | | *102* | *75-130* | | | *D* |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# TCLP Volatile Organic Compounds per EPA Method 1311/8260B - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110881 - EPA 5030B** | | | | | | | | | | | |
| **Matrix Spike Dup (3110881-MSD1)** | | **Source: P3K0433-17** | | Prepared: 12/01/03 Analyzed: 12/02/03 | | | | | | | |
| *Surrogate: 1,2-DCA-d4* | *0.0188* | | | *mg/l* | *0.0200* | | *94.0* | *79-123* | | | *D* |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# TCLP Semivolatiles per EPA Method 1311/8270 - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3120009 - EPA 1311/3510** | | | | | | | | | | | |
| **Blank (3120009-BLK1)** | | | | | Prepared & Analyzed: 12/01/03 | | | | | | |
| Acenaphthene | ND | 0.0500 | 0.0500 | mg/l | | | | | | | U |
| Acenaphthylene | ND | 0.0500 | 0.0500 | " | | | | | | | U |
| Anthracene | ND | 0.0500 | 0.0500 | " | | | | | | | U |
| Benzo (a) anthracene | ND | 0.0500 | 0.0500 | " | | | | | | | U |
| Benzo (b) fluoranthene | ND | 0.0500 | 0.0500 | " | | | | | | | U |
| Benzo (k) fluoranthene | ND | 0.0500 | 0.0500 | " | | | | | | | U |
| Benzo (ghi) perylene | ND | 0.0500 | 0.0500 | " | | | | | | | U |
| Benzo (a) pyrene | ND | 0.0500 | 0.0500 | " | | | | | | | U |
| Benzoic acid | ND | 0.200 | 0.200 | " | | | | | | | U |
| Benzyl alcohol | ND | 0.200 | 0.200 | " | | | | | | | U |
| Bis(2-chloroethoxy)methane | ND | 0.0500 | 0.0500 | " | | | | | | | U |
| Bis(2-chloroethyl)ether | ND | 0.0500 | 0.0500 | " | | | | | | | U |
| Bis(2-chloroisopropyl)ether | ND | 0.0500 | 0.0500 | " | | | | | | | U |
| Bis(2-ethylhexyl)phthalate | ND | 0.0500 | 0.0500 | " | | | | | | | U |
| 4-Bromophenyl phenyl ether | ND | 0.0500 | 0.0500 | " | | | | | | | U |
| 4-Chloro-3-methylphenol | ND | 0.0500 | 0.0500 | " | | | | | | | U |
| 2-Chloronaphthalene | ND | 0.0500 | 0.0500 | " | | | | | | | U |
| 4-Chlorophenyl phenyl ether | ND | 0.0500 | 0.0500 | " | | | | | | | U |
| 2-Chlorophenol | ND | 0.0500 | 0.0500 | " | | | | | | | U |
| Chrysene | ND | 0.0500 | 0.0500 | " | | | | | | | U |
| Dibenzo (a,h) anthracene | ND | 0.0500 | 0.0500 | " | | | | | | | U |
| Dibenzofuran | ND | 0.0500 | 0.0500 | " | | | | | | | U |
| Di-n-butyl phthalate | ND | 0.0500 | 0.0500 | " | | | | | | | U |
| 1,2-Dichlorobenzene | ND | 0.0500 | 0.0500 | " | | | | | | | U |
| 1,3-Dichlorobenzene | ND | 0.0500 | 0.0500 | " | | | | | | | U |
| 1,4-Dichlorobenzene | ND | 0.0500 | 0.0500 | " | | | | | | | U |
| 3,3'-Dichlorobenzidine | ND | 0.200 | 0.200 | " | | | | | | | U |
| 2,4-Dichlorophenol | ND | 0.0500 | 0.0500 | " | | | | | | | U |
| Diethyl phthalate | ND | 0.0500 | 0.0500 | " | | | | | | | U |
| 2,4-Dimethylphenol | ND | 0.100 | 0.100 | " | | | | | | | U |
| Dimethyl phthalate | ND | 0.0500 | 0.0500 | " | | | | | | | U |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# TCLP Semivolatiles per EPA Method 1311/8270 - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3120009 - EPA 1311/3510** | | | | | | | | | | | |
| **Blank (3120009-BLK1)** | | | | | Prepared & Analyzed: 12/01/03 | | | | | | |
| 4,6-Dinitro-2-methylphenol | ND | 0.200 | 0.200 | mg/l | | | | | | | U |
| 2,4-Dinitrophenol | ND | 0.200 | 0.200 | " | | | | | | | U |
| 2,4-Dinitrotoluene | ND | 0.0500 | 0.0500 | " | | | | | | | U |
| 2,6-Dinitrotoluene | ND | 0.0500 | 0.0500 | " | | | | | | | U |
| Di-n-octyl phthalate | ND | 0.0500 | 0.0500 | " | | | | | | | U |
| Fluoranthene | ND | 0.0500 | 0.0500 | " | | | | | | | U |
| Fluorene | ND | 0.0500 | 0.0500 | " | | | | | | | U |
| Hexachlorobenzene | ND | 0.0500 | 0.0500 | " | | | | | | | U |
| Hexachlorobutadiene | ND | 0.0500 | 0.0500 | " | | | | | | | U |
| Hexachlorocyclopentadiene | ND | 0.200 | 0.200 | " | | | | | | | U |
| Hexachloroethane | ND | 0.0500 | 0.0500 | " | | | | | | | U |
| Indeno (1,2,3-cd) pyrene | ND | 0.0500 | 0.0500 | " | | | | | | | U |
| Isophorone | ND | 0.0500 | 0.0500 | " | | | | | | | U |
| 2-Methylnaphthalene | ND | 0.0500 | 0.0500 | " | | | | | | | U |
| Naphthalene | ND | 0.0500 | 0.0500 | " | | | | | | | U |
| 2-Nitroaniline | ND | 0.200 | 0.200 | " | | | | | | | U |
| 3-Nitroaniline | ND | 0.200 | 0.200 | " | | | | | | | U |
| 4-Nitroaniline | ND | 0.200 | 0.200 | " | | | | | | | U |
| Nitrobenzene | ND | 0.0500 | 0.0500 | " | | | | | | | U |
| 2-Nitrophenol | ND | 0.0500 | 0.0500 | " | | | | | | | U |
| 4-Nitrophenol | ND | 0.200 | 0.200 | " | | | | | | | U |
| N-Nitrosodiphenylamine | ND | 0.0500 | 0.0500 | " | | | | | | | U |
| N-Nitrosodi-n-propylamine | ND | 0.0500 | 0.0500 | " | | | | | | | U |
| Pentachlorophenol | ND | 0.100 | 0.100 | " | | | | | | | U |
| Phenanthrene | ND | 0.0500 | 0.0500 | " | | | | | | | U |
| Phenol | ND | 0.0500 | 0.0500 | " | | | | | | | U |
| Pyrene | ND | 0.0500 | 0.0500 | " | | | | | | | U |
| Pyridine | ND | 0.200 | 0.200 | " | | | | | | | U |
| Total Cresols | ND | 0.100 | 0.100 | " | | | | | | | U |
| 1,2,4-Trichlorobenzene | ND | 0.0500 | 0.0500 | " | | | | | | | U |
| 2,4,5-Trichlorophenol | ND | 0.0500 | 0.0500 | " | | | | | | | U |
| 2,4,6-Trichlorophenol | ND | 0.0500 | 0.0500 | " | | | | | | | U |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# TCLP Semivolatiles per EPA Method 1311/8270 - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3120009 - EPA 1311/3510** | | | | | | | | | | | |
| **Blank (3120009-BLK1)** | | | | | Prepared & Analyzed: 12/01/03 | | | | | | |
| Butyl benzyl phthalate | ND | 0.0500 | 0.0500 | mg/l | | | | | | | U |
| 4-Chloroaniline | ND | 0.100 | 0.100 | " | | | | | | | U |
| *Surrogate: 2-Fluorobiphenyl* | *0.210* | | | " | *0.300* | | *70.0* | *20-150* | | | |
| *Surrogate: Nitrobenzene-d5* | *0.209* | | | " | *0.300* | | *69.7* | *20-150* | | | |
| *Surrogate: Phenol-d6* | *0.141* | | | " | *0.600* | | *23.5* | *10-150* | | | |
| *Surrogate: 2-Fluorophenol* | *0.270* | | | " | *0.600* | | *45.0* | *10-150* | | | |
| *Surrogate: p-Terphenyl-d14* | *0.269* | | | " | *0.300* | | *89.7* | *20-150* | | | |
| *Surrogate: 2,4,6-Tribromophenol* | *0.460* | | | " | *0.600* | | *76.7* | *10-150* | | | |
| **LCS (3120009-BS1)** | | | | | Prepared & Analyzed: 12/01/03 | | | | | | |
| 1,4-Dichlorobenzene | 0.212 | 0.0500 | 0.0500 | mg/l | 0.400 | | 53.0 | 20-150 | | | |
| 2,4-Dinitrotoluene | 0.277 | 0.0500 | 0.0500 | " | 0.400 | | 69.2 | 20-150 | | | |
| Hexachlorobenzene | 0.279 | 0.0500 | 0.0500 | " | 0.400 | | 69.8 | 20-150 | | | |
| Hexachlorobutadiene | 0.245 | 0.0500 | 0.0500 | " | 0.400 | | 61.2 | 20-150 | | | |
| Hexachloroethane | 0.257 | 0.0500 | 0.0500 | " | 0.400 | | 64.2 | 20-150 | | | |
| Nitrobenzene | 0.284 | 0.0500 | 0.0500 | " | 0.400 | | 71.0 | 20-150 | | | |
| Pentachlorophenol | 0.291 | 0.100 | 0.100 | " | 0.400 | | 72.8 | 10-150 | | | |
| Pyridine | 0.173 | 0.100 | 0.100 | " | 0.400 | | 43.2 | 0-150 | | | R-21 |
| Total Cresols | 0.720 | 0.100 | 0.100 | " | 1.20 | | 60.0 | 20-150 | | | |
| 2,4,5-Trichlorophenol | 0.330 | 0.0500 | 0.0500 | " | 0.400 | | 82.5 | 10-150 | | | |
| 2,4,6-Trichlorophenol | 0.311 | 0.0500 | 0.0500 | " | 0.400 | | 77.8 | 10-150 | | | |
| *Surrogate: 2-Fluorobiphenyl* | *0.223* | | | " | *0.300* | | *74.3* | *20-150* | | | |
| *Surrogate: Nitrobenzene-d5* | *0.219* | | | " | *0.300* | | *73.0* | *20-150* | | | |
| *Surrogate: Phenol-d6* | *0.146* | | | " | *0.600* | | *24.3* | *10-150* | | | |
| *Surrogate: 2-Fluorophenol* | *0.276* | | | " | *0.600* | | *46.0* | *10-150* | | | |
| *Surrogate: p-Terphenyl-d14* | *0.264* | | | " | *0.300* | | *88.0* | *20-150* | | | |
| *Surrogate: 2,4,6-Tribromophenol* | *0.519* | | | " | *0.600* | | *86.5* | *10-150* | | | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# TCLP Semivolatiles per EPA Method 1311/8270 - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3120009 - EPA 1311/3510** | | | | | | | | | | | |
| **Duplicate (3120009-DUP1)** | | **Source: P3K0433-17** | | Prepared & Analyzed: 12/01/03 | | | | | | | |
| Acenaphthene | ND | 0.0500 | 0.0500 | mg/l | | ND | | | | 50 | U |
| Acenaphthylene | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |
| Anthracene | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |
| Benzo (a) anthracene | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |
| Benzo (b) fluoranthene | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |
| Benzo (k) fluoranthene | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |
| Benzo (ghi) perylene | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |
| Benzo (a) pyrene | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |
| Benzoic acid | ND | 0.200 | 0.200 | " | | ND | | | | 50 | U |
| Benzyl alcohol | ND | 0.200 | 0.200 | " | | ND | | | | 50 | U |
| Bis(2-chloroethoxy)methane | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |
| Bis(2-chloroethyl)ether | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |
| Bis(2-chloroisopropyl)ether | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |
| Bis(2-ethylhexyl)phthalate | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |
| 4-Bromophenyl phenyl ether | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |
| 4-Chloro-3-methylphenol | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |
| 2-Chloronaphthalene | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |
| 4-Chlorophenyl phenyl ether | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |
| 2-Chlorophenol | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |
| Chrysene | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |
| Dibenzo (a,h) anthracene | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |
| Dibenzofuran | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |
| Di-n-butyl phthalate | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |
| 1,2-Dichlorobenzene | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |
| 1,3-Dichlorobenzene | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |
| 1,4-Dichlorobenzene | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |
| 3,3'-Dichlorobenzidine | ND | 0.200 | 0.200 | " | | ND | | | | 50 | U |
| 2,4-Dichlorophenol | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |
| Diethyl phthalate | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |
| 2,4-Dimethylphenol | ND | 0.100 | 0.100 | " | | ND | | | | 50 | U |
| Dimethyl phthalate | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# TCLP Semivolatiles per EPA Method 1311/8270 - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3120009 - EPA 1311/3510** | | | | | | | | | | | |
| **Duplicate (3120009-DUP1)** | | **Source: P3K0433-17** | | Prepared & Analyzed: 12/01/03 | | | | | | | |
| 4,6-Dinitro-2-methylphenol | ND | 0.200 | 0.200 | mg/l | | ND | | | | 50 | U |
| 2,4-Dinitrophenol | ND | 0.200 | 0.200 | " | | ND | | | | 50 | U |
| 2,4-Dinitrotoluene | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |
| 2,6-Dinitrotoluene | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |
| Di-n-octyl phthalate | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |
| Fluoranthene | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |
| Fluorene | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |
| Hexachlorobenzene | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |
| Hexachlorobutadiene | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |
| Hexachlorocyclopentadiene | ND | 0.200 | 0.200 | " | | ND | | | | 50 | U |
| Hexachloroethane | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |
| Indeno (1,2,3-cd) pyrene | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |
| Isophorone | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |
| 2-Methylnaphthalene | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |
| Naphthalene | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |
| 2-Nitroaniline | ND | 0.200 | 0.200 | " | | ND | | | | 50 | U |
| 3-Nitroaniline | ND | 0.200 | 0.200 | " | | ND | | | | 50 | U |
| 4-Nitroaniline | ND | 0.200 | 0.200 | " | | ND | | | | 50 | U |
| Nitrobenzene | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |
| 2-Nitrophenol | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |
| 4-Nitrophenol | ND | 0.200 | 0.200 | " | | ND | | | | 50 | U |
| N-Nitrosodiphenylamine | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |
| N-Nitrosodi-n-propylamine | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |
| Pentachlorophenol | ND | 0.100 | 0.100 | " | | ND | | | | 50 | U |
| Phenanthrene | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |
| Phenol | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |
| Pyrene | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |
| Pyridine | ND | 0.200 | 0.200 | " | | ND | | | | 50 | U |
| Total Cresols | ND | 0.100 | 0.100 | " | | ND | | | | 50 | U |
| 1,2,4-Trichlorobenzene | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |
| 2,4,5-Trichlorophenol | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |
| 2,4,6-Trichlorophenol | ND | 0.0500 | 0.0500 | " | | ND | | | | 50 | U |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# TCLP Semivolatiles per EPA Method 1311/8270 - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3120009 - EPA 1311/3510** | | | | | | | | | | | |
| **Duplicate (3120009-DUP1)** | | **Source: P3K0433-17** | | Prepared & Analyzed: 12/01/03 | | | | | | | |
| Butyl benzyl phthalate | ND | 0.0500 | 0.0500 | mg/l | | ND | | | | 0 | U |
| 4-Chloroaniline | ND | 0.100 | 0.100 | " | | ND | | | | 0 | U |
| *Surrogate: 2-Fluorobiphenyl* | *0.225* | | | " | *0.300* | | *75.0* | *20-150* | | | |
| *Surrogate: Nitrobenzene-d5* | *0.231* | | | " | *0.300* | | *77.0* | *20-150* | | | |
| *Surrogate: Phenol-d6* | *0.143* | | | " | *0.600* | | *23.8* | *10-150* | | | |
| *Surrogate: 2-Fluorophenol* | *0.282* | | | " | *0.600* | | *47.0* | *10-150* | | | |
| *Surrogate: p-Terphenyl-d14* | *0.272* | | | " | *0.300* | | *90.7* | *20-150* | | | |
| *Surrogate: 2,4,6-Tribromophenol* | *0.509* | | | " | *0.600* | | *84.8* | *10-150* | | | |
| **Matrix Spike (3120009-MS1)** | | **Source: P3K0433-17** | | Prepared & Analyzed: 12/01/03 | | | | | | | |
| 1,4-Dichlorobenzene | 0.218 | 0.0500 | 0.0500 | mg/l | 0.400 | ND | 54.5 | 20-150 | | | |
| 2,4-Dinitrotoluene | 0.274 | 0.0500 | 0.0500 | " | 0.400 | ND | 68.5 | 20-150 | | | |
| Hexachlorobenzene | 0.280 | 0.0500 | 0.0500 | " | 0.400 | ND | 70.0 | 20-150 | | | |
| Hexachlorobutadiene | 0.281 | 0.0500 | 0.0500 | " | 0.400 | ND | 70.2 | 20-150 | | | |
| Hexachloroethane | 0.267 | 0.0500 | 0.0500 | " | 0.400 | ND | 66.8 | 20-150 | | | |
| Nitrobenzene | 0.282 | 0.0500 | 0.0500 | " | 0.400 | ND | 70.5 | 20-150 | | | |
| Pentachlorophenol | 0.289 | 0.100 | 0.100 | " | 0.400 | ND | 72.2 | 10-150 | | | |
| Pyridine | 0.171 | 0.100 | 0.100 | " | 0.400 | ND | 42.8 | 0-150 | | | R-21 |
| Total Cresols | 0.676 | 0.100 | 0.100 | " | 1.20 | ND | 56.3 | 20-150 | | | |
| 2,4,5-Trichlorophenol | 0.322 | 0.0500 | 0.0500 | " | 0.400 | ND | 80.5 | 10-150 | | | |
| 2,4,6-Trichlorophenol | 0.311 | 0.0500 | 0.0500 | " | 0.400 | ND | 77.8 | 10-150 | | | |
| *Surrogate: 2-Fluorobiphenyl* | *0.220* | | | " | *0.300* | | *73.3* | *20-150* | | | |
| *Surrogate: Nitrobenzene-d5* | *0.217* | | | " | *0.300* | | *72.3* | *20-150* | | | |
| *Surrogate: Phenol-d6* | *0.140* | | | " | *0.600* | | *23.3* | *10-150* | | | |
| *Surrogate: 2-Fluorophenol* | *0.253* | | | " | *0.600* | | *42.2* | *10-150* | | | |
| *Surrogate: p-Terphenyl-d14* | *0.260* | | | " | *0.300* | | *86.7* | *20-150* | | | |
| *Surrogate: 2,4,6-Tribromophenol* | *0.533* | | | " | *0.600* | | *88.8* | *10-150* | | | |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Percent Dry Weight (Solids) per Standard Methods - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110677 - Dry Weight** | | | | | | | | | | | |
| **Duplicate (3110677-DUP1)** | | **Source: P3K0255-02** | | | Prepared: 11/20/03 | Analyzed: 11/21/03 | | | | | |
| % Solids | 74.0 | | 1.00 | % by Weight | | 74.0 | | | 0.00 | 20 | |
| **Duplicate (3110677-DUP2)** | | **Source: P3K0469-05** | | | Prepared: 11/20/03 | Analyzed: 11/21/03 | | | | | |
| % Solids | 76.2 | | 1.00 | % by Weight | | 76.6 | | | 0.524 | 20 | |
| **Duplicate (3110677-DUP3)** | | **Source: P3K0472-02** | | | Prepared: 11/20/03 | Analyzed: 11/21/03 | | | | | |
| % Solids | 77.6 | | 1.00 | % by Weight | | 77.6 | | | 0.00 | 20 | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

## North Creek Analytical - Bothell

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3K21004 - General Preparation** | | | | | | | | | | | |
| **Blank (3K21004-BLK1)** | | | | | Prepared & Analyzed: 11/20/03 | | | | | | |
| Total Organic Carbon | ND | | 1000 | mg/kg | | | | | | | |
| **LCS (3K21004-BS1)** | | | | | Prepared & Analyzed: 11/20/03 | | | | | | |
| Total Organic Carbon | 29800 | | 1000 | mg/kg | 30000 | | 99.3 | 72-130 | | | |
| **LCS Dup (3K21004-BSD1)** | | | | | Prepared & Analyzed: 11/20/03 | | | | | | |
| Total Organic Carbon | 27000 | | 1000 | mg/kg | 30000 | | 90.0 | 72-130 | 9.86 | 30 | |
| **Duplicate (3K21004-DUP1)** | | **Source: B3K0436-01** | | | Prepared: 11/18/03 Analyzed: 11/20/03 | | | | | | |
| Total Organic Carbon | 6000 | | 1000 | mg/kg dry | | 10600 | | | 55.4 | 35 | Q-07 |
| **Duplicate (3K21004-DUP2)** | | **Source: P3K0433-06** | | | Prepared: 11/19/03 Analyzed: 11/20/03 | | | | | | |
| Total Organic Carbon | ND | | 1000 | mg/kg dry | | 1770 | | | 126 | 35 | |
| **Duplicate (3K21004-DUP3)** | | **Source: B3K0463-01** | | | Prepared: 11/19/03 Analyzed: 11/20/03 | | | | | | |
| Total Organic Carbon | 21000 | | 1000 | mg/kg dry | | 22500 | | | 6.90 | 35 | |
| **Matrix Spike (3K21004-MS1)** | | **Source: B3K0436-01** | | | Prepared: 11/18/03 Analyzed: 11/20/03 | | | | | | |
| Total Organic Carbon | 40000 | | 1000 | mg/kg dry | 27800 | 10600 | 106 | 40-160 | | | |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

# Physical Parameters by APHA/ASTM/EPA Methods - Quality Control

## North Creek Analytical - Bothell

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3L01062 - Dry Weight** | | | | | | | | | | | |
| **Blank (3L01062-BLK1)** | | | | | Prepared: 12/01/03 Analyzed: 12/02/03 | | | | | | |
| Dry Weight | 100 | | 1.00 | % | | | | | | | |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 13:05 |

## Notes and Definitions

| | |
|---|---|
| A-01 | This surrogate is outside control limits. Since the sample is ND for analytes associated with this surrogate compound, data quality is not affected. |
| D | Data reported from a preparation or analytical dilution. |
| D-15 | Detected hydrocarbons have non-petroleum peaks or elution pattern that suggests the presence of biogenic interference. |
| J | Estimated value. |
| M-04 | Sample Filtered through 0.45 micron filter in Laboratory prior to analysis. |
| P-02 | Results reported on 'As Received' basis. |
| Q-02 | The spike recovery for this QC sample is outside of established control limits due to sample matrix interference. |
| Q-06 | Analyses are not controlled on RPD values from sample concentrations less than 5 times the reporting limit. |
| Q-07 | The RPD value for this QC sample is above the established control limit. Review of associated QC indicates the high RPD does not represent an out-of-control condition for the batch. |
| Q-14 | The Spike Recovery and/or RPD is outside of control limits due to a non-homogeneous sample matrix. |
| R-03 | The reporting limit for this analyte was raised due to matrix interference. |
| R-05 | Reporting limits raised due to dilution necessary for analysis. Sample contains high levels of reported analyte, non-target analyte, and/or matrix interference. |
| R-21 | Reporting limit adjusted to report quantitation below the MRL. |
| S-08 | Surrogate recovery is above control limits. Since no analytes were detected in the sample, the quality of the data has not been affected. |
| U | Analyte included in the analysis but not detected. |
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis. MRLs are adjusted if %Solids are less than 50%. |
| RPD | Relative Percent Difference |

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# North Creek Analytical
# Case Narrative

**Client: Forensic Environmental Services**
**Project Name: GS Roofing-Portland**
**Consultant Project #: None**
**Laboratory Work Order: P3K0433**

## Summary

Four water and fourteen soil samples were received by North Creek Analytical, Portland and logged in on 11/14/03. The samples were received at 6.2 degrees Centigrade.

## Sample Analysis

There were no anomalies encountered during the preparation and analysis of the samples. Qualifiers have been added to sample results as footnotes and are detailed in the *Notes and Definitions* section of the *Analytical Report*, page 117.

## QC Analysis

If surrogate and quality control parameters are outside established control limits it is noted on the appropriate pages of the *Analytical Report*. There were no anomalies encountered during the preparation and analysis of the QC samples that impacts data quality or integrity.

Brian L Cone 2-25-04

, Project Manager Date

nca

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# CHAIN OF CUSTODY REPORT

**Work Order #:** P3K0433

CLIENT:

REPORT TO: Forensics Environmental
ADDRESS: 113 John Robert Thomas Dr
Exton PA 19341
PHONE: (610) 594-3940 FAX: (610) 594 3943

INVOICE TO:

P.O. NUMBER:

PROJECT NAME: GS Roofing

PROJECT NUMBER:

SAMPLED BY: Brian Richardson

**TURNAROUND REQUEST** in Business Days *

Organic & Inorganic Analyses: 10 (STD.) 7 5 4 3 2 1 <1

Petroleum Hydrocarbon Analyses: 5 (STD.) 4 3 2 1 <1

OTHER Specify:

* Turnaround Requests less than standard may incur Rush Charges.

PRESERVATIVE: NONE, NONE, MeOH, NaHSO4, HCl

REQUESTED ANALYSES

| | CLIENT SAMPLE IDENTIFICATION | SAMPLING DATE/TIME | TPH Dx | TPH Gx | PP metals SVOCs PCBs | VOCs by 8260B | VOCs by 8260B | TCL | VOCs by 8260B | MATRIX (W, S, O) | # OF CONT. | LOCATION / COMMENTS | NCA WO ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | SB-1-10 | 11-13-03 / 1705 | | | X | | | | | S | 1 | | |
| 2 | SB-1-13 | 11-13-03 / 1712 | X | X | | | | | | S | 1 | | |
| 3 | TB-3 | 11-13-03 / 1700 | | | | | | | X | W | 1 | | |
| 4 | SB-1-11 | 11-13-03 / 1750 | | | | X | X | | | S | 3 | | |
| 5 | SB-1-20-21.5 | 11-14-03 / 0838 | | | | X | X | | | S | 3 | | |
| 6 | SB-1-18.5 | 11-14-03 / 0824 | | | | | | X | | S | 1 | | |
| 7 | SB-1-18.75 | 11-14-03 / 0825 | X | X | | | | | | S | 1 | | |
| 8 | SB-1-20 | 11-14-03 / 0830 | | | X | | | | | S | 1 | | |
| 9 | SB-5-13.5 | 11-14-03 / 1045 | X | X | X | | | | | S | 2 | | |
| 10 | Air Blank | 11-14-03 / 1141 | | | | X | | | | O | 1 | meOH exposed to Atmosphere | |

RELEASED BY: [signature] DATE: 11-14-03
PRINT NAME: Brian Richardson FIRM: Forensics Env. TIME: 1625

RECEIVED BY: [signature] DATE: 11/14/03
PRINT NAME: Bob F FIRM: NCA TIME: 16:25

RELEASED BY: [signature] DATE:
PRINT NAME: FIRM: TIME:

RECEIVED BY: [signature] DATE: 11/14/03
PRINT NAME: Erica [illegible] FIRM: NCA TIME: 1700

ADDITIONAL REMARKS:
COC REV 1/03 Note individual Jars marked for designated Analyses (Some)
2) Preserved VOA may show extraction time w/ Avg sample time on chain

TEMP: 1.0 °C

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# CHAIN OF CUSTODY REPORT

**Work Order #:** P3K0433

CLIENT:

REPORT TO: Forensics Environmental
ADDRESS: 113 John Robert Thomas Dr
Exton PA 19341
PHONE: (610) 594-3940 FAX (610) 594-3943

INVOICE TO:

P.O. NUMBER:

PROJECT NAME: GS Roofing
PROJECT NUMBER:
SAMPLED BY: Brian Richardson

**TURNAROUND REQUEST** in Business Days *

Organic & Inorganic Analyses: ☒ 10 (STD.) | 7 | 5 | 4 | 3 | 2 | 1 | <1

Petroleum Hydrocarbon Analyses: 5 (STD.) | 4 | 3 | 2 | 1 | <1

OTHER Specify:

* Turnaround Requests less than standard may incur Rush Charges.

PRESERVATIVE: NONE ↔ NONE | MeOH | NaHSO4 | HCl | HCl

REQUESTED ANALYSES

| | CLIENT SAMPLE IDENTIFICATION | SAMPLING DATE/TIME | TPH Dx | TPH Gx | SVOCs PCBs PP metals | TOC | VOCs by 8260B | VOCs by 8260B | TCLP | BTEX by 8260B | SVOC's | VOCs by 8260B | | | | MATRIX (W, S, O) | # OF CONT. | LOCATION / COMMENTS | NCA WO ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | SB-5-13-14.5 | 11-14-03/1057 | | | | | X | X | | | | | | | | S | 3 | SVOC's by 8270 PP metals by 9060 | |
| 2 | SB-4-17.5 | 11-14-03/1408 | | | X | | | | | | | | | | | S | 1 | PCB's by 8082 | |
| 3 | SB-4-18 | 11-14-03/1410 | X | X | | X | | | | | | | | | | S | 2 | | |
| 4 | SB-4-16.5-18 | 11-14-03/1420 | | | | | X | X | | | | | | | | S | 3 | | |
| 5 | MW-11-PW | 11-14-03/1445 | | | | | | | | X | X | X | | | | W | 5 | | |
| 6 | MW-12-PW | 11-14-03/1553 | | | | | | | | X | X | X | | | | W | 5 | | |
| 7 | Comp-1 | 11-14-03/1555 | X | X | X | | | | X | | | | | | | S | 2 | Homogenize Samples | |
| 8 | Comp-2 | 11-14-03/1605 | X | X | X | | | | X | | | | | | | S | 2 | Homogenize Samples | |
| 9 | EB-1 | 11-14-03/1600 | | | | | | | | X | X | X | | | | W | 2 | *Limited 8260B Sample | |
| 10 | | | | | | | | | | | | | | | | | | | |

RELEASED BY: [signature] DATE: 11/14/03
PRINT NAME: Brian Richardson FIRM: Forensics Env TIME: 16:25

RECEIVED BY: [signature] DATE: 11/14/03
PRINT NAME: Bob F FIRM: NCA TIME: 16:25

RELEASED BY: [signature] DATE:
PRINT NAME: FIRM: TIME:

RECEIVED BY: [signature] DATE: 11/14/03
PRINT NAME: Erica Oakan FIRM: NCA TIME: 1700

ADDITIONAL REMARKS: Homogenize Comp-2 & 1 prior to Extract

TEMP: 10.2C

PAGE 2 OF 2

COC REV 1/03

# NORTH CREEK ANALYTICAL COOLER RECEIPT FORM

(Army Corp. compliant)

Client: Grainfield

1. **Please sign for receipt and opening of** 1 **cooler or** ____ **other** ____

   By (print) Erica Dahan (sign) Erica Dahan

2. Date samples received 11/14/03 Date opened: Same X or ___/___/___

3. Delivered by: X NCA Bob courier ___ FedEx ___ UPS ___ Courier ___ Client ___ Other ____

   Airbill # if applicable ____ (Put copy of shipping papers in file)

4. There were 0 custody seals present, signed by ____ date ___/___/___.

5. Were the custody seals unbroken and intact at the date and time of arrival? ___ Yes ___ No

6. Was ice used? X yes ___ no Type of ice: ___ blue ice ___ gel ice X real ice

   Temperature (degrees C) 6.2°C Raytek thermometer ____ Digi-Therm (probe temperature blank)

7. Are custody papers sealed in a plastic bag and taped inside to lid? X Yes ___ No

8. Were custody papers filled out properly (ink, signed, etc.)? X Yes ___ No

   If "no" please specify: ____

9. Was project identifiable from custody papers? X Yes ___ No

   Name of project GS Roofing (if applicable)

10. **Initial and date for unpacking:** EJD **(initials)** **date** 11/17/03

11. Packing material: ___ bubble wrap/bag ___ styrofoam ___ cardboard None other

12. Were samples in bags? X Yes ___ No

13. Did all containers indicated on the COC arrive? X Yes ___ No

    If "no" please indicate which containers were absent ____

14. Were all containers unbroken and labels in good condition? X Yes ___ No

    If "no" please indicate which containers ____

15. Were all bottle labels complete (ID, date, time, signature, etc.)? X Yes ___ No

    Do the IDs, times, etc. agree with the COC? X Yes ___ No

    If "no" please indicate which containers ____

16. Are containers properly preserved for indicated analysis? X Yes ___ No

17. Is there adequate volume for the test(s) requested? X Yes ___ No

18. If voa vials were submitted, are they free of bubbles? X N/A ___ Yes ___ No

19. **Log-in phase: Date samples were logged in:** 11/17/03 **Elm Project #** P350433

20. Logged in by (print) Kim Davis (sign) Kim Davis

21. Was the project manager notified of status? (Use back of form as a record) ___ Yes X No

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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

## ANALYTICAL REPORT FOR SAMPLES

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| SB-2-15 | P3K0404-01 | Soil | 11/13/03 11:05 | 11/13/03 17:05 |
| SB-13-17 | P3K0404-02 | Soil | 11/13/03 11:15 | 11/13/03 17:05 |
| SB-2-17-18.5 | P3K0404-03 | Soil | 11/13/03 12:10 | 11/13/03 17:05 |
| SB-13-17-18.5 | P3K0404-04 | Soil | 11/13/03 12:08 | 11/13/03 17:05 |
| SB-3-17 | P3K0404-05 | Soil | 11/13/03 14:48 | 11/13/03 17:05 |
| TB-2 | P3K0404-06 | Water | 11/13/03 15:15 | 11/13/03 17:05 |

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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Gasoline Hydrocarbons per NW TPH-Gx Method
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-2-15 (P3K0404-01RE2) Soil** | **Sampled: 11/13/03 11:05** | | **Received: 11/13/03 17:05** | | | | | | | |
| Gasoline Range Hydrocarbons | ND | | 4.00 | mg/kg dry | 1 | 3110680 | 11/20/03 | 11/21/03 | NW TPH-Gx | U |
| *Surrogate: a,a,a-TFT* | | *80.5 %* | *50-150* | | | " | " | " | " | |
| **SB-13-17 (P3K0404-02RE2) Soil** | **Sampled: 11/13/03 11:15** | | **Received: 11/13/03 17:05** | | | | | | | |
| **Gasoline Range Hydrocarbons** | **4.44** | | 4.00 | mg/kg dry | 1 | 3110680 | 11/20/03 | 11/21/03 | NW TPH-Gx | |
| *Surrogate: a,a,a-TFT* | | *86.3 %* | *50-150* | | | " | " | " | " | |
| **SB-3-17 (P3K0404-05RE2) Soil** | **Sampled: 11/13/03 14:48** | | **Received: 11/13/03 17:05** | | | | | | | |
| Gasoline Range Hydrocarbons | ND | | 4.00 | mg/kg dry | 1 | 3110680 | 11/20/03 | 11/21/03 | NW TPH-Gx | U |
| *Surrogate: a,a,a-TFT* | | *96.4 %* | *50-150* | | | " | " | " | " | |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Diesel and Heavy Range Hydrocarbons per NWTPH-Dx Method
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-2-15 (P3K0404-01) Soil Sampled: 11/13/03 11:05 Received: 11/13/03 17:05** | | | | | | | | | | |
| **Diesel Range Organics** | **6780** | | 1250 | mg/kg dry | 50 | 3110480 | 11/17/03 | 11/17/03 | NWTPH-Dx | D-17 |
| **Heavy Oil Range Hydrocarbons** | **21500** | | 2500 | " | " | " | " | " | " | |
| *Surrogate: 1-Chlorooctadecane* | | *6.51 %* | *50-150* | | | " | " | " | " | *S-01* |
| **SB-13-17 (P3K0404-02) Soil Sampled: 11/13/03 11:15 Received: 11/13/03 17:05** | | | | | | | | | | |
| **Diesel Range Organics** | **3980** | | 500 | mg/kg dry | 20 | 3110480 | 11/17/03 | 11/17/03 | NWTPH-Dx | D-17 |
| **Heavy Oil Range Hydrocarbons** | **10500** | | 1000 | " | " | " | " | " | " | |
| *Surrogate: 1-Chlorooctadecane* | | *126 %* | *50-150* | | | " | " | " | " | |
| **SB-3-17 (P3K0404-05) Soil Sampled: 11/13/03 14:48 Received: 11/13/03 17:05** | | | | | | | | | | |
| Diesel Range Organics | ND | | 25.0 | mg/kg dry | 1 | 3110480 | 11/17/03 | 11/17/03 | NWTPH-Dx | U |
| **Heavy Oil Range Hydrocarbons** | **51.5** | | 50.0 | " | " | " | " | " | " | |
| *Surrogate: 1-Chlorooctadecane* | | *100 %* | *50-150* | | | " | " | " | " | |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Total Metals per EPA 6000/7000 Series Methods
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-2-15 (P3K0404-01) Soil Sampled: 11/13/03 11:05 Received: 11/13/03 17:05** | | | | | | | | | | |
| **Silver** | **0.130** | 0.0369 | 0.500 | mg/kg dry | 1 | 3110783 | 11/24/03 | 11/26/03 | EPA 6020 | J |
| **Arsenic** | **2.02** | 0.427 | 0.500 | " | " | " | " | " | " | |
| **Beryllium** | **0.349** | 0.210 | 0.500 | " | " | " | " | " | " | J |
| Cadmium | ND | 1.26 | 3.15 | " | 6.29 | " | " | 11/26/03 | " | D, U |
| **Chromium** | **18.6** | 0.498 | 0.500 | " | 1 | " | " | 11/26/03 | " | |
| **Copper** | **17.4** | 0.955 | 2.00 | " | " | " | " | " | " | |
| **Mercury** | **0.0202** | 0.00275 | 0.0556 | " | " | 3110642 | 11/20/03 | 11/20/03 | EPA 7471A | J, D |
| **Nickel** | **20.7** | 0.213 | 1.00 | " | " | 3110783 | 11/24/03 | 11/26/03 | EPA 6020 | |
| **Lead** | **9.63** | 0.106 | 0.500 | " | " | " | " | " | " | |
| Antimony | ND | 0.0659 | 0.500 | " | " | " | " | " | " | U |
| Selenium | ND | 0.409 | 0.500 | " | " | " | " | " | " | U |
| Thallium | ND | 0.246 | 0.500 | " | " | " | " | " | " | U |
| **Zinc** | **50.2** | 0.630 | 2.00 | " | " | " | " | " | " | |
| **SB-13-17 (P3K0404-02) Soil Sampled: 11/13/03 11:15 Received: 11/13/03 17:05** | | | | | | | | | | |
| **Silver** | **0.125** | 0.0275 | 0.373 | mg/kg dry | 1 | 3110783 | 11/24/03 | 11/26/03 | EPA 6020 | J, D |
| **Arsenic** | **3.05** | 0.319 | 0.373 | " | " | " | " | " | " | D |
| **Beryllium** | **0.487** | 0.157 | 0.373 | " | " | " | " | " | " | D |
| Cadmium | ND | 0.940 | 2.35 | " | 6.3 | " | " | 11/26/03 | " | D, U |
| **Chromium** | **20.9** | 0.372 | 0.373 | " | 1 | " | " | 11/26/03 | " | D |
| **Copper** | **22.2** | 0.713 | 1.49 | " | " | " | " | " | " | D |
| **Mercury** | **0.0772** | 0.00203 | 0.0410 | " | " | 3110642 | 11/20/03 | 11/20/03 | EPA 7471A | D |
| **Nickel** | **23.9** | 0.159 | 0.746 | " | " | 3110783 | 11/24/03 | 11/26/03 | EPA 6020 | D |
| **Lead** | **21.7** | 0.0791 | 0.373 | " | " | " | " | " | " | D |
| Antimony | ND | 0.0492 | 0.373 | " | " | " | " | " | " | D, U |
| Selenium | ND | 0.305 | 0.373 | " | " | " | " | " | " | D, U |
| Thallium | ND | 0.184 | 0.373 | " | " | " | " | " | " | D, U |
| **Zinc** | **58.5** | 0.470 | 1.49 | " | " | " | " | " | " | D |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Total Metals per EPA 6000/7000 Series Methods
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-3-17 (P3K0404-05) Soil Sampled: 11/13/03 14:48 Received: 11/13/03 17:05** | | | | | | | | | | |
| **Silver** | **0.204** | 0.0335 | 0.455 | mg/kg dry | 1 | 3110783 | 11/24/03 | 11/26/03 | EPA 6020 | J, D |
| **Arsenic** | **6.70** | 0.388 | 0.455 | " | " | " | " | " | " | D |
| **Beryllium** | **0.659** | 0.191 | 0.455 | " | " | " | " | " | " | D |
| Cadmium | ND | 1.12 | 2.81 | " | 6.17 | " | " | 11/26/03 | " | D, U |
| **Chromium** | **20.0** | 0.453 | 0.455 | " | 1 | " | " | 11/26/03 | " | D |
| **Copper** | **29.8** | 0.868 | 1.82 | " | " | " | " | " | " | D |
| **Mercury** | **0.0803** | 0.00302 | 0.0610 | " | " | 3110642 | 11/20/03 | 11/20/03 | EPA 7471A | D |
| **Nickel** | **22.6** | 0.194 | 0.909 | " | " | 3110783 | 11/24/03 | 11/26/03 | EPA 6020 | D |
| **Lead** | **15.2** | 0.0964 | 0.455 | " | " | " | " | " | " | D |
| **Antimony** | **0.0779** | 0.0599 | 0.455 | " | " | " | " | " | " | J, D |
| Selenium | ND | 0.372 | 0.455 | " | " | " | " | " | " | D, U |
| Thallium | ND | 0.224 | 0.455 | " | " | " | " | " | " | D, U |
| **Zinc** | **76.4** | 0.573 | 1.82 | " | " | " | " | " | " | D |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Polychlorinated Biphenyls per EPA Method 8082
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-2-15 (P3K0404-01) Soil Sampled: 11/13/03 11:05 Received: 11/13/03 17:05** | | | | | | | | | | |
| Aroclor 1016 | ND | 11.1 | 67.0 | ug/kg dry | 1 | 3110698 | 11/21/03 | 11/25/03 | EPA 8082 | U |
| Aroclor 1221 | ND | 12.7 | 134 | " | " | " | " | " | " | U |
| Aroclor 1232 | ND | 11.1 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1242 | ND | 11.1 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1248 | ND | 3.87 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1254 | ND | 6.10 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1260 | ND | 11.5 | 67.0 | " | " | " | " | " | " | U |
| *Surrogate: 2,4,5,6-Tetrachloro-m-xylene* | | *68.9 %* | *36-140* | | | " | " | " | " | |
| *Surrogate: Decachlorobiphenyl* | | *14.8 %* | *16-149* | | | " | " | " | " | *S-09* |
| **SB-13-17 (P3K0404-02) Soil Sampled: 11/13/03 11:15 Received: 11/13/03 17:05** | | | | | | | | | | |
| Aroclor 1016 | ND | 11.1 | 67.0 | ug/kg dry | 1 | 3110698 | 11/21/03 | 11/24/03 | EPA 8082 | U |
| Aroclor 1221 | ND | 12.7 | 134 | " | " | " | " | " | " | U |
| Aroclor 1232 | ND | 11.1 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1242 | ND | 11.1 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1248 | ND | 3.87 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1254 | ND | 6.10 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1260 | ND | 11.5 | 67.0 | " | " | " | " | " | " | U |
| *Surrogate: 2,4,5,6-Tetrachloro-m-xylene* | | *84.4 %* | *36-140* | | | " | " | " | " | |
| *Surrogate: Decachlorobiphenyl* | | *31.5 %* | *16-149* | | | " | " | " | " | |
| **SB-3-17 (P3K0404-05) Soil Sampled: 11/13/03 14:48 Received: 11/13/03 17:05** | | | | | | | | | | |
| Aroclor 1016 | ND | 11.1 | 67.0 | ug/kg dry | 1 | 3110698 | 11/21/03 | 11/24/03 | EPA 8082 | U |
| Aroclor 1221 | ND | 12.7 | 134 | " | " | " | " | " | " | U |
| Aroclor 1232 | ND | 11.1 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1242 | ND | 11.1 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1248 | ND | 3.87 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1254 | ND | 6.10 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1260 | ND | 11.5 | 67.0 | " | " | " | " | " | " | U |
| *Surrogate: 2,4,5,6-Tetrachloro-m-xylene* | | *100 %* | *36-140* | | | " | " | " | " | |
| *Surrogate: Decachlorobiphenyl* | | *73.6 %* | *16-149* | | | " | " | " | " | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Volatile Organic Compounds per EPA Method 8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-2-17-18.5 (P3K0404-03) Soil Sampled: 11/13/03 12:10 Received: 11/13/03 17:05** | | | | | | | | | | **P-02** |
| Acetone | ND | 144 | 2500 | ug/kg wet | 1 | 3110486 | 11/17/03 | 11/18/03 | EPA 8260B | U |
| Benzene | ND | 4.44 | 100 | " | " | " | " | " | " | U |
| Bromobenzene | ND | 12.2 | 100 | " | " | " | " | " | " | U |
| Bromochloromethane | ND | 16.4 | 100 | " | " | " | " | " | " | U |
| Bromodichloromethane | ND | 10.2 | 100 | " | " | " | " | " | " | U |
| Bromoform | ND | 15.8 | 100 | " | " | " | " | " | " | U |
| Bromomethane | ND | 5.09 | 500 | " | " | " | " | " | " | U |
| 2-Butanone | ND | 148 | 1000 | " | " | " | " | " | " | U |
| n-Butylbenzene | ND | 11.3 | 500 | " | " | " | " | " | " | U |
| sec-Butylbenzene | ND | 7.45 | 100 | " | " | " | " | " | " | U |
| tert-Butylbenzene | ND | 15.2 | 100 | " | " | " | " | " | " | U |
| Carbon disulfide | ND | 7.19 | 1000 | " | " | " | " | " | " | U |
| Carbon tetrachloride | ND | 7.64 | 100 | " | " | " | " | " | " | U |
| Chlorobenzene | ND | 8.09 | 100 | " | " | " | " | " | " | U |
| Chloroethane | ND | 10.7 | 100 | " | " | " | " | " | " | U |
| Chloroform | ND | 7.26 | 100 | " | " | " | " | " | " | U |
| Chloromethane | ND | 6.72 | 500 | " | " | " | " | " | " | U |
| 2-Chlorotoluene | ND | 11.0 | 100 | " | " | " | " | " | " | U |
| 4-Chlorotoluene | ND | 10.4 | 100 | " | " | " | " | " | " | U |
| 1,2-Dibromo-3-chloropropane | ND | 26.0 | 500 | " | " | " | " | " | " | U |
| Dibromochloromethane | ND | 11.2 | 100 | " | " | " | " | " | " | U |
| 1,2-Dibromoethane | ND | 11.6 | 100 | " | " | " | " | " | " | U |
| Dibromomethane | ND | 14.7 | 100 | " | " | " | " | " | " | U |
| 1,2-Dichlorobenzene | ND | 14.4 | 100 | " | " | " | " | " | " | U |
| 1,3-Dichlorobenzene | ND | 5.86 | 100 | " | " | " | " | " | " | U |
| 1,4-Dichlorobenzene | ND | 14.9 | 100 | " | " | " | " | " | " | U |
| Dichlorodifluoromethane | ND | 11.8 | 500 | " | " | " | " | " | " | U |
| 1,1-Dichloroethane | ND | 11.9 | 100 | " | " | " | " | " | " | U |
| 1,2-Dichloroethane | ND | 11.2 | 100 | " | " | " | " | " | " | U |
| 1,1-Dichloroethene | ND | 11.9 | 100 | " | " | " | " | " | " | U |
| cis-1,2-Dichloroethene | ND | 12.6 | 100 | " | " | " | " | " | " | U |
| trans-1,2-Dichloroethene | ND | 8.97 | 100 | " | " | " | " | " | " | U |
| 1,2-Dichloropropane | ND | 7.45 | 100 | " | " | " | " | " | " | U |
| 1,3-Dichloropropane | ND | 17.4 | 100 | " | " | " | " | " | " | U |
| 2,2-Dichloropropane | ND | 8.09 | 100 | " | " | " | " | " | " | U |
| 1,1-Dichloropropene | ND | 10.9 | 100 | " | " | " | " | " | " | U |
| cis-1,3-Dichloropropene | ND | 4.95 | 100 | " | " | " | " | " | " | U |
| trans-1,3-Dichloropropene | ND | 8.29 | 100 | " | " | " | " | " | " | U |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Volatile Organic Compounds per EPA Method 8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-2-17-18.5 (P3K0404-03) Soil Sampled: 11/13/03 12:10 Received: 11/13/03 17:05** | | | | | | | | | | **P-02** |
| Ethylbenzene | ND | 9.40 | 100 | ug/kg wet | 1 | 3110486 | 11/17/03 | 11/18/03 | EPA 8260B | U |
| Hexachlorobutadiene | ND | 69.4 | 200 | " | " | " | " | " | " | U |
| 2-Hexanone | ND | 57.2 | 1000 | " | " | " | " | " | " | U |
| Isopropylbenzene | ND | 9.55 | 200 | " | " | " | " | " | " | U |
| p-Isopropyltoluene | ND | 9.68 | 200 | " | " | " | " | " | " | U |
| 4-Methyl-2-pentanone | ND | 117 | 500 | " | " | " | " | " | " | U |
| Methyl tert-butyl ether | ND | 11.9 | 100 | " | " | " | " | " | " | U |
| Methylene chloride | ND | 250 | 500 | " | " | " | " | " | " | U |
| Naphthalene | ND | 14.1 | 200 | " | " | " | " | " | " | U |
| n-Propylbenzene | ND | 9.89 | 100 | " | " | " | " | " | " | U |
| Styrene | ND | 8.89 | 100 | " | " | " | " | " | " | U |
| 1,1,1,2-Tetrachloroethane | ND | 9.25 | 100 | " | " | " | " | " | " | U |
| 1,1,2,2-Tetrachloroethane | ND | 21.1 | 100 | " | " | " | " | " | " | U |
| Tetrachloroethene | ND | 16.9 | 100 | " | " | " | " | " | " | U |
| Toluene | ND | 6.29 | 100 | " | " | " | " | " | " | U |
| 1,2,3-Trichlorobenzene | ND | 16.9 | 100 | " | " | " | " | " | " | U |
| 1,2,4-Trichlorobenzene | ND | 21.4 | 100 | " | " | " | " | " | " | U |
| 1,1,1-Trichloroethane | ND | 6.13 | 100 | " | " | " | " | " | " | U |
| 1,1,2-Trichloroethane | ND | 18.1 | 100 | " | " | " | " | " | " | U |
| Trichloroethene | ND | 12.0 | 100 | " | " | " | " | " | " | U |
| Trichlorofluoromethane | ND | 8.97 | 100 | " | " | " | " | " | " | U |
| 1,2,3-Trichloropropane | ND | 49.2 | 100 | " | " | " | " | " | " | U |
| 1,2,4-Trimethylbenzene | ND | 6.75 | 100 | " | " | " | " | " | " | U |
| 1,3,5-Trimethylbenzene | ND | 9.33 | 100 | " | " | " | " | " | " | U |
| Vinyl chloride | ND | 5.74 | 100 | " | " | " | " | " | " | U |
| o-Xylene | ND | 11.6 | 100 | " | " | " | " | " | " | U |
| m,p-Xylene | ND | 11.4 | 200 | " | " | " | " | " | " | U |
| *Surrogate: 4-BFB* | | *106 %* | *42.6-130* | | | " | " | " | " | |
| *Surrogate: 1,2-DCA-d4* | | *92.0 %* | *57.3-144* | | | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *90.5 %* | *45.5-130* | | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *106 %* | *42.1-144* | | | " | " | " | " | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Volatile Organic Compounds per EPA Method 8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-13-17-18.5 (P3K0404-04) Soil** | **Sampled: 11/13/03 12:08** | | **Received: 11/13/03 17:05** | | | | | | | **P-02** |
| Acetone | ND | 144 | 2500 | ug/kg wet | 1 | 3110486 | 11/17/03 | 11/18/03 | EPA 8260B | U |
| Benzene | ND | 4.44 | 100 | " | " | " | " | " | " | U |
| Bromobenzene | ND | 12.2 | 100 | " | " | " | " | " | " | U |
| Bromochloromethane | ND | 16.4 | 100 | " | " | " | " | " | " | U |
| Bromodichloromethane | ND | 10.2 | 100 | " | " | " | " | " | " | U |
| Bromoform | ND | 15.8 | 100 | " | " | " | " | " | " | U |
| Bromomethane | ND | 5.09 | 500 | " | " | " | " | " | " | U |
| 2-Butanone | ND | 148 | 1000 | " | " | " | " | " | " | U |
| n-Butylbenzene | ND | 11.3 | 500 | " | " | " | " | " | " | U |
| sec-Butylbenzene | ND | 7.45 | 100 | " | " | " | " | " | " | U |
| tert-Butylbenzene | ND | 15.2 | 100 | " | " | " | " | " | " | U |
| Carbon disulfide | ND | 7.19 | 1000 | " | " | " | " | " | " | U |
| Carbon tetrachloride | ND | 7.64 | 100 | " | " | " | " | " | " | U |
| Chlorobenzene | ND | 8.09 | 100 | " | " | " | " | " | " | U |
| Chloroethane | ND | 10.7 | 100 | " | " | " | " | " | " | U |
| Chloroform | ND | 7.26 | 100 | " | " | " | " | " | " | U |
| Chloromethane | ND | 6.72 | 500 | " | " | " | " | " | " | U |
| 2-Chlorotoluene | ND | 11.0 | 100 | " | " | " | " | " | " | U |
| 4-Chlorotoluene | ND | 10.4 | 100 | " | " | " | " | " | " | U |
| 1,2-Dibromo-3-chloropropane | ND | 26.0 | 500 | " | " | " | " | " | " | U |
| Dibromochloromethane | ND | 11.2 | 100 | " | " | " | " | " | " | U |
| 1,2-Dibromoethane | ND | 11.6 | 100 | " | " | " | " | " | " | U |
| Dibromomethane | ND | 14.7 | 100 | " | " | " | " | " | " | U |
| 1,2-Dichlorobenzene | ND | 14.4 | 100 | " | " | " | " | " | " | U |
| 1,3-Dichlorobenzene | ND | 5.86 | 100 | " | " | " | " | " | " | U |
| 1,4-Dichlorobenzene | ND | 14.9 | 100 | " | " | " | " | " | " | U |
| Dichlorodifluoromethane | ND | 11.8 | 500 | " | " | " | " | " | " | U |
| 1,1-Dichloroethane | ND | 11.9 | 100 | " | " | " | " | " | " | U |
| 1,2-Dichloroethane | ND | 11.2 | 100 | " | " | " | " | " | " | U |
| 1,1-Dichloroethene | ND | 11.9 | 100 | " | " | " | " | " | " | U |
| cis-1,2-Dichloroethene | ND | 12.6 | 100 | " | " | " | " | " | " | U |
| trans-1,2-Dichloroethene | ND | 8.97 | 100 | " | " | " | " | " | " | U |
| 1,2-Dichloropropane | ND | 7.45 | 100 | " | " | " | " | " | " | U |
| 1,3-Dichloropropane | ND | 17.4 | 100 | " | " | " | " | " | " | U |
| 2,2-Dichloropropane | ND | 8.09 | 100 | " | " | " | " | " | " | U |
| 1,1-Dichloropropene | ND | 10.9 | 100 | " | " | " | " | " | " | U |
| cis-1,3-Dichloropropene | ND | 4.95 | 100 | " | " | " | " | " | " | U |
| trans-1,3-Dichloropropene | ND | 8.29 | 100 | " | " | " | " | " | " | U |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Volatile Organic Compounds per EPA Method 8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-13-17-18.5 (P3K0404-04) Soil** | **Sampled: 11/13/03 12:08** | | **Received: 11/13/03 17:05** | | | | | | | **P-02** |
| Ethylbenzene | ND | 9.40 | 100 | ug/kg wet | 1 | 3110486 | 11/17/03 | 11/18/03 | EPA 8260B | U |
| Hexachlorobutadiene | ND | 69.4 | 200 | " | " | " | " | " | " | U |
| 2-Hexanone | ND | 57.2 | 1000 | " | " | " | " | " | " | U |
| Isopropylbenzene | ND | 9.55 | 200 | " | " | " | " | " | " | U |
| p-Isopropyltoluene | ND | 9.68 | 200 | " | " | " | " | " | " | U |
| 4-Methyl-2-pentanone | ND | 117 | 500 | " | " | " | " | " | " | U |
| Methyl tert-butyl ether | ND | 11.9 | 100 | " | " | " | " | " | " | U |
| Methylene chloride | ND | 250 | 500 | " | " | " | " | " | " | U |
| Naphthalene | ND | 14.1 | 200 | " | " | " | " | " | " | U |
| n-Propylbenzene | ND | 9.89 | 100 | " | " | " | " | " | " | U |
| Styrene | ND | 8.89 | 100 | " | " | " | " | " | " | U |
| 1,1,1,2-Tetrachloroethane | ND | 9.25 | 100 | " | " | " | " | " | " | U |
| 1,1,2,2-Tetrachloroethane | ND | 21.1 | 100 | " | " | " | " | " | " | U |
| Tetrachloroethene | ND | 16.9 | 100 | " | " | " | " | " | " | U |
| Toluene | ND | 6.29 | 100 | " | " | " | " | " | " | U |
| 1,2,3-Trichlorobenzene | ND | 16.9 | 100 | " | " | " | " | " | " | U |
| 1,2,4-Trichlorobenzene | ND | 21.4 | 100 | " | " | " | " | " | " | U |
| 1,1,1-Trichloroethane | ND | 6.13 | 100 | " | " | " | " | " | " | U |
| 1,1,2-Trichloroethane | ND | 18.1 | 100 | " | " | " | " | " | " | U |
| Trichloroethene | ND | 12.0 | 100 | " | " | " | " | " | " | U |
| Trichlorofluoromethane | ND | 8.97 | 100 | " | " | " | " | " | " | U |
| 1,2,3-Trichloropropane | ND | 49.2 | 100 | " | " | " | " | " | " | U |
| 1,2,4-Trimethylbenzene | ND | 6.75 | 100 | " | " | " | " | " | " | U |
| 1,3,5-Trimethylbenzene | ND | 9.33 | 100 | " | " | " | " | " | " | U |
| Vinyl chloride | ND | 5.74 | 100 | " | " | " | " | " | " | U |
| o-Xylene | ND | 11.6 | 100 | " | " | " | " | " | " | U |
| m,p-Xylene | ND | 11.4 | 200 | " | " | " | " | " | " | U |
| *Surrogate: 4-BFB* | | *109 %* | *42.6-130* | | | " | " | " | " | |
| *Surrogate: 1,2-DCA-d4* | | *97.0 %* | *57.3-144* | | | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *93.5 %* | *45.5-130* | | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *110 %* | *42.1-144* | | | " | " | " | " | |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Volatile Organic Compounds per EPA Method 8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-3-17 (P3K0404-05) Soil Sampled: 11/13/03 14:48 Received: 11/13/03 17:05** | | | | | | | | | | **P-02** |
| Acetone | ND | 144 | 2500 | ug/kg dry | 1 | 3110486 | 11/17/03 | 11/18/03 | EPA 8260B | U |
| Benzene | ND | 4.44 | 100 | " | " | " | " | " | " | U |
| Bromobenzene | ND | 12.2 | 100 | " | " | " | " | " | " | U |
| Bromochloromethane | ND | 16.4 | 100 | " | " | " | " | " | " | U |
| Bromodichloromethane | ND | 10.2 | 100 | " | " | " | " | " | " | U |
| Bromoform | ND | 15.8 | 100 | " | " | " | " | " | " | U |
| Bromomethane | ND | 5.09 | 500 | " | " | " | " | " | " | U |
| 2-Butanone | ND | 148 | 1000 | " | " | " | " | " | " | U |
| n-Butylbenzene | ND | 11.3 | 500 | " | " | " | " | " | " | U |
| sec-Butylbenzene | ND | 7.45 | 100 | " | " | " | " | " | " | U |
| tert-Butylbenzene | ND | 15.2 | 100 | " | " | " | " | " | " | U |
| Carbon disulfide | ND | 7.19 | 1000 | " | " | " | " | " | " | U |
| Carbon tetrachloride | ND | 7.64 | 100 | " | " | " | " | " | " | U |
| Chlorobenzene | ND | 8.09 | 100 | " | " | " | " | " | " | U |
| Chloroethane | ND | 10.7 | 100 | " | " | " | " | " | " | U |
| Chloroform | ND | 7.26 | 100 | " | " | " | " | " | " | U |
| Chloromethane | ND | 6.72 | 500 | " | " | " | " | " | " | U |
| 2-Chlorotoluene | ND | 11.0 | 100 | " | " | " | " | " | " | U |
| 4-Chlorotoluene | ND | 10.4 | 100 | " | " | " | " | " | " | U |
| 1,2-Dibromo-3-chloropropane | ND | 26.0 | 500 | " | " | " | " | " | " | U |
| Dibromochloromethane | ND | 11.2 | 100 | " | " | " | " | " | " | U |
| 1,2-Dibromoethane | ND | 11.6 | 100 | " | " | " | " | " | " | U |
| Dibromomethane | ND | 14.7 | 100 | " | " | " | " | " | " | U |
| 1,2-Dichlorobenzene | ND | 14.4 | 100 | " | " | " | " | " | " | U |
| 1,3-Dichlorobenzene | ND | 5.86 | 100 | " | " | " | " | " | " | U |
| 1,4-Dichlorobenzene | ND | 14.9 | 100 | " | " | " | " | " | " | U |
| Dichlorodifluoromethane | ND | 11.8 | 500 | " | " | " | " | " | " | U |
| 1,1-Dichloroethane | ND | 11.9 | 100 | " | " | " | " | " | " | U |
| 1,2-Dichloroethane | ND | 11.2 | 100 | " | " | " | " | " | " | U |
| 1,1-Dichloroethene | ND | 11.9 | 100 | " | " | " | " | " | " | U |
| cis-1,2-Dichloroethene | ND | 12.6 | 100 | " | " | " | " | " | " | U |
| trans-1,2-Dichloroethene | ND | 8.97 | 100 | " | " | " | " | " | " | U |
| 1,2-Dichloropropane | ND | 7.45 | 100 | " | " | " | " | " | " | U |
| 1,3-Dichloropropane | ND | 17.4 | 100 | " | " | " | " | " | " | U |
| 2,2-Dichloropropane | ND | 8.09 | 100 | " | " | " | " | " | " | U |
| 1,1-Dichloropropene | ND | 10.9 | 100 | " | " | " | " | " | " | U |
| cis-1,3-Dichloropropene | ND | 4.95 | 100 | " | " | " | " | " | " | U |
| trans-1,3-Dichloropropene | ND | 8.29 | 100 | " | " | " | " | " | " | U |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Volatile Organic Compounds per EPA Method 8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-3-17 (P3K0404-05) Soil Sampled: 11/13/03 14:48 Received: 11/13/03 17:05** | | | | | | | | | | **P-02** |
| Ethylbenzene | ND | 9.40 | 100 | ug/kg dry | 1 | 3110486 | 11/17/03 | 11/18/03 | EPA 8260B | U |
| Hexachlorobutadiene | ND | 69.4 | 200 | " | " | " | " | " | " | U |
| 2-Hexanone | ND | 57.2 | 1000 | " | " | " | " | " | " | U |
| Isopropylbenzene | ND | 9.55 | 200 | " | " | " | " | " | " | U |
| p-Isopropyltoluene | ND | 9.68 | 200 | " | " | " | " | " | " | U |
| 4-Methyl-2-pentanone | ND | 117 | 500 | " | " | " | " | " | " | U |
| Methyl tert-butyl ether | ND | 11.9 | 100 | " | " | " | " | " | " | U |
| Methylene chloride | ND | 250 | 500 | " | " | " | " | " | " | U |
| Naphthalene | ND | 14.1 | 200 | " | " | " | " | " | " | U |
| n-Propylbenzene | ND | 9.89 | 100 | " | " | " | " | " | " | U |
| Styrene | ND | 8.89 | 100 | " | " | " | " | " | " | U |
| 1,1,1,2-Tetrachloroethane | ND | 9.25 | 100 | " | " | " | " | " | " | U |
| 1,1,2,2-Tetrachloroethane | ND | 21.1 | 100 | " | " | " | " | " | " | U |
| Tetrachloroethene | ND | 16.9 | 100 | " | " | " | " | " | " | U |
| Toluene | ND | 6.29 | 100 | " | " | " | " | " | " | U |
| 1,2,3-Trichlorobenzene | ND | 16.9 | 100 | " | " | " | " | " | " | U |
| 1,2,4-Trichlorobenzene | ND | 21.4 | 100 | " | " | " | " | " | " | U |
| 1,1,1-Trichloroethane | ND | 6.13 | 100 | " | " | " | " | " | " | U |
| 1,1,2-Trichloroethane | ND | 18.1 | 100 | " | " | " | " | " | " | U |
| Trichloroethene | ND | 12.0 | 100 | " | " | " | " | " | " | U |
| Trichlorofluoromethane | ND | 8.97 | 100 | " | " | " | " | " | " | U |
| 1,2,3-Trichloropropane | ND | 49.2 | 100 | " | " | " | " | " | " | U |
| 1,2,4-Trimethylbenzene | ND | 6.75 | 100 | " | " | " | " | " | " | U |
| 1,3,5-Trimethylbenzene | ND | 9.33 | 100 | " | " | " | " | " | " | U |
| Vinyl chloride | ND | 5.74 | 100 | " | " | " | " | " | " | U |
| o-Xylene | ND | 11.6 | 100 | " | " | " | " | " | " | U |
| m,p-Xylene | ND | 11.4 | 200 | " | " | " | " | " | " | U |
| *Surrogate: 4-BFB* | | *104 %* | *42.6-130* | | | " | " | " | " | |
| *Surrogate: 1,2-DCA-d4* | | *89.0 %* | *57.3-144* | | | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *87.9 %* | *45.5-130* | | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *100 %* | *42.1-144* | | | " | " | " | " | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Volatile Organic Compounds per EPA Method 8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **TB-2 (P3K0404-06) Water Sampled: 11/13/03 15:15 Received: 11/13/03 17:05** | | | | | | | | | | |
| Acetone | ND | 2.34 | 25.0 | ug/l | 1 | 3110483 | 11/17/03 | 11/17/03 | EPA 8260B | U |
| Benzene | ND | 0.147 | 1.00 | " | " | " | " | " | " | U |
| Bromobenzene | ND | 0.333 | 1.00 | " | " | " | " | " | " | U |
| Bromochloromethane | ND | 0.266 | 1.00 | " | " | " | " | " | " | U |
| Bromodichloromethane | ND | 0.183 | 1.00 | " | " | " | " | " | " | U |
| Bromoform | ND | 0.174 | 1.00 | " | " | " | " | " | " | U |
| Bromomethane | ND | 0.282 | 5.00 | " | " | " | " | " | " | U |
| 2-Butanone | ND | 1.60 | 10.0 | " | " | " | " | " | " | U |
| n-Butylbenzene | ND | 0.183 | 5.00 | " | " | " | " | " | " | U |
| sec-Butylbenzene | ND | 0.193 | 1.00 | " | " | " | " | " | " | U |
| tert-Butylbenzene | ND | 0.206 | 1.00 | " | " | " | " | " | " | U |
| Carbon disulfide | ND | 0.233 | 10.0 | " | " | " | " | " | " | U |
| Carbon tetrachloride | ND | 0.140 | 1.00 | " | " | " | " | " | " | U |
| Chlorobenzene | ND | 0.136 | 1.00 | " | " | " | " | " | " | U |
| Chloroethane | ND | 0.327 | 1.00 | " | " | " | " | " | " | U |
| Chloroform | ND | 0.143 | 1.00 | " | " | " | " | " | " | U |
| Chloromethane | ND | 0.159 | 5.00 | " | " | " | " | " | " | U |
| 2-Chlorotoluene | ND | 0.110 | 1.00 | " | " | " | " | " | " | U |
| 4-Chlorotoluene | ND | 0.120 | 1.00 | " | " | " | " | " | " | U |
| 1,2-Dibromo-3-chloropropane | ND | 0.405 | 5.00 | " | " | " | " | " | " | U |
| Dibromochloromethane | ND | 0.133 | 1.00 | " | " | " | " | " | " | U |
| 1,2-Dibromoethane | ND | 0.187 | 1.00 | " | " | " | " | " | " | U |
| Dibromomethane | ND | 0.117 | 1.00 | " | " | " | " | " | " | U |
| 1,2-Dichlorobenzene | ND | 0.0859 | 1.00 | " | " | " | " | " | " | U |
| 1,3-Dichlorobenzene | ND | 0.132 | 1.00 | " | " | " | " | " | " | U |
| 1,4-Dichlorobenzene | ND | 0.187 | 1.00 | " | " | " | " | " | " | U |
| Dichlorodifluoromethane | ND | 0.312 | 5.00 | " | " | " | " | " | " | U |
| 1,1-Dichloroethane | ND | 0.157 | 1.00 | " | " | " | " | " | " | U |
| 1,2-Dichloroethane | ND | 0.142 | 1.00 | " | " | " | " | " | " | U |
| 1,1-Dichloroethene | ND | 0.197 | 1.00 | " | " | " | " | " | " | U |
| cis-1,2-Dichloroethene | ND | 0.170 | 1.00 | " | " | " | " | " | " | U |
| trans-1,2-Dichloroethene | ND | 0.175 | 1.00 | " | " | " | " | " | " | U |
| 1,2-Dichloropropane | ND | 0.266 | 1.00 | " | " | " | " | " | " | U |
| 1,3-Dichloropropane | ND | 0.151 | 1.00 | " | " | " | " | " | " | U |
| 2,2-Dichloropropane | ND | 0.104 | 1.00 | " | " | " | " | " | " | U |
| 1,1-Dichloropropene | ND | 0.149 | 1.00 | " | " | " | " | " | " | U |
| cis-1,3-Dichloropropene | ND | 0.128 | 1.00 | " | " | " | " | " | " | U |
| trans-1,3-Dichloropropene | ND | 0.152 | 1.00 | " | " | " | " | " | " | U |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Volatile Organic Compounds per EPA Method 8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **TB-2 (P3K0404-06) Water Sampled: 11/13/03 15:15 Received: 11/13/03 17:05** | | | | | | | | | | |
| Ethylbenzene | ND | 0.110 | 1.00 | ug/l | 1 | 3110483 | 11/17/03 | 11/17/03 | EPA 8260B | U |
| Hexachlorobutadiene | ND | 0.878 | 2.00 | " | " | " | " | " | " | U |
| 2-Hexanone | ND | 1.10 | 10.0 | " | " | " | " | " | " | U |
| Isopropylbenzene | ND | 0.107 | 2.00 | " | " | " | " | " | " | U |
| p-Isopropyltoluene | ND | 0.149 | 2.00 | " | " | " | " | " | " | U |
| 4-Methyl-2-pentanone | ND | 1.49 | 5.00 | " | " | " | " | " | " | U |
| Methyl tert-butyl ether | ND | 0.0865 | 1.00 | " | " | " | " | " | " | U |
| Methylene chloride | ND | 2.50 | 5.00 | " | " | " | " | " | " | U |
| Naphthalene | ND | 0.0989 | 2.00 | " | " | " | " | " | " | U |
| n-Propylbenzene | ND | 0.138 | 1.00 | " | " | " | " | " | " | U |
| Styrene | ND | 0.0723 | 1.00 | " | " | " | " | " | " | U |
| 1,1,1,2-Tetrachloroethane | ND | 0.148 | 1.00 | " | " | " | " | " | " | U |
| 1,1,2,2-Tetrachloroethane | ND | 0.294 | 1.00 | " | " | " | " | " | " | U |
| Tetrachloroethene | ND | 0.109 | 1.00 | " | " | " | " | " | " | U |
| Toluene | ND | 0.155 | 1.00 | " | " | " | " | " | " | U |
| 1,2,3-Trichlorobenzene | ND | 0.219 | 1.00 | " | " | " | " | " | " | U |
| 1,2,4-Trichlorobenzene | ND | 0.213 | 1.00 | " | " | " | " | " | " | U |
| 1,1,1-Trichloroethane | ND | 0.0859 | 1.00 | " | " | " | " | " | " | U |
| 1,1,2-Trichloroethane | ND | 0.301 | 1.00 | " | " | " | " | " | " | U |
| Trichloroethene | ND | 0.241 | 1.00 | " | " | " | " | " | " | U |
| Trichlorofluoromethane | ND | 0.160 | 1.00 | " | " | " | " | " | " | U |
| 1,2,3-Trichloropropane | ND | 0.365 | 1.00 | " | " | " | " | " | " | U |
| 1,2,4-Trimethylbenzene | ND | 0.0884 | 1.00 | " | " | " | " | " | " | U |
| 1,3,5-Trimethylbenzene | ND | 0.157 | 1.00 | " | " | " | " | " | " | U |
| Vinyl chloride | ND | 0.152 | 1.00 | " | " | " | " | " | " | U |
| o-Xylene | ND | 0.187 | 1.00 | " | " | " | " | " | " | U |
| m,p-Xylene | ND | 0.295 | 2.00 | " | " | " | " | " | " | U |
| *Surrogate: 4-BFB* | | *88.5 %* | *75-120* | | | " | " | " | " | |
| *Surrogate: 1,2-DCA-d4* | | *96.0 %* | *77-129* | | | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *94.0 %* | *80-121* | | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *96.5 %* | *80-120* | | | " | " | " | " | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Volatile Organic Compounds per EPA Methods 5035/8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-2-17-18.5 (P3K0404-03) Soil Sampled: 11/13/03 12:10 Received: 11/13/03 17:05** | | | | | | | | | | |
| Acetone | ND | 4.25 | 20.0 | ug/kg wet | 1 | 3110271 | 11/18/03 | 11/20/03 | EPA 8260B | U |
| **Benzene** | **0.310** | 0.147 | 5.00 | " | " | " | " | " | " | J |
| Bromobenzene | ND | 0.152 | 5.00 | " | " | " | " | " | " | U |
| Bromochloromethane | ND | 0.277 | 5.00 | " | " | " | " | " | " | U |
| Bromodichloromethane | ND | 0.388 | 5.00 | " | " | " | " | " | " | U |
| Bromoform | ND | 0.169 | 5.00 | " | " | " | " | " | " | U |
| Bromomethane | ND | 0.309 | 20.0 | " | " | " | " | " | " | U |
| 2-Butanone | ND | 15.4 | 20.0 | " | " | " | " | " | " | U |
| n-Butylbenzene | ND | 0.181 | 5.00 | " | " | " | " | " | " | U |
| sec-Butylbenzene | ND | 0.160 | 5.00 | " | " | " | " | " | " | U |
| tert-Butylbenzene | ND | 0.195 | 5.00 | " | " | " | " | " | " | U |
| Carbon disulfide | ND | 0.420 | 20.0 | " | " | " | " | " | " | U |
| Carbon tetrachloride | ND | 0.202 | 5.00 | " | " | " | " | " | " | U |
| Chlorobenzene | ND | 0.276 | 5.00 | " | " | " | " | " | " | U |
| Chloroethane | ND | 0.353 | 10.0 | " | " | " | " | " | " | U |
| Chloroform | ND | 0.174 | 5.00 | " | " | " | " | " | " | U |
| Chloromethane | ND | 0.513 | 10.0 | " | " | " | " | " | " | U |
| 2-Chlorotoluene | ND | 0.236 | 5.00 | " | " | " | " | " | " | U |
| 4-Chlorotoluene | ND | 0.108 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dibromo-3-chloropropane | ND | 0.213 | 10.0 | " | " | " | " | " | " | U |
| Dibromochloromethane | ND | 0.270 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dibromoethane | ND | 0.386 | 5.00 | " | " | " | " | " | " | U |
| Dibromomethane | ND | 0.302 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dichlorobenzene | ND | 0.169 | 5.00 | " | " | " | " | " | " | U |
| 1,3-Dichlorobenzene | ND | 0.329 | 5.00 | " | " | " | " | " | " | U |
| 1,4-Dichlorobenzene | ND | 0.162 | 5.00 | " | " | " | " | " | " | U |
| Dichlorodifluoromethane | ND | 0.280 | 10.0 | " | " | " | " | " | " | U |
| 1,1-Dichloroethane | ND | 0.0975 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dichloroethane | ND | 0.236 | 5.00 | " | " | " | " | " | " | U |
| 1,1-Dichloroethene | ND | 0.180 | 5.00 | " | " | " | " | " | " | U |
| cis-1,2-Dichloroethene | ND | 0.202 | 5.00 | " | " | " | " | " | " | U |
| trans-1,2-Dichloroethene | ND | 0.195 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dichloropropane | ND | 0.191 | 5.00 | " | " | " | " | " | " | U |
| 1,3-Dichloropropane | ND | 0.353 | 5.00 | " | " | " | " | " | " | U |
| 2,2-Dichloropropane | ND | 0.224 | 5.00 | " | " | " | " | " | " | U |
| 1,1-Dichloropropene | ND | 0.234 | 5.00 | " | " | " | " | " | " | U |
| cis-1,3-Dichloropropene | ND | 0.141 | 5.00 | " | " | " | " | " | " | U |
| trans-1,3-Dichloropropene | ND | 0.372 | 5.00 | " | " | " | " | " | " | U |



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Volatile Organic Compounds per EPA Methods 5035/8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-2-17-18.5 (P3K0404-03) Soil Sampled: 11/13/03 12:10 Received: 11/13/03 17:05** | | | | | | | | | | |
| **Ethylbenzene** | **0.170** | 0.143 | 5.00 | ug/kg wet | 1 | 3110271 | 11/18/03 | 11/20/03 | EPA 8260B | J |
| Hexachlorobutadiene | ND | 0.739 | 5.00 | " | " | " | " | " | " | U |
| 2-Hexanone | ND | 2.14 | 20.0 | " | " | " | " | " | " | U |
| Isopropylbenzene | ND | 0.202 | 5.00 | " | " | " | " | " | " | U |
| **p-Isopropyltoluene** | **0.170** | 0.133 | 5.00 | " | " | " | " | " | " | J |
| **4-Methyl-2-pentanone** | **4.42** | 2.06 | 20.0 | " | " | " | " | " | " | J |
| Methylene chloride | ND | 10.0 | 25.0 | " | " | " | " | " | " | U |
| **Naphthalene** | **0.840** | 0.345 | 5.00 | " | " | " | " | " | " | J |
| n-Propylbenzene | ND | 0.174 | 5.00 | " | " | " | " | " | " | U |
| Styrene | ND | 0.154 | 5.00 | " | " | " | " | " | " | U |
| 1,1,1,2-Tetrachloroethane | ND | 0.297 | 5.00 | " | " | " | " | " | " | U |
| 1,1,2,2-Tetrachloroethane | ND | 0.257 | 5.00 | " | " | " | " | " | " | U |
| **Tetrachloroethene** | **0.310** | 0.145 | 5.00 | " | " | " | " | " | " | J |
| **Toluene** | **0.480** | 0.299 | 5.00 | " | " | " | " | " | " | J |
| 1,2,3-Trichlorobenzene | ND | 0.318 | 5.00 | " | " | " | " | " | " | U |
| 1,2,4-Trichlorobenzene | ND | 0.393 | 5.00 | " | " | " | " | " | " | U |
| 1,1,1-Trichloroethane | ND | 0.228 | 5.00 | " | " | " | " | " | " | U |
| 1,1,2-Trichloroethane | ND | 0.701 | 5.00 | " | " | " | " | " | " | U |
| **Trichloroethene** | **0.730** | 0.221 | 5.00 | " | " | " | " | " | " | J |
| Trichlorofluoromethane | ND | 0.281 | 5.00 | " | " | " | " | " | " | U |
| 1,2,3-Trichloropropane | ND | 0.962 | 5.00 | " | " | " | " | " | " | U |
| **1,2,4-Trimethylbenzene** | **0.260** | 0.0800 | 5.00 | " | " | " | " | " | " | J |
| 1,3,5-Trimethylbenzene | ND | 0.154 | 5.00 | " | " | " | " | " | " | U |
| Vinyl chloride | ND | 0.305 | 10.0 | " | " | " | " | " | " | U |
| o-Xylene | ND | 0.199 | 5.00 | " | " | " | " | " | " | U |
| **m,p-Xylene** | **0.560** | 0.208 | 10.0 | " | " | " | " | " | " | J |
| *Surrogate: 4-BFB* | | *97.0 %* | *42.6-130* | | | " | " | " | " | |
| *Surrogate: 1,2-DCA-d4* | | *103 %* | *57.3-144* | | | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *101 %* | *45.5-130* | | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *97.0 %* | *42.1-144* | | | " | " | " | " | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Volatile Organic Compounds per EPA Methods 5035/8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-13-17-18.5 (P3K0404-04) Soil Sampled: 11/13/03 12:08 Received: 11/13/03 17:05** | | | | | | | | | | |
| Acetone | ND | 4.25 | 20.0 | ug/kg wet | 1 | 3110271 | 11/18/03 | 11/20/03 | EPA 8260B | U |
| **Benzene** | **0.450** | 0.147 | 5.00 | " | " | " | " | " | " | J |
| Bromobenzene | ND | 0.152 | 5.00 | " | " | " | " | " | " | U |
| Bromochloromethane | ND | 0.277 | 5.00 | " | " | " | " | " | " | U |
| Bromodichloromethane | ND | 0.388 | 5.00 | " | " | " | " | " | " | U |
| Bromoform | ND | 0.169 | 5.00 | " | " | " | " | " | " | U |
| Bromomethane | ND | 0.309 | 20.0 | " | " | " | " | " | " | U |
| 2-Butanone | ND | 15.4 | 20.0 | " | " | " | " | " | " | U |
| n-Butylbenzene | ND | 0.181 | 5.00 | " | " | " | " | " | " | U |
| sec-Butylbenzene | ND | 0.160 | 5.00 | " | " | " | " | " | " | U |
| tert-Butylbenzene | ND | 0.195 | 5.00 | " | " | " | " | " | " | U |
| **Carbon disulfide** | **1.22** | 0.420 | 20.0 | " | " | " | " | " | " | J |
| Carbon tetrachloride | ND | 0.202 | 5.00 | " | " | " | " | " | " | U |
| Chlorobenzene | ND | 0.276 | 5.00 | " | " | " | " | " | " | U |
| Chloroethane | ND | 0.353 | 10.0 | " | " | " | " | " | " | U |
| Chloroform | ND | 0.174 | 5.00 | " | " | " | " | " | " | U |
| Chloromethane | ND | 0.513 | 10.0 | " | " | " | " | " | " | U |
| 2-Chlorotoluene | ND | 0.236 | 5.00 | " | " | " | " | " | " | U |
| 4-Chlorotoluene | ND | 0.108 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dibromo-3-chloropropane | ND | 0.213 | 10.0 | " | " | " | " | " | " | U |
| Dibromochloromethane | ND | 0.270 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dibromoethane | ND | 0.386 | 5.00 | " | " | " | " | " | " | U |
| Dibromomethane | ND | 0.302 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dichlorobenzene | ND | 0.169 | 5.00 | " | " | " | " | " | " | U |
| 1,3-Dichlorobenzene | ND | 0.329 | 5.00 | " | " | " | " | " | " | U |
| 1,4-Dichlorobenzene | ND | 0.162 | 5.00 | " | " | " | " | " | " | U |
| Dichlorodifluoromethane | ND | 0.280 | 10.0 | " | " | " | " | " | " | U |
| 1,1-Dichloroethane | ND | 0.0975 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dichloroethane | ND | 0.236 | 5.00 | " | " | " | " | " | " | U |
| 1,1-Dichloroethene | ND | 0.180 | 5.00 | " | " | " | " | " | " | U |
| cis-1,2-Dichloroethene | ND | 0.202 | 5.00 | " | " | " | " | " | " | U |
| trans-1,2-Dichloroethene | ND | 0.195 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dichloropropane | ND | 0.191 | 5.00 | " | " | " | " | " | " | U |
| 1,3-Dichloropropane | ND | 0.353 | 5.00 | " | " | " | " | " | " | U |
| 2,2-Dichloropropane | ND | 0.224 | 5.00 | " | " | " | " | " | " | U |
| 1,1-Dichloropropene | ND | 0.234 | 5.00 | " | " | " | " | " | " | U |
| cis-1,3-Dichloropropene | ND | 0.141 | 5.00 | " | " | " | " | " | " | U |
| trans-1,3-Dichloropropene | ND | 0.372 | 5.00 | " | " | " | " | " | " | U |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Volatile Organic Compounds per EPA Methods 5035/8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-13-17-18.5 (P3K0404-04) Soil Sampled: 11/13/03 12:08 Received: 11/13/03 17:05** | | | | | | | | | | |
| Ethylbenzene | ND | 0.143 | 5.00 | ug/kg wet | 1 | 3110271 | 11/18/03 | 11/20/03 | EPA 8260B | U |
| Hexachlorobutadiene | ND | 0.739 | 5.00 | " | " | " | " | " | " | U |
| 2-Hexanone | ND | 2.14 | 20.0 | " | " | " | " | " | " | U |
| Isopropylbenzene | ND | 0.202 | 5.00 | " | " | " | " | " | " | U |
| p-Isopropyltoluene | ND | 0.133 | 5.00 | " | " | " | " | " | " | U |
| **4-Methyl-2-pentanone** | **5.13** | 2.06 | 20.0 | " | " | " | " | " | " | J |
| Methylene chloride | ND | 10.0 | 25.0 | " | " | " | " | " | " | U |
| Naphthalene | ND | 0.345 | 5.00 | " | " | " | " | " | " | U |
| n-Propylbenzene | ND | 0.174 | 5.00 | " | " | " | " | " | " | U |
| Styrene | ND | 0.154 | 5.00 | " | " | " | " | " | " | U |
| 1,1,1,2-Tetrachloroethane | ND | 0.297 | 5.00 | " | " | " | " | " | " | U |
| 1,1,2,2-Tetrachloroethane | ND | 0.257 | 5.00 | " | " | " | " | " | " | U |
| Tetrachloroethene | ND | 0.145 | 5.00 | " | " | " | " | " | " | U |
| **Toluene** | **0.410** | 0.299 | 5.00 | " | " | " | " | " | " | J |
| 1,2,3-Trichlorobenzene | ND | 0.318 | 5.00 | " | " | " | " | " | " | U |
| 1,2,4-Trichlorobenzene | ND | 0.393 | 5.00 | " | " | " | " | " | " | U |
| 1,1,1-Trichloroethane | ND | 0.228 | 5.00 | " | " | " | " | " | " | U |
| 1,1,2-Trichloroethane | ND | 0.701 | 5.00 | " | " | " | " | " | " | U |
| Trichloroethene | ND | 0.221 | 5.00 | " | " | " | " | " | " | U |
| Trichlorofluoromethane | ND | 0.281 | 5.00 | " | " | " | " | " | " | U |
| 1,2,3-Trichloropropane | ND | 0.962 | 5.00 | " | " | " | " | " | " | U |
| **1,2,4-Trimethylbenzene** | **0.290** | 0.0800 | 5.00 | " | " | " | " | " | " | J |
| 1,3,5-Trimethylbenzene | ND | 0.154 | 5.00 | " | " | " | " | " | " | U |
| Vinyl chloride | ND | 0.305 | 10.0 | " | " | " | " | " | " | U |
| o-Xylene | ND | 0.199 | 5.00 | " | " | " | " | " | " | U |
| **m,p-Xylene** | **0.460** | 0.208 | 10.0 | " | " | " | " | " | " | J |
| *Surrogate: 4-BFB* | | *112 %* | *42.6-130* | | | " | " | " | " | |
| *Surrogate: 1,2-DCA-d4* | | *112 %* | *57.3-144* | | | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *98.5 %* | *45.5-130* | | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *102 %* | *42.1-144* | | | " | " | " | " | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Volatile Organic Compounds per EPA Methods 5035/8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-3-17 (P3K0404-05) Soil Sampled: 11/13/03 14:48 Received: 11/13/03 17:05** | | | | | | | | | | |
| Acetone | ND | 4.25 | 20.0 | ug/kg dry | 1 | 3110271 | 11/18/03 | 11/20/03 | EPA 8260B | U |
| **Benzene** | **0.409** | 0.147 | 5.00 | " | " | " | " | " | " | J |
| Bromobenzene | ND | 0.152 | 5.00 | " | " | " | " | " | " | U |
| Bromochloromethane | ND | 0.277 | 5.00 | " | " | " | " | " | " | U |
| Bromodichloromethane | ND | 0.388 | 5.00 | " | " | " | " | " | " | U |
| Bromoform | ND | 0.169 | 5.00 | " | " | " | " | " | " | U |
| Bromomethane | ND | 0.309 | 20.0 | " | " | " | " | " | " | U |
| 2-Butanone | ND | 15.4 | 20.0 | " | " | " | " | " | " | U |
| n-Butylbenzene | ND | 0.181 | 5.00 | " | " | " | " | " | " | U |
| sec-Butylbenzene | ND | 0.160 | 5.00 | " | " | " | " | " | " | U |
| tert-Butylbenzene | ND | 0.195 | 5.00 | " | " | " | " | " | " | U |
| Carbon disulfide | ND | 0.420 | 20.0 | " | " | " | " | " | " | U |
| Carbon tetrachloride | ND | 0.202 | 5.00 | " | " | " | " | " | " | U |
| Chlorobenzene | ND | 0.276 | 5.00 | " | " | " | " | " | " | U |
| Chloroethane | ND | 0.353 | 10.0 | " | " | " | " | " | " | U |
| Chloroform | ND | 0.174 | 5.00 | " | " | " | " | " | " | U |
| Chloromethane | ND | 0.513 | 10.0 | " | " | " | " | " | " | U |
| 2-Chlorotoluene | ND | 0.236 | 5.00 | " | " | " | " | " | " | U |
| 4-Chlorotoluene | ND | 0.108 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dibromo-3-chloropropane | ND | 0.213 | 10.0 | " | " | " | " | " | " | U |
| Dibromochloromethane | ND | 0.270 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dibromoethane | ND | 0.386 | 5.00 | " | " | " | " | " | " | U |
| Dibromomethane | ND | 0.302 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dichlorobenzene | ND | 0.169 | 5.00 | " | " | " | " | " | " | U |
| 1,3-Dichlorobenzene | ND | 0.329 | 5.00 | " | " | " | " | " | " | U |
| 1,4-Dichlorobenzene | ND | 0.162 | 5.00 | " | " | " | " | " | " | U |
| Dichlorodifluoromethane | ND | 0.280 | 10.0 | " | " | " | " | " | " | U |
| 1,1-Dichloroethane | ND | 0.0975 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dichloroethane | ND | 0.236 | 5.00 | " | " | " | " | " | " | U |
| 1,1-Dichloroethene | ND | 0.180 | 5.00 | " | " | " | " | " | " | U |
| cis-1,2-Dichloroethene | ND | 0.202 | 5.00 | " | " | " | " | " | " | U |
| trans-1,2-Dichloroethene | ND | 0.195 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dichloropropane | ND | 0.191 | 5.00 | " | " | " | " | " | " | U |
| 1,3-Dichloropropane | ND | 0.353 | 5.00 | " | " | " | " | " | " | U |
| 2,2-Dichloropropane | ND | 0.224 | 5.00 | " | " | " | " | " | " | U |
| 1,1-Dichloropropene | ND | 0.234 | 5.00 | " | " | " | " | " | " | U |
| cis-1,3-Dichloropropene | ND | 0.141 | 5.00 | " | " | " | " | " | " | U |
| trans-1,3-Dichloropropene | ND | 0.372 | 5.00 | " | " | " | " | " | " | U |



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907.563.9200 fax 907.563.9210

| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Volatile Organic Compounds per EPA Methods 5035/8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-3-17 (P3K0404-05) Soil Sampled: 11/13/03 14:48 Received: 11/13/03 17:05** | | | | | | | | | | |
| **Ethylbenzene** | **0.158** | 0.143 | 5.00 | ug/kg dry | 1 | 3110271 | 11/18/03 | 11/20/03 | EPA 8260B | J |
| Hexachlorobutadiene | ND | 0.739 | 5.00 | " | " | " | " | " | " | U |
| 2-Hexanone | ND | 2.14 | 20.0 | " | " | " | " | " | " | U |
| Isopropylbenzene | ND | 0.202 | 5.00 | " | " | " | " | " | " | U |
| p-Isopropyltoluene | ND | 0.133 | 5.00 | " | " | " | " | " | " | U |
| 4-Methyl-2-pentanone | ND | 2.06 | 20.0 | " | " | " | " | " | " | U |
| Methylene chloride | ND | 10.0 | 25.0 | " | " | " | " | " | " | U |
| **Naphthalene** | **0.646** | 0.345 | 5.00 | " | " | " | " | " | " | J |
| n-Propylbenzene | ND | 0.174 | 5.00 | " | " | " | " | " | " | U |
| Styrene | ND | 0.154 | 5.00 | " | " | " | " | " | " | U |
| 1,1,1,2-Tetrachloroethane | ND | 0.297 | 5.00 | " | " | " | " | " | " | U |
| 1,1,2,2-Tetrachloroethane | ND | 0.257 | 5.00 | " | " | " | " | " | " | U |
| Tetrachloroethene | ND | 0.145 | 5.00 | " | " | " | " | " | " | U |
| **Toluene** | **0.409** | 0.299 | 5.00 | " | " | " | " | " | " | J |
| 1,2,3-Trichlorobenzene | ND | 0.318 | 5.00 | " | " | " | " | " | " | U |
| 1,2,4-Trichlorobenzene | ND | 0.393 | 5.00 | " | " | " | " | " | " | U |
| 1,1,1-Trichloroethane | ND | 0.228 | 5.00 | " | " | " | " | " | " | U |
| 1,1,2-Trichloroethane | ND | 0.701 | 5.00 | " | " | " | " | " | " | U |
| **Trichloroethene** | **0.382** | 0.221 | 5.00 | " | " | " | " | " | " | J |
| Trichlorofluoromethane | ND | 0.281 | 5.00 | " | " | " | " | " | " | U |
| 1,2,3-Trichloropropane | ND | 0.962 | 5.00 | " | " | " | " | " | " | U |
| **1,2,4-Trimethylbenzene** | **0.211** | 0.0800 | 5.00 | " | " | " | " | " | " | J |
| 1,3,5-Trimethylbenzene | ND | 0.154 | 5.00 | " | " | " | " | " | " | U |
| Vinyl chloride | ND | 0.305 | 10.0 | " | " | " | " | " | " | U |
| o-Xylene | ND | 0.199 | 5.00 | " | " | " | " | " | " | U |
| **m,p-Xylene** | **0.343** | 0.208 | 10.0 | " | " | " | " | " | " | J |
| *Surrogate: 4-BFB* | | *101 %* | *42.6-130* | | | " | " | " | " | |
| *Surrogate: 1,2-DCA-d4* | | *99.2 %* | *57.3-144* | | | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *93.9 %* | *45.5-130* | | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *100 %* | *42.1-144* | | | " | " | " | " | |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Semivolatile Organic Compounds per EPA Method 8270C
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-2-15 (P3K0404-01) Soil Sampled: 11/13/03 11:05 Received: 11/13/03 17:05** | | | | | | | | | | **R-05** |
| Acenaphthene | ND | 7.00 | 33.0 | mg/kg dry | 10 | 3110491 | 11/17/03 | 11/19/03 | EPA 8270C | U |
| Acenaphthylene | ND | 7.00 | 33.0 | " | " | " | " | " | " | U |
| Anthracene | ND | 7.00 | 33.0 | " | " | " | " | " | " | U |
| Benzo (a) anthracene | ND | 7.00 | 33.0 | " | " | " | " | " | " | U |
| Benzo (a) pyrene | ND | 7.00 | 33.0 | " | " | " | " | " | " | U |
| Benzo (b) fluoranthene | ND | 7.00 | 33.0 | " | " | " | " | " | " | U |
| Benzo (ghi) perylene | ND | 7.00 | 33.0 | " | " | " | " | " | " | U |
| Benzo (k) fluoranthene | ND | 7.00 | 33.0 | " | " | " | " | " | " | U |
| Benzoic Acid | ND | 50.0 | 100 | " | " | " | " | " | " | U |
| Benzyl alcohol | ND | 16.5 | 33.0 | " | " | " | " | " | " | U |
| 4-Bromophenyl phenyl ether | ND | 7.00 | 33.0 | " | " | " | " | " | " | U |
| Butyl benzyl phthalate | ND | 7.00 | 33.0 | " | " | " | " | " | " | U |
| 4-Chloro-3-methylphenol | ND | 7.00 | 33.0 | " | " | " | " | " | " | U |
| 4-Chloroaniline | ND | 16.5 | 200 | " | " | " | " | " | " | U |
| Bis(2-chloroethoxy)methane | ND | 7.00 | 33.0 | " | " | " | " | " | " | U |
| Bis(2-chloroethyl)ether | ND | 7.00 | 33.0 | " | " | " | " | " | " | U |
| Bis(2-chloroisopropyl)ether | ND | 7.00 | 33.0 | " | " | " | " | " | " | U |
| 2-Chloronaphthalene | ND | 7.00 | 33.0 | " | " | " | " | " | " | U |
| 2-Chlorophenol | ND | 7.00 | 33.0 | " | " | " | " | " | " | U |
| 4-Chlorophenyl phenyl ether | ND | 7.00 | 33.0 | " | " | " | " | " | " | U |
| Chrysene | ND | 7.00 | 33.0 | " | " | " | " | " | " | U |
| Di-n-butyl phthalate | ND | 50.0 | 100 | " | " | " | " | " | " | U |
| Di-n-octyl phthalate | ND | 7.00 | 33.0 | " | " | " | " | " | " | U |
| Dibenzo (a,h) anthracene | ND | 6.00 | 33.0 | " | " | " | " | " | " | U |
| Dibenzofuran | ND | 7.00 | 33.0 | " | " | " | " | " | " | U |
| 1,2-Dichlorobenzene | ND | 50.0 | 100 | " | " | " | " | " | " | U |
| 1,3-Dichlorobenzene | ND | 50.0 | 100 | " | " | " | " | " | " | U |
| 1,4-Dichlorobenzene | ND | 50.0 | 100 | " | " | " | " | " | " | U |
| 3,3'-Dichlorobenzidine | ND | 50.0 | 100 | " | " | " | " | " | " | U |
| 2,4-Dichlorophenol | ND | 7.00 | 33.0 | " | " | " | " | " | " | U |
| Diethyl phthalate | ND | 7.00 | 33.0 | " | " | " | " | " | " | U |
| 2,4-Dimethylphenol | ND | 50.0 | 100 | " | " | " | " | " | " | U |
| Dimethyl phthalate | ND | 7.00 | 33.0 | " | " | " | " | " | " | U |
| 4,6-Dinitro-2-methylphenol | ND | 50.0 | 100 | " | " | " | " | " | " | U |
| 2,4-Dinitrophenol | ND | 200 | 200 | " | " | " | " | " | " | U |
| 2,4-Dinitrotoluene | ND | 50.0 | 50.0 | " | " | " | " | " | " | U |
| 2,6-Dinitrotoluene | ND | 7.00 | 50.0 | " | " | " | " | " | " | U |
| Bis(2-ethylhexyl)phthalate | ND | 200 | 200 | " | " | " | " | " | " | U |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Semivolatile Organic Compounds per EPA Method 8270C
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-2-15 (P3K0404-01) Soil Sampled: 11/13/03 11:05 Received: 11/13/03 17:05** | | | | | | | | | | **R-05** |
| Fluoranthene | ND | 7.00 | 33.0 | mg/kg dry | 10 | 3110491 | 11/17/03 | 11/19/03 | EPA 8270C | U |
| Fluorene | ND | 7.00 | 33.0 | " | " | " | " | " | " | U |
| Hexachlorobenzene | ND | 7.00 | 33.0 | " | " | " | " | " | " | U |
| Hexachlorobutadiene | ND | 50.0 | 100 | " | " | " | " | " | " | U |
| Hexachlorocyclopentadiene | ND | 50.0 | 100 | " | " | " | " | " | " | U |
| Hexachloroethane | ND | 50.0 | 100 | " | " | " | " | " | " | U |
| Indeno (1,2,3-cd) pyrene | ND | 7.00 | 33.0 | " | " | " | " | " | " | U |
| Isophorone | ND | 7.00 | 33.0 | " | " | " | " | " | " | U |
| 2-Methylnaphthalene | ND | 7.00 | 33.0 | " | " | " | " | " | " | U |
| 2-Methylphenol | ND | 7.00 | 33.0 | " | " | " | " | " | " | U |
| 3-,4-Methylphenol | ND | 7.00 | 33.0 | " | " | " | " | " | " | U |
| Naphthalene | ND | 7.00 | 33.0 | " | " | " | " | " | " | U |
| 2-Nitroaniline | ND | 7.00 | 33.0 | " | " | " | " | " | " | U |
| 3-Nitroaniline | ND | 50.0 | 100 | " | " | " | " | " | " | U |
| 4-Nitroaniline | ND | 7.00 | 33.0 | " | " | " | " | " | " | U |
| Nitrobenzene | ND | 7.00 | 33.0 | " | " | " | " | " | " | U |
| 2-Nitrophenol | ND | 7.00 | 33.0 | " | " | " | " | " | " | U |
| 4-Nitrophenol | ND | 50.0 | 100 | " | " | " | " | " | " | U |
| N-Nitrosodi-n-propylamine | ND | 7.00 | 33.0 | " | " | " | " | " | " | U |
| N-Nitrosodiphenylamine | ND | 7.00 | 33.0 | " | " | " | " | " | " | U |
| Pentachlorophenol | ND | 50.0 | 100 | " | " | " | " | " | " | U |
| Phenanthrene | ND | 7.00 | 33.0 | " | " | " | " | " | " | U |
| Phenol | ND | 7.00 | 33.0 | " | " | " | " | " | " | U |
| Pyrene | ND | 7.00 | 33.0 | " | " | " | " | " | " | U |
| 1,2,4-Trichlorobenzene | ND | 7.00 | 33.0 | " | " | " | " | " | " | U |
| 2,4,5-Trichlorophenol | ND | 7.00 | 33.0 | " | " | " | " | " | " | U |
| 2,4,6-Trichlorophenol | ND | 7.00 | 33.0 | " | " | " | " | " | " | U |
| *Surrogate: 2-Fluorobiphenyl* | | *NR* | *44-146* | | | " | " | " | " | *S-01* |
| *Surrogate: 2-Fluorophenol* | | *NR* | *42-126* | | | " | " | " | " | *S-01* |
| *Surrogate: Nitrobenzene-d5* | | *NR* | *42-126* | | | " | " | " | " | *S-01* |
| *Surrogate: Phenol-d6* | | *NR* | *42-131* | | | " | " | " | " | *S-01* |
| *Surrogate: p-Terphenyl-d14* | | *NR* | *49-150* | | | " | " | " | " | *S-01* |
| *Surrogate: 2,4,6-Tribromophenol* | | *NR* | *48-119* | | | " | " | " | " | *S-01* |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Semivolatile Organic Compounds per EPA Method 8270C
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-13-17 (P3K0404-02) Soil Sampled: 11/13/03 11:15 Received: 11/13/03 17:05** | | | | | | | | | | **R-05** |
| Acenaphthene | ND | 1.05 | 4.95 | mg/kg dry | 5 | 3110491 | 11/17/03 | 11/19/03 | EPA 8270C | D, U |
| Acenaphthylene | ND | 1.05 | 4.95 | " | " | " | " | " | " | D, U |
| Anthracene | ND | 1.05 | 4.95 | " | " | " | " | " | " | D, U |
| Benzo (a) anthracene | ND | 1.05 | 4.95 | " | " | " | " | " | " | D, U |
| Benzo (a) pyrene | ND | 1.05 | 4.95 | " | " | " | " | " | " | D, U |
| Benzo (b) fluoranthene | ND | 1.05 | 4.95 | " | " | " | " | " | " | D, U |
| Benzo (ghi) perylene | ND | 1.05 | 4.95 | " | " | " | " | " | " | D, U |
| Benzo (k) fluoranthene | ND | 1.05 | 4.95 | " | " | " | " | " | " | D, U |
| Benzoic Acid | ND | 7.50 | 15.0 | " | " | " | " | " | " | D, U |
| Benzyl alcohol | ND | 2.48 | 4.95 | " | " | " | " | " | " | D, U |
| 4-Bromophenyl phenyl ether | ND | 1.05 | 4.95 | " | " | " | " | " | " | D, U |
| Butyl benzyl phthalate | ND | 1.05 | 4.95 | " | " | " | " | " | " | D, U |
| 4-Chloro-3-methylphenol | ND | 1.05 | 4.95 | " | " | " | " | " | " | D, U |
| 4-Chloroaniline | ND | 2.48 | 30.0 | " | " | " | " | " | " | D, U |
| Bis(2-chloroethoxy)methane | ND | 1.05 | 4.95 | " | " | " | " | " | " | D, U |
| Bis(2-chloroethyl)ether | ND | 1.05 | 4.95 | " | " | " | " | " | " | D, U |
| Bis(2-chloroisopropyl)ether | ND | 1.05 | 4.95 | " | " | " | " | " | " | D, U |
| 2-Chloronaphthalene | ND | 1.05 | 4.95 | " | " | " | " | " | " | D, U |
| 2-Chlorophenol | ND | 1.05 | 4.95 | " | " | " | " | " | " | D, U |
| 4-Chlorophenyl phenyl ether | ND | 1.05 | 4.95 | " | " | " | " | " | " | D, U |
| Chrysene | ND | 1.05 | 4.95 | " | " | " | " | " | " | D, U |
| Di-n-butyl phthalate | ND | 7.50 | 15.0 | " | " | " | " | " | " | D, U |
| Di-n-octyl phthalate | ND | 1.05 | 4.95 | " | " | " | " | " | " | D, U |
| Dibenzo (a,h) anthracene | ND | 0.900 | 4.95 | " | " | " | " | " | " | D, U |
| Dibenzofuran | ND | 1.05 | 4.95 | " | " | " | " | " | " | D, U |
| 1,2-Dichlorobenzene | ND | 7.50 | 15.0 | " | " | " | " | " | " | D, U |
| 1,3-Dichlorobenzene | ND | 7.50 | 15.0 | " | " | " | " | " | " | D, U |
| 1,4-Dichlorobenzene | ND | 7.50 | 15.0 | " | " | " | " | " | " | D, U |
| 3,3'-Dichlorobenzidine | ND | 7.50 | 15.0 | " | " | " | " | " | " | D, U |
| 2,4-Dichlorophenol | ND | 1.05 | 4.95 | " | " | " | " | " | " | D, U |
| Diethyl phthalate | ND | 1.05 | 4.95 | " | " | " | " | " | " | D, U |
| 2,4-Dimethylphenol | ND | 7.50 | 15.0 | " | " | " | " | " | " | D, U |
| Dimethyl phthalate | ND | 1.05 | 4.95 | " | " | " | " | " | " | D, U |
| 4,6-Dinitro-2-methylphenol | ND | 7.50 | 15.0 | " | " | " | " | " | " | D, U |
| 2,4-Dinitrophenol | ND | 30.0 | 30.0 | " | " | " | " | " | " | D, U |
| 2,4-Dinitrotoluene | ND | 7.50 | 7.50 | " | " | " | " | " | " | D, U |
| 2,6-Dinitrotoluene | ND | 1.05 | 7.50 | " | " | " | " | " | " | D, U |
| Bis(2-ethylhexyl)phthalate | ND | 30.0 | 30.0 | " | " | " | " | " | " | D, U |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Semivolatile Organic Compounds per EPA Method 8270C
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-13-17 (P3K0404-02) Soil Sampled: 11/13/03 11:15 Received: 11/13/03 17:05** | | | | | | | | | | **R-05** |
| Fluoranthene | ND | 1.05 | 4.95 | mg/kg dry | 5 | 3110491 | 11/17/03 | 11/19/03 | EPA 8270C | D, U |
| Fluorene | ND | 1.05 | 4.95 | " | " | " | " | " | " | D, U |
| Hexachlorobenzene | ND | 1.05 | 4.95 | " | " | " | " | " | " | D, U |
| Hexachlorobutadiene | ND | 7.50 | 15.0 | " | " | " | " | " | " | D, U |
| Hexachlorocyclopentadiene | ND | 7.50 | 15.0 | " | " | " | " | " | " | D, U |
| Hexachloroethane | ND | 7.50 | 15.0 | " | " | " | " | " | " | D, U |
| Indeno (1,2,3-cd) pyrene | ND | 1.05 | 4.95 | " | " | " | " | " | " | D, U |
| Isophorone | ND | 1.05 | 4.95 | " | " | " | " | " | " | D, U |
| 2-Methylnaphthalene | ND | 1.05 | 4.95 | " | " | " | " | " | " | D, U |
| 2-Methylphenol | ND | 1.05 | 4.95 | " | " | " | " | " | " | D, U |
| 3-,4-Methylphenol | ND | 1.05 | 4.95 | " | " | " | " | " | " | D, U |
| Naphthalene | ND | 1.05 | 4.95 | " | " | " | " | " | " | D, U |
| 2-Nitroaniline | ND | 1.05 | 4.95 | " | " | " | " | " | " | D, U |
| 3-Nitroaniline | ND | 7.50 | 15.0 | " | " | " | " | " | " | D, U |
| 4-Nitroaniline | ND | 1.05 | 4.95 | " | " | " | " | " | " | D, U |
| Nitrobenzene | ND | 1.05 | 4.95 | " | " | " | " | " | " | D, U |
| 2-Nitrophenol | ND | 1.05 | 4.95 | " | " | " | " | " | " | D, U |
| 4-Nitrophenol | ND | 7.50 | 15.0 | " | " | " | " | " | " | D, U |
| N-Nitrosodi-n-propylamine | ND | 1.05 | 4.95 | " | " | " | " | " | " | D, U |
| N-Nitrosodiphenylamine | ND | 1.05 | 4.95 | " | " | " | " | " | " | D, U |
| Pentachlorophenol | ND | 7.50 | 15.0 | " | " | " | " | " | " | D, U |
| Phenanthrene | ND | 1.05 | 4.95 | " | " | " | " | " | " | D, U |
| Phenol | ND | 1.05 | 4.95 | " | " | " | " | " | " | D, U |
| Pyrene | ND | 1.05 | 4.95 | " | " | " | " | " | " | D, U |
| 1,2,4-Trichlorobenzene | ND | 1.05 | 4.95 | " | " | " | " | " | " | D, U |
| 2,4,5-Trichlorophenol | ND | 1.05 | 4.95 | " | " | " | " | " | " | D, U |
| 2,4,6-Trichlorophenol | ND | 1.05 | 4.95 | " | " | " | " | " | " | D, U |
| *Surrogate: 2-Fluorobiphenyl* | | *113 %* | *44-146* | | | " | " | " | " | *D* |
| *Surrogate: 2-Fluorophenol* | | *106 %* | *42-126* | | | " | " | " | " | *D* |
| *Surrogate: Nitrobenzene-d5* | | *94.9 %* | *42-126* | | | " | " | " | " | *J, D* |
| *Surrogate: Phenol-d6* | | *128 %* | *42-131* | | | " | " | " | " | *D* |
| *Surrogate: p-Terphenyl-d14* | | *119 %* | *49-150* | | | " | " | " | " | *D* |
| *Surrogate: 2,4,6-Tribromophenol* | | *91.5 %* | *48-119* | | | " | " | " | " | *D* |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Semivolatile Organic Compounds per EPA Method 8270C
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-3-17 (P3K0404-05) Soil Sampled: 11/13/03 14:48 Received: 11/13/03 17:05** | | | | | | | | | | |
| **Acenaphthene** | **0.0862** | 0.0700 | 0.330 | mg/kg dry | 1 | 3110491 | 11/17/03 | 11/19/03 | EPA 8270C | J |
| **Acenaphthylene** | **0.176** | 0.0700 | 0.330 | " | " | " | " | " | " | J |
| **Anthracene** | **0.522** | 0.0700 | 0.330 | " | " | " | " | " | " | |
| **Benzo (a) anthracene** | **1.30** | 0.0700 | 0.330 | " | " | " | " | " | " | |
| **Benzo (a) pyrene** | **1.17** | 0.0700 | 0.330 | " | " | " | " | " | " | |
| **Benzo (b) fluoranthene** | **0.600** | 0.0700 | 0.330 | " | " | " | " | " | " | |
| **Benzo (ghi) perylene** | **0.845** | 0.0700 | 0.330 | " | " | " | " | " | " | |
| **Benzo (k) fluoranthene** | **0.858** | 0.0700 | 0.330 | " | " | " | " | " | " | |
| Benzoic Acid | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Benzyl alcohol | ND | 0.165 | 0.330 | " | " | " | " | " | " | U |
| 4-Bromophenyl phenyl ether | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Butyl benzyl phthalate | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 4-Chloro-3-methylphenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 4-Chloroaniline | ND | 0.165 | 2.00 | " | " | " | " | " | " | U |
| Bis(2-chloroethoxy)methane | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Bis(2-chloroethyl)ether | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Bis(2-chloroisopropyl)ether | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Chloronaphthalene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Chlorophenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 4-Chlorophenyl phenyl ether | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| **Chrysene** | **1.45** | 0.0700 | 0.330 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Di-n-octyl phthalate | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| **Dibenzo (a,h) anthracene** | **0.206** | 0.0600 | 0.330 | " | " | " | " | " | " | J |
| Dibenzofuran | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 1,2-Dichlorobenzene | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 1,3-Dichlorobenzene | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 1,4-Dichlorobenzene | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 3,3'-Dichlorobenzidine | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 2,4-Dichlorophenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Diethyl phthalate | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2,4-Dimethylphenol | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Dimethyl phthalate | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 4,6-Dinitro-2-methylphenol | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 2,4-Dinitrophenol | ND | 2.00 | 2.00 | " | " | " | " | " | " | U |
| 2,4-Dinitrotoluene | ND | 0.500 | 0.500 | " | " | " | " | " | " | U |
| 2,6-Dinitrotoluene | ND | 0.0700 | 0.500 | " | " | " | " | " | " | U |
| Bis(2-ethylhexyl)phthalate | ND | 2.00 | 2.00 | " | " | " | " | " | " | U |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Semivolatile Organic Compounds per EPA Method 8270C
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-3-17 (P3K0404-05) Soil Sampled: 11/13/03 14:48 Received: 11/13/03 17:05** | | | | | | | | | | |
| **Fluoranthene** | **2.32** | 0.0700 | 0.330 | mg/kg dry | 1 | 3110491 | 11/17/03 | 11/19/03 | EPA 8270C | |
| **Fluorene** | **0.103** | 0.0700 | 0.330 | " | " | " | " | " | " | J |
| Hexachlorobenzene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Hexachlorobutadiene | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Hexachlorocyclopentadiene | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Hexachloroethane | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| **Indeno (1,2,3-cd) pyrene** | **0.665** | 0.0700 | 0.330 | " | " | " | " | " | " | |
| Isophorone | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Methylnaphthalene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Methylphenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 3-,4-Methylphenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Naphthalene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Nitroaniline | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 3-Nitroaniline | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 4-Nitroaniline | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Nitrobenzene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Nitrophenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 4-Nitrophenol | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| N-Nitrosodi-n-propylamine | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| N-Nitrosodiphenylamine | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Pentachlorophenol | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| **Phenanthrene** | **1.82** | 0.0700 | 0.330 | " | " | " | " | " | " | |
| Phenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| **Pyrene** | **3.44** | 0.0700 | 0.330 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2,4,5-Trichlorophenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2,4,6-Trichlorophenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| *Surrogate: 2-Fluorobiphenyl* | | *108 %* | *44-146* | | | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *107 %* | *42-126* | | | " | " | *11/19/03* | " | *D* |
| *Surrogate: Nitrobenzene-d5* | | *103 %* | *42-126* | | | " | " | *11/19/03* | " | |
| *Surrogate: Phenol-d6* | | *95.6 %* | *42-131* | | | " | " | " | " | |
| *Surrogate: p-Terphenyl-d14* | | *128 %* | *49-150* | | | " | " | " | " | |
| *Surrogate: 2,4,6-Tribromophenol* | | *114 %* | *48-119* | | | " | " | " | " | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Percent Dry Weight (Solids) per Standard Methods
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-2-15 (P3K0404-01) Soil Sampled: 11/13/03 11:05 Received: 11/13/03 17:05** | | | | | | | | | | |
| **% Solids** | **88.7** | | 1.00 | % by Weight | 1 | 3110623 | 11/19/03 | 11/20/03 | NCA SOP | |
| **SB-13-17 (P3K0404-02) Soil Sampled: 11/13/03 11:15 Received: 11/13/03 17:05** | | | | | | | | | | |
| **% Solids** | **74.4** | | 1.00 | % by Weight | 1 | 3110623 | 11/19/03 | 11/20/03 | NCA SOP | |
| **SB-3-17 (P3K0404-05) Soil Sampled: 11/13/03 14:48 Received: 11/13/03 17:05** | | | | | | | | | | |
| **% Solids** | **75.8** | | 1.00 | % by Weight | 1 | 3110623 | 11/19/03 | 11/20/03 | NCA SOP | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Conventional Chemistry Parameters by APHA/EPA Methods
## North Creek Analytical - Bothell

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-3-17 (P3K0404-05) Soil Sampled: 11/13/03 14:48 Received: 11/13/03 17:05** | | | | | | | | | | |
| **Total Organic Carbon** | **22500** | | 1000 | mg/kg dry | 1 | 3K21004 | 11/19/03 | 11/20/03 | EPA 9060 mod. | |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Physical Parameters by APHA/ASTM/EPA Methods
## North Creek Analytical - Bothell

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **SB-3-17 (P3K0404-05) Soil Sampled: 11/13/03 14:48 Received: 11/13/03 17:05** | | | | | | | | | | |
| **Dry Weight** | **68.9** | | 1.00 | % | 1 | 3K24027 | 11/24/03 | 11/25/03 | BSOPSPL003 R08 | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Gasoline Hydrocarbons per NW TPH-Gx Method - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110680 - EPA 5035** | | | | | | | | | | | |
| **Blank (3110680-BLK1)** | | | | | Prepared & Analyzed: 11/20/03 | | | | | | |
| Gasoline Range Hydrocarbons | ND | | 4.00 | mg/kg | | | | | | | U |
| *Surrogate: a,a,a-TFT* | *2.24* | | | " | *2.50* | | *89.6* | *50-150* | | | |
| **LCS (3110680-BS1)** | | | | | Prepared: 11/20/03 Analyzed: 11/21/03 | | | | | | |
| Gasoline Range Hydrocarbons | 58.7 | | 4.00 | mg/kg | 62.5 | | 93.9 | 70-130 | | | |
| *Surrogate: a,a,a-TFT* | *2.58* | | | " | *2.50* | | *103* | *50-150* | | | |
| **LCS (3110680-BS2)** | | | | | Prepared & Analyzed: 11/21/03 | | | | | | |
| Gasoline Range Hydrocarbons | 49.9 | | 4.00 | mg/kg | 62.5 | | 79.8 | 70-130 | | | |
| *Surrogate: a,a,a-TFT* | *2.45* | | | " | *2.50* | | *98.0* | *50-150* | | | |
| **Duplicate (3110680-DUP1)** | | | | | **Source: P3K0392-01RE2** Prepared & Analyzed: 11/20/03 | | | | | | |
| Gasoline Range Hydrocarbons | 537 | | 40.0 | mg/kg dry | | 768 | | | 35.4 | 40 | |
| *Surrogate: a,a,a-TFT* | *3.31* | | | " | *3.28* | | *101* | *50-150* | | | |
| **Duplicate (3110680-DUP2)** | | | | | **Source: P3K0392-02RE2** Prepared & Analyzed: 11/20/03 | | | | | | |
| Gasoline Range Hydrocarbons | 3880 | | 80.0 | mg/kg dry | | 2400 | | | 47.1 | 40 | Q-14 |
| *Surrogate: a,a,a-TFT* | *3.56* | | | " | *3.20* | | *111* | *50-150* | | | |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Diesel and Heavy Range Hydrocarbons per NWTPH-Dx Method - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110480 - EPA 3550 Fuels** | | | | | | | | | | | |
| **Blank (3110480-BLK1)** | | | | | Prepared & Analyzed: 11/17/03 | | | | | | |
| Diesel Range Organics | ND | | 25.0 | mg/kg | | | | | | | U |
| Heavy Oil Range Hydrocarbons | ND | | 50.0 | " | | | | | | | U |
| *Surrogate: 1-Chlorooctadecane* | *4.55* | | | " | *4.80* | | *94.8* | *50-150* | | | |
| **LCS (3110480-BS1)** | | | | | Prepared & Analyzed: 11/17/03 | | | | | | |
| Diesel Range Organics | 125 | | 25.0 | mg/kg | 125 | | 100 | 50-150 | | | |
| Heavy Oil Range Hydrocarbons | 78.2 | | 50.0 | " | 75.0 | | 104 | 50-150 | | | |
| *Surrogate: 1-Chlorooctadecane* | *4.83* | | | " | *4.80* | | *101* | *50-150* | | | |
| **Duplicate (3110480-DUP1)** | | **Source: P3K0375-41** | | | Prepared & Analyzed: 11/17/03 | | | | | | |
| Diesel Range Organics | ND | | 25.0 | mg/kg dry | | ND | | | | 50 | U |
| Heavy Oil Range Hydrocarbons | ND | | 50.0 | " | | ND | | | | 50 | U |
| *Surrogate: 1-Chlorooctadecane* | *5.74* | | | " | *6.46* | | *88.9* | *50-150* | | | |
| **Duplicate (3110480-DUP2)** | | **Source: P3K0375-43** | | | Prepared & Analyzed: 11/17/03 | | | | | | |
| Diesel Range Organics | 117 | | 83.1 | mg/kg dry | | 105 | | | 10.8 | 50 | |
| Heavy Oil Range Hydrocarbons | 529 | | 166 | " | | 499 | | | 5.84 | 50 | |
| *Surrogate: 1-Chlorooctadecane* | *14.9* | | | " | *15.9* | | *93.7* | *50-150* | | | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Total Metals per EPA 6000/7000 Series Methods - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110642 - EPA 7471A** | | | | | | | | | | | |
| **Blank (3110642-BLK1)** | | | | | Prepared & Analyzed: 11/20/03 | | | | | | |
| Mercury | ND | 0.00496 | 0.100 | mg/kg | | | | | | | U |
| **LCS (3110642-BS1)** | | | | | Prepared & Analyzed: 11/20/03 | | | | | | |
| Mercury | 1.08 | 0.00496 | 0.100 | mg/kg | 1.00 | | 108 | 80-120 | | | |
| **Duplicate (3110642-DUP1)** | | | Source: P3K0375-51 | | Prepared & Analyzed: 11/20/03 | | | | | | |
| Mercury | 0.0364 | 0.00234 | 0.0472 | mg/kg dry | | 0.0409 | | | 11.6 | 40 | J, D |
| **Matrix Spike (3110642-MS1)** | | | Source: P3K0375-51 | | Prepared & Analyzed: 11/20/03 | | | | | | |
| Mercury | 1.21 | 0.00310 | 0.0625 | mg/kg dry | 1.08 | 0.0409 | 108 | 75-125 | | | D |
| **Matrix Spike (3110642-MS2)** | | | Source: P3K0375-52 | | Prepared & Analyzed: 11/20/03 | | | | | | |
| Mercury | 0.719 | 0.00248 | 0.0500 | mg/kg dry | 0.613 | 0.0333 | 112 | 75-125 | | | D |
| **Batch 3110783 - EPA 3050** | | | | | | | | | | | |
| **Blank (3110783-BLK2)** | | | | | Prepared: 11/24/03 Analyzed: 11/26/03 | | | | | | |
| Antimony | ND | 0.0659 | 0.500 | mg/kg | | | | | | | U |
| Arsenic | ND | 0.427 | 0.500 | " | | | | | | | U |
| Beryllium | ND | 0.210 | 0.500 | " | | | | | | | U |
| Cadmium | ND | 0.200 | 0.500 | " | | | | | | | U |
| Chromium | ND | 0.498 | 0.500 | " | | | | | | | U |
| Copper | ND | 0.955 | 2.00 | " | | | | | | | U |
| Lead | ND | 0.106 | 0.500 | " | | | | | | | U |
| Nickel | ND | 0.213 | 1.00 | " | | | | | | | U |
| Selenium | ND | 0.409 | 0.500 | " | | | | | | | U |
| Silver | ND | 0.0369 | 0.500 | " | | | | | | | U |
| Thallium | ND | 0.246 | 0.500 | " | | | | | | | U |
| Zinc | ND | 0.630 | 2.00 | " | | | | | | | U |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Total Metals per EPA 6000/7000 Series Methods - Quality Control
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110783 - EPA 3050** | | | | | | | | | | | |
| **LCS (3110783-BS2)** | | | | | Prepared: 11/24/03 Analyzed: 11/26/03 | | | | | | |
| Antimony | 4.82 | 0.0659 | 0.500 | mg/kg | 5.00 | | 96.4 | 80-120 | | | |
| Arsenic | 9.52 | 0.427 | 0.500 | " | 10.0 | | 95.2 | 80-120 | | | |
| Beryllium | 9.50 | 0.210 | 0.500 | " | 10.0 | | 95.0 | 80-120 | | | |
| Cadmium | 9.64 | 0.200 | 0.500 | " | 10.0 | | 96.4 | 80-120 | | | |
| Chromium | 9.70 | 0.498 | 0.500 | " | 10.0 | | 97.0 | 80-120 | | | |
| Copper | 9.42 | 0.955 | 2.00 | " | 10.0 | | 94.2 | 80-120 | | | |
| Lead | 9.80 | 0.106 | 0.500 | " | 10.0 | | 98.0 | 80-120 | | | |
| Nickel | 9.28 | 0.213 | 1.00 | " | 10.0 | | 92.8 | 80-120 | | | |
| Selenium | 9.54 | 0.409 | 0.500 | " | 10.0 | | 95.4 | 80-120 | | | |
| Silver | 5.04 | 0.0369 | 0.500 | " | 5.00 | | 101 | 80-120 | | | |
| Thallium | 4.61 | 0.246 | 0.500 | " | 5.00 | | 92.2 | 80-120 | | | |
| Zinc | 9.68 | 0.630 | 2.00 | " | 10.0 | | 96.8 | 80-120 | | | |
| **Duplicate (3110783-DUP1)** | | **Source: P3K0331-40** | | | Prepared: 11/24/03 Analyzed: 11/26/03 | | | | | | |
| Antimony | ND | 0.0573 | 0.435 | mg/kg dry | | ND | | | | 40 | D, U |
| Arsenic | 3.27 | 0.371 | 0.435 | " | | 2.91 | | | 11.7 | 40 | D |
| Beryllium | 0.437 | 0.183 | 0.435 | " | | 0.422 | | | 3.49 | 40 | D |
| Cadmium | ND | 1.07 | 2.66 | " | | ND | | | | 40 | D, U |
| Chromium | 15.6 | 0.433 | 0.435 | " | | 15.2 | | | 2.60 | 40 | D |
| Copper | 21.8 | 0.830 | 1.74 | " | | 20.3 | | | 7.13 | 40 | D |
| Lead | 7.56 | 0.0922 | 0.435 | " | | 6.87 | | | 9.56 | 40 | D |
| Nickel | 21.5 | 0.185 | 0.870 | " | | 20.7 | | | 3.79 | 40 | D |
| Selenium | ND | 0.356 | 0.435 | " | | ND | | | | 40 | D, U |
| Silver | 0.107 | 0.0321 | 0.435 | " | | 0.112 | | | 4.57 | 40 | J, D |
| Thallium | ND | 0.214 | 0.435 | " | | ND | | | | 40 | D, U |
| Zinc | 80.8 | 0.548 | 1.74 | " | | 72.1 | | | 11.4 | 40 | D |
| **Matrix Spike (3110783-MS1)** | | **Source: P3K0331-40** | | | Prepared: 11/24/03 Analyzed: 11/26/03 | | | | | | |
| Antimony | 2.12 | 0.0659 | 0.500 | mg/kg dry | 5.56 | ND | 38.1 | 75-125 | | | Q-02 |
| Arsenic | 14.8 | 0.427 | 0.500 | " | 11.1 | 2.91 | 107 | 75-125 | | | |
| Beryllium | 12.0 | 0.210 | 0.500 | " | 11.1 | 0.422 | 104 | 75-125 | | | |
| Cadmium | 10.4 | 0.200 | 0.500 | " | 11.1 | ND | 93.7 | 75-125 | | | |
| Chromium | 25.9 | 0.498 | 0.500 | " | 11.1 | 15.2 | 96.4 | 75-125 | | | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Total Metals per EPA 6000/7000 Series Methods - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110783 - EPA 3050** | | | | | | | | | | | |
| **Matrix Spike (3110783-MS1)** | | **Source: P3K0331-40** | | | Prepared: 11/24/03 | Analyzed: 11/26/03 | | | | | |
| Copper | 32.2 | 0.955 | 2.00 | mg/kg dry | 11.1 | 20.3 | 107 | 75-125 | | | |
| Lead | 19.0 | 0.106 | 0.500 | " | 11.1 | 6.87 | 109 | 75-125 | | | |
| Nickel | 31.7 | 0.213 | 1.00 | " | 11.1 | 20.7 | 99.1 | 75-125 | | | |
| Selenium | 11.7 | 0.409 | 0.500 | " | 11.1 | ND | 105 | 75-125 | | | |
| Silver | 6.31 | 0.0369 | 0.500 | " | 5.56 | 0.112 | 111 | 75-125 | | | |
| Thallium | 5.38 | 0.246 | 0.500 | " | 5.56 | ND | 96.8 | 75-125 | | | |
| Zinc | 81.4 | 0.630 | 2.00 | " | 11.1 | 72.1 | 83.8 | 75-125 | | | Q-02 |
| **Matrix Spike (3110783-MS2)** | | **Source: P3K0331-44** | | | Prepared: 11/24/03 | Analyzed: 11/26/03 | | | | | |
| Antimony | 2.02 | 0.0659 | 0.500 | mg/kg dry | 6.00 | ND | 33.7 | 75-125 | | | Q-02 |
| Arsenic | 15.5 | 0.427 | 0.500 | " | 12.0 | 2.97 | 104 | 75-125 | | | |
| Beryllium | 12.6 | 0.210 | 0.500 | " | 12.0 | 0.522 | 101 | 75-125 | | | |
| Cadmium | 11.8 | 0.200 | 0.500 | " | 12.0 | ND | 98.3 | 75-125 | | | |
| Chromium | 34.7 | 0.498 | 0.500 | " | 12.0 | 20.8 | 116 | 75-125 | | | |
| Copper | 35.0 | 0.955 | 2.00 | " | 12.0 | 21.0 | 117 | 75-125 | | | |
| Lead | 30.6 | 0.106 | 0.500 | " | 12.0 | 18.0 | 105 | 75-125 | | | |
| Nickel | 32.6 | 0.213 | 1.00 | " | 12.0 | 19.1 | 112 | 75-125 | | | |
| Selenium | 12.0 | 0.409 | 0.500 | " | 12.0 | ND | 100 | 75-125 | | | |
| Silver | 6.49 | 0.0369 | 0.500 | " | 6.00 | 0.108 | 106 | 75-125 | | | |
| Thallium | 5.71 | 0.246 | 0.500 | " | 6.00 | ND | 95.2 | 75-125 | | | |
| Zinc | 88.9 | 0.630 | 2.00 | " | 12.0 | 79.4 | 79.2 | 75-125 | | | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Polychlorinated Biphenyls per EPA Method 8082 - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110698 - EPA 3550** | | | | | | | | | | | |
| **Blank (3110698-BLK1)** | | | | | Prepared & Analyzed: 11/21/03 | | | | | | |
| Aroclor 1016 | ND | 11.1 | 67.0 | ug/kg | | | | | | | U |
| Aroclor 1221 | ND | 12.7 | 134 | " | | | | | | | U |
| Aroclor 1232 | ND | 11.1 | 67.0 | " | | | | | | | U |
| Aroclor 1242 | ND | 11.1 | 67.0 | " | | | | | | | U |
| Aroclor 1248 | ND | 3.87 | 67.0 | " | | | | | | | U |
| Aroclor 1254 | ND | 6.10 | 67.0 | " | | | | | | | U |
| Aroclor 1260 | ND | 11.5 | 67.0 | " | | | | | | | U |
| *Surrogate: 2,4,5,6-Tetrachloro-m-xylene* | *36.6* | | | " | *33.3* | | *110* | *36-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *34.1* | | | " | *33.3* | | *102* | *16-149* | | | |
| **LCS (3110698-BS1)** | | | | | Prepared & Analyzed: 11/21/03 | | | | | | |
| Aroclor 1016 | 301 | 11.1 | 67.0 | ug/kg | 333 | | 90.4 | 57-135 | | | |
| Aroclor 1260 | 310 | 11.5 | 67.0 | " | 333 | | 93.1 | 60-135 | | | |
| *Surrogate: 2,4,5,6-Tetrachloro-m-xylene* | *35.0* | | | " | *33.3* | | *105* | *36-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *33.9* | | | " | *33.3* | | *102* | *16-149* | | | |
| **Matrix Spike (3110698-MS1)** | | **Source: P3K0433-08** | | | Prepared & Analyzed: 11/21/03 | | | | | | |
| Aroclor 1016 | 362 | 11.1 | 67.0 | ug/kg dry | 452 | ND | 80.1 | 37-145 | | | |
| Aroclor 1260 | 344 | 11.5 | 67.0 | " | 452 | ND | 76.1 | 25-144 | | | |
| *Surrogate: 2,4,5,6-Tetrachloro-m-xylene* | *43.7* | | | " | *45.2* | | *96.7* | *36-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *37.5* | | | " | *45.2* | | *83.0* | *16-149* | | | |
| **Matrix Spike Dup (3110698-MSD1)** | | **Source: P3K0433-08** | | | Prepared & Analyzed: 11/21/03 | | | | | | |
| Aroclor 1016 | 361 | 11.1 | 67.0 | ug/kg dry | 452 | ND | 79.9 | 37-145 | 0.277 | 26 | |
| Aroclor 1260 | 343 | 11.5 | 67.0 | " | 452 | ND | 75.9 | 25-144 | 0.291 | 30 | |
| *Surrogate: 2,4,5,6-Tetrachloro-m-xylene* | *44.4* | | | " | *45.2* | | *98.2* | *36-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *36.0* | | | " | *45.2* | | *79.6* | *16-149* | | | |



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| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Volatile Organic Compounds per EPA Method 8260B - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110483 - EPA 5030B** | | | | | | | | | | | |
| **Blank (3110483-BLK1)** | | | | | Prepared & Analyzed: 11/17/03 | | | | | | |
| Acetone | 2.51 | 2.34 | 25.0 | ug/l | | | | | | | J |
| Benzene | ND | 0.147 | 1.00 | " | | | | | | | U |
| Bromobenzene | ND | 0.333 | 1.00 | " | | | | | | | U |
| Bromochloromethane | ND | 0.266 | 1.00 | " | | | | | | | U |
| Bromodichloromethane | ND | 0.183 | 1.00 | " | | | | | | | U |
| Bromoform | ND | 0.174 | 1.00 | " | | | | | | | U |
| Bromomethane | ND | 0.282 | 5.00 | " | | | | | | | U |
| 2-Butanone | ND | 1.60 | 10.0 | " | | | | | | | U |
| n-Butylbenzene | ND | 0.183 | 5.00 | " | | | | | | | U |
| sec-Butylbenzene | ND | 0.193 | 1.00 | " | | | | | | | U |
| tert-Butylbenzene | ND | 0.206 | 1.00 | " | | | | | | | U |
| Carbon disulfide | ND | 0.233 | 10.0 | " | | | | | | | U |
| Carbon tetrachloride | ND | 0.140 | 1.00 | " | | | | | | | U |
| Chlorobenzene | ND | 0.136 | 1.00 | " | | | | | | | U |
| Chloroethane | ND | 0.327 | 1.00 | " | | | | | | | U |
| Chloroform | ND | 0.143 | 1.00 | " | | | | | | | U |
| Chloromethane | ND | 0.159 | 5.00 | " | | | | | | | U |
| 2-Chlorotoluene | ND | 0.110 | 1.00 | " | | | | | | | U |
| 4-Chlorotoluene | ND | 0.120 | 1.00 | " | | | | | | | U |
| 1,2-Dibromo-3-chloropropane | ND | 0.405 | 5.00 | " | | | | | | | U |
| Dibromochloromethane | ND | 0.133 | 1.00 | " | | | | | | | U |
| 1,2-Dibromoethane | ND | 0.187 | 1.00 | " | | | | | | | U |
| Dibromomethane | ND | 0.117 | 1.00 | " | | | | | | | U |
| 1,2-Dichlorobenzene | ND | 0.0859 | 1.00 | " | | | | | | | U |
| 1,3-Dichlorobenzene | ND | 0.132 | 1.00 | " | | | | | | | U |
| 1,4-Dichlorobenzene | ND | 0.187 | 1.00 | " | | | | | | | U |
| Dichlorodifluoromethane | ND | 0.312 | 5.00 | " | | | | | | | U |
| 1,1-Dichloroethane | ND | 0.157 | 1.00 | " | | | | | | | U |
| 1,2-Dichloroethane | ND | 0.142 | 1.00 | " | | | | | | | U |
| 1,1-Dichloroethene | ND | 0.197 | 1.00 | " | | | | | | | U |
| cis-1,2-Dichloroethene | ND | 0.170 | 1.00 | " | | | | | | | U |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Volatile Organic Compounds per EPA Method 8260B - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110483 - EPA 5030B** | | | | | | | | | | | |
| **Blank (3110483-BLK1)** | | | | | Prepared & Analyzed: 11/17/03 | | | | | | |
| trans-1,2-Dichloroethene | ND | 0.175 | 1.00 | ug/l | | | | | | | U |
| 1,2-Dichloropropane | ND | 0.266 | 1.00 | " | | | | | | | U |
| 1,3-Dichloropropane | ND | 0.151 | 1.00 | " | | | | | | | U |
| 2,2-Dichloropropane | ND | 0.104 | 1.00 | " | | | | | | | U |
| 1,1-Dichloropropene | ND | 0.149 | 1.00 | " | | | | | | | U |
| cis-1,3-Dichloropropene | ND | 0.128 | 1.00 | " | | | | | | | U |
| trans-1,3-Dichloropropene | ND | 0.152 | 1.00 | " | | | | | | | U |
| Ethylbenzene | ND | 0.110 | 1.00 | " | | | | | | | U |
| Hexachlorobutadiene | ND | 0.878 | 2.00 | " | | | | | | | U |
| 2-Hexanone | ND | 1.10 | 10.0 | " | | | | | | | U |
| Isopropylbenzene | ND | 0.107 | 2.00 | " | | | | | | | U |
| p-Isopropyltoluene | ND | 0.149 | 2.00 | " | | | | | | | U |
| 4-Methyl-2-pentanone | ND | 1.49 | 5.00 | " | | | | | | | U |
| Methyl tert-butyl ether | ND | 0.0865 | 1.00 | " | | | | | | | U |
| Methylene chloride | ND | 2.50 | 5.00 | " | | | | | | | U |
| Naphthalene | ND | 0.0989 | 2.00 | " | | | | | | | U |
| n-Propylbenzene | ND | 0.138 | 1.00 | " | | | | | | | U |
| Styrene | ND | 0.0723 | 1.00 | " | | | | | | | U |
| 1,1,1,2-Tetrachloroethane | ND | 0.148 | 1.00 | " | | | | | | | U |
| 1,1,2,2-Tetrachloroethane | ND | 0.294 | 1.00 | " | | | | | | | U |
| Tetrachloroethene | ND | 0.109 | 1.00 | " | | | | | | | U |
| Toluene | ND | 0.155 | 1.00 | " | | | | | | | U |
| 1,2,3-Trichlorobenzene | 0.300 | 0.219 | 1.00 | " | | | | | | | J |
| 1,2,4-Trichlorobenzene | ND | 0.213 | 1.00 | " | | | | | | | U |
| 1,1,1-Trichloroethane | ND | 0.0859 | 1.00 | " | | | | | | | U |
| 1,1,2-Trichloroethane | ND | 0.301 | 1.00 | " | | | | | | | U |
| Trichloroethene | ND | 0.241 | 1.00 | " | | | | | | | U |
| Trichlorofluoromethane | ND | 0.160 | 1.00 | " | | | | | | | U |
| 1,2,3-Trichloropropane | ND | 0.365 | 1.00 | " | | | | | | | U |
| 1,2,4-Trimethylbenzene | ND | 0.0884 | 1.00 | " | | | | | | | U |
| 1,3,5-Trimethylbenzene | ND | 0.157 | 1.00 | " | | | | | | | U |
| Vinyl chloride | ND | 0.152 | 1.00 | " | | | | | | | U |



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| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Volatile Organic Compounds per EPA Method 8260B - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110483 - EPA 5030B** | | | | | | | | | | | |
| **Blank (3110483-BLK1)** | | | | | Prepared & Analyzed: 11/17/03 | | | | | | |
| o-Xylene | ND | 0.187 | 1.00 | ug/l | | | | | | | U |
| m,p-Xylene | ND | 0.295 | 2.00 | " | | | | | | | U |
| *Surrogate: 4-BFB* | *17.8* | | | " | *20.0* | | *89.0* | *75-120* | | | |
| *Surrogate: 1,2-DCA-d4* | *18.9* | | | " | *20.0* | | *94.5* | *77-129* | | | |
| *Surrogate: Dibromofluoromethane* | *18.6* | | | " | *20.0* | | *93.0* | *80-121* | | | |
| *Surrogate: Toluene-d8* | *18.8* | | | " | *20.0* | | *94.0* | *80-120* | | | |
| **LCS (3110483-BS1)** | | | | | Prepared & Analyzed: 11/17/03 | | | | | | |
| Benzene | 22.4 | 0.147 | 1.00 | ug/l | 20.0 | | 112 | 80-120 | | | |
| Chlorobenzene | 21.5 | 0.136 | 1.00 | " | 20.0 | | 108 | 80-124 | | | |
| 1,1-Dichloroethene | 21.0 | 0.197 | 1.00 | " | 20.0 | | 105 | 78-120 | | | |
| Toluene | 21.6 | 0.155 | 1.00 | " | 20.0 | | 108 | 80-124 | | | |
| Trichloroethene | 22.0 | 0.241 | 1.00 | " | 20.0 | | 110 | 80-132 | | | |
| *Surrogate: 4-BFB* | *20.9* | | | " | *20.0* | | *104* | *75-120* | | | |
| *Surrogate: 1,2-DCA-d4* | *21.8* | | | " | *20.0* | | *109* | *77-129* | | | |
| *Surrogate: Dibromofluoromethane* | *22.2* | | | " | *20.0* | | *111* | *80-121* | | | |
| *Surrogate: Toluene-d8* | *22.3* | | | " | *20.0* | | *112* | *80-120* | | | |
| **Matrix Spike (3110483-MS1)** | | **Source: P3K0394-01** | | | Prepared & Analyzed: 11/17/03 | | | | | | |
| Benzene | 19.1 | 0.147 | 1.00 | ug/l | 20.0 | ND | 95.5 | 80-124 | | | |
| Chlorobenzene | 18.5 | 0.136 | 1.00 | " | 20.0 | ND | 92.5 | 72.9-134 | | | |
| 1,1-Dichloroethene | 19.1 | 0.197 | 1.00 | " | 20.0 | ND | 95.5 | 79.3-127 | | | |
| Toluene | 18.2 | 0.155 | 1.00 | " | 20.0 | ND | 91.0 | 79.7-131 | | | |
| Trichloroethene | 18.4 | 0.241 | 1.00 | " | 20.0 | ND | 92.0 | 68.4-130 | | | |
| *Surrogate: 4-BFB* | *19.3* | | | " | *20.0* | | *96.5* | *75-120* | | | |
| *Surrogate: 1,2-DCA-d4* | *19.0* | | | " | *20.0* | | *95.0* | *77-129* | | | |
| *Surrogate: Dibromofluoromethane* | *19.7* | | | " | *20.0* | | *98.5* | *80-121* | | | |
| *Surrogate: Toluene-d8* | *19.5* | | | " | *20.0* | | *97.5* | *80-120* | | | |



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907.563.9200 fax 907.563.9210

| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Volatile Organic Compounds per EPA Method 8260B - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110483 - EPA 5030B** | | | | | | | | | | | |
| **Matrix Spike Dup (3110483-MSD1)** | | **Source: P3K0394-01** | | Prepared & Analyzed: 11/17/03 | | | | | | | |
| Benzene | 20.8 | 0.147 | 1.00 | ug/l | 20.0 | ND | 104 | 80-124 | 8.52 | 25 | |
| Chlorobenzene | 20.0 | 0.136 | 1.00 | " | 20.0 | ND | 100 | 72.9-134 | 7.79 | 25 | |
| 1,1-Dichloroethene | 20.5 | 0.197 | 1.00 | " | 20.0 | ND | 102 | 79.3-127 | 7.07 | 25 | |
| Toluene | 19.7 | 0.155 | 1.00 | " | 20.0 | ND | 98.5 | 79.7-131 | 7.92 | 25 | |
| Trichloroethene | 20.1 | 0.241 | 1.00 | " | 20.0 | ND | 100 | 68.4-130 | 8.83 | 25 | |
| *Surrogate: 4-BFB* | *20.4* | | | *"* | *20.0* | | *102* | *75-120* | | | |
| *Surrogate: 1,2-DCA-d4* | *20.2* | | | *"* | *20.0* | | *101* | *77-129* | | | |
| *Surrogate: Dibromofluoromethane* | *21.0* | | | *"* | *20.0* | | *105* | *80-121* | | | |
| *Surrogate: Toluene-d8* | *20.6* | | | *"* | *20.0* | | *103* | *80-120* | | | |
| **Batch 3110486 - EPA 5035** | | | | | | | | | | | |
| **Blank (3110486-BLK1)** | | | | | Prepared: 11/17/03 Analyzed: 11/18/03 | | | | | | |
| Acetone | ND | 144 | 2500 | ug/kg | | | | | | | U |
| Benzene | ND | 4.44 | 100 | " | | | | | | | U |
| Bromobenzene | ND | 12.2 | 100 | " | | | | | | | U |
| Bromochloromethane | ND | 16.4 | 100 | " | | | | | | | U |
| Bromodichloromethane | ND | 10.2 | 100 | " | | | | | | | U |
| Bromoform | ND | 15.8 | 100 | " | | | | | | | U |
| Bromomethane | 17.0 | 5.09 | 500 | " | | | | | | | J |
| 2-Butanone | ND | 148 | 1000 | " | | | | | | | U |
| n-Butylbenzene | 12.0 | 11.3 | 500 | " | | | | | | | J |
| sec-Butylbenzene | ND | 7.45 | 100 | " | | | | | | | U |
| tert-Butylbenzene | ND | 15.2 | 100 | " | | | | | | | U |
| Carbon disulfide | ND | 7.19 | 1000 | " | | | | | | | U |
| Carbon tetrachloride | ND | 7.64 | 100 | " | | | | | | | U |
| Chlorobenzene | ND | 8.09 | 100 | " | | | | | | | U |
| Chloroethane | ND | 10.7 | 100 | " | | | | | | | U |
| Chloroform | ND | 7.26 | 100 | " | | | | | | | U |
| Chloromethane | ND | 6.72 | 500 | " | | | | | | | U |
| 2-Chlorotoluene | ND | 11.0 | 100 | " | | | | | | | U |
| 4-Chlorotoluene | ND | 10.4 | 100 | " | | | | | | | U |



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907.563.9200 fax 907.563.9210

| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Volatile Organic Compounds per EPA Method 8260B - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110486 - EPA 5035** | | | | | | | | | | | |
| **Blank (3110486-BLK1)** | | | | | Prepared: 11/17/03 Analyzed: 11/18/03 | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 26.0 | 500 | ug/kg | | | | | | | U |
| Dibromochloromethane | ND | 11.2 | 100 | " | | | | | | | U |
| 1,2-Dibromoethane | ND | 11.6 | 100 | " | | | | | | | U |
| Dibromomethane | ND | 14.7 | 100 | " | | | | | | | U |
| 1,2-Dichlorobenzene | ND | 14.4 | 100 | " | | | | | | | U |
| 1,3-Dichlorobenzene | ND | 5.86 | 100 | " | | | | | | | U |
| 1,4-Dichlorobenzene | ND | 14.9 | 100 | " | | | | | | | U |
| Dichlorodifluoromethane | ND | 11.8 | 500 | " | | | | | | | U |
| 1,1-Dichloroethane | ND | 11.9 | 100 | " | | | | | | | U |
| 1,2-Dichloroethane | ND | 11.2 | 100 | " | | | | | | | U |
| 1,1-Dichloroethene | ND | 11.9 | 100 | " | | | | | | | U |
| cis-1,2-Dichloroethene | ND | 12.6 | 100 | " | | | | | | | U |
| trans-1,2-Dichloroethene | ND | 8.97 | 100 | " | | | | | | | U |
| 1,2-Dichloropropane | ND | 7.45 | 100 | " | | | | | | | U |
| 1,3-Dichloropropane | ND | 17.4 | 100 | " | | | | | | | U |
| 2,2-Dichloropropane | ND | 8.09 | 100 | " | | | | | | | U |
| 1,1-Dichloropropene | ND | 10.9 | 100 | " | | | | | | | U |
| cis-1,3-Dichloropropene | ND | 4.95 | 100 | " | | | | | | | U |
| trans-1,3-Dichloropropene | ND | 8.29 | 100 | " | | | | | | | U |
| Ethylbenzene | ND | 9.40 | 100 | " | | | | | | | U |
| Hexachlorobutadiene | ND | 69.4 | 200 | " | | | | | | | U |
| 2-Hexanone | ND | 57.2 | 1000 | " | | | | | | | U |
| Isopropylbenzene | ND | 9.55 | 200 | " | | | | | | | U |
| p-Isopropyltoluene | ND | 9.68 | 200 | " | | | | | | | U |
| 4-Methyl-2-pentanone | ND | 117 | 500 | " | | | | | | | U |
| Methyl tert-butyl ether | ND | 11.9 | 100 | " | | | | | | | U |
| Methylene chloride | ND | 250 | 500 | " | | | | | | | U |
| Naphthalene | 25.0 | 14.1 | 200 | " | | | | | | | J |
| n-Propylbenzene | ND | 9.89 | 100 | " | | | | | | | U |
| Styrene | ND | 8.89 | 100 | " | | | | | | | U |
| 1,1,1,2-Tetrachloroethane | ND | 9.25 | 100 | " | | | | | | | U |
| 1,1,2,2-Tetrachloroethane | ND | 21.1 | 100 | " | | | | | | | U |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Volatile Organic Compounds per EPA Method 8260B - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110486 - EPA 5035** | | | | | | | | | | | |
| **Blank (3110486-BLK1)** | | | | | Prepared: 11/17/03 Analyzed: 11/18/03 | | | | | | |
| Tetrachloroethene | ND | 16.9 | 100 | ug/kg | | | | | | | U |
| Toluene | ND | 6.29 | 100 | " | | | | | | | U |
| 1,2,3-Trichlorobenzene | 23.0 | 16.9 | 100 | " | | | | | | | J |
| 1,2,4-Trichlorobenzene | 26.0 | 21.4 | 100 | " | | | | | | | J |
| 1,1,1-Trichloroethane | ND | 6.13 | 100 | " | | | | | | | U |
| 1,1,2-Trichloroethane | ND | 18.1 | 100 | " | | | | | | | U |
| Trichloroethene | ND | 12.0 | 100 | " | | | | | | | U |
| Trichlorofluoromethane | ND | 8.97 | 100 | " | | | | | | | U |
| 1,2,3-Trichloropropane | ND | 49.2 | 100 | " | | | | | | | U |
| 1,2,4-Trimethylbenzene | 13.0 | 6.75 | 100 | " | | | | | | | J |
| 1,3,5-Trimethylbenzene | ND | 9.33 | 100 | " | | | | | | | U |
| Vinyl chloride | ND | 5.74 | 100 | " | | | | | | | U |
| o-Xylene | ND | 11.6 | 100 | " | | | | | | | U |
| m,p-Xylene | ND | 11.4 | 200 | " | | | | | | | U |
| *Surrogate: 4-BFB* | *2040* | | | " | *2000* | | *102* | *42.6-130* | | | |
| *Surrogate: 1,2-DCA-d4* | *2290* | | | " | *2000* | | *114* | *57.3-144* | | | |
| *Surrogate: Dibromofluoromethane* | *2170* | | | " | *2000* | | *108* | *45.5-130* | | | |
| *Surrogate: Toluene-d8* | *2330* | | | " | *2000* | | *116* | *42.1-144* | | | |
| **LCS (3110486-BS1)** | | | | | Prepared: 11/17/03 Analyzed: 11/18/03 | | | | | | |
| Benzene | 2010 | 4.44 | 100 | ug/kg | 2000 | | 100 | 81.9-125 | | | |
| Chlorobenzene | 1950 | 8.09 | 100 | " | 2000 | | 97.5 | 79.2-125 | | | |
| 1,1-Dichloroethene | 1870 | 11.9 | 100 | " | 2000 | | 93.5 | 66.1-125 | | | |
| Toluene | 1980 | 6.29 | 100 | " | 2000 | | 99.0 | 80-125 | | | |
| Trichloroethene | 2040 | 12.0 | 100 | " | 2000 | | 102 | 76-125 | | | |
| *Surrogate: 4-BFB* | *1870* | | | " | *2000* | | *93.5* | *42.6-130* | | | |
| *Surrogate: 1,2-DCA-d4* | *2200* | | | " | *2000* | | *110* | *57.3-144* | | | |
| *Surrogate: Dibromofluoromethane* | *2120* | | | " | *2000* | | *106* | *45.5-130* | | | |
| *Surrogate: Toluene-d8* | *2060* | | | " | *2000* | | *103* | *42.1-144* | | | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Volatile Organic Compounds per EPA Method 8260B - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110486 - EPA 5035** | | | | | | | | | | | |
| **Matrix Spike (3110486-MS1)** | | **Source: P3K0392-01** | | | Prepared: 11/17/03 | Analyzed: 11/18/03 | | | | | |
| Benzene | 2770 | 4.44 | 100 | ug/kg dry | 2620 | ND | 106 | 68.5-125 | | | |
| Chlorobenzene | 2670 | 8.09 | 100 | " | 2620 | ND | 102 | 65.9-125 | | | |
| 1,1-Dichloroethene | 2710 | 11.9 | 100 | " | 2620 | ND | 103 | 55.8-125 | | | |
| Toluene | 3000 | 6.29 | 100 | " | 2620 | 676 | 88.7 | 70.3-125 | | | |
| Trichloroethene | 2700 | 12.0 | 100 | " | 2620 | ND | 103 | 65.5-125 | | | |
| *Surrogate: 4-BFB* | *2780* | | | *"* | *2620* | | *106* | *42.6-130* | | | |
| *Surrogate: 1,2-DCA-d4* | *2830* | | | *"* | *2620* | | *108* | *57.3-144* | | | |
| *Surrogate: Dibromofluoromethane* | *2700* | | | *"* | *2620* | | *103* | *45.5-130* | | | |
| *Surrogate: Toluene-d8* | *2590* | | | *"* | *2620* | | *98.9* | *42.1-144* | | | |
| **Matrix Spike Dup (3110486-MSD1)** | | **Source: P3K0392-01** | | | Prepared: 11/17/03 | Analyzed: 11/18/03 | | | | | |
| Benzene | 2610 | 4.44 | 100 | ug/kg dry | 2620 | ND | 99.6 | 68.5-125 | 5.95 | 25 | |
| Chlorobenzene | 2480 | 8.09 | 100 | " | 2620 | ND | 94.7 | 65.9-125 | 7.38 | 25 | |
| 1,1-Dichloroethene | 2600 | 11.9 | 100 | " | 2620 | ND | 99.2 | 55.8-125 | 4.14 | 25 | |
| Toluene | 2890 | 6.29 | 100 | " | 2620 | 676 | 84.5 | 70.3-125 | 3.74 | 25 | |
| Trichloroethene | 2600 | 12.0 | 100 | " | 2620 | ND | 99.2 | 65.5-125 | 3.77 | 25 | |
| *Surrogate: 4-BFB* | *2930* | | | *"* | *2620* | | *112* | *42.6-130* | | | |
| *Surrogate: 1,2-DCA-d4* | *2720* | | | *"* | *2620* | | *104* | *57.3-144* | | | |
| *Surrogate: Dibromofluoromethane* | *2610* | | | *"* | *2620* | | *99.6* | *45.5-130* | | | |
| *Surrogate: Toluene-d8* | *2580* | | | *"* | *2620* | | *98.5* | *42.1-144* | | | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Volatile Organic Compounds per EPA Methods 5035/8260B - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110271 - EPA 5035** | | | | | | | | | | | |
| **Blank (3110271-BLK1)** | | | | | Prepared: 11/18/03 Analyzed: 11/20/03 | | | | | | |
| Acetone | ND | 4.25 | 20.0 | ug/kg | | | | | | | U |
| Benzene | ND | 0.147 | 5.00 | " | | | | | | | U |
| Bromobenzene | ND | 0.152 | 5.00 | " | | | | | | | U |
| Bromochloromethane | ND | 0.277 | 5.00 | " | | | | | | | U |
| Bromodichloromethane | ND | 0.388 | 5.00 | " | | | | | | | U |
| Bromoform | ND | 0.169 | 5.00 | " | | | | | | | U |
| Bromomethane | ND | 0.309 | 20.0 | " | | | | | | | U |
| 2-Butanone | ND | 15.4 | 20.0 | " | | | | | | | U |
| n-Butylbenzene | ND | 0.181 | 5.00 | " | | | | | | | U |
| sec-Butylbenzene | ND | 0.160 | 5.00 | " | | | | | | | U |
| tert-Butylbenzene | ND | 0.195 | 5.00 | " | | | | | | | U |
| Carbon disulfide | ND | 0.420 | 20.0 | " | | | | | | | U |
| Carbon tetrachloride | ND | 0.202 | 5.00 | " | | | | | | | U |
| Chlorobenzene | ND | 0.276 | 5.00 | " | | | | | | | U |
| Chloroethane | ND | 0.353 | 10.0 | " | | | | | | | U |
| Chloroform | ND | 0.174 | 5.00 | " | | | | | | | U |
| Chloromethane | ND | 0.513 | 10.0 | " | | | | | | | U |
| 2-Chlorotoluene | ND | 0.236 | 5.00 | " | | | | | | | U |
| 4-Chlorotoluene | ND | 0.108 | 5.00 | " | | | | | | | U |
| 1,2-Dibromo-3-chloropropane | ND | 0.213 | 10.0 | " | | | | | | | U |
| Dibromochloromethane | ND | 0.270 | 5.00 | " | | | | | | | U |
| 1,2-Dibromoethane | ND | 0.386 | 5.00 | " | | | | | | | U |
| Dibromomethane | ND | 0.302 | 5.00 | " | | | | | | | U |
| 1,2-Dichlorobenzene | ND | 0.169 | 5.00 | " | | | | | | | U |
| 1,3-Dichlorobenzene | ND | 0.329 | 5.00 | " | | | | | | | U |
| 1,4-Dichlorobenzene | ND | 0.162 | 5.00 | " | | | | | | | U |
| Dichlorodifluoromethane | ND | 0.280 | 10.0 | " | | | | | | | U |
| 1,1-Dichloroethane | ND | 0.0975 | 5.00 | " | | | | | | | U |
| 1,2-Dichloroethane | ND | 0.236 | 5.00 | " | | | | | | | U |
| 1,1-Dichloroethene | ND | 0.180 | 5.00 | " | | | | | | | U |
| cis-1,2-Dichloroethene | ND | 0.202 | 5.00 | " | | | | | | | U |



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907.563.9200 fax 907.563.9210

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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Volatile Organic Compounds per EPA Methods 5035/8260B - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110271 - EPA 5035** | | | | | | | | | | | |
| **Blank (3110271-BLK1)** | | | | | Prepared: 11/18/03 Analyzed: 11/20/03 | | | | | | |
| trans-1,2-Dichloroethene | ND | 0.195 | 5.00 | ug/kg | | | | | | | U |
| 1,2-Dichloropropane | ND | 0.191 | 5.00 | " | | | | | | | U |
| 1,3-Dichloropropane | ND | 0.353 | 5.00 | " | | | | | | | U |
| 2,2-Dichloropropane | ND | 0.224 | 5.00 | " | | | | | | | U |
| 1,1-Dichloropropene | ND | 0.234 | 5.00 | " | | | | | | | U |
| cis-1,3-Dichloropropene | ND | 0.141 | 5.00 | " | | | | | | | U |
| trans-1,3-Dichloropropene | ND | 0.372 | 5.00 | " | | | | | | | U |
| Ethylbenzene | 0.250 | 0.143 | 5.00 | " | | | | | | | J |
| Hexachlorobutadiene | ND | 0.739 | 5.00 | " | | | | | | | U |
| 2-Hexanone | ND | 2.14 | 20.0 | " | | | | | | | U |
| Isopropylbenzene | ND | 0.202 | 5.00 | " | | | | | | | U |
| p-Isopropyltoluene | 0.250 | 0.133 | 5.00 | " | | | | | | | J |
| 4-Methyl-2-pentanone | ND | 2.06 | 20.0 | " | | | | | | | U |
| Methylene chloride | ND | 10.0 | 25.0 | " | | | | | | | U |
| Naphthalene | 1.36 | 0.345 | 5.00 | " | | | | | | | J |
| n-Propylbenzene | ND | 0.174 | 5.00 | " | | | | | | | U |
| Styrene | ND | 0.154 | 5.00 | " | | | | | | | U |
| 1,1,1,2-Tetrachloroethane | ND | 0.297 | 5.00 | " | | | | | | | U |
| 1,1,2,2-Tetrachloroethane | ND | 0.257 | 5.00 | " | | | | | | | U |
| Tetrachloroethene | ND | 0.145 | 5.00 | " | | | | | | | U |
| Toluene | ND | 0.299 | 5.00 | " | | | | | | | U |
| 1,2,3-Trichlorobenzene | ND | 0.318 | 5.00 | " | | | | | | | U |
| 1,2,4-Trichlorobenzene | ND | 0.392 | 5.00 | " | | | | | | | U |
| 1,1,1-Trichloroethane | ND | 0.228 | 5.00 | " | | | | | | | U |
| 1,1,2-Trichloroethane | ND | 0.701 | 5.00 | " | | | | | | | U |
| Trichloroethene | ND | 0.221 | 5.00 | " | | | | | | | U |
| Trichlorofluoromethane | ND | 0.281 | 5.00 | " | | | | | | | U |
| 1,2,3-Trichloropropane | ND | 0.962 | 5.00 | " | | | | | | | U |
| 1,2,4-Trimethylbenzene | 0.350 | 0.0800 | 5.00 | " | | | | | | | J |
| 1,3,5-Trimethylbenzene | ND | 0.154 | 5.00 | " | | | | | | | U |
| Vinyl chloride | ND | 0.305 | 10.0 | " | | | | | | | U |
| o-Xylene | 0.230 | 0.199 | 5.00 | " | | | | | | | J |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Volatile Organic Compounds per EPA Methods 5035/8260B - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110271 - EPA 5035** | | | | | | | | | | | |
| **Blank (3110271-BLK1)** | | | | | Prepared: 11/18/03 Analyzed: 11/20/03 | | | | | | |
| m,p-Xylene | 0.800 | 0.208 | 10.0 | ug/kg | | | | | | | J |
| *Surrogate: 4-BFB* | *19.5* | | | " | *20.0* | | *97.5* | *42.6-130* | | | |
| *Surrogate: 1,2-DCA-d4* | *18.6* | | | " | *20.0* | | *93.0* | *57.3-144* | | | |
| *Surrogate: Dibromofluoromethane* | *18.9* | | | " | *20.0* | | *94.5* | *45.5-130* | | | |
| *Surrogate: Toluene-d8* | *19.4* | | | " | *20.0* | | *97.0* | *42.1-144* | | | |
| **LCS (3110271-BS1)** | | | | | Prepared: 11/18/03 Analyzed: 11/20/03 | | | | | | |
| Benzene | 18.3 | 0.147 | 5.00 | ug/kg | 20.0 | | 91.5 | 78-129 | | | |
| Chlorobenzene | 18.7 | 0.276 | 5.00 | " | 20.0 | | 93.5 | 62.8-140 | | | |
| 1,1-Dichloroethene | 15.5 | 0.180 | 5.00 | " | 20.0 | | 77.5 | 68.2-133 | | | |
| Toluene | 19.0 | 0.299 | 5.00 | " | 20.0 | | 95.0 | 66.8-137 | | | |
| Trichloroethene | 20.5 | 0.221 | 5.00 | " | 20.0 | | 102 | 76.2-132 | | | |
| *Surrogate: 4-BFB* | *19.6* | | | " | *20.0* | | *98.0* | *42.6-130* | | | |
| *Surrogate: 1,2-DCA-d4* | *18.6* | | | " | *20.0* | | *93.0* | *57.3-144* | | | |
| *Surrogate: Dibromofluoromethane* | *18.7* | | | " | *20.0* | | *93.5* | *45.5-130* | | | |
| *Surrogate: Toluene-d8* | *19.3* | | | " | *20.0* | | *96.5* | *42.1-144* | | | |
| **Matrix Spike (3110271-MS1)** | | **Source: P3K0194-01** | | | Prepared: 11/18/03 Analyzed: 11/20/03 | | | | | | |
| Benzene | 1050 | 8.22 | 279 | ug/kg dry | 1120 | ND | 93.8 | 60-140 | | | |
| Chlorobenzene | 1040 | 15.4 | 279 | " | 1120 | 32.4 | 90.0 | 60-140 | | | |
| 1,1-Dichloroethene | 948 | 10.1 | 279 | " | 1120 | ND | 84.6 | 60-140 | | | |
| Toluene | 1220 | 16.7 | 279 | " | 1120 | 226 | 88.8 | 60-140 | | | |
| Trichloroethene | 1010 | 12.4 | 279 | " | 1120 | 117 | 79.7 | 60-140 | | | |
| *Surrogate: 4-BFB* | *1030* | | | " | *1120* | | *92.0* | *42.6-130* | | | |
| *Surrogate: 1,2-DCA-d4* | *902* | | | " | *1120* | | *80.5* | *57.3-144* | | | |
| *Surrogate: Dibromofluoromethane* | *988* | | | " | *1120* | | *88.2* | *45.5-130* | | | |
| *Surrogate: Toluene-d8* | *1090* | | | " | *1120* | | *97.3* | *42.1-144* | | | |



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907.563.9200 fax 907.563.9210

| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Volatile Organic Compounds per EPA Methods 5035/8260B - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110271 - EPA 5035** | | | | | | | | | | | |
| **Matrix Spike Dup (3110271-MSD1)** | | **Source: P3K0194-01** | | Prepared: 11/18/03 | Analyzed: 11/20/03 | | | | | | |
| Benzene | 979 | 8.22 | 279 | ug/kg dry | 1120 | ND | 87.4 | 60-140 | 7.00 | 25 | |
| Chlorobenzene | 962 | 15.4 | 279 | " | 1120 | 32.4 | 83.0 | 60-140 | 7.79 | 25 | |
| 1,1-Dichloroethene | 956 | 10.1 | 279 | " | 1120 | ND | 85.4 | 60-140 | 0.840 | 25 | |
| Toluene | 1140 | 16.7 | 279 | " | 1120 | 226 | 81.6 | 60-140 | 6.78 | 25 | |
| Trichloroethene | 1080 | 12.4 | 279 | " | 1120 | 117 | 86.0 | 60-140 | 6.70 | 25 | |
| *Surrogate: 4-BFB* | *1020* | | | *"* | *1120* | | *91.1* | *42.6-130* | | | |
| *Surrogate: 1,2-DCA-d4* | *937* | | | *"* | *1120* | | *83.7* | *57.3-144* | | | |
| *Surrogate: Dibromofluoromethane* | *1040* | | | *"* | *1120* | | *92.9* | *45.5-130* | | | |
| *Surrogate: Toluene-d8* | *1070* | | | *"* | *1120* | | *95.5* | *42.1-144* | | | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Semivolatile Organic Compounds per EPA Method 8270C - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110491 - EPA 3550** | | | | | | | | | | | |
| **Blank (3110491-BLK1)** | | | | | Prepared: 11/17/03 Analyzed: 11/19/03 | | | | | | |
| Acenaphthene | ND | 0.0700 | 0.330 | mg/kg | | | | | | | U |
| Acenaphthylene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Anthracene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Benzo (a) anthracene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Benzo (a) pyrene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Benzo (b) fluoranthene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Benzo (ghi) perylene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Benzo (k) fluoranthene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Benzoic Acid | ND | 0.500 | 1.00 | " | | | | | | | U |
| Benzyl alcohol | ND | 0.165 | 0.330 | " | | | | | | | U |
| 4-Bromophenyl phenyl ether | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Butyl benzyl phthalate | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 4-Chloro-3-methylphenol | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 4-Chloroaniline | ND | 0.165 | 2.00 | " | | | | | | | U |
| Bis(2-chloroethoxy)methane | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Bis(2-chloroethyl)ether | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Bis(2-chloroisopropyl)ether | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 2-Chloronaphthalene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 2-Chlorophenol | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 4-Chlorophenyl phenyl ether | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Chrysene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Di-n-butyl phthalate | ND | 0.500 | 1.00 | " | | | | | | | U |
| Di-n-octyl phthalate | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Dibenzo (a,h) anthracene | ND | 0.0600 | 0.330 | " | | | | | | | U |
| Dibenzofuran | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 1,2-Dichlorobenzene | ND | 0.500 | 1.00 | " | | | | | | | U |
| 1,3-Dichlorobenzene | ND | 0.500 | 1.00 | " | | | | | | | U |
| 1,4-Dichlorobenzene | ND | 0.500 | 1.00 | " | | | | | | | U |
| 3,3'-Dichlorobenzidine | ND | 0.500 | 1.00 | " | | | | | | | U |
| 2,4-Dichlorophenol | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Diethyl phthalate | ND | 0.0700 | 0.330 | " | | | | | | | U |



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907.563.9200 fax 907.563.9210

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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Semivolatile Organic Compounds per EPA Method 8270C - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110491 - EPA 3550** | | | | | | | | | | | |
| **Blank (3110491-BLK1)** | | | | | Prepared: 11/17/03 Analyzed: 11/19/03 | | | | | | |
| 2,4-Dimethylphenol | ND | 0.500 | 1.00 | mg/kg | | | | | | | U |
| Dimethyl phthalate | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 4,6-Dinitro-2-methylphenol | ND | 0.500 | 1.00 | " | | | | | | | U |
| 2,4-Dinitrophenol | ND | 2.00 | 2.00 | " | | | | | | | U |
| 2,4-Dinitrotoluene | ND | 0.500 | 0.500 | " | | | | | | | U |
| 2,6-Dinitrotoluene | ND | 0.0700 | 0.500 | " | | | | | | | U |
| Bis(2-ethylhexyl)phthalate | ND | 2.00 | 2.00 | " | | | | | | | U |
| Fluoranthene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Fluorene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Hexachlorobenzene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Hexachlorobutadiene | ND | 0.500 | 1.00 | " | | | | | | | U |
| Hexachlorocyclopentadiene | ND | 0.500 | 1.00 | " | | | | | | | U |
| Hexachloroethane | ND | 0.500 | 1.00 | " | | | | | | | U |
| Indeno (1,2,3-cd) pyrene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Isophorone | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 2-Methylnaphthalene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 2-Methylphenol | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 3-,4-Methylphenol | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Naphthalene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 2-Nitroaniline | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 3-Nitroaniline | ND | 0.500 | 1.00 | " | | | | | | | U |
| 4-Nitroaniline | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Nitrobenzene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 2-Nitrophenol | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 4-Nitrophenol | ND | 0.500 | 1.00 | " | | | | | | | U |
| N-Nitrosodi-n-propylamine | ND | 0.0700 | 0.330 | " | | | | | | | U |
| N-Nitrosodiphenylamine | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Pentachlorophenol | ND | 0.500 | 1.00 | " | | | | | | | U |
| Phenanthrene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Phenol | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Pyrene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 1,2,4-Trichlorobenzene | ND | 0.0700 | 0.330 | " | | | | | | | U |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Semivolatile Organic Compounds per EPA Method 8270C - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110491 - EPA 3550** | | | | | | | | | | | |
| **Blank (3110491-BLK1)** | | | | | Prepared: 11/17/03 Analyzed: 11/19/03 | | | | | | |
| 2,4,5-Trichlorophenol | ND | 0.0700 | 0.330 | mg/kg | | | | | | | U |
| 2,4,6-Trichlorophenol | ND | 0.0700 | 0.330 | " | | | | | | | U |
| *Surrogate: 2-Fluorobiphenyl* | *2.62* | | | " | *2.50* | | *105* | *44-146* | | | |
| *Surrogate: 2-Fluorophenol* | *4.92* | | | " | *5.00* | | *98.4* | *42-126* | | | *D* |
| *Surrogate: Nitrobenzene-d5* | *2.44* | | | " | *2.50* | | *97.6* | *42-126* | | | |
| *Surrogate: Phenol-d6* | *4.66* | | | " | *5.00* | | *93.2* | *42-131* | | | |
| *Surrogate: p-Terphenyl-d14* | *3.16* | | | " | *2.50* | | *126* | *49-150* | | | |
| *Surrogate: 2,4,6-Tribromophenol* | *4.86* | | | " | *5.00* | | *97.2* | *48-119* | | | |
| **LCS (3110491-BS1)** | | | | | Prepared: 11/17/03 Analyzed: 11/18/03 | | | | | | |
| Acenaphthene | 2.62 | 0.0700 | 0.330 | mg/kg | 2.50 | | 105 | 30-115 | | | |
| 4-Chloro-3-methylphenol | 4.61 | 0.140 | 0.660 | " | 5.00 | | 92.2 | 40-110 | | | D |
| 2-Chlorophenol | 4.79 | 0.140 | 0.660 | " | 5.00 | | 95.8 | 40-100 | | | D |
| 1,4-Dichlorobenzene | 2.27 | 0.500 | 1.00 | " | 2.50 | | 90.8 | 10-100 | | | |
| 2,4-Dinitrotoluene | 2.50 | 0.500 | 0.500 | " | 2.50 | | 100 | 30-110 | | | |
| 4-Nitrophenol | 5.21 | 0.500 | 1.00 | " | 5.00 | | 104 | 30-130 | | | |
| N-Nitrosodi-n-propylamine | 2.75 | 0.0700 | 0.330 | " | 2.50 | | 110 | 30-110 | | | |
| Pentachlorophenol | 4.17 | 0.500 | 1.00 | " | 5.00 | | 83.4 | 14-120 | | | |
| Phenol | 4.95 | 0.0700 | 0.330 | " | 5.00 | | 99.0 | 35-100 | | | |
| Pyrene | 2.61 | 0.0700 | 0.330 | " | 2.50 | | 104 | 30-115 | | | |
| 1,2,4-Trichlorobenzene | 2.05 | 0.0700 | 0.330 | " | 2.50 | | 82.0 | 18-100 | | | |
| *Surrogate: 2-Fluorobiphenyl* | *2.68* | | | " | *2.50* | | *107* | *44-146* | | | |
| *Surrogate: 2-Fluorophenol* | *5.19* | | | " | *5.00* | | *104* | *42-126* | | | *D* |
| *Surrogate: Nitrobenzene-d5* | *2.68* | | | " | *2.50* | | *107* | *42-126* | | | |
| *Surrogate: Phenol-d6* | *5.39* | | | " | *5.00* | | *108* | *42-131* | | | |
| *Surrogate: p-Terphenyl-d14* | *3.07* | | | " | *2.50* | | *123* | *49-150* | | | |
| *Surrogate: 2,4,6-Tribromophenol* | *5.64* | | | " | *5.00* | | *113* | *48-119* | | | *D* |



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Anchorage 2000 W. International Airport Road, Suite A10, Anchorage, AK 99502-1119
907.563.9200 fax 907.563.9210

| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Semivolatile Organic Compounds per EPA Method 8270C - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110491 - EPA 3550** | | | | | | | | | | | |
| **Matrix Spike (3110491-MS1)** | | **Source: P3K0348-06** | | | Prepared: 11/17/03 | Analyzed: 11/19/03 | | | | | |
| Acenaphthene | 2.74 | 0.140 | 0.660 | mg/kg dry | 2.75 | ND | 99.6 | 40-110 | | | D |
| 4-Chloro-3-methylphenol | 5.03 | 0.140 | 0.660 | " | 5.50 | ND | 91.5 | 40-110 | | | D |
| 2-Chlorophenol | 4.88 | 0.140 | 0.660 | " | 5.50 | ND | 88.7 | 40-100 | | | D |
| 1,4-Dichlorobenzene | 1.82 | 1.00 | 2.00 | " | 2.75 | ND | 66.2 | 10-100 | | | J, D |
| 2,4-Dinitrotoluene | 2.83 | 1.00 | 1.00 | " | 2.75 | ND | 103 | 40-110 | | | D |
| 4-Nitrophenol | 5.86 | 1.00 | 2.00 | " | 5.50 | ND | 107 | 40-125 | | | D |
| N-Nitrosodi-n-propylamine | 2.21 | 0.140 | 0.660 | " | 2.75 | ND | 80.4 | 30-110 | | | D |
| Pentachlorophenol | 5.03 | 1.00 | 2.00 | " | 5.50 | ND | 91.5 | 25-110 | | | D |
| Phenol | 3.96 | 0.140 | 0.660 | " | 5.50 | ND | 72.0 | 35-100 | | | D |
| Pyrene | 3.11 | 0.140 | 0.660 | " | 2.75 | ND | 113 | 40-110 | | | Q-01, D |
| 1,2,4-Trichlorobenzene | 2.16 | 0.140 | 0.660 | " | 2.75 | ND | 78.5 | 30-101 | | | D |
| *Surrogate: 2-Fluorobiphenyl* | *3.12* | | | " | *2.75* | | *113* | *44-146* | | | *D* |
| *Surrogate: 2-Fluorophenol* | *5.31* | | | " | *5.50* | | *96.5* | *42-126* | | | *D* |
| *Surrogate: Nitrobenzene-d5* | *2.54* | | | " | *2.75* | | *92.4* | *42-126* | | | *D* |
| *Surrogate: Phenol-d6* | *3.90* | | | " | *5.50* | | *70.9* | *42-131* | | | *D* |
| *Surrogate: p-Terphenyl-d14* | *3.34* | | | " | *2.75* | | *121* | *49-150* | | | *D* |
| *Surrogate: 2,4,6-Tribromophenol* | *7.16* | | | " | *5.50* | | *130* | *48-119* | | | *Q-01, D* |
| **Matrix Spike Dup (3110491-MSD1)** | | **Source: P3K0348-06** | | | Prepared: 11/17/03 | Analyzed: 11/19/03 | | | | | |
| Acenaphthene | 2.65 | 0.140 | 0.660 | mg/kg dry | 2.75 | ND | 96.4 | 40-110 | 3.34 | 40 | D |
| 4-Chloro-3-methylphenol | 5.02 | 0.140 | 0.660 | " | 5.50 | ND | 91.3 | 40-110 | 0.199 | 40 | D |
| 2-Chlorophenol | 5.48 | 0.140 | 0.660 | " | 5.50 | ND | 99.6 | 40-100 | 11.6 | 40 | D |
| 1,4-Dichlorobenzene | 2.02 | 1.00 | 2.00 | " | 2.75 | ND | 73.5 | 10-100 | 10.4 | 60 | D |
| 2,4-Dinitrotoluene | 2.57 | 1.00 | 1.00 | " | 2.75 | ND | 93.5 | 40-110 | 9.63 | 40 | D |
| 4-Nitrophenol | 4.92 | 1.00 | 2.00 | " | 5.50 | ND | 89.5 | 40-125 | 17.4 | 40 | D |
| N-Nitrosodi-n-propylamine | 2.55 | 0.140 | 0.660 | " | 2.75 | ND | 92.7 | 30-110 | 14.3 | 40 | D |
| Pentachlorophenol | 3.62 | 1.00 | 2.00 | " | 5.50 | ND | 65.8 | 25-110 | 32.6 | 60 | D |
| Phenol | 4.30 | 0.140 | 0.660 | " | 5.50 | ND | 78.2 | 35-100 | 8.23 | 40 | D |
| Pyrene | 3.01 | 0.140 | 0.660 | " | 2.75 | ND | 109 | 40-110 | 3.27 | 40 | D |
| 1,2,4-Trichlorobenzene | 2.25 | 0.140 | 0.660 | " | 2.75 | ND | 81.8 | 30-101 | 4.08 | 60 | D |
| *Surrogate: 2-Fluorobiphenyl* | *2.88* | | | " | *2.75* | | *105* | *44-146* | | | *D* |



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907.563.9200 fax 907.563.9210

| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Semivolatile Organic Compounds per EPA Method 8270C - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110491 - EPA 3550** | | | | | | | | | | | |
| **Matrix Spike Dup (3110491-MSD1)** | | | **Source: P3K0348-06** | | Prepared: 11/17/03 | Analyzed: 11/19/03 | | | | | |
| *Surrogate: 2-Fluorophenol* | *5.79* | | | *mg/kg dry* | *5.50* | | *105* | *42-126* | | | *D* |
| *Surrogate: Nitrobenzene-d5* | *2.55* | | | *"* | *2.75* | | *92.7* | *42-126* | | | *D* |
| *Surrogate: Phenol-d6* | *4.82* | | | *"* | *5.50* | | *87.6* | *42-131* | | | *D* |
| *Surrogate: p-Terphenyl-d14* | *3.34* | | | *"* | *2.75* | | *121* | *49-150* | | | *D* |
| *Surrogate: 2,4,6-Tribromophenol* | *6.25* | | | *"* | *5.50* | | *114* | *48-119* | | | *D* |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Percent Dry Weight (Solids) per Standard Methods - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110623 - Dry Weight** | | | | | | | | | | | |
| **Duplicate (3110623-DUP1)** | | **Source: P3K0470-11** | | | Prepared: 11/19/03 Analyzed: 11/20/03 | | | | | | |
| % Solids | 82.9 | | 1.00 | % by Weight | | 83.1 | | | 0.241 | 20 | |
| **Duplicate (3110623-DUP2)** | | **Source: P3K0468-03** | | | Prepared: 11/19/03 Analyzed: 11/20/03 | | | | | | |
| % Solids | 78.2 | | 1.00 | % by Weight | | 77.9 | | | 0.384 | 20 | |
| **Duplicate (3110623-DUP3)** | | **Source: P3K0468-09** | | | Prepared: 11/19/03 Analyzed: 11/20/03 | | | | | | |
| % Solids | 79.1 | | 1.00 | % by Weight | | 79.1 | | | 0.00 | 20 | |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

## North Creek Analytical - Bothell

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3K21004 - General Preparation** | | | | | | | | | | | |
| **Blank (3K21004-BLK1)** | | | | | Prepared & Analyzed: 11/20/03 | | | | | | |
| Total Organic Carbon | ND | | 1000 | mg/kg | | | | | | | |
| **LCS (3K21004-BS1)** | | | | | Prepared & Analyzed: 11/20/03 | | | | | | |
| Total Organic Carbon | 29800 | | 1000 | mg/kg | 30000 | | 99.3 | 72-130 | | | |
| **LCS Dup (3K21004-BSD1)** | | | | | Prepared & Analyzed: 11/20/03 | | | | | | |
| Total Organic Carbon | 27000 | | 1000 | mg/kg | 30000 | | 90.0 | 72-130 | 9.86 | 30 | |
| **Duplicate (3K21004-DUP1)** | | **Source: B3K0436-01** | | | Prepared: 11/18/03 Analyzed: 11/20/03 | | | | | | |
| Total Organic Carbon | 6000 | | 1000 | mg/kg dry | | 10600 | | | 55.4 | 35 | Q-07 |
| **Duplicate (3K21004-DUP2)** | | **Source: B3K0460-01** | | | Prepared: 11/19/03 Analyzed: 11/20/03 | | | | | | |
| Total Organic Carbon | ND | | 1000 | mg/kg wet | | 1390 | | | | 35 | |
| **Duplicate (3K21004-DUP3)** | | **Source: P3K0404-05** | | | Prepared: 11/19/03 Analyzed: 11/20/03 | | | | | | |
| Total Organic Carbon | 21000 | | 1000 | mg/kg dry | | 22500 | | | 6.90 | 35 | |
| **Matrix Spike (3K21004-MS1)** | | **Source: B3K0436-01** | | | Prepared: 11/18/03 Analyzed: 11/20/03 | | | | | | |
| Total Organic Carbon | 40000 | | 1000 | mg/kg dry | 27800 | 10600 | 106 | 40-160 | | | |



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907.563.9200 fax 907.563.9210

| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

# Physical Parameters by APHA/ASTM/EPA Methods - Quality Control

## North Creek Analytical - Bothell

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3K24027 - Dry Weight** | | | | | | | | | | | |
| **Blank (3K24027-BLK1)** | | | | | Prepared: 11/24/03 Analyzed: 11/25/03 | | | | | | |
| Dry Weight | 100 | | 1.00 | % | | | | | | | |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 11:02 |

## Notes and Definitions

| | |
|---|---|
| D | Data reported from a preparation or analytical dilution. |
| D-17 | Detected hydrocarbons in the diesel range do not have a distinct diesel pattern and may be due to heavily weathered diesel or possibly biogenic interference. |
| J | Estimated value. |
| P-02 | Results reported on 'As Received' basis. |
| Q-01 | The spike recovery, and/or RPD, for this QC sample is outside of established control limits. Review of associated batch QC indicates the recovery for this analyte does not represent an out-of-control condition for the batch. |
| Q-02 | The spike recovery for this QC sample is outside of established control limits due to sample matrix interference. |
| Q-07 | The RPD value for this QC sample is above the established control limit. Review of associated QC indicates the high RPD does not represent an out-of-control condition for the batch. |
| Q-14 | The Spike Recovery and/or RPD is outside of control limits due to a non-homogeneous sample matrix. |
| R-05 | Reporting limits raised due to dilution necessary for analysis. Sample contains high levels of reported analyte, non-target analyte, and/or matrix interference. |
| S-01 | The surrogate recovery for this sample is not available due to sample dilution required from high analyte concentration and/or matrix interferences. |
| S-09 | Surrogate recovery is outside control limits due to matrix interference. |
| U | Analyte included in the analysis but not detected. |
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis. MRLs are adjusted if %Solids are less than 50%. |
| RPD | Relative Percent Difference |

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# North Creek Analytical
# Case Narrative

**Client: Forensic Environmental Services**
**Project Name: GS Roofing-Portland**
**Consultant Project #: None**
**Laboratory Work Order: P3K0404**

## Summary

One water and five soil samples were received by North Creek Analytical, Portland and logged in on 11/14/03. The samples were received at 5.7 degrees Centigrade.

## Sample Analysis

There were no anomalies encountered during the preparation and analysis of the samples. Qualifiers have been added to sample results as footnotes and are detailed in the *Notes and Definitions* section of the *Analytical Report*, page 55.

## QC Analysis

If surrogate and quality control parameters are outside established control limits it is noted on the appropriate pages of the *Analytical Report*. There were no anomalies encountered during the preparation and analysis of the QC samples that impacts data quality or integrity.

Brian L Cox 2-25-04

, Project Manager Date

nca

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3209 Denali St, Anchorage, AK 99503-4030 907-334-9200 FAX 334-9210

# CHAIN OF CUSTODY REPORT

**Work Order #:** P3K0404

CLIENT:

REPORT TO: Forensics Environmental Inc
ADDRESS: 113 John Robert Thomas Dr
Exton PA 19341

PHONE (610) 594-3940 FAX (610) 594-3943

INVOICE TO:

P.O. NUMBER:

PROJECT NAME: GS Roofing

PROJECT NUMBER:

SAMPLED BY: Brian Richardson

**TURNAROUND REQUEST**
in Business Days *

Organic & Inorganic Analyses: ☒ STD. | 7 | 5 | 4 | 3 | 2 | 1 | <1

Petroleum Hydrocarbon Analyses: 5 STD. | 4 | 3 | 2 | 1 | <1

OTHER Specify:

* Turnaround Requests less than standard may incur Rush Charges.

PRESERVATIVE: NONE | NONE | NONE | meOH | NaHSO4 | | HCl

REQUESTED ANALYSES

| CLIENT SAMPLE IDENTIFICATION | SAMPLING DATE/TIME | | TPH Dx | TPH Gx | PP metals SVOCs PCBs | VOCs 8260B | VOCs by 8260B | TOC | VOCs by 8260B | MATRIX (W, S, O) | # OF CONT. | LOCATION / COMMENTS | NCA WO ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 SB-2-15 | 11/13/03 | 1105 | X | X | X | ~~X~~ | ~~X~~ | | | S | 3 | SVOC's by 8270 metals by 6060 PCB's by 8082 | |
| 2 SB-13-17 | 11/13/03 | 1115 | X | X | X | | | | | S | 2 | | |
| 3 SB-2-17-18.5 | 11/13/03 | 1210 | | | | X | X | | | S | 3 | | |
| 4 SB-13-17-18.5 | 11/13/03 | 1208 | | | | X | X | | | S | 3 | | |
| 5 SB-3-17 | 11/13/03 | 1448 | X | X | X | X | X | X | | S | 6 | | |
| 6 TB-2 | 11/13/03 | 1515 | | | | | | | X | W | 1 | | |
| 7 | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| RELEASED BY: | DATE: 11/13/03 | RECEIVED BY: | DATE: 11/13/03 |
| PRINT NAME: Brian Richardson | FIRM: Forensics Env TIME: 16:00 | PRINT NAME: Bob F | FIRM: NCA TIME: 16:00 |
| RELEASED BY: | DATE: | RECEIVED BY: | DATE: 11/13/03 |
| PRINT NAME: | FIRM: TIME: | PRINT NAME: Erica Dolan | FIRM: NCA TIME: 1705 |

ADDITIONAL REMARKS:
Samples Preserved w/ meOH & NaHSO4 have elevated time of Avg from extraction times as noted on individual VOA's

TEMP: 5.1°C

COC REV 1/03

PAGE 1 OF

# NORTH CREEK ANALYTICAL COOLER RECEIPT FORM

(Army Corp. compliant)

Client: Certainteed

1. **Please sign for receipt and opening of** 1 **cooler or** ____ **other** ____

   By (print) Erica Dakan (sign) Erica Dakan

2. Date samples received 11/13/05 Date opened: Same X or ___/___/___

3. Delivered by: X NCA courier ___ FedEx ___ UPS ___ Courier ___ Client ___ Other ___

   Airbill # if applicable ____ (Put copy of shipping papers in file)

4. There were 0 custody seals present, signed by ____ date ___/___/___.

5. Were the custody seals unbroken and intact at the date and time of arrival? ___ Yes ___ No

6. Was ice used? X yes ___ no Type of ice: X blue ice ___ gel ice X real ice

   Temperature (degrees C) 5.7°C Raytek thermometer ____ Digi-Therm (probe temperature blank)

7. Are custody papers sealed in a plastic bag and taped inside to lid? X Yes ___ No

8. Were custody papers filled out properly (ink, signed, etc.)? X Yes ___ No

   If "no" please specify: ____

9. Was project identifiable from custody papers? X Yes ___ No

   Name of project GS Roofing (if applicable)

10. **Initial and date for unpacking:** CAB **(initials)** **date** 11/14/3

11. Packing material: ___ bubble wrap/bag ___ styrofoam ___ cardboard none other

12. Were samples in bags? X Yes ___ No

13. Did all containers indicated on the COC arrive? X Yes ___ No

    If "no" please indicate which containers were absent ____

14. Were all containers unbroken and labels in good condition? X Yes ___ No

    If "no" please indicate which containers ____

15. Were all bottle labels complete (ID, date, time, signature, etc.)? X Yes ___ No

    Do the IDs, times, etc. agree with the COC? ___ Yes X No

    If "no" please indicate which containers SB2-17-18.5 12:05 ≠ 12:10 12:15 ≠ 12:10

16. Are containers properly preserved for indicated analysis? X Yes ___ No

17. Is there adequate volume for the test(s) requested? X Yes ___ No

18. If voa vials were submitted, are they free of bubbles? X N/A ___ Yes ___ No

19. **Log-in phase: Date samples were logged in:** ___/___/___ **Elm Project # P** ____

20. Logged in by (print) ____ (sign) ____

21. Was the project manager notified of status? (Use back of form as a record) ___ Yes ___ No

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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

## ANALYTICAL REPORT FOR SAMPLES

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| MW-12-20.5 | P3K0348-01 | Soil | 11/11/03 11:28 | 11/12/03 16:40 |
| MW-11-11.25 | P3K0348-02 | Soil | 11/11/03 15:20 | 11/12/03 16:40 |
| MW-11-26.25 | P3K0348-03 | Soil | 11/11/03 16:15 | 11/12/03 16:40 |
| TB-042 | P3K0348-04 | Water | 11/11/03 10:00 | 11/12/03 16:40 |
| MW-14-16 | P3K0348-05 | Soil | 11/12/03 11:18 | 11/12/03 16:40 |
| Dry Well #2 | P3K0348-06 | Soil | 11/12/03 12:59 | 11/12/03 16:40 |
| Dry Well #1 | P3K0348-07 | Soil | 11/12/03 12:41 | 11/12/03 16:40 |
| MW-13-15 | P3K0348-08 | Soil | 11/12/03 14:32 | 11/12/03 16:40 |
| MW-13-25 | P3K0348-09 | Soil | 11/12/03 14:51 | 11/12/03 16:40 |

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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Gasoline Hydrocarbons per NW TPH-Gx Method
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **MW-12-20.5 (P3K0348-01RE2) Soil** | **Sampled: 11/11/03 11:28** | | **Received: 11/12/03 16:40** | | | | | | | |
| **Gasoline Range Hydrocarbons** | **155** | | 40.0 | mg/kg dry | 10 | 3110680 | 11/20/03 | 11/20/03 | NW TPH-Gx | |
| *Surrogate: a,a,a-TFT* | | *91.5 %* | *50-150* | | | " | " | " | " | |
| **MW-11-11.25 (P3K0348-02RE2) Soil** | **Sampled: 11/11/03 15:20** | | **Received: 11/12/03 16:40** | | | | | | | |
| Gasoline Range Hydrocarbons | ND | | 4.00 | mg/kg dry | 1 | 3110680 | 11/20/03 | 11/20/03 | NW TPH-Gx | U |
| *Surrogate: a,a,a-TFT* | | *69.8 %* | *50-150* | | | " | " | " | " | |
| **MW-14-16 (P3K0348-05RE2) Soil** | **Sampled: 11/12/03 11:18** | | **Received: 11/12/03 16:40** | | | | | | | |
| Gasoline Range Hydrocarbons | ND | | 4.00 | mg/kg dry | 1 | 3110680 | 11/20/03 | 11/21/03 | NW TPH-Gx | U |
| *Surrogate: a,a,a-TFT* | | *77.2 %* | *50-150* | | | " | " | " | " | |
| **Dry Well #2 (P3K0348-06RE2) Soil** | **Sampled: 11/12/03 12:59** | | **Received: 11/12/03 16:40** | | | | | | | |
| Gasoline Range Hydrocarbons | ND | | 4.00 | mg/kg dry | 1 | 3110680 | 11/20/03 | 11/21/03 | NW TPH-Gx | U |
| *Surrogate: a,a,a-TFT* | | *69.8 %* | *50-150* | | | " | " | " | " | |
| **Dry Well #1 (P3K0348-07RE2) Soil** | **Sampled: 11/12/03 12:41** | | **Received: 11/12/03 16:40** | | | | | | | |
| Gasoline Range Hydrocarbons | ND | | 4.00 | mg/kg dry | 1 | 3110680 | 11/20/03 | 11/21/03 | NW TPH-Gx | U |
| *Surrogate: a,a,a-TFT* | | *90.3 %* | *50-150* | | | " | " | " | " | |
| **MW-13-25 (P3K0348-09RE2) Soil** | **Sampled: 11/12/03 14:51** | | **Received: 11/12/03 16:40** | | | | | | | |
| Gasoline Range Hydrocarbons | ND | | 4.00 | mg/kg dry | 1 | 3110680 | 11/20/03 | 11/21/03 | NW TPH-Gx | U |
| *Surrogate: a,a,a-TFT* | | *92.2 %* | *50-150* | | | " | " | " | " | |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Diesel and Heavy Range Hydrocarbons per NWTPH-Dx Method
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **MW-12-20.5 (P3K0348-01) Soil** | **Sampled: 11/11/03 11:28** | | **Received: 11/12/03 16:40** | | | | | | | |
| **Diesel Range Organics** | **1960** | | 250 | mg/kg dry | 10 | 3110430 | 11/14/03 | 11/14/03 | NWTPH-Dx | A-01 |
| **Heavy Oil Range Hydrocarbons** | **3410** | | 500 | " | " | " | " | " | " | |
| *Surrogate: 1-Chlorooctadecane* | | *131 %* | *50-150* | | | " | " | " | " | |
| **MW-11-11.25 (P3K0348-02) Soil** | **Sampled: 11/11/03 15:20** | | **Received: 11/12/03 16:40** | | | | | | | |
| Diesel Range Organics | ND | | 25.0 | mg/kg dry | 1 | 3110430 | 11/14/03 | 11/14/03 | NWTPH-Dx | U |
| Heavy Oil Range Hydrocarbons | ND | | 50.0 | " | " | " | " | " | " | U |
| *Surrogate: 1-Chlorooctadecane* | | *84.9 %* | *50-150* | | | " | " | " | " | |
| **MW-14-16 (P3K0348-05) Soil** | **Sampled: 11/12/03 11:18** | | **Received: 11/12/03 16:40** | | | | | | | |
| **Diesel Range Organics** | **35.0** | | 25.0 | mg/kg dry | 1 | 3110430 | 11/14/03 | 11/17/03 | NWTPH-Dx | |
| **Heavy Oil Range Hydrocarbons** | **205** | | 50.0 | " | " | " | " | " | " | |
| *Surrogate: 1-Chlorooctadecane* | | *105 %* | *50-150* | | | " | " | " | " | |
| **Dry Well #2 (P3K0348-06) Soil** | **Sampled: 11/12/03 12:59** | | **Received: 11/12/03 16:40** | | | | | | | |
| Diesel Range Organics | ND | | 25.0 | mg/kg dry | 1 | 3110430 | 11/14/03 | 11/14/03 | NWTPH-Dx | U |
| Heavy Oil Range Hydrocarbons | ND | | 50.0 | " | " | " | " | " | " | U |
| *Surrogate: 1-Chlorooctadecane* | | *84.7 %* | *50-150* | | | " | " | " | " | |
| **Dry Well #1 (P3K0348-07) Soil** | **Sampled: 11/12/03 12:41** | | **Received: 11/12/03 16:40** | | | | | | | |
| **Diesel Range Organics** | **123** | | 50.0 | mg/kg dry | 2 | 3110430 | 11/14/03 | 11/17/03 | NWTPH-Dx | D-17 |
| **Heavy Oil Range Hydrocarbons** | **518** | | 100 | " | " | " | " | " | " | |
| *Surrogate: 1-Chlorooctadecane* | | *92.5 %* | *50-150* | | | " | " | " | " | |
| **MW-13-25 (P3K0348-09) Soil** | **Sampled: 11/12/03 14:51** | | **Received: 11/12/03 16:40** | | | | | | | |
| Diesel Range Organics | ND | | 25.0 | mg/kg dry | 1 | 3110480 | 11/17/03 | 11/17/03 | NWTPH-Dx | U |
| Heavy Oil Range Hydrocarbons | ND | | 50.0 | " | " | " | " | " | " | U |
| *Surrogate: 1-Chlorooctadecane* | | *84.7 %* | *50-150* | | | " | " | " | " | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Total Metals per EPA 6000/7000 Series Methods
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **MW-12-20.5 (P3K0348-01) Soil Sampled: 11/11/03 11:28 Received: 11/12/03 16:40** | | | | | | | | | | |
| **Silver** | **0.0941** | 0.0369 | 0.500 | mg/kg dry | 1 | 3110456 | 11/14/03 | 11/17/03 | EPA 6020 | J |
| **Arsenic** | **3.25** | 0.427 | 0.500 | " | " | " | " | " | " | |
| **Beryllium** | **0.531** | 0.210 | 0.500 | " | " | " | " | " | " | |
| Cadmium | ND | 0.950 | 2.38 | " | 4.75 | " | " | 11/17/03 | " | R-03, D, U |
| **Chromium** | **46.7** | 0.498 | 0.500 | " | 1 | " | " | 11/17/03 | " | |
| **Copper** | **43.7** | 0.955 | 2.00 | " | " | " | " | " | " | |
| **Mercury** | **0.0406** | 0.00496 | 0.100 | " | " | 3110615 | 11/19/03 | 11/19/03 | EPA 7471A | J |
| **Nickel** | **34.5** | 0.213 | 1.00 | " | " | 3110456 | 11/14/03 | 11/17/03 | EPA 6020 | |
| **Lead** | **12.7** | 0.106 | 0.500 | " | " | " | " | " | " | |
| **Antimony** | **0.0672** | 0.0659 | 0.500 | " | " | " | " | " | " | J |
| **Selenium** | **0.632** | 0.409 | 0.500 | " | " | " | " | " | " | |
| Thallium | ND | 0.246 | 0.500 | " | " | " | " | " | " | U |
| **Zinc** | **79.4** | 0.630 | 2.00 | " | " | " | " | 11/20/03 | " | |
| **MW-11-11.25 (P3K0348-02) Soil Sampled: 11/11/03 15:20 Received: 11/12/03 16:40** | | | | | | | | | | |
| **Silver** | **0.0285** | 0.0273 | 0.370 | mg/kg dry | 1 | 3110456 | 11/14/03 | 11/17/03 | EPA 6020 | J, D |
| **Arsenic** | **2.25** | 0.316 | 0.370 | " | " | " | " | " | " | D |
| **Beryllium** | **0.242** | 0.156 | 0.370 | " | " | " | " | " | " | J, D |
| Cadmium | ND | 0.701 | 1.75 | " | 4.73 | " | " | 11/17/03 | " | D, U |
| **Chromium** | **13.8** | 0.369 | 0.370 | " | 1 | " | " | 11/17/03 | " | D |
| **Copper** | **14.4** | 0.707 | 1.48 | " | " | " | " | " | " | D |
| **Mercury** | **0.0135** | 0.00400 | 0.0806 | " | " | 3110615 | 11/19/03 | 11/19/03 | EPA 7471A | J, D |
| **Nickel** | **17.4** | 0.158 | 0.741 | " | " | 3110456 | 11/14/03 | 11/17/03 | EPA 6020 | D |
| **Lead** | **2.90** | 0.0785 | 0.370 | " | " | " | " | " | " | D |
| Antimony | ND | 0.0488 | 0.370 | " | " | " | " | " | " | D, U |
| **Selenium** | **0.352** | 0.303 | 0.370 | " | " | " | " | " | " | J, D |
| Thallium | ND | 0.182 | 0.370 | " | " | " | " | " | " | D, U |
| **Zinc** | **44.3** | 0.467 | 1.48 | " | " | " | " | 11/20/03 | " | D |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Total Metals per EPA 6000/7000 Series Methods
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **MW-14-16 (P3K0348-05) Soil Sampled: 11/12/03 11:18 Received: 11/12/03 16:40** | | | | | | | | | | |
| **Silver** | **0.251** | 0.0282 | 0.382 | mg/kg dry | 1 | 3110456 | 11/14/03 | 11/17/03 | EPA 6020 | J, D |
| **Arsenic** | **8.57** | 0.326 | 0.382 | " | " | " | " | " | " | D |
| **Beryllium** | **0.467** | 0.160 | 0.382 | " | " | " | " | " | " | D |
| Cadmium | ND | 0.759 | 1.90 | " | 4.97 | " | " | 11/17/03 | " | R-03, D, U |
| **Chromium** | **23.9** | 0.380 | 0.382 | " | 1 | " | " | 11/17/03 | " | D |
| **Copper** | **34.4** | 0.729 | 1.53 | " | " | " | " | " | " | D |
| **Mercury** | **0.0183** | 0.00427 | 0.0862 | " | " | 3110615 | 11/19/03 | 11/19/03 | EPA 7471A | J, D |
| **Nickel** | **19.3** | 0.163 | 0.763 | " | " | 3110456 | 11/14/03 | 11/17/03 | EPA 6020 | D |
| **Lead** | **131** | 0.0809 | 0.382 | " | " | " | " | " | " | D |
| **Antimony** | **0.246** | 0.0503 | 0.382 | " | " | " | " | " | " | J, D |
| **Selenium** | **0.463** | 0.312 | 0.382 | " | " | " | " | " | " | D |
| Thallium | ND | 0.188 | 0.382 | " | " | " | " | " | " | D, U |
| **Zinc** | **135** | 0.481 | 1.53 | " | " | " | " | 11/20/03 | " | D |
| **Dry Well #2 (P3K0348-06) Soil Sampled: 11/12/03 12:59 Received: 11/12/03 16:40** | | | | | | | | | | |
| Silver | ND | 0.0293 | 0.397 | mg/kg dry | 1 | 3110456 | 11/14/03 | 11/17/03 | EPA 6020 | D, U |
| **Arsenic** | **2.84** | 0.339 | 0.397 | " | " | " | " | " | " | D |
| **Beryllium** | **0.253** | 0.167 | 0.397 | " | " | " | " | " | " | J, D |
| Cadmium | ND | 0.729 | 1.82 | " | 4.59 | " | " | 11/17/03 | " | D, U |
| **Chromium** | **13.9** | 0.395 | 0.397 | " | 1 | " | " | 11/17/03 | " | D |
| **Copper** | **14.2** | 0.758 | 1.59 | " | " | " | " | " | " | D |
| **Mercury** | **0.164** | 0.00310 | 0.0625 | " | " | 3110615 | 11/19/03 | 11/19/03 | EPA 7471A | D |
| **Nickel** | **17.7** | 0.169 | 0.794 | " | " | 3110456 | 11/14/03 | 11/17/03 | EPA 6020 | D |
| **Lead** | **2.21** | 0.0841 | 0.397 | " | " | " | " | " | " | D |
| **Antimony** | **0.0699** | 0.0523 | 0.397 | " | " | " | " | " | " | J, D |
| **Selenium** | **0.363** | 0.325 | 0.397 | " | " | " | " | " | " | J, D |
| Thallium | ND | 0.195 | 0.397 | " | " | " | " | " | " | D, U |
| **Zinc** | **44.3** | 0.500 | 1.59 | " | " | " | " | 11/20/03 | " | D |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Total Metals per EPA 6000/7000 Series Methods
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Dry Well #1 (P3K0348-07) Soil Sampled: 11/12/03 12:41 Received: 11/12/03 16:40** | | | | | | | | | | |
| **Silver** | **0.0935** | 0.0369 | 0.500 | mg/kg dry | 1 | 3110456 | 11/14/03 | 11/17/03 | EPA 6020 | J |
| **Arsenic** | **7.51** | 0.427 | 0.500 | " | " | " | " | " | " | |
| Beryllium | ND | 0.210 | 0.500 | " | " | " | " | " | " | U |
| Cadmium | ND | 0.944 | 2.36 | " | 4.72 | " | " | 11/17/03 | " | D, U |
| **Chromium** | **34.3** | 0.498 | 0.500 | " | 1 | " | " | 11/17/03 | " | |
| **Copper** | **30.8** | 0.955 | 2.00 | " | " | " | " | " | " | |
| **Mercury** | **0.00848** | 0.00413 | 0.0833 | " | " | 3110615 | 11/19/03 | 11/19/03 | EPA 7471A | J, D |
| **Nickel** | **82.9** | 0.213 | 1.00 | " | " | 3110456 | 11/14/03 | 11/17/03 | EPA 6020 | |
| **Lead** | **10.8** | 0.106 | 0.500 | " | " | " | " | " | " | |
| **Antimony** | **0.493** | 0.0659 | 0.500 | " | " | " | " | " | " | J |
| **Selenium** | **0.586** | 0.409 | 0.500 | " | " | " | " | " | " | |
| Thallium | ND | 0.246 | 0.500 | " | " | " | " | " | " | U |
| **Zinc** | **227** | 0.630 | 2.00 | " | " | " | " | 11/20/03 | " | |
| **MW-13-15 (P3K0348-08) Soil Sampled: 11/12/03 14:32 Received: 11/12/03 16:40** | | | | | | | | | | |
| Silver | ND | 0.0327 | 0.442 | mg/kg dry | 1 | 3110456 | 11/14/03 | 11/17/03 | EPA 6020 | D, U |
| **Arsenic** | **2.72** | 0.378 | 0.442 | " | " | " | " | " | " | D |
| **Beryllium** | **0.286** | 0.186 | 0.442 | " | " | " | " | " | " | J, D |
| Cadmium | ND | 0.862 | 2.15 | " | 4.87 | " | " | 11/17/03 | " | D, U |
| **Chromium** | **15.7** | 0.441 | 0.442 | " | 1 | " | " | 11/17/03 | " | D |
| **Copper** | **20.9** | 0.845 | 1.77 | " | " | " | " | " | " | D |
| **Mercury** | **0.0418** | 0.00253 | 0.0510 | " | " | 3110615 | 11/19/03 | 11/19/03 | EPA 7471A | J, D |
| **Nickel** | **18.8** | 0.188 | 0.885 | " | " | 3110456 | 11/14/03 | 11/17/03 | EPA 6020 | D |
| **Lead** | **3.51** | 0.0938 | 0.442 | " | " | " | " | " | " | D |
| Antimony | ND | 0.0583 | 0.442 | " | " | " | " | " | " | D, U |
| **Selenium** | **0.667** | 0.362 | 0.442 | " | " | " | " | " | " | D |
| Thallium | ND | 0.218 | 0.442 | " | " | " | " | " | " | D, U |
| **Zinc** | **46.7** | 0.558 | 1.77 | " | " | " | " | 11/20/03 | " | D |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Polychlorinated Biphenyls per EPA Method 8082
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **MW-12-20.5 (P3K0348-01) Soil Sampled: 11/11/03 11:28 Received: 11/12/03 16:40** | | | | | | | | | | |
| Aroclor 1016 | ND | 11.1 | 67.0 | ug/kg dry | 1 | 3110601 | 11/19/03 | 11/25/03 | EPA 8082 | U |
| Aroclor 1221 | ND | 12.7 | 134 | " | " | " | " | " | " | U |
| Aroclor 1232 | ND | 11.1 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1242 | ND | 11.1 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1248 | ND | 3.87 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1254 | ND | 12.2 | 134 | " | " | " | " | " | " | R-03, U |
| Aroclor 1260 | ND | 11.5 | 67.0 | " | " | " | " | " | " | U |
| *Surrogate: 2,4,5,6-Tetrachloro-m-xylene* | | *75.2 %* | *36-140* | | | " | " | " | " | |
| *Surrogate: Decachlorobiphenyl* | | *54.8 %* | *16-149* | | | " | " | " | " | |
| **MW-11-11.25 (P3K0348-02) Soil Sampled: 11/11/03 15:20 Received: 11/12/03 16:40** | | | | | | | | | | |
| Aroclor 1016 | ND | 11.1 | 67.0 | ug/kg dry | 1 | 3110601 | 11/19/03 | 11/21/03 | EPA 8082 | U |
| Aroclor 1221 | ND | 12.7 | 134 | " | " | " | " | " | " | U |
| Aroclor 1232 | ND | 11.1 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1242 | ND | 11.1 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1248 | ND | 3.87 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1254 | ND | 6.10 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1260 | ND | 11.5 | 67.0 | " | " | " | " | " | " | U |
| *Surrogate: 2,4,5,6-Tetrachloro-m-xylene* | | *101 %* | *36-140* | | | " | " | " | " | |
| *Surrogate: Decachlorobiphenyl* | | *88.8 %* | *16-149* | | | " | " | " | " | |
| **MW-14-16 (P3K0348-05) Soil Sampled: 11/12/03 11:18 Received: 11/12/03 16:40** | | | | | | | | | | |
| Aroclor 1016 | ND | 11.1 | 67.0 | ug/kg dry | 1 | 3110601 | 11/19/03 | 11/21/03 | EPA 8082 | U |
| Aroclor 1221 | ND | 12.7 | 134 | " | " | " | " | " | " | U |
| Aroclor 1232 | ND | 11.1 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1242 | ND | 11.1 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1248 | ND | 3.87 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1254 | ND | 6.10 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1260 | ND | 11.5 | 67.0 | " | " | " | " | " | " | U |
| *Surrogate: 2,4,5,6-Tetrachloro-m-xylene* | | *101 %* | *36-140* | | | " | " | " | " | |
| *Surrogate: Decachlorobiphenyl* | | *69.1 %* | *16-149* | | | " | " | " | " | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Polychlorinated Biphenyls per EPA Method 8082
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Dry Well #2 (P3K0348-06) Soil Sampled: 11/12/03 12:59 Received: 11/12/03 16:40** | | | | | | | | | | |
| Aroclor 1016 | ND | 11.1 | 67.0 | ug/kg dry | 1 | 3110601 | 11/19/03 | 11/21/03 | EPA 8082 | U |
| Aroclor 1221 | ND | 12.7 | 134 | " | " | " | " | " | " | U |
| Aroclor 1232 | ND | 11.1 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1242 | ND | 11.1 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1248 | ND | 3.87 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1254 | ND | 6.10 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1260 | ND | 11.5 | 67.0 | " | " | " | " | " | " | U |
| *Surrogate: 2,4,5,6-Tetrachloro-m-xylene* | | *107 %* | *36-140* | | | " | " | " | " | |
| *Surrogate: Decachlorobiphenyl* | | *94.0 %* | *16-149* | | | " | " | " | " | |
| **Dry Well #1 (P3K0348-07) Soil Sampled: 11/12/03 12:41 Received: 11/12/03 16:40** | | | | | | | | | | |
| Aroclor 1016 | ND | 11.1 | 67.0 | ug/kg dry | 1 | 3110601 | 11/19/03 | 11/21/03 | EPA 8082 | U |
| Aroclor 1221 | ND | 12.7 | 134 | " | " | " | " | " | " | U |
| Aroclor 1232 | ND | 11.1 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1242 | ND | 11.1 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1248 | ND | 3.87 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1254 | ND | 6.10 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1260 | ND | 11.5 | 67.0 | " | " | " | " | " | " | U |
| *Surrogate: 2,4,5,6-Tetrachloro-m-xylene* | | *107 %* | *36-140* | | | " | " | " | " | |
| *Surrogate: Decachlorobiphenyl* | | *71.9 %* | *16-149* | | | " | " | " | " | |
| **MW-13-15 (P3K0348-08) Soil Sampled: 11/12/03 14:32 Received: 11/12/03 16:40** | | | | | | | | | | |
| Aroclor 1016 | ND | 11.1 | 67.0 | ug/kg dry | 1 | 3110601 | 11/19/03 | 11/21/03 | EPA 8082 | U |
| Aroclor 1221 | ND | 12.7 | 134 | " | " | " | " | " | " | U |
| Aroclor 1232 | ND | 11.1 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1242 | ND | 11.1 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1248 | ND | 3.87 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1254 | ND | 6.10 | 67.0 | " | " | " | " | " | " | U |
| Aroclor 1260 | ND | 11.5 | 67.0 | " | " | " | " | " | " | U |
| *Surrogate: 2,4,5,6-Tetrachloro-m-xylene* | | *109 %* | *36-140* | | | " | " | " | " | |
| *Surrogate: Decachlorobiphenyl* | | *97.4 %* | *16-149* | | | " | " | " | " | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Volatile Organic Compounds per EPA Method 8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **MW-12-20.5 (P3K0348-01) Soil Sampled: 11/11/03 11:28 Received: 11/12/03 16:40** | | | | | | | | | | |
| Acetone | ND | 144 | 2500 | ug/kg dry | 1 | 3110441 | 11/14/03 | 11/19/03 | EPA 8260B | U |
| Benzene | ND | 4.44 | 100 | " | " | " | " | " | " | U |
| Bromobenzene | ND | 12.2 | 100 | " | " | " | " | " | " | U |
| Bromochloromethane | ND | 16.4 | 100 | " | " | " | " | " | " | U |
| Bromodichloromethane | ND | 10.2 | 100 | " | " | " | " | " | " | U |
| Bromoform | ND | 15.8 | 100 | " | " | " | " | " | " | U |
| Bromomethane | ND | 5.09 | 500 | " | " | " | " | " | " | U |
| 2-Butanone | ND | 148 | 1000 | " | " | " | " | " | " | U |
| **n-Butylbenzene** | **2740** | 11.3 | 500 | " | " | " | " | " | " | |
| **sec-Butylbenzene** | **1490** | 7.45 | 100 | " | " | " | " | " | " | |
| tert-Butylbenzene | ND | 15.2 | 100 | " | " | " | " | " | " | U |
| Carbon disulfide | ND | 7.19 | 1000 | " | " | " | " | " | " | U |
| Carbon tetrachloride | ND | 7.64 | 100 | " | " | " | " | " | " | U |
| Chlorobenzene | ND | 8.09 | 100 | " | " | " | " | " | " | U |
| Chloroethane | ND | 10.7 | 100 | " | " | " | " | " | " | U |
| Chloroform | ND | 7.26 | 100 | " | " | " | " | " | " | U |
| Chloromethane | ND | 6.72 | 500 | " | " | " | " | " | " | U |
| 2-Chlorotoluene | ND | 11.0 | 100 | " | " | " | " | " | " | U |
| 4-Chlorotoluene | ND | 10.4 | 100 | " | " | " | " | " | " | U |
| 1,2-Dibromo-3-chloropropane | ND | 26.0 | 500 | " | " | " | " | " | " | U |
| Dibromochloromethane | ND | 11.2 | 100 | " | " | " | " | " | " | U |
| 1,2-Dibromoethane | ND | 11.6 | 100 | " | " | " | " | " | " | U |
| Dibromomethane | ND | 14.7 | 100 | " | " | " | " | " | " | U |
| 1,2-Dichlorobenzene | ND | 14.4 | 100 | " | " | " | " | " | " | U |
| 1,3-Dichlorobenzene | ND | 5.86 | 100 | " | " | " | " | " | " | U |
| 1,4-Dichlorobenzene | ND | 14.9 | 100 | " | " | " | " | " | " | U |
| Dichlorodifluoromethane | ND | 11.8 | 500 | " | " | " | " | " | " | U |
| 1,1-Dichloroethane | ND | 11.9 | 100 | " | " | " | " | " | " | U |
| 1,2-Dichloroethane | ND | 11.2 | 100 | " | " | " | " | " | " | U |
| 1,1-Dichloroethene | ND | 11.9 | 100 | " | " | " | " | " | " | U |
| cis-1,2-Dichloroethene | ND | 12.6 | 100 | " | " | " | " | " | " | U |
| trans-1,2-Dichloroethene | ND | 8.97 | 100 | " | " | " | " | " | " | U |
| 1,2-Dichloropropane | ND | 7.45 | 100 | " | " | " | " | " | " | U |
| 1,3-Dichloropropane | ND | 17.4 | 100 | " | " | " | " | " | " | U |
| 2,2-Dichloropropane | ND | 8.09 | 100 | " | " | " | " | " | " | U |
| 1,1-Dichloropropene | ND | 10.9 | 100 | " | " | " | " | " | " | U |
| cis-1,3-Dichloropropene | ND | 4.95 | 100 | " | " | " | " | " | " | U |
| trans-1,3-Dichloropropene | ND | 8.29 | 100 | " | " | " | " | " | " | U |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Volatile Organic Compounds per EPA Method 8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **MW-12-20.5 (P3K0348-01) Soil Sampled: 11/11/03 11:28 Received: 11/12/03 16:40** | | | | | | | | | | |
| **Ethylbenzene** | **1690** | 9.40 | 100 | ug/kg dry | 1 | 3110441 | 11/14/03 | 11/19/03 | EPA 8260B | |
| Hexachlorobutadiene | ND | 69.4 | 200 | " | " | " | " | " | " | U |
| 2-Hexanone | ND | 57.2 | 1000 | " | " | " | " | " | " | U |
| **Isopropylbenzene** | **1190** | 9.55 | 200 | " | " | " | " | " | " | |
| p-Isopropyltoluene | ND | 9.68 | 200 | " | " | " | " | " | " | U |
| 4-Methyl-2-pentanone | ND | 117 | 500 | " | " | " | " | " | " | U |
| Methyl tert-butyl ether | ND | 11.9 | 100 | " | " | " | " | " | " | U |
| Methylene chloride | ND | 250 | 500 | " | " | " | " | " | " | U |
| **Naphthalene** | **7380** | 14.1 | 200 | " | " | " | " | " | " | |
| **n-Propylbenzene** | **2530** | 9.89 | 100 | " | " | " | " | " | " | |
| Styrene | ND | 8.89 | 100 | " | " | " | " | " | " | U |
| 1,1,1,2-Tetrachloroethane | ND | 9.25 | 100 | " | " | " | " | " | " | U |
| 1,1,2,2-Tetrachloroethane | ND | 21.1 | 100 | " | " | " | " | " | " | U |
| **Tetrachloroethene** | **21.8** | 16.9 | 100 | " | " | " | " | " | " | J |
| **Toluene** | **948** | 6.29 | 100 | " | " | " | " | " | " | |
| **1,2,3-Trichlorobenzene** | **24.7** | 16.9 | 100 | " | " | " | " | " | " | J |
| 1,2,4-Trichlorobenzene | ND | 21.4 | 100 | " | " | " | " | " | " | U |
| 1,1,1-Trichloroethane | ND | 6.13 | 100 | " | " | " | " | " | " | U |
| 1,1,2-Trichloroethane | ND | 18.1 | 100 | " | " | " | " | " | " | U |
| **Trichloroethene** | **76.9** | 12.0 | 100 | " | " | " | " | " | " | J |
| Trichlorofluoromethane | ND | 8.97 | 100 | " | " | " | " | " | " | U |
| 1,2,3-Trichloropropane | ND | 49.2 | 100 | " | " | " | " | " | " | U |
| **1,2,4-Trimethylbenzene** | **28200** | 6.75 | 100 | " | " | " | " | " | " | |
| **1,3,5-Trimethylbenzene** | **6020** | 9.33 | 100 | " | " | " | " | " | " | |
| Vinyl chloride | ND | 5.74 | 100 | " | " | " | " | " | " | U |
| **o-Xylene** | **4210** | 11.6 | 100 | " | " | " | " | " | " | |
| **m,p-Xylene** | **8160** | 11.4 | 200 | " | " | " | " | " | " | |
| *Surrogate: 4-BFB* | | *103 %* | *42.6-130* | | | " | " | " | " | |
| *Surrogate: 1,2-DCA-d4* | | *90.3 %* | *57.3-144* | | | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *92.4 %* | *45.5-130* | | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *100 %* | *42.1-144* | | | " | " | " | " | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Volatile Organic Compounds per EPA Method 8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **TB-042 (P3K0348-04) Water Sampled: 11/11/03 10:00 Received: 11/12/03 16:40** | | | | | | | | | | |
| Acetone | ND | 2.34 | 25.0 | ug/l | 1 | 3110478 | 11/16/03 | 11/16/03 | EPA 8260B | U |
| Benzene | ND | 0.147 | 1.00 | " | " | " | " | " | " | U |
| Bromobenzene | ND | 0.333 | 1.00 | " | " | " | " | " | " | U |
| Bromochloromethane | ND | 0.266 | 1.00 | " | " | " | " | " | " | U |
| Bromodichloromethane | ND | 0.183 | 1.00 | " | " | " | " | " | " | U |
| Bromoform | ND | 0.174 | 1.00 | " | " | " | " | " | " | U |
| Bromomethane | ND | 0.282 | 5.00 | " | " | " | " | " | " | U |
| 2-Butanone | ND | 1.60 | 10.0 | " | " | " | " | " | " | U |
| n-Butylbenzene | ND | 0.183 | 5.00 | " | " | " | " | " | " | U |
| sec-Butylbenzene | ND | 0.193 | 1.00 | " | " | " | " | " | " | U |
| tert-Butylbenzene | ND | 0.206 | 1.00 | " | " | " | " | " | " | U |
| Carbon disulfide | ND | 0.233 | 10.0 | " | " | " | " | " | " | U |
| Carbon tetrachloride | ND | 0.140 | 1.00 | " | " | " | " | " | " | U |
| Chlorobenzene | ND | 0.136 | 1.00 | " | " | " | " | " | " | U |
| Chloroethane | ND | 0.327 | 1.00 | " | " | " | " | " | " | U |
| Chloroform | ND | 0.143 | 1.00 | " | " | " | " | " | " | U |
| Chloromethane | ND | 0.159 | 5.00 | " | " | " | " | " | " | U |
| 2-Chlorotoluene | ND | 0.110 | 1.00 | " | " | " | " | " | " | U |
| 4-Chlorotoluene | ND | 0.120 | 1.00 | " | " | " | " | " | " | U |
| 1,2-Dibromo-3-chloropropane | ND | 0.405 | 5.00 | " | " | " | " | " | " | U |
| Dibromochloromethane | ND | 0.133 | 1.00 | " | " | " | " | " | " | U |
| 1,2-Dibromoethane | ND | 0.187 | 1.00 | " | " | " | " | " | " | U |
| Dibromomethane | ND | 0.117 | 1.00 | " | " | " | " | " | " | U |
| 1,2-Dichlorobenzene | ND | 0.0859 | 1.00 | " | " | " | " | " | " | U |
| 1,3-Dichlorobenzene | ND | 0.132 | 1.00 | " | " | " | " | " | " | U |
| 1,4-Dichlorobenzene | ND | 0.187 | 1.00 | " | " | " | " | " | " | U |
| Dichlorodifluoromethane | ND | 0.312 | 5.00 | " | " | " | " | " | " | U |
| 1,1-Dichloroethane | ND | 0.157 | 1.00 | " | " | " | " | " | " | U |
| 1,2-Dichloroethane | ND | 0.142 | 1.00 | " | " | " | " | " | " | U |
| 1,1-Dichloroethene | ND | 0.197 | 1.00 | " | " | " | " | " | " | U |
| cis-1,2-Dichloroethene | ND | 0.170 | 1.00 | " | " | " | " | " | " | U |
| trans-1,2-Dichloroethene | ND | 0.175 | 1.00 | " | " | " | " | " | " | U |
| 1,2-Dichloropropane | ND | 0.266 | 1.00 | " | " | " | " | " | " | U |
| 1,3-Dichloropropane | ND | 0.151 | 1.00 | " | " | " | " | " | " | U |
| 2,2-Dichloropropane | ND | 0.104 | 1.00 | " | " | " | " | " | " | U |
| 1,1-Dichloropropene | ND | 0.149 | 1.00 | " | " | " | " | " | " | U |
| cis-1,3-Dichloropropene | ND | 0.128 | 1.00 | " | " | " | " | " | " | U |
| trans-1,3-Dichloropropene | ND | 0.152 | 1.00 | " | " | " | " | " | " | U |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Volatile Organic Compounds per EPA Method 8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **TB-042 (P3K0348-04) Water Sampled: 11/11/03 10:00 Received: 11/12/03 16:40** | | | | | | | | | | |
| Ethylbenzene | ND | 0.110 | 1.00 | ug/l | 1 | 3110478 | 11/16/03 | 11/16/03 | EPA 8260B | U |
| Hexachlorobutadiene | ND | 0.878 | 2.00 | " | " | " | " | " | " | U |
| 2-Hexanone | ND | 1.10 | 10.0 | " | " | " | " | " | " | U |
| Isopropylbenzene | ND | 0.107 | 2.00 | " | " | " | " | " | " | U |
| p-Isopropyltoluene | ND | 0.149 | 2.00 | " | " | " | " | " | " | U |
| 4-Methyl-2-pentanone | ND | 1.49 | 5.00 | " | " | " | " | " | " | U |
| Methyl tert-butyl ether | ND | 0.0865 | 1.00 | " | " | " | " | " | " | U |
| Methylene chloride | ND | 2.50 | 5.00 | " | " | " | " | " | " | U |
| Naphthalene | ND | 0.0989 | 2.00 | " | " | " | " | " | " | U |
| n-Propylbenzene | ND | 0.138 | 1.00 | " | " | " | " | " | " | U |
| Styrene | ND | 0.0723 | 1.00 | " | " | " | " | " | " | U |
| 1,1,1,2-Tetrachloroethane | ND | 0.148 | 1.00 | " | " | " | " | " | " | U |
| 1,1,2,2-Tetrachloroethane | ND | 0.294 | 1.00 | " | " | " | " | " | " | U |
| Tetrachloroethene | ND | 0.109 | 1.00 | " | " | " | " | " | " | U |
| Toluene | ND | 0.155 | 1.00 | " | " | " | " | " | " | U |
| 1,2,3-Trichlorobenzene | ND | 0.219 | 1.00 | " | " | " | " | " | " | U |
| 1,2,4-Trichlorobenzene | ND | 0.213 | 1.00 | " | " | " | " | " | " | U |
| 1,1,1-Trichloroethane | ND | 0.0859 | 1.00 | " | " | " | " | " | " | U |
| 1,1,2-Trichloroethane | ND | 0.301 | 1.00 | " | " | " | " | " | " | U |
| Trichloroethene | ND | 0.241 | 1.00 | " | " | " | " | " | " | U |
| Trichlorofluoromethane | ND | 0.160 | 1.00 | " | " | " | " | " | " | U |
| 1,2,3-Trichloropropane | ND | 0.365 | 1.00 | " | " | " | " | " | " | U |
| 1,2,4-Trimethylbenzene | ND | 0.0884 | 1.00 | " | " | " | " | " | " | U |
| 1,3,5-Trimethylbenzene | ND | 0.157 | 1.00 | " | " | " | " | " | " | U |
| Vinyl chloride | ND | 0.152 | 1.00 | " | " | " | " | " | " | U |
| o-Xylene | ND | 0.187 | 1.00 | " | " | " | " | " | " | U |
| m,p-Xylene | ND | 0.295 | 2.00 | " | " | " | " | " | " | U |
| *Surrogate: 4-BFB* | | *96.0 %* | *75-120* | | | " | " | " | " | |
| *Surrogate: 1,2-DCA-d4* | | *102 %* | *77-129* | | | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *102 %* | *80-121* | | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *100 %* | *80-120* | | | " | " | " | " | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Volatile Organic Compounds per EPA Methods 5035/8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **MW-11-11.25 (P3K0348-02) Soil Sampled: 11/11/03 15:20 Received: 11/12/03 16:40** | | | | | | | | | | |
| **Acetone** | **27.2** | 4.25 | 20.0 | ug/kg dry | 1 | 3110271 | 11/18/03 | 11/20/03 | EPA 8260B | |
| **Benzene** | **0.783** | 0.147 | 5.00 | " | " | " | " | " | " | J |
| Bromobenzene | ND | 0.152 | 5.00 | " | " | " | " | " | " | U |
| Bromochloromethane | ND | 0.277 | 5.00 | " | " | " | " | " | " | U |
| Bromodichloromethane | ND | 0.388 | 5.00 | " | " | " | " | " | " | U |
| Bromoform | ND | 0.169 | 5.00 | " | " | " | " | " | " | U |
| Bromomethane | ND | 0.309 | 20.0 | " | " | " | " | " | " | U |
| 2-Butanone | ND | 15.4 | 20.0 | " | " | " | " | " | " | U |
| **n-Butylbenzene** | **14.5** | 0.181 | 5.00 | " | " | " | " | " | " | |
| **sec-Butylbenzene** | **9.14** | 0.160 | 5.00 | " | " | " | " | " | " | |
| **tert-Butylbenzene** | **1.00** | 0.195 | 5.00 | " | " | " | " | " | " | J |
| **Carbon disulfide** | **10.3** | 0.420 | 20.0 | " | " | " | " | " | " | J |
| Carbon tetrachloride | ND | 0.202 | 5.00 | " | " | " | " | " | " | U |
| Chlorobenzene | ND | 0.276 | 5.00 | " | " | " | " | " | " | U |
| Chloroethane | ND | 0.353 | 10.0 | " | " | " | " | " | " | U |
| Chloroform | ND | 0.174 | 5.00 | " | " | " | " | " | " | U |
| Chloromethane | ND | 0.513 | 10.0 | " | " | " | " | " | " | U |
| 2-Chlorotoluene | ND | 0.236 | 5.00 | " | " | " | " | " | " | U |
| 4-Chlorotoluene | ND | 0.108 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dibromo-3-chloropropane | ND | 0.213 | 10.0 | " | " | " | " | " | " | U |
| Dibromochloromethane | ND | 0.270 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dibromoethane | ND | 0.386 | 5.00 | " | " | " | " | " | " | U |
| Dibromomethane | ND | 0.302 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dichlorobenzene | ND | 0.169 | 5.00 | " | " | " | " | " | " | U |
| 1,3-Dichlorobenzene | ND | 0.329 | 5.00 | " | " | " | " | " | " | U |
| 1,4-Dichlorobenzene | ND | 0.162 | 5.00 | " | " | " | " | " | " | U |
| Dichlorodifluoromethane | ND | 0.280 | 10.0 | " | " | " | " | " | " | U |
| 1,1-Dichloroethane | ND | 0.0975 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dichloroethane | ND | 0.236 | 5.00 | " | " | " | " | " | " | U |
| 1,1-Dichloroethene | ND | 0.180 | 5.00 | " | " | " | " | " | " | U |
| cis-1,2-Dichloroethene | ND | 0.202 | 5.00 | " | " | " | " | " | " | U |
| trans-1,2-Dichloroethene | ND | 0.195 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dichloropropane | ND | 0.191 | 5.00 | " | " | " | " | " | " | U |
| 1,3-Dichloropropane | ND | 0.353 | 5.00 | " | " | " | " | " | " | U |
| 2,2-Dichloropropane | ND | 0.224 | 5.00 | " | " | " | " | " | " | U |
| 1,1-Dichloropropene | ND | 0.234 | 5.00 | " | " | " | " | " | " | U |
| cis-1,3-Dichloropropene | ND | 0.141 | 5.00 | " | " | " | " | " | " | U |
| trans-1,3-Dichloropropene | ND | 0.372 | 5.00 | " | " | " | " | " | " | U |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Volatile Organic Compounds per EPA Methods 5035/8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **MW-11-11.25 (P3K0348-02) Soil Sampled: 11/11/03 15:20 Received: 11/12/03 16:40** | | | | | | | | | | |
| **Ethylbenzene** | **8.23** | 0.143 | 5.00 | ug/kg dry | 1 | 3110271 | 11/18/03 | 11/20/03 | EPA 8260B | |
| Hexachlorobutadiene | ND | 0.739 | 5.00 | " | " | " | " | " | " | U |
| 2-Hexanone | ND | 2.14 | 20.0 | " | " | " | " | " | " | U |
| **Isopropylbenzene** | **6.78** | 0.202 | 5.00 | " | " | " | " | " | " | |
| **p-Isopropyltoluene** | **13.6** | 0.133 | 5.00 | " | " | " | " | " | " | |
| 4-Methyl-2-pentanone | ND | 2.06 | 20.0 | " | " | " | " | " | " | U |
| Methylene chloride | ND | 10.0 | 25.0 | " | " | " | " | " | " | U |
| **Naphthalene** | **24.6** | 0.345 | 5.00 | " | " | " | " | " | " | |
| **n-Propylbenzene** | **14.0** | 0.174 | 5.00 | " | " | " | " | " | " | |
| Styrene | ND | 0.154 | 5.00 | " | " | " | " | " | " | U |
| 1,1,1,2-Tetrachloroethane | ND | 0.297 | 5.00 | " | " | " | " | " | " | U |
| 1,1,2,2-Tetrachloroethane | ND | 0.257 | 5.00 | " | " | " | " | " | " | U |
| **Tetrachloroethene** | **0.565** | 0.145 | 5.00 | " | " | " | " | " | " | J |
| **Toluene** | **6.08** | 0.299 | 5.00 | " | " | " | " | " | " | |
| 1,2,3-Trichlorobenzene | ND | 0.318 | 5.00 | " | " | " | " | " | " | U |
| 1,2,4-Trichlorobenzene | ND | 0.393 | 5.00 | " | " | " | " | " | " | U |
| 1,1,1-Trichloroethane | ND | 0.228 | 5.00 | " | " | " | " | " | " | U |
| 1,1,2-Trichloroethane | ND | 0.701 | 5.00 | " | " | " | " | " | " | U |
| **Trichloroethene** | **0.745** | 0.221 | 5.00 | " | " | " | " | " | " | J |
| Trichlorofluoromethane | ND | 0.281 | 5.00 | " | " | " | " | " | " | U |
| 1,2,3-Trichloropropane | ND | 0.962 | 5.00 | " | " | " | " | " | " | U |
| **1,2,4-Trimethylbenzene** | **140** | 0.0800 | 5.00 | " | " | " | " | " | " | |
| **1,3,5-Trimethylbenzene** | **40.6** | 0.154 | 5.00 | " | " | " | " | " | " | |
| Vinyl chloride | ND | 0.305 | 10.0 | " | " | " | " | " | " | U |
| **o-Xylene** | **25.8** | 0.199 | 5.00 | " | " | " | " | " | " | |
| **m,p-Xylene** | **49.4** | 0.208 | 10.0 | " | " | " | " | " | " | |
| *Surrogate: 4-BFB* | | *101 %* | *42.6-130* | | | " | " | " | " | |
| *Surrogate: 1,2-DCA-d4* | | *98.8 %* | *57.3-144* | | | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *97.3 %* | *45.5-130* | | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *95.7 %* | *42.1-144* | | | " | " | " | " | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Volatile Organic Compounds per EPA Methods 5035/8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **MW-14-16 (P3K0348-05) Soil Sampled: 11/12/03 11:18 Received: 11/12/03 16:40** | | | | | | | | | | |
| **Acetone** | **53.8** | 4.25 | 20.0 | ug/kg dry | 1 | 3110271 | 11/18/03 | 11/20/03 | EPA 8260B | |
| **Benzene** | **0.631** | 0.147 | 5.00 | " | " | " | " | " | " | J |
| Bromobenzene | ND | 0.152 | 5.00 | " | " | " | " | " | " | U |
| Bromochloromethane | ND | 0.277 | 5.00 | " | " | " | " | " | " | U |
| Bromodichloromethane | ND | 0.388 | 5.00 | " | " | " | " | " | " | U |
| Bromoform | ND | 0.169 | 5.00 | " | " | " | " | " | " | U |
| Bromomethane | ND | 0.309 | 20.0 | " | " | " | " | " | " | U |
| 2-Butanone | ND | 15.4 | 20.0 | " | " | " | " | " | " | U |
| n-Butylbenzene | ND | 0.181 | 5.00 | " | " | " | " | " | " | U |
| sec-Butylbenzene | ND | 0.160 | 5.00 | " | " | " | " | " | " | U |
| tert-Butylbenzene | ND | 0.195 | 5.00 | " | " | " | " | " | " | U |
| **Carbon disulfide** | **0.758** | 0.420 | 20.0 | " | " | " | " | " | " | J |
| Carbon tetrachloride | ND | 0.202 | 5.00 | " | " | " | " | " | " | U |
| Chlorobenzene | ND | 0.276 | 5.00 | " | " | " | " | " | " | U |
| Chloroethane | ND | 0.353 | 10.0 | " | " | " | " | " | " | U |
| Chloroform | ND | 0.174 | 5.00 | " | " | " | " | " | " | U |
| Chloromethane | ND | 0.513 | 10.0 | " | " | " | " | " | " | U |
| 2-Chlorotoluene | ND | 0.236 | 5.00 | " | " | " | " | " | " | U |
| 4-Chlorotoluene | ND | 0.108 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dibromo-3-chloropropane | ND | 0.213 | 10.0 | " | " | " | " | " | " | U |
| Dibromochloromethane | ND | 0.270 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dibromoethane | ND | 0.386 | 5.00 | " | " | " | " | " | " | U |
| Dibromomethane | ND | 0.302 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dichlorobenzene | ND | 0.169 | 5.00 | " | " | " | " | " | " | U |
| 1,3-Dichlorobenzene | ND | 0.329 | 5.00 | " | " | " | " | " | " | U |
| 1,4-Dichlorobenzene | ND | 0.162 | 5.00 | " | " | " | " | " | " | U |
| Dichlorodifluoromethane | ND | 0.280 | 10.0 | " | " | " | " | " | " | U |
| 1,1-Dichloroethane | ND | 0.0975 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dichloroethane | ND | 0.236 | 5.00 | " | " | " | " | " | " | U |
| 1,1-Dichloroethene | ND | 0.180 | 5.00 | " | " | " | " | " | " | U |
| cis-1,2-Dichloroethene | ND | 0.202 | 5.00 | " | " | " | " | " | " | U |
| trans-1,2-Dichloroethene | ND | 0.195 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dichloropropane | ND | 0.191 | 5.00 | " | " | " | " | " | " | U |
| 1,3-Dichloropropane | ND | 0.353 | 5.00 | " | " | " | " | " | " | U |
| 2,2-Dichloropropane | ND | 0.224 | 5.00 | " | " | " | " | " | " | U |
| 1,1-Dichloropropene | ND | 0.234 | 5.00 | " | " | " | " | " | " | U |
| cis-1,3-Dichloropropene | ND | 0.141 | 5.00 | " | " | " | " | " | " | U |
| trans-1,3-Dichloropropene | ND | 0.372 | 5.00 | " | " | " | " | " | " | U |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Volatile Organic Compounds per EPA Methods 5035/8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **MW-14-16 (P3K0348-05) Soil Sampled: 11/12/03 11:18 Received: 11/12/03 16:40** | | | | | | | | | | |
| **Ethylbenzene** | **0.189** | 0.143 | 5.00 | ug/kg dry | 1 | 3110271 | 11/18/03 | 11/20/03 | EPA 8260B | J |
| Hexachlorobutadiene | ND | 0.739 | 5.00 | " | " | " | " | " | " | U |
| 2-Hexanone | ND | 2.14 | 20.0 | " | " | " | " | " | " | U |
| Isopropylbenzene | ND | 0.202 | 5.00 | " | " | " | " | " | " | U |
| **p-Isopropyltoluene** | **0.518** | 0.133 | 5.00 | " | " | " | " | " | " | J |
| 4-Methyl-2-pentanone | ND | 2.06 | 20.0 | " | " | " | " | " | " | U |
| Methylene chloride | ND | 10.0 | 25.0 | " | " | " | " | " | " | U |
| **Naphthalene** | **6.78** | 0.345 | 5.00 | " | " | " | " | " | " | |
| **n-Propylbenzene** | **0.189** | 0.174 | 5.00 | " | " | " | " | " | " | J |
| Styrene | ND | 0.154 | 5.00 | " | " | " | " | " | " | U |
| 1,1,1,2-Tetrachloroethane | ND | 0.297 | 5.00 | " | " | " | " | " | " | U |
| 1,1,2,2-Tetrachloroethane | ND | 0.257 | 5.00 | " | " | " | " | " | " | U |
| **Tetrachloroethene** | **0.442** | 0.145 | 5.00 | " | " | " | " | " | " | J |
| **Toluene** | **0.783** | 0.299 | 5.00 | " | " | " | " | " | " | J |
| 1,2,3-Trichlorobenzene | ND | 0.318 | 5.00 | " | " | " | " | " | " | U |
| 1,2,4-Trichlorobenzene | ND | 0.393 | 5.00 | " | " | " | " | " | " | U |
| 1,1,1-Trichloroethane | ND | 0.228 | 5.00 | " | " | " | " | " | " | U |
| 1,1,2-Trichloroethane | ND | 0.701 | 5.00 | " | " | " | " | " | " | U |
| **Trichloroethene** | **0.783** | 0.221 | 5.00 | " | " | " | " | " | " | J |
| Trichlorofluoromethane | ND | 0.281 | 5.00 | " | " | " | " | " | " | U |
| 1,2,3-Trichloropropane | ND | 0.962 | 5.00 | " | " | " | " | " | " | U |
| **1,2,4-Trimethylbenzene** | **1.24** | 0.0800 | 5.00 | " | " | " | " | " | " | J |
| **1,3,5-Trimethylbenzene** | **0.341** | 0.154 | 5.00 | " | " | " | " | " | " | J |
| Vinyl chloride | ND | 0.305 | 10.0 | " | " | " | " | " | " | U |
| **o-Xylene** | **0.303** | 0.199 | 5.00 | " | " | " | " | " | " | J |
| **m,p-Xylene** | **0.732** | 0.208 | 10.0 | " | " | " | " | " | " | J |
| *Surrogate: 4-BFB* | | *98.8 %* | *42.6-130* | | | " | " | " | " | |
| *Surrogate: 1,2-DCA-d4* | | *102 %* | *57.3-144* | | | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *94.9 %* | *45.5-130* | | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *100 %* | *42.1-144* | | | " | " | " | " | |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Volatile Organic Compounds per EPA Methods 5035/8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Dry Well #2 (P3K0348-06) Soil Sampled: 11/12/03 12:59 Received: 11/12/03 16:40** | | | | | | | | | | |
| **Acetone** | **53.0** | 4.25 | 20.0 | ug/kg dry | 1 | 3110271 | 11/18/03 | 11/20/03 | EPA 8260B | |
| **Benzene** | **0.231** | 0.147 | 5.00 | " | " | " | " | " | " | J |
| Bromobenzene | ND | 0.152 | 5.00 | " | " | " | " | " | " | U |
| Bromochloromethane | ND | 0.277 | 5.00 | " | " | " | " | " | " | U |
| Bromodichloromethane | ND | 0.388 | 5.00 | " | " | " | " | " | " | U |
| Bromoform | ND | 0.169 | 5.00 | " | " | " | " | " | " | U |
| Bromomethane | ND | 0.309 | 20.0 | " | " | " | " | " | " | U |
| 2-Butanone | ND | 15.4 | 20.0 | " | " | " | " | " | " | U |
| n-Butylbenzene | ND | 0.181 | 5.00 | " | " | " | " | " | " | U |
| sec-Butylbenzene | ND | 0.160 | 5.00 | " | " | " | " | " | " | U |
| tert-Butylbenzene | ND | 0.195 | 5.00 | " | " | " | " | " | " | U |
| Carbon disulfide | ND | 0.420 | 20.0 | " | " | " | " | " | " | U |
| Carbon tetrachloride | ND | 0.202 | 5.00 | " | " | " | " | " | " | U |
| Chlorobenzene | ND | 0.276 | 5.00 | " | " | " | " | " | " | U |
| Chloroethane | ND | 0.353 | 10.0 | " | " | " | " | " | " | U |
| Chloroform | ND | 0.174 | 5.00 | " | " | " | " | " | " | U |
| Chloromethane | ND | 0.513 | 10.0 | " | " | " | " | " | " | U |
| 2-Chlorotoluene | ND | 0.236 | 5.00 | " | " | " | " | " | " | U |
| 4-Chlorotoluene | ND | 0.108 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dibromo-3-chloropropane | ND | 0.213 | 10.0 | " | " | " | " | " | " | U |
| Dibromochloromethane | ND | 0.270 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dibromoethane | ND | 0.386 | 5.00 | " | " | " | " | " | " | U |
| Dibromomethane | ND | 0.302 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dichlorobenzene | ND | 0.169 | 5.00 | " | " | " | " | " | " | U |
| 1,3-Dichlorobenzene | ND | 0.329 | 5.00 | " | " | " | " | " | " | U |
| 1,4-Dichlorobenzene | ND | 0.162 | 5.00 | " | " | " | " | " | " | U |
| Dichlorodifluoromethane | ND | 0.280 | 10.0 | " | " | " | " | " | " | U |
| 1,1-Dichloroethane | ND | 0.0975 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dichloroethane | ND | 0.236 | 5.00 | " | " | " | " | " | " | U |
| 1,1-Dichloroethene | ND | 0.180 | 5.00 | " | " | " | " | " | " | U |
| cis-1,2-Dichloroethene | ND | 0.202 | 5.00 | " | " | " | " | " | " | U |
| trans-1,2-Dichloroethene | ND | 0.195 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dichloropropane | ND | 0.191 | 5.00 | " | " | " | " | " | " | U |
| 1,3-Dichloropropane | ND | 0.353 | 5.00 | " | " | " | " | " | " | U |
| 2,2-Dichloropropane | ND | 0.224 | 5.00 | " | " | " | " | " | " | U |
| 1,1-Dichloropropene | ND | 0.234 | 5.00 | " | " | " | " | " | " | U |
| cis-1,3-Dichloropropene | ND | 0.141 | 5.00 | " | " | " | " | " | " | U |
| trans-1,3-Dichloropropene | ND | 0.372 | 5.00 | " | " | " | " | " | " | U |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Volatile Organic Compounds per EPA Methods 5035/8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Dry Well #2 (P3K0348-06) Soil Sampled: 11/12/03 12:59 Received: 11/12/03 16:40** | | | | | | | | | | |
| Ethylbenzene | ND | 0.143 | 5.00 | ug/kg dry | 1 | 3110271 | 11/18/03 | 11/20/03 | EPA 8260B | U |
| Hexachlorobutadiene | ND | 0.739 | 5.00 | " | " | " | " | " | " | U |
| 2-Hexanone | ND | 2.14 | 20.0 | " | " | " | " | " | " | U |
| Isopropylbenzene | ND | 0.202 | 5.00 | " | " | " | " | " | " | U |
| p-Isopropyltoluene | ND | 0.133 | 5.00 | " | " | " | " | " | " | U |
| 4-Methyl-2-pentanone | ND | 2.06 | 20.0 | " | " | " | " | " | " | U |
| Methylene chloride | ND | 10.0 | 25.0 | " | " | " | " | " | " | U |
| **Naphthalene** | **1.33** | 0.345 | 5.00 | " | " | " | " | " | " | J |
| n-Propylbenzene | ND | 0.174 | 5.00 | " | " | " | " | " | " | U |
| Styrene | ND | 0.154 | 5.00 | " | " | " | " | " | " | U |
| 1,1,1,2-Tetrachloroethane | ND | 0.297 | 5.00 | " | " | " | " | " | " | U |
| 1,1,2,2-Tetrachloroethane | ND | 0.257 | 5.00 | " | " | " | " | " | " | U |
| **Tetrachloroethene** | **0.352** | 0.145 | 5.00 | " | " | " | " | " | " | J |
| Toluene | ND | 0.299 | 5.00 | " | " | " | " | " | " | U |
| 1,2,3-Trichlorobenzene | ND | 0.318 | 5.00 | " | " | " | " | " | " | U |
| 1,2,4-Trichlorobenzene | ND | 0.393 | 5.00 | " | " | " | " | " | " | U |
| 1,1,1-Trichloroethane | ND | 0.228 | 5.00 | " | " | " | " | " | " | U |
| 1,1,2-Trichloroethane | ND | 0.701 | 5.00 | " | " | " | " | " | " | U |
| **Trichloroethene** | **0.440** | 0.221 | 5.00 | " | " | " | " | " | " | J |
| Trichlorofluoromethane | ND | 0.281 | 5.00 | " | " | " | " | " | " | U |
| 1,2,3-Trichloropropane | ND | 0.962 | 5.00 | " | " | " | " | " | " | U |
| **1,2,4-Trimethylbenzene** | **0.286** | 0.0800 | 5.00 | " | " | " | " | " | " | J |
| 1,3,5-Trimethylbenzene | ND | 0.154 | 5.00 | " | " | " | " | " | " | U |
| Vinyl chloride | ND | 0.305 | 10.0 | " | " | " | " | " | " | U |
| o-Xylene | ND | 0.199 | 5.00 | " | " | " | " | " | " | U |
| **m,p-Xylene** | **0.440** | 0.208 | 10.0 | " | " | " | " | " | " | J |
| *Surrogate: 4-BFB* | | *101 %* | *42.6-130* | | | " | " | " | " | |
| *Surrogate: 1,2-DCA-d4* | | *106 %* | *57.3-144* | | | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *96.4 %* | *45.5-130* | | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *94.5 %* | *42.1-144* | | | " | " | " | " | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Volatile Organic Compounds per EPA Methods 5035/8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Dry Well #1 (P3K0348-07) Soil Sampled: 11/12/03 12:41 Received: 11/12/03 16:40** | | | | | | | | | | |
| Acetone | ND | 4.25 | 20.0 | ug/kg dry | 1 | 3110271 | 11/18/03 | 11/20/03 | EPA 8260B | U |
| **Benzene** | **0.534** | 0.147 | 5.00 | " | " | " | " | " | " | J |
| Bromobenzene | ND | 0.152 | 5.00 | " | " | " | " | " | " | U |
| Bromochloromethane | ND | 0.277 | 5.00 | " | " | " | " | " | " | U |
| Bromodichloromethane | ND | 0.388 | 5.00 | " | " | " | " | " | " | U |
| Bromoform | ND | 0.169 | 5.00 | " | " | " | " | " | " | U |
| Bromomethane | ND | 0.309 | 20.0 | " | " | " | " | " | " | U |
| 2-Butanone | ND | 15.4 | 20.0 | " | " | " | " | " | " | U |
| n-Butylbenzene | ND | 0.181 | 5.00 | " | " | " | " | " | " | U |
| sec-Butylbenzene | ND | 0.160 | 5.00 | " | " | " | " | " | " | U |
| tert-Butylbenzene | ND | 0.195 | 5.00 | " | " | " | " | " | " | U |
| **Carbon disulfide** | **1.73** | 0.420 | 20.0 | " | " | " | " | " | " | J |
| Carbon tetrachloride | ND | 0.202 | 5.00 | " | " | " | " | " | " | U |
| Chlorobenzene | ND | 0.276 | 5.00 | " | " | " | " | " | " | U |
| Chloroethane | ND | 0.353 | 10.0 | " | " | " | " | " | " | U |
| Chloroform | ND | 0.174 | 5.00 | " | " | " | " | " | " | U |
| Chloromethane | ND | 0.513 | 10.0 | " | " | " | " | " | " | U |
| 2-Chlorotoluene | ND | 0.236 | 5.00 | " | " | " | " | " | " | U |
| 4-Chlorotoluene | ND | 0.108 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dibromo-3-chloropropane | ND | 0.213 | 10.0 | " | " | " | " | " | " | U |
| Dibromochloromethane | ND | 0.270 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dibromoethane | ND | 0.386 | 5.00 | " | " | " | " | " | " | U |
| Dibromomethane | ND | 0.302 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dichlorobenzene | ND | 0.169 | 5.00 | " | " | " | " | " | " | U |
| 1,3-Dichlorobenzene | ND | 0.329 | 5.00 | " | " | " | " | " | " | U |
| 1,4-Dichlorobenzene | ND | 0.162 | 5.00 | " | " | " | " | " | " | U |
| Dichlorodifluoromethane | ND | 0.280 | 10.0 | " | " | " | " | " | " | U |
| 1,1-Dichloroethane | ND | 0.0975 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dichloroethane | ND | 0.236 | 5.00 | " | " | " | " | " | " | U |
| 1,1-Dichloroethene | ND | 0.180 | 5.00 | " | " | " | " | " | " | U |
| cis-1,2-Dichloroethene | ND | 0.202 | 5.00 | " | " | " | " | " | " | U |
| trans-1,2-Dichloroethene | ND | 0.195 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dichloropropane | ND | 0.191 | 5.00 | " | " | " | " | " | " | U |
| 1,3-Dichloropropane | ND | 0.353 | 5.00 | " | " | " | " | " | " | U |
| 2,2-Dichloropropane | ND | 0.224 | 5.00 | " | " | " | " | " | " | U |
| 1,1-Dichloropropene | ND | 0.234 | 5.00 | " | " | " | " | " | " | U |
| cis-1,3-Dichloropropene | ND | 0.141 | 5.00 | " | " | " | " | " | " | U |
| trans-1,3-Dichloropropene | ND | 0.372 | 5.00 | " | " | " | " | " | " | U |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Volatile Organic Compounds per EPA Methods 5035/8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Dry Well #1 (P3K0348-07) Soil Sampled: 11/12/03 12:41 Received: 11/12/03 16:40** | | | | | | | | | | |
| Ethylbenzene | ND | 0.143 | 5.00 | ug/kg dry | 1 | 3110271 | 11/18/03 | 11/20/03 | EPA 8260B | U |
| Hexachlorobutadiene | ND | 0.739 | 5.00 | " | " | " | " | " | " | U |
| 2-Hexanone | ND | 2.14 | 20.0 | " | " | " | " | " | " | U |
| Isopropylbenzene | ND | 0.202 | 5.00 | " | " | " | " | " | " | U |
| **p-Isopropyltoluene** | **0.165** | 0.133 | 5.00 | " | " | " | " | " | " | J |
| 4-Methyl-2-pentanone | ND | 2.06 | 20.0 | " | " | " | " | " | " | U |
| Methylene chloride | ND | 10.0 | 25.0 | " | " | " | " | " | " | U |
| **Naphthalene** | **1.25** | 0.345 | 5.00 | " | " | " | " | " | " | J |
| n-Propylbenzene | ND | 0.174 | 5.00 | " | " | " | " | " | " | U |
| Styrene | ND | 0.154 | 5.00 | " | " | " | " | " | " | U |
| 1,1,1,2-Tetrachloroethane | ND | 0.297 | 5.00 | " | " | " | " | " | " | U |
| 1,1,2,2-Tetrachloroethane | ND | 0.257 | 5.00 | " | " | " | " | " | " | U |
| **Tetrachloroethene** | **1.87** | 0.145 | 5.00 | " | " | " | " | " | " | J |
| **Toluene** | **0.343** | 0.299 | 5.00 | " | " | " | " | " | " | J |
| 1,2,3-Trichlorobenzene | ND | 0.318 | 5.00 | " | " | " | " | " | " | U |
| 1,2,4-Trichlorobenzene | ND | 0.393 | 5.00 | " | " | " | " | " | " | U |
| 1,1,1-Trichloroethane | ND | 0.228 | 5.00 | " | " | " | " | " | " | U |
| 1,1,2-Trichloroethane | ND | 0.701 | 5.00 | " | " | " | " | " | " | U |
| **Trichloroethene** | **0.700** | 0.221 | 5.00 | " | " | " | " | " | " | J |
| Trichlorofluoromethane | ND | 0.281 | 5.00 | " | " | " | " | " | " | U |
| 1,2,3-Trichloropropane | ND | 0.962 | 5.00 | " | " | " | " | " | " | U |
| **1,2,4-Trimethylbenzene** | **0.242** | 0.0800 | 5.00 | " | " | " | " | " | " | J |
| 1,3,5-Trimethylbenzene | ND | 0.154 | 5.00 | " | " | " | " | " | " | U |
| Vinyl chloride | ND | 0.305 | 10.0 | " | " | " | " | " | " | U |
| o-Xylene | ND | 0.199 | 5.00 | " | " | " | " | " | " | U |
| **m,p-Xylene** | **0.458** | 0.208 | 10.0 | " | " | " | " | " | " | J |
| *Surrogate: 4-BFB* | | *98.8 %* | *42.6-130* | | | " | " | " | " | |
| *Surrogate: 1,2-DCA-d4* | | *103 %* | *57.3-144* | | | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *95.3 %* | *45.5-130* | | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *97.6 %* | *42.1-144* | | | " | " | " | " | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Volatile Organic Compounds per EPA Methods 5035/8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **MW-13-15 (P3K0348-08) Soil Sampled: 11/12/03 14:32 Received: 11/12/03 16:40** | | | | | | | | | | |
| **Acetone** | **68.1** | 4.25 | 20.0 | ug/kg dry | 1 | 3110271 | 11/18/03 | 11/20/03 | EPA 8260B | |
| **Benzene** | **0.544** | 0.147 | 5.00 | " | " | " | " | " | " | J |
| Bromobenzene | ND | 0.152 | 5.00 | " | " | " | " | " | " | U |
| Bromochloromethane | ND | 0.277 | 5.00 | " | " | " | " | " | " | U |
| Bromodichloromethane | ND | 0.388 | 5.00 | " | " | " | " | " | " | U |
| Bromoform | ND | 0.169 | 5.00 | " | " | " | " | " | " | U |
| Bromomethane | ND | 0.309 | 20.0 | " | " | " | " | " | " | U |
| 2-Butanone | ND | 15.4 | 20.0 | " | " | " | " | " | " | U |
| n-Butylbenzene | ND | 0.181 | 5.00 | " | " | " | " | " | " | U |
| sec-Butylbenzene | ND | 0.160 | 5.00 | " | " | " | " | " | " | U |
| tert-Butylbenzene | ND | 0.195 | 5.00 | " | " | " | " | " | " | U |
| **Carbon disulfide** | **1.17** | 0.420 | 20.0 | " | " | " | " | " | " | J |
| Carbon tetrachloride | ND | 0.202 | 5.00 | " | " | " | " | " | " | U |
| Chlorobenzene | ND | 0.276 | 5.00 | " | " | " | " | " | " | U |
| Chloroethane | ND | 0.353 | 10.0 | " | " | " | " | " | " | U |
| Chloroform | ND | 0.174 | 5.00 | " | " | " | " | " | " | U |
| Chloromethane | ND | 0.513 | 10.0 | " | " | " | " | " | " | U |
| 2-Chlorotoluene | ND | 0.236 | 5.00 | " | " | " | " | " | " | U |
| 4-Chlorotoluene | ND | 0.108 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dibromo-3-chloropropane | ND | 0.213 | 10.0 | " | " | " | " | " | " | U |
| Dibromochloromethane | ND | 0.270 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dibromoethane | ND | 0.386 | 5.00 | " | " | " | " | " | " | U |
| Dibromomethane | ND | 0.302 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dichlorobenzene | ND | 0.169 | 5.00 | " | " | " | " | " | " | U |
| 1,3-Dichlorobenzene | ND | 0.329 | 5.00 | " | " | " | " | " | " | U |
| 1,4-Dichlorobenzene | ND | 0.162 | 5.00 | " | " | " | " | " | " | U |
| Dichlorodifluoromethane | ND | 0.280 | 10.0 | " | " | " | " | " | " | U |
| 1,1-Dichloroethane | ND | 0.0975 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dichloroethane | ND | 0.236 | 5.00 | " | " | " | " | " | " | U |
| 1,1-Dichloroethene | ND | 0.180 | 5.00 | " | " | " | " | " | " | U |
| cis-1,2-Dichloroethene | ND | 0.202 | 5.00 | " | " | " | " | " | " | U |
| trans-1,2-Dichloroethene | ND | 0.195 | 5.00 | " | " | " | " | " | " | U |
| 1,2-Dichloropropane | ND | 0.191 | 5.00 | " | " | " | " | " | " | U |
| 1,3-Dichloropropane | ND | 0.353 | 5.00 | " | " | " | " | " | " | U |
| 2,2-Dichloropropane | ND | 0.224 | 5.00 | " | " | " | " | " | " | U |
| 1,1-Dichloropropene | ND | 0.234 | 5.00 | " | " | " | " | " | " | U |
| cis-1,3-Dichloropropene | ND | 0.141 | 5.00 | " | " | " | " | " | " | U |
| trans-1,3-Dichloropropene | ND | 0.372 | 5.00 | " | " | " | " | " | " | U |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Volatile Organic Compounds per EPA Methods 5035/8260B
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **MW-13-15 (P3K0348-08) Soil Sampled: 11/12/03 14:32 Received: 11/12/03 16:40** | | | | | | | | | | |
| **Ethylbenzene** | **0.193** | 0.143 | 5.00 | ug/kg dry | 1 | 3110271 | 11/18/03 | 11/20/03 | EPA 8260B | J |
| Hexachlorobutadiene | ND | 0.739 | 5.00 | " | " | " | " | " | " | U |
| 2-Hexanone | ND | 2.14 | 20.0 | " | " | " | " | " | " | U |
| Isopropylbenzene | ND | 0.202 | 5.00 | " | " | " | " | " | " | U |
| **p-Isopropyltoluene** | **6.10** | 0.133 | 5.00 | " | " | " | " | " | " | |
| 4-Methyl-2-pentanone | ND | 2.06 | 20.0 | " | " | " | " | " | " | U |
| Methylene chloride | ND | 10.0 | 25.0 | " | " | " | " | " | " | U |
| **Naphthalene** | **1.65** | 0.345 | 5.00 | " | " | " | " | " | " | J |
| n-Propylbenzene | ND | 0.174 | 5.00 | " | " | " | " | " | " | U |
| Styrene | ND | 0.154 | 5.00 | " | " | " | " | " | " | U |
| 1,1,1,2-Tetrachloroethane | ND | 0.297 | 5.00 | " | " | " | " | " | " | U |
| 1,1,2,2-Tetrachloroethane | ND | 0.257 | 5.00 | " | " | " | " | " | " | U |
| Tetrachloroethene | ND | 0.145 | 5.00 | " | " | " | " | " | " | U |
| Toluene | ND | 0.299 | 5.00 | " | " | " | " | " | " | U |
| 1,2,3-Trichlorobenzene | ND | 0.318 | 5.00 | " | " | " | " | " | " | U |
| 1,2,4-Trichlorobenzene | ND | 0.393 | 5.00 | " | " | " | " | " | " | U |
| 1,1,1-Trichloroethane | ND | 0.228 | 5.00 | " | " | " | " | " | " | U |
| 1,1,2-Trichloroethane | ND | 0.701 | 5.00 | " | " | " | " | " | " | U |
| **Trichloroethene** | **0.703** | 0.221 | 5.00 | " | " | " | " | " | " | J |
| Trichlorofluoromethane | ND | 0.281 | 5.00 | " | " | " | " | " | " | U |
| 1,2,3-Trichloropropane | ND | 0.962 | 5.00 | " | " | " | " | " | " | U |
| **1,2,4-Trimethylbenzene** | **0.623** | 0.0800 | 5.00 | " | " | " | " | " | " | J |
| 1,3,5-Trimethylbenzene | ND | 0.154 | 5.00 | " | " | " | " | " | " | U |
| Vinyl chloride | ND | 0.305 | 10.0 | " | " | " | " | " | " | U |
| **o-Xylene** | **0.374** | 0.199 | 5.00 | " | " | " | " | " | " | J |
| **m,p-Xylene** | **0.827** | 0.208 | 10.0 | " | " | " | " | " | " | J |
| *Surrogate: 4-BFB* | | *108 %* | *42.6-130* | | | " | " | " | " | |
| *Surrogate: 1,2-DCA-d4* | | *115 %* | *57.3-144* | | | " | " | " | " | |
| *Surrogate: Dibromofluoromethane* | | *99.1 %* | *45.5-130* | | | " | " | " | " | |
| *Surrogate: Toluene-d8* | | *92.5 %* | *42.1-144* | | | " | " | " | " | |



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| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Semivolatile Organic Compounds per EPA Method 8270C
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **MW-12-20.5 (P3K0348-01) Soil Sampled: 11/11/03 11:28 Received: 11/12/03 16:40** | | | | | | | | | | |
| Acenaphthene | ND | 0.0700 | 0.330 | mg/kg dry | 1 | 3110491 | 11/17/03 | 11/19/03 | EPA 8270C | U |
| Acenaphthylene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Anthracene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Benzo (a) anthracene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Benzo (a) pyrene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Benzo (b) fluoranthene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Benzo (ghi) perylene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Benzo (k) fluoranthene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Benzoic Acid | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Benzyl alcohol | ND | 0.165 | 0.330 | " | " | " | " | " | " | U |
| 4-Bromophenyl phenyl ether | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Butyl benzyl phthalate | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 4-Chloro-3-methylphenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 4-Chloroaniline | ND | 0.165 | 2.00 | " | " | " | " | " | " | U |
| Bis(2-chloroethoxy)methane | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Bis(2-chloroethyl)ether | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Bis(2-chloroisopropyl)ether | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Chloronaphthalene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Chlorophenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 4-Chlorophenyl phenyl ether | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Chrysene | ND | 0.330 | 0.330 | " | " | " | " | " | " | U |
| Di-n-butyl phthalate | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Di-n-octyl phthalate | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Dibenzo (a,h) anthracene | ND | 0.0600 | 0.330 | " | " | " | " | " | " | U |
| Dibenzofuran | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 1,2-Dichlorobenzene | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 1,3-Dichlorobenzene | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 1,4-Dichlorobenzene | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 3,3'-Dichlorobenzidine | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 2,4-Dichlorophenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Diethyl phthalate | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2,4-Dimethylphenol | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Dimethyl phthalate | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 4,6-Dinitro-2-methylphenol | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 2,4-Dinitrophenol | ND | 2.00 | 2.00 | " | " | " | " | " | " | U |
| 2,4-Dinitrotoluene | ND | 0.500 | 0.500 | " | " | " | " | " | " | U |
| 2,6-Dinitrotoluene | ND | 0.0700 | 0.500 | " | " | " | " | " | " | U |
| Bis(2-ethylhexyl)phthalate | ND | 2.00 | 2.00 | " | " | " | " | " | " | U |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Semivolatile Organic Compounds per EPA Method 8270C
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **MW-12-20.5 (P3K0348-01) Soil Sampled: 11/11/03 11:28 Received: 11/12/03 16:40** | | | | | | | | | | |
| Fluoranthene | ND | 0.0700 | 0.330 | mg/kg dry | 1 | 3110491 | 11/17/03 | 11/19/03 | EPA 8270C | U |
| Fluorene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Hexachlorobenzene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Hexachlorobutadiene | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Hexachlorocyclopentadiene | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Hexachloroethane | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Indeno (1,2,3-cd) pyrene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Isophorone | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Methylnaphthalene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Methylphenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 3-,4-Methylphenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| **Naphthalene** | **0.775** | 0.0700 | 0.330 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 3-Nitroaniline | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 4-Nitroaniline | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Nitrobenzene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Nitrophenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 4-Nitrophenol | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| N-Nitrosodi-n-propylamine | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| N-Nitrosodiphenylamine | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Pentachlorophenol | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| **Phenanthrene** | **0.125** | 0.0700 | 0.330 | " | " | " | " | " | " | J |
| Phenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| **Pyrene** | **0.127** | 0.0700 | 0.330 | " | " | " | " | " | " | J |
| 1,2,4-Trichlorobenzene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2,4,5-Trichlorophenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2,4,6-Trichlorophenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| *Surrogate: 2-Fluorobiphenyl* | | *88.2 %* | *44-146* | | | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *109 %* | *42-126* | | | " | " | *11/19/03* | " | *D* |
| *Surrogate: Nitrobenzene-d5* | | *87.6 %* | *42-126* | | | " | " | *11/19/03* | " | |
| *Surrogate: Phenol-d6* | | *89.3 %* | *42-131* | | | " | " | " | " | |
| *Surrogate: p-Terphenyl-d14* | | *123 %* | *49-150* | | | " | " | " | " | |
| *Surrogate: 2,4,6-Tribromophenol* | | *107 %* | *48-119* | | | " | " | " | " | |



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| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Semivolatile Organic Compounds per EPA Method 8270C
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **MW-11-11.25 (P3K0348-02) Soil Sampled: 11/11/03 15:20 Received: 11/12/03 16:40** | | | | | | | | | | |
| Acenaphthene | ND | 0.0700 | 0.330 | mg/kg dry | 1 | 3110491 | 11/17/03 | 11/19/03 | EPA 8270C | U |
| Acenaphthylene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Anthracene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Benzo (a) anthracene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Benzo (a) pyrene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Benzo (b) fluoranthene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Benzo (ghi) perylene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Benzo (k) fluoranthene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Benzoic Acid | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Benzyl alcohol | ND | 0.165 | 0.330 | " | " | " | " | " | " | U |
| 4-Bromophenyl phenyl ether | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Butyl benzyl phthalate | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 4-Chloro-3-methylphenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 4-Chloroaniline | ND | 0.165 | 2.00 | " | " | " | " | " | " | U |
| Bis(2-chloroethoxy)methane | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Bis(2-chloroethyl)ether | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Bis(2-chloroisopropyl)ether | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Chloronaphthalene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Chlorophenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 4-Chlorophenyl phenyl ether | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Chrysene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Di-n-butyl phthalate | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Di-n-octyl phthalate | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Dibenzo (a,h) anthracene | ND | 0.0600 | 0.330 | " | " | " | " | " | " | U |
| Dibenzofuran | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 1,2-Dichlorobenzene | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 1,3-Dichlorobenzene | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 1,4-Dichlorobenzene | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 3,3'-Dichlorobenzidine | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 2,4-Dichlorophenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Diethyl phthalate | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2,4-Dimethylphenol | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Dimethyl phthalate | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 4,6-Dinitro-2-methylphenol | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 2,4-Dinitrophenol | ND | 2.00 | 2.00 | " | " | " | " | " | " | U |
| 2,4-Dinitrotoluene | ND | 0.500 | 0.500 | " | " | " | " | " | " | U |
| 2,6-Dinitrotoluene | ND | 0.0700 | 0.500 | " | " | " | " | " | " | U |
| Bis(2-ethylhexyl)phthalate | ND | 2.00 | 2.00 | " | " | " | " | " | " | U |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Semivolatile Organic Compounds per EPA Method 8270C
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **MW-11-11.25 (P3K0348-02) Soil Sampled: 11/11/03 15:20 Received: 11/12/03 16:40** | | | | | | | | | | |
| Fluoranthene | ND | 0.0700 | 0.330 | mg/kg dry | 1 | 3110491 | 11/17/03 | 11/19/03 | EPA 8270C | U |
| Fluorene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Hexachlorobenzene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Hexachlorobutadiene | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Hexachlorocyclopentadiene | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Hexachloroethane | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Indeno (1,2,3-cd) pyrene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Isophorone | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Methylnaphthalene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Methylphenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 3-,4-Methylphenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Naphthalene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Nitroaniline | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 3-Nitroaniline | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 4-Nitroaniline | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Nitrobenzene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Nitrophenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 4-Nitrophenol | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| N-Nitrosodi-n-propylamine | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| N-Nitrosodiphenylamine | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Pentachlorophenol | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Phenanthrene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Phenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Pyrene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 1,2,4-Trichlorobenzene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2,4,5-Trichlorophenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2,4,6-Trichlorophenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| *Surrogate: 2-Fluorobiphenyl* | | *99.7 %* | *44-146* | | | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *106 %* | *42-126* | | | " | " | *11/19/03* | " | *D* |
| *Surrogate: Nitrobenzene-d5* | | *101 %* | *42-126* | | | " | " | *11/19/03* | " | |
| *Surrogate: Phenol-d6* | | *98.0 %* | *42-131* | | | " | " | " | " | |
| *Surrogate: p-Terphenyl-d14* | | *120 %* | *49-150* | | | " | " | " | " | |
| *Surrogate: 2,4,6-Tribromophenol* | | *91.9 %* | *48-119* | | | " | " | " | " | |



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Semivolatile Organic Compounds per EPA Method 8270C
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **MW-14-16 (P3K0348-05) Soil Sampled: 11/12/03 11:18 Received: 11/12/03 16:40** | | | | | | | | | | **R-05** |
| Acenaphthene | ND | 0.700 | 3.30 | mg/kg dry | 1 | 3110491 | 11/17/03 | 11/19/03 | EPA 8270C | D, U |
| Acenaphthylene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Anthracene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Benzo (a) anthracene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Benzo (a) pyrene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Benzo (b) fluoranthene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Benzo (ghi) perylene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Benzo (k) fluoranthene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Benzoic Acid | ND | 5.00 | 10.0 | " | " | " | " | " | " | D, U |
| Benzyl alcohol | ND | 1.65 | 3.30 | " | " | " | " | " | " | D, U |
| 4-Bromophenyl phenyl ether | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Butyl benzyl phthalate | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 4-Chloro-3-methylphenol | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 4-Chloroaniline | ND | 1.65 | 20.0 | " | " | " | " | " | " | D, U |
| Bis(2-chloroethoxy)methane | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Bis(2-chloroethyl)ether | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Bis(2-chloroisopropyl)ether | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 2-Chloronaphthalene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 2-Chlorophenol | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 4-Chlorophenyl phenyl ether | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Chrysene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Di-n-butyl phthalate | ND | 5.00 | 10.0 | " | " | " | " | " | " | D, U |
| Di-n-octyl phthalate | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Dibenzo (a,h) anthracene | ND | 0.600 | 3.30 | " | " | " | " | " | " | D, U |
| Dibenzofuran | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 1,2-Dichlorobenzene | ND | 5.00 | 10.0 | " | " | " | " | " | " | D, U |
| 1,3-Dichlorobenzene | ND | 5.00 | 10.0 | " | " | " | " | " | " | D, U |
| 1,4-Dichlorobenzene | ND | 5.00 | 10.0 | " | " | " | " | " | " | D, U |
| 3,3'-Dichlorobenzidine | ND | 5.00 | 10.0 | " | " | " | " | " | " | D, U |
| 2,4-Dichlorophenol | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Diethyl phthalate | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 2,4-Dimethylphenol | ND | 5.00 | 10.0 | " | " | " | " | " | " | D, U |
| Dimethyl phthalate | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 4,6-Dinitro-2-methylphenol | ND | 5.00 | 10.0 | " | " | " | " | " | " | D, U |
| 2,4-Dinitrophenol | ND | 20.0 | 20.0 | " | " | " | " | " | " | D, U |
| 2,4-Dinitrotoluene | ND | 5.00 | 5.00 | " | " | " | " | " | " | D, U |
| 2,6-Dinitrotoluene | ND | 0.700 | 5.00 | " | " | " | " | " | " | D, U |
| Bis(2-ethylhexyl)phthalate | ND | 20.0 | 20.0 | " | " | " | " | " | " | D, U |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Semivolatile Organic Compounds per EPA Method 8270C
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **MW-14-16 (P3K0348-05) Soil** | **Sampled: 11/12/03 11:18** | | **Received: 11/12/03 16:40** | | | | | | | **R-05** |
| Fluoranthene | ND | 0.700 | 3.30 | mg/kg dry | 1 | 3110491 | 11/17/03 | 11/19/03 | EPA 8270C | D, U |
| Fluorene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Hexachlorobenzene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Hexachlorobutadiene | ND | 5.00 | 10.0 | " | " | " | " | " | " | D, U |
| Hexachlorocyclopentadiene | ND | 5.00 | 10.0 | " | " | " | " | " | " | D, U |
| Hexachloroethane | ND | 5.00 | 10.0 | " | " | " | " | " | " | D, U |
| Indeno (1,2,3-cd) pyrene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Isophorone | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 2-Methylnaphthalene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 2-Methylphenol | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 3-,4-Methylphenol | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Naphthalene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 2-Nitroaniline | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 3-Nitroaniline | ND | 5.00 | 10.0 | " | " | " | " | " | " | D, U |
| 4-Nitroaniline | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Nitrobenzene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 2-Nitrophenol | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 4-Nitrophenol | ND | 5.00 | 10.0 | " | " | " | " | " | " | D, U |
| N-Nitrosodi-n-propylamine | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| N-Nitrosodiphenylamine | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Pentachlorophenol | ND | 5.00 | 10.0 | " | " | " | " | " | " | D, U |
| Phenanthrene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Phenol | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| Pyrene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 1,2,4-Trichlorobenzene | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 2,4,5-Trichlorophenol | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| 2,4,6-Trichlorophenol | ND | 0.700 | 3.30 | " | " | " | " | " | " | D, U |
| *Surrogate: 2-Fluorobiphenyl* | | *105 %* | *44-146* | | | " | " | " | " | *D* |
| *Surrogate: 2-Fluorophenol* | | *105 %* | *42-126* | | | " | " | " | " | *D* |
| *Surrogate: Nitrobenzene-d5* | | *91.5 %* | *42-126* | | | " | " | " | " | *D* |
| *Surrogate: Phenol-d6* | | *112 %* | *42-131* | | | " | " | " | " | *D* |
| *Surrogate: p-Terphenyl-d14* | | *123 %* | *49-150* | | | " | " | " | " | *D* |
| *Surrogate: 2,4,6-Tribromophenol* | | *85.9 %* | *48-119* | | | " | " | " | " | *D* |

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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Semivolatile Organic Compounds per EPA Method 8270C
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Dry Well #2 (P3K0348-06) Soil Sampled: 11/12/03 12:59 Received: 11/12/03 16:40** | | | | | | | | | | |
| Acenaphthene | ND | 0.0700 | 0.330 | mg/kg dry | 1 | 3110491 | 11/17/03 | 11/19/03 | EPA 8270C | U |
| Acenaphthylene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Anthracene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Benzo (a) anthracene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Benzo (a) pyrene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Benzo (b) fluoranthene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Benzo (ghi) perylene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Benzo (k) fluoranthene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Benzoic Acid | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Benzyl alcohol | ND | 0.165 | 0.330 | " | " | " | " | " | " | U |
| 4-Bromophenyl phenyl ether | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Butyl benzyl phthalate | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 4-Chloro-3-methylphenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 4-Chloroaniline | ND | 0.165 | 2.00 | " | " | " | " | " | " | U |
| Bis(2-chloroethoxy)methane | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Bis(2-chloroethyl)ether | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Bis(2-chloroisopropyl)ether | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Chloronaphthalene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Chlorophenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 4-Chlorophenyl phenyl ether | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Chrysene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Di-n-butyl phthalate | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Di-n-octyl phthalate | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Dibenzo (a,h) anthracene | ND | 0.0600 | 0.330 | " | " | " | " | " | " | U |
| Dibenzofuran | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 1,2-Dichlorobenzene | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 1,3-Dichlorobenzene | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 1,4-Dichlorobenzene | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 3,3'-Dichlorobenzidine | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 2,4-Dichlorophenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Diethyl phthalate | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2,4-Dimethylphenol | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Dimethyl phthalate | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 4,6-Dinitro-2-methylphenol | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 2,4-Dinitrophenol | ND | 2.00 | 2.00 | " | " | " | " | " | " | U |
| 2,4-Dinitrotoluene | ND | 0.500 | 0.500 | " | " | " | " | " | " | U |
| 2,6-Dinitrotoluene | ND | 0.0700 | 0.500 | " | " | " | " | " | " | U |
| Bis(2-ethylhexyl)phthalate | ND | 2.00 | 2.00 | " | " | " | " | " | " | U |



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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907.563.9200 fax 907.563.9210

| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Semivolatile Organic Compounds per EPA Method 8270C
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Dry Well #2 (P3K0348-06) Soil** | **Sampled: 11/12/03 12:59** | | **Received: 11/12/03 16:40** | | | | | | | |
| Fluoranthene | ND | 0.0700 | 0.330 | mg/kg dry | 1 | 3110491 | 11/17/03 | 11/19/03 | EPA 8270C | U |
| Fluorene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Hexachlorobenzene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Hexachlorobutadiene | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Hexachlorocyclopentadiene | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Hexachloroethane | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Indeno (1,2,3-cd) pyrene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Isophorone | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Methylnaphthalene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Methylphenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 3-,4-Methylphenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Naphthalene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Nitroaniline | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 3-Nitroaniline | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 4-Nitroaniline | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Nitrobenzene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Nitrophenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 4-Nitrophenol | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| N-Nitrosodi-n-propylamine | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| N-Nitrosodiphenylamine | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Pentachlorophenol | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Phenanthrene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Phenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Pyrene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 1,2,4-Trichlorobenzene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2,4,5-Trichlorophenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2,4,6-Trichlorophenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| *Surrogate: 2-Fluorobiphenyl* | | *107 %* | *44-146* | | | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *106 %* | *42-126* | | | " | " | *11/19/03* | " | *D* |
| *Surrogate: Nitrobenzene-d5* | | *105 %* | *42-126* | | | " | " | *11/19/03* | " | |
| *Surrogate: Phenol-d6* | | *107 %* | *42-131* | | | " | " | " | " | |
| *Surrogate: p-Terphenyl-d14* | | *130 %* | *49-150* | | | " | " | " | " | |
| *Surrogate: 2,4,6-Tribromophenol* | | *115 %* | *48-119* | | | " | " | " | " | |

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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Semivolatile Organic Compounds per EPA Method 8270C
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Dry Well #1 (P3K0348-07) Soil** | **Sampled: 11/12/03 12:41** | | **Received: 11/12/03 16:40** | | | | | | | **R-05** |
| Acenaphthene | ND | 0.210 | 0.990 | mg/kg dry | 1 | 3110491 | 11/17/03 | 11/19/03 | EPA 8270C | D, U |
| Acenaphthylene | ND | 0.210 | 0.990 | " | " | " | " | " | " | D, U |
| Anthracene | ND | 0.210 | 0.990 | " | " | " | " | " | " | D, U |
| Benzo (a) anthracene | ND | 0.210 | 0.990 | " | " | " | " | " | " | D, U |
| Benzo (a) pyrene | ND | 0.210 | 0.990 | " | " | " | " | " | " | D, U |
| Benzo (b) fluoranthene | ND | 0.210 | 0.990 | " | " | " | " | " | " | D, U |
| Benzo (ghi) perylene | ND | 0.210 | 0.990 | " | " | " | " | " | " | D, U |
| Benzo (k) fluoranthene | ND | 0.210 | 0.990 | " | " | " | " | " | " | D, U |
| Benzoic Acid | ND | 1.50 | 3.00 | " | " | " | " | " | " | D, U |
| Benzyl alcohol | ND | 0.495 | 0.990 | " | " | " | " | " | " | D, U |
| 4-Bromophenyl phenyl ether | ND | 0.210 | 0.990 | " | " | " | " | " | " | D, U |
| Butyl benzyl phthalate | ND | 0.210 | 0.990 | " | " | " | " | " | " | D, U |
| 4-Chloro-3-methylphenol | ND | 0.210 | 0.990 | " | " | " | " | " | " | D, U |
| 4-Chloroaniline | ND | 0.495 | 6.00 | " | " | " | " | " | " | D, U |
| Bis(2-chloroethoxy)methane | ND | 0.210 | 0.990 | " | " | " | " | " | " | D, U |
| Bis(2-chloroethyl)ether | ND | 0.210 | 0.990 | " | " | " | " | " | " | D, U |
| Bis(2-chloroisopropyl)ether | ND | 0.210 | 0.990 | " | " | " | " | " | " | D, U |
| 2-Chloronaphthalene | ND | 0.210 | 0.990 | " | " | " | " | " | " | D, U |
| 2-Chlorophenol | ND | 0.210 | 0.990 | " | " | " | " | " | " | D, U |
| 4-Chlorophenyl phenyl ether | ND | 0.210 | 0.990 | " | " | " | " | " | " | D, U |
| Chrysene | ND | 0.210 | 0.990 | " | " | " | " | " | " | D, U |
| Di-n-butyl phthalate | ND | 1.50 | 3.00 | " | " | " | " | " | " | D, U |
| Di-n-octyl phthalate | ND | 0.210 | 0.990 | " | " | " | " | " | " | D, U |
| Dibenzo (a,h) anthracene | ND | 0.180 | 0.990 | " | " | " | " | " | " | D, U |
| Dibenzofuran | ND | 0.210 | 0.990 | " | " | " | " | " | " | D, U |
| 1,2-Dichlorobenzene | ND | 1.50 | 3.00 | " | " | " | " | " | " | D, U |
| 1,3-Dichlorobenzene | ND | 1.50 | 3.00 | " | " | " | " | " | " | D, U |
| 1,4-Dichlorobenzene | ND | 1.50 | 3.00 | " | " | " | " | " | " | D, U |
| 3,3'-Dichlorobenzidine | ND | 1.50 | 3.00 | " | " | " | " | " | " | D, U |
| 2,4-Dichlorophenol | ND | 0.210 | 0.990 | " | " | " | " | " | " | D, U |
| Diethyl phthalate | ND | 0.210 | 0.990 | " | " | " | " | " | " | D, U |
| 2,4-Dimethylphenol | ND | 1.50 | 3.00 | " | " | " | " | " | " | D, U |
| Dimethyl phthalate | ND | 0.210 | 0.990 | " | " | " | " | " | " | D, U |
| 4,6-Dinitro-2-methylphenol | ND | 1.50 | 3.00 | " | " | " | " | " | " | D, U |
| 2,4-Dinitrophenol | ND | 6.00 | 6.00 | " | " | " | " | " | " | D, U |
| 2,4-Dinitrotoluene | ND | 1.50 | 1.50 | " | " | " | " | " | " | D, U |
| 2,6-Dinitrotoluene | ND | 0.210 | 1.50 | " | " | " | " | " | " | D, U |
| Bis(2-ethylhexyl)phthalate | ND | 6.00 | 6.00 | " | " | " | " | " | " | D, U |



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Semivolatile Organic Compounds per EPA Method 8270C
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Dry Well #1 (P3K0348-07) Soil Sampled: 11/12/03 12:41 Received: 11/12/03 16:40** | | | | | | | | | | **R-05** |
| Fluoranthene | ND | 0.210 | 0.990 | mg/kg dry | 1 | 3110491 | 11/17/03 | 11/19/03 | EPA 8270C | D, U |
| Fluorene | ND | 0.210 | 0.990 | " | " | " | " | " | " | D, U |
| Hexachlorobenzene | ND | 0.210 | 0.990 | " | " | " | " | " | " | D, U |
| Hexachlorobutadiene | ND | 1.50 | 3.00 | " | " | " | " | " | " | D, U |
| Hexachlorocyclopentadiene | ND | 1.50 | 3.00 | " | " | " | " | " | " | D, U |
| Hexachloroethane | ND | 1.50 | 3.00 | " | " | " | " | " | " | D, U |
| Indeno (1,2,3-cd) pyrene | ND | 0.210 | 0.990 | " | " | " | " | " | " | D, U |
| Isophorone | ND | 0.210 | 0.990 | " | " | " | " | " | " | D, U |
| 2-Methylnaphthalene | ND | 0.210 | 0.990 | " | " | " | " | " | " | D, U |
| 2-Methylphenol | ND | 0.210 | 0.990 | " | " | " | " | " | " | D, U |
| 3-,4-Methylphenol | ND | 0.210 | 0.990 | " | " | " | " | " | " | D, U |
| Naphthalene | ND | 0.210 | 0.990 | " | " | " | " | " | " | D, U |
| 2-Nitroaniline | ND | 0.210 | 0.990 | " | " | " | " | " | " | D, U |
| 3-Nitroaniline | ND | 1.50 | 3.00 | " | " | " | " | " | " | D, U |
| 4-Nitroaniline | ND | 0.210 | 0.990 | " | " | " | " | " | " | D, U |
| Nitrobenzene | ND | 0.210 | 0.990 | " | " | " | " | " | " | D, U |
| 2-Nitrophenol | ND | 0.210 | 0.990 | " | " | " | " | " | " | D, U |
| 4-Nitrophenol | ND | 1.50 | 3.00 | " | " | " | " | " | " | D, U |
| N-Nitrosodi-n-propylamine | ND | 0.210 | 0.990 | " | " | " | " | " | " | D, U |
| N-Nitrosodiphenylamine | ND | 0.210 | 0.990 | " | " | " | " | " | " | D, U |
| Pentachlorophenol | ND | 1.50 | 3.00 | " | " | " | " | " | " | D, U |
| Phenanthrene | ND | 0.210 | 0.990 | " | " | " | " | " | " | D, U |
| Phenol | ND | 0.210 | 0.990 | " | " | " | " | " | " | D, U |
| Pyrene | ND | 0.210 | 0.990 | " | " | " | " | " | " | D, U |
| 1,2,4-Trichlorobenzene | ND | 0.210 | 0.990 | " | " | " | " | " | " | D, U |
| 2,4,5-Trichlorophenol | ND | 0.210 | 0.990 | " | " | " | " | " | " | D, U |
| 2,4,6-Trichlorophenol | ND | 0.210 | 0.990 | " | " | " | " | " | " | D, U |
| *Surrogate: 2-Fluorobiphenyl* | | *106 %* | *44-146* | | | " | " | " | " | *D* |
| *Surrogate: 2-Fluorophenol* | | *109 %* | *42-126* | | | " | " | " | " | *D* |
| *Surrogate: Nitrobenzene-d5* | | *95.0 %* | *42-126* | | | " | " | " | " | *D* |
| *Surrogate: Phenol-d6* | | *92.5 %* | *42-131* | | | " | " | " | " | *D* |
| *Surrogate: p-Terphenyl-d14* | | *122 %* | *49-150* | | | " | " | " | " | *D* |
| *Surrogate: 2,4,6-Tribromophenol* | | *112 %* | *48-119* | | | " | " | " | " | *D* |

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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Semivolatile Organic Compounds per EPA Method 8270C
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **MW-13-15 (P3K0348-08) Soil Sampled: 11/12/03 14:32 Received: 11/12/03 16:40** | | | | | | | | | | |
| Acenaphthene | ND | 0.0700 | 0.330 | mg/kg dry | 1 | 3110491 | 11/17/03 | 11/19/03 | EPA 8270C | U |
| Acenaphthylene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Anthracene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Benzo (a) anthracene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Benzo (a) pyrene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Benzo (b) fluoranthene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Benzo (ghi) perylene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Benzo (k) fluoranthene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Benzoic Acid | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Benzyl alcohol | ND | 0.165 | 0.330 | " | " | " | " | " | " | U |
| 4-Bromophenyl phenyl ether | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Butyl benzyl phthalate | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 4-Chloro-3-methylphenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 4-Chloroaniline | ND | 0.165 | 2.00 | " | " | " | " | " | " | U |
| Bis(2-chloroethoxy)methane | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Bis(2-chloroethyl)ether | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Bis(2-chloroisopropyl)ether | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Chloronaphthalene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Chlorophenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 4-Chlorophenyl phenyl ether | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Chrysene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Di-n-butyl phthalate | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Di-n-octyl phthalate | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Dibenzo (a,h) anthracene | ND | 0.0600 | 0.330 | " | " | " | " | " | " | U |
| Dibenzofuran | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 1,2-Dichlorobenzene | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 1,3-Dichlorobenzene | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 1,4-Dichlorobenzene | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 3,3'-Dichlorobenzidine | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 2,4-Dichlorophenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Diethyl phthalate | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2,4-Dimethylphenol | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Dimethyl phthalate | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 4,6-Dinitro-2-methylphenol | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 2,4-Dinitrophenol | ND | 2.00 | 2.00 | " | " | " | " | " | " | U |
| 2,4-Dinitrotoluene | ND | 0.500 | 0.500 | " | " | " | " | " | " | U |
| 2,6-Dinitrotoluene | ND | 0.0700 | 0.500 | " | " | " | " | " | " | U |
| Bis(2-ethylhexyl)phthalate | ND | 2.00 | 2.00 | " | " | " | " | " | " | U |



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Semivolatile Organic Compounds per EPA Method 8270C
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **MW-13-15 (P3K0348-08) Soil Sampled: 11/12/03 14:32 Received: 11/12/03 16:40** | | | | | | | | | | |
| Fluoranthene | ND | 0.0700 | 0.330 | mg/kg dry | 1 | 3110491 | 11/17/03 | 11/19/03 | EPA 8270C | U |
| Fluorene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Hexachlorobenzene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Hexachlorobutadiene | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Hexachlorocyclopentadiene | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Hexachloroethane | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Indeno (1,2,3-cd) pyrene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Isophorone | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Methylnaphthalene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Methylphenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 3-,4-Methylphenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Naphthalene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Nitroaniline | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 3-Nitroaniline | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| 4-Nitroaniline | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Nitrobenzene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2-Nitrophenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 4-Nitrophenol | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| N-Nitrosodi-n-propylamine | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| N-Nitrosodiphenylamine | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Pentachlorophenol | ND | 0.500 | 1.00 | " | " | " | " | " | " | U |
| Phenanthrene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Phenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| Pyrene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 1,2,4-Trichlorobenzene | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2,4,5-Trichlorophenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| 2,4,6-Trichlorophenol | ND | 0.0700 | 0.330 | " | " | " | " | " | " | U |
| *Surrogate: 2-Fluorobiphenyl* | | *107 %* | *44-146* | | | " | " | " | " | |
| *Surrogate: 2-Fluorophenol* | | *98.2 %* | *42-126* | | | " | " | *11/19/03* | " | *D* |
| *Surrogate: Nitrobenzene-d5* | | *102 %* | *42-126* | | | " | " | *11/19/03* | " | |
| *Surrogate: Phenol-d6* | | *99.3 %* | *42-131* | | | " | " | " | " | |
| *Surrogate: p-Terphenyl-d14* | | *128 %* | *49-150* | | | " | " | " | " | |
| *Surrogate: 2,4,6-Tribromophenol* | | *118 %* | *48-119* | | | " | " | " | " | |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Percent Dry Weight (Solids) per Standard Methods
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **MW-12-20.5 (P3K0348-01) Soil Sampled: 11/11/03 11:28 Received: 11/12/03 16:40** | | | | | | | | | | |
| **% Solids** | **68.9** | | 1.00 | % by Weight | 1 | 3110517 | 11/17/03 | 11/18/03 | NCA SOP | |
| **MW-11-11.25 (P3K0348-02) Soil Sampled: 11/11/03 15:20 Received: 11/12/03 16:40** | | | | | | | | | | |
| **% Solids** | **77.9** | | 1.00 | % by Weight | 1 | 3110517 | 11/17/03 | 11/18/03 | NCA SOP | |
| **MW-14-16 (P3K0348-05) Soil Sampled: 11/12/03 11:18 Received: 11/12/03 16:40** | | | | | | | | | | |
| **% Solids** | **79.2** | | 1.00 | % by Weight | 1 | 3110517 | 11/17/03 | 11/18/03 | NCA SOP | |
| **Dry Well #2 (P3K0348-06) Soil Sampled: 11/12/03 12:59 Received: 11/12/03 16:40** | | | | | | | | | | |
| **% Solids** | **90.8** | | 1.00 | % by Weight | 1 | 3110517 | 11/17/03 | 11/18/03 | NCA SOP | |
| **Dry Well #1 (P3K0348-07) Soil Sampled: 11/12/03 12:41 Received: 11/12/03 16:40** | | | | | | | | | | |
| **% Solids** | **78.6** | | 1.00 | % by Weight | 1 | 3110517 | 11/17/03 | 11/18/03 | NCA SOP | |
| **MW-13-15 (P3K0348-08) Soil Sampled: 11/12/03 14:32 Received: 11/12/03 16:40** | | | | | | | | | | |
| **% Solids** | **88.2** | | 1.00 | % by Weight | 1 | 3110517 | 11/17/03 | 11/18/03 | NCA SOP | |
| **MW-13-25 (P3K0348-09) Soil Sampled: 11/12/03 14:51 Received: 11/12/03 16:40** | | | | | | | | | | |
| **% Solids** | **70.0** | | 1.00 | % by Weight | 1 | 3110517 | 11/17/03 | 11/18/03 | NCA SOP | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Conventional Chemistry Parameters by APHA/EPA Methods
## North Creek Analytical - Bothell

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **MW-12-20.5 (P3K0348-01) Soil Sampled: 11/11/03 11:28 Received: 11/12/03 16:40** | | | | | | | | | | |
| **Total Organic Carbon** | **10600** | | 1000 | mg/kg dry | 1 | 3K21004 | 11/18/03 | 11/20/03 | EPA 9060 mod. | |
| **MW-11-11.25 (P3K0348-02) Soil Sampled: 11/11/03 15:20 Received: 11/12/03 16:40** | | | | | | | | | | |
| Total Organic Carbon | ND | | 1000 | mg/kg dry | 1 | 3K21004 | 11/18/03 | 11/20/03 | EPA 9060 mod. | |
| **MW-11-26.25 (P3K0348-03) Soil Sampled: 11/11/03 16:15 Received: 11/12/03 16:40** | | | | | | | | | | |
| **Total Organic Carbon** | **41900** | | 1000 | mg/kg dry | 1 | 3K21004 | 11/18/03 | 11/20/03 | EPA 9060 mod. | |
| **MW-14-16 (P3K0348-05) Soil Sampled: 11/12/03 11:18 Received: 11/12/03 16:40** | | | | | | | | | | |
| **Total Organic Carbon** | **27700** | | 1000 | mg/kg dry | 1 | 3K21004 | 11/18/03 | 11/20/03 | EPA 9060 mod. | |
| **MW-13-15 (P3K0348-08) Soil Sampled: 11/12/03 14:32 Received: 11/12/03 16:40** | | | | | | | | | | |
| Total Organic Carbon | ND | | 1000 | mg/kg dry | 1 | 3K21004 | 11/18/03 | 11/20/03 | EPA 9060 mod. | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Physical Parameters by APHA/ASTM/EPA Methods
## North Creek Analytical - Bothell

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **MW-12-20.5 (P3K0348-01) Soil Sampled: 11/11/03 11:28 Received: 11/12/03 16:40** | | | | | | | | | | |
| **Dry Weight** | **69.0** | | 1.00 | % | 1 | 3K22004 | 11/22/03 | 11/24/03 | BSOPSPL003 R08 | |
| **MW-11-11.25 (P3K0348-02) Soil Sampled: 11/11/03 15:20 Received: 11/12/03 16:40** | | | | | | | | | | |
| **Dry Weight** | **75.8** | | 1.00 | % | 1 | 3K22004 | 11/22/03 | 11/24/03 | BSOPSPL003 R08 | |
| **MW-11-26.25 (P3K0348-03) Soil Sampled: 11/11/03 16:15 Received: 11/12/03 16:40** | | | | | | | | | | |
| **Dry Weight** | **58.3** | | 1.00 | % | 1 | 3K22004 | 11/22/03 | 11/24/03 | BSOPSPL003 R08 | |
| **MW-14-16 (P3K0348-05) Soil Sampled: 11/12/03 11:18 Received: 11/12/03 16:40** | | | | | | | | | | |
| **Dry Weight** | **83.7** | | 1.00 | % | 1 | 3K22004 | 11/22/03 | 11/24/03 | BSOPSPL003 R08 | |
| **MW-13-15 (P3K0348-08) Soil Sampled: 11/12/03 14:32 Received: 11/12/03 16:40** | | | | | | | | | | |
| **Dry Weight** | **90.1** | | 1.00 | % | 1 | 3K22004 | 11/22/03 | 11/24/03 | BSOPSPL003 R08 | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Gasoline Hydrocarbons per NW TPH-Gx Method - Quality Control
## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110680 - EPA 5035** | | | | | | | | | | | |
| **Blank (3110680-BLK1)** | | | | | Prepared & Analyzed: 11/20/03 | | | | | | |
| Gasoline Range Hydrocarbons | ND | | 4.00 | mg/kg | | | | | | | U |
| *Surrogate: a,a,a-TFT* | *2.24* | | | " | *2.50* | | *89.6* | *50-150* | | | |
| **LCS (3110680-BS1)** | | | | | Prepared: 11/20/03 Analyzed: 11/21/03 | | | | | | |
| Gasoline Range Hydrocarbons | 58.7 | | 4.00 | mg/kg | 62.5 | | 93.9 | 70-130 | | | |
| *Surrogate: a,a,a-TFT* | *2.58* | | | " | *2.50* | | *103* | *50-150* | | | |
| **LCS (3110680-BS2)** | | | | | Prepared & Analyzed: 11/21/03 | | | | | | |
| Gasoline Range Hydrocarbons | 49.9 | | 4.00 | mg/kg | 62.5 | | 79.8 | 70-130 | | | |
| *Surrogate: a,a,a-TFT* | *2.45* | | | " | *2.50* | | *98.0* | *50-150* | | | |
| **Duplicate (3110680-DUP1)** | | | | | **Source: P3K0392-01RE2** Prepared & Analyzed: 11/20/03 | | | | | | |
| Gasoline Range Hydrocarbons | 537 | | 40.0 | mg/kg dry | | 768 | | | 35.4 | 40 | |
| *Surrogate: a,a,a-TFT* | *3.31* | | | " | *3.28* | | *101* | *50-150* | | | |
| **Duplicate (3110680-DUP2)** | | | | | **Source: P3K0392-02RE2** Prepared & Analyzed: 11/20/03 | | | | | | |
| Gasoline Range Hydrocarbons | 3880 | | 80.0 | mg/kg dry | | 2400 | | | 47.1 | 40 | Q-14 |
| *Surrogate: a,a,a-TFT* | *3.56* | | | " | *3.20* | | *111* | *50-150* | | | |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Diesel and Heavy Range Hydrocarbons per NWTPH-Dx Method - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110430 - EPA 3550 Fuels** | | | | | | | | | | | |
| **Blank (3110430-BLK1)** | | | | | Prepared & Analyzed: 11/14/03 | | | | | | |
| Diesel Range Organics | ND | | 25.0 | mg/kg | | | | | | | U |
| Heavy Oil Range Hydrocarbons | ND | | 50.0 | " | | | | | | | U |
| *Surrogate: 1-Chlorooctadecane* | *4.31* | | | " | *4.80* | | *89.8* | *50-150* | | | |
| **LCS (3110430-BS1)** | | | | | Prepared & Analyzed: 11/14/03 | | | | | | |
| Diesel Range Organics | 119 | | 25.0 | mg/kg | 125 | | 95.2 | 50-150 | | | |
| Heavy Oil Range Hydrocarbons | 74.7 | | 50.0 | " | 75.0 | | 99.6 | 50-150 | | | |
| *Surrogate: 1-Chlorooctadecane* | *4.58* | | | " | *4.80* | | *95.4* | *50-150* | | | |
| **Duplicate (3110430-DUP1)** | | **Source: P3K0267-01** | | | Prepared & Analyzed: 11/14/03 | | | | | | |
| Diesel Range Organics | ND | | 25.0 | mg/kg dry | | ND | | | | 50 | U |
| Heavy Oil Range Hydrocarbons | ND | | 50.0 | " | | ND | | | | 50 | U |
| *Surrogate: 1-Chlorooctadecane* | *4.65* | | | " | *5.54* | | *83.9* | *50-150* | | | |
| **Duplicate (3110430-DUP2)** | | **Source: P3K0267-02** | | | Prepared & Analyzed: 11/14/03 | | | | | | |
| Diesel Range Organics | ND | | 25.0 | mg/kg dry | | ND | | | | 50 | U |
| Heavy Oil Range Hydrocarbons | ND | | 50.0 | " | | ND | | | | 50 | U |
| *Surrogate: 1-Chlorooctadecane* | *4.55* | | | " | *5.44* | | *83.6* | *50-150* | | | |
| **Matrix Spike (3110430-MS1)** | | **Source: P3K0291-04** | | | Prepared & Analyzed: 11/14/03 | | | | | | |
| Diesel Range Organics | 208 | | 25.0 | mg/kg dry | 208 | ND | 100 | 50-150 | | | |
| Heavy Oil Range Hydrocarbons | 143 | | 50.0 | " | 125 | ND | 114 | 50-150 | | | |
| *Surrogate: 1-Chlorooctadecane* | *7.64* | | | " | *7.97* | | *95.9* | *50-150* | | | |
| **Matrix Spike Dup (3110430-MSD1)** | | **Source: P3K0291-04** | | | Prepared & Analyzed: 11/14/03 | | | | | | |
| Diesel Range Organics | 195 | | 25.0 | mg/kg dry | 208 | ND | 93.8 | 50-150 | 6.45 | 50 | |
| Heavy Oil Range Hydrocarbons | 131 | | 50.0 | " | 125 | ND | 105 | 50-150 | 8.76 | 50 | |
| *Surrogate: 1-Chlorooctadecane* | *7.24* | | | " | *7.97* | | *90.8* | *50-150* | | | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Diesel and Heavy Range Hydrocarbons per NWTPH-Dx Method - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110480 - EPA 3550 Fuels** | | | | | | | | | | | |
| **Blank (3110480-BLK1)** | | | | | Prepared & Analyzed: 11/17/03 | | | | | | |
| Diesel Range Organics | ND | | 25.0 | mg/kg | | | | | | | U |
| Heavy Oil Range Hydrocarbons | ND | | 50.0 | " | | | | | | | U |
| *Surrogate: 1-Chlorooctadecane* | *4.55* | | | " | *4.80* | | *94.8* | *50-150* | | | |
| **LCS (3110480-BS1)** | | | | | Prepared & Analyzed: 11/17/03 | | | | | | |
| Diesel Range Organics | 125 | | 25.0 | mg/kg | 125 | | 100 | 50-150 | | | |
| Heavy Oil Range Hydrocarbons | 78.2 | | 50.0 | " | 75.0 | | 104 | 50-150 | | | |
| *Surrogate: 1-Chlorooctadecane* | *4.83* | | | " | *4.80* | | *101* | *50-150* | | | |
| **Duplicate (3110480-DUP1)** | | **Source: P3K0375-41** | | | Prepared & Analyzed: 11/17/03 | | | | | | |
| Diesel Range Organics | ND | | 25.0 | mg/kg dry | | ND | | | | 50 | U |
| Heavy Oil Range Hydrocarbons | ND | | 50.0 | " | | ND | | | | 50 | U |
| *Surrogate: 1-Chlorooctadecane* | *5.74* | | | " | *6.46* | | *88.9* | *50-150* | | | |
| **Duplicate (3110480-DUP2)** | | **Source: P3K0375-43** | | | Prepared & Analyzed: 11/17/03 | | | | | | |
| Diesel Range Organics | 117 | | 83.1 | mg/kg dry | | 105 | | | 10.8 | 50 | |
| Heavy Oil Range Hydrocarbons | 529 | | 166 | " | | 499 | | | 5.84 | 50 | |
| *Surrogate: 1-Chlorooctadecane* | *14.9* | | | " | *15.9* | | *93.7* | *50-150* | | | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Total Metals per EPA 6000/7000 Series Methods - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110456 - EPA 3050** | | | | | | | | | | | |
| **Blank (3110456-BLK2)** | | | | | Prepared: 11/14/03 Analyzed: 11/17/03 | | | | | | |
| Antimony | ND | 0.0659 | 0.500 | mg/kg | | | | | | | U |
| Arsenic | ND | 0.427 | 0.500 | " | | | | | | | U |
| Beryllium | ND | 0.210 | 0.500 | " | | | | | | | U |
| Cadmium | ND | 0.200 | 0.500 | " | | | | | | | U |
| Chromium | ND | 0.498 | 0.500 | " | | | | | | | U |
| Copper | ND | 0.955 | 2.00 | " | | | | | | | U |
| Lead | ND | 0.106 | 0.500 | " | | | | | | | U |
| Nickel | 0.370 | 0.213 | 1.00 | " | | | | | | | J |
| Selenium | ND | 0.409 | 0.500 | " | | | | | | | U |
| Silver | ND | 0.0369 | 0.500 | " | | | | | | | U |
| Thallium | ND | 0.246 | 0.500 | " | | | | | | | U |
| Zinc | ND | 0.630 | 2.00 | " | | | | | | | U |
| **LCS (3110456-BS2)** | | | | | Prepared: 11/14/03 Analyzed: 11/17/03 | | | | | | |
| Antimony | 5.02 | 0.0659 | 0.500 | mg/kg | 5.00 | | 100 | 80-120 | | | |
| Arsenic | 9.86 | 0.427 | 0.500 | " | 10.0 | | 98.6 | 80-120 | | | |
| Beryllium | 8.96 | 0.210 | 0.500 | " | 10.0 | | 89.6 | 80-120 | | | |
| Cadmium | 9.06 | 0.200 | 0.500 | " | 10.0 | | 90.6 | 80-120 | | | |
| Chromium | 10.3 | 0.498 | 0.500 | " | 10.0 | | 103 | 80-120 | | | |
| Copper | 8.72 | 0.955 | 2.00 | " | 10.0 | | 87.2 | 80-120 | | | |
| Lead | 10.0 | 0.106 | 0.500 | " | 10.0 | | 100 | 80-120 | | | |
| Nickel | 10.3 | 0.213 | 1.00 | " | 10.0 | | 103 | 80-120 | | | |
| Selenium | 9.54 | 0.409 | 0.500 | " | 10.0 | | 95.4 | 80-120 | | | |
| Silver | 5.16 | 0.0369 | 0.500 | " | 5.00 | | 103 | 80-120 | | | |
| Thallium | 5.04 | 0.246 | 0.500 | " | 5.00 | | 101 | 80-120 | | | |
| Zinc | 9.78 | 0.630 | 2.00 | " | 10.0 | | 97.8 | 80-120 | | | |
| **Duplicate (3110456-DUP1)** | | | **Source: P3K0348-02** | | Prepared: 11/14/03 Analyzed: 11/17/03 | | | | | | |
| Antimony | ND | 0.0659 | 0.500 | mg/kg dry | | ND | | | | 40 | U |
| Arsenic | 2.33 | 0.427 | 0.500 | " | | 2.25 | | | 3.49 | 40 | |
| Beryllium | 0.263 | 0.210 | 0.500 | " | | 0.242 | | | 8.32 | 40 | J |
| Cadmium | ND | 0.936 | 2.34 | " | | ND | | | | 40 | R-03, D, U |
| Chromium | 15.9 | 0.498 | 0.500 | " | | 13.8 | | | 14.1 | 40 | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Total Metals per EPA 6000/7000 Series Methods - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110456 - EPA 3050** | | | | | | | | | | | |
| **Duplicate (3110456-DUP1)** | | **Source: P3K0348-02** | | Prepared: 11/14/03 Analyzed: 11/17/03 | | | | | | | |
| Copper | 15.6 | 0.955 | 2.00 | mg/kg dry | | 14.4 | | | 8.00 | 40 | |
| Lead | 3.28 | 0.106 | 0.500 | " | | 2.90 | | | 12.3 | 40 | |
| Nickel | 20.4 | 0.213 | 1.00 | " | | 17.4 | | | 15.9 | 40 | |
| Selenium | 0.575 | 0.409 | 0.500 | " | | 0.352 | | | | 40 | |
| Silver | ND | 0.0369 | 0.500 | " | | 0.0285 | | | | 40 | U |
| Thallium | ND | 0.246 | 0.500 | " | | ND | | | | 40 | U |
| Zinc | 43.5 | 0.630 | 2.00 | " | | 44.3 | | | 1.82 | 40 | |
| **Matrix Spike (3110456-MS1)** | | **Source: P3K0348-02** | | Prepared: 11/14/03 Analyzed: 11/17/03 | | | | | | | |
| Antimony | 3.84 | 0.0659 | 0.500 | mg/kg dry | 6.23 | ND | 61.6 | 75-125 | | | Q-02 |
| Arsenic | 14.4 | 0.427 | 0.500 | " | 12.5 | 2.25 | 97.2 | 75-125 | | | |
| Beryllium | 12.2 | 0.210 | 0.500 | " | 12.5 | 0.242 | 95.7 | 75-125 | | | |
| Cadmium | 11.2 | 0.200 | 0.500 | " | 12.5 | ND | 89.6 | 75-125 | | | |
| Chromium | 28.0 | 0.498 | 0.500 | " | 12.5 | 13.8 | 114 | 75-125 | | | |
| Copper | 29.2 | 0.955 | 2.00 | " | 12.5 | 14.4 | 118 | 75-125 | | | |
| Lead | 15.7 | 0.106 | 0.500 | " | 12.5 | 2.90 | 102 | 75-125 | | | |
| Nickel | 33.3 | 0.213 | 1.00 | " | 12.5 | 17.4 | 127 | 75-125 | | | Q-14 |
| Selenium | 12.7 | 0.409 | 0.500 | " | 12.5 | 0.352 | 98.8 | 75-125 | | | |
| Silver | 6.82 | 0.0369 | 0.500 | " | 6.23 | 0.0285 | 109 | 75-125 | | | |
| Thallium | 5.80 | 0.246 | 0.500 | " | 6.23 | ND | 93.1 | 75-125 | | | |
| Zinc | 58.8 | 0.630 | 2.00 | " | 12.5 | 44.3 | 116 | 75-125 | | | |
| **Batch 3110615 - EPA 7471A** | | | | | | | | | | | |
| **Blank (3110615-BLK1)** | | | | Prepared & Analyzed: 11/19/03 | | | | | | | |
| Mercury | ND | 0.00496 | 0.100 | mg/kg | | | | | | | U |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Total Metals per EPA 6000/7000 Series Methods - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110615 - EPA 7471A** | | | | | | | | | | | |
| **LCS (3110615-BS1)** | | | | | Prepared & Analyzed: 11/19/03 | | | | | | |
| Mercury | 0.981 | 0.00496 | 0.100 | mg/kg | 1.00 | | 98.1 | 80-120 | | | |
| **Duplicate (3110615-DUP1)** | | **Source: P3K0304-44** | | | Prepared & Analyzed: 11/19/03 | | | | | | |
| Mercury | 0.0475 | 0.00318 | 0.0641 | mg/kg dry | | 0.0256 | | | 59.9 | 40 | Q-06, J, D |
| **Matrix Spike (3110615-MS1)** | | **Source: P3K0304-44** | | | Prepared & Analyzed: 11/19/03 | | | | | | |
| Mercury | 0.839 | 0.00354 | 0.0714 | mg/kg dry | 0.794 | 0.0256 | 102 | 75-125 | | | D |
| **Matrix Spike (3110615-MS2)** | | **Source: P3K0348-01** | | | Prepared & Analyzed: 11/19/03 | | | | | | |
| Mercury | 0.790 | 0.00258 | 0.0521 | mg/kg dry | 0.756 | 0.0406 | 99.1 | 75-125 | | | D |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Polychlorinated Biphenyls per EPA Method 8082 - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110601 - EPA 3550** | | | | | | | | | | | |
| **Blank (3110601-BLK1)** | | | | | Prepared: 11/19/03 Analyzed: 11/21/03 | | | | | | |
| Aroclor 1016 | ND | 11.1 | 67.0 | ug/kg | | | | | | | U |
| Aroclor 1221 | ND | 12.7 | 134 | " | | | | | | | U |
| Aroclor 1232 | ND | 11.1 | 67.0 | " | | | | | | | U |
| Aroclor 1242 | ND | 11.1 | 67.0 | " | | | | | | | U |
| Aroclor 1248 | ND | 3.87 | 67.0 | " | | | | | | | U |
| Aroclor 1254 | ND | 6.10 | 67.0 | " | | | | | | | U |
| Aroclor 1260 | ND | 11.5 | 67.0 | " | | | | | | | U |
| *Surrogate: 2,4,5,6-Tetrachloro-m-xylene* | *36.4* | | | " | *33.3* | | *109* | *36-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *34.3* | | | " | *33.3* | | *103* | *16-149* | | | |
| **LCS (3110601-BS1)** | | | | | Prepared: 11/19/03 Analyzed: 11/21/03 | | | | | | |
| Aroclor 1016 | 307 | 11.1 | 67.0 | ug/kg | 333 | | 92.2 | 57-135 | | | |
| Aroclor 1260 | 320 | 11.5 | 67.0 | " | 333 | | 96.1 | 60-135 | | | |
| *Surrogate: 2,4,5,6-Tetrachloro-m-xylene* | *34.8* | | | " | *33.3* | | *105* | *36-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *34.0* | | | " | *33.3* | | *102* | *16-149* | | | |
| **Matrix Spike (3110601-MS1)** | | **Source: P3K0438-04** | | | Prepared: 11/19/03 Analyzed: 11/21/03 | | | | | | |
| Aroclor 1016 | 336 | 11.1 | 67.0 | ug/kg dry | 377 | ND | 89.1 | 37-145 | | | |
| Aroclor 1260 | 287 | 11.5 | 67.0 | " | 377 | ND | 76.1 | 25-144 | | | |
| *Surrogate: 2,4,5,6-Tetrachloro-m-xylene* | *39.3* | | | " | *37.7* | | *104* | *36-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *34.3* | | | " | *37.7* | | *91.0* | *16-149* | | | |
| **Matrix Spike Dup (3110601-MSD1)** | | **Source: P3K0438-04** | | | Prepared: 11/19/03 Analyzed: 11/21/03 | | | | | | |
| Aroclor 1016 | 326 | 11.1 | 67.0 | ug/kg dry | 377 | ND | 86.5 | 37-145 | 3.02 | 26 | |
| Aroclor 1260 | 349 | 11.5 | 67.0 | " | 377 | ND | 92.6 | 25-144 | 19.5 | 30 | |
| *Surrogate: 2,4,5,6-Tetrachloro-m-xylene* | *38.5* | | | " | *37.7* | | *102* | *36-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *41.7* | | | " | *37.7* | | *111* | *16-149* | | | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Volatile Organic Compounds per EPA Method 8260B - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110441 - EPA 5035** | | | | | | | | | | | |
| **Blank (3110441-BLK1)** | | | | | Prepared: 11/14/03 Analyzed: 11/15/03 | | | | | | |
| Acetone | ND | 144 | 2500 | ug/kg | | | | | | | U |
| Benzene | ND | 4.44 | 100 | " | | | | | | | U |
| Bromobenzene | ND | 12.2 | 100 | " | | | | | | | U |
| Bromochloromethane | ND | 16.4 | 100 | " | | | | | | | U |
| Bromodichloromethane | ND | 10.2 | 100 | " | | | | | | | U |
| Bromoform | ND | 15.8 | 100 | " | | | | | | | U |
| Bromomethane | ND | 5.09 | 500 | " | | | | | | | U |
| 2-Butanone | ND | 148 | 1000 | " | | | | | | | U |
| n-Butylbenzene | ND | 11.3 | 500 | " | | | | | | | U |
| sec-Butylbenzene | ND | 7.45 | 100 | " | | | | | | | U |
| tert-Butylbenzene | ND | 15.2 | 100 | " | | | | | | | U |
| Carbon disulfide | ND | 7.19 | 1000 | " | | | | | | | U |
| Carbon tetrachloride | ND | 7.64 | 100 | " | | | | | | | U |
| Chlorobenzene | ND | 8.09 | 100 | " | | | | | | | U |
| Chloroethane | ND | 10.7 | 100 | " | | | | | | | U |
| Chloroform | ND | 7.26 | 100 | " | | | | | | | U |
| Chloromethane | ND | 6.72 | 500 | " | | | | | | | U |
| 2-Chlorotoluene | ND | 11.0 | 100 | " | | | | | | | U |
| 4-Chlorotoluene | ND | 10.4 | 100 | " | | | | | | | U |
| 1,2-Dibromo-3-chloropropane | ND | 26.0 | 500 | " | | | | | | | U |
| Dibromochloromethane | ND | 11.2 | 100 | " | | | | | | | U |
| 1,2-Dibromoethane | ND | 11.6 | 100 | " | | | | | | | U |
| Dibromomethane | ND | 14.7 | 100 | " | | | | | | | U |
| 1,2-Dichlorobenzene | ND | 14.4 | 100 | " | | | | | | | U |
| 1,3-Dichlorobenzene | ND | 5.86 | 100 | " | | | | | | | U |
| 1,4-Dichlorobenzene | ND | 14.9 | 100 | " | | | | | | | U |
| Dichlorodifluoromethane | ND | 11.8 | 500 | " | | | | | | | U |
| 1,1-Dichloroethane | ND | 11.9 | 100 | " | | | | | | | U |
| 1,2-Dichloroethane | ND | 11.2 | 100 | " | | | | | | | U |
| 1,1-Dichloroethene | ND | 11.9 | 100 | " | | | | | | | U |
| cis-1,2-Dichloroethene | ND | 12.6 | 100 | " | | | | | | | U |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Volatile Organic Compounds per EPA Method 8260B - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110441 - EPA 5035** | | | | | | | | | | | |
| **Blank (3110441-BLK1)** | | | | | Prepared: 11/14/03 Analyzed: 11/15/03 | | | | | | |
| trans-1,2-Dichloroethene | ND | 8.97 | 100 | ug/kg | | | | | | | U |
| 1,2-Dichloropropane | ND | 7.45 | 100 | " | | | | | | | U |
| 1,3-Dichloropropane | ND | 17.4 | 100 | " | | | | | | | U |
| 2,2-Dichloropropane | ND | 8.09 | 100 | " | | | | | | | U |
| 1,1-Dichloropropene | ND | 10.9 | 100 | " | | | | | | | U |
| cis-1,3-Dichloropropene | ND | 4.95 | 100 | " | | | | | | | U |
| trans-1,3-Dichloropropene | ND | 8.29 | 100 | " | | | | | | | U |
| Ethylbenzene | ND | 9.40 | 100 | " | | | | | | | U |
| Hexachlorobutadiene | ND | 69.4 | 200 | " | | | | | | | U |
| 2-Hexanone | ND | 57.2 | 1000 | " | | | | | | | U |
| Isopropylbenzene | ND | 9.55 | 200 | " | | | | | | | U |
| p-Isopropyltoluene | ND | 9.68 | 200 | " | | | | | | | U |
| 4-Methyl-2-pentanone | ND | 117 | 500 | " | | | | | | | U |
| Methyl tert-butyl ether | ND | 11.9 | 100 | " | | | | | | | U |
| Methylene chloride | ND | 250 | 500 | " | | | | | | | U |
| Naphthalene | ND | 14.1 | 200 | " | | | | | | | U |
| n-Propylbenzene | ND | 9.89 | 100 | " | | | | | | | U |
| Styrene | ND | 8.89 | 100 | " | | | | | | | U |
| 1,1,1,2-Tetrachloroethane | ND | 9.25 | 100 | " | | | | | | | U |
| 1,1,2,2-Tetrachloroethane | ND | 21.1 | 100 | " | | | | | | | U |
| Tetrachloroethene | ND | 16.9 | 100 | " | | | | | | | U |
| Toluene | ND | 6.29 | 100 | " | | | | | | | U |
| 1,2,3-Trichlorobenzene | ND | 16.9 | 100 | " | | | | | | | U |
| 1,2,4-Trichlorobenzene | ND | 21.4 | 100 | " | | | | | | | U |
| 1,1,1-Trichloroethane | ND | 6.13 | 100 | " | | | | | | | U |
| 1,1,2-Trichloroethane | ND | 18.1 | 100 | " | | | | | | | U |
| Trichloroethene | ND | 12.0 | 100 | " | | | | | | | U |
| Trichlorofluoromethane | ND | 8.97 | 100 | " | | | | | | | U |
| 1,2,3-Trichloropropane | ND | 49.2 | 100 | " | | | | | | | U |
| 1,2,4-Trimethylbenzene | ND | 6.75 | 100 | " | | | | | | | U |
| 1,3,5-Trimethylbenzene | ND | 9.33 | 100 | " | | | | | | | U |
| Vinyl chloride | ND | 5.74 | 100 | " | | | | | | | U |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Volatile Organic Compounds per EPA Method 8260B - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110441 - EPA 5035** | | | | | | | | | | | |
| **Blank (3110441-BLK1)** | | | | | Prepared: 11/14/03 Analyzed: 11/15/03 | | | | | | |
| o-Xylene | ND | 11.6 | 100 | ug/kg | | | | | | | U |
| m,p-Xylene | ND | 11.4 | 200 | " | | | | | | | U |
| *Surrogate: 4-BFB* | *1890* | | | " | *2000* | | *94.5* | *42.6-130* | | | |
| *Surrogate: 1,2-DCA-d4* | *2110* | | | " | *2000* | | *106* | *57.3-144* | | | |
| *Surrogate: Dibromofluoromethane* | *1890* | | | " | *2000* | | *94.5* | *45.5-130* | | | |
| *Surrogate: Toluene-d8* | *2110* | | | " | *2000* | | *106* | *42.1-144* | | | |
| **LCS (3110441-BS1)** | | | | | Prepared: 11/14/03 Analyzed: 11/15/03 | | | | | | |
| Benzene | 2460 | 4.44 | 100 | ug/kg | 2500 | | 98.4 | 81.9-125 | | | |
| Chlorobenzene | 2620 | 8.09 | 100 | " | 2500 | | 105 | 79.2-125 | | | |
| 1,1-Dichloroethene | 2380 | 11.9 | 100 | " | 2500 | | 95.2 | 66.1-125 | | | |
| Toluene | 2540 | 6.29 | 100 | " | 2500 | | 102 | 80-125 | | | |
| Trichloroethene | 2160 | 12.0 | 100 | " | 2500 | | 86.4 | 76-125 | | | |
| *Surrogate: 4-BFB* | *1830* | | | " | *2000* | | *91.5* | *42.6-130* | | | |
| *Surrogate: 1,2-DCA-d4* | *2060* | | | " | *2000* | | *103* | *57.3-144* | | | |
| *Surrogate: Dibromofluoromethane* | *1840* | | | " | *2000* | | *92.0* | *45.5-130* | | | |
| *Surrogate: Toluene-d8* | *2070* | | | " | *2000* | | *104* | *42.1-144* | | | |
| **Matrix Spike (3110441-MS1)** | | **Source: P3K0348-01** | | | Prepared: 11/14/03 Analyzed: 11/19/03 | | | | | | |
| Benzene | 3480 | 4.44 | 100 | ug/kg dry | 3630 | ND | 95.9 | 68.5-125 | | | |
| Chlorobenzene | 3540 | 8.09 | 100 | " | 3630 | ND | 97.5 | 65.9-125 | | | |
| 1,1-Dichloroethene | 3380 | 11.9 | 100 | " | 3630 | ND | 93.1 | 55.8-125 | | | |
| Toluene | 4470 | 6.29 | 100 | " | 3630 | 948 | 97.0 | 70.3-125 | | | |
| Trichloroethene | 3080 | 12.0 | 100 | " | 3630 | 76.9 | 82.7 | 65.5-125 | | | |
| *Surrogate: 4-BFB* | *2990* | | | " | *2900* | | *103* | *42.6-130* | | | |
| *Surrogate: 1,2-DCA-d4* | *2580* | | | " | *2900* | | *89.0* | *57.3-144* | | | |
| *Surrogate: Dibromofluoromethane* | *2570* | | | " | *2900* | | *88.6* | *45.5-130* | | | |
| *Surrogate: Toluene-d8* | *2850* | | | " | *2900* | | *98.3* | *42.1-144* | | | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Volatile Organic Compounds per EPA Method 8260B - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110441 - EPA 5035** | | | | | | | | | | | |
| **Matrix Spike Dup (3110441-MSD1)** | | **Source: P3K0348-01** | | | Prepared: 11/14/03 Analyzed: 11/19/03 | | | | | | |
| Benzene | 3330 | 4.44 | 100 | ug/kg dry | 3630 | ND | 91.7 | 68.5-125 | 4.41 | 25 | |
| Chlorobenzene | 3520 | 8.09 | 100 | " | 3630 | ND | 97.0 | 65.9-125 | 0.567 | 25 | |
| 1,1-Dichloroethene | 2990 | 11.9 | 100 | " | 3630 | ND | 82.4 | 55.8-125 | 12.2 | 25 | |
| Toluene | 4300 | 6.29 | 100 | " | 3630 | 948 | 92.3 | 70.3-125 | 3.88 | 25 | |
| Trichloroethene | 2900 | 12.0 | 100 | " | 3630 | 76.9 | 77.8 | 65.5-125 | 6.02 | 25 | |
| *Surrogate: 4-BFB* | *3070* | | | *"* | *2900* | | *106* | *42.6-130* | | | |
| *Surrogate: 1,2-DCA-d4* | *2540* | | | *"* | *2900* | | *87.6* | *57.3-144* | | | |
| *Surrogate: Dibromofluoromethane* | *2650* | | | *"* | *2900* | | *91.4* | *45.5-130* | | | |
| *Surrogate: Toluene-d8* | *2950* | | | *"* | *2900* | | *102* | *42.1-144* | | | |
| **Batch 3110478 - EPA 5030B** | | | | | | | | | | | |
| **Blank (3110478-BLK1)** | | | | | Prepared & Analyzed: 11/16/03 | | | | | | |
| Acetone | ND | 2.34 | 25.0 | ug/l | | | | | | | U |
| Benzene | ND | 0.147 | 1.00 | " | | | | | | | U |
| Bromobenzene | ND | 0.333 | 1.00 | " | | | | | | | U |
| Bromochloromethane | ND | 0.266 | 1.00 | " | | | | | | | U |
| Bromodichloromethane | ND | 0.183 | 1.00 | " | | | | | | | U |
| Bromoform | ND | 0.174 | 1.00 | " | | | | | | | U |
| Bromomethane | ND | 0.282 | 5.00 | " | | | | | | | U |
| 2-Butanone | ND | 1.60 | 10.0 | " | | | | | | | U |
| n-Butylbenzene | ND | 0.183 | 5.00 | " | | | | | | | U |
| sec-Butylbenzene | ND | 0.193 | 1.00 | " | | | | | | | U |
| tert-Butylbenzene | ND | 0.206 | 1.00 | " | | | | | | | U |
| Carbon disulfide | ND | 0.233 | 10.0 | " | | | | | | | U |
| Carbon tetrachloride | ND | 0.140 | 1.00 | " | | | | | | | U |
| Chlorobenzene | ND | 0.136 | 1.00 | " | | | | | | | U |
| Chloroethane | ND | 0.327 | 1.00 | " | | | | | | | U |
| Chloroform | ND | 0.143 | 1.00 | " | | | | | | | U |
| Chloromethane | ND | 0.159 | 5.00 | " | | | | | | | U |
| 2-Chlorotoluene | ND | 0.110 | 1.00 | " | | | | | | | U |
| 4-Chlorotoluene | ND | 0.120 | 1.00 | " | | | | | | | U |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Volatile Organic Compounds per EPA Method 8260B - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110478 - EPA 5030B** | | | | | | | | | | | |
| **Blank (3110478-BLK1)** | | | | | Prepared & Analyzed: 11/16/03 | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 0.405 | 5.00 | ug/l | | | | | | | U |
| Dibromochloromethane | ND | 0.133 | 1.00 | " | | | | | | | U |
| 1,2-Dibromoethane | ND | 0.187 | 1.00 | " | | | | | | | U |
| Dibromomethane | ND | 0.117 | 1.00 | " | | | | | | | U |
| 1,2-Dichlorobenzene | ND | 0.0859 | 1.00 | " | | | | | | | U |
| 1,3-Dichlorobenzene | ND | 0.132 | 1.00 | " | | | | | | | U |
| 1,4-Dichlorobenzene | ND | 0.187 | 1.00 | " | | | | | | | U |
| Dichlorodifluoromethane | ND | 0.312 | 5.00 | " | | | | | | | U |
| 1,1-Dichloroethane | ND | 0.157 | 1.00 | " | | | | | | | U |
| 1,2-Dichloroethane | ND | 0.142 | 1.00 | " | | | | | | | U |
| 1,1-Dichloroethene | ND | 0.197 | 1.00 | " | | | | | | | U |
| cis-1,2-Dichloroethene | ND | 0.170 | 1.00 | " | | | | | | | U |
| trans-1,2-Dichloroethene | ND | 0.175 | 1.00 | " | | | | | | | U |
| 1,2-Dichloropropane | ND | 0.266 | 1.00 | " | | | | | | | U |
| 1,3-Dichloropropane | ND | 0.151 | 1.00 | " | | | | | | | U |
| 2,2-Dichloropropane | ND | 0.104 | 1.00 | " | | | | | | | U |
| 1,1-Dichloropropene | ND | 0.149 | 1.00 | " | | | | | | | U |
| cis-1,3-Dichloropropene | ND | 0.128 | 1.00 | " | | | | | | | U |
| trans-1,3-Dichloropropene | ND | 0.152 | 1.00 | " | | | | | | | U |
| Ethylbenzene | ND | 0.110 | 1.00 | " | | | | | | | U |
| Hexachlorobutadiene | ND | 0.878 | 2.00 | " | | | | | | | U |
| 2-Hexanone | ND | 1.10 | 10.0 | " | | | | | | | U |
| Isopropylbenzene | ND | 0.107 | 2.00 | " | | | | | | | U |
| p-Isopropyltoluene | ND | 0.149 | 2.00 | " | | | | | | | U |
| 4-Methyl-2-pentanone | ND | 1.49 | 5.00 | " | | | | | | | U |
| Methyl tert-butyl ether | ND | 0.0865 | 1.00 | " | | | | | | | U |
| Methylene chloride | ND | 2.50 | 5.00 | " | | | | | | | U |
| Naphthalene | ND | 0.0989 | 2.00 | " | | | | | | | U |
| n-Propylbenzene | ND | 0.138 | 1.00 | " | | | | | | | U |
| Styrene | ND | 0.0723 | 1.00 | " | | | | | | | U |
| 1,1,1,2-Tetrachloroethane | ND | 0.148 | 1.00 | " | | | | | | | U |
| 1,1,2,2-Tetrachloroethane | ND | 0.294 | 1.00 | " | | | | | | | U |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Volatile Organic Compounds per EPA Method 8260B - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110478 - EPA 5030B** | | | | | | | | | | | |
| **Blank (3110478-BLK1)** | | | | | Prepared & Analyzed: 11/16/03 | | | | | | |
| Tetrachloroethene | ND | 0.109 | 1.00 | ug/l | | | | | | | U |
| Toluene | ND | 0.155 | 1.00 | " | | | | | | | U |
| 1,2,3-Trichlorobenzene | ND | 0.219 | 1.00 | " | | | | | | | U |
| 1,2,4-Trichlorobenzene | ND | 0.213 | 1.00 | " | | | | | | | U |
| 1,1,1-Trichloroethane | ND | 0.0859 | 1.00 | " | | | | | | | U |
| 1,1,2-Trichloroethane | ND | 0.301 | 1.00 | " | | | | | | | U |
| Trichloroethene | ND | 0.241 | 1.00 | " | | | | | | | U |
| Trichlorofluoromethane | ND | 0.160 | 1.00 | " | | | | | | | U |
| 1,2,3-Trichloropropane | ND | 0.365 | 1.00 | " | | | | | | | U |
| 1,2,4-Trimethylbenzene | ND | 0.0884 | 1.00 | " | | | | | | | U |
| 1,3,5-Trimethylbenzene | ND | 0.157 | 1.00 | " | | | | | | | U |
| Vinyl chloride | ND | 0.152 | 1.00 | " | | | | | | | U |
| o-Xylene | ND | 0.187 | 1.00 | " | | | | | | | U |
| m,p-Xylene | ND | 0.295 | 2.00 | " | | | | | | | U |
| *Surrogate: 4-BFB* | *20.1* | | | " | *20.0* | | *100* | *75-120* | | | |
| *Surrogate: 1,2-DCA-d4* | *20.0* | | | " | *20.0* | | *100* | *77-129* | | | |
| *Surrogate: Dibromofluoromethane* | *20.2* | | | " | *20.0* | | *101* | *80-121* | | | |
| *Surrogate: Toluene-d8* | *20.2* | | | " | *20.0* | | *101* | *80-120* | | | |
| **LCS (3110478-BS1)** | | | | | Prepared & Analyzed: 11/16/03 | | | | | | |
| Benzene | 19.5 | 0.147 | 1.00 | ug/l | 20.0 | | 97.5 | 80-120 | | | |
| Chlorobenzene | 20.3 | 0.136 | 1.00 | " | 20.0 | | 102 | 80-124 | | | |
| 1,1-Dichloroethene | 18.3 | 0.197 | 1.00 | " | 20.0 | | 91.5 | 78-120 | | | |
| Toluene | 19.6 | 0.155 | 1.00 | " | 20.0 | | 98.0 | 80-124 | | | |
| Trichloroethene | 19.7 | 0.241 | 1.00 | " | 20.0 | | 98.5 | 80-132 | | | |
| *Surrogate: 4-BFB* | *20.8* | | | " | *20.0* | | *104* | *75-120* | | | |
| *Surrogate: 1,2-DCA-d4* | *20.3* | | | " | *20.0* | | *102* | *77-129* | | | |
| *Surrogate: Dibromofluoromethane* | *20.6* | | | " | *20.0* | | *103* | *80-121* | | | |
| *Surrogate: Toluene-d8* | *20.5* | | | " | *20.0* | | *102* | *80-120* | | | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Volatile Organic Compounds per EPA Method 8260B - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110478 - EPA 5030B** | | | | | | | | | | | |
| **Matrix Spike (3110478-MS1)** | | **Source: P3K0268-03** | | | Prepared & Analyzed: 11/16/03 | | | | | | |
| Benzene | 20.5 | 0.147 | 1.00 | ug/l | 20.0 | ND | 102 | 80-124 | | | |
| Chlorobenzene | 20.8 | 0.136 | 1.00 | " | 20.0 | ND | 104 | 72.9-134 | | | |
| 1,1-Dichloroethene | 20.7 | 0.197 | 1.00 | " | 20.0 | ND | 104 | 79.3-127 | | | |
| Toluene | 20.3 | 0.155 | 1.00 | " | 20.0 | ND | 102 | 79.7-131 | | | |
| Trichloroethene | 19.9 | 0.241 | 1.00 | " | 20.0 | ND | 99.5 | 68.4-130 | | | |
| *Surrogate: 4-BFB* | *20.4* | | | " | *20.0* | | *102* | *75-120* | | | |
| *Surrogate: 1,2-DCA-d4* | *19.9* | | | " | *20.0* | | *99.5* | *77-129* | | | |
| *Surrogate: Dibromofluoromethane* | *20.2* | | | " | *20.0* | | *101* | *80-121* | | | |
| *Surrogate: Toluene-d8* | *19.8* | | | " | *20.0* | | *99.0* | *80-120* | | | |
| **Matrix Spike Dup (3110478-MSD1)** | | **Source: P3K0268-03** | | | Prepared & Analyzed: 11/16/03 | | | | | | |
| Benzene | 21.1 | 0.147 | 1.00 | ug/l | 20.0 | ND | 106 | 80-124 | 2.88 | 25 | |
| Chlorobenzene | 21.4 | 0.136 | 1.00 | " | 20.0 | ND | 107 | 72.9-134 | 2.84 | 25 | |
| 1,1-Dichloroethene | 21.3 | 0.197 | 1.00 | " | 20.0 | ND | 106 | 79.3-127 | 2.86 | 25 | |
| Toluene | 20.8 | 0.155 | 1.00 | " | 20.0 | ND | 104 | 79.7-131 | 2.43 | 25 | |
| Trichloroethene | 20.9 | 0.241 | 1.00 | " | 20.0 | ND | 104 | 68.4-130 | 4.90 | 25 | |
| *Surrogate: 4-BFB* | *21.2* | | | " | *20.0* | | *106* | *75-120* | | | |
| *Surrogate: 1,2-DCA-d4* | *20.6* | | | " | *20.0* | | *103* | *77-129* | | | |
| *Surrogate: Dibromofluoromethane* | *21.2* | | | " | *20.0* | | *106* | *80-121* | | | |
| *Surrogate: Toluene-d8* | *20.8* | | | " | *20.0* | | *104* | *80-120* | | | |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Volatile Organic Compounds per EPA Methods 5035/8260B - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110271 - EPA 5035** | | | | | | | | | | | |
| **Blank (3110271-BLK1)** | | | | | Prepared: 11/18/03 Analyzed: 11/20/03 | | | | | | |
| Acetone | ND | 4.25 | 20.0 | ug/kg | | | | | | | U |
| Benzene | ND | 0.147 | 5.00 | " | | | | | | | U |
| Bromobenzene | ND | 0.152 | 5.00 | " | | | | | | | U |
| Bromochloromethane | ND | 0.277 | 5.00 | " | | | | | | | U |
| Bromodichloromethane | ND | 0.388 | 5.00 | " | | | | | | | U |
| Bromoform | ND | 0.169 | 5.00 | " | | | | | | | U |
| Bromomethane | ND | 0.309 | 20.0 | " | | | | | | | U |
| 2-Butanone | ND | 15.4 | 20.0 | " | | | | | | | U |
| n-Butylbenzene | ND | 0.181 | 5.00 | " | | | | | | | U |
| sec-Butylbenzene | ND | 0.160 | 5.00 | " | | | | | | | U |
| tert-Butylbenzene | ND | 0.195 | 5.00 | " | | | | | | | U |
| Carbon disulfide | ND | 0.420 | 20.0 | " | | | | | | | U |
| Carbon tetrachloride | ND | 0.202 | 5.00 | " | | | | | | | U |
| Chlorobenzene | ND | 0.276 | 5.00 | " | | | | | | | U |
| Chloroethane | ND | 0.353 | 10.0 | " | | | | | | | U |
| Chloroform | ND | 0.174 | 5.00 | " | | | | | | | U |
| Chloromethane | ND | 0.513 | 10.0 | " | | | | | | | U |
| 2-Chlorotoluene | ND | 0.236 | 5.00 | " | | | | | | | U |
| 4-Chlorotoluene | ND | 0.108 | 5.00 | " | | | | | | | U |
| 1,2-Dibromo-3-chloropropane | ND | 0.213 | 10.0 | " | | | | | | | U |
| Dibromochloromethane | ND | 0.270 | 5.00 | " | | | | | | | U |
| 1,2-Dibromoethane | ND | 0.386 | 5.00 | " | | | | | | | U |
| Dibromomethane | ND | 0.302 | 5.00 | " | | | | | | | U |
| 1,2-Dichlorobenzene | ND | 0.169 | 5.00 | " | | | | | | | U |
| 1,3-Dichlorobenzene | ND | 0.329 | 5.00 | " | | | | | | | U |
| 1,4-Dichlorobenzene | ND | 0.162 | 5.00 | " | | | | | | | U |
| Dichlorodifluoromethane | ND | 0.280 | 10.0 | " | | | | | | | U |
| 1,1-Dichloroethane | ND | 0.0975 | 5.00 | " | | | | | | | U |
| 1,2-Dichloroethane | ND | 0.236 | 5.00 | " | | | | | | | U |
| 1,1-Dichloroethene | ND | 0.180 | 5.00 | " | | | | | | | U |
| cis-1,2-Dichloroethene | ND | 0.202 | 5.00 | " | | | | | | | U |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Volatile Organic Compounds per EPA Methods 5035/8260B - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110271 - EPA 5035** | | | | | | | | | | | |
| **Blank (3110271-BLK1)** | | | | | Prepared: 11/18/03 Analyzed: 11/20/03 | | | | | | |
| trans-1,2-Dichloroethene | ND | 0.195 | 5.00 | ug/kg | | | | | | | U |
| 1,2-Dichloropropane | ND | 0.191 | 5.00 | " | | | | | | | U |
| 1,3-Dichloropropane | ND | 0.353 | 5.00 | " | | | | | | | U |
| 2,2-Dichloropropane | ND | 0.224 | 5.00 | " | | | | | | | U |
| 1,1-Dichloropropene | ND | 0.234 | 5.00 | " | | | | | | | U |
| cis-1,3-Dichloropropene | ND | 0.141 | 5.00 | " | | | | | | | U |
| trans-1,3-Dichloropropene | ND | 0.372 | 5.00 | " | | | | | | | U |
| Ethylbenzene | 0.250 | 0.143 | 5.00 | " | | | | | | | J |
| Hexachlorobutadiene | ND | 0.739 | 5.00 | " | | | | | | | U |
| 2-Hexanone | ND | 2.14 | 20.0 | " | | | | | | | U |
| Isopropylbenzene | ND | 0.202 | 5.00 | " | | | | | | | U |
| p-Isopropyltoluene | 0.250 | 0.133 | 5.00 | " | | | | | | | J |
| 4-Methyl-2-pentanone | ND | 2.06 | 20.0 | " | | | | | | | U |
| Methylene chloride | ND | 10.0 | 25.0 | " | | | | | | | U |
| Naphthalene | 1.36 | 0.345 | 5.00 | " | | | | | | | J |
| n-Propylbenzene | ND | 0.174 | 5.00 | " | | | | | | | U |
| Styrene | ND | 0.154 | 5.00 | " | | | | | | | U |
| 1,1,1,2-Tetrachloroethane | ND | 0.297 | 5.00 | " | | | | | | | U |
| 1,1,2,2-Tetrachloroethane | ND | 0.257 | 5.00 | " | | | | | | | U |
| Tetrachloroethene | ND | 0.145 | 5.00 | " | | | | | | | U |
| Toluene | ND | 0.299 | 5.00 | " | | | | | | | U |
| 1,2,3-Trichlorobenzene | ND | 0.318 | 5.00 | " | | | | | | | U |
| 1,2,4-Trichlorobenzene | ND | 0.393 | 5.00 | " | | | | | | | U |
| 1,1,1-Trichloroethane | ND | 0.228 | 5.00 | " | | | | | | | U |
| 1,1,2-Trichloroethane | ND | 0.701 | 5.00 | " | | | | | | | U |
| Trichloroethene | ND | 0.221 | 5.00 | " | | | | | | | U |
| Trichlorofluoromethane | ND | 0.281 | 5.00 | " | | | | | | | U |
| 1,2,3-Trichloropropane | ND | 0.962 | 5.00 | " | | | | | | | U |
| 1,2,4-Trimethylbenzene | 0.350 | 0.0800 | 5.00 | " | | | | | | | J |
| 1,3,5-Trimethylbenzene | ND | 0.154 | 5.00 | " | | | | | | | U |
| Vinyl chloride | ND | 0.305 | 10.0 | " | | | | | | | U |
| o-Xylene | 0.230 | 0.199 | 5.00 | " | | | | | | | J |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Volatile Organic Compounds per EPA Methods 5035/8260B - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110271 - EPA 5035** | | | | | | | | | | | |
| **Blank (3110271-BLK1)** | | | | | Prepared: 11/18/03 Analyzed: 11/20/03 | | | | | | |
| m,p-Xylene | 0.800 | 0.208 | 10.0 | ug/kg | | | | | | | J |
| *Surrogate: 4-BFB* | *19.5* | | | " | *20.0* | | *97.5* | *42.6-130* | | | |
| *Surrogate: 1,2-DCA-d4* | *18.6* | | | " | *20.0* | | *93.0* | *57.3-144* | | | |
| *Surrogate: Dibromofluoromethane* | *18.9* | | | " | *20.0* | | *94.5* | *45.5-130* | | | |
| *Surrogate: Toluene-d8* | *19.4* | | | " | *20.0* | | *97.0* | *42.1-144* | | | |
| **LCS (3110271-BS1)** | | | | | Prepared: 11/18/03 Analyzed: 11/20/03 | | | | | | |
| Benzene | 18.3 | 0.147 | 5.00 | ug/kg | 20.0 | | 91.5 | 78-129 | | | |
| Chlorobenzene | 18.7 | 0.276 | 5.00 | " | 20.0 | | 93.5 | 62.8-140 | | | |
| 1,1-Dichloroethene | 15.5 | 0.180 | 5.00 | " | 20.0 | | 77.5 | 68.2-133 | | | |
| Toluene | 19.0 | 0.299 | 5.00 | " | 20.0 | | 95.0 | 66.8-137 | | | |
| Trichloroethene | 20.5 | 0.221 | 5.00 | " | 20.0 | | 102 | 76.2-132 | | | |
| *Surrogate: 4-BFB* | *19.6* | | | " | *20.0* | | *98.0* | *42.6-130* | | | |
| *Surrogate: 1,2-DCA-d4* | *18.6* | | | " | *20.0* | | *93.0* | *57.3-144* | | | |
| *Surrogate: Dibromofluoromethane* | *18.7* | | | " | *20.0* | | *93.5* | *45.5-130* | | | |
| *Surrogate: Toluene-d8* | *19.3* | | | " | *20.0* | | *96.5* | *42.1-144* | | | |
| **Matrix Spike (3110271-MS1)** | | **Source: P3K0194-01** | | | Prepared: 11/18/03 Analyzed: 11/20/03 | | | | | | |
| Benzene | 1050 | 8.22 | 279 | ug/kg dry | 1120 | ND | 93.8 | 60-140 | | | |
| Chlorobenzene | 1040 | 15.4 | 279 | " | 1120 | 32.4 | 90.0 | 60-140 | | | |
| 1,1-Dichloroethene | 948 | 10.1 | 279 | " | 1120 | ND | 84.6 | 60-140 | | | |
| Toluene | 1220 | 16.7 | 279 | " | 1120 | 226 | 88.8 | 60-140 | | | |
| Trichloroethene | 1010 | 12.4 | 279 | " | 1120 | 117 | 79.7 | 60-140 | | | |
| *Surrogate: 4-BFB* | *1030* | | | " | *1120* | | *92.0* | *42.6-130* | | | |
| *Surrogate: 1,2-DCA-d4* | *902* | | | " | *1120* | | *80.5* | *57.3-144* | | | |
| *Surrogate: Dibromofluoromethane* | *988* | | | " | *1120* | | *88.2* | *45.5-130* | | | |
| *Surrogate: Toluene-d8* | *1090* | | | " | *1120* | | *97.3* | *42.1-144* | | | |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Volatile Organic Compounds per EPA Methods 5035/8260B - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110271 - EPA 5035** | | | | | | | | | | | |
| **Matrix Spike Dup (3110271-MSD1)** | | **Source: P3K0194-01** | | Prepared: 11/18/03 Analyzed: 11/20/03 | | | | | | | |
| Benzene | 979 | 8.22 | 279 | ug/kg dry | 1120 | ND | 87.4 | 60-140 | 7.00 | 25 | |
| Chlorobenzene | 962 | 15.4 | 279 | " | 1120 | 32.4 | 83.0 | 60-140 | 7.79 | 25 | |
| 1,1-Dichloroethene | 956 | 10.1 | 279 | " | 1120 | ND | 85.4 | 60-140 | 0.840 | 25 | |
| Toluene | 1140 | 16.7 | 279 | " | 1120 | 226 | 81.6 | 60-140 | 6.78 | 25 | |
| Trichloroethene | 1080 | 12.4 | 279 | " | 1120 | 117 | 86.0 | 60-140 | 6.70 | 25 | |
| *Surrogate: 4-BFB* | *1020* | | | " | *1120* | | *91.1* | *42.6-130* | | | |
| *Surrogate: 1,2-DCA-d4* | *937* | | | " | *1120* | | *83.7* | *57.3-144* | | | |
| *Surrogate: Dibromofluoromethane* | *1040* | | | " | *1120* | | *92.9* | *45.5-130* | | | |
| *Surrogate: Toluene-d8* | *1070* | | | " | *1120* | | *95.5* | *42.1-144* | | | |



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907.563.9200 fax 907.563.9210

| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Semivolatile Organic Compounds per EPA Method 8270C - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110491 - EPA 3550** | | | | | | | | | | | |
| **Blank (3110491-BLK1)** | | | | | Prepared: 11/17/03 Analyzed: 11/19/03 | | | | | | |
| Acenaphthene | ND | 0.0700 | 0.330 | mg/kg | | | | | | | U |
| Acenaphthylene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Anthracene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Benzo (a) anthracene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Benzo (a) pyrene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Benzo (b) fluoranthene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Benzo (ghi) perylene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Benzo (k) fluoranthene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Benzoic Acid | ND | 0.500 | 1.00 | " | | | | | | | U |
| Benzyl alcohol | ND | 0.165 | 0.330 | " | | | | | | | U |
| 4-Bromophenyl phenyl ether | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Butyl benzyl phthalate | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 4-Chloro-3-methylphenol | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 4-Chloroaniline | ND | 0.165 | 2.00 | " | | | | | | | U |
| Bis(2-chloroethoxy)methane | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Bis(2-chloroethyl)ether | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Bis(2-chloroisopropyl)ether | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 2-Chloronaphthalene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 2-Chlorophenol | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 4-Chlorophenyl phenyl ether | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Chrysene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Di-n-butyl phthalate | ND | 0.500 | 1.00 | " | | | | | | | U |
| Di-n-octyl phthalate | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Dibenzo (a,h) anthracene | ND | 0.0600 | 0.330 | " | | | | | | | U |
| Dibenzofuran | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 1,2-Dichlorobenzene | ND | 0.500 | 1.00 | " | | | | | | | U |
| 1,3-Dichlorobenzene | ND | 0.500 | 1.00 | " | | | | | | | U |
| 1,4-Dichlorobenzene | ND | 0.500 | 1.00 | " | | | | | | | U |
| 3,3'-Dichlorobenzidine | ND | 0.500 | 1.00 | " | | | | | | | U |
| 2,4-Dichlorophenol | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Diethyl phthalate | ND | 0.0700 | 0.330 | " | | | | | | | U |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Semivolatile Organic Compounds per EPA Method 8270C - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110491 - EPA 3550** | | | | | | | | | | | |
| **Blank (3110491-BLK1)** | | | | | Prepared: 11/17/03 Analyzed: 11/19/03 | | | | | | |
| 2,4-Dimethylphenol | ND | 0.500 | 1.00 | mg/kg | | | | | | | U |
| Dimethyl phthalate | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 4,6-Dinitro-2-methylphenol | ND | 0.500 | 1.00 | " | | | | | | | U |
| 2,4-Dinitrophenol | ND | 2.00 | 2.00 | " | | | | | | | U |
| 2,4-Dinitrotoluene | ND | 0.500 | 0.500 | " | | | | | | | U |
| 2,6-Dinitrotoluene | ND | 0.0700 | 0.500 | " | | | | | | | U |
| Bis(2-ethylhexyl)phthalate | ND | 2.00 | 2.00 | " | | | | | | | U |
| Fluoranthene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Fluorene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Hexachlorobenzene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Hexachlorobutadiene | ND | 0.500 | 1.00 | " | | | | | | | U |
| Hexachlorocyclopentadiene | ND | 0.500 | 1.00 | " | | | | | | | U |
| Hexachloroethane | ND | 0.500 | 1.00 | " | | | | | | | U |
| Indeno (1,2,3-cd) pyrene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Isophorone | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 2-Methylnaphthalene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 2-Methylphenol | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 3-,4-Methylphenol | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Naphthalene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 2-Nitroaniline | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 3-Nitroaniline | ND | 0.500 | 1.00 | " | | | | | | | U |
| 4-Nitroaniline | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Nitrobenzene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 2-Nitrophenol | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 4-Nitrophenol | ND | 0.500 | 1.00 | " | | | | | | | U |
| N-Nitrosodi-n-propylamine | ND | 0.0700 | 0.330 | " | | | | | | | U |
| N-Nitrosodiphenylamine | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Pentachlorophenol | ND | 0.500 | 1.00 | " | | | | | | | U |
| Phenanthrene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Phenol | ND | 0.0700 | 0.330 | " | | | | | | | U |
| Pyrene | ND | 0.0700 | 0.330 | " | | | | | | | U |
| 1,2,4-Trichlorobenzene | ND | 0.0700 | 0.330 | " | | | | | | | U |



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| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Semivolatile Organic Compounds per EPA Method 8270C - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110491 - EPA 3550** | | | | | | | | | | | |
| **Blank (3110491-BLK1)** | | | | | Prepared: 11/17/03 Analyzed: 11/19/03 | | | | | | |
| 2,4,5-Trichlorophenol | ND | 0.0700 | 0.330 | mg/kg | | | | | | | U |
| 2,4,6-Trichlorophenol | ND | 0.0700 | 0.330 | " | | | | | | | U |
| *Surrogate: 2-Fluorobiphenyl* | *2.62* | | | " | *2.50* | | *105* | *44-146* | | | |
| *Surrogate: 2-Fluorophenol* | *4.92* | | | " | *5.00* | | *98.4* | *42-126* | | | *D* |
| *Surrogate: Nitrobenzene-d5* | *2.44* | | | " | *2.50* | | *97.6* | *42-126* | | | |
| *Surrogate: Phenol-d6* | *4.66* | | | " | *5.00* | | *93.2* | *42-131* | | | |
| *Surrogate: p-Terphenyl-d14* | *3.16* | | | " | *2.50* | | *126* | *49-150* | | | |
| *Surrogate: 2,4,6-Tribromophenol* | *4.86* | | | " | *5.00* | | *97.2* | *48-119* | | | |
| **LCS (3110491-BS1)** | | | | | Prepared: 11/17/03 Analyzed: 11/18/03 | | | | | | |
| Acenaphthene | 2.62 | 0.0700 | 0.330 | mg/kg | 2.50 | | 105 | 30-115 | | | |
| 4-Chloro-3-methylphenol | 4.61 | 0.140 | 0.660 | " | 5.00 | | 92.2 | 40-110 | | | D |
| 2-Chlorophenol | 4.79 | 0.140 | 0.660 | " | 5.00 | | 95.8 | 40-100 | | | D |
| 1,4-Dichlorobenzene | 2.27 | 0.500 | 1.00 | " | 2.50 | | 90.8 | 10-100 | | | |
| 2,4-Dinitrotoluene | 2.50 | 0.500 | 0.500 | " | 2.50 | | 100 | 30-110 | | | |
| 4-Nitrophenol | 5.21 | 0.500 | 1.00 | " | 5.00 | | 104 | 30-130 | | | |
| N-Nitrosodi-n-propylamine | 2.75 | 0.0700 | 0.330 | " | 2.50 | | 110 | 30-110 | | | |
| Pentachlorophenol | 4.17 | 0.500 | 1.00 | " | 5.00 | | 83.4 | 14-120 | | | |
| Phenol | 4.95 | 0.0700 | 0.330 | " | 5.00 | | 99.0 | 35-100 | | | |
| Pyrene | 2.61 | 0.0700 | 0.330 | " | 2.50 | | 104 | 30-115 | | | |
| 1,2,4-Trichlorobenzene | 2.05 | 0.0700 | 0.330 | " | 2.50 | | 82.0 | 18-100 | | | |
| *Surrogate: 2-Fluorobiphenyl* | *2.68* | | | " | *2.50* | | *107* | *44-146* | | | |
| *Surrogate: 2-Fluorophenol* | *5.19* | | | " | *5.00* | | *104* | *42-126* | | | *D* |
| *Surrogate: Nitrobenzene-d5* | *2.68* | | | " | *2.50* | | *107* | *42-126* | | | |
| *Surrogate: Phenol-d6* | *5.39* | | | " | *5.00* | | *108* | *42-131* | | | |
| *Surrogate: p-Terphenyl-d14* | *3.07* | | | " | *2.50* | | *123* | *49-150* | | | |
| *Surrogate: 2,4,6-Tribromophenol* | *5.64* | | | " | *5.00* | | *113* | *48-119* | | | *D* |



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|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Semivolatile Organic Compounds per EPA Method 8270C - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110491 - EPA 3550** | | | | | | | | | | | |
| **Matrix Spike (3110491-MS1)** | | **Source: P3K0348-06** | | Prepared: 11/17/03 | Analyzed: 11/19/03 | | | | | | |
| Acenaphthene | 2.74 | 0.140 | 0.660 | mg/kg dry | 2.75 | ND | 99.6 | 40-110 | | | D |
| 4-Chloro-3-methylphenol | 5.03 | 0.140 | 0.660 | " | 5.50 | ND | 91.5 | 40-110 | | | D |
| 2-Chlorophenol | 4.88 | 0.140 | 0.660 | " | 5.50 | ND | 88.7 | 40-100 | | | D |
| 1,4-Dichlorobenzene | 1.82 | 1.00 | 2.00 | " | 2.75 | ND | 66.2 | 10-100 | | | J, D |
| 2,4-Dinitrotoluene | 2.83 | 1.00 | 1.00 | " | 2.75 | ND | 103 | 40-110 | | | D |
| 4-Nitrophenol | 5.86 | 1.00 | 2.00 | " | 5.50 | ND | 107 | 40-125 | | | D |
| N-Nitrosodi-n-propylamine | 2.21 | 0.140 | 0.660 | " | 2.75 | ND | 80.4 | 30-110 | | | D |
| Pentachlorophenol | 5.03 | 1.00 | 2.00 | " | 5.50 | ND | 91.5 | 25-110 | | | D |
| Phenol | 3.96 | 0.140 | 0.660 | " | 5.50 | ND | 72.0 | 35-100 | | | D |
| Pyrene | 3.11 | 0.140 | 0.660 | " | 2.75 | ND | 113 | 40-110 | | | Q-01, D |
| 1,2,4-Trichlorobenzene | 2.16 | 0.140 | 0.660 | " | 2.75 | ND | 78.5 | 30-101 | | | D |
| *Surrogate: 2-Fluorobiphenyl* | *3.12* | | | " | *2.75* | | *113* | *44-146* | | | *D* |
| *Surrogate: 2-Fluorophenol* | *5.31* | | | " | *5.50* | | *96.5* | *42-126* | | | *D* |
| *Surrogate: Nitrobenzene-d5* | *2.54* | | | " | *2.75* | | *92.4* | *42-126* | | | *D* |
| *Surrogate: Phenol-d6* | *3.90* | | | " | *5.50* | | *70.9* | *42-131* | | | *D* |
| *Surrogate: p-Terphenyl-d14* | *3.34* | | | " | *2.75* | | *121* | *49-150* | | | *D* |
| *Surrogate: 2,4,6-Tribromophenol* | *7.16* | | | " | *5.50* | | *130* | *48-119* | | | *Q-01, D* |
| **Matrix Spike Dup (3110491-MSD1)** | | **Source: P3K0348-06** | | Prepared: 11/17/03 | Analyzed: 11/19/03 | | | | | | |
| Acenaphthene | 2.65 | 0.140 | 0.660 | mg/kg dry | 2.75 | ND | 96.4 | 40-110 | 3.34 | 40 | D |
| 4-Chloro-3-methylphenol | 5.02 | 0.140 | 0.660 | " | 5.50 | ND | 91.3 | 40-110 | 0.199 | 40 | D |
| 2-Chlorophenol | 5.48 | 0.140 | 0.660 | " | 5.50 | ND | 99.6 | 40-100 | 11.6 | 40 | D |
| 1,4-Dichlorobenzene | 2.02 | 1.00 | 2.00 | " | 2.75 | ND | 73.5 | 10-100 | 10.4 | 60 | D |
| 2,4-Dinitrotoluene | 2.57 | 1.00 | 1.00 | " | 2.75 | ND | 93.5 | 40-110 | 9.63 | 40 | D |
| 4-Nitrophenol | 4.92 | 1.00 | 2.00 | " | 5.50 | ND | 89.5 | 40-125 | 17.4 | 40 | D |
| N-Nitrosodi-n-propylamine | 2.55 | 0.140 | 0.660 | " | 2.75 | ND | 92.7 | 30-110 | 14.3 | 40 | D |
| Pentachlorophenol | 3.62 | 1.00 | 2.00 | " | 5.50 | ND | 65.8 | 25-110 | 32.6 | 60 | D |
| Phenol | 4.30 | 0.140 | 0.660 | " | 5.50 | ND | 78.2 | 35-100 | 8.23 | 40 | D |
| Pyrene | 3.01 | 0.140 | 0.660 | " | 2.75 | ND | 109 | 40-110 | 3.27 | 40 | D |
| 1,2,4-Trichlorobenzene | 2.25 | 0.140 | 0.660 | " | 2.75 | ND | 81.8 | 30-101 | 4.08 | 60 | D |
| *Surrogate: 2-Fluorobiphenyl* | *2.88* | | | " | *2.75* | | *105* | *44-146* | | | *D* |



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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907.563.9200 fax 907.563.9210

| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Semivolatile Organic Compounds per EPA Method 8270C - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110491 - EPA 3550** | | | | | | | | | | | |
| **Matrix Spike Dup (3110491-MSD1)** | | | **Source: P3K0348-06** | | Prepared: 11/17/03 | Analyzed: 11/19/03 | | | | | |
| *Surrogate: 2-Fluorophenol* | *5.79* | | | *mg/kg dry* | *5.50* | | *105* | *42-126* | | | *D* |
| *Surrogate: Nitrobenzene-d5* | *2.55* | | | *"* | *2.75* | | *92.7* | *42-126* | | | *D* |
| *Surrogate: Phenol-d6* | *4.82* | | | *"* | *5.50* | | *87.6* | *42-131* | | | *D* |
| *Surrogate: p-Terphenyl-d14* | *3.34* | | | *"* | *2.75* | | *121* | *49-150* | | | *D* |
| *Surrogate: 2,4,6-Tribromophenol* | *6.25* | | | *"* | *5.50* | | *114* | *48-119* | | | *D* |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Percent Dry Weight (Solids) per Standard Methods - Quality Control

## North Creek Analytical - Portland

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3110517 - Dry Weight** | | | | | | | | | | | |
| **Duplicate (3110517-DUP1)** | | **Source: P3K0331-35** | | Prepared: 11/17/03 Analyzed: 11/18/03 | | | | | | | |
| % Solids | 82.0 | | 1.00 | % by Weight | | 82.0 | | | 0.00 | 20 | |
| **Duplicate (3110517-DUP2)** | | **Source: P3K0331-40** | | Prepared: 11/17/03 Analyzed: 11/18/03 | | | | | | | |
| % Solids | 85.7 | | 1.00 | % by Weight | | 85.6 | | | 0.117 | 20 | |
| **Duplicate (3110517-DUP3)** | | **Source: P3K0331-44** | | Prepared: 11/17/03 Analyzed: 11/18/03 | | | | | | | |
| % Solids | 83.4 | | 1.00 | % by Weight | | 83.3 | | | 0.120 | 20 | |



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| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

## North Creek Analytical - Bothell

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3K21004 - General Preparation** | | | | | | | | | | | |
| **Blank (3K21004-BLK1)** | | | | | Prepared & Analyzed: 11/20/03 | | | | | | |
| Total Organic Carbon | ND | | 1000 | mg/kg | | | | | | | |
| **LCS (3K21004-BS1)** | | | | | Prepared & Analyzed: 11/20/03 | | | | | | |
| Total Organic Carbon | 29800 | | 1000 | mg/kg | 30000 | | 99.3 | 72-130 | | | |
| **LCS Dup (3K21004-BSD1)** | | | | | Prepared & Analyzed: 11/20/03 | | | | | | |
| Total Organic Carbon | 27000 | | 1000 | mg/kg | 30000 | | 90.0 | 72-130 | 9.86 | 30 | |
| **Duplicate (3K21004-DUP1)** | | **Source: P3K0348-01** | | | Prepared: 11/18/03 Analyzed: 11/20/03 | | | | | | |
| Total Organic Carbon | 6000 | | 1000 | mg/kg dry | | 10600 | | | 55.4 | 35 | Q-07 |
| **Duplicate (3K21004-DUP2)** | | **Source: B3K0460-01** | | | Prepared: 11/19/03 Analyzed: 11/20/03 | | | | | | |
| Total Organic Carbon | ND | | 1000 | mg/kg wet | | 1390 | | | | 35 | |
| **Duplicate (3K21004-DUP3)** | | **Source: B3K0463-01** | | | Prepared: 11/19/03 Analyzed: 11/20/03 | | | | | | |
| Total Organic Carbon | 21000 | | 1000 | mg/kg dry | | 22500 | | | 6.90 | 35 | |
| **Matrix Spike (3K21004-MS1)** | | **Source: P3K0348-01** | | | Prepared: 11/18/03 Analyzed: 11/20/03 | | | | | | |
| Total Organic Carbon | 40000 | | 1000 | mg/kg dry | 27800 | 10600 | 106 | 40-160 | | | |



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907.563.9200 fax 907.563.9210

| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

# Physical Parameters by APHA/ASTM/EPA Methods - Quality Control

## North Creek Analytical - Bothell

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 3K22004 - Dry Weight** | | | | | | | | | | | |
| **Blank (3K22004-BLK1)** | | | | | Prepared: 11/22/03 Analyzed: 11/24/03 | | | | | | |
| Dry Weight | 100 | | 1.00 | % | | | | | | | |



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907.563.9200 fax 907.563.9210

| | | |
|---|---|---|
| Forensic Environmental Services | Project: GS Roofing-Portland | |
| 113 John Robert Thomas Dr | Project Number: [none] | **Reported:** |
| Exton PA, 19341 | Project Manager: Thomas Maguire | 02/13/04 10:53 |

## Notes and Definitions

| | |
|---|---|
| A-01 | The detected hydrocarbons appear to be due to the overlap of a gas range product such as mineral spirits, and the heavy range; however, weathered diesel may be present as well. |
| D | Data reported from a preparation or analytical dilution. |
| D-17 | Detected hydrocarbons in the diesel range do not have a distinct diesel pattern and may be due to heavily weathered diesel or possibly biogenic interference. |
| J | Estimated value. |
| Q-01 | The spike recovery, and/or RPD, for this QC sample is outside of established control limits. Review of associated batch QC indicates the recovery for this analyte does not represent an out-of-control condition for the batch. |
| Q-02 | The spike recovery for this QC sample is outside of established control limits due to sample matrix interference. |
| Q-06 | Analyses are not controlled on RPD values from sample concentrations less than 5 times the reporting limit. |
| Q-07 | The RPD value for this QC sample is above the established control limit. Review of associated QC indicates the high RPD does not represent an out-of-control condition for the batch. |
| Q-14 | The Spike Recovery and/or RPD is outside of control limits due to a non-homogeneous sample matrix. |
| R-03 | The reporting limit for this analyte was raised due to matrix interference. |
| R-05 | Reporting limits raised due to dilution necessary for analysis. Sample contains high levels of reported analyte, non-target analyte, and/or matrix interference. |
| U | Analyte included in the analysis but not detected. |
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis. MRLs are adjusted if %Solids are less than 50%. |
| RPD | Relative Percent Difference |

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# North Creek Analytical
# Case Narrative

**Client: Forensic Environmental Services**
**Project Name: GS Roofing-Portland**
**Consultant Project #: None**
**Laboratory Work Order: P3K0348**

## Summary

Four water and fourteen soil samples were received by North Creek Analytical, Portland and logged in on 11/12/03. The samples were received at 1.4 degrees Centigrade.

## Sample Analysis

There were no anomalies encountered during the preparation and analysis of the samples. Qualifiers have been added to sample results as footnotes and are detailed in the *Notes and Definitions* section of the *Analytical Report*, page 62.

## QC Analysis

If surrogate and quality control parameters are outside established control limits it is noted on the appropriate pages of the *Analytical Report*. There were no anomalies encountered during the preparation and analysis of the QC samples that impacts data quality or integrity.

Brian L Cover 2-25-04

Project Manager Date

nca

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# CHAIN OF CUSTODY REPORT

**Work Order #:** P3K0348

CLIENT: Forensics Environmental

REPORT TO: Thomas F. Maguire
ADDRESS: Forensic Env Services
113 John Robert Thomas Dr.
Exton PA 19341
PHONE: 610 594-3940 FAX: 610 594-3943

INVOICE TO: GS Roofing/Certain Feed
6350 NW Front St.
Portland OR

P.O. NUMBER:

PROJECT NAME: GS Roofing - Portland

PROJECT NUMBER:

SAMPLED BY: Brian A. Richardson (BAR)

**TURNAROUND REQUEST** in Business Days *

Organic & Inorganic Analyses: [X] STD. 7 5 4 3 2 1 <1

Petroleum Hydrocarbon Analyses: 5 STD. 4 3 2 1 <1

OTHER Specify:

* Turnaround Requests less than standard may incur Rush Charges.

PRESERVATIVE / REQUESTED ANALYSES

| | CLIENT SAMPLE IDENTIFICATION | SAMPLING DATE/TIME | VOC's (MeOH) | VOC's (NaHSO4) | ~~TPH~~ (None) | TOC (None) | SVOC's PCB's (None) | VOCs (None) | NWTPH DX (None) | NWTPH G2 (None) | PP metals | MATRIX (W, S, O) | # OF CONT. | LOCATION / COMMENTS | NCA WO ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | MW-12-20.5 | 11-11-03 / 1128 | X | X | | X | X | | X | X | X | S | 7 | VOC's by 8260B SVOC's by 8270B | |
| 2 | MW-11-11-25 | 11-11-03 / 1520 | X | X | | X | X | | X | X | X | S | 7 | metals by 9060 PCB's by 8082 | |
| 3 | MW-11-26.25 | 11-11-03 / 1615 | | | | X | | | | | | S | 1 | | |
| 4 | TB-042 | 11-11-03 / 1000 | | | | | | X | | | | W | 3 | | |
| 5 | MW-14-16 | 11/12/03 / 1118 | X | X | | X | X | | X | X | X | S | 6 | | |
| 6 | Dry Well #2 | 11/12/03 / 1259 | X | X | | | X | | X | X | X | S | 6 | | |
| 7 | Dry Well #1 | 11/12/03 / 1241 | X | X | | | X | | X | X | X | S | 6 | | |
| 8 | MW-13-15 | 11/12/03 / 1432 | X | X | | X | X | | | | X | S | 5 | | |
| 9 | MW-13-25 | 11/12/03 / 1451 | | | | | | | X | X | | S | 1 | | |
| 10 | | | | | | | | | | | | | | | |

RELEASED BY: [signature] DATE: 11/12/03
PRINT NAME: Brian Richardson FIRM: Forensics Env TIME: 1615

RECEIVED BY: [signature] DATE: 11/12/03
PRINT NAME: Bob F FIRM: NCA TIME: 16:15

RELEASED BY: [signature] DATE:
PRINT NAME: FIRM: TIME:

RECEIVED BY: [signature] DATE: 11/12/03
PRINT NAME: Erica Dahn FIRM: NCA TIME: 1640

ADDITIONAL REMARKS:
Samples for metals, SVOC's & PCB's in same 4oz jar per lab sheet

TEMP: 1.4°C PAGE 1 OF 1

COC REV 1/03

digi #1

# NORTH CREEK ANALYTICAL COOLER RECEIPT FORM

(Army Corp. compliant)

Client: Forensics Env.

1. **Please sign for receipt and opening of** 1 **cooler or** ____ **other** ____

   By (print) Erica Dakan (sign) Erica Dakan

2. Date samples received 11/13/03 Date opened: Same X or ___/___/___

3. Delivered by: X NCA courier ___ FedEx ___ UPS ___ Courier ___ Client ___ Other ____

   Airbill # if applicable ____ (Put copy of shipping papers in file)

4. There were 0 custody seals present, signed by ____ date ___/___/___.

5. Were the custody seals unbroken and intact at the date and time of arrival? ___ Yes ___ No

6. Was ice used? X yes ___ no Type of ice: ___ blue ice ___ gel ice X real ice

   Temperature (degrees C) ____ Raytek thermometer 1.4°C Digi-Therm (probe temperature blank) digi #1

7. Are custody papers sealed in a plastic bag and taped inside to lid? X Yes ___ No

8. Were custody papers filled out properly (ink, signed, etc.)? X Yes ___ No

   If "no" please specify: ____

9. Was project identifiable from custody papers? X Yes ___ No

   Name of project CS Roofing (if applicable)

10. **Initial and date for unpacking:** [initials] **(initials)** **date** 11/13/3

11. Packing material: ___ bubble wrap/bag ___ styrofoam ___ cardboard none other

12. Were samples in bags? X Yes ___ No

13. Did all containers indicated on the COC arrive? X Yes ___ No

    If "no" please indicate which containers were absent ____

14. Were all containers unbroken and labels in good condition? X Yes ___ No

    If "no" please indicate which containers ____

15. Were all bottle labels complete (ID, date, time, signature, etc.)? X Yes ___ No

    Do the IDs, times, etc. agree with the COC? X Yes ___ No

    If "no" please indicate which containers ____

16. Are containers properly preserved for indicated analysis? X Yes ___ No

17. Is there adequate volume for the test(s) requested? X Yes ___ No

18. If voa vials were submitted, are they free of bubbles? X N/A ___ Yes ___ No

19. **Log-in phase: Date samples were logged in:** 11/13/03 **Elm Project # P** 3K0348

20. Logged in by (print) Sarah Passage (sign) [signature]

21. Was the project manager notified of status? (Use back of form as a record) ___ Yes X No

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February 01, 2005

Nick DeSalvo
Forensic Environmental Services
113 John Robert Thomas Dr
Exton, PA 19341

RE: GS Roofing-Portland

Enclosed are the results of analyses for samples received by the laboratory on 04/26/04 13:20.
The following list is a summary of the NCA Work Orders contained in this report.
If you have any questions concerning this report, please feel free to contact me.

| Work | Project | ProjectNumber |
|---|---|---|
| P4D0911 | GS Roofing-Portland | [none] |

Thank You,

Brian L Cone

Brian Cone, Industrial Services Manager

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

***North Creek Analytical, Inc.***
***Environmental Laboratory Network***

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| | | | |
|---|---|---|---|
| **Forensic Environmental Services** | Project Name: | **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: | [none] | Report Created: |
| Exton, PA 19341 | Project Manager: | Nick DeSalvo | 02/01/05 09:27 |

# ANALYTICAL REPORT FOR SAMPLES

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| TB042604 | P4D0911-01 | Water | 04/26/04 08:00 | 04/26/04 13:20 |
| MW-1 | P4D0911-02 | Water | 04/26/04 11:58 | 04/26/04 13:20 |
| MW-11 | P4D0911-03 | Water | 04/26/04 09:50 | 04/26/04 13:20 |
| MW-12 | P4D0911-04 | Water | 04/26/04 11:23 | 04/26/04 13:20 |
| MW-14 | P4D0911-05 | Water | 04/26/04 12:21 | 04/26/04 13:20 |
| MW-50 | P4D0911-06 | Water | 04/26/04 09:40 | 04/26/04 13:20 |

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phone: (907) 563.9200 fax: (907) 563.9210

| | | |
|---|---|---|
| **Forensic Environmental Services** | Project Name: **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: [none] | Report Created: |
| Exton, PA 19341 | Project Manager: Nick DeSalvo | 02/01/05 09:27 |

# Diesel and Heavy Range Hydrocarbons per NWTPH-Dx Method

**North Creek Analytical - Portland**

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Batch | Prepared | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **P4D0911-02 Water** | **MW-1** | **Sampled: 04/26/04 11:58** | | | | | | | | |
| Diesel Range Organics | NWTPH-Dx | ND | ----- | 0.250 | mg/l | 1x | 4041055 | 04/27/04 | 04/27/04 15:06 | |
| Heavy Oil Range Hydrocarbons | " | ND | ----- | 0.500 | " | " | " | " | " | |
| *Surrogate(s): 1-Chlorooctadecane* | | *Recovery: 70.3%* | | *Limits: 50 - 150 %* | | " | | | " | |
| **P4D0911-03 Water** | **MW-11** | **Sampled: 04/26/04 09:50** | | | | | | | | |
| Diesel Range Organics | NWTPH-Dx | ND | ----- | 0.250 | mg/l | 1x | 4041055 | 04/27/04 | 04/27/04 15:41 | |
| Heavy Oil Range Hydrocarbons | " | ND | ----- | 0.500 | " | " | " | " | " | |
| *Surrogate(s): 1-Chlorooctadecane* | | *Recovery: 80.7%* | | *Limits: 50 - 150 %* | | " | | | " | |
| **P4D0911-04 Water** | **MW-12** | **Sampled: 04/26/04 11:23** | | | | | | | | |
| Diesel Range Organics | NWTPH-Dx | ND | ----- | 0.250 | mg/l | 1x | 4041055 | 04/27/04 | 04/27/04 16:15 | |
| Heavy Oil Range Hydrocarbons | " | ND | ----- | 0.500 | " | " | " | " | " | |
| *Surrogate(s): 1-Chlorooctadecane* | | *Recovery: 74.5%* | | *Limits: 50 - 150 %* | | " | | | " | |
| **P4D0911-05 Water** | **MW-14** | **Sampled: 04/26/04 12:21** | | | | | | | | |
| Diesel Range Organics | NWTPH-Dx | ND | ----- | 0.625 | mg/l | 1x | 4041055 | 04/27/04 | 04/27/04 16:50 | R-01 |
| Heavy Oil Range Hydrocarbons | " | ND | ----- | 1.25 | " | " | " | " | " | R-01 |
| *Surrogate(s): 1-Chlorooctadecane* | | *Recovery: 71.2%* | | *Limits: 50 - 150 %* | | " | | | " | |
| **P4D0911-06 Water** | **MW-50** | **Sampled: 04/26/04 09:40** | | | | | | | | |
| Diesel Range Organics | NWTPH-Dx | ND | ----- | 0.250 | mg/l | 1x | 4041055 | 04/27/04 | 04/27/04 16:26 | |
| Heavy Oil Range Hydrocarbons | " | ND | ----- | 0.500 | " | " | " | " | " | |
| *Surrogate(s): 1-Chlorooctadecane* | | *Recovery: 81.5%* | | *Limits: 50 - 150 %* | | " | | | " | |

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| | | |
|---|---|---|
| **Forensic Environmental Services** | Project Name: **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: [none] | Report Created: |
| Exton, PA 19341 | Project Manager: Nick DeSalvo | 02/01/05 09:27 |

# Total Metals per EPA 6000/7000 Series Methods

**North Creek Analytical - Portland**

| Analyte | | Method | Result | MDL* | MRL | Units | Dil | Batch | Prepared | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **P4D0911-02** | **Water** | **MW-1** | **Sampled: 04/26/04 11:58** | | | | | | | | |
| Antimony | | EPA 6020 | ND | ----- | 0.00100 | mg/l | 1x | 4041197 | 04/29/04 | 04/30/04 01:39 | |
| **Arsenic** | | " | **0.0117** | ----- | 0.00100 | " | " | " | " | " | |
| Beryllium | | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| Cadmium | | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| Chromium | | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| Copper | | " | ND | ----- | 0.00200 | " | " | " | " | " | |
| **Iron** | | EPA 6010B | **11.8** | ----- | 0.100 | " | " | 4041244 | 04/29/04 | 05/05/04 22:49 | |
| Lead | | EPA 6020 | ND | ----- | 0.00100 | " | " | 4041197 | 04/29/04 | 04/30/04 01:39 | |
| **Manganese** | | " | **2.44** | ----- | 0.0122 | " | 6.09x | " | " | 04/30/04 01:44 | **R-02** |
| Nickel | | " | ND | ----- | 0.00200 | " | 1x | " | " | 04/30/04 01:39 | |
| Selenium | | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| Silver | | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| Thallium | | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| Zinc | | " | ND | ----- | 0.00500 | " | " | " | " | " | |
| **P4D0911-03** | **Water** | **MW-11** | **Sampled: 04/26/04 09:50** | | | | | | | | |
| Antimony | | EPA 6020 | ND | ----- | 0.00100 | mg/l | 1x | 4041197 | 04/29/04 | 04/30/04 01:49 | |
| **Arsenic** | | " | **0.00312** | ----- | 0.00100 | " | " | " | " | " | |
| Beryllium | | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| Cadmium | | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| Chromium | | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| Copper | | " | ND | ----- | 0.00200 | " | " | " | " | " | |
| **Iron** | | EPA 6010B | **8.65** | ----- | 0.100 | " | " | 4041244 | 04/29/04 | 05/05/04 22:53 | |
| Lead | | EPA 6020 | ND | ----- | 0.00100 | " | " | 4041197 | 04/29/04 | 04/30/04 01:49 | |
| **Manganese** | | " | **4.21** | ----- | 0.0124 | " | 6.22x | " | " | 04/30/04 01:54 | **R-02** |
| Nickel | | " | ND | ----- | 0.00200 | " | 1x | " | " | 04/30/04 01:49 | |
| Selenium | | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| Silver | | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| Thallium | | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| Zinc | | " | ND | ----- | 0.00500 | " | " | " | " | " | |



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|---|---|---|
| **Forensic Environmental Services** | Project Name: **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: [none] | Report Created: |
| Exton, PA 19341 | Project Manager: Nick DeSalvo | 02/01/05 09:27 |

# Total Metals per EPA 6000/7000 Series Methods

**North Creek Analytical - Portland**

| Analyte | | Method | Result | MDL* | MRL | Units | Dil | Batch | Prepared | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **P4D0911-04** | **Water** | **MW-12** | **Sampled: 04/26/04 11:23** | | | | | | | | |
| Antimony | | EPA 6020 | ND | ----- | 0.00100 | mg/l | 1x | 4041197 | 04/29/04 | 04/30/04 02:10 | |
| **Arsenic** | | " | **0.0315** | ----- | 0.00100 | " | " | " | " | " | |
| Beryllium | | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| Cadmium | | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| **Chromium** | | " | **0.00117** | ----- | 0.00100 | " | " | " | " | " | |
| Copper | | " | ND | ----- | 0.00200 | " | " | " | " | " | |
| **Iron** | | EPA 6010B | **33.8** | ----- | 0.100 | " | " | 4041244 | 04/29/04 | 05/05/04 22:58 | |
| Lead | | EPA 6020 | ND | ----- | 0.00100 | " | " | 4041197 | 04/29/04 | 04/30/04 02:10 | |
| **Manganese** | | " | **3.45** | ----- | 0.0120 | " | 5.99x | " | " | 04/30/04 02:15 | **R-02** |
| Nickel | | " | ND | ----- | 0.00200 | " | 1x | " | " | 04/30/04 02:10 | |
| Selenium | | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| Silver | | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| Thallium | | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| Zinc | | " | ND | ----- | 0.00500 | " | " | " | " | " | |
| **P4D0911-05** | **Water** | **MW-14** | **Sampled: 04/26/04 12:21** | | | | | | | | |
| Antimony | | EPA 6020 | ND | ----- | 0.00100 | mg/l | 1x | 4041197 | 04/29/04 | 04/30/04 02:20 | |
| **Arsenic** | | " | **0.00961** | ----- | 0.00100 | " | " | " | " | " | |
| Beryllium | | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| Cadmium | | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| **Chromium** | | " | **0.00341** | ----- | 0.00100 | " | " | " | " | " | |
| **Copper** | | " | **0.00804** | ----- | 0.00200 | " | " | " | " | " | |
| **Iron** | | EPA 6010B | **18.8** | ----- | 0.100 | " | " | 4041244 | 04/29/04 | 05/05/04 23:02 | |
| **Lead** | | EPA 6020 | **0.00497** | ----- | 0.00100 | " | " | 4041197 | 04/29/04 | 04/30/04 02:20 | |
| **Manganese** | | " | **8.43** | ----- | 0.0200 | " | 10x | " | " | 05/01/04 10:35 | **R-02** |
| **Nickel** | | " | **0.0155** | ----- | 0.00200 | " | 1x | " | " | 04/30/04 02:20 | |
| **Selenium** | | " | **0.0104** | ----- | 0.00100 | " | " | " | " | " | |
| Silver | | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| Thallium | | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| **Zinc** | | " | **0.0312** | ----- | 0.00500 | " | " | " | " | " | |



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| | | | |
|---|---|---|---|
| **Forensic Environmental Services** | Project Name: | **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: | [none] | Report Created: |
| Exton, PA 19341 | Project Manager: | Nick DeSalvo | 02/01/05 09:27 |

# Total Metals per EPA 6000/7000 Series Methods

**North Creek Analytical - Portland**

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Batch | Prepared | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **P4D0911-06 Water** | **MW-50** | **Sampled: 04/26/04 09:40** | | | | | | | | |
| Antimony | EPA 6020 | ND | ----- | 0.00100 | mg/l | 1x | 4041197 | 04/29/04 | 04/30/04 02:41 | |
| **Arsenic** | " | **0.00351** | ----- | 0.00100 | " | " | " | " | " | |
| Beryllium | " | ND | ----- | 0.00100 | " | " | " | " | 05/01/04 10:40 | |
| Cadmium | " | ND | ----- | 0.00100 | " | " | " | " | 04/30/04 02:41 | |
| Chromium | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| Copper | " | ND | ----- | 0.00200 | " | " | " | " | " | |
| **Iron** | EPA 6010B | **8.32** | ----- | 0.100 | " | " | 4041244 | 04/29/04 | 05/05/04 23:07 | |
| Lead | EPA 6020 | ND | ----- | 0.00100 | " | " | 4041197 | 04/29/04 | 04/30/04 02:41 | |
| **Manganese** | " | **4.19** | ----- | 0.0121 | " | 6.07x | " | " | 04/30/04 02:46 | **R-02** |
| Nickel | " | ND | ----- | 0.00200 | " | 1x | " | " | 04/30/04 02:41 | |
| Selenium | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| Silver | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| Thallium | " | ND | ----- | 0.00100 | " | " | " | " | 05/01/04 10:40 | |
| Zinc | " | ND | ----- | 0.00500 | " | " | " | " | 04/30/04 02:41 | |

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| | | | |
|---|---|---|---|
| **Forensic Environmental Services** | Project Name: | **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: | [none] | Report Created: |
| Exton, PA 19341 | Project Manager: | Nick DeSalvo | 02/01/05 09:27 |

# Dissolved Metals per EPA 6000/7000 Series Methods

**North Creek Analytical - Portland**

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Batch | Prepared | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **P4D0911-02 Water MW-1 Sampled: 04/26/04 11:58** | | | | | | | | | | |
| Antimony | EPA 6020 | ND | ----- | 0.00100 | mg/l | 1x | 4041241 | 04/29/04 | 05/01/04 22:58 | |
| **Arsenic** | " | **0.00632** | ----- | 0.00100 | " | " | " | " | " | |
| Beryllium | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| Cadmium | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| Chromium | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| Copper | " | ND | ----- | 0.00200 | " | " | " | " | " | |
| **Iron** | EPA 6010B | **2.04** | ----- | 0.100 | " | " | " | " | 05/10/04 16:50 | |
| Lead | EPA 6020 | ND | ----- | 0.00100 | " | " | " | " | 05/01/04 22:58 | |
| **Manganese** | " | **2.32** | ----- | 0.0200 | " | 10x | " | " | 05/07/04 22:32 | |
| **Nickel** | " | **0.00257** | ----- | 0.00200 | " | 1x | " | " | 05/01/04 22:58 | |
| Selenium | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| Silver | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| Thallium | " | ND | ----- | 0.00100 | " | " | " | " | 05/10/04 18:54 | |
| Zinc | " | ND | ----- | 0.00500 | " | " | " | " | 05/01/04 22:58 | |
| **P4D0911-03 Water MW-11 Sampled: 04/26/04 09:50** | | | | | | | | | | |
| Antimony | EPA 6020 | ND | ----- | 0.00100 | mg/l | 1x | 4041241 | 04/29/04 | 05/01/04 23:26 | |
| **Arsenic** | " | **0.00153** | ----- | 0.00100 | " | " | " | " | " | |
| Beryllium | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| Cadmium | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| Chromium | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| Copper | " | ND | ----- | 0.00200 | " | " | " | " | " | |
| **Iron** | EPA 6010B | **1.54** | ----- | 0.100 | " | " | 4041240 | 04/30/04 | 05/04/04 00:52 | |
| Lead | EPA 6020 | ND | ----- | 0.00100 | " | " | 4041241 | 04/29/04 | 05/01/04 23:26 | |
| **Manganese** | " | **4.14** | ----- | 0.0200 | " | 10x | " | " | 05/07/04 22:47 | |
| Nickel | " | ND | ----- | 0.00200 | " | 1x | " | " | 05/01/04 23:26 | |
| Selenium | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| Silver | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| Thallium | " | ND | ----- | 0.00100 | " | " | " | " | 05/10/04 19:12 | |
| Zinc | " | ND | ----- | 0.00500 | " | " | " | " | 05/01/04 23:26 | |



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| | | |
|---|---|---|
| **Forensic Environmental Services** | Project Name: **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: [none] | Report Created: |
| Exton, PA 19341 | Project Manager: Nick DeSalvo | 02/01/05 09:27 |

# Dissolved Metals per EPA 6000/7000 Series Methods

**North Creek Analytical - Portland**

| Analyte | | Method | Result | MDL* | MRL | Units | Dil | Batch | Prepared | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **P4D0911-04** | **Water** | **MW-12** | **Sampled: 04/26/04 11:23** | | | | | | | | |
| Antimony | | EPA 6020 | ND | ----- | 0.00100 | mg/l | 1x | 4041241 | 04/29/04 | 05/01/04 23:40 | |
| **Arsenic** | | " | **0.00487** | ----- | 0.00100 | " | " | " | " | " | |
| Beryllium | | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| Cadmium | | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| Chromium | | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| Copper | | " | ND | ----- | 0.00200 | " | " | " | " | " | |
| **Iron** | | EPA 6010B | **5.80** | ----- | 0.100 | " | " | 4041240 | 04/30/04 | 05/04/04 00:56 | |
| Lead | | EPA 6020 | ND | ----- | 0.00100 | " | " | 4041241 | 04/29/04 | 05/01/04 23:40 | |
| **Manganese** | | " | **3.43** | ----- | 0.0200 | " | 10x | " | " | 05/07/04 23:02 | |
| Nickel | | " | ND | ----- | 0.00200 | " | 1x | " | " | 05/01/04 23:40 | |
| Selenium | | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| Silver | | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| Thallium | | " | ND | ----- | 0.00100 | " | " | " | " | 05/04/04 21:14 | |
| Zinc | | " | ND | ----- | 0.00500 | " | " | " | " | 05/01/04 23:40 | |
| **P4D0911-05** | **Water** | **MW-14** | **Sampled: 04/26/04 12:21** | | | | | | | | |
| Antimony | | EPA 6020 | ND | ----- | 0.00100 | mg/l | 1x | 4041241 | 04/29/04 | 05/10/04 11:19 | |
| **Arsenic** | | " | **0.00344** | ----- | 0.00100 | " | " | " | " | " | |
| Beryllium | | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| Cadmium | | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| Chromium | | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| Copper | | " | ND | ----- | 0.00200 | " | " | " | " | " | |
| **Iron** | | EPA 6010B | **0.129** | ----- | 0.100 | " | " | 4041240 | 04/30/04 | 05/04/04 01:01 | |
| Lead | | EPA 6020 | ND | ----- | 0.00100 | " | " | 4041241 | 04/29/04 | 05/04/04 21:28 | |
| **Manganese** | | " | **8.24** | ----- | 0.0400 | " | 20x | " | " | 05/07/04 23:16 | |
| **Nickel** | | " | **0.00831** | ----- | 0.00200 | " | 1x | " | " | 05/10/04 11:19 | |
| Selenium | | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| Silver | | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| Thallium | | " | ND | ----- | 0.00100 | " | " | " | " | 05/04/04 21:28 | |
| Zinc | | " | ND | ----- | 0.00500 | " | " | " | " | 05/10/04 11:19 | |



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| | | |
|---|---|---|
| **Forensic Environmental Services** | Project Name: **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: [none] | Report Created: |
| Exton, PA 19341 | Project Manager: Nick DeSalvo | 02/01/05 09:27 |

# Dissolved Metals per EPA 6000/7000 Series Methods

**North Creek Analytical - Portland**

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Batch | Prepared | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **P4D0911-06 Water** | **MW-50** | **Sampled: 04/26/04 09:40** | | | | | | | | |
| Antimony | EPA 6020 | ND | ----- | 0.00100 | mg/l | 1x | 4041241 | 04/29/04 | 05/10/04 11:28 | |
| **Arsenic** | " | **0.00135** | ----- | 0.00100 | " | " | " | " | " | |
| Beryllium | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| Cadmium | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| Chromium | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| Copper | " | ND | ----- | 0.00200 | " | " | " | " | " | |
| **Iron** | EPA 6010B | **1.17** | ----- | 0.100 | " | " | 4041240 | 04/30/04 | 05/04/04 01:06 | |
| Lead | EPA 6020 | ND | ----- | 0.00100 | " | " | 4041241 | 04/29/04 | 05/04/04 21:36 | |
| **Manganese** | " | **4.43** | ----- | 0.0400 | " | 20x | " | " | 05/07/04 23:24 | |
| Nickel | " | ND | ----- | 0.00200 | " | 1x | " | " | 05/10/04 11:28 | |
| Selenium | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| Silver | " | ND | ----- | 0.00100 | " | " | " | " | " | |
| Thallium | " | ND | ----- | 0.00100 | " | " | " | " | 05/04/04 21:36 | |
| Zinc | " | ND | ----- | 0.00500 | " | " | " | " | 05/10/04 11:28 | |



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|---|---|---|
| **Forensic Environmental Services** | Project Name: **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: [none] | Report Created: |
| Exton, PA 19341 | Project Manager: Nick DeSalvo | 02/01/05 09:27 |

# Dissolved Mercury per EPA Method 7470A

**North Creek Analytical - Portland**

| Analyte | | Method | Result | MDL* | MRL | Units | Dil | Batch | Prepared | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **P4D0911-02** | **Water** | **MW-1** | **Sampled: 04/26/04 11:58** | | | | | | | | |
| Mercury | | EPA 7470A | ND | ----- | 0.000200 | mg/l | 1x | 4041095 | 04/27/04 | 04/27/04 15:17 | **M-04** |
| **P4D0911-03** | **Water** | **MW-11** | **Sampled: 04/26/04 09:50** | | | | | | | | |
| Mercury | | EPA 7470A | ND | ----- | 0.000200 | mg/l | 1x | 4041095 | 04/27/04 | 04/27/04 15:20 | **M-04** |
| **P4D0911-04** | **Water** | **MW-12** | **Sampled: 04/26/04 11:23** | | | | | | | | |
| Mercury | | EPA 7470A | ND | ----- | 0.000200 | mg/l | 1x | 4041095 | 04/27/04 | 04/27/04 15:23 | **M-04** |
| **P4D0911-05** | **Water** | **MW-14** | **Sampled: 04/26/04 12:21** | | | | | | | | |
| Mercury | | EPA 7470A | ND | ----- | 0.000200 | mg/l | 1x | 4041095 | 04/27/04 | 04/27/04 15:25 | **M-04** |
| **P4D0911-06** | **Water** | **MW-50** | **Sampled: 04/26/04 09:40** | | | | | | | | |
| Mercury | | EPA 7470A | ND | ----- | 0.000200 | mg/l | 1x | 4041095 | 04/27/04 | 04/27/04 15:28 | **M-04** |



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|---|---|---|
| **Forensic Environmental Services** | Project Name: **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: [none] | Report Created: |
| Exton, PA 19341 | Project Manager: Nick DeSalvo | 02/01/05 09:27 |

# Total Mercury per EPA Method 7470A

## North Creek Analytical - Portland

| Analyte | | Method | Result | MDL* | MRL | Units | Dil | Batch | Prepared | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **P4D0911-02** | **Water** | **MW-1** | **Sampled: 04/26/04 11:58** | | | | | | | | |
| Mercury | | EPA 7470A | ND | ----- | 0.000200 | mg/l | 1x | 4041094 | 04/27/04 | 04/27/04 14:12 | |
| **P4D0911-03** | **Water** | **MW-11** | **Sampled: 04/26/04 09:50** | | | | | | | | |
| Mercury | | EPA 7470A | ND | ----- | 0.000200 | mg/l | 1x | 4041094 | 04/27/04 | 04/27/04 14:15 | |
| **P4D0911-04** | **Water** | **MW-12** | **Sampled: 04/26/04 11:23** | | | | | | | | |
| Mercury | | EPA 7470A | ND | ----- | 0.000200 | mg/l | 1x | 4041094 | 04/27/04 | 04/27/04 14:17 | |
| **P4D0911-05** | **Water** | **MW-14** | **Sampled: 04/26/04 12:21** | | | | | | | | |
| Mercury | | EPA 7470A | ND | ----- | 0.000200 | mg/l | 1x | 4041094 | 04/27/04 | 04/27/04 14:20 | |
| **P4D0911-06** | **Water** | **MW-50** | **Sampled: 04/26/04 09:40** | | | | | | | | |
| Mercury | | EPA 7470A | ND | ----- | 0.000200 | mg/l | 1x | 4041094 | 04/27/04 | 04/27/04 14:22 | |



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| | | |
|---|---|---|
| **Forensic Environmental Services** | Project Name: **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: [none] | Report Created: |
| Exton, PA 19341 | Project Manager: Nick DeSalvo | 02/01/05 09:27 |

# Polychlorinated Biphenyls per EPA Method 8082

**North Creek Analytical - Portland**

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Batch | Prepared | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **P4D0911-02 Water MW-1 Sampled: 04/26/04 11:58** | | | | | | | | | | |
| Aroclor 1016 | EPA 8082 | ND | ----- | 0.500 | ug/l | 1x | 4041066 | 04/27/04 | 04/30/04 17:18 | |
| Aroclor 1221 | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Aroclor 1232 | " | ND | ----- | 0.500 | " | " | " | " | " | |
| Aroclor 1242 | " | ND | ----- | 0.500 | " | " | " | " | " | |
| Aroclor 1248 | " | ND | ----- | 0.500 | " | " | " | " | " | |
| Aroclor 1254 | " | ND | ----- | 0.500 | " | " | " | " | " | |
| Aroclor 1260 | " | ND | ----- | 0.500 | " | " | " | " | " | |
| *Surrogate(s): 2,4,5,6-Tetrachloro-m-xylene* | | *Recovery: 100%* | | *Limits: 16 - 137 %* | | " | | | " | |
| *Decachlorobiphenyl* | | *38.0%* | | *12 - 130 %* | | " | | | " | |
| **P4D0911-03 Water MW-11 Sampled: 04/26/04 09:50** | | | | | | | | | | |
| Aroclor 1016 | EPA 8082 | ND | ----- | 0.500 | ug/l | 1x | 4041066 | 04/27/04 | 04/30/04 17:37 | |
| Aroclor 1221 | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Aroclor 1232 | " | ND | ----- | 0.500 | " | " | " | " | " | |
| Aroclor 1242 | " | ND | ----- | 0.500 | " | " | " | " | " | |
| Aroclor 1248 | " | ND | ----- | 0.500 | " | " | " | " | " | |
| Aroclor 1254 | " | ND | ----- | 0.500 | " | " | " | " | " | |
| Aroclor 1260 | " | ND | ----- | 0.500 | " | " | " | " | " | |
| *Surrogate(s): 2,4,5,6-Tetrachloro-m-xylene* | | *Recovery: 97.3%* | | *Limits: 16 - 137 %* | | " | | | " | |
| *Decachlorobiphenyl* | | *40.3%* | | *12 - 130 %* | | " | | | " | |



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|---|---|---|
| **Forensic Environmental Services** | Project Name: **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: [none] | Report Created: |
| Exton, PA 19341 | Project Manager: Nick DeSalvo | 02/01/05 09:27 |

# Polychlorinated Biphenyls per EPA Method 8082

**North Creek Analytical - Portland**

| Analyte | | Method | Result | MDL* | MRL | Units | Dil | Batch | Prepared | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **P4D0911-04** | **Water** | **MW-12** | **Sampled: 04/26/04 11:23** | | | | | | | | |
| Aroclor 1016 | | EPA 8082 | ND | ----- | 0.500 | ug/l | 1x | 4041066 | 04/27/04 | 04/30/04 17:56 | |
| Aroclor 1221 | | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Aroclor 1232 | | " | ND | ----- | 0.500 | " | " | " | " | " | |
| Aroclor 1242 | | " | ND | ----- | 0.500 | " | " | " | " | " | |
| Aroclor 1248 | | " | ND | ----- | 0.500 | " | " | " | " | " | |
| Aroclor 1254 | | " | ND | ----- | 0.500 | " | " | " | " | " | |
| Aroclor 1260 | | " | ND | ----- | 0.500 | " | " | " | " | " | |
| *Surrogate(s):* | *2,4,5,6-Tetrachloro-m-xylene* | | *Recovery: 94.7%* | | *Limits: 16 - 137 %* | | " | | | " | |
| | *Decachlorobiphenyl* | | *37.3%* | | *12 - 130 %* | | " | | | " | |
| **P4D0911-05** | **Water** | **MW-14** | **Sampled: 04/26/04 12:21** | | | | | | | | **R-01** |
| Aroclor 1016 | | EPA 8082 | ND | ----- | 1.00 | ug/l | 1x | 4041066 | 04/27/04 | 04/30/04 15:45 | |
| Aroclor 1221 | | " | ND | ----- | 2.00 | " | " | " | " | " | |
| Aroclor 1232 | | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Aroclor 1242 | | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Aroclor 1248 | | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Aroclor 1254 | | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Aroclor 1260 | | " | ND | ----- | 1.00 | " | " | " | " | " | |
| *Surrogate(s):* | *2,4,5,6-Tetrachloro-m-xylene* | | *Recovery: 97.0%* | | *Limits: 16 - 137 %* | | " | | | " | |
| | *Decachlorobiphenyl* | | *59.6%* | | *12 - 130 %* | | " | | | " | |



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| | | |
|---|---|---|
| **Forensic Environmental Services** | Project Name: **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: [none] | Report Created: |
| Exton, PA 19341 | Project Manager: Nick DeSalvo | 02/01/05 09:27 |

# Polychlorinated Biphenyls per EPA Method 8082

**North Creek Analytical - Portland**

| Analyte | | Method | Result | MDL* | MRL | Units | Dil | Batch | Prepared | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **P4D0911-06** | **Water** | **MW-50** | **Sampled: 04/26/04 09:40** | | | | | | | | |
| Aroclor 1016 | | EPA 8082 | ND | ----- | 0.500 | ug/l | 1x | 4041066 | 04/27/04 | 04/30/04 16:07 | |
| Aroclor 1221 | | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Aroclor 1232 | | " | ND | ----- | 0.500 | " | " | " | " | " | |
| Aroclor 1242 | | " | ND | ----- | 0.500 | " | " | " | " | " | |
| Aroclor 1248 | | " | ND | ----- | 0.500 | " | " | " | " | " | |
| Aroclor 1254 | | " | ND | ----- | 0.500 | " | " | " | " | " | |
| Aroclor 1260 | | " | ND | ----- | 0.500 | " | " | " | " | " | |
| *Surrogate(s):* | *2,4,5,6-Tetrachloro-m-xylene* | | *Recovery: 87.1%* | | *Limits: 16 - 137 %* | | " | | | " | |
| | *Decachlorobiphenyl* | | *36.2%* | | *12 - 130 %* | | " | | | " | |



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| **Forensic Environmental Services** | Project Name: **GS Roofing-Portland** | |
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| Exton, PA 19341 | Project Manager: Nick DeSalvo | 02/01/05 09:27 |

# Volatile Organic Compounds per EPA Method 8260B

## North Creek Analytical - Portland

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Batch | Prepared | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **P4D0911-01 Water** | **TB042604** | **Sampled: 04/26/04 08:00** | | | | | | | | |
| Acetone | EPA 8260B | ND | ----- | 25.0 | ug/l | 1x | 4041072 | 04/27/04 | 04/27/04 14:35 | |
| Benzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Bromobenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Bromochloromethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Bromodichloromethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Bromoform | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Bromomethane | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2-Butanone | " | ND | ----- | 10.0 | " | " | " | " | " | |
| n-Butylbenzene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| sec-Butylbenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| tert-Butylbenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Carbon disulfide | " | ND | ----- | 10.0 | " | " | " | " | " | |
| Carbon tetrachloride | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Chlorobenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Chloroethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Chloroform | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Chloromethane | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2-Chlorotoluene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 4-Chlorotoluene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2-Dibromo-3-chloropropane | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Dibromochloromethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2-Dibromoethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Dibromomethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2-Dichlorobenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,3-Dichlorobenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,4-Dichlorobenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Dichlorodifluoromethane | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 1,1-Dichloroethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2-Dichloroethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,1-Dichloroethene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| cis-1,2-Dichloroethene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| trans-1,2-Dichloroethene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2-Dichloropropane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,3-Dichloropropane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 2,2-Dichloropropane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,1-Dichloropropene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| cis-1,3-Dichloropropene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| trans-1,3-Dichloropropene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Ethylbenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Hexachlorobutadiene | " | ND | ----- | 2.00 | " | " | " | " | " | |
| 2-Hexanone | " | ND | ----- | 10.0 | " | " | " | " | " | |
| Isopropylbenzene | " | ND | ----- | 2.00 | " | " | " | " | " | |



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| **Forensic Environmental Services** | Project Name: **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: [none] | Report Created: |
| Exton, PA 19341 | Project Manager: Nick DeSalvo | 02/01/05 09:27 |

# Volatile Organic Compounds per EPA Method 8260B

## North Creek Analytical - Portland

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Batch | Prepared | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **P4D0911-01 Water** | **TB042604** | **Sampled: 04/26/04 08:00** | | | | | | | | |
| p-Isopropyltoluene | EPA 8260B | ND | ----- | 2.00 | ug/l | 1x | 4041072 | 04/27/04 | 04/27/04 14:35 | |
| 4-Methyl-2-pentanone | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Methyl tert-butyl ether | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Methylene chloride | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Naphthalene | " | ND | ----- | 2.00 | " | " | " | " | " | |
| n-Propylbenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Styrene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,1,1,2-Tetrachloroethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,1,2,2-Tetrachloroethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Tetrachloroethene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Toluene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2,3-Trichlorobenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,1,1-Trichloroethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,1,2-Trichloroethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Trichloroethene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Trichlorofluoromethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2,3-Trichloropropane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2,4-Trimethylbenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,3,5-Trimethylbenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Vinyl chloride | " | ND | ----- | 1.00 | " | " | " | " | " | |
| o-Xylene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| m,p-Xylene | " | ND | ----- | 2.00 | " | " | " | " | " | |
| *Surrogate(s): 4-BFB* | | *Recovery: 107%* | | *Limits: 75 - 120 %* | | " | | | " | |
| *1,2-DCA-d4* | | *102%* | | *77 - 129 %* | | " | | | " | |
| *Dibromofluoromethane* | | *106%* | | *80 - 121 %* | | " | | | " | |
| *Toluene-d8* | | *103%* | | *80 - 120 %* | | " | | | " | |



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Brian L Cone

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| | | |
|---|---|---|
| **Forensic Environmental Services** | Project Name: **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: [none] | Report Created: |
| Exton, PA 19341 | Project Manager: Nick DeSalvo | 02/01/05 09:27 |

# Volatile Organic Compounds per EPA Method 8260B

**North Creek Analytical - Portland**

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Batch | Prepared | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **P4D0911-02 Water** | **MW-1** | **Sampled: 04/26/04 11:58** | | | | | | | | |
| Acetone | EPA 8260B | ND | ----- | 25.0 | ug/l | 1x | 4041072 | 04/27/04 | 04/27/04 20:34 | |
| Benzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Bromobenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Bromochloromethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Bromodichloromethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Bromoform | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Bromomethane | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2-Butanone | " | ND | ----- | 10.0 | " | " | " | " | " | |
| n-Butylbenzene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| sec-Butylbenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| tert-Butylbenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Carbon disulfide | " | ND | ----- | 10.0 | " | " | " | " | " | |
| Carbon tetrachloride | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Chlorobenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Chloroethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Chloroform | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Chloromethane | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2-Chlorotoluene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 4-Chlorotoluene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2-Dibromo-3-chloropropane | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Dibromochloromethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2-Dibromoethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Dibromomethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2-Dichlorobenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,3-Dichlorobenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,4-Dichlorobenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Dichlorodifluoromethane | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 1,1-Dichloroethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2-Dichloroethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,1-Dichloroethene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| cis-1,2-Dichloroethene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| trans-1,2-Dichloroethene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2-Dichloropropane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,3-Dichloropropane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 2,2-Dichloropropane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,1-Dichloropropene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| cis-1,3-Dichloropropene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| trans-1,3-Dichloropropene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Ethylbenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Hexachlorobutadiene | " | ND | ----- | 2.00 | " | " | " | " | " | |
| 2-Hexanone | " | ND | ----- | 10.0 | " | " | " | " | " | |
| **Isopropylbenzene** | " | **3.23** | ----- | 2.00 | " | " | " | " | " | |

North Creek Analytical - Portland

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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Brian Cone, Industrial Services Manager

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*Environmental Laboratory Network*

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| | | |
|---|---|---|
| **Forensic Environmental Services** | Project Name: **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: [none] | Report Created: |
| Exton, PA 19341 | Project Manager: Nick DeSalvo | 02/01/05 09:27 |

# Volatile Organic Compounds per EPA Method 8260B

**North Creek Analytical - Portland**

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Batch | Prepared | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **P4D0911-02 Water** | **MW-1** | **Sampled: 04/26/04 11:58** | | | | | | | | |
| p-Isopropyltoluene | EPA 8260B | ND | ----- | 2.00 | ug/l | 1x | 4041072 | 04/27/04 | 04/27/04 20:34 | |
| 4-Methyl-2-pentanone | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Methyl tert-butyl ether | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Methylene chloride | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Naphthalene | " | ND | ----- | 2.00 | " | " | " | " | " | |
| **n-Propylbenzene** | " | **5.80** | ----- | 1.00 | " | " | " | " | " | |
| Styrene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,1,1,2-Tetrachloroethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,1,2,2-Tetrachloroethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Tetrachloroethene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Toluene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2,3-Trichlorobenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,1,1-Trichloroethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,1,2-Trichloroethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Trichloroethene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Trichlorofluoromethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2,3-Trichloropropane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2,4-Trimethylbenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,3,5-Trimethylbenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Vinyl chloride | " | ND | ----- | 1.00 | " | " | " | " | " | |
| o-Xylene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| m,p-Xylene | " | ND | ----- | 2.00 | " | " | " | " | " | |
| *Surrogate(s): 4-BFB* | | *Recovery: 110%* | | *Limits: 75 - 120 %* | | " | | | " | |
| *1,2-DCA-d4* | | *100%* | | *77 - 129 %* | | " | | | " | |
| *Dibromofluoromethane* | | *102%* | | *80 - 121 %* | | " | | | " | |
| *Toluene-d8* | | *97.0%* | | *80 - 120 %* | | " | | | " | |

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| | | |
|---|---|---|
| **Forensic Environmental Services** | Project Name: **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: [none] | Report Created: |
| Exton, PA 19341 | Project Manager: Nick DeSalvo | 02/01/05 09:27 |

# Volatile Organic Compounds per EPA Method 8260B

## North Creek Analytical - Portland

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Batch | Prepared | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **P4D0911-03 Water** | **MW-11** | **Sampled: 04/26/04 09:50** | | | | | | | | |
| Acetone | EPA 8260B | ND | ----- | 25.0 | ug/l | 1x | 4041072 | 04/27/04 | 04/27/04 21:02 | |
| Benzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Bromobenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Bromochloromethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Bromodichloromethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Bromoform | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Bromomethane | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2-Butanone | " | ND | ----- | 10.0 | " | " | " | " | " | |
| n-Butylbenzene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| **sec-Butylbenzene** | " | **2.10** | ----- | 1.00 | " | " | " | " | " | |
| tert-Butylbenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Carbon disulfide | " | ND | ----- | 10.0 | " | " | " | " | " | |
| Carbon tetrachloride | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Chlorobenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Chloroethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Chloroform | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Chloromethane | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2-Chlorotoluene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 4-Chlorotoluene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2-Dibromo-3-chloropropane | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Dibromochloromethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2-Dibromoethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Dibromomethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2-Dichlorobenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,3-Dichlorobenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,4-Dichlorobenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Dichlorodifluoromethane | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 1,1-Dichloroethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2-Dichloroethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,1-Dichloroethene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| cis-1,2-Dichloroethene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| trans-1,2-Dichloroethene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2-Dichloropropane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,3-Dichloropropane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 2,2-Dichloropropane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,1-Dichloropropene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| cis-1,3-Dichloropropene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| trans-1,3-Dichloropropene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Ethylbenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Hexachlorobutadiene | " | ND | ----- | 2.00 | " | " | " | " | " | |
| 2-Hexanone | " | ND | ----- | 10.0 | " | " | " | " | " | |
| Isopropylbenzene | " | ND | ----- | 2.00 | " | " | " | " | " | |



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| | | | |
|---|---|---|---|
| **Forensic Environmental Services** | Project Name: | **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: | [none] | Report Created: |
| Exton, PA 19341 | Project Manager: | Nick DeSalvo | 02/01/05 09:27 |

# Volatile Organic Compounds per EPA Method 8260B

**North Creek Analytical - Portland**

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Batch | Prepared | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **P4D0911-03 Water** | **MW-11** | **Sampled: 04/26/04 09:50** | | | | | | | | |
| p-Isopropyltoluene | EPA 8260B | ND | ----- | 2.00 | ug/l | 1x | 4041072 | 04/27/04 | 04/27/04 21:02 | |
| 4-Methyl-2-pentanone | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Methyl tert-butyl ether | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Methylene chloride | " | ND | ----- | 5.00 | " | " | " | " | " | |
| **Naphthalene** | " | **14.8** | ----- | 2.00 | " | " | " | " | " | |
| **n-Propylbenzene** | " | **3.52** | ----- | 1.00 | " | " | " | " | " | |
| Styrene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,1,1,2-Tetrachloroethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,1,2,2-Tetrachloroethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Tetrachloroethene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Toluene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2,3-Trichlorobenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,1,1-Trichloroethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,1,2-Trichloroethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Trichloroethene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Trichlorofluoromethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2,3-Trichloropropane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| **1,2,4-Trimethylbenzene** | " | **30.1** | ----- | 1.00 | " | " | " | " | " | |
| **1,3,5-Trimethylbenzene** | " | **6.04** | ----- | 1.00 | " | " | " | " | " | |
| Vinyl chloride | " | ND | ----- | 1.00 | " | " | " | " | " | |
| **o-Xylene** | " | **1.19** | ----- | 1.00 | " | " | " | " | " | |
| **m,p-Xylene** | " | **2.35** | ----- | 2.00 | " | " | " | " | " | |
| *Surrogate(s): 4-BFB* | *Recovery: 102%* | | *Limits: 75 - 120 %* | | " | | | | " | |
| *1,2-DCA-d4* | *101%* | | *77 - 129 %* | | " | | | | " | |
| *Dibromofluoromethane* | *106%* | | *80 - 121 %* | | " | | | | " | |
| *Toluene-d8* | *102%* | | *80 - 120 %* | | " | | | | " | |

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| | | |
|---|---|---|
| **Forensic Environmental Services** | Project Name: **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: [none] | Report Created: |
| Exton, PA 19341 | Project Manager: Nick DeSalvo | 02/01/05 09:27 |

# Volatile Organic Compounds per EPA Method 8260B

## North Creek Analytical - Portland

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Batch | Prepared | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **P4D0911-04 Water** | **MW-12** | **Sampled: 04/26/04 11:23** | | | | | | | | |
| Acetone | EPA 8260B | ND | ----- | 25.0 | ug/l | 1x | 4041072 | 04/27/04 | 04/27/04 21:29 | |
| Benzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Bromobenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Bromochloromethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Bromodichloromethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Bromoform | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Bromomethane | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2-Butanone | " | ND | ----- | 10.0 | " | " | " | " | " | |
| n-Butylbenzene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| sec-Butylbenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| tert-Butylbenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Carbon disulfide | " | ND | ----- | 10.0 | " | " | " | " | " | |
| Carbon tetrachloride | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Chlorobenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Chloroethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Chloroform | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Chloromethane | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2-Chlorotoluene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 4-Chlorotoluene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2-Dibromo-3-chloropropane | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Dibromochloromethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2-Dibromoethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Dibromomethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2-Dichlorobenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,3-Dichlorobenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,4-Dichlorobenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Dichlorodifluoromethane | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 1,1-Dichloroethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2-Dichloroethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,1-Dichloroethene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| cis-1,2-Dichloroethene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| trans-1,2-Dichloroethene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2-Dichloropropane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,3-Dichloropropane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 2,2-Dichloropropane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,1-Dichloropropene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| cis-1,3-Dichloropropene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| trans-1,3-Dichloropropene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Ethylbenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Hexachlorobutadiene | " | ND | ----- | 2.00 | " | " | " | " | " | |
| 2-Hexanone | " | ND | ----- | 10.0 | " | " | " | " | " | |
| Isopropylbenzene | " | ND | ----- | 2.00 | " | " | " | " | " | |

North Creek Analytical - Portland

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Brian L Cone

Brian Cone, Industrial Services Manager

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*Environmental Laboratory Network*

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| | | |
|---|---|---|
| **Forensic Environmental Services** | Project Name: **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: [none] | Report Created: |
| Exton, PA 19341 | Project Manager: Nick DeSalvo | 02/01/05 09:27 |

# Volatile Organic Compounds per EPA Method 8260B

**North Creek Analytical - Portland**

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Batch | Prepared | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **P4D0911-04 Water** | **MW-12** | **Sampled: 04/26/04 11:23** | | | | | | | | |
| p-Isopropyltoluene | EPA 8260B | ND | ----- | 2.00 | ug/l | 1x | 4041072 | 04/27/04 | 04/27/04 21:29 | |
| 4-Methyl-2-pentanone | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Methyl tert-butyl ether | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Methylene chloride | " | ND | ----- | 5.00 | " | " | " | " | " | |
| **Naphthalene** | " | **2.98** | ----- | 2.00 | " | " | " | " | " | |
| n-Propylbenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Styrene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,1,1,2-Tetrachloroethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,1,2,2-Tetrachloroethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Tetrachloroethene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Toluene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2,3-Trichlorobenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,1,1-Trichloroethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,1,2-Trichloroethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Trichloroethene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Trichlorofluoromethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2,3-Trichloropropane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| **1,2,4-Trimethylbenzene** | " | **5.12** | ----- | 1.00 | " | " | " | " | " | |
| **1,3,5-Trimethylbenzene** | " | **1.12** | ----- | 1.00 | " | " | " | " | " | |
| Vinyl chloride | " | ND | ----- | 1.00 | " | " | " | " | " | |
| o-Xylene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| m,p-Xylene | " | ND | ----- | 2.00 | " | " | " | " | " | |
| *Surrogate(s): 4-BFB* | | *Recovery: 108%* | | *Limits: 75 - 120 %* | | " | | | " | |
| *1,2-DCA-d4* | | *100%* | | *77 - 129 %* | | " | | | " | |
| *Dibromofluoromethane* | | *101%* | | *80 - 121 %* | | " | | | " | |
| *Toluene-d8* | | *99.5%* | | *80 - 120 %* | | " | | | " | |

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phone: (907) 563.9200 fax: (907) 563.9210

| | | |
|---|---|---|
| **Forensic Environmental Services** | Project Name: **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: [none] | Report Created: |
| Exton, PA 19341 | Project Manager: Nick DeSalvo | 02/01/05 09:27 |

# Volatile Organic Compounds per EPA Method 8260B

**North Creek Analytical - Portland**

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Batch | Prepared | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **P4D0911-05 Water** | **MW-14** | **Sampled: 04/26/04 12:21** | | | | | | | | |
| Acetone | EPA 8260B | ND | ----- | 25.0 | ug/l | 1x | 4041072 | 04/27/04 | 04/27/04 21:57 | |
| Benzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Bromobenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Bromochloromethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Bromodichloromethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Bromoform | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Bromomethane | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2-Butanone | " | ND | ----- | 10.0 | " | " | " | " | " | |
| n-Butylbenzene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| sec-Butylbenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| tert-Butylbenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Carbon disulfide | " | ND | ----- | 10.0 | " | " | " | " | " | |
| Carbon tetrachloride | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Chlorobenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Chloroethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Chloroform | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Chloromethane | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2-Chlorotoluene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 4-Chlorotoluene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2-Dibromo-3-chloropropane | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Dibromochloromethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2-Dibromoethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Dibromomethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2-Dichlorobenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,3-Dichlorobenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,4-Dichlorobenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Dichlorodifluoromethane | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 1,1-Dichloroethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2-Dichloroethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,1-Dichloroethene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| cis-1,2-Dichloroethene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| trans-1,2-Dichloroethene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2-Dichloropropane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,3-Dichloropropane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 2,2-Dichloropropane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,1-Dichloropropene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| cis-1,3-Dichloropropene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| trans-1,3-Dichloropropene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Ethylbenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Hexachlorobutadiene | " | ND | ----- | 2.00 | " | " | " | " | " | |
| 2-Hexanone | " | ND | ----- | 10.0 | " | " | " | " | " | |
| Isopropylbenzene | " | ND | ----- | 2.00 | " | " | " | " | " | |



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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Brian Cone, Industrial Services Manager

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| | | |
|---|---|---|
| **Forensic Environmental Services** | Project Name: **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: [none] | Report Created: |
| Exton, PA 19341 | Project Manager: Nick DeSalvo | 02/01/05 09:27 |

# Volatile Organic Compounds per EPA Method 8260B

**North Creek Analytical - Portland**

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Batch | Prepared | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **P4D0911-05 Water** | **MW-14** | **Sampled: 04/26/04 12:21** | | | | | | | | |
| p-Isopropyltoluene | EPA 8260B | ND | ----- | 2.00 | ug/l | 1x | 4041072 | 04/27/04 | 04/27/04 21:57 | |
| 4-Methyl-2-pentanone | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Methyl tert-butyl ether | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Methylene chloride | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Naphthalene | " | ND | ----- | 2.00 | " | " | " | " | " | |
| n-Propylbenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Styrene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,1,1,2-Tetrachloroethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,1,2,2-Tetrachloroethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Tetrachloroethene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Toluene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2,3-Trichlorobenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,1,1-Trichloroethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,1,2-Trichloroethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Trichloroethene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Trichlorofluoromethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2,3-Trichloropropane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2,4-Trimethylbenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,3,5-Trimethylbenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Vinyl chloride | " | ND | ----- | 1.00 | " | " | " | " | " | |
| o-Xylene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| m,p-Xylene | " | ND | ----- | 2.00 | " | " | " | " | " | |
| *Surrogate(s): 4-BFB* | | *Recovery: 106%* | | *Limits: 75 - 120 %* | | " | | | " | |
| *1,2-DCA-d4* | | *103%* | | *77 - 129 %* | | " | | | " | |
| *Dibromofluoromethane* | | *104%* | | *80 - 121 %* | | " | | | " | |
| *Toluene-d8* | | *102%* | | *80 - 120 %* | | " | | | " | |

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| | | |
|---|---|---|
| **Forensic Environmental Services** | Project Name: **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: [none] | Report Created: |
| Exton, PA 19341 | Project Manager: Nick DeSalvo | 02/01/05 09:27 |

# Volatile Organic Compounds per EPA Method 8260B

## North Creek Analytical - Portland

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Batch | Prepared | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **P4D0911-06 Water** | **MW-50** | **Sampled: 04/26/04 09:40** | | | | | | | | |
| Acetone | EPA 8260B | ND | ----- | 25.0 | ug/l | 1x | 4041072 | 04/27/04 | 04/27/04 22:25 | |
| Benzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Bromobenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Bromochloromethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Bromodichloromethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Bromoform | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Bromomethane | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2-Butanone | " | ND | ----- | 10.0 | " | " | " | " | " | |
| n-Butylbenzene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| **sec-Butylbenzene** | " | **1.71** | ----- | 1.00 | " | " | " | " | " | |
| tert-Butylbenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Carbon disulfide | " | ND | ----- | 10.0 | " | " | " | " | " | |
| Carbon tetrachloride | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Chlorobenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Chloroethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Chloroform | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Chloromethane | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2-Chlorotoluene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 4-Chlorotoluene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2-Dibromo-3-chloropropane | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Dibromochloromethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2-Dibromoethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Dibromomethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2-Dichlorobenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,3-Dichlorobenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,4-Dichlorobenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Dichlorodifluoromethane | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 1,1-Dichloroethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2-Dichloroethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,1-Dichloroethene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| cis-1,2-Dichloroethene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| trans-1,2-Dichloroethene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2-Dichloropropane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,3-Dichloropropane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 2,2-Dichloropropane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,1-Dichloropropene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| cis-1,3-Dichloropropene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| trans-1,3-Dichloropropene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Ethylbenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Hexachlorobutadiene | " | ND | ----- | 2.00 | " | " | " | " | " | |
| 2-Hexanone | " | ND | ----- | 10.0 | " | " | " | " | " | |
| Isopropylbenzene | " | ND | ----- | 2.00 | " | " | " | " | " | |

North Creek Analytical - Portland

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| | | |
|---|---|---|
| **Forensic Environmental Services** | Project Name: **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: [none] | Report Created: |
| Exton, PA 19341 | Project Manager: Nick DeSalvo | 02/01/05 09:27 |

# Volatile Organic Compounds per EPA Method 8260B

**North Creek Analytical - Portland**

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Batch | Prepared | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **P4D0911-06 Water** | **MW-50** | **Sampled: 04/26/04 09:40** | | | | | | | | |
| p-Isopropyltoluene | EPA 8260B | ND | ----- | 2.00 | ug/l | 1x | 4041072 | 04/27/04 | 04/27/04 22:25 | |
| 4-Methyl-2-pentanone | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Methyl tert-butyl ether | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Methylene chloride | " | ND | ----- | 5.00 | " | " | " | " | " | |
| **Naphthalene** | " | **11.0** | ----- | 2.00 | " | " | " | " | " | |
| **n-Propylbenzene** | " | **2.31** | ----- | 1.00 | " | " | " | " | " | |
| Styrene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,1,1,2-Tetrachloroethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,1,2,2-Tetrachloroethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Tetrachloroethene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Toluene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2,3-Trichlorobenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,1,1-Trichloroethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,1,2-Trichloroethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Trichloroethene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| Trichlorofluoromethane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| 1,2,3-Trichloropropane | " | ND | ----- | 1.00 | " | " | " | " | " | |
| **1,2,4-Trimethylbenzene** | " | **23.4** | ----- | 1.00 | " | " | " | " | " | |
| **1,3,5-Trimethylbenzene** | " | **4.82** | ----- | 1.00 | " | " | " | " | " | |
| Vinyl chloride | " | ND | ----- | 1.00 | " | " | " | " | " | |
| o-Xylene | " | ND | ----- | 1.00 | " | " | " | " | " | |
| m,p-Xylene | " | ND | ----- | 2.00 | " | " | " | " | " | |
| *Surrogate(s): 4-BFB* | | *Recovery: 106%* | | *Limits: 75 - 120 %* | | " | | | " | |
| *1,2-DCA-d4* | | *97.5%* | | *77 - 129 %* | | " | | | " | |
| *Dibromofluoromethane* | | *100%* | | *80 - 121 %* | | " | | | " | |
| *Toluene-d8* | | *98.5%* | | *80 - 120 %* | | " | | | " | |

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phone: (907) 563.9200 fax: (907) 563.9210

| | | | |
|---|---|---|---|
| **Forensic Environmental Services** | Project Name: | **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: | [none] | Report Created: |
| Exton, PA 19341 | Project Manager: | Nick DeSalvo | 02/01/05 09:27 |

# Semivolatile Organic Compounds per EPA Method 8270C

**North Creek Analytical - Portland**

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Batch | Prepared | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **P4D0911-02 Water** | **MW-1** | **Sampled: 04/26/04 11:58** | | | | | | | | |
| Acenaphthene | EPA 8270C | ND | ----- | 5.00 | ug/l | 1x | 4041130 | 04/28/04 | 05/05/04 01:31 | |
| Acenaphthylene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Anthracene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Benzo (a) anthracene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Benzo (a) pyrene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Benzo (b) fluoranthene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Benzo (ghi) perylene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Benzo (k) fluoranthene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Benzoic Acid | " | ND | ----- | 50.0 | " | " | " | " | " | |
| Benzyl alcohol | " | ND | ----- | 10.0 | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Butyl benzyl phthalate | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 4-Chloroaniline | " | ND | ----- | 20.0 | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | " | ND | ----- | 10.0 | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | " | ND | ----- | 10.0 | " | " | " | " | " | |
| 2-Chloronaphthalene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2-Chlorophenol | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Chrysene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Di-n-butyl phthalate | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Di-n-octyl phthalate | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Dibenzo (a,h) anthracene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Dibenzofuran | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 1,2-Dichlorobenzene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 1,3-Dichlorobenzene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 1,4-Dichlorobenzene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 3,3'-Dichlorobenzidine | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2,4-Dichlorophenol | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Diethyl phthalate | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2,4-Dimethylphenol | " | ND | ----- | 10.0 | " | " | " | " | " | |
| Dimethyl phthalate | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | " | ND | ----- | 10.0 | " | " | " | " | " | |
| 2,4-Dinitrophenol | " | ND | ----- | 25.0 | " | " | " | " | " | |
| 2,4-Dinitrotoluene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2,6-Dinitrotoluene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | " | ND | ----- | 10.0 | " | " | " | " | " | |
| Fluoranthene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Fluorene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Hexachlorobenzene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Hexachlorobutadiene | " | ND | ----- | 10.0 | " | " | " | " | " | |



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Brian L Cone

Brian Cone, Industrial Services Manager

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| | | | |
|---|---|---|---|
| **Forensic Environmental Services** | Project Name: | **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: | [none] | Report Created: |
| Exton, PA 19341 | Project Manager: | Nick DeSalvo | 02/01/05 09:27 |

# Semivolatile Organic Compounds per EPA Method 8270C

**North Creek Analytical - Portland**

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Batch | Prepared | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **P4D0911-02 Water** | **MW-1** | **Sampled: 04/26/04 11:58** | | | | | | | | |
| Hexachlorocyclopentadiene | EPA 8270C | ND | ----- | 10.0 | ug/l | 1x | 4041130 | 04/28/04 | 05/05/04 01:31 | |
| Hexachloroethane | " | ND | ----- | 10.0 | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Isophorone | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2-Methylnaphthalene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2-Methylphenol | " | ND | ----- | 10.0 | " | " | " | " | " | |
| 3-,4-Methylphenol | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Naphthalene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2-Nitroaniline | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 3-Nitroaniline | " | ND | ----- | 10.0 | " | " | " | " | " | |
| 4-Nitroaniline | " | ND | ----- | 10.0 | " | " | " | " | " | |
| Nitrobenzene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2-Nitrophenol | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 4-Nitrophenol | " | ND | ----- | 25.0 | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | " | ND | ----- | 10.0 | " | " | " | " | " | |
| N-Nitrosodiphenylamine | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Pentachlorophenol | " | ND | ----- | 10.0 | " | " | " | " | " | |
| Phenanthrene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Phenol | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Pyrene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | " | ND | ----- | 5.00 | " | " | " | " | " | |
| *Surrogate(s): 2-Fluorobiphenyl* | | *Recovery: 55.4%* | | *Limits: 26 - 135 %* | | " | | | " | |
| *2-Fluorophenol* | | *36.9%* | | *6 - 124 %* | | " | | | " | |
| *Nitrobenzene-d5* | | *67.9%* | | *23 - 147 %* | | " | | | " | |
| *Phenol-d6* | | *26.9%* | | *11 - 130 %* | | " | | | " | |
| *p-Terphenyl-d14* | | *74.7%* | | *38 - 149 %* | | " | | | " | |
| *2,4,6-Tribromophenol* | | *73.9%* | | *19 - 126 %* | | " | | | " | |

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| | | | |
|---|---|---|---|
| **Forensic Environmental Services** | Project Name: | **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: | [none] | Report Created: |
| Exton, PA 19341 | Project Manager: | Nick DeSalvo | 02/01/05 09:27 |

# Semivolatile Organic Compounds per EPA Method 8270C

**North Creek Analytical - Portland**

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Batch | Prepared | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **P4D0911-03 Water** | **MW-11** | **Sampled: 04/26/04 09:50** | | | | | | | | |
| Acenaphthene | EPA 8270C | ND | ----- | 5.00 | ug/l | 1x | 4041130 | 04/28/04 | 05/05/04 00:50 | |
| Acenaphthylene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Anthracene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Benzo (a) anthracene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Benzo (a) pyrene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Benzo (b) fluoranthene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Benzo (ghi) perylene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Benzo (k) fluoranthene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Benzoic Acid | " | ND | ----- | 50.0 | " | " | " | " | " | |
| Benzyl alcohol | " | ND | ----- | 10.0 | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Butyl benzyl phthalate | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 4-Chloroaniline | " | ND | ----- | 20.0 | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | " | ND | ----- | 10.0 | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | " | ND | ----- | 10.0 | " | " | " | " | " | |
| 2-Chloronaphthalene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2-Chlorophenol | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Chrysene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Di-n-butyl phthalate | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Di-n-octyl phthalate | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Dibenzo (a,h) anthracene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Dibenzofuran | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 1,2-Dichlorobenzene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 1,3-Dichlorobenzene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 1,4-Dichlorobenzene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 3,3'-Dichlorobenzidine | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2,4-Dichlorophenol | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Diethyl phthalate | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2,4-Dimethylphenol | " | ND | ----- | 10.0 | " | " | " | " | " | |
| Dimethyl phthalate | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | " | ND | ----- | 10.0 | " | " | " | " | " | |
| 2,4-Dinitrophenol | " | ND | ----- | 25.0 | " | " | " | " | " | |
| 2,4-Dinitrotoluene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2,6-Dinitrotoluene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | " | ND | ----- | 10.0 | " | " | " | " | " | |
| Fluoranthene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Fluorene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Hexachlorobenzene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Hexachlorobutadiene | " | ND | ----- | 10.0 | " | " | " | " | " | |



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| | | |
|---|---|---|
| **Forensic Environmental Services** | Project Name: **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: [none] | Report Created: |
| Exton, PA 19341 | Project Manager: Nick DeSalvo | 02/01/05 09:27 |

# Semivolatile Organic Compounds per EPA Method 8270C

**North Creek Analytical - Portland**

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Batch | Prepared | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **P4D0911-03 Water** | **MW-11** | **Sampled: 04/26/04 09:50** | | | | | | | | |
| Hexachlorocyclopentadiene | EPA 8270C | ND | ----- | 10.0 | ug/l | 1x | 4041130 | 04/28/04 | 05/05/04 00:50 | |
| Hexachloroethane | " | ND | ----- | 10.0 | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Isophorone | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2-Methylnaphthalene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2-Methylphenol | " | ND | ----- | 10.0 | " | " | " | " | " | |
| 3-,4-Methylphenol | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Naphthalene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2-Nitroaniline | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 3-Nitroaniline | " | ND | ----- | 10.0 | " | " | " | " | " | |
| 4-Nitroaniline | " | ND | ----- | 10.0 | " | " | " | " | " | |
| Nitrobenzene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2-Nitrophenol | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 4-Nitrophenol | " | ND | ----- | 25.0 | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | " | ND | ----- | 10.0 | " | " | " | " | " | |
| N-Nitrosodiphenylamine | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Pentachlorophenol | " | ND | ----- | 10.0 | " | " | " | " | " | |
| Phenanthrene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Phenol | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Pyrene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | " | ND | ----- | 5.00 | " | " | " | " | " | |
| *Surrogate(s): 2-Fluorobiphenyl* | | *Recovery: 55.4%* | | *Limits: 26 - 135 %* | | " | | | " | |
| *2-Fluorophenol* | | *36.2%* | | *6 - 124 %* | | " | | | " | |
| *Nitrobenzene-d5* | | *70.2%* | | *23 - 147 %* | | " | | | " | |
| *Phenol-d6* | | *26.5%* | | *11 - 130 %* | | " | | | " | |
| *p-Terphenyl-d14* | | *73.6%* | | *38 - 149 %* | | " | | | " | |
| *2,4,6-Tribromophenol* | | *70.1%* | | *19 - 126 %* | | " | | | " | |



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Brian Cone, Industrial Services Manager

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| | | | |
|---|---|---|---|
| **Forensic Environmental Services** | Project Name: | **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: | [none] | Report Created: |
| Exton, PA 19341 | Project Manager: | Nick DeSalvo | 02/01/05 09:27 |

# Semivolatile Organic Compounds per EPA Method 8270C

**North Creek Analytical - Portland**

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Batch | Prepared | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **P4D0911-04 Water** | **MW-12** | **Sampled: 04/26/04 11:23** | | | | | | | | |
| Acenaphthene | EPA 8270C | ND | ----- | 5.00 | ug/l | 1x | 4041130 | 04/28/04 | 05/05/04 00:09 | |
| Acenaphthylene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Anthracene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Benzo (a) anthracene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Benzo (a) pyrene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Benzo (b) fluoranthene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Benzo (ghi) perylene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Benzo (k) fluoranthene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Benzoic Acid | " | ND | ----- | 50.0 | " | " | " | " | " | |
| Benzyl alcohol | " | ND | ----- | 10.0 | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Butyl benzyl phthalate | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 4-Chloroaniline | " | ND | ----- | 20.0 | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | " | ND | ----- | 10.0 | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | " | ND | ----- | 10.0 | " | " | " | " | " | |
| 2-Chloronaphthalene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2-Chlorophenol | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Chrysene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Di-n-butyl phthalate | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Di-n-octyl phthalate | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Dibenzo (a,h) anthracene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Dibenzofuran | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 1,2-Dichlorobenzene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 1,3-Dichlorobenzene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 1,4-Dichlorobenzene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 3,3'-Dichlorobenzidine | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2,4-Dichlorophenol | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Diethyl phthalate | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2,4-Dimethylphenol | " | ND | ----- | 10.0 | " | " | " | " | " | |
| Dimethyl phthalate | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | " | ND | ----- | 10.0 | " | " | " | " | " | |
| 2,4-Dinitrophenol | " | ND | ----- | 25.0 | " | " | " | " | " | |
| 2,4-Dinitrotoluene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2,6-Dinitrotoluene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | " | ND | ----- | 10.0 | " | " | " | " | " | |
| Fluoranthene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Fluorene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Hexachlorobenzene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Hexachlorobutadiene | " | ND | ----- | 10.0 | " | " | " | " | " | |



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Brian L Cone

Brian Cone, Industrial Services Manager

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| | | | |
|---|---|---|---|
| **Forensic Environmental Services** | Project Name: | **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: | [none] | Report Created: |
| Exton, PA 19341 | Project Manager: | Nick DeSalvo | 02/01/05 09:27 |

# Semivolatile Organic Compounds per EPA Method 8270C

**North Creek Analytical - Portland**

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Batch | Prepared | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **P4D0911-04 Water** | **MW-12** | **Sampled: 04/26/04 11:23** | | | | | | | | |
| Hexachlorocyclopentadiene | EPA 8270C | ND | ----- | 10.0 | ug/l | 1x | 4041130 | 04/28/04 | 05/05/04 00:09 | |
| Hexachloroethane | " | ND | ----- | 10.0 | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Isophorone | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2-Methylnaphthalene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2-Methylphenol | " | ND | ----- | 10.0 | " | " | " | " | " | |
| 3-,4-Methylphenol | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Naphthalene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2-Nitroaniline | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 3-Nitroaniline | " | ND | ----- | 10.0 | " | " | " | " | " | |
| 4-Nitroaniline | " | ND | ----- | 10.0 | " | " | " | " | " | |
| Nitrobenzene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2-Nitrophenol | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 4-Nitrophenol | " | ND | ----- | 25.0 | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | " | ND | ----- | 10.0 | " | " | " | " | " | |
| N-Nitrosodiphenylamine | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Pentachlorophenol | " | ND | ----- | 10.0 | " | " | " | " | " | |
| Phenanthrene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Phenol | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Pyrene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | " | ND | ----- | 5.00 | " | " | " | " | " | |
| *Surrogate(s): 2-Fluorobiphenyl* | | *Recovery: 52.3%* | | *Limits: 26 - 135 %* | | " | | | " | |
| *2-Fluorophenol* | | *35.6%* | | *6 - 124 %* | | " | | | " | |
| *Nitrobenzene-d5* | | *67.8%* | | *23 - 147 %* | | " | | | " | |
| *Phenol-d6* | | *24.5%* | | *11 - 130 %* | | " | | | " | |
| *p-Terphenyl-d14* | | *74.9%* | | *38 - 149 %* | | " | | | " | |
| *2,4,6-Tribromophenol* | | *71.1%* | | *19 - 126 %* | | " | | | " | |

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| | | |
|---|---|---|
| **Forensic Environmental Services** | Project Name: **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: [none] | Report Created: |
| Exton, PA 19341 | Project Manager: Nick DeSalvo | 02/01/05 09:27 |

# Semivolatile Organic Compounds per EPA Method 8270C

**North Creek Analytical - Portland**

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Batch | Prepared | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **P4D0911-05 Water** | **MW-14** | **Sampled: 04/26/04 12:21** | | | | | | | | **R-01** |
| Acenaphthene | EPA 8270C | ND | ----- | 9.09 | ug/l | 1x | 4041130 | 04/28/04 | 05/04/04 23:28 | |
| Acenaphthylene | " | ND | ----- | 9.09 | " | " | " | " | " | |
| Anthracene | " | ND | ----- | 9.09 | " | " | " | " | " | |
| Benzo (a) anthracene | " | ND | ----- | 9.09 | " | " | " | " | " | |
| Benzo (a) pyrene | " | ND | ----- | 9.09 | " | " | " | " | " | |
| Benzo (b) fluoranthene | " | ND | ----- | 9.09 | " | " | " | " | " | |
| Benzo (ghi) perylene | " | ND | ----- | 9.09 | " | " | " | " | " | |
| Benzo (k) fluoranthene | " | ND | ----- | 9.09 | " | " | " | " | " | |
| Benzoic Acid | " | ND | ----- | 90.9 | " | " | " | " | " | |
| Benzyl alcohol | " | ND | ----- | 18.2 | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | " | ND | ----- | 9.09 | " | " | " | " | " | |
| Butyl benzyl phthalate | " | ND | ----- | 9.09 | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | " | ND | ----- | 9.09 | " | " | " | " | " | |
| 4-Chloroaniline | " | ND | ----- | 36.4 | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | " | ND | ----- | 18.2 | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | " | ND | ----- | 9.09 | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | " | ND | ----- | 18.2 | " | " | " | " | " | |
| 2-Chloronaphthalene | " | ND | ----- | 9.09 | " | " | " | " | " | |
| 2-Chlorophenol | " | ND | ----- | 9.09 | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | " | ND | ----- | 9.09 | " | " | " | " | " | |
| Chrysene | " | ND | ----- | 9.09 | " | " | " | " | " | |
| Di-n-butyl phthalate | " | ND | ----- | 9.09 | " | " | " | " | " | |
| Di-n-octyl phthalate | " | ND | ----- | 9.09 | " | " | " | " | " | |
| Dibenzo (a,h) anthracene | " | ND | ----- | 9.09 | " | " | " | " | " | |
| Dibenzofuran | " | ND | ----- | 9.09 | " | " | " | " | " | |
| 1,2-Dichlorobenzene | " | ND | ----- | 9.09 | " | " | " | " | " | |
| 1,3-Dichlorobenzene | " | ND | ----- | 9.09 | " | " | " | " | " | |
| 1,4-Dichlorobenzene | " | ND | ----- | 9.09 | " | " | " | " | " | |
| 3,3'-Dichlorobenzidine | " | ND | ----- | 9.09 | " | " | " | " | " | |
| 2,4-Dichlorophenol | " | ND | ----- | 9.09 | " | " | " | " | " | |
| Diethyl phthalate | " | ND | ----- | 9.09 | " | " | " | " | " | |
| 2,4-Dimethylphenol | " | ND | ----- | 18.2 | " | " | " | " | " | |
| Dimethyl phthalate | " | ND | ----- | 9.09 | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | " | ND | ----- | 18.2 | " | " | " | " | " | |
| 2,4-Dinitrophenol | " | ND | ----- | 45.5 | " | " | " | " | " | |
| 2,4-Dinitrotoluene | " | ND | ----- | 9.09 | " | " | " | " | " | |
| 2,6-Dinitrotoluene | " | ND | ----- | 9.09 | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | " | ND | ----- | 18.2 | " | " | " | " | " | |
| Fluoranthene | " | ND | ----- | 9.09 | " | " | " | " | " | |
| Fluorene | " | ND | ----- | 9.09 | " | " | " | " | " | |
| Hexachlorobenzene | " | ND | ----- | 9.09 | " | " | " | " | " | |
| Hexachlorobutadiene | " | ND | ----- | 18.2 | " | " | " | " | " | |

North Creek Analytical - Portland

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Brian L Cone

Brian Cone, Industrial Services Manager

*North Creek Analytical, Inc.*
*Environmental Laboratory Network*

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phone: (907) 563.9200 fax: (907) 563.9210

| | | | |
|---|---|---|---|
| **Forensic Environmental Services** | Project Name: | **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: | [none] | Report Created: |
| Exton, PA 19341 | Project Manager: | Nick DeSalvo | 02/01/05 09:27 |

# Semivolatile Organic Compounds per EPA Method 8270C

**North Creek Analytical - Portland**

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Batch | Prepared | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **P4D0911-05 Water** | **MW-14** | **Sampled: 04/26/04 12:21** | | | | | | | | **R-01** |
| Hexachlorocyclopentadiene | EPA 8270C | ND | ----- | 18.2 | ug/l | 1x | 4041130 | 04/28/04 | 05/04/04 23:28 | |
| Hexachloroethane | " | ND | ----- | 18.2 | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | " | ND | ----- | 9.09 | " | " | " | " | " | |
| Isophorone | " | ND | ----- | 9.09 | " | " | " | " | " | |
| 2-Methylnaphthalene | " | ND | ----- | 9.09 | " | " | " | " | " | |
| 2-Methylphenol | " | ND | ----- | 18.2 | " | " | " | " | " | |
| 3-,4-Methylphenol | " | ND | ----- | 9.09 | " | " | " | " | " | |
| Naphthalene | " | ND | ----- | 9.09 | " | " | " | " | " | |
| 2-Nitroaniline | " | ND | ----- | 9.09 | " | " | " | " | " | |
| 3-Nitroaniline | " | ND | ----- | 18.2 | " | " | " | " | " | |
| 4-Nitroaniline | " | ND | ----- | 18.2 | " | " | " | " | " | |
| Nitrobenzene | " | ND | ----- | 9.09 | " | " | " | " | " | |
| 2-Nitrophenol | " | ND | ----- | 9.09 | " | " | " | " | " | |
| 4-Nitrophenol | " | ND | ----- | 45.5 | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | " | ND | ----- | 18.2 | " | " | " | " | " | |
| N-Nitrosodiphenylamine | " | ND | ----- | 9.09 | " | " | " | " | " | |
| Pentachlorophenol | " | ND | ----- | 18.2 | " | " | " | " | " | |
| Phenanthrene | " | ND | ----- | 9.09 | " | " | " | " | " | |
| Phenol | " | ND | ----- | 9.09 | " | " | " | " | " | |
| Pyrene | " | ND | ----- | 9.09 | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | " | ND | ----- | 9.09 | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | " | ND | ----- | 9.09 | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | " | ND | ----- | 9.09 | " | " | " | " | " | |
| *Surrogate(s): 2-Fluorobiphenyl* | | *Recovery: 53.7%* | | *Limits: 26 - 135 %* | | " | | | " | |
| *2-Fluorophenol* | | *37.0%* | | *6 - 124 %* | | " | | | " | |
| *Nitrobenzene-d5* | | *66.8%* | | *23 - 147 %* | | " | | | " | |
| *Phenol-d6* | | *27.7%* | | *11 - 130 %* | | " | | | " | |
| *p-Terphenyl-d14* | | *72.0%* | | *38 - 149 %* | | " | | | " | |
| *2,4,6-Tribromophenol* | | *76.6%* | | *19 - 126 %* | | " | | | " | |

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| | | | |
|---|---|---|---|
| **Forensic Environmental Services** | Project Name: | **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: | [none] | Report Created: |
| Exton, PA 19341 | Project Manager: | Nick DeSalvo | 02/01/05 09:27 |

# Semivolatile Organic Compounds per EPA Method 8270C

**North Creek Analytical - Portland**

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Batch | Prepared | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **P4D0911-06 Water** | **MW-50** | **Sampled: 04/26/04 09:40** | | | | | | | | |
| Acenaphthene | EPA 8270C | ND | ----- | 5.00 | ug/l | 1x | 4041130 | 04/28/04 | 05/04/04 22:47 | |
| Acenaphthylene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Anthracene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Benzo (a) anthracene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Benzo (a) pyrene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Benzo (b) fluoranthene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Benzo (ghi) perylene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Benzo (k) fluoranthene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Benzoic Acid | " | ND | ----- | 50.0 | " | " | " | " | " | |
| Benzyl alcohol | " | ND | ----- | 10.0 | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Butyl benzyl phthalate | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 4-Chloroaniline | " | ND | ----- | 20.0 | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | " | ND | ----- | 10.0 | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | " | ND | ----- | 10.0 | " | " | " | " | " | |
| 2-Chloronaphthalene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2-Chlorophenol | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Chrysene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Di-n-butyl phthalate | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Di-n-octyl phthalate | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Dibenzo (a,h) anthracene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Dibenzofuran | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 1,2-Dichlorobenzene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 1,3-Dichlorobenzene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 1,4-Dichlorobenzene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 3,3'-Dichlorobenzidine | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2,4-Dichlorophenol | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Diethyl phthalate | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2,4-Dimethylphenol | " | ND | ----- | 10.0 | " | " | " | " | " | |
| Dimethyl phthalate | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | " | ND | ----- | 10.0 | " | " | " | " | " | |
| 2,4-Dinitrophenol | " | ND | ----- | 25.0 | " | " | " | " | " | |
| 2,4-Dinitrotoluene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2,6-Dinitrotoluene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | " | ND | ----- | 10.0 | " | " | " | " | " | |
| Fluoranthene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Fluorene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Hexachlorobenzene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Hexachlorobutadiene | " | ND | ----- | 10.0 | " | " | " | " | " | |

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| | | | |
|---|---|---|---|
| **Forensic Environmental Services** | Project Name: | **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: | [none] | Report Created: |
| Exton, PA 19341 | Project Manager: | Nick DeSalvo | 02/01/05 09:27 |

# Semivolatile Organic Compounds per EPA Method 8270C

**North Creek Analytical - Portland**

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Batch | Prepared | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **P4D0911-06 Water** | **MW-50** | **Sampled: 04/26/04 09:40** | | | | | | | | |
| Hexachlorocyclopentadiene | EPA 8270C | ND | ----- | 10.0 | ug/l | 1x | 4041130 | 04/28/04 | 05/04/04 22:47 | |
| Hexachloroethane | " | ND | ----- | 10.0 | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Isophorone | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2-Methylnaphthalene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2-Methylphenol | " | ND | ----- | 10.0 | " | " | " | " | " | |
| 3-,4-Methylphenol | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Naphthalene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2-Nitroaniline | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 3-Nitroaniline | " | ND | ----- | 10.0 | " | " | " | " | " | |
| 4-Nitroaniline | " | ND | ----- | 10.0 | " | " | " | " | " | |
| Nitrobenzene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2-Nitrophenol | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 4-Nitrophenol | " | ND | ----- | 25.0 | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | " | ND | ----- | 10.0 | " | " | " | " | " | |
| N-Nitrosodiphenylamine | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Pentachlorophenol | " | ND | ----- | 10.0 | " | " | " | " | " | |
| Phenanthrene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Phenol | " | ND | ----- | 5.00 | " | " | " | " | " | |
| Pyrene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | " | ND | ----- | 5.00 | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | " | ND | ----- | 5.00 | " | " | " | " | " | |
| *Surrogate(s): 2-Fluorobiphenyl* | | *Recovery: 54.2%* | | *Limits: 26 - 135 %* | | " | | | " | |
| *2-Fluorophenol* | | *38.0%* | | *6 - 124 %* | | " | | | " | |
| *Nitrobenzene-d5* | | *69.2%* | | *23 - 147 %* | | " | | | " | |
| *Phenol-d6* | | *27.7%* | | *11 - 130 %* | | " | | | " | |
| *p-Terphenyl-d14* | | *73.9%* | | *38 - 149 %* | | " | | | " | |
| *2,4,6-Tribromophenol* | | *72.5%* | | *19 - 126 %* | | " | | | " | |

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|---|---|---|
| **Forensic Environmental Services** | Project Name: **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: [none] | Report Created: |
| Exton, PA 19341 | Project Manager: Nick DeSalvo | 02/01/05 09:27 |

# Conventional Chemistry Parameters per Standard Methods

## North Creek Analytical - Portland

| Analyte | | Method | Result | MDL* | MRL | Units | Dil | Batch | Prepared | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **P4D0911-02** | **Water** | **MW-1** | **Sampled: 04/26/04 11:58** | | | | | | | | |
| **Carbon dioxide** | | SM 4500-C | **48.3** | ----- | 10.0 | mg/l | 1x | 4041057 | 04/27/04 | 04/27/04 08:00 | |
| **P4D0911-03** | **Water** | **MW-11** | **Sampled: 04/26/04 09:50** | | | | | | | | |
| **Carbon dioxide** | | SM 4500-C | **57.1** | ----- | 10.0 | mg/l | 1x | 4041057 | 04/27/04 | 04/27/04 08:00 | |
| **P4D0911-04** | **Water** | **MW-12** | **Sampled: 04/26/04 11:23** | | | | | | | | |
| **Carbon dioxide** | | SM 4500-C | **94.7** | ----- | 10.0 | mg/l | 1x | 4041057 | 04/27/04 | 04/27/04 08:00 | |
| **P4D0911-05** | **Water** | **MW-14** | **Sampled: 04/26/04 12:21** | | | | | | | | |
| **Carbon dioxide** | | SM 4500-C | **195** | ----- | 10.0 | mg/l | 1x | 4041057 | 04/27/04 | 04/27/04 08:00 | |
| **P4D0911-06** | **Water** | **MW-50** | **Sampled: 04/26/04 09:40** | | | | | | | | |
| **Carbon dioxide** | | SM 4500-C | **58.3** | ----- | 10.0 | mg/l | 1x | 4041057 | 04/27/04 | 04/27/04 08:00 | |



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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| **Forensic Environmental Services** | Project Name: **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: [none] | Report Created: |
| Exton, PA 19341 | Project Manager: Nick DeSalvo | 02/01/05 09:27 |

# Anions per EPA Method 300.0

**North Creek Analytical - Portland**

| Analyte | | Method | Result | MDL* | MRL | Units | Dil | Batch | Prepared | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **P4D0911-02** | **Water** | **MW-1** | **Sampled: 04/26/04 11:58** | | | | | | | | |
| Nitrate-Nitrogen | | EPA 300.0 | ND | ----- | 0.100 | mg/l | 1x | 4041047 | 04/26/04 | 04/26/04 21:46 | |
| **Sulfate** | | " | **5.00** | ----- | 1.00 | " | " | " | " | " | |
| **P4D0911-03** | **Water** | **MW-11** | **Sampled: 04/26/04 09:50** | | | | | | | | |
| Nitrate-Nitrogen | | EPA 300.0 | ND | ----- | 0.100 | mg/l | 1x | 4041047 | 04/26/04 | 04/26/04 22:28 | |
| **Sulfate** | | " | **2.95** | ----- | 1.00 | " | " | " | " | " | |
| **P4D0911-04** | **Water** | **MW-12** | **Sampled: 04/26/04 11:23** | | | | | | | | |
| Nitrate-Nitrogen | | EPA 300.0 | ND | ----- | 0.100 | mg/l | 1x | 4041047 | 04/26/04 | 04/26/04 22:42 | |
| Sulfate | | " | ND | ----- | 1.00 | " | " | " | " | " | |
| **P4D0911-05** | **Water** | **MW-14** | **Sampled: 04/26/04 12:21** | | | | | | | | |
| Nitrate-Nitrogen | | EPA 300.0 | ND | ----- | 0.100 | mg/l | 1x | 4041047 | 04/26/04 | 04/26/04 22:56 | |
| **Sulfate** | | " | **15.7** | ----- | 1.00 | " | " | " | " | " | |
| **P4D0911-06** | **Water** | **MW-50** | **Sampled: 04/26/04 09:40** | | | | | | | | |
| Nitrate-Nitrogen | | EPA 300.0 | ND | ----- | 0.100 | mg/l | 1x | 4041047 | 04/26/04 | 04/26/04 23:10 | |
| **Sulfate** | | " | **2.52** | ----- | 1.00 | " | " | " | " | " | |



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|---|---|---|
| **Forensic Environmental Services** | Project Name: **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: [none] | Report Created: |
| Exton, PA 19341 | Project Manager: Nick DeSalvo | 02/01/05 09:27 |

# Volatile Petroleum Products by NWTPH-Gx

**North Creek Analytical - Bothell**

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Batch | Prepared | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **P4D0911-02 Water** | **MW-1** | **Sampled: 04/26/04 11:58** | | | | | | | | |
| **Gasoline Range Hydrocarbons** | NWTPH-Gx | 118 | ----- | 50.0 | ug/l | 1x | 4D29012 | 04/29/04 | 04/29/04 11:58 | |
| *Surrogate(s): 4-BFB (FID)* | | *Recovery: 102%* | | *Limits: 62 - 127 %* | | " | | | " | |
| **P4D0911-03 Water** | **MW-11** | **Sampled: 04/26/04 09:50** | | | | | | | | |
| **Gasoline Range Hydrocarbons** | NWTPH-Gx | 232 | ----- | 50.0 | ug/l | 1x | 4D29012 | 04/29/04 | 04/29/04 12:28 | |
| *Surrogate(s): 4-BFB (FID)* | | *Recovery: 100%* | | *Limits: 62 - 127 %* | | " | | | " | |
| **P4D0911-04 Water** | **MW-12** | **Sampled: 04/26/04 11:23** | | | | | | | | |
| **Gasoline Range Hydrocarbons** | NWTPH-Gx | 196 | ----- | 50.0 | ug/l | 1x | 4D29012 | 04/29/04 | 04/29/04 12:58 | |
| *Surrogate(s): 4-BFB (FID)* | | *Recovery: 99.2%* | | *Limits: 62 - 127 %* | | " | | | " | |
| **P4D0911-05 Water** | **MW-14** | **Sampled: 04/26/04 12:21** | | | | | | | | |
| Gasoline Range Hydrocarbons | NWTPH-Gx | ND | ----- | 50.0 | ug/l | 1x | 4D29012 | 04/29/04 | 04/29/04 13:27 | |
| *Surrogate(s): 4-BFB (FID)* | | *Recovery: 85.6%* | | *Limits: 62 - 127 %* | | " | | | " | |
| **P4D0911-06 Water** | **MW-50** | **Sampled: 04/26/04 09:40** | | | | | | | | |
| **Gasoline Range Hydrocarbons** | NWTPH-Gx | 265 | ----- | 50.0 | ug/l | 1x | 4D29012 | 04/29/04 | 04/29/04 14:27 | |
| *Surrogate(s): 4-BFB (FID)* | | *Recovery: 99.6%* | | *Limits: 62 - 127 %* | | " | | | " | |

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| | | | |
|---|---|---|---|
| **Forensic Environmental Services** | Project Name: | **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: | [none] | Report Created: |
| Exton, PA 19341 | Project Manager: | Nick DeSalvo | 02/01/05 09:27 |

## Diesel and Heavy Range Hydrocarbons per NWTPH-Dx Method - Laboratory Quality Control Results

**North Creek Analytical - Portland**

**QC Batch: 4041055** **Water Preparation Method: EPA 3510 Fuels**

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Source Result | Spike Amt | % REC | (Limits) | % RPD | (Limits) | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Blank (4041055-BLK1)** | | | | | | | | Extracted: 04/27/04 06:49 | | | | | | |
| Diesel Range Organics | NWTPH-Dx | ND | --- | 0.250 | mg/l | 1x | -- | -- | -- | -- | -- | -- | 04/27/04 15:06 | |
| Heavy Oil Range Hydrocarbons | " | ND | --- | 0.500 | " | " | -- | -- | -- | -- | -- | -- | " | |
| *Surrogate(s): 1-Chlorooctadecane* | | *Recovery:* | *89.4%* | *Limits:* | *50-150%* | " | | | | | | | *04/27/04 15:06* | |
| **LCS (4041055-BS1)** | | | | | | | | Extracted: 04/27/04 06:49 | | | | | | |
| Diesel Range Organics | NWTPH-Dx | 1.86 | --- | 0.250 | mg/l | 1x | -- | 2.50 | 74.4% | (50-150) | -- | -- | 04/27/04 15:41 | |
| Heavy Oil Range Hydrocarbons | " | 1.35 | --- | 0.500 | " | " | -- | 1.50 | 90.0% | " | -- | -- | " | |
| *Surrogate(s): 1-Chlorooctadecane* | | *Recovery:* | *86.0%* | *Limits:* | *50-150%* | " | | | | | | | *04/27/04 15:41* | |
| **LCS Dup (4041055-BSD1)** | | | | | | | | Extracted: 04/27/04 06:49 | | | | | | |
| Diesel Range Organics | NWTPH-Dx | 1.88 | --- | 0.250 | mg/l | 1x | -- | 2.50 | 75.2% | (50-150) | 1.07% | (50) | 04/27/04 16:15 | |
| Heavy Oil Range Hydrocarbons | " | 1.37 | --- | 0.500 | " | " | -- | 1.50 | 91.3% | " | 1.47% | " | " | |
| *Surrogate(s): 1-Chlorooctadecane* | | *Recovery:* | *78.2%* | *Limits:* | *50-150%* | " | | | | | | | *04/27/04 16:15* | |

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|---|---|---|
| **Forensic Environmental Services** | Project Name: **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: [none] | Report Created: |
| Exton, PA 19341 | Project Manager: Nick DeSalvo | 02/01/05 09:27 |

## Total Metals per EPA 6000/7000 Series Methods - Laboratory Quality Control Results

### North Creek Analytical - Portland

**QC Batch: 4041197** **Water Preparation Method: EPA 200/3005**

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Source Result | Spike Amt | % REC | (Limits) | % RPD | (Limits) | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Blank (4041197-BLK1)** | | | | | | | | Extracted: 04/29/04 10:05 | | | | | | |
| Antimony | EPA 6020 | ND | --- | 0.00100 | mg/l | 1x | -- | -- | -- | -- | -- | -- | 04/29/04 23:29 | |
| Arsenic | " | ND | --- | 0.00100 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Beryllium | " | ND | --- | 0.00100 | " | " | -- | -- | -- | -- | -- | -- | 05/01/04 09:28 | |
| Cadmium | " | ND | --- | 0.00100 | " | " | -- | -- | -- | -- | -- | -- | 04/29/04 23:29 | |
| Chromium | " | ND | --- | 0.00100 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Copper | " | ND | --- | 0.00200 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Lead | " | ND | --- | 0.00100 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Manganese | " | ND | --- | 0.00200 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Nickel | " | ND | --- | 0.00200 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Selenium | " | ND | --- | 0.00100 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Silver | " | ND | --- | 0.00100 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Thallium | " | ND | --- | 0.00100 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Zinc | " | ND | --- | 0.00500 | " | " | -- | -- | -- | -- | -- | -- | " | |
| **LCS (4041197-BS1)** | | | | | | | | Extracted: 04/29/04 10:05 | | | | | | |
| Antimony | EPA 6020 | 0.0464 | --- | 0.00100 | mg/l | 1x | -- | 0.0500 | 92.8% | (80-120) | -- | -- | 04/29/04 23:34 | |
| Arsenic | " | 0.0966 | --- | 0.00100 | " | " | -- | 0.100 | 96.6% | " | -- | -- | " | |
| Beryllium | " | 0.0998 | --- | 0.00100 | " | " | -- | " | 99.8% | " | -- | -- | 05/01/04 09:33 | |
| Cadmium | " | 0.0984 | --- | 0.00100 | " | " | -- | " | 98.4% | " | -- | -- | 04/29/04 23:34 | |
| Chromium | " | 0.0988 | --- | 0.00100 | " | " | -- | " | 98.8% | " | -- | -- | " | |
| Copper | " | 0.0968 | --- | 0.00200 | " | " | -- | " | 96.8% | " | -- | -- | " | |
| Lead | " | 0.0971 | --- | 0.00100 | " | " | -- | " | 97.1% | " | -- | -- | " | |
| Manganese | " | 0.0966 | --- | 0.00200 | " | " | -- | " | 96.6% | " | -- | -- | " | |
| Nickel | " | 0.0976 | --- | 0.00200 | " | " | -- | " | 97.6% | " | -- | -- | " | |
| Selenium | " | 0.0947 | --- | 0.00100 | " | " | -- | " | 94.7% | " | -- | -- | " | |
| Silver | " | 0.0504 | --- | 0.00100 | " | " | -- | 0.0500 | 101% | " | -- | -- | " | |
| Thallium | " | 0.0470 | --- | 0.00100 | " | " | -- | " | 94.0% | " | -- | -- | " | |
| Zinc | " | 0.0966 | --- | 0.00500 | " | " | -- | 0.100 | 96.6% | " | -- | -- | " | |
| **LCS Dup (4041197-BSD1)** | | | | | | | | Extracted: 04/29/04 10:05 | | | | | | |
| Antimony | EPA 6020 | 0.0499 | --- | 0.00100 | mg/l | 1x | -- | 0.0500 | 99.8% | (80-120) | 7.27% | (20) | 04/29/04 23:39 | |
| Arsenic | " | 0.0969 | --- | 0.00100 | " | " | -- | 0.100 | 96.9% | " | 0.310% | " | " | |
| Beryllium | " | 0.0986 | --- | 0.00100 | " | " | -- | " | 98.6% | " | 1.21% | " | 05/01/04 09:38 | |
| Cadmium | " | 0.0972 | --- | 0.00100 | " | " | -- | " | 97.2% | " | 1.23% | " | 04/29/04 23:39 | |
| Chromium | " | 0.0991 | --- | 0.00100 | " | " | -- | " | 99.1% | " | 0.303% | " | " | |
| Copper | " | 0.0990 | --- | 0.00200 | " | " | -- | " | 99.0% | " | 2.25% | " | " | |
| Lead | " | 0.0966 | --- | 0.00100 | " | " | -- | " | 96.6% | " | 0.516% | " | " | |
| Manganese | " | 0.0976 | --- | 0.00200 | " | " | -- | " | 97.6% | " | 1.03% | " | " | |
| Nickel | " | 0.0985 | --- | 0.00200 | " | " | -- | " | 98.5% | " | 0.918% | " | " | |
| Selenium | " | 0.0933 | --- | 0.00100 | " | " | -- | " | 93.3% | " | 1.49% | " | " | |
| Silver | " | 0.0511 | --- | 0.00100 | " | " | -- | 0.0500 | 102% | " | 1.38% | " | " | |
| Thallium | " | 0.0464 | --- | 0.00100 | " | " | -- | " | 92.8% | " | 1.28% | " | " | |

North Creek Analytical - Portland

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*Environmental Laboratory Network*

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|---|---|---|---|
| **Forensic Environmental Services** | Project Name: | **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: | [none] | Report Created: |
| Exton, PA 19341 | Project Manager: | Nick DeSalvo | 02/01/05 09:27 |

## Total Metals per EPA 6000/7000 Series Methods - Laboratory Quality Control Results

**North Creek Analytical - Portland**

**QC Batch: 4041197** **Water Preparation Method: EPA 200/3005**

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Source Result | Spike Amt | % REC | (Limits) | % RPD | (Limits) | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LCS Dup (4041197-BSD1)** | | | | | | | | Extracted: 04/29/04 10:05 | | | | | | |
| Zinc | " | 0.0983 | --- | 0.00500 | " | " | -- | 0.100 | 98.3% | " | 1.74% | " | " | |
| **Duplicate (4041197-DUP1)** | | | | QC Source: P4D0871-01 | | | | Extracted: 04/29/04 10:05 | | | | | | |
| Antimony | EPA 6020 | ND | --- | 0.00100 | mg/l | 1x | ND | -- | -- | -- | 50.7% | (20) | 04/29/04 23:50 | Q-06 |
| Arsenic | " | 0.00258 | --- | 0.00100 | " | " | 0.00279 | -- | -- | -- | 7.82% | " | " | |
| Beryllium | " | ND | --- | 0.00100 | " | " | ND | -- | -- | -- | NR | " | 05/01/04 09:49 | |
| Cadmium | " | ND | --- | 0.00100 | " | " | ND | -- | -- | -- | NR | " | 04/29/04 23:50 | |
| Chromium | " | ND | --- | 0.00100 | " | " | ND | -- | -- | -- | NR | " | " | |
| Copper | " | 0.00886 | --- | 0.00200 | " | " | 0.00888 | -- | -- | -- | 0.225% | " | " | |
| Lead | " | 0.00172 | --- | 0.00100 | " | " | 0.00173 | -- | -- | -- | 0.580% | " | " | |
| Manganese | " | 0.925 | --- | 0.00200 | " | " | 0.902 | -- | -- | -- | 2.52% | " | " | |
| Nickel | " | 0.00212 | --- | 0.00200 | " | " | 0.00210 | -- | -- | -- | 0.948% | " | " | |
| Selenium | " | ND | --- | 0.00100 | " | " | 0.00113 | -- | -- | -- | NR | " | " | |
| Silver | " | ND | --- | 0.00100 | " | " | ND | -- | -- | -- | NR | " | " | |
| Thallium | " | ND | --- | 0.00100 | " | " | ND | -- | -- | -- | NR | " | " | |
| Zinc | " | 0.0311 | --- | 0.00500 | " | " | 0.0305 | -- | -- | -- | 1.95% | " | " | |
| **Matrix Spike (4041197-MS1)** | | | | QC Source: P4D0872-02 | | | | Extracted: 04/29/04 10:05 | | | | | | |
| Antimony | EPA 6020 | 0.0542 | --- | 0.00100 | mg/l | 1x | 0.00179 | 0.0500 | 105% | (75-125) | -- | -- | 04/30/04 00:00 | |
| Arsenic | " | 0.105 | --- | 0.00100 | " | " | 0.00118 | 0.100 | 104% | " | -- | -- | " | |
| Beryllium | " | 0.0955 | --- | 0.00100 | " | " | ND | " | 95.5% | " | -- | -- | 05/01/04 09:59 | |
| Cadmium | " | 0.0979 | --- | 0.00100 | " | " | ND | " | 97.9% | " | -- | -- | 04/30/04 00:00 | |
| Chromium | " | 0.486 | --- | 0.00100 | " | " | 0.382 | " | 104% | " | -- | -- | " | |
| Copper | " | 0.120 | --- | 0.00200 | " | " | 0.0200 | " | 100% | " | -- | -- | " | |
| Lead | " | 0.0908 | --- | 0.00100 | " | " | 0.000270 | " | 90.5% | " | -- | -- | " | |
| Manganese | " | 0.105 | --- | 0.00200 | " | " | 0.00470 | " | 100% | " | -- | -- | " | |
| Nickel | " | 0.106 | --- | 0.00200 | " | " | 0.00678 | " | 99.2% | " | -- | -- | " | |
| Selenium | " | 0.101 | --- | 0.00100 | " | " | ND | " | 101% | " | -- | -- | " | |
| Silver | " | 0.0491 | --- | 0.00100 | " | " | ND | 0.0500 | 98.2% | " | -- | -- | " | |
| Thallium | " | 0.0436 | --- | 0.00100 | " | " | ND | " | 87.2% | " | -- | -- | " | |
| Zinc | " | 0.120 | --- | 0.00500 | " | " | 0.0181 | 0.100 | 102% | " | -- | -- | " | |

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**Forensic Environmental Services**
113 John Robert Thomas Dr
Exton, PA 19341

Project Name: **GS Roofing-Portland**
Project Number: [none]
Project Manager: Nick DeSalvo

Report Created:
02/01/05 09:27

## Total Metals per EPA 6000/7000 Series Methods - Laboratory Quality Control Results
### North Creek Analytical - Portland

**QC Batch: 4041197** **Water Preparation Method: EPA 200/3005**

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Source Result | Spike Amt | % REC | (Limits) | % RPD | (Limits) | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Matrix Spike (4041197-MS2)** | | | | QC Source: P4D0884-04 | | | | Extracted: 04/29/04 10:05 | | | | | | |
| Antimony | EPA 6020 | 0.0421 | --- | 0.00100 | mg/l | 1x | 0.000200 | 0.0500 | 83.8% | (75-125) | -- | -- | 04/30/04 00:26 | |
| Arsenic | " | 0.112 | --- | 0.00100 | " | " | 0.0122 | 0.100 | 99.8% | " | -- | -- | " | |
| Beryllium | " | 0.0984 | --- | 0.00100 | " | " | ND | " | 98.4% | " | -- | -- | 05/01/04 10:25 | |
| Cadmium | " | 0.0974 | --- | 0.00100 | " | " | ND | " | 97.4% | " | -- | -- | 04/30/04 00:26 | |
| Chromium | " | 0.102 | --- | 0.00100 | " | " | 0.00128 | " | 101% | " | -- | -- | " | |
| Copper | " | 0.106 | --- | 0.00200 | " | " | 0.00799 | " | 98.0% | " | -- | -- | " | |
| Lead | " | 0.0948 | --- | 0.00100 | " | " | 0.00230 | " | 92.5% | " | -- | -- | " | |
| Manganese | " | 1.69 | --- | 0.0125 | " | 6.27x | 1.56 | " | 130% | " | -- | -- | 05/01/04 10:30 | R-02 |
| Nickel | " | 0.101 | --- | 0.00200 | " | 1x | 0.00803 | " | 93.0% | " | -- | -- | 04/30/04 00:26 | |
| Selenium | " | 0.0959 | --- | 0.00100 | " | " | 0.00289 | " | 93.0% | " | -- | -- | " | |
| Silver | " | 0.0498 | --- | 0.00100 | " | " | ND | 0.0500 | 99.6% | " | -- | -- | " | |
| Thallium | " | 0.0450 | --- | 0.00100 | " | " | ND | " | 90.0% | " | -- | -- | " | |
| Zinc | " | 0.117 | --- | 0.00500 | " | " | 0.0178 | 0.100 | 99.2% | " | -- | -- | " | |

**QC Batch: 4041244** **Water Preparation Method: EPA 200/3005**

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Source Result | Spike Amt | % REC | (Limits) | % RPD | (Limits) | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Blank (4041244-BLK1)** | | | | | | | | Extracted: 04/29/04 17:45 | | | | | | |
| Iron | EPA 6010B | ND | --- | 0.100 | mg/l | 1x | -- | -- | -- | -- | -- | -- | 05/05/04 22:12 | |
| **LCS (4041244-BS1)** | | | | | | | | Extracted: 04/29/04 17:45 | | | | | | |
| Iron | EPA 6010B | 4.06 | --- | 0.100 | mg/l | 1x | -- | 4.00 | 102% | (80-120) | -- | -- | 05/05/04 22:26 | |
| **LCS Dup (4041244-BSD1)** | | | | | | | | Extracted: 04/29/04 17:45 | | | | | | |
| Iron | EPA 6010B | 3.96 | --- | 0.100 | mg/l | 1x | -- | 4.00 | 99.0% | (80-120) | 2.49% | (20) | 05/05/04 22:30 | |
| **Duplicate (4041244-DUP1)** | | | | QC Source: P4D0958-03 | | | | Extracted: 04/29/04 17:45 | | | | | | |
| Iron | EPA 6010B | 1.22 | --- | 0.100 | mg/l | 1x | 1.20 | -- | -- | -- | 1.65% | (20) | 05/05/04 22:35 | |
| **Matrix Spike (4041244-MS1)** | | | | QC Source: P4D0958-03 | | | | Extracted: 04/29/04 17:45 | | | | | | |
| Iron | EPA 6010B | 5.15 | --- | 0.100 | mg/l | 1x | 1.20 | 4.00 | 98.8% | (75-125) | -- | -- | 05/05/04 22:39 | |
| **Matrix Spike (4041244-MS2)** | | | | QC Source: P4D0974-01 | | | | Extracted: 04/29/04 17:45 | | | | | | |
| Iron | EPA 6010B | 5.37 | --- | 0.100 | mg/l | 1x | 1.36 | 4.00 | 100% | (75-125) | -- | -- | 05/05/04 22:44 | |



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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| **Forensic Environmental Services** | Project Name: **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: [none] | Report Created: |
| Exton, PA 19341 | Project Manager: Nick DeSalvo | 02/01/05 09:27 |

## Dissolved Metals per EPA 6000/7000 Series Methods - Laboratory Quality Control Results

### North Creek Analytical - Portland

**QC Batch: 4041240** **Water Preparation Method: EPA 200/3005 Diss**

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Source Result | Spike Amt | % REC | (Limits) | % RPD | (Limits) | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Blank (4041240-BLK1)** | | | | | | | | Extracted: 04/29/04 16:44 | | | | | | |
| Iron | EPA 6010B | ND | --- | 0.100 | mg/l | 1x | -- | -- | -- | -- | -- | -- | 05/03/04 16:56 | |
| **LCS (4041240-BS1)** | | | | | | | | Extracted: 04/30/04 11:44 | | | | | | |
| Iron | EPA 6010B | 4.14 | --- | 0.100 | mg/l | 1x | -- | 4.00 | 104% | (80-120) | -- | -- | 05/03/04 17:01 | |
| **LCS Dup (4041240-BSD1)** | | | | | | | | Extracted: 04/30/04 11:44 | | | | | | |
| Iron | EPA 6010B | 4.18 | --- | 0.100 | mg/l | 1x | -- | 4.00 | 104% | (80-120) | 0.962% | (20) | 05/03/04 17:05 | |
| **Duplicate (4041240-DUP1)** | | | | QC Source: | P4D1010-05 | | | Extracted: 04/30/04 11:44 | | | | | | |
| Iron | EPA 6010B | ND | --- | 0.100 | mg/l | 1x | ND | -- | -- | -- | NR | (20) | 05/03/04 17:10 | |
| **Matrix Spike (4041240-MS1)** | | | | QC Source: | P4D1010-05 | | | Extracted: 04/30/04 11:44 | | | | | | |
| Iron | EPA 6010B | 4.04 | --- | 0.100 | mg/l | 1x | ND | 4.00 | 101% | (75-125) | -- | -- | 05/03/04 17:15 | |
| **Matrix Spike (4041240-MS2)** | | | | QC Source: | P4D0961-01 | | | Extracted: 04/30/04 11:44 | | | | | | |
| Iron | EPA 6010B | 17.3 | --- | 0.100 | mg/l | 1x | 13.9 | 4.00 | 85.0% | (75-125) | -- | -- | 05/03/04 17:28 | |

**QC Batch: 4041241** **Water Preparation Method: EPA 200/3005 Diss**

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Source Result | Spike Amt | % REC | (Limits) | % RPD | (Limits) | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Blank (4041241-BLK1)** | | | | | | | | Extracted: 04/29/04 17:02 | | | | | | |
| Antimony | EPA 6020 | ND | --- | 0.00100 | mg/l | 1x | -- | -- | -- | -- | -- | -- | 05/01/04 10:37 | |
| Arsenic | " | ND | --- | 0.00100 | " | " | -- | -- | -- | -- | -- | -- | 05/08/04 02:34 | |
| Beryllium | " | ND | --- | 0.00100 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Cadmium | " | ND | --- | 0.00100 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Chromium | " | ND | --- | 0.00100 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Copper | " | ND | --- | 0.00200 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Iron | EPA 6010B | ND | --- | 0.100 | " | " | -- | -- | -- | -- | -- | -- | 05/10/04 16:22 | |
| Lead | EPA 6020 | ND | --- | 0.00100 | " | " | -- | -- | -- | -- | -- | -- | 05/08/04 02:34 | |
| Manganese | " | ND | --- | 0.00200 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Nickel | " | ND | --- | 0.00200 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Selenium | " | ND | --- | 0.00100 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Silver | " | ND | --- | 0.00100 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Thallium | " | ND | --- | 0.00100 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Zinc | " | ND | --- | 0.00500 | " | " | -- | -- | -- | -- | -- | -- | " | |

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| | | | |
|---|---|---|---|
| **Forensic Environmental Services** | Project Name: | **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: | [none] | Report Created: |
| Exton, PA 19341 | Project Manager: | Nick DeSalvo | 02/01/05 09:27 |

## Dissolved Metals per EPA 6000/7000 Series Methods - Laboratory Quality Control Results

### North Creek Analytical - Portland

**QC Batch: 4041241** **Water Preparation Method: EPA 200/3005 Diss**

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Source Result | Spike Amt | % REC | (Limits) | % RPD | (Limits) | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LCS (4041241-BS1)** | | | | | | | | Extracted: 04/29/04 17:02 | | | | | | |
| Antimony | EPA 6020 | 0.0474 | --- | 0.00100 | mg/l | 1x | -- | 0.0500 | 94.8% | (80-120) | -- | -- | 05/01/04 22:44 | |
| Arsenic | " | 0.0973 | --- | 0.00100 | " | " | -- | 0.100 | 97.3% | " | -- | -- | " | |
| Beryllium | " | 0.0957 | --- | 0.00100 | " | " | -- | " | 95.7% | " | -- | -- | " | |
| Cadmium | " | 0.0933 | --- | 0.00100 | " | " | -- | " | 93.3% | " | -- | -- | " | |
| Chromium | " | 0.0972 | --- | 0.00100 | " | " | -- | " | 97.2% | " | -- | -- | " | |
| Copper | " | 0.0960 | --- | 0.00200 | " | " | -- | " | 96.0% | " | -- | -- | " | |
| Iron | EPA 6010B | 0.883 | --- | 0.100 | " | " | -- | 0.800 | 110% | " | -- | -- | 05/10/04 16:27 | |
| Lead | EPA 6020 | 0.0940 | --- | 0.00100 | " | " | -- | 0.100 | 94.0% | " | -- | -- | 05/01/04 22:44 | |
| Manganese | " | 0.110 | --- | 0.00200 | " | " | -- | " | 110% | " | -- | -- | " | |
| Nickel | " | 0.0955 | --- | 0.00200 | " | " | -- | " | 95.5% | " | -- | -- | " | |
| Selenium | " | 0.0889 | --- | 0.00100 | " | " | -- | " | 88.9% | " | -- | -- | " | |
| Silver | " | 0.0487 | --- | 0.00100 | " | " | -- | 0.0500 | 97.4% | " | -- | -- | " | |
| Thallium | " | 0.0480 | --- | 0.00100 | " | " | -- | " | 96.0% | " | -- | -- | 05/10/04 18:36 | |
| Zinc | " | 0.0938 | --- | 0.00500 | " | " | -- | 0.100 | 93.8% | " | -- | -- | 05/01/04 22:44 | |
| **LCS Dup (4041241-BSD1)** | | | | | | | | Extracted: 04/29/04 17:02 | | | | | | |
| Antimony | EPA 6020 | 0.0492 | --- | 0.00100 | mg/l | 1x | -- | 0.0500 | 98.4% | (80-120) | 3.73% | (20) | 05/01/04 22:51 | |
| Arsenic | " | 0.101 | --- | 0.00100 | " | " | -- | 0.100 | 101% | " | 3.73% | " | " | |
| Beryllium | " | 0.0984 | --- | 0.00100 | " | " | -- | " | 98.4% | " | 2.78% | " | " | |
| Cadmium | " | 0.0978 | --- | 0.00100 | " | " | -- | " | 97.8% | " | 4.71% | " | " | |
| Chromium | " | 0.101 | --- | 0.00100 | " | " | -- | " | 101% | " | 3.83% | " | " | |
| Copper | " | 0.100 | --- | 0.00200 | " | " | -- | " | 100% | " | 4.08% | " | " | |
| Iron | EPA 6010B | 0.862 | --- | 0.100 | " | " | -- | 0.800 | 108% | " | 2.41% | " | 05/10/04 16:32 | |
| Lead | EPA 6020 | 0.0982 | --- | 0.00100 | " | " | -- | 0.100 | 98.2% | " | 4.37% | " | 05/01/04 22:51 | |
| Manganese | " | 0.100 | --- | 0.00200 | " | " | -- | " | 100% | " | 9.52% | " | " | |
| Nickel | " | 0.100 | --- | 0.00200 | " | " | -- | " | 100% | " | 4.60% | " | " | |
| Selenium | " | 0.0930 | --- | 0.00100 | " | " | -- | " | 93.0% | " | 4.51% | " | " | |
| Silver | " | 0.0503 | --- | 0.00100 | " | " | -- | 0.0500 | 101% | " | 3.23% | " | " | |
| Thallium | " | 0.0475 | --- | 0.00100 | " | " | -- | " | 95.0% | " | 1.05% | " | 05/10/04 18:45 | |
| Zinc | " | 0.0962 | --- | 0.00500 | " | " | -- | 0.100 | 96.2% | " | 2.53% | " | 05/01/04 22:51 | |



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| | | |
|---|---|---|
| **Forensic Environmental Services** | Project Name: **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: [none] | Report Created: |
| Exton, PA 19341 | Project Manager: Nick DeSalvo | 02/01/05 09:27 |

## Dissolved Metals per EPA 6000/7000 Series Methods - Laboratory Quality Control Results

### North Creek Analytical - Portland

**QC Batch: 4041241** **Water Preparation Method: EPA 200/3005 Diss**

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Source Result | Spike Amt | % REC | (Limits) | % RPD | (Limits) | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Duplicate (4041241-DUP1)** | | | | QC Source: P4D0911-02 | | | | Extracted: 04/29/04 17:02 | | | | | | |
| Antimony | EPA 6020 | ND | --- | 0.00100 | mg/l | 1x | ND | -- | -- | -- | NR | (20) | 05/01/04 23:05 | |
| Arsenic | " | 0.00582 | --- | 0.00100 | " | " | 0.00632 | -- | -- | -- | 8.24% | " | " | |
| Beryllium | " | ND | --- | 0.00100 | " | " | ND | -- | -- | -- | NR | " | " | |
| Cadmium | " | ND | --- | 0.00100 | " | " | ND | -- | -- | -- | NR | " | " | |
| Chromium | " | ND | --- | 0.00100 | " | " | ND | -- | -- | -- | NR | " | " | |
| Copper | " | 0.0194 | --- | 0.00200 | " | " | ND | -- | -- | -- | 190% | " | 05/10/04 19:03 | zQ-19 |
| Iron | EPA 6010B | 1.91 | --- | 0.100 | " | " | 2.04 | -- | -- | -- | 6.58% | " | 05/10/04 16:36 | |
| Lead | EPA 6020 | 0.0322 | --- | 0.00100 | " | " | ND | -- | -- | -- | NR | " | 05/01/04 23:05 | |
| Manganese | " | 2.30 | --- | 0.0200 | " | 10x | 2.32 | -- | -- | -- | 0.866% | " | 05/07/04 22:40 | |
| Nickel | " | 0.00912 | --- | 0.00200 | " | 1x | 0.00257 | -- | -- | -- | 112% | " | 05/10/04 19:03 | zQ-19 |
| Selenium | " | ND | --- | 0.00100 | " | " | ND | -- | -- | -- | NR | " | 05/01/04 23:05 | |
| Silver | " | ND | --- | 0.00100 | " | " | ND | -- | -- | -- | NR | " | " | |
| Thallium | " | ND | --- | 0.00100 | " | " | ND | -- | -- | -- | NR | " | 05/10/04 19:03 | |
| Zinc | " | 0.0785 | --- | 0.00500 | " | " | ND | -- | -- | -- | 178% | " | " | zQ-19 |
| **Matrix Spike (4041241-MS1)** | | | | QC Source: P4D0911-03 | | | | Extracted: 04/29/04 17:02 | | | | | | |
| Antimony | EPA 6020 | 0.0475 | --- | 0.00100 | mg/l | 1x | ND | 0.0500 | 95.0% | (75-125) | -- | -- | 05/01/04 23:33 | |
| Arsenic | " | 0.105 | --- | 0.00100 | " | " | 0.00153 | 0.100 | 103% | " | -- | -- | " | |
| Beryllium | " | 0.0963 | --- | 0.00100 | " | " | ND | " | 96.3% | " | -- | -- | " | |
| Cadmium | " | 0.0983 | --- | 0.00100 | " | " | ND | " | 98.3% | " | -- | -- | " | |
| Chromium | " | 0.102 | --- | 0.00100 | " | " | ND | " | 102% | " | -- | -- | " | |
| Copper | " | 0.0990 | --- | 0.00200 | " | " | 0.000500 | " | 98.5% | " | -- | -- | " | |
| Iron | EPA 6010B | 2.58 | --- | 0.100 | " | " | 1.54 | 0.800 | 130% | " | -- | -- | 05/10/04 16:41 | |
| Lead | EPA 6020 | 0.0936 | --- | 0.00100 | " | " | ND | 0.100 | 93.6% | " | -- | -- | 05/01/04 23:33 | |
| Manganese | " | 4.39 | --- | 0.0200 | " | 10x | 4.14 | " | 250% | " | -- | -- | 05/07/04 22:54 | Q-03 |
| Nickel | " | 0.0984 | --- | 0.00200 | " | 1x | 0.00125 | " | 97.2% | " | -- | -- | 05/01/04 23:33 | |
| Selenium | " | 0.0973 | --- | 0.00100 | " | " | ND | " | 97.3% | " | -- | -- | " | |
| Silver | " | 0.0497 | --- | 0.00100 | " | " | ND | 0.0500 | 99.4% | " | -- | -- | " | |
| Thallium | " | 0.0476 | --- | 0.00100 | " | " | ND | " | 95.2% | " | -- | -- | 05/04/04 21:07 | |
| Zinc | " | 0.102 | --- | 0.00500 | " | " | 0.00449 | 0.100 | 97.5% | " | -- | -- | 05/01/04 23:33 | |



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|---|---|---|
| **Forensic Environmental Services** | Project Name: **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: [none] | Report Created: |
| Exton, PA 19341 | Project Manager: Nick DeSalvo | 02/01/05 09:27 |

## Dissolved Metals per EPA 6000/7000 Series Methods - Laboratory Quality Control Results

### North Creek Analytical - Portland

**QC Batch: 4041241** **Water Preparation Method: EPA 200/3005 Diss**

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Source Result | Spike Amt | % REC | (Limits) | % RPD | (Limits) | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Matrix Spike (4041241-MS2)** | | | | QC Source: P4D0911-04 | | | | Extracted: 04/29/04 17:02 | | | | | | |
| Antimony | EPA 6020 | 0.0523 | --- | 0.00100 | mg/l | 1x | 0.000380 | 0.0500 | 104% | (75-125) | -- | -- | 05/10/04 10:52 | |
| Arsenic | " | 0.107 | --- | 0.00100 | " | " | 0.00487 | 0.100 | 102% | " | -- | -- | " | |
| Beryllium | " | 0.203 | --- | 0.00100 | " | " | ND | " | 203% | " | -- | -- | " | Q-02 |
| Cadmium | " | 0.107 | --- | 0.00100 | " | " | ND | " | 107% | " | -- | -- | " | |
| Chromium | " | 0.0998 | --- | 0.00100 | " | " | ND | " | 99.8% | " | -- | -- | " | |
| Copper | " | 0.0952 | --- | 0.00200 | " | " | 0.000410 | " | 94.8% | " | -- | -- | " | |
| Iron | EPA 6010B | 7.44 | --- | 0.100 | " | " | 5.80 | 0.800 | 205% | " | -- | -- | 05/10/04 16:45 | Q-03 |
| Lead | EPA 6020 | 0.105 | --- | 0.00100 | " | " | ND | 0.100 | 105% | " | -- | -- | 05/04/04 21:21 | |
| Manganese | " | 3.42 | --- | 0.0200 | " | 10x | 3.43 | " | NR | " | -- | -- | 05/07/04 23:09 | Q-03 |
| Nickel | " | 0.0935 | --- | 0.00200 | " | 1x | 0.00135 | " | 92.2% | " | -- | -- | 05/10/04 10:52 | |
| Selenium | " | 0.0999 | --- | 0.00100 | " | " | 0.000670 | " | 99.2% | " | -- | -- | " | |
| Silver | " | 0.0466 | --- | 0.00100 | " | " | ND | 0.0500 | 93.2% | " | -- | -- | " | |
| Thallium | " | 0.0454 | --- | 0.00100 | " | " | ND | " | 90.8% | " | -- | -- | 05/04/04 21:21 | |
| Zinc | " | 0.0944 | --- | 0.00500 | " | " | 0.00257 | 0.100 | 91.8% | " | -- | -- | 05/10/04 10:52 | |

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|---|---|---|
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| 113 John Robert Thomas Dr | Project Number: [none] | Report Created: |
| Exton, PA 19341 | Project Manager: Nick DeSalvo | 02/01/05 09:27 |

## Dissolved Mercury per EPA Method 7470A - Laboratory Quality Control Results

**North Creek Analytical - Portland**

**QC Batch: 4041095** **Water Preparation Method: EPA 7470**

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Source Result | Spike Amt | % REC | (Limits) | % RPD | (Limits) | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Blank (4041095-BLK1)** | | | | | | | | Extracted: | 04/27/04 13:35 | | | | | |
| Mercury | EPA 7470A | ND | --- | 0.000200 | mg/l | 1x | -- | -- | -- | -- | -- | -- | 04/27/04 14:40 | |
| **LCS (4041095-BS1)** | | | | | | | | Extracted: | 04/27/04 13:35 | | | | | |
| Mercury | EPA 7470A | 0.00525 | --- | 0.000200 | mg/l | 1x | -- | 0.00500 | 105% | (85-115) | -- | -- | 04/27/04 14:43 | |
| **LCS Dup (4041095-BSD1)** | | | | | | | | Extracted: | 04/27/04 13:35 | | | | | |
| Mercury | EPA 7470A | 0.00529 | --- | 0.000200 | mg/l | 1x | -- | 0.00500 | 106% | (85-115) | 0.759% | (20) | 04/27/04 14:45 | |
| **Duplicate (4041095-DUP1)** | | | | QC Source: | P4D0931-40 | | | Extracted: | 04/27/04 13:35 | | | | | |
| Mercury | EPA 7470A | ND | --- | 0.000200 | mg/l | 1x | ND | -- | -- | -- | NR | (20) | 04/27/04 14:48 | |
| **Matrix Spike (4041095-MS1)** | | | | QC Source: | P4D0931-41 | | | Extracted: | 04/27/04 13:35 | | | | | |
| Mercury | EPA 7470A | 0.00490 | --- | 0.000200 | mg/l | 1x | ND | 0.00500 | 98.0% | (75-125) | -- | -- | 04/27/04 14:51 | |
| **Matrix Spike Dup (4041095-MSD1)** | | | | QC Source: | P4D0931-41 | | | Extracted: | 04/27/04 13:35 | | | | | |
| Mercury | EPA 7470A | 0.00505 | --- | 0.000200 | mg/l | 1x | ND | 0.00500 | 101% | (75-125) | 3.02% | (20) | 04/27/04 14:54 | |



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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|---|---|---|
| **Forensic Environmental Services** | Project Name: **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: [none] | Report Created: |
| Exton, PA 19341 | Project Manager: Nick DeSalvo | 02/01/05 09:27 |

## Total Mercury per EPA Method 7470A - Laboratory Quality Control Results

**North Creek Analytical - Portland**

**QC Batch: 4041094** **Water Preparation Method: EPA 7470**

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Source Result | Spike Amt | % REC | (Limits) | % RPD | (Limits) | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Blank (4041094-BLK1)** | | | | | | | | Extracted: 04/27/04 13:34 | | | | | | |
| Mercury | EPA 7470A | ND | --- | 0.000200 | mg/l | 1x | -- | -- | -- | -- | -- | -- | 04/27/04 13:51 | |
| **LCS (4041094-BS1)** | | | | | | | | Extracted: 04/27/04 13:34 | | | | | | |
| Mercury | EPA 7470A | 0.00492 | --- | 0.000200 | mg/l | 1x | -- | 0.00500 | 98.4% | (85-115) | -- | -- | 04/27/04 13:53 | |
| **LCS Dup (4041094-BSD1)** | | | | | | | | Extracted: 04/27/04 13:34 | | | | | | |
| Mercury | EPA 7470A | 0.00495 | --- | 0.000200 | mg/l | 1x | -- | 0.00500 | 99.0% | (85-115) | 0.608% | (20) | 04/27/04 13:56 | |
| **Duplicate (4041094-DUP1)** | | | | QC Source: P4D0911-02 | | | | Extracted: 04/27/04 13:34 | | | | | | |
| Mercury | EPA 7470A | ND | --- | 0.000200 | mg/l | 1x | ND | -- | -- | -- | NR | (20) | 04/27/04 13:59 | |
| **Matrix Spike (4041094-MS1)** | | | | QC Source: P4D0911-03 | | | | Extracted: 04/27/04 13:34 | | | | | | |
| Mercury | EPA 7470A | 0.00535 | --- | 0.000200 | mg/l | 1x | ND | 0.00500 | 107% | (75-125) | -- | -- | 04/27/04 14:01 | |
| **Matrix Spike Dup (4041094-MSD1)** | | | | QC Source: P4D0911-03 | | | | Extracted: 04/27/04 13:34 | | | | | | |
| Mercury | EPA 7470A | 0.00502 | --- | 0.000200 | mg/l | 1x | ND | 0.00500 | 100% | (75-125) | 6.36% | (20) | 04/27/04 14:04 | |



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| 113 John Robert Thomas Dr | Project Number: [none] | Report Created: |
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## Polychlorinated Biphenyls per EPA Method 8082 - Laboratory Quality Control Results

**North Creek Analytical - Portland**

**QC Batch: 4041066** **Water Preparation Method: EPA 3510/600 Series**

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Source Result | Spike Amt | % REC | (Limits) | % RPD | (Limits) | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Blank (4041066-BLK1)** | | | | | | | | | Extracted: 04/27/04 08:58 | | | | | |
| Aroclor 1016 | EPA 8082 | ND | --- | 0.500 | ug/l | 1x | -- | -- | -- | -- | -- | -- | 05/03/04 13:33 | |
| Aroclor 1221 | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Aroclor 1232 | " | ND | --- | 0.500 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Aroclor 1242 | " | ND | --- | 0.500 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Aroclor 1248 | " | ND | --- | 0.500 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Aroclor 1254 | " | ND | --- | 0.500 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Aroclor 1260 | " | ND | --- | 0.500 | " | " | -- | -- | -- | -- | -- | -- | " | |
| *Surrogate(s): 2,4,5,6-Tetrachloro-m-xylene* | | *Recovery: 98.2%* | | | *Limits: 16-137%* | " | | | | | | | *05/03/04 13:33* | |
| *Decachlorobiphenyl* | | *64.8%* | | | *12-130%* | " | | | | | | | " | |
| **LCS (4041066-BS1)** | | | | | | | | | Extracted: 04/27/04 08:58 | | | | | |
| Aroclor 1016 | EPA 8082 | 4.74 | --- | 0.500 | ug/l | 1x | -- | 5.00 | 94.8% | (57-122) | -- | -- | 05/03/04 12:55 | |
| Aroclor 1260 | " | 4.71 | --- | 0.500 | " | " | -- | " | 94.2% | (62-120) | -- | -- | " | |
| *Surrogate(s): 2,4,5,6-Tetrachloro-m-xylene* | | *Recovery: 96.8%* | | | *Limits: 16-137%* | " | | | | | | | *05/03/04 12:55* | |
| *Decachlorobiphenyl* | | *68.2%* | | | *12-130%* | " | | | | | | | " | |
| **LCS Dup (4041066-BSD1)** | | | | | | | | | Extracted: 04/27/04 08:58 | | | | | |
| Aroclor 1016 | EPA 8082 | 4.77 | --- | 0.500 | ug/l | 1x | -- | 5.00 | 95.4% | (57-122) | 0.631% | (22) | 05/03/04 13:14 | |
| Aroclor 1260 | " | 4.61 | --- | 0.500 | " | " | -- | " | 92.2% | (62-120) | 2.15% | (23) | " | |
| *Surrogate(s): 2,4,5,6-Tetrachloro-m-xylene* | | *Recovery: 98.6%* | | | *Limits: 16-137%* | " | | | | | | | *05/03/04 13:14* | |
| *Decachlorobiphenyl* | | *65.2%* | | | *12-130%* | " | | | | | | | " | |

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|---|---|---|---|
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| 113 John Robert Thomas Dr | Project Number: | [none] | Report Created: |
| Exton, PA 19341 | Project Manager: | Nick DeSalvo | 02/01/05 09:27 |

## Volatile Organic Compounds per EPA Method 8260B - Laboratory Quality Control Results

**North Creek Analytical - Portland**

**QC Batch: 4041072** **Water Preparation Method: EPA 5030B**

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Source Result | Spike Amt | % REC | (Limits) | % RPD | (Limits) | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Blank (4041072-BLK1)** | | | | | | | | Extracted: 04/27/04 10:00 | | | | | | |
| Acetone | EPA 8260B | ND | --- | 25.0 | ug/l | 1x | -- | -- | -- | -- | -- | -- | 04/27/04 13:40 | |
| Benzene | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Bromobenzene | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Bromochloromethane | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Bromodichloromethane | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Bromoform | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Bromomethane | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 2-Butanone | " | ND | --- | 10.0 | " | " | -- | -- | -- | -- | -- | -- | " | |
| n-Butylbenzene | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| sec-Butylbenzene | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| tert-Butylbenzene | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Carbon disulfide | " | ND | --- | 10.0 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Carbon tetrachloride | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Chlorobenzene | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Chloroethane | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Chloroform | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Chloromethane | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 2-Chlorotoluene | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 4-Chlorotoluene | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 1,2-Dibromo-3-chloropropane | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Dibromochloromethane | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 1,2-Dibromoethane | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Dibromomethane | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 1,2-Dichlorobenzene | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 1,3-Dichlorobenzene | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 1,4-Dichlorobenzene | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Dichlorodifluoromethane | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 1,1-Dichloroethane | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 1,2-Dichloroethane | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 1,1-Dichloroethene | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| cis-1,2-Dichloroethene | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| trans-1,2-Dichloroethene | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 1,2-Dichloropropane | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 1,3-Dichloropropane | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 2,2-Dichloropropane | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 1,1-Dichloropropene | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| cis-1,3-Dichloropropene | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| trans-1,3-Dichloropropene | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Ethylbenzene | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Hexachlorobutadiene | " | ND | --- | 2.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 2-Hexanone | " | ND | --- | 10.0 | " | " | -- | -- | -- | -- | -- | -- | " | |



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|---|---|---|---|
| **Forensic Environmental Services** | Project Name: | **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: | [none] | Report Created: |
| Exton, PA 19341 | Project Manager: | Nick DeSalvo | 02/01/05 09:27 |

## Volatile Organic Compounds per EPA Method 8260B - Laboratory Quality Control Results

**North Creek Analytical - Portland**

**QC Batch: 4041072** **Water Preparation Method: EPA 5030B**

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Source Result | Spike Amt | % REC | (Limits) | % RPD | (Limits) | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Blank (4041072-BLK1)** | | | | | | | | | Extracted: 04/27/04 10:00 | | | | | |
| Isopropylbenzene | EPA 8260B | ND | --- | 2.00 | ug/l | 1x | -- | -- | -- | -- | -- | -- | 04/27/04 13:40 | |
| p-Isopropyltoluene | " | ND | --- | 2.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 4-Methyl-2-pentanone | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Methyl tert-butyl ether | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Methylene chloride | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Naphthalene | " | ND | --- | 2.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| n-Propylbenzene | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Styrene | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 1,1,1,2-Tetrachloroethane | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 1,1,2,2-Tetrachloroethane | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Tetrachloroethene | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Toluene | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 1,2,3-Trichlorobenzene | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 1,2,4-Trichlorobenzene | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 1,1,1-Trichloroethane | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 1,1,2-Trichloroethane | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Trichloroethene | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Trichlorofluoromethane | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 1,2,3-Trichloropropane | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 1,2,4-Trimethylbenzene | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 1,3,5-Trimethylbenzene | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Vinyl chloride | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| o-Xylene | " | ND | --- | 1.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| m,p-Xylene | " | ND | --- | 2.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| *Surrogate(s): 4-BFB* | | *Recovery: 113%* | | | *Limits: 75-120%* | " | | | | | | | *04/27/04 13:40* | |
| *1,2-DCA-d4* | | *102%* | | | *77-129%* | " | | | | | | | " | |
| *Dibromofluoromethane* | | *108%* | | | *80-121%* | " | | | | | | | " | |
| *Toluene-d8* | | *106%* | | | *80-120%* | " | | | | | | | " | |

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| **Forensic Environmental Services** | Project Name: **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: [none] | Report Created: |
| Exton, PA 19341 | Project Manager: Nick DeSalvo | 02/01/05 09:27 |

## Volatile Organic Compounds per EPA Method 8260B - Laboratory Quality Control Results

**North Creek Analytical - Portland**

**QC Batch: 4041072** **Water Preparation Method: EPA 5030B**

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Source Result | Spike Amt | % REC | (Limits) | % RPD | (Limits) | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LCS (4041072-BS1)** | | | | | | | | | Extracted: 04/27/04 10:00 | | | | | |
| Benzene | EPA 8260B | 19.9 | --- | 1.00 | ug/l | 1x | -- | 20.0 | 99.5% | (80-120) | -- | -- | 04/27/04 11:51 | |
| Chlorobenzene | " | 19.5 | --- | 1.00 | " | " | -- | " | 97.5% | (80-124) | -- | -- | " | |
| 1,1-Dichloroethene | " | 18.9 | --- | 1.00 | " | " | -- | " | 94.5% | (78-120) | -- | -- | " | |
| Toluene | " | 19.7 | --- | 1.00 | " | " | -- | " | 98.5% | (80-124) | -- | -- | " | |
| Trichloroethene | " | 19.6 | --- | 1.00 | " | " | -- | " | 98.0% | (80-132) | -- | -- | " | |
| *Surrogate(s): 4-BFB* | | *Recovery: 103%* | | *Limits: 75-120%* | | " | | | | | | | *04/27/04 11:51* | |
| *1,2-DCA-d4* | | *95.5%* | | *77-129%* | | " | | | | | | | " | |
| *Dibromofluoromethane* | | *100%* | | *80-121%* | | " | | | | | | | " | |
| *Toluene-d8* | | *104%* | | *80-120%* | | " | | | | | | | " | |
| **Matrix Spike (4041072-MS1)** | | | | | QC Source: P4D0875-01 | | | | Extracted: 04/27/04 10:00 | | | | | |
| Benzene | EPA 8260B | 20.7 | --- | 1.00 | ug/l | 1x | ND | 20.0 | 104% | (80-124) | -- | -- | 04/27/04 12:18 | |
| Chlorobenzene | " | 21.3 | --- | 1.00 | " | " | ND | " | 106% | (72.9-134) | -- | -- | " | |
| 1,1-Dichloroethene | " | 18.8 | --- | 1.00 | " | " | ND | " | 94.0% | (79.3-127) | -- | -- | " | |
| Toluene | " | 20.2 | --- | 1.00 | " | " | ND | " | 101% | (79.7-131) | -- | -- | " | |
| Trichloroethene | " | 30.5 | --- | 1.00 | " | " | 11.5 | " | 95.0% | (68.4-130) | -- | -- | " | |
| *Surrogate(s): 4-BFB* | | *Recovery: 104%* | | *Limits: 75-120%* | | " | | | | | | | *04/27/04 12:18* | |
| *1,2-DCA-d4* | | *95.0%* | | *77-129%* | | " | | | | | | | " | |
| *Dibromofluoromethane* | | *101%* | | *80-121%* | | " | | | | | | | " | |
| *Toluene-d8* | | *104%* | | *80-120%* | | " | | | | | | | " | |
| **Matrix Spike Dup (4041072-MSD1)** | | | | | QC Source: P4D0875-01 | | | | Extracted: 04/27/04 10:00 | | | | | |
| Benzene | EPA 8260B | 18.4 | --- | 1.00 | ug/l | 1x | ND | 20.0 | 92.0% | (80-124) | 11.8% | (25) | 04/27/04 12:46 | |
| Chlorobenzene | " | 18.8 | --- | 1.00 | " | " | ND | " | 94.0% | (72.9-134) | 12.5% | " | " | |
| 1,1-Dichloroethene | " | 17.0 | --- | 1.00 | " | " | ND | " | 85.0% | (79.3-127) | 10.1% | " | " | |
| Toluene | " | 18.5 | --- | 1.00 | " | " | ND | " | 92.5% | (79.7-131) | 8.79% | " | " | |
| Trichloroethene | " | 29.3 | --- | 1.00 | " | " | 11.5 | " | 89.0% | (68.4-130) | 4.01% | " | " | |
| *Surrogate(s): 4-BFB* | | *Recovery: 104%* | | *Limits: 75-120%* | | " | | | | | | | *04/27/04 12:46* | |
| *1,2-DCA-d4* | | *93.5%* | | *77-129%* | | " | | | | | | | " | |
| *Dibromofluoromethane* | | *99.5%* | | *80-121%* | | " | | | | | | | " | |
| *Toluene-d8* | | *102%* | | *80-120%* | | " | | | | | | | " | |

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| **Forensic Environmental Services** | Project Name: | **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: | [none] | Report Created: |
| Exton, PA 19341 | Project Manager: | Nick DeSalvo | 02/01/05 09:27 |

## Semivolatile Organic Compounds per EPA Method 8270C - Laboratory Quality Control Results

**North Creek Analytical - Portland**

**QC Batch: 4041130** **Water Preparation Method: EPA 3510/600 Series**

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Source Result | Spike Amt | % REC | (Limits) | % RPD | (Limits) | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Blank (4041130-BLK1)** | | | | | | | | Extracted: 04/28/04 08:23 | | | | | | |
| Acenaphthene | EPA 8270C | ND | --- | 5.00 | ug/l | 1x | -- | -- | -- | -- | -- | -- | 05/05/04 13:39 | |
| Acenaphthylene | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Anthracene | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Benzo (a) anthracene | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Benzo (a) pyrene | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Benzo (b) fluoranthene | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Benzo (ghi) perylene | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Benzo (k) fluoranthene | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Benzoic Acid | " | ND | --- | 50.0 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Benzyl alcohol | " | ND | --- | 10.0 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 4-Bromophenyl phenyl ether | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Butyl benzyl phthalate | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 4-Chloro-3-methylphenol | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 4-Chloroaniline | " | ND | --- | 20.0 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Bis(2-chloroethoxy)methane | " | ND | --- | 10.0 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Bis(2-chloroethyl)ether | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Bis(2-chloroisopropyl)ether | " | ND | --- | 10.0 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 2-Chloronaphthalene | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 2-Chlorophenol | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 4-Chlorophenyl phenyl ether | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Chrysene | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Di-n-butyl phthalate | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Di-n-octyl phthalate | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Dibenzo (a,h) anthracene | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Dibenzofuran | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 1,2-Dichlorobenzene | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 1,3-Dichlorobenzene | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 1,4-Dichlorobenzene | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 3,3'-Dichlorobenzidine | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 2,4-Dichlorophenol | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Diethyl phthalate | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 2,4-Dimethylphenol | " | ND | --- | 10.0 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Dimethyl phthalate | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 4,6-Dinitro-2-methylphenol | " | ND | --- | 10.0 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 2,4-Dinitrophenol | " | ND | --- | 25.0 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 2,4-Dinitrotoluene | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 2,6-Dinitrotoluene | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Bis(2-ethylhexyl)phthalate | " | ND | --- | 10.0 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Fluoranthene | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Fluorene | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Hexachlorobenzene | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |

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| **Forensic Environmental Services** | Project Name: **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: [none] | Report Created: |
| Exton, PA 19341 | Project Manager: Nick DeSalvo | 02/01/05 09:27 |

## Semivolatile Organic Compounds per EPA Method 8270C - Laboratory Quality Control Results

### North Creek Analytical - Portland

**QC Batch: 4041130** **Water Preparation Method: EPA 3510/600 Series**

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Source Result | Spike Amt | % REC | (Limits) | % RPD | (Limits) | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Blank (4041130-BLK1)** | | | | | | | | | Extracted: 04/28/04 08:23 | | | | | |
| Hexachlorobutadiene | EPA 8270C | ND | --- | 10.0 | ug/l | 1x | -- | -- | -- | -- | -- | -- | 05/05/04 13:39 | |
| Hexachlorocyclopentadiene | " | ND | --- | 10.0 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Hexachloroethane | " | ND | --- | 10.0 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Indeno (1,2,3-cd) pyrene | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Isophorone | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 2-Methylnaphthalene | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 2-Methylphenol | " | ND | --- | 10.0 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 3-,4-Methylphenol | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Naphthalene | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 2-Nitroaniline | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 3-Nitroaniline | " | ND | --- | 10.0 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 4-Nitroaniline | " | ND | --- | 10.0 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Nitrobenzene | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 2-Nitrophenol | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 4-Nitrophenol | " | ND | --- | 25.0 | " | " | -- | -- | -- | -- | -- | -- | " | |
| N-Nitrosodi-n-propylamine | " | ND | --- | 10.0 | " | " | -- | -- | -- | -- | -- | -- | " | |
| N-Nitrosodiphenylamine | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Pentachlorophenol | " | ND | --- | 10.0 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Phenanthrene | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Phenol | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Pyrene | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 1,2,4-Trichlorobenzene | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 2,4,5-Trichlorophenol | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| 2,4,6-Trichlorophenol | " | ND | --- | 5.00 | " | " | -- | -- | -- | -- | -- | -- | " | |
| *Surrogate(s): 2-Fluorobiphenyl* | | *Recovery: 61.6%* | | | *Limits: 26-135%* | " | | | | | | | *05/05/04 13:39* | |
| *2-Fluorophenol* | | *41.0%* | | | *6-124%* | " | | | | | | | " | |
| *Nitrobenzene-d5* | | *74.3%* | | | *23-147%* | " | | | | | | | " | |
| *Phenol-d6* | | *29.8%* | | | *11-130%* | " | | | | | | | " | |
| *p-Terphenyl-d14* | | *73.6%* | | | *38-149%* | " | | | | | | | " | |
| *2,4,6-Tribromophenol* | | *70.0%* | | | *19-126%* | " | | | | | | | " | |

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| **Forensic Environmental Services** | Project Name: **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: [none] | Report Created: |
| Exton, PA 19341 | Project Manager: Nick DeSalvo | 02/01/05 09:27 |

## Semivolatile Organic Compounds per EPA Method 8270C - Laboratory Quality Control Results

### North Creek Analytical - Portland

**QC Batch: 4041130** **Water Preparation Method: EPA 3510/600 Series**

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Source Result | Spike Amt | % REC | (Limits) | % RPD | (Limits) | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LCS (4041130-BS1)** | | | | | | | | Extracted: 04/28/04 08:23 | | | | | | |
| Acenaphthene | EPA 8270C | 23.6 | --- | 5.00 | ug/l | 1x | -- | 30.0 | 78.7% | (40-110) | -- | -- | 05/05/04 12:18 | |
| 4-Chloro-3-methylphenol | " | 29.8 | --- | 5.00 | " | " | -- | 40.0 | 74.5% | " | -- | -- | " | |
| 2-Chlorophenol | " | 24.6 | --- | 5.00 | " | " | -- | " | 61.5% | " | -- | -- | " | |
| 1,4-Dichlorobenzene | " | 12.1 | --- | 5.00 | " | " | -- | 30.0 | 40.3% | (20-90) | -- | -- | " | |
| 2,4-Dinitrotoluene | " | 21.4 | --- | 5.00 | " | " | -- | " | 71.3% | (50-110) | -- | -- | " | |
| 4-Nitrophenol | " | 14.3 | --- | 25.0 | " | " | -- | 40.0 | 35.8% | (15-100) | -- | -- | " | |
| N-Nitrosodi-n-propylamine | " | 22.7 | --- | 10.0 | " | " | -- | 30.0 | 75.7% | (40-110) | -- | -- | " | |
| Pentachlorophenol | " | 27.8 | --- | 10.0 | " | " | -- | 40.0 | 69.5% | (30-120) | -- | -- | " | |
| Phenol | " | 12.4 | --- | 5.00 | " | " | -- | " | 31.0% | (15-110) | -- | -- | " | |
| Pyrene | " | 28.7 | --- | 5.00 | " | " | -- | 30.0 | 95.7% | (40-110) | -- | -- | " | |
| 1,2,4-Trichlorobenzene | " | 15.8 | --- | 5.00 | " | " | -- | " | 52.7% | (25-100) | -- | -- | " | |
| *Surrogate(s): 2-Fluorobiphenyl* | | *Recovery:* | *69.7%* | | *Limits:* | *26-135%* | " | | | | | | *05/05/04 12:18* | |
| *2-Fluorophenol* | | | *40.3%* | | | *6-124%* | " | | | | | | " | |
| *Nitrobenzene-d5* | | | *76.4%* | | | *23-147%* | " | | | | | | " | |
| *Phenol-d6* | | | *28.4%* | | | *11-130%* | " | | | | | | " | |
| *p-Terphenyl-d14* | | | *79.3%* | | | *38-149%* | " | | | | | | " | |
| *2,4,6-Tribromophenol* | | | *74.7%* | | | *19-126%* | " | | | | | | " | |
| **LCS Dup (4041130-BSD1)** | | | | | | | | Extracted: 04/28/04 08:23 | | | | | | |
| Acenaphthene | EPA 8270C | 25.3 | --- | 5.00 | ug/l | 1x | -- | 30.0 | 84.3% | (40-110) | 6.95% | (36) | 05/05/04 12:59 | |
| 4-Chloro-3-methylphenol | " | 31.9 | --- | 5.00 | " | " | -- | 40.0 | 79.8% | " | 6.81% | (43) | " | |
| 2-Chlorophenol | " | 25.7 | --- | 5.00 | " | " | -- | " | 64.2% | " | 4.37% | (38) | " | |
| 1,4-Dichlorobenzene | " | 11.3 | --- | 5.00 | " | " | -- | 30.0 | 37.7% | (20-90) | 6.84% | (43) | " | |
| 2,4-Dinitrotoluene | " | 23.0 | --- | 5.00 | " | " | -- | " | 76.7% | (50-110) | 7.21% | (31) | " | |
| 4-Nitrophenol | " | 14.4 | --- | 25.0 | " | " | -- | 40.0 | 36.0% | (15-100) | 0.697% | (36) | " | |
| N-Nitrosodi-n-propylamine | " | 24.5 | --- | 10.0 | " | " | -- | 30.0 | 81.7% | (40-110) | 7.63% | (37) | " | |
| Pentachlorophenol | " | 29.0 | --- | 10.0 | " | " | -- | 40.0 | 72.5% | (30-120) | 4.23% | (40) | " | |
| Phenol | " | 13.3 | --- | 5.00 | " | " | -- | " | 33.2% | (15-110) | 7.00% | (36) | " | |
| Pyrene | " | 30.4 | --- | 5.00 | " | " | -- | 30.0 | 101% | (40-110) | 5.75% | (31) | " | |
| 1,2,4-Trichlorobenzene | " | 15.7 | --- | 5.00 | " | " | -- | " | 52.3% | (25-100) | 0.635% | (42) | " | |
| *Surrogate(s): 2-Fluorobiphenyl* | | *Recovery:* | *69.6%* | | *Limits:* | *26-135%* | " | | | | | | *05/05/04 12:59* | |
| *2-Fluorophenol* | | | *40.6%* | | | *6-124%* | " | | | | | | " | |
| *Nitrobenzene-d5* | | | *77.1%* | | | *23-147%* | " | | | | | | " | |
| *Phenol-d6* | | | *29.0%* | | | *11-130%* | " | | | | | | " | |
| *p-Terphenyl-d14* | | | *80.1%* | | | *38-149%* | " | | | | | | " | |
| *2,4,6-Tribromophenol* | | | *74.7%* | | | *19-126%* | " | | | | | | " | |

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| | | |
|---|---|---|
| **Forensic Environmental Services** | Project Name: **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: [none] | Report Created: |
| Exton, PA 19341 | Project Manager: Nick DeSalvo | 02/01/05 09:27 |

## Conventional Chemistry Parameters per Standard Methods - Laboratory Quality Control Results

### North Creek Analytical - Portland

**QC Batch: 4041057** **Water Preparation Method: General Preparation**

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Source Result | Spike Amt | % REC | (Limits) | % RPD | (Limits) | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Blank (4041057-BLK1)** | | | | | | | | Extracted: 04/27/04 07:32 | | | | | | |
| Carbon dioxide | SM 4500-C | ND | --- | 10.0 | mg/l | 1x | -- | -- | -- | -- | -- | -- | 04/27/04 08:00 | |
| **Duplicate (4041057-DUP1)** | | | | QC Source: P4D0911-02 | | | | Extracted: 04/27/04 07:32 | | | | | | |
| Carbon dioxide | SM 4500-C | 50.3 | --- | 10.0 | mg/l | 1x | 48.3 | -- | -- | -- | 4.06% | (20) | 04/27/04 08:00 | |



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Brian L Cone

Brian Cone, Industrial Services Manager

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| | | |
|---|---|---|
| **Forensic Environmental Services** | Project Name: **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: [none] | Report Created: |
| Exton, PA 19341 | Project Manager: Nick DeSalvo | 02/01/05 09:27 |

## Anions per EPA Method 300.0 - Laboratory Quality Control Results

**North Creek Analytical - Portland**

**QC Batch: 4041047** **Water Preparation Method: Wet Chem**

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Source Result | Spike Amt | % REC | (Limits) | % RPD | (Limits) | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Blank (4041047-BLK1)** | | | | | | | | Extracted: | | 04/26/04 14:05 | | | | |
| Sulfate | EPA 300.0 | ND | --- | 1.00 | mg/l | 1x | -- | -- | -- | -- | -- | -- | 04/26/04 15:55 | |
| Nitrate-Nitrogen | " | ND | --- | 0.100 | " | " | -- | -- | -- | -- | -- | -- | " | |
| **LCS (4041047-BS1)** | | | | | | | | Extracted: | | 04/26/04 14:05 | | | | |
| Nitrate-Nitrogen | EPA 300.0 | 5.28 | --- | 0.100 | mg/l | 1x | -- | 5.00 | 106% | (90-110) | -- | -- | 04/26/04 16:09 | |
| Sulfate | " | 31.1 | --- | 1.00 | " | " | -- | 30.0 | 104% | " | -- | -- | " | |
| **Duplicate (4041047-DUP1)** | | | | QC Source: | P4D0894-01 | | | Extracted: | | 04/26/04 14:05 | | | | |
| Nitrate-Nitrogen | EPA 300.0 | 0.730 | --- | 0.100 | mg/l | 1x | 0.700 | -- | -- | -- | 4.20% | (20) | 04/26/04 17:33 | |
| Sulfate | " | 10.8 | --- | 1.00 | " | " | 10.8 | -- | -- | -- | 0.00% | " | " | |
| **Matrix Spike (4041047-MS1)** | | | | QC Source: | P4D0894-01 | | | Extracted: | | 04/26/04 14:05 | | | | |
| Sulfate | EPA 300.0 | 15.0 | --- | 1.11 | mg/l | 1x | 10.8 | 4.44 | 94.6% | (80-120) | -- | -- | 04/26/04 17:47 | |
| Nitrate-Nitrogen | " | 2.86 | --- | 0.111 | " | " | 0.700 | 2.22 | 97.3% | " | -- | -- | " | |
| **Matrix Spike (4041047-MS2)** | | | | QC Source: | P4D0911-02 | | | Extracted: | | 04/26/04 14:05 | | | | |
| Nitrate-Nitrogen | EPA 300.0 | 2.18 | --- | 0.111 | mg/l | 1x | ND | 2.22 | 98.2% | (80-120) | -- | -- | 04/26/04 22:00 | |
| Sulfate | " | 9.28 | --- | 1.11 | " | " | 5.00 | 4.44 | 96.4% | " | -- | -- | " | |
| **Matrix Spike Dup (4041047-MSD1)** | | | | QC Source: | P4D0894-01 | | | Extracted: | | 04/26/04 14:05 | | | | |
| Nitrate-Nitrogen | EPA 300.0 | 2.87 | --- | 0.111 | mg/l | 1x | 0.700 | 2.22 | 97.7% | (80-120) | 0.349% | (20) | 04/26/04 18:01 | |
| Sulfate | " | 15.0 | --- | 1.11 | " | " | 10.8 | 4.44 | 94.6% | " | 0.00% | " | " | |
| **Matrix Spike Dup (4041047-MSD2)** | | | | QC Source: | P4D0911-02 | | | Extracted: | | 04/26/04 14:05 | | | | |
| Nitrate-Nitrogen | EPA 300.0 | 2.18 | --- | 0.111 | mg/l | 1x | ND | 2.22 | 98.2% | (80-120) | 0.00% | (20) | 04/26/04 20:14 | |
| Sulfate | " | 9.33 | --- | 1.11 | " | " | 5.00 | 4.44 | 97.5% | " | 0.537% | " | " | |



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| | | |
|---|---|---|
| **Forensic Environmental Services** | Project Name: **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: [none] | Report Created: |
| Exton, PA 19341 | Project Manager: Nick DeSalvo | 02/01/05 09:27 |

## Volatile Petroleum Products by NWTPH-Gx - Laboratory Quality Control Results

**North Creek Analytical - Bothell**

**QC Batch: 4D29012** **Water Preparation Method: EPA 5030B (P/T)**

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Source Result | Spike Amt | % REC | (Limits) | % RPD | (Limits) | Analyzed | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Blank (4D29012-BLK1)** | | | | | | | | Extracted: 04/29/04 08:01 | | | | | | |
| Gasoline Range Hydrocarbons | NWTPH-Gx | ND | --- | 50.0 | ug/l | 1x | -- | -- | -- | -- | -- | -- | 04/29/04 10:29 | |
| *Surrogate(s): 4-BFB (FID)* | | *Recovery: 84.0%* | | *Limits: 62-127%* | | " | | | | | | | *04/29/04 10:29* | |
| **LCS (4D29012-BS1)** | | | | | | | | Extracted: 04/29/04 08:01 | | | | | | |
| Gasoline Range Hydrocarbons | NWTPH-Gx | 465 | --- | 50.0 | ug/l | 1x | -- | 500 | 93.0% | (80-120) | -- | -- | 04/29/04 10:59 | |
| *Surrogate(s): 4-BFB (FID)* | | *Recovery: 109%* | | *Limits: 62-127%* | | " | | | | | | | *04/29/04 10:59* | |
| **LCS Dup (4D29012-BSD1)** | | | | | | | | Extracted: 04/29/04 08:01 | | | | | | |
| Gasoline Range Hydrocarbons | NWTPH-Gx | 490 | --- | 50.0 | ug/l | 1x | -- | 500 | 98.0% | (80-120) | 5.24% | (25) | 04/29/04 11:28 | |
| *Surrogate(s): 4-BFB (FID)* | | *Recovery: 112%* | | *Limits: 62-127%* | | " | | | | | | | *04/29/04 11:28* | |
| **Matrix Spike (4D29012-MS1)** | | | | QC Source: P4D0911-02 | | | | Extracted: 04/29/04 08:01 | | | | | | |
| Gasoline Range Hydrocarbons | NWTPH-Gx | 627 | --- | 50.0 | ug/l | 1x | 118 | 500 | 102% | (72-119) | -- | -- | 04/29/04 17:49 | |
| *Surrogate(s): 4-BFB (FID)* | | *Recovery: 129%* | | *Limits: 62-127%* | | " | | | | | | | *04/29/04 17:49* | *S-04* |
| **Matrix Spike Dup (4D29012-MSD1)** | | | | QC Source: P4D0911-02 | | | | Extracted: 04/29/04 08:01 | | | | | | |
| Gasoline Range Hydrocarbons | NWTPH-Gx | 589 | --- | 50.0 | ug/l | 1x | 118 | 500 | 94.2% | (72-119) | 6.25% | (25) | 04/29/04 18:19 | |
| *Surrogate(s): 4-BFB (FID)* | | *Recovery: 122%* | | *Limits: 62-127%* | | " | | | | | | | *04/29/04 18:19* | |

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| | | | |
|---|---|---|---|
| **Forensic Environmental Services** | Project Name: | **GS Roofing-Portland** | |
| 113 John Robert Thomas Dr | Project Number: | [none] | Report Created: |
| Exton, PA 19341 | Project Manager: | Nick DeSalvo | 02/01/05 09:27 |

## Notes and Definitions

Report Specific Notes:

| | | |
|---|---|---|
| M-04 | - | Sample Filtered through 0.45 micron filter in Laboratory prior to analysis. |
| Q-02 | - | The matrix spike recovery, and/or RPD, for this QC sample is outside of established control limits due to sample matrix interference. |
| Q-03 | - | The matrix spike recovery, and/or RPD, for this QC sample cannot be accurately calculated due to the high concentration of analyte already present in the source sample. |
| Q-06 | - | RPD is not applicable for analyte concentrations less than 5 times the MRL. |
| R-01 | - | The reporting limit for this analyte was raised to compensate for the limited sample quantity available for the analysis. |
| R-02 | - | The reporting limit for this analyte was raised due to the high analyte concentration present in the sample. |
| S-04 | - | The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect. |
| zQ-19 | - | The matrix spike recovery, and/or RPD, for this QC sample is outside of control limits due to a non-homogeneous sample matrix. |

Laboratory Reporting Conventions:

| | | |
|---|---|---|
| DET | - | Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only. |
| ND | - | Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate). |
| NR / NA | - | Not Reported / Not Available |
| dry | - | Sample results reported on a dry weight basis. Reporting Limits are corrected for %Solids when %Solids are <50%. |
| wet | - | Sample results and reporting limits reported on a wet weight basis (as received). |
| RPD | - | Relative Percent Difference. (RPDs calculated using Results, not Percent Recoveries). |
| MRL | - | METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table. |
| MDL* | - | METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated results. |
| Dil | - | Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data. |
| Reporting limits | - | Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable. |

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# CHAIN OF CUSTODY REPORT

**Work Order #:** P4DC911

CLIENT: Forensic Environmental Services, Inc
REPORT TO: Nick DeSalvo
ADDRESS: 113 John Robert Thomas Drive
Exton, PA 19341
PHONE: 610-594-3940 FAX:
PROJECT NAME: GS Roofing
PROJECT NUMBER:
SAMPLED BY: Jay Greifer - PNG

INVOICE TO: NDC FES
P.O. NUMBER:

TURNAROUND REQUEST in Business Days*
Organic & Inorganic Analyses: 10 (STD.) | 7 | 5 | 4 | 3 | 2 | 1 | <1
Petroleum Hydrocarbon Analyses: 5 (STD.) | 4 | 3 | 2 | 1 | <1
OTHER — Please Specify
*Turnaround Requests less than standard may incur Rush Charges.

REQUESTED ANALYSES

| CLIENT SAMPLE IDENTIFICATION | SAMPLING DATE/TIME | PPL VOCs 8260B | PPL SVOCs 8270C | PCBs 8082 | NW TPH Fix | NW TPH Dx | Metals PPL Tot+Fe+Mn | Metals PPL Diss+Fe+Mn | SULFATE 300 | NITRATE 300 | Free CO2 4500 CO2 | | | | MATRIX (W, S, O) | # OF CONT. | COMMENTS | NCA WO ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. TB042604 | 4-26-04 00800 | X | | | | | | | | | | | | | Water | 1 | | |
| 2. MW-1 | 1158 | X | X | X | X | X | X | X | X | X | X | | | | | 11 | | |
| 3. MW-11 | 0950 | X | X | X | X | X | X | X | X | X | X | | | | | 11 | | |
| 4. MW-12 | 1123 | X | X | X | X | X | X | X | X | X | X | | | | | 11 | | |
| 5. MW-14 | 1221 | X | X | X | X | X | X | X | X | X | X | | | | | 10 | | |
| 6. MW-50 | 0940 | X | X | X | X | X | X | X | X | X | X | | | | | 11 | | |
| 7. | | | | | | | | | | | | | | | | | | |
| 8. | | | | | | | | | | | | | | | | | | |
| 9. | | | | | | | | | | | | | | | | | | |
| 10. | | | | | | | | | | | | | | | | | | |
| 11. | | | | | | | | | | | | | | | | | | |
| 12. | | | | | | | | | | | | | | | | | | |
| 13. | | | | | | | | | | | | | | | | | | |
| 14. | | | | | | | | | | | | | | | | | | |
| 15. | | | | | | | | | | | | | | | | | | |

RELINQUISHED BY: Jay Greifer DATE: 4-26-04 RECEIVED BY: Callie Fanshold DATE: 4/26/04
PRINT NAME: Jay Greifer FIRM: PNG TIME: 1320 PRINT NAME: Callie Fanshold FIRM: NCA TIME: 1320
RELINQUISHED BY: DATE: RECEIVED BY: DATE:
PRINT NAME: FIRM: TIME: PRINT NAME: FIRM: TIME:

ADDITIONAL REMARKS: cc: client TEMP: 3.3

COC REV 3/99 PAGE OF

# NORTH CREEK ANALYTICAL COOLER RECEIPT FORM

(Army Corp. compliant)

Client: Forensic Enviro.

1. **Please sign for receipt and opening of** 1 **cooler or** _____ **other** _____

   By (print) Callie Fahshold (sign) Callie Fahshold

2. Date samples received 4/26/04 Date opened: Same X or ___/___/___

3. Delivered by: ___NCA courier ___ FedEx ___UPS ___Courier X Client ___Other_____

   Airbill # if applicable _____ (Put copy of shipping papers in file)

4. There were 0 custody seals present, signed by _____ date ___/___/___.

5. Were the custody seals unbroken and intact at the date and time of arrival? ____Yes ____No

6. Was ice used? Y yes ____no Type of ice: ____ blue ice ____gel ice Y real ice

   Temperature (degrees C) _____ Raytek thermometer 3.3 Digi-Therm (probe temperature blank)

7. Are custody papers sealed in a plastic bag and taped inside to lid? ____ Yes X No

8. Were custody papers filled out properly (ink, signed, etc.)? X Yes ____ No

   If "no" please specify: _____

9. Was project identifiable from custody papers? X Yes ____ No

   Name of project GS Roofing (if applicable)

10. **Initial and date for unpacking:** VE **(initials)** **date** 4/26/04

11. Packing material: Y bubble wrap/bag ____styrofoam ____cardboard _____other

12. Were samples in bags? ____ Yes X No

13. Did all containers indicated on the COC arrive? X Yes ____ No

    If "no" please indicate which containers were absent _____

14. Were all containers unbroken and labels in good condition? X Yes ____ No

    If "no" please indicate which containers _____

15. Were all bottle labels complete (ID, date, time, signature, etc.)? ____ Yes X No

    Do the IDs, times, etc. agree with the COC? X Yes ____ No

    If "no" please indicate which containers no time on labels

16. Are containers properly preserved for indicated analysis? X Yes ____ No

17. Is there adequate volume for the test(s) requested? X Yes ____ No

    ~~1 gallon~~ for MW-14 only 1/2 Full + only ~~1 gallon~~ for SVOC + PCB

18. If voa vials were submitted, are they free of bubbles? ____ N/A X Yes ____ No

19. **Log-in phase: Date samples were logged in:** 4/26/04 **Elm Project #** PHD0911

20. Logged in by (print) Kim Davis (sign) [illegible]

21. Was the project manager notified of status? (Use back of form as a record) ____ Yes X No