Appendix D
Results of 2004 Testing of ASB Sludges and Berm Sands

This appendix describes the results of testing of sludges and berm sands at the aerated stabilization basin (ASB) facility located in Bellingham Bay in Bellingham, Washington. This investigation was performed by RETEC during the summer of 2004 as part of the Whatcom Waterway Remedial Investigation/Feasibility Study (RI/FS). This work was prepared consistent with Agreed Order DE95TC-N399 and Work Plan Addendum 5. This testing was performed consistent with a sampling plan approved by the Department of Ecology (Ecology).

D.1 Introduction and Background

The primary objectives of this study were to collect additional chemical and physical testing data to support the RI/FS evaluations of the ASB sludges and berm areas. Field activities included a bathymetry survey, solids thickness probing, solids and berm sand sampling and dewatering tests of ASB sludges.

GP has owned and operated a pulp and paper mill adjacent to the Whatcom Waterway since the 1960s. Prior to 1971, facility wastewater was discharged to the Whatcom Waterway. Facility primary wastewater treatment was initiated in 1972 and the direct discharge of wastewater to the Whatcom Waterway was discontinued in 1979 after construction and operation of the ASB secondary wastewater secondary treatment system.

The ASB was designed to treat large quantities of process wastewater with continuous aeration. Compressors provided air to static aerators tethered at elevation –7.0 feet (MLLW) across the lagoon bottom. The ASB is separated into two sections by a panel wall to prevent short-circuiting. In the first ASB section, sufficient oxygen is supplied to maintain aerobic conditions and sufficient energy is created to prevent deposition of solids. Most organic stabilization occurs under this condition. The second section of the basin facilitates settlement of solids and anaerobic decomposition. A partially mixed condition is maintained by aerators to ensure oxidizing conditions exist in the surface waters. Microbial metabolism is enhanced with ammonia and phosphoric acid additions due to the wastewater's nutrient deficiency and lime is added for neutralization.

Construction of the ASB was completed between 1978 and 1979. Pre-construction design borings were performed to evaluate the ASB location and selection of the outfall alignment. A Phase II Geotechnical Exploration Report was prepared and summarized engineering conclusions and recommendations for the proposed ASB lagoon and outfall. A Department of the Army Permit (No. 071-OYB-2-004368) was submitted in May 1978 and

presents the lagoon construction details. Specific as-builts for the ASB are not available.

The permit proposed the ASB bottom at an elevation of –12 feet MLLW. Generally, the interior of the lagoon berm consists of imported sand with rock placed under and along the exterior of the sand. A combination of bentonite, lignin and sand was used as a seal along the inside of the berm surface and lagoon bottom to prevent wastewater from leaching into Bellingham Bay.

Treated effluent from the ASB is discharged through an outfall chamber situated on the southwest wall. The outfall and diffuser section run approximately 8,000 feet to the southwest. The outfall consists of 60-inch inside diameter concrete pipe and is supported on a series of steel pile structures. The diffuser section is approximately 2,000 feet with 1.5-inch diameter ports on either side of the pipe. The scope of this investigation was limited to the interior of the ASB and no sampling was performed in the vicinity of the outfall.

D.2 Investigation Methods

This section describes the methods used to conduct the ASB sludges and berm soil investigations. Sections D.3 and D.4 present the results and conclusions of these investigations.

D.2.1 Overview of Investigation

All field activities were performed as outlined in the Sampling and Analysis Plan (RETEC, 2004) for each respective investigation. Deviations from the SAP are described below. Field activities were also conducted in accordance with procedures and actions defined in WAC 173-340-350 and the Washington State Sediment Management Standards (SMS) Chapter WAC-173-204 (Washington State Department of Ecology [Ecology], 1995). Sediment sample collection followed the guidelines defined by the Puget Sound Dredged Disposal Analysis Program (PSDDA) and those presented in Puget Sound Estuarine Protocols (PSEP).

Field sampling locations are presented on Figure 1. All collected samples were submitted to Analytical Resources, Inc. (ARI) for chemical and physical testing and handled in accordance with PSDDA and PSEP testing protocols and QA/QC requirements.

Field data collected during the investigation included the following:

- **Bathymetry:** A bathymetric survey was conducted by Blue Water Engineering. The survey consisted of tracks running perpendicular to the shore at approximately 50-foot spacing and measurements recorded every 10 to 20 feet per track line.

- **Sludge Thickness Probing:** ASB solids thickness was estimated using a 30-foot aluminum pole marked at one-foot intervals. Five transects were completed with five probing locations for each transect.

- **ASB Sludge Sampling:** Surface samples were collected from the ASB lagoon by Van Veen surface grab and Ponar gravity core. The grabs were deployed from an on-site motor vessel provided by GP. Samples were submitted for physical testing and dewatering tests.

- **ASB Berm Sand Sampling:** Berm sand samples were collected from temporary Geoprobe borings completed along the ASB berm roadway. Samples were submitted and analyzed for chemical and physical parameters.

D.2.2 General Work Requirements

Health and Safety

All site activities were conducted following procedures presented in the Site-Specific Health and Safety Plan (HASP). Before beginning work on the first day of field activities, a meeting was conducted to review the HASP. The plan was kept at the site during any work and was available for review. Safe work meetings were conducted on an as-needed basis to discuss planned work and review any safety issues.

Prior to field activities, utilities were located. No work activities were conducted in areas in the immediate vicinity of utilities. No invasive testing was performed without prior location of all on-site utilities, including fiber optic lines.

Prevention of Contaminant Releases

To prevent contaminants from leaving the site, all equipment that came in contact with potentially contaminated soil or surface water/solids was decontaminated before it left the immediate area of the site. Personal decontamination was also performed before leaving the immediate area. The personal decontamination area included containers for disposal of used personal protective equipment, and additional fresh water for washing the skin. The procedures for decontamination were presented in the HASP.

Navigation, Positioning, and Location Control

Positioning and navigation for sample locations was accomplished using a Real Time Kinematic (RTK) differential global positioning system (DGPS) that allowed for sub-meter horizontal and vertical accuracy. A Trimble global positioning system (GPS) was also employed. The objectives for the sample station positioning require an accuracy of plus or minus 3 meters with a minimum completeness of 90 percent of all sampling stations. To meet these requirements, the instrument was calibrated over a known coordinate prior to the initiation of any field activities. The datum for all survey data was

reported in SEDQUAL format in North American Datum 1983 (NAD83), South Zone.

D.2.3 ASB Bathymetry and Solids Thickness Probing

ASB bathymetry and solids thickness data were collected to estimate the volume of lagoon solids to be used for remedial alternative evaluations. This data was used to confirm the volume of ASB sludges from prior volume calculations determined during the supplemental RI/FS.

Bathymetry

The bathymetric survey was conducted by Blue Water Engineering, in conformation with United States Army Corp of Engineers (USACE) Class 1 survey standards (USACE, 2002). Bathymetry was measured using a standard single beam echo sounder from a 10-foot *Livingston* with a small outboard. Echo sounder measurements were confirmed using a sounding pole at approximately 20 different locations. Spatial coverage included the ASB lagoon and slope areas. Survey transects ran perpendicular to the shore at approximately 50-foot spacing with measurements collected every 10 to 20 feet per transect, adjusted as necessary. Positioning was confirmed using a DGPS. The survey data was edited for spikes and anomalies and then elevation-corrected.

In conjunction with the bathymetry survey, Blue Water Engineering also surveyed the surface water elevation in the ASB.

Solids Thickness Probing

Solids thickness probing was performed to confirm the approximate sediment bottom (hard sediment) present during the ASB construction as proposed on the Army Corp permit. A small barge-like motor vessel was provided by GP and a 30-foot marked aluminum pole was used. Measurements were obtained by positioning the motor vessel along a transect line using DGPS, using the echo sounder to measure water depth and extending the aluminum pole from the top of solids to refusal (hard sediment). The DGPS location, water depth and total depth to refusal were recorded. Solids thickness measurements were recorded along five transects with five measurements taken along each transect line. Results were used in conjunction with bathymetry data and previous mudline elevations (pre-ASB construction) to estimate the volume of sludges within the ASB.

D.2.4 ASB Sample Collection

The ASB investigation included two phases of sampling activities. ASB sludges were collected for physical testing and ASB containment berm soil samples were collected for chemical and physical testing. Sample collection methodologies are presented below.

ASB Sludge Sampling

Eight locations were sampled for ASB sludges as shown in Figure 1. Samples SS-01 through SS-07 were collected as surface grabs using a stainless steel Van Veen sediment grab sampler (0.025 m^2). Due to failed recovery attempts at sample location SS-08, a Ponar gravity core sampler and ten-pound weight were employed. All sampling devices were deployed from a barge-like motorized vessel provided by GP.

Grabs that did not meet acceptance requirements were rejected and additional attempts were made within a 20-foot radius. Once accepted, the overlying water was siphoned off. Solids grabs were observed and described in accordance with the visual-manual description procedure (Method ASTM D-2488 modified).

Solids grab samples were submitted to ARI for physical testing and performed following PSEP and PSDDA procedures. Physical testing included pH, total solids, total volatile solids, ash content, density, specific gravity and grain size. Table D-1 presents a summary of physical testing performed at each solids sampling location.

ASB Berm Sand Sampling

Eight temporary Geoprobe borings were advanced on the perimeter of the ASB berm for chemical and physical testing of subsurface soils. ASB berm sand sample locations are presented on Figure 1. Two borings were advanced on each side of the ASB berm, including the landward area in the proximity of the GP warehouse.

ASB berm sand samples were collected from locations BERM-01 (10-16 ft bgs), BERM-02 (10-16 ft bgs), BERM-03 (10-16 ft bgs), BERM-04 (8-14 ft bgs), BERM-05 (8-14 ft bgs), BERM-06 (10-16 ft bgs), BERM-07 (7-11 ft bgs), and BERM-08 (10-14 ft bgs). Geoprobe sampling was conducted using continuous sampling to provide the best definition of subsurface conditions. Sand samples collected from the borings were field screened for the presence of gross contamination. Sand samples were collected just below the water interface as observed at the time of sampling. Geoprobe boring logs are included as attachments to this Appendix.

Collected samples were submitted to ARI for chemical and physical testing and performed following PSEP and PSDDA procedures. Table D-2 presents a summary of the chemical and physical testing performed at each berm sand sampling location. Chemical analyses included conventionals (pH, total solids, preserved total solids, ammonia, sulfide and total organic carbon), heavy metals, PCBs and SVOCs. In addition, two composite samples were analyzed for dioxins-furans and submitted to STL for analysis. The composite samples consisted of COMP-01 (BERM-01, BERM-04 and BERM-06) and COMP-02 (BERM-07 and BERM-08). COMP-03 was also submitted for dioxins-furans analysis as a control sample composed of clean silicon dioxide

(particle size of 0.5-10 um) obtained from Sigma-Aldrich. Physical testing included grain size analysis.

D.3 Results of ASB Investigation

This section describes the results of the ASB investigations consistent with the scope discussed in Section D.2 above. Field sampling locations are presented on Figure 1. Solids thickness probing details are provided in Table D-3 and a summary description of solids grab samples is presented in Table D-4. Chemical and physical testing results are summarized in Tables D-5, D-6 and D-7. The laboratory analytical reports are attached as part of this appendix.

D.3.1 Bathymetry and Solids Thickness Probing

The bathymetric survey and solids thickness probing measurements are presented in Figure 2. The bathymetry contour lines are shown in one-foot intervals The surface water elevation in the ASB lagoon was surveyed and measured at 19.27 feet MLLW.

The sludge thickness probing measurement details are presented in Table D-3 and shown in Figure 2 as distinct locations with the associated refusal elevation noted. The depth to hard bottom was generally between -13 ft MLLW and -16 ft MLLW, which is consistent with the historical neat-line dredge elevation of -12 ft MLLW, after providing for typical historical over-dredge allowances for production dredging. Excluding outlier measurements, the average hard sediment (refusal) elevation was approximately –14.3 feet MLLW as measured in the field.

The sludge thickness was estimated at each location by subtracting the depth of water from the probing refusal depth. Sludge thickness was consistent with the bathymetry data, as areas with greater sludge thickness showed a higher water/solids interface (mudline) elevation. The average sludge thickness based on the 25 measurement locations was approximately 8.0 feet.

D.3.2 Results of ASB Sludge Sampling

The ASB sludges were sampled in eight locations (SS-01 to SS-08) and tested for physical parameters. A summary of sample descriptions is presented in Table D-2. The description summary includes field observations and recovery details.

Physical testing included pH, total solids, total volatile solids, ash content, specific gravity, and grain size. The results of the physical testing are presented in Table D-5.

The samples consisted generally of silty sand with clay. Gravel was not identified in any sample and very little course sand was identified in sample SS-08 (0.29%). Samples collected on the east area of the panel wall showed an increase in silt and ash content. Sample SS-08 showed a larger increase in

silt, ash, density and total solids results with a larger decrease in organic matter. This sample was located adjacent the receiving outfall in the southeast area of the ASB.

D.3.3 Results of ASB Sludge Dewatering Tests

The results of ASB sludge dewatering tests are described in the attached memorandum from Veolia Water North America (Houston, TX). Results indicated that sludge dewatering using chemical and physical enhancements could achieve a dewatered solids concentration roughly twice the initial value. Results suggested that the degree of solids dewatering readily achievable with conventional separation technology will vary with the specific sludge sample, with final solids values ranging from about 20% to over 41% by weight. Cationic polymers enhanced the separation achievable with physical methods.

D.3.4 Results of ASB Berm Sand Sampling

Sampling of the ASB berm sand included advancing eight temporary Geoprobe boring around the perimeter of the ASB. Two sample locations were completed on each side of the berm and are shown in Figure 1. Berm sand samples were submitted for chemical and physical testing at each location and samples were collected just below the water interface as observed at the time of sampling. The results of berm sand chemical testing are summarized in Tables D-6 and D-7. The physical testing results are summarized in Table D-8.

Chemical Testing

Chemical testing of ASB berm sand samples included conventionals, heavy metals, PCBs, SVOCs and dioxins/furans. Sample analyses followed PSEP/PSDDA protocols. Chemical testing results are summarized in Tables D-6 and D-7. Chemical concentrations were compared with applicable Sediment Management Standard (SMS) screening criteria including Sediment Quality Standards (SQS) and Minimum Cleanup Levels (MCUL). Dioxins-furans were compared to applicable Puget Sound Dredge Disposal Analysis (PSDDA) screening criteria and MTCA Method B cleanup levels for unrestricted land uses..

Conventionals

A summary of analytical results for pH, total solids, preserved total solids, N-ammonia, sulfide, and total organic carbon is presented in Table D-6. pH values ranged from 9.07 (BERM-03) to 7.70 (BERM-05). Total solids ranged from 97.20% (BERM-05) to 94.4% (BERM-06). The range of preserved total solids values was 94.70% (BERM-01) to 89.50% (BERM-07). N-ammonia values ranged from 0.64 mg/N-kg (BERM-08) to 0.13 mg/N-kg (BERM-04). The total organic carbon values ranged from 0.320% (BERM-08) to 0.088% (BERM-02). Sulfide values were all below laboratory detection limits which ranged from 6.4 mg/kg to 1.7 mg/kg,

Heavy Metals

Heavy metals were analyzed by EPA methods 6010/7471. Antimony, Arsenic, cadmium, mercury and silver were all at non-detect concentrations. Chromium, copper, nickel and zinc were detected in all of the berm sand samples analyzed. Lead was detected in six of the eight samples submitted for chemical analyses. Of these detected heavy metals, none exceeded the applicable SMS screening criteria.

Chromium was detected at concentrations ranging from 25.7 mg/kg (BERM-02) to 18.6 mg/kg (BERM-04 and BERM-06). All detected concentrations were below the applicable SMS screening values of 260 mg/kg (SQS) and 270 mg/kg (MCUL). Results are consistent with Puget Sound area background concentrations.

Copper concentrations in berm sands ranged from 44.6 mg/kg (BERM-05) to 27.3 mg/kg (BERM-04). All detected concentrations were below the applicable SMS screening values of 390 mg/kg (SQS and MCUL). Results are consistent with Puget Sound area background concentrations.

Nickel was detected at concentrations ranging from 22 mg/kg (BERM-08) to 17 mg/kg (BERM-06 and BERM-07). Nickel does not currently have an associated SMS screening criteria. Results are consistent with Puget Sound area background concentrations.

Zinc concentrations ranged from 38.6 mg/kg (BERM-08) to 29.0 mg/kg (BERM-06). All detected concentrations were below the applicable SMS screening values of 410 mg/kg (SQS) and 960 mg/kg (MCUL). Results are consistent with Puget Sound area background concentrations.

Lead was detected in six of the eight berm sand samples, including BERM-01 through BERM-04, BERM-07 and BERM-08. The maximum concentration was detected in sample BERM-08 (4 mg/kg) and the remaining samples had a concentration of 2 mg/kg (BERM-01, -02, -03, -04, and -07). All detected concentrations were below the applicable SMS screening values of 450 mg/kg (SQS) and 530 mg/kg (MCUL). Results are consistent with Puget Sound area background concentrations.

Polychlorinated Biphenyls (PCBs)

PCB mixtures (Aroclors) were at non-detect concentrations in all of the eight berm sand samples. All PCB detection limits were well below applicable SMS screening criteria.

Semivolatile Organics Compounds (SVOCs)

SVOCs analysiswas performed on each of the eight berm sand samples. All SVOCs were at non-detect concentrations, except bis(2-Ethylhexyl)phthalate (BEP) was detected at sample location BERM-08 at a concentration of 0.340 mg/kg. Because the sample has a very low TOC content (0.32% TOC) the concentration was compared directly to the dry-weight LAET for BEP (1.30 mg/kg). The measured value was less than the corresponding LAET. This compound is also a common field and laboratory contaminant. The fact that this compound was not detected in any of the other samples, suggests that the detection may have been a false positive.

Dioxins/Furans

Two composite berm sand samples were submitted for dioxins-furans analyses. Sample COMP-01 consisted of a composite of berm sand samples BERM-01, BERM-04 and BERM-06. Sample COMP-02 consisted of a composite of berm sand samples BERM-07 and BERM-08. COMP-03 was a control sample as described above. Table D-7 presents a summary of dioxin-furans results.

Dioxin/furan compounds were below method detection limits in samples COMP-01 and COMP-03. Sample COMP-02 had two detections including total HxCDD (2.9 ng/kg) and OCDD (19 ng/kg). These concentrations were multiplied by the associated toxic equivalency factors (TEF) and summed to calculate a toxic equivalence concentration (TEC). The total TEQ concentration was 1.19 ng/kg for sample COMP-02. This value is well below the applicable PSDDA screening level of 15 ng/kg (parts per trillion) and is also below the MTCA Method B cleanup level for upland soil reuse under unrestricted land use scenarios (6.7 ng/kg).

Physical Parameters Testing

Physical testing of berm sand samples consisted of grain size analysis. Grain size analysis results are presented in Table D-8.

Grain Size

Grain size analysis was performed on all berm sand samples submitted for testing and was performed following PSEP/PSDDA protocols. All samples consisted of a gravelly sand with trace amounts of silt and clay. These results are consistent with the ASB berm construction details presented in the Army Corp permit.

D.4 Conclusions of Investigation

The results of the supplemental ASB investigation provided additional chemical and physical data to evaluate potential remedial options for cleanup and redevelopment. Bathymetry, solids thickness probing and solids

physical testing provided the data to estimate solids volumes and evaluate design specifications for cleanup. Chemical testing of ASB berm soils indicated that concentrations of heavy metals, PCBs, SVOCs, and dioxins-furans were below the applicable SMS, MTCA and PSDDA screening levels.

D.5 References

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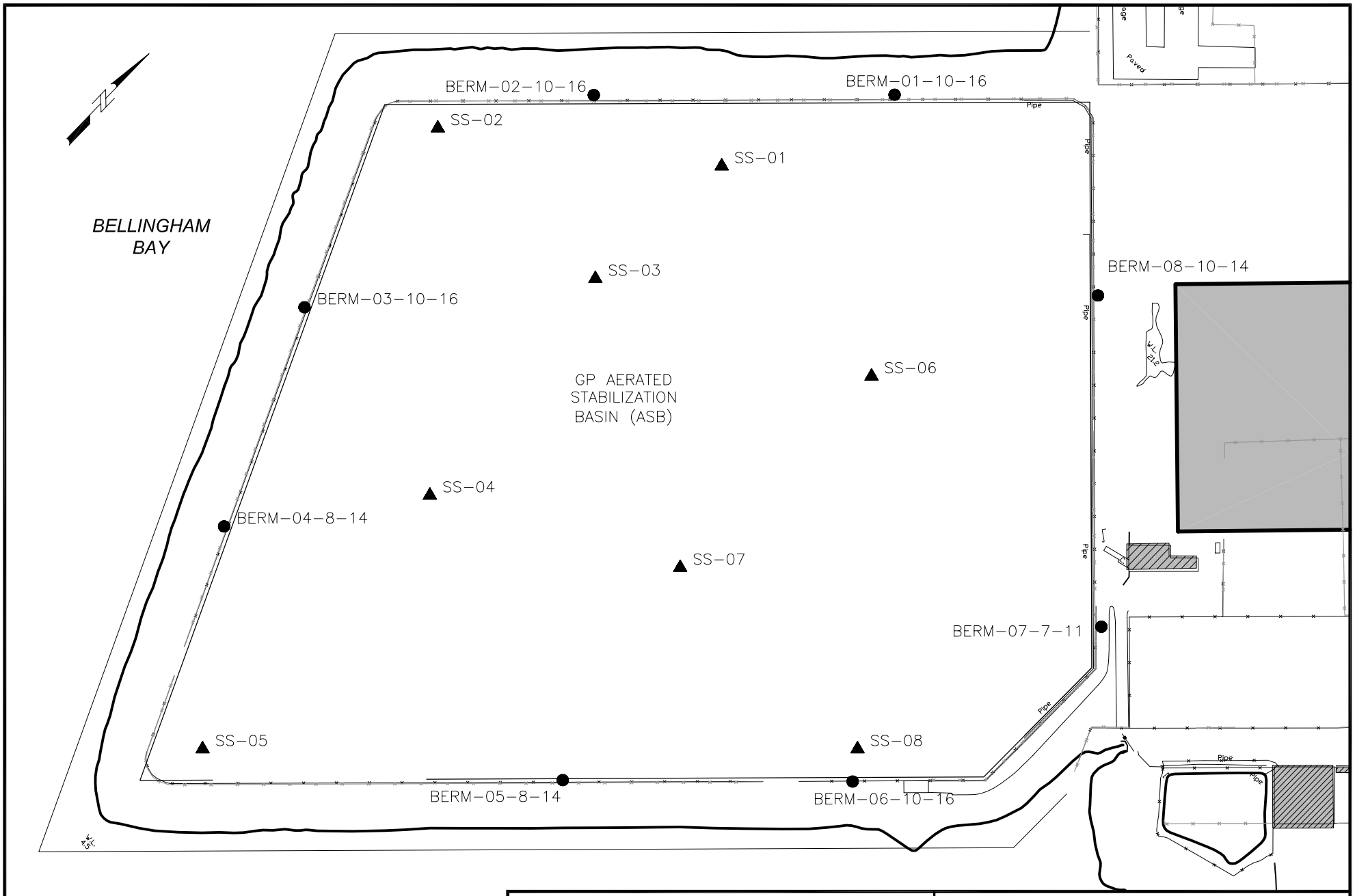


RETEC

100 0 200

SCALE IN FEET

ASB INVESTIGATION
PORT OF BELLINGHAM
PORTB-18876-240

DATE: 09/15/04 | DRWN: A.S./SEA

ASB INVESTIGATION SAMPLING LOCATIONS

FIGURE 1

File: H:\18876\18876S0002.dwg Layout: FIGURE 2 User: nstenberg Plotted: Mar 03, 2006 - 2:43pm Xref's: PARCEL-SMALL, GPMILL-BLDG-HTC, BAYTOTA-BLDG-HTC, GPMILL-2, HYBRID, SEDIMENTCAP-HTC, ISA-GP.

LEGEND

- APPROXIMATE WHATCOM WATERWAY MUDLINE ELEVATIONS
- APPROXIMATE BERM ELEVATIONS (OUTSIDE SOLIDS FOOTPRINT)
- 1 −10.73 PROBE LOCATION AND REFUSAL ELEVATION (MLLW)
- LESS THAN −10.0ft MLLW
- −5.0ft to −9.0ft MLLW
- ABOVE −4.0ft MLLW

SOLIDS ELEVATION CONTOUR LINES ARE PLOTTED IN 1-FOOT INTERVALS.

RETEC

125 0 250

SCALE IN FEET

PORT OF BELLINGHAM

PORTB-18876

DATE: 03/03/06 | DRWN: N.J.S./SEA

ASB BATHYMETRY AND SOLIDS THICKNESS PROBING

FIGURE 2

Table D-1. Summary of Tests Performed on ASB Sludges

Sample ID	Physical Testing						
	pH	Total Solids	Total Volatile Solids	Ash Content	Density	Specific Gravity	Grain Size
ASB Lagoon Solids Samples							
SS-01-0704	X	X	X	X	X	X	X
SS-02-0704	X	X	X	X	X	X	X
SS-03-0704	X	X	X	X	X	X	X
SS-04-0704	X	X	X	X	X	X	X
SS-05-0704	X	X	X	X	X	X	X
SS-06-0704	X	X	X	X	X	X	X
SS-07-0704	X	X	X	X	X	X	X
SS-08-0704	X	X	X	X	X	X	X
WS-01-0704	--	--	X	--	X	X	X

Note:
Sample lcoation WS-01-0704 is a water sample collected in the vicinity of SS-03-0704.

Table D-2. Summary of Testing Performed on ASB Berm Sands

Sample ID	Chemical Analyses					Physical Analyses
	Conventionals	Metals	PCBs	SVOCs	Doxins / Furans	Grain Size
ASB Berm Sand Samples						
BERM-01-10-16	X	X	X	X	COMP-01	X
BERM-02-10-16	X	X	X	X	--	X
BERM-03-10-16	X	X	X	X	--	X
BERM-04-8-14	X	X	X	X	COMP-01	X
BERM-05-8-14	X	X	X	X	--	X
BERM-06-10-16	X	X	X	X	COMP-01	X
BERM-07-7-11	X	X	X	X	COMP-02	X
BERM-08-10-14	X	X	X	X	COMP-02	X

Note:
Sample **COMP-03** is a control sample comprised of silicon dioxide (particle size 0.5-10um) obtained from Sigma-Aldrich and was relinguished to STL-West.

Table D-3. Results of ASB Sludge Thickness Measurements

Transect	Number	Easting (ft)	Northing (ft)	Water Depth (ft)	[1] Mudline Elevation (ft)	[2] Pole Reusal Depth (ft)	[3] Hard Sediment Elevation (ft)	[4] Solids Thickness (ft)
1	1	1239925.7	642189.5	23.1	-3.8	30.0	-10.7*	6.9
	2	1239842.4	642313.9	23.8	-4.5	33.0	-13.7	9.2
	3	1239747.9	642458.5	23.5	-4.2	34.0	-14.7	10.5
	4	1239616.7	642685.0	25.1	-5.8	34.5	-15.2	9.4
	5	1239514.3	642846.6	24.5	-5.2	33.0	-13.7	8.5
2	6	1239593.3	642947.9	25.9	-6.6	33.5	-14.2	7.6
	7	1239752.8	642832.0	23.7	-4.4	35.0	-15.7	11.3
	8	1239896.2	642693.3	17.9	1.4	32.5	-13.2	14.6
	9	1240003.0	642530.6	18.4	0.9	34.0	-14.7	15.6
	10	1240105.5	642426.2	17.7	1.6	35.5	-16.2	17.8
3	11	1240305.7	642573.6	27.1	-7.8	34.5	-15.2	7.4
	12	1240176.6	642737.3	32.2	-12.9	35.0	-15.7	2.8
	13	1240039.6	642860.5	27.8	-8.5	36.0	-16.7	8.2
	14	1239915.2	643007.4	29.8	-10.5	35.0	-15.7	5.2
	15	1239800.8	643140.5	29.1	-9.8	35.5	-16.2	6.4
4	16	1239903.8	643280.3	28.3	-9.0	33.0	-13.7	4.7
	17	1240170.1	643035.6	26.2	-6.9	32.5	-13.2	6.3
	18	1240053.3	643151.5	26.0	-6.7	33.0	-13.7	7.0
	19	1240288.0	642878.8	26.4	-7.1	32.0	-12.7	5.6
	20	1240445.2	642755.6	24.2	-4.9	30.0	-10.7	5.8
5	21	1240565.1	642903.5	23.1	-3.8	27.0	-7.7*	3.9
	22	1240374.6	643112.8	27.1	-7.8	33.5	-14.2	6.4
	23	1240336.9	643179.8	24.1	-4.8	32.0	-12.7	7.9
	24	1240229.9	643304.8	26.3	-7.0	33.0	-13.7	6.7
	25	1240098.2	643439.5	27.5	-8.2	32.0	-12.7	4.5
					Average Measurements		-14.3	8.0

Notes:

ASB lagoon water was surveyed at 19.27 feet MLLW.

*: Excluded from average elevation measurement.

1. Mudline (solids) elevation was calculated by subtracting water depth from surveyed water level (19.27 feet MLLW).
2. Pole refusal depth is the depth from the water line (MLLW) to the hard sediment measured using a 30-foot marked aluminum pole.
3. Hard sediment elevation was calculated by subtracting the pole refusal depth from the surveyed water level (19.27 feet MLLW).

Table D-4. Description of ASB Sludge Samples

Sample ID	Date Collected	Sample Method	Field Observations of Sample							Sample Recovery Details		
			Color	Texture	Odor	Sheen	Debris	Notes	Analysis	Replicate Grabs	Water Depth (ft)	Sample Elevation (MLLW)
SS-01	7/28/2004	V V	darkish olive green to black	organinc silt	slight hydrogen sulfide like odor	sligth purple-green sheen	5-10% black fragments (<1 mm)	none	physical testing	4 grabs	23.5 to 24.0	-4.5
SS-02	7/28/02004	V V	dark olive green to black	organinc silt	moderate to strong hydrogen sulfide like odor	slight spotty sheen	1-5% very fine black fragments	soupy	physical testing	1 grab	28.5	-9.2
SS-03	7/28/2004	V V	dark olive green to black	organinc silt	slight hydrogen sulfide like odor	very slight, spotty purple - green sheen	1-2 % very fine black fragments (> 0.5 mm)	soupy	physical testing	1 grab	29.2	-9.9
SS-04	7/28/02004	V V	dark olive green to black	organinc silt	moderate to strong hydrogen sulfide like odor	very slight spotty sheen	1 % black fragments	soupy	physical testing	3 grabs	22.2 to 22.7	-3.2
SS-05	7/28/2004	V V	dark olive green to black	organinc silt	moderate to strong hydrogen sulfide like odor	slight spotty sheen	none	soupy	physical testing	1 grab	22.4	-3.1
SS-06	7/28/02004	V V	dark olive green to black	organinc silt	moderate hydrogen sulfide like odor	spotty sheen	woody-like black fragments (up to 4 mm)	soupy	physical testing	1 grab	25.3	-6.0
SS-07	7/28/2004	V V	dark olive green to black	organinc silt	slight hydrogen sulfide like odor	slight spotty sheen	5 % black fragments (<1 mm) and woody material (25 mm)	soupy	physical testing	3 grabs	23.8 to 26.1	-5.7
SS-08	7/28/02004	P	NR	organinc silt	slight hydrogen sulfide like odor	none	chunks of clayey silt and 10 % black fragments (1-2 mm)	none	physical testing	3 refused van Veen and 3 accepted Ponar	19.5 to 21.1	-1.0

Notes:
Elevations based on survey elevation of ASB lagoon water at 19.27 feet MLLW.
V V = Van Veen Surface Grab Sampler
P = Pondar grab plus 10 pound weight
NR = Not Reported

Table D-5. Physical Testing Results for ASB Sludges

Percent Retained in Each Size Fraction	Gravel	Sand				Silt					Clay
		Coarse Sand	Medium Sand	Fine Sand	Total Sand	Very Coarse Silt	Coarse Silt	Medium Silt	Fine Silt	Very Fine Silt	
Sieve Size (microns)	>4750	4750-2000	2000-425	425-75	4750-75	75-32	32-22	22-13	13-9	9-3.2	<3.2
SS-01-0704	0.00	0.00	9.33	30.93	40.26	5.65	19.47	10.82	3.25	9.74	10.82
SS-02-0704	0.00	0.00	61.47	11.67	73.14	3.24	4.72	3.54	2.36	3.54	9.45
SS-03-0704	0.00	0.00	36.22	32.06	68.29	4.28	6.58	3.29	2.19	8.78	6.58
SS-04-0704	0.00	0.00	65.20	14.11	79.31	1.45	3.21	4.28	1.07	6.41	4.28
SS-05-0704	0.00	0.00	67.50	10.61	78.11	1.45	0.21	2.89	4.33	7.22	5.78
SS-06-0704	0.00	0.04	17.79	26.54	44.36	11.05	16.01	9.15	3.43	9.15	6.86
SS-07-0704	0.00	0.00	35.22	28.23	63.45	4.93	4.86	7.30	2.43	7.30	9.73
SS-08-0704	0.00	0.29	4.43	25.39	30.12	28.02	18.32	9.59	2.62	6.11	5.23

Sample ID	% Moisture Content Range	Dry Density (pcf)	Wet Density (pcf)	% Total Solids	% Organic Matter	% Ash	Specific Gravity	pH (in DI water)
SS-01-0704	554.4	7.4	66.5	15.3	40.7	59.3	1.97	6.92
SS-02-0704	640.9	5.0	64.7	13.5	72.1	27.9	1.97	6.88
SS-03-0704	688.0	5.7	65.2	12.7	64.2	35.8	1.99	6.89
SS-04-0704	1065.1	5.6	65.5	8.6	49.2	50.8	1.88	6.90
SS-05-0704	538.0	4.5	64.7	15.7	81.2	18.8	1.76	6.83
SS-06-0704	520.9	10.3	68.2	16.1	47.1	52.9	2.09	6.96
SS-07-0704	901.6	6.3	65.9	10.0	54.2	45.8	1.84	6.91
SS-08-0704	215.4	24.6	77.9	31.7	13.5	86.5	1.32	7.11

Note: All grain size results reported in %.

Table D-6. Chemical Testing Data for ASB Berm Sands

Sample ID Sample Date Sample Depth (feet bgs) Analysis	SMS Screening Criteria		BERM-01-10-16 8/12/2004 10-16	BERM-02-10-16 8/12/2004 10-16	BERM-03-10-16 8/12/2004 10-16
	SQS	MCUL			
Conventionals (units testing specific)					
pH (std units)	NV	NV	**8.29**	**8.54**	**9.07**
Total Solids (%)	NV	NV	**96.40**	**95.90**	**95.90**
Preserved Total Solids (%)	NV	NV	**94.70**	**93.80**	**93.30**
N-Ammonia (mg/N-kg)	NV	NV	**0.31**	**0.42**	**0.33**
Sulfide (mg/kg)	NV	NV	< 2.7	< 2.0	< 1.9
Total Organic Carbon (%)	NV	NV	**0.171**	**0.088**	**0.091**
Metals (6010/7471) - mg/kg					
Antimony	NV	NV	< 5	< 5	< 5
Arsenic	57	93	< 5	< 5	< 5
Cadmium	5.1	6.7	< 0.2	< 0.2	< 0.2
Chromium	260	270	**19.9**	**25.7**	**21.7**
Copper	390	390	**36.7**	**38.6**	**41.4**
Lead	450	530	**2**	**2**	**2**
Mercury	0.41	0.59	< 0.05	< 0.04	< 0.04
Nickel	NV	NV	**18**	**21**	**19**
Silver	6.1	6.1	< 0.3	< 0.3	< 0.3
Zinc	410	960	**32.9**	**34.8**	**32.6**
PCBs (PSDDA by GC/MS) - mg/kg					
Aroclor 1016	12 *	65*	< 0.020	< 0.020	< 0.019
Aroclor 1242	12 *	65*	< 0.020	< 0.020	< 0.019
Aroclor 1248	12 *	65*	< 0.020	< 0.020	< 0.019
Aroclor 1254	12 *	65*	< 0.020	< 0.020	< 0.019
Aroclor 1260	12 *	65*	< 0.020	< 0.020	< 0.019
Aroclor 1221	12 *	65*	< 0.020	< 0.020	< 0.019
Aroclor 1232	12 *	65*	< 0.020	< 0.020	< 0.019
SVOCs (PSDDA by GC/MS) - mg/kg					
Phenol	0.42	1.2	< 0.019	< 0.020	< 0.019
Bis-(2-Chloroethyl) Ether	NV	NV	< 0.039	< 0.040	< 0.039
2-Chlorophenol	NV	NV	< 0.019	< 0.020	< 0.019
1,3-Dichlorobenzene	NV	NV	< 0.019	< 0.020	< 0.019
1,4-Dichlorobenzene	3.1 *	9 *	< 0.019	< 0.020	< 0.019
Benzyl Alcohol	0.057	0.073	< 0.019	< 0.020	< 0.019
1,2-Dichlorobenzene	2.3 *	2.3 *	< 0.019	< 0.020	< 0.019
2-Methylphenol	0.063	0.063	< 0.019	< 0.020	< 0.019
2,2'-Oxybis (1-Chloropropane)	NV	NV	< 0.019	< 0.020	< 0.019
4-Methylphenol	0.67	0.67	< 0.019	< 0.020	< 0.019
N-Nitro-Di-N-Propylamine	NV	NV	< 0.039	< 0.040	< 0.039
Hexachloroethane	NV	NV	< 0.019	< 0.020	< 0.019
Nitrobenzene	NV	NV	< 0.019	< 0.020	< 0.019
Isophorone	NV	NV	< 0.019	< 0.020	< 0.019
2-Nitrophenol	NV	NV	< 0.097	< 0.099	< 0.097
2,4-Dimethylphenol	0.029	0.029	< 0.019	< 0.020	< 0.019
Benzoic Acid	0.65	0.65	< 0.190	< 0.200	< 0.190
bis-(2-Chloroethoxy) Methane	NV	NV	< 0.019	< 0.020	< 0.019
2,4-Dichlorophenol	NV	NV	< 0.058	< 0.060	< 0.058
1,2,4-Trichlorobenzene	0.81 *	1.8 *	< 0.019	< 0.020	< 0.019
Naphthalene	99 *	170 *	< 0.019	< 0.020	< 0.019
4-Chloroaniline	NV	NV	< 0.058	< 0.060	< 0.058
Hexachlorobutadiene	3.9 *	6.2 *	< 0.019	< 0.020	< 0.019
4-Chloro-3-methylphenol	NV	NV	< 0.039	< 0.040	< 0.039
2-Methylnaphthalene	38 *	64 *	< 0.019	< 0.020	< 0.019
Hexachlorocyclopentadiene	NV	NV	< 0.097	< 0.099	< 0.097
2,4,6-Trichlorophenol	NV	NV	< 0.097	< 0.099	< 0.097
2,4,5-Trichlorophenol	NV	NV	< 0.097	< 0.099	< 0.097

Table D-6. Chemical Testing Data for ASB Berm Sands

Sample ID / Sample Date / Sample Depth (feet bgs) / Analysis	SMS Screening Criteria SQS	SMS Screening Criteria MCUL	BERM-01-10-16 8/12/2004 10-16	BERM-02-10-16 8/12/2004 10-16	BERM-03-10-16 8/12/2004 10-16
2-Chloronaphthalene	NV	NV	< 0.019	< 0.020	< 0.019
2-Nitroaniline	NV	NV	< 0.097	< 0.099	< 0.097
Dimethylphthalate	53 *	53 *	< 0.019	< 0.020	< 0.019
Acenaphthylene	66 *	66 *	< 0.019	< 0.020	< 0.019
3-Nitroaniline	NV	NV	< 0.120	< 0.120	< 0.120
Acenaphthene	16 *	57 *	< 0.019	< 0.020	< 0.019
2,4-Dinitrophenol	NV	NV	< 0.190	< 0.200	< 0.190
4-Nitrophenol	NV	NV	< 0.097	< 0.099	< 0.097
Dibenzofuran	NV	NV	< 0.019	< 0.020	< 0.019
2,6-Dinitrotoluene	NV	NV	< 0.097	< 0.099	< 0.097
2,4-Dinitrotoluene	NV	NV	< 0.097	< 0.099	< 0.097
Diethylphthalate	61 *	110 *	< 0.019	< 0.020	< 0.019
4-Chlorophenyl-phenylether	NV	NV	< 0.019	< 0.020	< 0.019
Fluorene	23 *	79 *	< 0.019	< 0.020	< 0.019
4-Nitroaniline	15 *	58 *	< 0.097	< 0.099	< 0.097
4,6-Dinitro-2-Methylphenol	NV	NV	< 0.190	< 0.200	< 0.190
N-Nitrosodiphenylamine	11 *	11 *	< 0.019	< 0.020	< 0.019
4-Bromophenyl-phenylether	NV	NV	< 0.019	< 0.020	< 0.019
Hexachlorobenzene	0.38 *	2.3 *	< 0.019	< 0.020	< 0.019
Pentachlorophenol	0.36	0.69	< 0.097	< 0.099	< 0.097
Phenanthrene	100 *	480 *	< 0.019	< 0.020	< 0.019
Carbazole	NV	NV	< 0.019	< 0.020	< 0.019
Anthracene	220 *	1200 *	< 0.019	< 0.020	< 0.019
Di-n-Butylphthalate	220 *	1700 *	< 0.019	< 0.020	< 0.019
Fluoranthene	160 *	1200 *	< 0.019	< 0.020	< 0.019
Pyrene	1000 *	1400 *	< 0.019	< 0.020	< 0.019
Butylbenzylphthalate	4.9 *	64 *	< 0.019	< 0.020	< 0.019
3,3'-Dichlorobenzidine	NV	NV	< 0.097	< 0.099	< 0.097
Benzo(a)Anthracene	110 *	270 *	< 0.019	< 0.020	< 0.019
bis (2-Ethylhexyl) phthalate	47 *	78 *	< 0.019	< 0.020	< 0.019
Chrysene	110 *	460 *	< 0.019	< 0.020	< 0.019
Di-n-Octyl phthalate	58 *	4500 *	< 0.019	< 0.020	< 0.019
Benzo(b)Fluoranthene	NV	NV	< 0.019	< 0.020	< 0.019
Benzo(k)Fluoranthene	NV	NV	< 0.019	< 0.020	< 0.019
Benzo(a)Pyrene	99 *	210 *	< 0.019	< 0.020	< 0.019
Indeno(1,2,3-cd)Pyrene	34 *	34 *	< 0.019	< 0.020	< 0.019
Dibenzo(a,h)Anthracene	12 *	33 *	< 0.019	< 0.020	< 0.019
Benzo(ghi)Perylene	31 *	78 *	< 0.019	< 0.020	< 0.019
Aniline	NV	NV	< 0.019	<	< 0.019

Notes:
All results are expressed in units of mg/kg dry weight.
*: SQS/MCUL value is expressed as TOC-normalized concentration (ppm TOC).
NV: No value currently available.

Table D-6. Chemical Testing Data for ASB Berm Sands

Sample ID Sample Date Sample Depth (feet bgs) Analysis	SMS Screening Criteria SQS	 MCUL	BERM-04-8-14 8/12/2004 8-14	BERM-05-8-14 8/11/2004 8-14	BERM-06-10-16 8/11/2004 10-16
Conventionals (units testing specific)					
pH (std units)	NV	NV	**8.91**	**7.70**	**7.11**
Total Solids (%)	NV	NV	**96.40**	**97.20**	**95.90** *
Preserved Total Solids (%)	NV	NV	**94.60**	**94.30**	**94.50**
N-Ammonia (mg/N-kg)	NV	NV	**0.13**	**0.17**	**0.20**
Sulfide (mg/kg)	NV	NV	< 1.7	< 4.9	< 6.4
Total Organic Carbon (%)	NV	NV	**0.127**	**0.133**	**0.120**
Metals (6010/7471) - mg/kg					
Antimony	NV	NV	< 5	< 10	< 5
Arsenic	57	93	< 5	< 10	< 5
Cadmium	5.1	6.7	< 0.2	< 0.5	< 0.2
Chromium	260	270	**18.6**	**23**	**18.6**
Copper	390	390	**27.3**	**44.6**	**30.9**
Lead	450	530	**2**	< 5	< 2
Mercury	0.41	0.59	< 0.05	< 0.04	< 0.05
Nickel	NV	NV	**19**	**21**	**17**
Silver	6.1	6.1	< 0.3	< 0.7	< 0.3
Zinc	410	960	**30.0**	**37**	**29.0**
PCBs (PSDDA by GC/MS) - mg/kg					
Aroclor 1016	12 *	65*	< 0.019	< 0.019	< 0.020
Aroclor 1242	12 *	65*	< 0.019	< 0.019	< 0.020
Aroclor 1248	12 *	65*	< 0.019	< 0.019	< 0.020
Aroclor 1254	12 *	65*	< 0.019	< 0.019	< 0.020
Aroclor 1260	12 *	65*	< 0.019	< 0.019	< 0.020
Aroclor 1221	12 *	65*	< 0.019	< 0.019	< 0.020
Aroclor 1232	12 *	65*	< 0.019	< 0.019	< 0.020
SVOCs (PSDDA by GC/MS) - mg/kg					
Phenol	0.42	1.2	< 0.019	< 0.019	< 0.019
Bis-(2-Chloroethyl) Ether	NV	NV	< 0.039	< 0.038	< 0.039
2-Chlorophenol	NV	NV	< 0.019	< 0.019	< 0.019
1,3-Dichlorobenzene	NV	NV	< 0.019	< 0.019	< 0.019
1,4-Dichlorobenzene	3.1 *	9 *	< 0.019	< 0.019	< 0.019
Benzyl Alcohol	0.057	0.073	< 0.019	< 0.019	< 0.019
1,2-Dichlorobenzene	2.3 *	2.3 *	< 0.019	< 0.019	< 0.019
2-Methylphenol	0.063	0.063	< 0.019	< 0.019	< 0.019
2,2'-Oxybis (1-Chloropropane)	NV	NV	< 0.019	< 0.019	< 0.019
4-Methylphenol	0.67	0.67	< 0.019	< 0.019	< 0.019
N-Nitro-Di-N-Propylamine	NV	NV	< 0.039	< 0.038	< 0.039
Hexachloroethane	NV	NV	< 0.019	< 0.019	< 0.019
Nitrobenzene	NV	NV	< 0.019	< 0.019	< 0.019
Isophorone	NV	NV	< 0.019	< 0.019	< 0.019
2-Nitrophenol	NV	NV	< 0.097	< 0.096	< 0.096
2,4-Dimethylphenol	0.029	0.029	< 0.019	< 0.019	< 0.019
Benzoic Acid	0.65	0.65	< 0.190	< 0.190	< 0.190
bis-(2-Chloroethoxy) Methane	NV	NV	< 0.019	< 0.019	< 0.019
2,4-Dichlorophenol	NV	NV	< 0.058	< 0.058	< 0.058
1,2,4-Trichlorobenzene	0.81 *	1.8 *	< 0.019	< 0.019	< 0.019
Naphthalene	99 *	170 *	< 0.019	< 0.019	< 0.019
4-Chloroaniline	NV	NV	< 0.058	< 0.058	< 0.058
Hexachlorobutadiene	3.9 *	6.2 *	< 0.019	< 0.019	< 0.019
4-Chloro-3-methylphenol	NV	NV	< 0.039	< 0.038	< 0.039
2-Methylnaphthalene	38 *	64 *	< 0.019	< 0.019	< 0.019
Hexachlorocyclopentadiene	NV	NV	< 0.097	< 0.096	< 0.096
2,4,6-Trichlorophenol	NV	NV	< 0.097	< 0.096	< 0.096
2,4,5-Trichlorophenol	NV	NV	< 0.097	< 0.096	< 0.096

Table D-6. Chemical Testing Data for ASB Berm Sands

Sample ID Sample Date Sample Depth (feet bgs) Analysis	SMS Screening Criteria		BERM-04-8-14 8/12/2004 8-14	BERM-05-8-14 8/11/2004 8-14	BERM-06-10-16 8/11/2004 10-16
	SQS	MCUL			
2-Chloronaphthalene	NV	NV	< 0.019	< 0.019	< 0.019
2-Nitroaniline	NV	NV	< 0.097	< 0.096	< 0.096
Dimethylphthalate	53 *	53 *	< 0.019	< 0.019	< 0.019
Acenaphthylene	66 *	66 *	< 0.019	< 0.019	< 0.019
3-Nitroaniline	NV	NV	< 0.120	< 0.120	< 0.120
Acenaphthene	16 *	57 *	< 0.019	< 0.019	< 0.019
2,4-Dinitrophenol	NV	NV	< 0.190	< 0.190	< 0.190
4-Nitrophenol	NV	NV	< 0.097	< 0.096	< 0.096
Dibenzofuran	NV	NV	< 0.019	< 0.019	< 0.019
2,6-Dinitrotoluene	NV	NV	< 0.097	< 0.096	< 0.096
2,4-Dinitrotoluene	NV	NV	< 0.097	< 0.096	< 0.096
Diethylphthalate	61 *	110 *	< 0.019	< 0.019	< 0.019
4-Chlorophenyl-phenylether	NV	NV	< 0.019	< 0.019	< 0.019
Fluorene	23 *	79 *	< 0.019	< 0.019	< 0.019
4-Nitroaniline	15 *	58 *	< 0.097	< 0.096	< 0.096
4,6-Dinitro-2-Methylphenol	NV	NV	< 0.190	< 0.190	< 0.190
N-Nitrosodiphenylamine	11 *	11 *	< 0.019	< 0.019	< 0.019
4-Bromophenyl-phenylether	NV	NV	< 0.019	< 0.019	< 0.019
Hexachlorobenzene	0.38 *	2.3 *	< 0.019	< 0.019	< 0.019
Pentachlorophenol	0.36	0.69	< 0.097	< 0.096	< 0.096
Phenanthrene	100 *	480 *	< 0.019	< 0.019	< 0.019
Carbazole	NV	NV	< 0.019	< 0.019	< 0.019
Anthracene	220 *	1200 *	< 0.019	< 0.019	< 0.019
Di-n-Butylphthalate	220 *	1700 *	< 0.019	< 0.019	< 0.019
Fluoranthene	160 *	1200 *	< 0.019	< 0.019	< 0.019
Pyrene	1000 *	1400 *	< 0.019	< 0.019	< 0.019
Butylbenzylphthalate	4.9 *	64 *	< 0.019	< 0.019	< 0.019
3,3'-Dichlorobenzidine	NV	NV	< 0.097	< 0.096	< 0.096
Benzo(a)Anthracene	110 *	270 *	< 0.019	< 0.019	< 0.019
bis (2-Ethylhexyl) phthalate	47 *	78 *	< 0.019	< 0.019	< 0.019
Chrysene	110 *	460 *	< 0.019	< 0.019	< 0.019
Di-n-Octyl phthalate	58 *	4500 *	< 0.019	< 0.019	< 0.019
Benzo(b)Fluoranthene	NV	NV	< 0.019	< 0.019	< 0.019
Benzo(k)Fluoranthene	NV	NV	< 0.019	< 0.019	< 0.019
Benzo(a)Pyrene	99 *	210 *	< 0.019	< 0.019	< 0.019
Indeno(1,2,3-cd)Pyrene	34 *	34 *	< 0.019	< 0.019	< 0.019
Dibenzo(a,h)Anthracene	12 *	33 *	< 0.019	< 0.019	< 0.019
Benzo(ghi)Perylene	31 *	78 *	< 0.019	< 0.019	< 0.019
Aniline	NV	NV	< 0.019	< 0.019	< 0.019

Notes:
All results are expressed in units of mg/kg dry weight.
*: SQS/MCUL value is expressed as TOC-normalized concentration (ppm
NV: No value currently available.

Table D-6. Chemical Testing Data for ASB Berm Sands

Sample ID / Sample Date / Sample Depth (feet bgs) / Analysis	SMS Screening Criteria SQS	SMS Screening Criteria MCUL	BERM-07-7-11 8/13/2004 7-11	BERM-08-10-14 8/13/2004 10-14
Conventionals (units testing specific)				
pH (std units)	NV	NV	**8.87**	**8.43**
Total Solids (%)	NV	NV	**94.40** *	**96.10**
Preserved Total Solids (%)	NV	NV	**89.50**	**91.60**
N-Ammonia (mg/N-kg)	NV	NV	**0.63**	**0.64**
Sulfide (mg/kg)	NV	NV	< 2.0	< 2.8
Total Organic Carbon (%)	NV	NV	**0.128**	**0.320**
Metals (6010/7471) - mg/kg				
Antimony	NV	NV	< 5	< 5
Arsenic	57	93	< 5	< 5
Cadmium	5.1	6.7	< 0.2	< 0.2
Chromium	260	270	**19.9**	**22.3**
Copper	390	390	**39.9**	**32.1**
Lead	450	530	**2**	**4**
Mercury	0.41	0.59	< 0.05	< 0.05
Nickel	NV	NV	**17**	**22**
Silver	6.1	6.1	< 0.3	< 0.3
Zinc	410	960	**30.9**	**38.6**
PCBs (PSDDA by GC/MS) - mg/kg				
Aroclor 1016	12 *	65*	< 0.019	< 0.019
Aroclor 1242	12 *	65*	< 0.019	< 0.019
Aroclor 1248	12 *	65*	< 0.019	< 0.019
Aroclor 1254	12 *	65*	< 0.019	< 0.019
Aroclor 1260	12 *	65*	< 0.019	< 0.019
Aroclor 1221	12 *	65*	< 0.019	< 0.019
Aroclor 1232	12 *	65*	< 0.019	< 0.019
SVOCs (PSDDA by GC/MS) - mg/kg				
Phenol	0.42	1.2	< 0.019	< 0.019
Bis-(2-Chloroethyl) Ether	NV	NV	< 0.038	< 0.038
2-Chlorophenol	NV	NV	< 0.019	< 0.019
1,3-Dichlorobenzene	NV	NV	< 0.019	< 0.019
1,4-Dichlorobenzene	3.1 *	9 *	< 0.019	< 0.019
Benzyl Alcohol	0.057	0.073	< 0.019	< 0.019
1,2-Dichlorobenzene	2.3 *	2.3 *	< 0.019	< 0.019
2-Methylphenol	0.063	0.063	< 0.019	< 0.019
2,2'-Oxybis (1-Chloropropane)	NV	NV	< 0.019	< 0.019
4-Methylphenol	0.67	0.67	< 0.019	< 0.019
N-Nitro-Di-N-Propylamine	NV	NV	< 0.038	< 0.038
Hexachloroethane	NV	NV	< 0.019	< 0.019
Nitrobenzene	NV	NV	< 0.019	< 0.019
Isophorone	NV	NV	< 0.019	< 0.019
2-Nitrophenol	NV	NV	< 0.096	< 0.094
2,4-Dimethylphenol	0.029	0.029	< 0.019	< 0.019
Benzoic Acid	0.65	0.65	< 0.190	< 0.190
bis-(2-Chloroethoxy) Methane	NV	NV	< 0.019	< 0.019
2,4-Dichlorophenol	NV	NV	< 0.057	< 0.056
1,2,4-Trichlorobenzene	0.81 *	1.8 *	< 0.019	< 0.019
Naphthalene	99 *	170 *	< 0.019	< 0.019
4-Chloroaniline	NV	NV	< 0.057	< 0.056
Hexachlorobutadiene	3.9 *	6.2 *	< 0.019	< 0.019
4-Chloro-3-methylphenol	NV	NV	< 0.038	< 0.038
2-Methylnaphthalene	38 *	64 *	< 0.019	< 0.019
Hexachlorocyclopentadiene	NV	NV	< 0.096	< 0.094
2,4,6-Trichlorophenol	NV	NV	< 0.096	< 0.094
2,4,5-Trichlorophenol	NV	NV	< 0.096	< 0.094

Table D-6. Chemical Testing Data for ASB Berm Sands

Sample ID / Sample Date / Sample Depth (feet bgs) / Analysis	SMS Screening Criteria SQS	SMS Screening Criteria MCUL	BERM-07-7-11 8/13/2004 7-11	BERM-08-10-14 8/13/2004 10-14
2-Chloronaphthalene	NV	NV	< 0.019	< 0.019
2-Nitroaniline	NV	NV	< 0.096	< 0.094
Dimethylphthalate	53 *	53 *	< 0.019	< 0.019
Acenaphthylene	66 *	66 *	< 0.019	< 0.019
3-Nitroaniline	NV	NV	< 0.110	< 0.110
Acenaphthene	16 *	57 *	< 0.019	< 0.019
2,4-Dinitrophenol	NV	NV	< 0.190	< 0.190
4-Nitrophenol	NV	NV	< 0.096	< 0.094
Dibenzofuran	NV	NV	< 0.019	< 0.019
2,6-Dinitrotoluene	NV	NV	< 0.096	< 0.094
2,4-Dinitrotoluene	NV	NV	< 0.096	< 0.094
Diethylphthalate	61 *	110 *	< 0.019	< 0.019
4-Chlorophenyl-phenylether	NV	NV	< 0.019	< 0.019
Fluorene	23 *	79 *	< 0.019	< 0.019
4-Nitroaniline	15 *	58 *	< 0.096	< 0.094
4,6-Dinitro-2-Methylphenol	NV	NV	< 0.190	< 0.190
N-Nitrosodiphenylamine	11 *	11 *	< 0.019	< 0.019
4-Bromophenyl-phenylether	NV	NV	< 0.019	< 0.019
Hexachlorobenzene	0.38 *	2.3 *	< 0.019	< 0.019
Pentachlorophenol	0.36	0.69	< 0.096	< 0.094
Phenanthrene	100 *	480 *	< 0.019	< 0.019
Carbazole	NV	NV	< 0.019	< 0.019
Anthracene	220 *	1200 *	< 0.019	< 0.019
Di-n-Butylphthalate	220 *	1700 *	< 0.019	< 0.019
Fluoranthene	160 *	1200 *	< 0.019	< 0.019
Pyrene	1000 *	1400 *	< 0.019	< 0.019
Butylbenzylphthalate	4.9 *	64 *	< 0.019	< 0.019
3,3'-Dichlorobenzidine	NV	NV	< 0.096	< 0.094
Benzo(a)Anthracene	110 *	270 *	< 0.019	< 0.019
bis (2-Ethylhexyl) phthalate	47 *	78 *	< 0.019	**0.340**
Chrysene	110 *	460 *	< 0.019	< 0.019
Di-n-Octyl phthalate	58 *	4500 *	< 0.019	< 0.019
Benzo(b)Fluoranthene	NV	NV	< 0.019	< 0.019
Benzo(k)Fluoranthene	NV	NV	< 0.019	< 0.019
Benzo(a)Pyrene	99 *	210 *	< 0.019	< 0.019
Indeno(1,2,3-cd)Pyrene	34 *	34 *	< 0.019	< 0.019
Dibenzo(a,h)Anthracene	12 *	33 *	< 0.019	< 0.019
Benzo(ghi)Perylene	31 *	78 *	< 0.019	< 0.019
Aniline	NV	NV	< 0.019	< 0.019

Notes:
All results are expressed in units of mg/kg dry weight.
*: SQS/MCUL value is expressed as TOC-normalized concentration (ppm
NV: No value currently available.

Table D-7. Dioxin & Furan Testing Data for ASB Berm Sands

Analysis	Compound Toxicity Equivalency Factor	PSDDA Screening Value (ng/kg)	COMP-01-0804 8/12/2004 ng/kg	COMP-02-0804 8/13/2004 ng/kg	COMP-03-0804 8/13/2004 ng/kg
Dioxins-Furans (EPA 8290) - ng/kg					
2,3,7,8-TCDD	1.0	5	< 0.25	< 0.17	< 0.16
Total TCDD	1.0	NA	< 0.25	< 0.88	< 0.16
1,2,3,7,8-PeCDD	0.5	NA	< 0.62	< 0.33	< 0.32
Total PeCDD	0.5	NA	< 0.62	< 0.97	< 0.43
1,2,3,4,7,8-HxCDD	0.1	NA	< 0.31	< 0.20	< 0.18
1,2,3,6,7,8-HxCDD	0.1	NA	< 0.29	< 0.18	< 0.16
1,2,3,7,8,9-HxCDD	0.1	NA	< 0.28	< 0.17	< 0.16
Total HxCDD	0.1	NA	< 0.31	**2.9**	< 0.20
1,2,3,4,6,7,8-HpCDD	0.01	NA	< 0.32	< 2.3	< 0.32
Total HpCDD	0.01	NA	< 0.32	< 2.3	< 0.32
OCDD	0.001	NA	< 1.3	**19**	< 4.6
2,3,7,8-TCDF	0.1	NA	< 0.22	< 0.15	< 0.15
Total TCDF	0.1	NA	< 0.22	< 0.15	< 0.15
1,2,3,7,8-PeCDF	0.05	NA	< 0.33	< 0.23	< 0.20
2,3,4,7,8-PeCDF	0.5	NA	< 0.33	< 0.23	< 0.21
Total PeCDF	0.5	NA	< 0.44	< 0.29	< 0.30
1,2,3,4,7,8-HxCDF	0.1	NA	< 0.17	< 0.50	< 0.11
1,2,3,6,7,8-HxCDF	0.1	NA	< 0.17	< 0.13	< 0.10
2,3,4,6,7,8-HxCDF	0.1	NA	< 0.19	< 0.14	< 0.11
1,2,3,7,8,9-HxCDF	0.1	NA	< 0.20	< 0.15	< 0.12
Total HxCDF	0.1	NA	< 0.20	< 0.50	< 0.12
1,2,3,4,6,7,8-HpCDF	0.01	NA	< 0.19	< 0.97	< 0.13
1,2,3,4,7,8,9-HpCDF	0.01	NA	< 0.23	< 0.36	< 0.16
Total HpCDF	0.01	NA	< 0.23	< 0.97	< 0.16
OCDF	0.001	NA	< 0.46	< 3.6	< 0.22
Dioxin/furan Concentration as 2,3,7,8-TCDD Equivalents (TEC)					
Total Equivalent Concentration		15	0.90 U	1.19	0.57 U

Notes:

All results are expressed as ng/kg dry weight (parts per trillion).
Sample COMP-01 is a composite of locations BERM-06-10-16, BERM-04-8-14 and BERM-01-10-16.
Sample COMP-02 is a composite of locations BERM-07-7-11 and BERM-08-10-14.
Sample COMP-03-0804 consisted of laboratory grade silica sand and was submitted as a control blank.
PSDDA screening value of 15 ng/kg obtained from PSDDA Guidance Manual (2000 edition).

Table D-8. Grain Size Testing Data for ASB Berm Sands

Percent Retained in Each Size Fraction	Total Solids	Gravel	Sand					Silt				Clay		
			Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Coarse Silt	Medium Silt	Fine Silt	Very Fine Silt			
Sieve Size (microns)	**(%)**	> #10 (2000)	10-18 (2000-1000)	18-35 (1000-500)	35-60 (500-250)	60-120 (250-125)	120-230 (125-62)	62.5-31.0	31.0-15.6	15.6-7.8	7.8-3.9	3.9-2.0	2.0-1.0	<1.0
BERM-01-10-16	96.6	22.7	10.9	17.6	24.7	15.8	4.2	1.4	0.7	0.5	0.5	0.3	0.3	0.5
BERM-02-10-16	96.8	14.2	15.2	20.9	27.1	15.3	4.2	1.1	0.6	0.3	0.3	0.2	0.2	0.3
BERM-03-10-16	95.6	18.2	11.2	19.2	27.0	16.7	4.1	1.2	0.6	0.5	0.4	0.3	0.2	0.3
BERM-04-8-14	96.3	22.5	14.1	21.6	26.0	10.9	2.4	0.7	0.5	0.3	0.3	0.2	0.2	0.3
BERM-05-8-14	97.1	28.2	13.7	20.1	21.6	11.5	2.8	0.9	0.3	0.2	0.2	0.1	0.2	0.3
BERM-06-10-16	95.9	29.1	11.8	17.0	21.7	14.6	3.8	0.6	0.3	0.3	0.2	0.1	0.2	0.2
BERM-07-7-11	94.4	16.4	10.4	17.9	28.0	19.2	4.5	1.2	0.7	0.4	0.4	0.2	0.3	0.4
BERM-08-10-14	96.8	21.1	10.5	15.5	22.0	14.9	5.4	2.9	2.1	1.5	1.3	0.9	0.6	1.3

Note: All grain size results reported in %.

Sludge Dewatering Test Results

INTRODUCTION

Process Solutions' corporate Technical Services Laboratory received four, one gallon samples of sludge from The RETEC Group, Inc. in Seattle, WA. The samples were labeled; SS-01-0704, SS-03-0704, SS-04-0704 and SS-08-0704. The accompanying Chain of Custody Record sheets indicated that dewatering testing was requested for samples 03, 04 and 08. Sample 01was marked as hold. Dewatering tests were not conducted on sample SS-01-0704. In addition to dewatering testing, pH and Dry Solids Content (DSC) tests were conducted on all samples. The results of this testing showed DSC for centrifuge cake of 29%, 20% and 42% for samples 03, 04, and 08 respectively.

PROCEDURES

A. DSC's were determined by drying measured samples of as received sludge and centrifuge cake in a conventional drying oven at 103°C to 105°C to constant weight.

B. pH's were measured using pH indicator test strips in the range of 0 – 14.

C. Dewatering testing was conducted by diluting the sludges with water at a rate of one part sludge to two parts of tap water. This was done because the as received samples were gelatinous and did not mix well with flocculants. Polymer solutions were prepared at 1% in tap water and added in 100 ppm increments until a floc acceptable for centrifuging was obtained.

D. Cake samples were prepared by flocculating a sample and filtering the solids through a piece of belt-press cloth using a Buchner Funnel and vacuum pump. A second piece of belt-press cloth was placed on top of the solids and a latex sheet was stretched across the top of the funnel. Vacuum applied to the funnel drew the latex sheet tight onto the top belt-press cloth pressing the water from the cake to simulate the beach section of the production centrifuge. The DSC of cake samples prepared from bio-sludges has, in the past, agreed very well with DSC's obtained from field produced samples using the production scale centrifuge.

RESULTS

The pH of all samples was in the range of 7 – 8 using the indicator strips. DSC's of the as received sludges are shown in the table below.

Sample Number	% Dry Solids by Weight
SS – 01 – 0704	12.3
SS – 03 – 0704	10.2
SS – 04 – 0704	9.2
SS – 08 – 0704	34.4

All samples produced a good floc with the same high molecular weight, medium charge density, cationic polymer. Dilutions of samples 03 and 04 required 1000 ppm to produce a good floc and a diluted sample 08 required 700 ppm to make a good floc. The DSC of the cakes produced from each sample is shown in the table below.

Sample Number	% DSC of Centrifuge Cake
SS – 03 – 0704	28.7
SS – 04 – 0704	20.0
SS – 08 – 0704	41.9

CONCLUSIONS / RECOMMENDATIONS

The DSC's obtained from simulated centrifuge cakes agreed well with the consistency of the as received sludge samples. Sample 04 produced the lowest solids content cake, 20% DSC. This sample was very gelatinous, similar to thickened bio-sludge. Sample 03 was less gelatinous and produced a dryer cake, 29%. Sample 08 appeared to contain a high concentration of course, gritty solids. This sample had a layer of cloudy water on its surface and the solids were packed hard. After mixing the sample remained stable for about 5 – 10 minutes. After that time a water layer appeared. This material produced the highest solids content cake, 42%.

Boring Logs for ASB Berm Investigation

Boring Log

RETEC

Boring #: BERM-01
Sheet 1 of 2

Project: **GP ASB Berm**	Operator: **Casey Goble**	Location:
Project #: **PORTB-16846-500**	Drill Rig Type: **Truck Mount Geoprobe**	Northing: **1599747.84** Easting: **643486.83**
Client: **Port of Bellingham**	Method: **Direct Push**	Ground Elevation:
Contractor: **Cascade Drilling**	Casing ID:	Total Depth: **32 feet**
Start Date & Time: **8/12/04 1150**	Bit Type:	Seal:
Finish Date & Time: **8/12/04 1420**	Boring ID:	Logged By: **Quinn Meehan**

Sample					Graphic	Depth (ft.)	Soil and Rock Description Classification Scheme: **USCS/ASTM**	Elevation (ft.)	Comments
Type & #	Depth Range (ft.)	Blows Per 6 Inch	% Rec	PID (ppm)					
BERM-01 -3-4			90			0	SW; light brown fine to coarse sand with angular to rounded gravel to 0.5", no odor, no moisture	0	
			100			5	SW: light brown medium to coarse sand gravel to 0.25" about 10%, no odor, very slight moisture	-5	
			78			10		-10	
			82.5			15	SAA with slightly more moisture	-15	
BERM-01-10-16			78			20	SAA, grades to moderate moisture towards bottom of core (20")	-20	
			55				SW: gray medium to coarse sand with about 10% gravel to 0.25", no odor, moderate moisture	-24	
			87.5			25	SW: dark gray coarse sand, no odor, moderate moisture	-27	

Remarks and Datum Used:

The RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

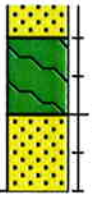
Sample Type
N = SPT
DP = Direct Push
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)

RETEC

Boring Log

Boring #: BERM-01
Sheet 2 of 2

Sample					Graphic	Depth (ft.)	Soil and Rock Description Classification Scheme: **USCS/ASTM**	Elevation (ft.)	Comments
Type & #	Depth Range (ft.)	Blows Per 6 Inch	% Rec	PID (ppm)					
BERM-01-28.5-29						30	CH: olive gray, soft silty clay, high plasticity, trace woody debris, moderate moisture SW: dark gray, medium to coarse grained sand, shell fragments, trace woody debris, sulfide-like odor, moderate moisture End of Geoprobe boring at 32 ft bgs.	-28 -29 -30 -31 -32	

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Sample Type
N = SPT
DP = Direct Push
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)

Boring Log

RETEC

Boring #: BERM-02
Sheet 1 of 2

Project: **GP ASB Berm**	Operator: **Casey Goble**	Location:
Project #: **PORTB-16846-500**	Drill Rig Type: **Truck Mount Geoprobe**	Northing: **1599418.61** Easting: **643168.08**
Client: **Port of Bellingham**	Method: **Direct Push**	Ground Elevation:
Contractor: **Cascade Drilling**	Casing ID:	Total Depth: **32 feet**
Start Date & Time: **8/12/04 1105**	Bit Type:	Seal:
Finish Date & Time: **8/12/04 1240**	Boring ID:	Logged By: **Quinn Meehan**

Sample Type & #	Sample Depth Range (ft.)	Sample Blows Per 6 Inch	Sample % Rec	Sample PID (ppm)	Graphic	Depth (ft.)	Soil and Rock Description (Classification Scheme: USCS/ASTM)	Elevation (ft.)	Comments
BERM-02 -3-4			100			0	SW: light brown medium to coarse sand with subrounded gravel to 1" about 30%, no moisture, no odor	0	
						5	SW: light brown medium to coarse sand, subrounded gravel to 0.25" about 20%, very slight moisture, no odor	-5	
			100				SW: reddish brown medium sand, well sorted, very slight moisture, no odor	-8	
			95			10	SW: light brown medium coarse sand subrounded gravel to 0.125 about 10%, very slight moisture, no odor	-10	
			87.5			15		-15	
BERM-02 -10-16							SW: SAA with slightly more moisture	-16	
			65			20	SW: light brown medium to coarse sand with gravel to 0.25" and reddish brown fine sand about 25%, no odor	-20	
			25				SW: light brown angular to subangular cobbles and gravel to 3" about 10% sandy silt, no odor	-22	
BERM-02 -27-27.4						25	SW: dark grey silty sand with red wood debris about 50%, silty sand grafes to medium sand with wood debris, high moisture, sulfide-like odor	-25	
			0.4					-27	

Remarks and Datum Used:

The RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type
N = SPT
DP = Direct Push
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)

RETEC

Boring Log

Boring #: BERM-02
Sheet 2 of 2

Sample					Graphic	Depth (ft.)	Soil and Rock Description Classification Scheme: **USCS/ASTM**	Elevation (ft.)	Comments
Type & #	Depth Range (ft.)	Blows Per 6 Inch	% Rec	PID (ppm)					
BERM-02 -28-29						30	SW: gray medium to coarse grained sand with shell fragments, high moisture, sulfide-like odor End of Geoprobe boring at 32.0 ft bgs	-28 -29 -30 -31 -32	

Remarks and Datum Used:

The RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type
N = SPT
DP = Direct Push
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)

Boring Log

Boring #: BERM-03
Sheet 1 of 2

Project: **GP ASB Berm**	Operator: **Casey Goble**	Location:
Project #: **PORTB-16846-500**	Drill Rig Type: **Truck Mount Geoprobe**	Northing: **1599326.14** Easting: **642629.28**
Client: **Port of Bellingham**	Method: **Direct Push**	Ground Elevation:
Contractor: **Cascade Drilling**	Casing ID:	Total Depth: **36 feet**
Start Date & Time: **8/12/04 0935**	Bit Type:	Seal:
Finish Date & Time: **8/12/04 1045**	Boring ID:	Logged By: **Quinn Meehan**

Sample Type & #	Sample Depth Range (ft.)	Sample Blows Per 6 Inch	Sample % Rec	Sample PID (ppm)	Graphic	Depth (ft.)	Soil and Rock Description (Classification Scheme: **USCS/ASTM**)	Elevation (ft.)	Comments
BERM-03 -3-4			90			0	SW: light brown fine to coarse sand with angular to subrounded gravel and cobbles to 2", very slight moisture, no odor	0	
							SW: light brown medium to coarse sand, very slight moisture, no odor	-1 to -4	
						5	SW: SAA with subrounded gravel to 0.25" about 10-15%, slightly more moisture	-5 to -8	
			90						
							SW: light brown medium to coarse sand sub-rounded gravel to 0.25" about 5-10%, slight moisture, no odor	-9 to -19	
			52			10			
						15			
BERM-03 -10-16			72						
			NR			20	GM: angular to subangular gravel and cobbles to 2" trace red brown orgainc silt, slight moisture, no odor	-20 to -24	
			12			25	GM: angular to subangular gravel and cobbles to 2" and trace brown silt, moderate moisture	-25	
							GM: SAA with trace red organics (wood) and	-26 to -27	

Remarks and Datum Used:

The RETEC Group, Inc.
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Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type
N = SPT
DP = Direct Push
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)

RETEC

Boring Log

Boring #: BERM-03
Sheet 2 of 2

Sample					Graphic	Depth (ft.)	Soil and Rock Description Classification Scheme: **USCS/ASTM**	Elevation (ft.)	Comments
Type & #	Depth Range (ft.)	Blows Per 6 Inch	% Rec	PID (ppm)					
			18				about 5% fine sand, high moisture	-28	
							GM: SAA	-29	
						30	SM: dark gray sandy silt with clay about 40% with red wood debris about 60%, high moisture, sulfide-like odor	-30 -31 -32	
BERM-03 -30-30.4			38				SM: gray medium to coarse sand trace silt shell fragments, trace wood debris, high moisture, strong sulfide-like odor	-33 -34	
						35	End of Geoprode boring at 36 ft bgs	-35 -36	

Remarks and Datum Used:

The RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type
N = SPT
DP = Direct Push
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)

Boring Log

Boring #: BERM-04
Sheet 1 of 2

Project: **GP ASB Berm**	Operator: **Casey Goble**	Location:
Project #: **PORTB-16846-500**	Drill Rig Type: **Truck Mount Geoprobe**	Northing: **1599469.98** Easting: **642303.92**
Client: **Port of Bellingham**	Method: **Direct Push**	Ground Elevation:
Contractor: **Cascade Drilling**	Casing ID:	Total Depth: **36 feet**
Start Date & Time: **8/12/04 0800**	Bit Type:	Seal:
Finish Date & Time: **8/12/04 0930**	Boring ID:	Logged By: **Quinn Meehan**

Sample					Graphic	Depth (ft.)	Soil and Rock Description Classification Scheme: **USCS/ASTM**	Elevation (ft.)	Comments
Type & #	Depth Range (ft.)	Blows Per 6 Inch	% Rec	PID (ppm)					
BERM-04 -3-4			90			0	FILL: angular aggregate to 0.5", no moisture, no odor	0	
							SW: light brown, medium coarse sand with gravel to 1", slight moisture, no odor	-1	
						5	SW: light brown medium to coarse grain sand, gravel to 0.25" about 10%, very slight moisture, no odor	-5	
			95				SW: SAA with gravel to 1"	-8	
						10	SW: light brown medium to coarse grain sand with gravel 0.25" about 10%, very slight moisture, no odor	-10	
BERM-04 8-14			88				SW: SAA	-12	
							SW: SAA with gravel to 0.5" about 10%	-14	
			52			15	SW: SAA with slightly more moisture	-15	
							SW: SAA	-19	
			100			20	GM: clast supported angular gravel and cobbles to 3" trace red brown silt and about 10% medium to coarse sand, moderate moisture, no odor	-20	
			40			25	GM: SAA with very high moisture	-27	

Remarks and Datum Used:

The RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

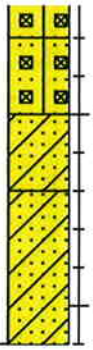
Sample Type
N = SPT
DP = Direct Push
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)

Boring Log

RETEC

Boring #: BERM-04
Sheet 2 of 2

Sample					Graphic	Depth (ft.)	Soil and Rock Description Classification Scheme: **USCS/ASTM**	Elevation (ft.)	Comments
Type & #	Depth Range (ft.)	Blows Per 6 Inch	% Rec	PID (ppm)					
			25			30	GM: SAA SC: dark gray sandy silt with clay about 40% red woody debris about 60% , high moisture, strong sulfide-like odor Sediment/Surface water contact at 32.0 ft bgs	-28 -29 -30 -31 -32 -33 -34 -35 -36	
BERM-04 -31-32			32			35	SC: gray fine to coarse sand, shell fragments, trace silt, trace woody debris, high moisture, strong sulfide odor End of Geoprobe boring at 36 ft bgs		

Remarks and Datum Used:

The RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type
N = SPT
DP = Direct Push
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)

Boring Log

Boring #: BERM-05
Sheet 1 of 2

Project: **GP ASB Berm**	Operator: **Casey Goble**	Location:
Project #: **PORTB-16846-500**	Drill Rig Type: **Truck Mount Geoprobe**	Northing: **1600109.78** Easting: **642384.33**
Client: **Port of Bellingham**	Method: **Direct Push**	Ground Elevation:
Contractor: **Cascade Drilling**	Casing ID:	Total Depth: **40 feet**
Start Date & Time: **8/11/04 1555**	Bit Type:	Seal:
Finish Date & Time: **8/11/04 ~1730**	Boring ID:	Logged By: **Quinn Meehan**

Sample: Type & #	Sample: Depth Range (ft.)	Sample: Blows Per 6 Inch	Sample: % Rec	Sample: PID (ppm)	Graphic	Depth (ft.)	Soil and Rock Description (Classification Scheme: **USCS/ASTM**)	Elevation (ft.)	Comments
						0	SW: light brown medium to coarse sand with 40 % angular gravel to 1.5", no moisture, no odor	0	
							SW: light gray medium to coarse sand with 20 % gravel to 0.25", very slight moisture, no odor	-1 -2 -3 -4	
BERM-05 -3-4			78			5	SW: light gray medium to coarse sand with 30% gravel to 0.25", very slight moisture, no odor	-5 -6	
							SW: SAA with slightly more moisture	-7	
			100				SW: light gray medium to coarse sand with 20 % gravel, slight moisture, no odor	-8 -9	
						10		-10 -11	
BERM-05 8-14			50				SW: light gray medium to coarse sand with 15% gravel to 0.25", slight moisture, no odor	-12 -13 -14	
						15		-15	
			48				SW: coarse sand with 10% gravel to 0.25", slight to moderate moisture, no odor	-16 -17 -18 -19	
			50			20	SW: SAA with increased moisture	-20	
							SW: medium to coarse sand with angular aggregate to 2", high moisture, no odor	-21 -22 -23	
BERM-05 -23-29			62				OL: dark gray sandy silt with 50% red woody debris and some clay, sulfide and ocean-like odor	-24	
						25		-25 -26	
							OL: SAA with 90% woody debris up to contact	-27	

Remarks and Datum Used:

The RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type
N = SPT
DP = Direct Push
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)

RETEC

Boring Log

Boring #: BERM-05
Sheet 2 of 2

Sample					Graphic	Depth (ft.)	Soil and Rock Description Classification Scheme: **USCS/ASTM**	Elevation (ft.)	Comments
Type & #	Depth Range (ft.)	Blows Per 6 Inch	% Rec	PID (ppm)					
BERM-05 -27-28			85			30	SW: light gray fine to medium sand, trace silt and shell fragments, 10% gravel from 0.125-0.25", moderate to high moisture, sulfide and ocean-like odor	-28 -29 -30 -31	
			75				SP: light gray fine sand, high moisture	-32	
						35	SP: SAA with 5% shell fragements, sulfide and ocean-like odor	-33 -34 -35 -36 -37 -38	
			88						
						40	End of Geoprobe boring at 40 ft bgs	-39 -40	

Remarks and Datum Used:

The RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type
N = SPT
DP = Direct Push
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)

Boring Log

Boring #: BERM-06
Sheet 1 of 2

Project: **GP ASB Berm**	Operator: **Casey Goble**	Location:
Project #: **PORTB-16846-500**	Drill Rig Type: **Truck Mount Geoprobe**	Northing: **1600428.96** Easting: **642689.56**
Client: **Port of Bellingham**	Method: **Direct Push**	Ground Elevation:
Contractor: **Cascade Drilling**	Casing ID:	Total Depth: **40 feet**
Start Date & Time: **8/11/04 0912**	Bit Type:	Seal: **Bentonite backfill**
Finish Date & Time: **8/11/04 ~1045**	Boring ID:	Logged By: **Ben Howard/Quinn Meehan**

Sample: Type & #	Sample: Depth Range (ft.)	Sample: Blows Per 6 Inch	Sample: % Rec	Sample: PID (ppm)	Graphic	Depth (ft.)	Soil and Rock Description (Classification Scheme: **USCS/ASTM**)	Elevation (ft.)	Comments
			82			0	SW: medium brown with light gray sand with 30% gravel to 1.5", very litttle moisture, no odor	0	
							SP: light gray fine sand with 10% gravel , very little moisture, no odor	-1 -2 -3 -4	
						5	SP: light gray medium sand with 10% gravel , slight moisture, no odor	-5 -6 -7	
			92				SW: light gray medium sand with ~20% gravel to 0.5", slight moisture	-8 -9	
						10	SW: light gray medium sand with 40% gravel to 0.75", no moisture	-10 -11	
			100				SP: light gray medium sand with 10% gravel to 0.25", slight moisture	-12 -13	
							SP: light gray medium sand with 10% gravel to 0.25", slight moisture	-14	
BERM-06 -10-16			62			15		-15 -16	
							SP: light gray medium sand with 10% gravel to 0.25", increased moisture, no odor	-17 -18	
							SW: SAA but grades to coarse sand, more moisture, no odor	-19	
			68			20	SP: light gray medium sand and trace gravel to 0.25", medium moisture, no odor	-20 -21 -22	
							SM: medium gray silty sand with ~20% red woody debris, trace shell fragments, sulfide and ocean- like odor	-23 -24	
BERM-06 -23-24			85			25		-25	archive and COMP-02
							SM: SAA but grades to sandy silt with 30-40% woody debris	-26 -27	

Remarks and Datum Used:

The RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type
N = SPT
DP = Direct Push
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)

RETEC

Boring Log

Boring #: BERM-06
Sheet 2 of 2

Sample					Graphic	Depth (ft.)	Soil and Rock Description Classification Scheme: **USCS/ASTM**	Elevation (ft.)	Comments
Type & #	Depth Range (ft.)	Blows Per 6 Inch	% Rec	PID (ppm)					
			100			30	SM: medium gray sandy silt with 50% woody debris and clay of medium plasticity, medium moisture, sulfide and ocean-like odor	-28	
			100				SM: medium gray silty sand with trace shell fragments, 10% gravel to 0.25", medium moisture, sulfide and ocean -like odor	-29 -30 -31	
						35	SM: fine to medium sand with trace silt, medium moisture, sulfide and ocean like odor	-32 -33 -34	
							SM: medium gray medium sand with trace silty and clay,, high moisture, sulfide and ocean-like odor	-35 -36 -37	
							SW: medium gray coarse sand with gravel to 0.5", high moisture, sulfide and ocean-like odor	-38 -39	
						40	SW: fine sand with shell fragments, trace silt and woody debris, high moisture, sulfide and ocean-like odor	-40	
							SW: SAA with more shell fragments and trace gravel to 0.25" and no woody debris, high moisture, sulfide and ocean-like odor		
							End of Geoprobe boring at 40 ft bgs		

Remarks and Datum Used:

The RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type
N = SPT
DP = Direct Push
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)

Boring Log

RETEC

Boring #: BERM-07
Sheet 1 of 2

Project: **GP ASB Berm**	Operator: **Casey Goble**	Location:
Project #: **PORTB-16846-500**	Drill Rig Type: **Truck Mount Geoprobe**	Northing: **1600537.70** Easting: **643122.51**
Client: **Port of Bellingham**	Method: **Direct Push**	Ground Elevation:
Contractor: **Cascade Drilling**	Casing ID:	Total Depth: **28 feet**
Start Date & Time: **8/13/04 0947**	Bit Type:	Seal:
Finish Date & Time: **8/13/04 1115**	Boring ID:	Logged By: **Quinn Meehan**

Sample Type & #	Sample Depth Range (ft.)	Sample Blows Per 6 Inch	Sample % Rec	Sample PID (ppm)	Graphic	Depth (ft.)	Soil and Rock Description (Classification Scheme: USCS/ASTM)	Elevation (ft.)	Comments
			92			0	asphalt	0	
							SW: light brown fine to coarse grained sand with gravel to 1.5", no moisture, no odor	-1	
								-2	
								-3	
							SP: light brown medium grained well sorted sand with 5-10% subrounded gravel to 0.25", slight moisture, no odor	-4	
						5		-5	
								-6	
								-7	
BERM-07 -7-11			82				SP: SAA with slightly more moisture	-8	
								-9	
						10	SW: gray medium to coarse grained sand, moderate moisture	-10	
								-11	
			95				SM: gray silty sand with subrounded to subangular gravel to 1.5" and ~10% clay	-12	
								-13	
							CL: gray clay ~50% with ~30% coarse grained sand and ~20% subrouonded gravel to 1", moderate plasticity, moderate moisture, no odor	-14	
						15		-15	
			78					-16	
							CL: gray clay ~50% and sand and gravel up to 2" of about 50%, moderate moisture	-17	
								-18	
							SW: dark gray coarse grained sand with subrounded gravel to 1.5" ~70%, moderate moisture, slight hydrocarbon-like odor	-19	
			73			20		-20	
								-21	
BERM-07 -21-22							OH: dark gray silty clay with ~40% reddish brown wood debris, very soft clay with high plasticity, moderate moisture, slight hydrocarbon-like odor	-22	
								-23	
BERM-07 -23-24			73					-24	
						25	SC: olive gray medium to coarse grained sand, ~5-10% clay, ~15% gravel to 0.25", shell fragments, moderate to high moisture, sulfide-like	-25	
BERM-07 -24.5-25								-26	
								-27	

Remarks and Datum Used:

The RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type
N = SPT
DP = Direct Push
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)

RETEC

Boring Log

Boring #: BERM-07
Sheet 2 of 2

Sample					Graphic	Depth (ft.)	Soil and Rock Description Classification Scheme: **USCS/ASTM**	Elevation (ft.)	Comments
Type & #	Depth Range (ft.)	Blows Per 6 Inch	% Rec	PID (ppm)					
							odor	-28	
							End of Geoprobe boring at 36 ft bgs		

Remarks and Datum Used:

The RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type
N = SPT
DP = Direct Push
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)

Boring Log

RETEC

Boring #: BERM-08
Sheet 1 of 2

Project: **GP ASB Berm**	Operator: **Casey Goble**	Location:
Project #: **PORTB-16846-500**	Drill Rig Type: **Truck Mount Geoprobe**	Northing: **1600183.26** Easting: **643482.02**
Client: **Port of Bellingham**	Method: **Direct Push**	Ground Elevation:
Contractor: **Cascade Drilling**	Casing ID:	Total Depth: **28 feet**
Start Date & Time: **8/13/04 0740**	Bit Type:	Seal:
Finish Date & Time: **8/13/04 0920**	Boring ID:	Logged By: **Quinn Meehan**

Sample Type & #	Sample Depth Range (ft.)	Sample Blows Per 6 Inch	Sample % Rec	Sample PID (ppm)	Graphic	Depth (ft.)	Soil and Rock Description (Classification Scheme: **USCS/ASTM**)	Elevation (ft.)	Comments
			85			0	SW: light brown medium to coarse grained sand 60% with ~40% gravel to 1", no moisture, no odor	0	
							SP: reddish brown medium grained sand, slight moisture, no odor	-1 -2 -3 -4	
						5	SW: light brown fine to coarse sand with 10% gravel to 0.25", very slight moisture, no odor	-5 -6 -7 -8 -9	
			82						
BERM-08 -10-14						10	SW: SAA with 25% gravel to 0.5"	-10 -11 -12 -13 -14	
			65						
BERM-08 -14.5-16.5						15	SW: SAA but grades to moderate mositure	-15 -16 -17 -18 -19	
			75				SW: gray coarse grained sand with 15% gravel to 0.25", moderate moisture, slight ocean-like odor		
BERM-08 -18-20							ML: gray sandy silt with subrounded gravel to 1" and clay, moderate moisture		
			80			20	ML: SAA with more moisture, slightl sulfide-like odor	-20 -21 -22 -23 -24	
BERM-08 -24.5-25			32			25	SP: dark gray fine sand, 40% red woody debris, moderate to high moisture, slight sulfide like odor	-25 -26	
BERM-08 -25.5-28							SW: gray medium to coarse grained sand with	-27	

Remarks and Datum Used:

The RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

Sample Type
N = SPT
DP = Direct Push
GS = Grab Sample
C = Core

Groundwater		
Date	Time	Depth (ft.)

RETEC

Boring Log

Boring #: BERM-08
Sheet 2 of 2

Sample					Graphic	Depth (ft.)	Soil and Rock Description Classification Scheme: **USCS/ASTM**	Elevation (ft.)	Comments
Type & #	Depth Range (ft.)	Blows Per 6 Inch	% Rec	PID (ppm)					
			85				shell fragments and subrounded to subangular gravel to 0.5", moderate to high moisture, sulfide-like odor	-28	
							End of Geoprobe boring at 28 ft bgs	-29	

Remarks and Datum Used:	Sample Type	Groundwater		
		Date	Time	Depth (ft.)
The RETEC Group, Inc. 1011 SW Klickitat Way, Suite 207 Seattle, WA 98134-1162 Phone: (206) 624-9349 Fax: (206) 624-2839	N = SPT DP = Direct Push GS = Grab Sample C = Core			

Analytical Testing Laboratory Reports

Analytical Resources, Incorporated
Analytical Chemists and Consultants

24 August 2004

Ben Howard
Retec, Inc
314 East Holly Street, Suite 202
Bellingham, WA 98225

RE: Client Project: PORTB-16846-500, ASB Berm
ARI Job No: GY57

Dear Ben:

Please find enclosed the original chain-of-custody record and the final results for the samples from the project referenced above. Analytical Resources, Inc. accepted fourteen soil samples on August 13, 2004. The samples were received intact and there were no discrepancies between the sample containers received and the COC. Ten samples were placed on hold as specified. The remaining samples were analyzed for SVOAs, PCBs, metals, grain size and conventional parameters as requested.

The area for one internal standard was not within control limits following the initial SVOA analysis of sample BERM-06-10-16. This sample was diluted and re-analyzed. The areas for all internal standards were within acceptable QC limits for the re-analysis. The results for both analyses have been submitted for this sample.

There were no further problems with these analyses.

A copy of these reports will be kept on file with ARI. Should you have any questions or problems, please feel free to call me at any time.

Sincerely,

ANALYTICAL RESOURCES, INC.

Mark D. Harris
Project Manager
206/695-6210
mark@arilabs.com

Enclosures

cc: File GY57

MDH/mdh

Chain of Custody Record

№ 101806

3.0/3.2

The RETEC Group, Inc.
1011 S.W. Klickitat Way, Suite 207 • Seattle, WA 98134-1162
(206) 624-9349 Phone • (206) 624-2839 Fax
www.retec.com

RETEC

Project Name: ASB Berm	Project Number: PORTB-16846-500
Send Report To: Ben Howard	Sampler (Print Name): B. Howard
Address: 1011 SW Klickitat Way	Sampler (Print Name): A. Meehan
Suite 207	Shipment Method: by hand
Seattle, WA 98134	Airbill Number: —
Phone: (206) 624-9349	Laboratory Receiving: ARI
Fax: (206) 624-2839	

Page 1 of 1

Purchase Order #: _____

Field Sample ID	Sample Date	Sample Time	Sample Matrix	Number of Containers	SVOCs (EPA 8270)	Metals (EPA 6010/7471)	PCBs (EPA 8081)	TOC (PSEP)	Ammonia (PSEP)	Total Sulfides (PSEP)	Archive	Comments, Special Instructions, etc.	Lab Sample ID (to be completed by lab)
BERM-06-10-16	8/11/04	0952	soil	6	X	X	X	X	X	X	X	Follow PSEP	
BERM-06-23-24		1023		1							X	procedures for	
BERM-05-3-4		1557		1							X	analytical /	
BERM-05-8-14		1607		6	X	X	X	X	X	X	X	physical testing.	
BERM-05-23-24		1640		1							X		
BERM-05-27-28		1649		1							X		
BERM-04-3-4	8/12/04	0817		1							X		
BERM-04-8-14		0826		6	X	X	X	X	X	X	X		
BERM-04-31-32		0915		1							X		
BERM-04-33-34		0919		1							X		
BERM-03-3-4		0947		1							X		
BERM-03-10-16		0959		6	X	X	X	X	X	X	X		
BERM-03-30-30.4		1042		1							X		
BERM-03-32-33		1047		1							X		

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
[signature]	[signature]	8/13/04	1700
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

Sample Custodian Remarks (Completed By Laboratory):

QA/QC Level	Turnaround	Sample Receipt	
Level I ☐	Routine ☐	Total # Containers Received?	
Level II ☐	24 Hour ☐	COC Seals Present?	
Level III ☐	1 Week ☐	COC Seals Intact?	
Other ☐	Other _____	Received Containers Intact?	
		Temperature?	

White: Lab Copy Yellow: PM Copy Pink: Field Copy Gold: PM/QA/QC Copy

Chain of Custody Record

№ 10[illegible]629

The RETEC Group, Inc.
1011 S.W. Klickitat Way, Suite 207 • Seattle, WA 98134-1162
(206) 624-9349 Phone • (206) 624-2839 Fax
www.retec.com

RETEC

Project Name: ASB Berm	Project Number: PORTB-16846-500
Send Report To: Ben Howard	Sampler (Print Name): B. Howard
Address: 1011 SW Klickitat Way	Sampler (Print Name): Q. Meehan
Suite 207	Shipment Method: by hand
Seattle, WA 98134	Airbill Number: -
Phone: (206) 624-9349	Laboratory Receiving: ARI
Fax: (206) 624-2839	

Page 1 of 1

Purchase Order #: _____

Field Sample ID	Sample Date	Sample Time	Sample Matrix	Number of Containers	SVOCs (EPA 8270)	Metals (EPA 6010/7471)	PCBs (EPA 8081)	Total solids (PSEP)	pH	TOC (PSEP)	Ammonia (PSEP)	Total Sulfides (PSEP)	Grain Size (PSEP)	Archive	Comments, Special instructions, etc.	Lab Sample ID (to be completed by lab)
BERM-02-3-4	8/12/04	1121	soil	1										X		Follow PSEP procedures for analytical/ physical testing.	
BERM-02-10-16		1130		6	X	X	X	X	X	X	X	X	X	X		
BERM-02-27-27.4		1224		1										X		
BERM-02-28-29		1231		1										X		
BERM-01-3-4		1303		1										X		
BERM-01-10-16		1317		6	X	X	X	X	X	X	X	X	X	X		
BERM-01-28.5-29		1402		1										X		
BERM-01-31-31.5		1409		1										X		
BERM-08-10-14	8/13/04	0802		6	X	X	X	X	X	X	X	X	X	X		
BERM-08-14.5-16.5		0825		1										X		
BERM-08-18-20		0831		1										X		
BERM-08-24.5-25		0840		1										X		
BERM-08-25.5-28		0905		1										X		
BERM-07-7-11		1010		6	X	X	X	X	X	X	X	X	X	X		
BERM-07-21-22		1053		1										X		
BERM-07-23-24		1057		1										X		
BERM-07-24.5-25		1104		1										X		

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Quinn Meehan	Ben Howard	8/13/04	1700
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

Sample Custodian Remarks (Completed By Laboratory):

QA/QC Level	Turnaround
Level I ☐	Routine ☐
Level II ☐	24 Hour ☐
Level III ☐	1 Week ☐
Other ☐	Other _____

Sample Receipt	
Total # Containers Received?	
COC Seals Present?	
COC Seals Intact?	
Received Containers Intact?	
Temperature?	

White: Lab Copy Yellow: PM Copy Pink: Field Copy Gold: PM/QA/QC Copy

Analytical Resources, Incorporated
Analytical Chemists and Consultants

ORGANIC COMPOUND
DATA REPORTING QUALIFIERS

U	Indicates the compound was undetected at the reported concentration. (Same as ND).
J	Indicates an estimated concentration when the value is less than the calculated reporting limit.
D	Indicates the surrogate/spike(s) was not detected, due to dilution of extract.
NR	Indicates the surrogate recovery cannot be reported due to matrix interference.
E	Indicates a value above the linear range of the detector. Sample dilution required.
S	Indicates no value reported due to saturation of the detector. Sample dilution required.
NA	Indicates compound not analyzed for.
M	Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match.
B	Indicates possible/probable blank contamination. Flagged when the analyte is detected in the blank as well as the sample.
Y	Indicates raised reporting limit due to background interference or to activity on the instrument. Compound is still not detected at or above the raised level.
C	Indicates a probable hit that cannot be confirmed due to matrix interference (GC).
P	Indicates a high RPD for dual column GC analyses without obvious interference.

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by GC/MS

Sample ID: MB-081804
METHOD BLANK

Lab Sample ID: MB-081804
LIMS ID: 04-12753
Matrix: Soil
Data Release Authorized:
Reported: 08/19/04

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500
Date Sampled: NA
Date Received: NA

Date Extracted: 08/18/04
Date Analyzed: 08/18/04 17:37
Instrument/Analyst: NT6/LJR
GPC Cleanup: NO

Sample Amount: 25.0 g
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: NA
pH: NA

CAS Number	Analyte	RL	Result
108-95-2	Phenol	20	< 20 U
111-44-4	Bis-(2-Chloroethyl) Ether	40	< 40 U
95-57-8	2-Chlorophenol	20	< 20 U
541-73-1	1,3-Dichlorobenzene	20	< 20 U
106-46-7	1,4-Dichlorobenzene	20	< 20 U
100-51-6	Benzyl Alcohol	20	< 20 U
95-50-1	1,2-Dichlorobenzene	20	< 20 U
95-48-7	2-Methylphenol	20	< 20 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	20	< 20 U
106-44-5	4-Methylphenol	20	< 20 U
621-64-7	N-Nitroso-Di-N-Propylamine	40	< 40 U
67-72-1	Hexachloroethane	20	< 20 U
98-95-3	Nitrobenzene	20	< 20 U
78-59-1	Isophorone	20	< 20 U
88-75-5	2-Nitrophenol	100	< 100 U
105-67-9	2,4-Dimethylphenol	20	< 20 U
65-85-0	Benzoic Acid	200	< 200 U
111-91-1	bis(2-Chloroethoxy) Methane	20	< 20 U
120-83-2	2,4-Dichlorophenol	60	< 60 U
120-82-1	1,2,4-Trichlorobenzene	20	< 20 U
91-20-3	Naphthalene	20	< 20 U
106-47-8	4-Chloroaniline	60	< 60 U
87-68-3	Hexachlorobutadiene	20	< 20 U
59-50-7	4-Chloro-3-methylphenol	40	< 40 U
91-57-6	2-Methylnaphthalene	20	< 20 U
77-47-4	Hexachlorocyclopentadiene	100	< 100 U
88-06-2	2,4,6-Trichlorophenol	100	< 100 U
95-95-4	2,4,5-Trichlorophenol	100	< 100 U
91-58-7	2-Chloronaphthalene	20	< 20 U
88-74-4	2-Nitroaniline	100	< 100 U
131-11-3	Dimethylphthalate	20	< 20 U
208-96-8	Acenaphthylene	20	< 20 U
99-09-2	3-Nitroaniline	120	< 120 U
83-32-9	Acenaphthene	20	< 20 U
51-28-5	2,4-Dinitrophenol	200	< 200 U
100-02-7	4-Nitrophenol	100	< 100 U
132-64-9	Dibenzofuran	20	< 20 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by GC/MS

Sample ID: MB-081804
METHOD BLANK

Lab Sample ID: MB-081804
LIMS ID: 04-12753
Matrix: Soil
Date Analyzed: 08/18/04 17:37

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500

CAS Number	Analyte	RL	Result
606-20-2	2,6-Dinitrotoluene	100	< 100 U
121-14-2	2,4-Dinitrotoluene	100	< 100 U
84-66-2	Diethylphthalate	20	< 20 U
7005-72-3	4-Chlorophenyl-phenylether	20	< 20 U
86-73-7	Fluorene	20	< 20 U
100-01-6	4-Nitroaniline	100	< 100 U
534-52-1	4,6-Dinitro-2-Methylphenol	200	< 200 U
86-30-6	N-Nitrosodiphenylamine	20	< 20 U
101-55-3	4-Bromophenyl-phenylether	20	< 20 U
118-74-1	Hexachlorobenzene	20	< 20 U
87-86-5	Pentachlorophenol	100	< 100 U
85-01-8	Phenanthrene	20	< 20 U
86-74-8	Carbazole	20	< 20 U
120-12-7	Anthracene	20	< 20 U
84-74-2	Di-n-Butylphthalate	20	< 20 U
206-44-0	Fluoranthene	20	< 20 U
129-00-0	Pyrene	20	< 20 U
85-68-7	Butylbenzylphthalate	20	< 20 U
91-94-1	3,3'-Dichlorobenzidine	100	< 100 U
56-55-3	Benzo(a)anthracene	20	< 20 U
117-81-7	bis(2-Ethylhexyl)phthalate	20	< 20 U
218-01-9	Chrysene	20	< 20 U
117-84-0	Di-n-Octyl phthalate	20	< 20 U
205-99-2	Benzo(b)fluoranthene	20	< 20 U
207-08-9	Benzo(k)fluoranthene	20	< 20 U
50-32-8	Benzo(a)pyrene	20	< 20 U
193-39-5	Indeno(1,2,3-cd)pyrene	20	< 20 U
53-70-3	Dibenz(a,h)anthracene	20	< 20 U
191-24-2	Benzo(g,h,i)perylene	20	< 20 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	64.0%	2-Fluorobiphenyl	78.4%
d14-p-Terphenyl	102%	d4-1,2-Dichlorobenzene	71.9%
d5-Phenol	69.3%	2-Fluorophenol	69.0%
2,4,6-Tribromophenol	96.6%	d4-2-Chlorophenol	75.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by GC/MS

Sample ID: BERM-06-10-16
SAMPLE

Lab Sample ID: GY57A
LIMS ID: 04-12753
Matrix: Soil
Data Release Authorized:
Reported: 08/19/04

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500
Date Sampled: 08/11/04
Date Received: 08/13/04

Date Extracted: 08/18/04
Date Analyzed: 08/18/04 18:40
Instrument/Analyst: NT6/LJR
GPC Cleanup: NO

Sample Amount: 25.9 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 3.1%
pH: 8.2

CAS Number	Analyte	RL	Result
108-95-2	Phenol	19	< 19 U
111-44-4	Bis-(2-Chloroethyl) Ether	39	< 39 U
95-57-8	2-Chlorophenol	19	< 19 U
541-73-1	1,3-Dichlorobenzene	19	< 19 U
106-46-7	1,4-Dichlorobenzene	19	< 19 U
100-51-6	Benzyl Alcohol	19	< 19 U
95-50-1	1,2-Dichlorobenzene	19	< 19 U
95-48-7	2-Methylphenol	19	< 19 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	19	< 19 U
106-44-5	4-Methylphenol	19	< 19 U
621-64-7	N-Nitroso-Di-N-Propylamine	39	< 39 U
67-72-1	Hexachloroethane	19	< 19 U
98-95-3	Nitrobenzene	19	< 19 U
78-59-1	Isophorone	19	< 19 U
88-75-5	2-Nitrophenol	96	< 96 U
105-67-9	2,4-Dimethylphenol	19	< 19 U
65-85-0	Benzoic Acid	190	< 190 U
111-91-1	bis(2-Chloroethoxy) Methane	19	< 19 U
120-83-2	2,4-Dichlorophenol	58	< 58 U
120-82-1	1,2,4-Trichlorobenzene	19	< 19 U
91-20-3	Naphthalene	19	< 19 U
106-47-8	4-Chloroaniline	58	< 58 U
87-68-3	Hexachlorobutadiene	19	< 19 U
59-50-7	4-Chloro-3-methylphenol	39	< 39 U
91-57-6	2-Methylnaphthalene	19	< 19 U
77-47-4	Hexachlorocyclopentadiene	96	< 96 U
88-06-2	2,4,6-Trichlorophenol	96	< 96 U
95-95-4	2,4,5-Trichlorophenol	96	< 96 U
91-58-7	2-Chloronaphthalene	19	< 19 U
88-74-4	2-Nitroaniline	96	< 96 U
131-11-3	Dimethylphthalate	19	< 19 U
208-96-8	Acenaphthylene	19	< 19 U
99-09-2	3-Nitroaniline	120	< 120 U
83-32-9	Acenaphthene	19	< 19 U
51-28-5	2,4-Dinitrophenol	190	< 190 U
100-02-7	4-Nitrophenol	96	< 96 U
132-64-9	Dibenzofuran	19	< 19 U

Sample ID: BERM-06-10-16
SAMPLE

Lab Sample ID: GY57A
LIMS ID: 04-12753
Matrix: Soil
Date Analyzed: 08/18/04 18:40

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500

CAS Number	Analyte	RL	Result
606-20-2	2,6-Dinitrotoluene	96	< 96 U
121-14-2	2,4-Dinitrotoluene	96	< 96 U
84-66-2	Diethylphthalate	19	< 19 U
7005-72-3	4-Chlorophenyl-phenylether	19	< 19 U
86-73-7	Fluorene	19	< 19 U
100-01-6	4-Nitroaniline	96	< 96 U
534-52-1	4,6-Dinitro-2-Methylphenol	190	< 190 U
86-30-6	N-Nitrosodiphenylamine	19	< 19 U
101-55-3	4-Bromophenyl-phenylether	19	< 19 U
118-74-1	Hexachlorobenzene	19	< 19 U
87-86-5	Pentachlorophenol	96	< 96 U
85-01-8	Phenanthrene	19	< 19 U
86-74-8	Carbazole	19	< 19 U
120-12-7	Anthracene	19	< 19 U
84-74-2	Di-n-Butylphthalate	19	< 19 U
206-44-0	Fluoranthene	19	< 19 U
129-00-0	Pyrene	19	< 19 U
85-68-7	Butylbenzylphthalate	19	< 19 U
91-94-1	3,3'-Dichlorobenzidine	96	< 96 U
56-55-3	Benzo(a)anthracene	19	< 19 U
117-81-7	bis(2-Ethylhexyl)phthalate	19	< 19 U
218-01-9	Chrysene	19	< 19 U
117-84-0	Di-n-Octyl phthalate	19	< 19 U
205-99-2	Benzo(b)fluoranthene	19	< 19 U
207-08-9	Benzo(k)fluoranthene	19	< 19 U
50-32-8	Benzo(a)pyrene	19	< 19 U
193-39-5	Indeno(1,2,3-cd)pyrene	19	< 19 U
53-70-3	Dibenz(a,h)anthracene	19	< 19 U
191-24-2	Benzo(g,h,i)perylene	19	< 19 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	66.5%	2-Fluorobiphenyl	81.4%
d14-p-Terphenyl	104%	d4-1,2-Dichlorobenzene	70.1%
d5-Phenol	65.8%	2-Fluorophenol	62.8%
2,4,6-Tribromophenol	88.3%	d4-2-Chlorophenol	69.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by GC/MS

Sample ID: BERM-06-10-16
DILUTION

Lab Sample ID: GY57A
LIMS ID: 04-12753
Matrix: Soil
Data Release Authorized:
Reported: 08/19/04

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500
Date Sampled: 08/11/04
Date Received: 08/13/04

Date Extracted: 08/18/04
Date Analyzed: 08/19/04 10:18
Instrument/Analyst: NT6/LJR
GPC Cleanup: NO

Sample Amount: 25.9 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 3.00
Percent Moisture: 3.1%
pH: 8.2

CAS Number	Analyte	RL	Result
108-95-2	Phenol	58	< 58 U
111-44-4	Bis-(2-Chloroethyl) Ether	120	< 120 U
95-57-8	2-Chlorophenol	58	< 58 U
541-73-1	1,3-Dichlorobenzene	58	< 58 U
106-46-7	1,4-Dichlorobenzene	58	< 58 U
100-51-6	Benzyl Alcohol	58	< 58 U
95-50-1	1,2-Dichlorobenzene	58	< 58 U
95-48-7	2-Methylphenol	58	< 58 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	58	< 58 U
106-44-5	4-Methylphenol	58	< 58 U
621-64-7	N-Nitroso-Di-N-Propylamine	120	< 120 U
67-72-1	Hexachloroethane	58	< 58 U
98-95-3	Nitrobenzene	58	< 58 U
78-59-1	Isophorone	58	< 58 U
88-75-5	2-Nitrophenol	290	< 290 U
105-67-9	2,4-Dimethylphenol	58	< 58 U
65-85-0	Benzoic Acid	580	< 580 U
111-91-1	bis(2-Chloroethoxy) Methane	58	< 58 U
120-83-2	2,4-Dichlorophenol	170	< 170 U
120-82-1	1,2,4-Trichlorobenzene	58	< 58 U
91-20-3	Naphthalene	58	< 58 U
106-47-8	4-Chloroaniline	170	< 170 U
87-68-3	Hexachlorobutadiene	58	< 58 U
59-50-7	4-Chloro-3-methylphenol	120	< 120 U
91-57-6	2-Methylnaphthalene	58	< 58 U
77-47-4	Hexachlorocyclopentadiene	290	< 290 U
88-06-2	2,4,6-Trichlorophenol	290	< 290 U
95-95-4	2,4,5-Trichlorophenol	290	< 290 U
91-58-7	2-Chloronaphthalene	58	< 58 U
88-74-4	2-Nitroaniline	290	< 290 U
131-11-3	Dimethylphthalate	58	< 58 U
208-96-8	Acenaphthylene	58	< 58 U
99-09-2	3-Nitroaniline	350	< 350 U
83-32-9	Acenaphthene	58	< 58 U
51-28-5	2,4-Dinitrophenol	580	< 580 U
100-02-7	4-Nitrophenol	290	< 290 U
132-64-9	Dibenzofuran	58	< 58 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by GC/MS

Sample ID: BERM-06-10-16
DILUTION

Lab Sample ID: GY57A
LIMS ID: 04-12753
Matrix: Soil
Date Analyzed: 08/19/04 10:18

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500

CAS Number	Analyte	RL	Result
606-20-2	2,6-Dinitrotoluene	290	< 290 U
121-14-2	2,4-Dinitrotoluene	290	< 290 U
84-66-2	Diethylphthalate	58	< 58 U
7005-72-3	4-Chlorophenyl-phenylether	58	< 58 U
86-73-7	Fluorene	58	< 58 U
100-01-6	4-Nitroaniline	290	< 290 U
534-52-1	4,6-Dinitro-2-Methylphenol	580	< 580 U
86-30-6	N-Nitrosodiphenylamine	58	< 58 U
101-55-3	4-Bromophenyl-phenylether	58	< 58 U
118-74-1	Hexachlorobenzene	58	< 58 U
87-86-5	Pentachlorophenol	290	< 290 U
85-01-8	Phenanthrene	58	< 58 U
86-74-8	Carbazole	58	< 58 U
120-12-7	Anthracene	58	< 58 U
84-74-2	Di-n-Butylphthalate	58	< 58 U
206-44-0	Fluoranthene	58	< 58 U
129-00-0	Pyrene	58	< 58 U
85-68-7	Butylbenzylphthalate	58	< 58 U
91-94-1	3,3'-Dichlorobenzidine	290	< 290 U
56-55-3	Benzo(a)anthracene	58	< 58 U
117-81-7	bis(2-Ethylhexyl)phthalate	58	< 58 U
218-01-9	Chrysene	58	< 58 U
117-84-0	Di-n-Octyl phthalate	58	< 58 U
205-99-2	Benzo(b)fluoranthene	58	< 58 U
207-08-9	Benzo(k)fluoranthene	58	< 58 U
50-32-8	Benzo(a)pyrene	58	< 58 U
193-39-5	Indeno(1,2,3-cd)pyrene	58	< 58 U
53-70-3	Dibenz(a,h)anthracene	58	< 58 U
191-24-2	Benzo(g,h,i)perylene	58	< 58 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	63.2%	2-Fluorobiphenyl	81.3%
d14-p-Terphenyl	102%	d4-1,2-Dichlorobenzene	69.0%
d5-Phenol	66.2%	2-Fluorophenol	62.6%
2,4,6-Tribromophenol	89.4%	d4-2-Chlorophenol	70.9%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by GC/MS

Sample ID: BERM-05-8-14
SAMPLE

Lab Sample ID: GY57B
LIMS ID: 04-12754
Matrix: Soil
Data Release Authorized:
Reported: 08/19/04

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500
Date Sampled: 08/11/04
Date Received: 08/13/04

Date Extracted: 08/18/04
Date Analyzed: 08/18/04 19:12
Instrument/Analyst: NT6/LJR
GPC Cleanup: NO

Sample Amount: 26.0 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 4.2%
pH: 7.6

CAS Number	Analyte	RL	Result
108-95-2	Phenol	19	< 19 U
111-44-4	Bis-(2-Chloroethyl) Ether	38	< 38 U
95-57-8	2-Chlorophenol	19	< 19 U
541-73-1	1,3-Dichlorobenzene	19	< 19 U
106-46-7	1,4-Dichlorobenzene	19	< 19 U
100-51-6	Benzyl Alcohol	19	< 19 U
95-50-1	1,2-Dichlorobenzene	19	< 19 U
95-48-7	2-Methylphenol	19	< 19 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	19	< 19 U
106-44-5	4-Methylphenol	19	< 19 U
621-64-7	N-Nitroso-Di-N-Propylamine	38	< 38 U
67-72-1	Hexachloroethane	19	< 19 U
98-95-3	Nitrobenzene	19	< 19 U
78-59-1	Isophorone	19	< 19 U
88-75-5	2-Nitrophenol	96	< 96 U
105-67-9	2,4-Dimethylphenol	19	< 19 U
65-85-0	Benzoic Acid	190	< 190 U
111-91-1	bis(2-Chloroethoxy) Methane	19	< 19 U
120-83-2	2,4-Dichlorophenol	58	< 58 U
120-82-1	1,2,4-Trichlorobenzene	19	< 19 U
91-20-3	Naphthalene	19	< 19 U
106-47-8	4-Chloroaniline	58	< 58 U
87-68-3	Hexachlorobutadiene	19	< 19 U
59-50-7	4-Chloro-3-methylphenol	38	< 38 U
91-57-6	2-Methylnaphthalene	19	< 19 U
77-47-4	Hexachlorocyclopentadiene	96	< 96 U
88-06-2	2,4,6-Trichlorophenol	96	< 96 U
95-95-4	2,4,5-Trichlorophenol	96	< 96 U
91-58-7	2-Chloronaphthalene	19	< 19 U
88-74-4	2-Nitroaniline	96	< 96 U
131-11-3	Dimethylphthalate	19	< 19 U
208-96-8	Acenaphthylene	19	< 19 U
99-09-2	3-Nitroaniline	120	< 120 U
83-32-9	Acenaphthene	19	< 19 U
51-28-5	2,4-Dinitrophenol	190	< 190 U
100-02-7	4-Nitrophenol	96	< 96 U
132-64-9	Dibenzofuran	19	< 19 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by GC/MS

Sample ID: BERM-05-8-14
SAMPLE

Lab Sample ID: GY57B
LIMS ID: 04-12754
Matrix: Soil
Date Analyzed: 08/18/04 19:12

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500

CAS Number	Analyte	RL	Result
606-20-2	2,6-Dinitrotoluene	96	< 96 U
121-14-2	2,4-Dinitrotoluene	96	< 96 U
84-66-2	Diethylphthalate	19	< 19 U
7005-72-3	4-Chlorophenyl-phenylether	19	< 19 U
86-73-7	Fluorene	19	< 19 U
100-01-6	4-Nitroaniline	96	< 96 U
534-52-1	4,6-Dinitro-2-Methylphenol	190	< 190 U
86-30-6	N-Nitrosodiphenylamine	19	< 19 U
101-55-3	4-Bromophenyl-phenylether	19	< 19 U
118-74-1	Hexachlorobenzene	19	< 19 U
87-86-5	Pentachlorophenol	96	< 96 U
85-01-8	Phenanthrene	19	< 19 U
86-74-8	Carbazole	19	< 19 U
120-12-7	Anthracene	19	< 19 U
84-74-2	Di-n-Butylphthalate	19	< 19 U
206-44-0	Fluoranthene	19	< 19 U
129-00-0	Pyrene	19	< 19 U
85-68-7	Butylbenzylphthalate	19	< 19 U
91-94-1	3,3'-Dichlorobenzidine	96	< 96 U
56-55-3	Benzo(a)anthracene	19	< 19 U
117-81-7	bis(2-Ethylhexyl)phthalate	19	< 19 U
218-01-9	Chrysene	19	< 19 U
117-84-0	Di-n-Octyl phthalate	19	< 19 U
205-99-2	Benzo(b)fluoranthene	19	< 19 U
207-08-9	Benzo(k)fluoranthene	19	< 19 U
50-32-8	Benzo(a)pyrene	19	< 19 U
193-39-5	Indeno(1,2,3-cd)pyrene	19	< 19 U
53-70-3	Dibenz(a,h)anthracene	19	< 19 U
191-24-2	Benzo(g,h,i)perylene	19	< 19 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	66.6%	2-Fluorobiphenyl	81.2%
d14-p-Terphenyl	105%	d4-1,2-Dichlorobenzene	70.8%
d5-Phenol	67.4%	2-Fluorophenol	63.7%
2,4,6-Tribromophenol	88.4%	d4-2-Chlorophenol	71.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by GC/MS

Sample ID: BERM-05-8-14
MATRIX SPIKE

Lab Sample ID: GY57B
LIMS ID: 04-12754
Matrix: Soil
Data Release Authorized:
Reported: 08/19/04

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500
Date Sampled: 08/11/04
Date Received: 08/13/04

Date Extracted: 08/18/04
Date Analyzed: 08/18/04 19:43
Instrument/Analyst: NT6/LJR
GPC Cleanup: NO

Sample Amount: 26.0 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 4.2%
pH: 7.6

CAS Number	Analyte	RL	Result
108-95-2	Phenol	19	---
111-44-4	Bis-(2-Chloroethyl) Ether	38	< 38 U
95-57-8	2-Chlorophenol	19	---
541-73-1	1,3-Dichlorobenzene	19	< 19 U
106-46-7	1,4-Dichlorobenzene	19	---
100-51-6	Benzyl Alcohol	19	< 19 U
95-50-1	1,2-Dichlorobenzene	19	< 19 U
95-48-7	2-Methylphenol	19	< 19 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	19	< 19 U
106-44-5	4-Methylphenol	19	< 19 U
621-64-7	N-Nitroso-Di-N-Propylamine	38	---
67-72-1	Hexachloroethane	19	< 19 U
98-95-3	Nitrobenzene	19	< 19 U
78-59-1	Isophorone	19	< 19 U
88-75-5	2-Nitrophenol	96	< 96 U
105-67-9	2,4-Dimethylphenol	19	< 19 U
65-85-0	Benzoic Acid	190	< 190 U
111-91-1	bis(2-Chloroethoxy) Methane	19	< 19 U
120-83-2	2,4-Dichlorophenol	58	< 58 U
120-82-1	1,2,4-Trichlorobenzene	19	---
91-20-3	Naphthalene	19	< 19 U
106-47-8	4-Chloroaniline	58	< 58 U
87-68-3	Hexachlorobutadiene	19	< 19 U
59-50-7	4-Chloro-3-methylphenol	38	---
91-57-6	2-Methylnaphthalene	19	< 19 U
77-47-4	Hexachlorocyclopentadiene	96	< 96 U
88-06-2	2,4,6-Trichlorophenol	96	< 96 U
95-95-4	2,4,5-Trichlorophenol	96	< 96 U
91-58-7	2-Chloronaphthalene	19	< 19 U
88-74-4	2-Nitroaniline	96	< 96 U
131-11-3	Dimethylphthalate	19	< 19 U
208-96-8	Acenaphthylene	19	< 19 U
99-09-2	3-Nitroaniline	120	< 120 U
83-32-9	Acenaphthene	19	---
51-28-5	2,4-Dinitrophenol	190	< 190 U
100-02-7	4-Nitrophenol	96	---
132-64-9	Dibenzofuran	19	< 19 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by GC/MS

Sample ID: BERM-05-8-14
MATRIX SPIKE

Lab Sample ID: GY57B
LIMS ID: 04-12754
Matrix: Soil
Date Analyzed: 08/18/04 19:43

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500

CAS Number	Analyte	RL	Result
606-20-2	2,6-Dinitrotoluene	96	< 96 U
121-14-2	2,4-Dinitrotoluene	96	---
84-66-2	Diethylphthalate	19	< 19 U
7005-72-3	4-Chlorophenyl-phenylether	19	< 19 U
86-73-7	Fluorene	19	< 19 U
100-01-6	4-Nitroaniline	96	< 96 U
534-52-1	4,6-Dinitro-2-Methylphenol	190	< 190 U
86-30-6	N-Nitrosodiphenylamine	19	< 19 U
101-55-3	4-Bromophenyl-phenylether	19	< 19 U
118-74-1	Hexachlorobenzene	19	< 19 U
87-86-5	Pentachlorophenol	96	---
85-01-8	Phenanthrene	19	< 19 U
86-74-8	Carbazole	19	< 19 U
120-12-7	Anthracene	19	< 19 U
84-74-2	Di-n-Butylphthalate	19	< 19 U
206-44-0	Fluoranthene	19	< 19 U
129-00-0	Pyrene	19	---
85-68-7	Butylbenzylphthalate	19	< 19 U
91-94-1	3,3'-Dichlorobenzidine	96	< 96 U
56-55-3	Benzo(a)anthracene	19	< 19 U
117-81-7	bis(2-Ethylhexyl)phthalate	19	< 19 U
218-01-9	Chrysene	19	< 19 U
117-84-0	Di-n-Octyl phthalate	19	< 19 U
205-99-2	Benzo(b)fluoranthene	19	< 19 U
207-08-9	Benzo(k)fluoranthene	19	< 19 U
50-32-8	Benzo(a)pyrene	19	< 19 U
193-39-5	Indeno(1,2,3-cd)pyrene	19	< 19 U
53-70-3	Dibenz(a,h)anthracene	19	< 19 U
191-24-2	Benzo(g,h,i)perylene	19	< 19 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	67.1%	2-Fluorobiphenyl	81.2%
d14-p-Terphenyl	103%	d4-1,2-Dichlorobenzene	72.0%
d5-Phenol	70.4%	2-Fluorophenol	67.5%
2,4,6-Tribromophenol	95.1%	d4-2-Chlorophenol	74.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by GC/MS

Sample ID: BERM-05-8-14
MATRIX SPIKE DUPLICATE

Lab Sample ID: GY57B
LIMS ID: 04-12754
Matrix: Soil
Data Release Authorized:
Reported: 08/19/04

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500
Date Sampled: 08/11/04
Date Received: 08/13/04

Date Extracted: 08/18/04
Date Analyzed: 08/18/04 20:15
Instrument/Analyst: NT6/LJR
GPC Cleanup: NO

Sample Amount: 26.0 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 4.2%
pH: 7.6

CAS Number	Analyte	RL	Result
108-95-2	Phenol	19	---
111-44-4	Bis-(2-Chloroethyl) Ether	39	< 39 U
95-57-8	2-Chlorophenol	19	---
541-73-1	1,3-Dichlorobenzene	19	< 19 U
106-46-7	1,4-Dichlorobenzene	19	---
100-51-6	Benzyl Alcohol	19	< 19 U
95-50-1	1,2-Dichlorobenzene	19	< 19 U
95-48-7	2-Methylphenol	19	< 19 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	19	< 19 U
106-44-5	4-Methylphenol	19	< 19 U
621-64-7	N-Nitroso-Di-N-Propylamine	39	---
67-72-1	Hexachloroethane	19	< 19 U
98-95-3	Nitrobenzene	19	< 19 U
78-59-1	Isophorone	19	< 19 U
88-75-5	2-Nitrophenol	96	< 96 U
105-67-9	2,4-Dimethylphenol	19	< 19 U
65-85-0	Benzoic Acid	190	< 190 U
111-91-1	bis(2-Chloroethoxy) Methane	19	< 19 U
120-83-2	2,4-Dichlorophenol	58	< 58 U
120-82-1	1,2,4-Trichlorobenzene	19	---
91-20-3	Naphthalene	19	< 19 U
106-47-8	4-Chloroaniline	58	< 58 U
87-68-3	Hexachlorobutadiene	19	< 19 U
59-50-7	4-Chloro-3-methylphenol	39	---
91-57-6	2-Methylnaphthalene	19	< 19 U
77-47-4	Hexachlorocyclopentadiene	96	< 96 U
88-06-2	2,4,6-Trichlorophenol	96	< 96 U
95-95-4	2,4,5-Trichlorophenol	96	< 96 U
91-58-7	2-Chloronaphthalene	19	< 19 U
88-74-4	2-Nitroaniline	96	< 96 U
131-11-3	Dimethylphthalate	19	< 19 U
208-96-8	Acenaphthylene	19	< 19 U
99-09-2	3-Nitroaniline	120	< 120 U
83-32-9	Acenaphthene	19	---
51-28-5	2,4-Dinitrophenol	190	< 190 U
100-02-7	4-Nitrophenol	96	---
132-64-9	Dibenzofuran	19	< 19 U

Sample ID: BERM-05-8-14
MATRIX SPIKE DUPLICATE

Lab Sample ID: GY57B
LIMS ID: 04-12754
Matrix: Soil
Date Analyzed: 08/18/04 20:15

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500

CAS Number	Analyte	RL	Result
606-20-2	2,6-Dinitrotoluene	96	< 96 U
121-14-2	2,4-Dinitrotoluene	96	---
84-66-2	Diethylphthalate	19	< 19 U
7005-72-3	4-Chlorophenyl-phenylether	19	< 19 U
86-73-7	Fluorene	19	< 19 U
100-01-6	4-Nitroaniline	96	< 96 U
534-52-1	4,6-Dinitro-2-Methylphenol	190	< 190 U
86-30-6	N-Nitrosodiphenylamine	19	< 19 U
101-55-3	4-Bromophenyl-phenylether	19	< 19 U
118-74-1	Hexachlorobenzene	19	< 19 U
87-86-5	Pentachlorophenol	96	---
85-01-8	Phenanthrene	19	< 19 U
86-74-8	Carbazole	19	< 19 U
120-12-7	Anthracene	19	< 19 U
84-74-2	Di-n-Butylphthalate	19	< 19 U
206-44-0	Fluoranthene	19	< 19 U
129-00-0	Pyrene	19	---
85-68-7	Butylbenzylphthalate	19	< 19 U
91-94-1	3,3'-Dichlorobenzidine	96	< 96 U
56-55-3	Benzo(a)anthracene	19	< 19 U
117-81-7	bis(2-Ethylhexyl)phthalate	19	< 19 U
218-01-9	Chrysene	19	< 19 U
117-84-0	Di-n-Octyl phthalate	19	< 19 U
205-99-2	Benzo(b)fluoranthene	19	< 19 U
207-08-9	Benzo(k)fluoranthene	19	< 19 U
50-32-8	Benzo(a)pyrene	19	< 19 U
193-39-5	Indeno(1,2,3-cd)pyrene	19	< 19 U
53-70-3	Dibenz(a,h)anthracene	19	< 19 U
191-24-2	Benzo(g,h,i)perylene	19	< 19 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	67.6%	2-Fluorobiphenyl	83.2%
d14-p-Terphenyl	107%	d4-1,2-Dichlorobenzene	71.3%
d5-Phenol	71.7%	2-Fluorophenol	67.6%
2,4,6-Tribromophenol	97.2%	d4-2-Chlorophenol	75.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by GC/MS

Sample ID: BERM-05-8-14
MS/MSD

Lab Sample ID: GY57B
LIMS ID: 04-12754
Matrix: Soil
Data Release Authorized:
Reported: 08/19/04

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500
Date Sampled: 08/11/04
Date Received: 08/13/04

Date Extracted MS/MSD: 08/18/04

Date Analyzed MS: 08/18/04 19:43
MSD: 08/18/04 20:15
Instrument/Analyst MS: NT6/LJR
MSD: NT6/LJR
GPC Cleanup: NO

Sample Amount MS: 26.0 g-dry-wt
MSD: 26.0 g-dry-wt
Final Extract Volume MS: 0.5 mL
MSD: 0.5 mL
Dilution Factor MS: 1.00
MSD: 1.00
Percent Moisture: 4.2%
pH: 7.6

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
Phenol	< 19.2	492	721	68.2%	485	722	67.2%	1.4%
2-Chlorophenol	< 19.2	516	721	71.6%	507	722	70.2%	1.8%
1,4-Dichlorobenzene	< 19.2	324	480	67.5%	306	482	63.5%	5.7%
N-Nitroso-Di-N-Propylamine	< 38.4	286	480	59.6%	269	482	55.8%	6.1%
1,2,4-Trichlorobenzene	< 19.2	363	480	75.6%	351	482	72.8%	3.4%
4-Chloro-3-methylphenol	< 38.4	575	721	79.8%	590	722	81.7%	2.6%
Acenaphthene	< 19.2	364	480	75.8%	362	482	75.1%	0.6%
4-Nitrophenol	< 96.1	681	721	94.5%	640	722	88.6%	6.2%
2,4-Dinitrotoluene	< 96.1	420	480	87.5%	409	482	84.9%	2.7%
Pentachlorophenol	< 96.1	797	721	111%	799	722	111%	0.3%
Pyrene	< 19.2	434	480	90.4%	435	482	90.2%	0.2%

Results reported in µg/kg
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by GC/MS

Sample ID: BERM-04-8-14
SAMPLE

Lab Sample ID: GY57C
LIMS ID: 04-12755
Matrix: Soil
Data Release Authorized:
Reported: 08/19/04

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500
Date Sampled: 08/12/04
Date Received: 08/13/04

Date Extracted: 08/18/04
Date Analyzed: 08/18/04 20:46
Instrument/Analyst: NT6/LJR
GPC Cleanup: NO

Sample Amount: 25.9 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 4.6%
pH: 8.7

CAS Number	Analyte	RL	Result
108-95-2	Phenol	19	< 19 U
111-44-4	Bis-(2-Chloroethyl) Ether	39	< 39 U
95-57-8	2-Chlorophenol	19	< 19 U
541-73-1	1,3-Dichlorobenzene	19	< 19 U
106-46-7	1,4-Dichlorobenzene	19	< 19 U
100-51-6	Benzyl Alcohol	19	< 19 U
95-50-1	1,2-Dichlorobenzene	19	< 19 U
95-48-7	2-Methylphenol	19	< 19 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	19	< 19 U
106-44-5	4-Methylphenol	19	< 19 U
621-64-7	N-Nitroso-Di-N-Propylamine	39	< 39 U
67-72-1	Hexachloroethane	19	< 19 U
98-95-3	Nitrobenzene	19	< 19 U
78-59-1	Isophorone	19	< 19 U
88-75-5	2-Nitrophenol	97	< 97 U
105-67-9	2,4-Dimethylphenol	19	< 19 U
65-85-0	Benzoic Acid	190	< 190 U
111-91-1	bis(2-Chloroethoxy) Methane	19	< 19 U
120-83-2	2,4-Dichlorophenol	58	< 58 U
120-82-1	1,2,4-Trichlorobenzene	19	< 19 U
91-20-3	Naphthalene	19	< 19 U
106-47-8	4-Chloroaniline	58	< 58 U
87-68-3	Hexachlorobutadiene	19	< 19 U
59-50-7	4-Chloro-3-methylphenol	39	< 39 U
91-57-6	2-Methylnaphthalene	19	< 19 U
77-47-4	Hexachlorocyclopentadiene	97	< 97 U
88-06-2	2,4,6-Trichlorophenol	97	< 97 U
95-95-4	2,4,5-Trichlorophenol	97	< 97 U
91-58-7	2-Chloronaphthalene	19	< 19 U
88-74-4	2-Nitroaniline	97	< 97 U
131-11-3	Dimethylphthalate	19	< 19 U
208-96-8	Acenaphthylene	19	< 19 U
99-09-2	3-Nitroaniline	120	< 120 U
83-32-9	Acenaphthene	19	< 19 U
51-28-5	2,4-Dinitrophenol	190	< 190 U
100-02-7	4-Nitrophenol	97	< 97 U
132-64-9	Dibenzofuran	19	< 19 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by GC/MS

Sample ID: BERM-04-8-14
SAMPLE

Lab Sample ID: GY57C
LIMS ID: 04-12755
Matrix: Soil
Date Analyzed: 08/18/04 20:46

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500

CAS Number	Analyte	RL	Result
606-20-2	2,6-Dinitrotoluene	97	< 97 U
121-14-2	2,4-Dinitrotoluene	97	< 97 U
84-66-2	Diethylphthalate	19	< 19 U
7005-72-3	4-Chlorophenyl-phenylether	19	< 19 U
86-73-7	Fluorene	19	< 19 U
100-01-6	4-Nitroaniline	97	< 97 U
534-52-1	4,6-Dinitro-2-Methylphenol	190	< 190 U
86-30-6	N-Nitrosodiphenylamine	19	< 19 U
101-55-3	4-Bromophenyl-phenylether	19	< 19 U
118-74-1	Hexachlorobenzene	19	< 19 U
87-86-5	Pentachlorophenol	97	< 97 U
85-01-8	Phenanthrene	19	< 19 U
86-74-8	Carbazole	19	< 19 U
120-12-7	Anthracene	19	< 19 U
84-74-2	Di-n-Butylphthalate	19	< 19 U
206-44-0	Fluoranthene	19	< 19 U
129-00-0	Pyrene	19	< 19 U
85-68-7	Butylbenzylphthalate	19	< 19 U
91-94-1	3,3'-Dichlorobenzidine	97	< 97 U
56-55-3	Benzo(a)anthracene	19	< 19 U
117-81-7	bis(2-Ethylhexyl)phthalate	19	< 19 U
218-01-9	Chrysene	19	< 19 U
117-84-0	Di-n-Octyl phthalate	19	< 19 U
205-99-2	Benzo(b)fluoranthene	19	< 19 U
207-08-9	Benzo(k)fluoranthene	19	< 19 U
50-32-8	Benzo(a)pyrene	19	< 19 U
193-39-5	Indeno(1,2,3-cd)pyrene	19	< 19 U
53-70-3	Dibenz(a,h)anthracene	19	< 19 U
191-24-2	Benzo(g,h,i)perylene	19	< 19 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	69.0%	2-Fluorobiphenyl	85.4%
d14-p-Terphenyl	108%	d4-1,2-Dichlorobenzene	71.2%
d5-Phenol	69.6%	2-Fluorophenol	66.2%
2,4,6-Tribromophenol	98.4%	d4-2-Chlorophenol	74.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by GC/MS

Sample ID: BERM-03-10-16
SAMPLE

Lab Sample ID: GY57D
LIMS ID: 04-12756
Matrix: Soil
Data Release Authorized:
Reported: 08/19/04

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500
Date Sampled: 08/12/04
Date Received: 08/13/04

Date Extracted: 08/18/04
Date Analyzed: 08/18/04 21:18
Instrument/Analyst: NT6/LJR
GPC Cleanup: NO

Sample Amount: 25.9 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 5.9%
pH: 8.8

CAS Number	Analyte	RL	Result
108-95-2	Phenol	19	< 19 U
111-44-4	Bis-(2-Chloroethyl) Ether	39	< 39 U
95-57-8	2-Chlorophenol	19	< 19 U
541-73-1	1,3-Dichlorobenzene	19	< 19 U
106-46-7	1,4-Dichlorobenzene	19	< 19 U
100-51-6	Benzyl Alcohol	19	< 19 U
95-50-1	1,2-Dichlorobenzene	19	< 19 U
95-48-7	2-Methylphenol	19	< 19 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	19	< 19 U
106-44-5	4-Methylphenol	19	< 19 U
621-64-7	N-Nitroso-Di-N-Propylamine	39	< 39 U
67-72-1	Hexachloroethane	19	< 19 U
98-95-3	Nitrobenzene	19	< 19 U
78-59-1	Isophorone	19	< 19 U
88-75-5	2-Nitrophenol	97	< 97 U
105-67-9	2,4-Dimethylphenol	19	< 19 U
65-85-0	Benzoic Acid	190	< 190 U
111-91-1	bis(2-Chloroethoxy) Methane	19	< 19 U
120-83-2	2,4-Dichlorophenol	58	< 58 U
120-82-1	1,2,4-Trichlorobenzene	19	< 19 U
91-20-3	Naphthalene	19	< 19 U
106-47-8	4-Chloroaniline	58	< 58 U
87-68-3	Hexachlorobutadiene	19	< 19 U
59-50-7	4-Chloro-3-methylphenol	39	< 39 U
91-57-6	2-Methylnaphthalene	19	< 19 U
77-47-4	Hexachlorocyclopentadiene	97	< 97 U
88-06-2	2,4,6-Trichlorophenol	97	< 97 U
95-95-4	2,4,5-Trichlorophenol	97	< 97 U
91-58-7	2-Chloronaphthalene	19	< 19 U
88-74-4	2-Nitroaniline	97	< 97 U
131-11-3	Dimethylphthalate	19	< 19 U
208-96-8	Acenaphthylene	19	< 19 U
99-09-2	3-Nitroaniline	120	< 120 U
83-32-9	Acenaphthene	19	< 19 U
51-28-5	2,4-Dinitrophenol	190	< 190 U
100-02-7	4-Nitrophenol	97	< 97 U
132-64-9	Dibenzofuran	19	< 19 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by GC/MS

Sample ID: BERM-03-10-16
SAMPLE

Lab Sample ID: GY57D
LIMS ID: 04-12756
Matrix: Soil
Date Analyzed: 08/18/04 21:18

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500

CAS Number	Analyte	RL	Result
606-20-2	2,6-Dinitrotoluene	97	< 97 U
121-14-2	2,4-Dinitrotoluene	97	< 97 U
84-66-2	Diethylphthalate	19	< 19 U
7005-72-3	4-Chlorophenyl-phenylether	19	< 19 U
86-73-7	Fluorene	19	< 19 U
100-01-6	4-Nitroaniline	97	< 97 U
534-52-1	4,6-Dinitro-2-Methylphenol	190	< 190 U
86-30-6	N-Nitrosodiphenylamine	19	< 19 U
101-55-3	4-Bromophenyl-phenylether	19	< 19 U
118-74-1	Hexachlorobenzene	19	< 19 U
87-86-5	Pentachlorophenol	97	< 97 U
85-01-8	Phenanthrene	19	< 19 U
86-74-8	Carbazole	19	< 19 U
120-12-7	Anthracene	19	< 19 U
84-74-2	Di-n-Butylphthalate	19	< 19 U
206-44-0	Fluoranthene	19	< 19 U
129-00-0	Pyrene	19	< 19 U
85-68-7	Butylbenzylphthalate	19	< 19 U
91-94-1	3,3'-Dichlorobenzidine	97	< 97 U
56-55-3	Benzo(a)anthracene	19	< 19 U
117-81-7	bis(2-Ethylhexyl)phthalate	19	< 19 U
218-01-9	Chrysene	19	< 19 U
117-84-0	Di-n-Octyl phthalate	19	< 19 U
205-99-2	Benzo(b)fluoranthene	19	< 19 U
207-08-9	Benzo(k)fluoranthene	19	< 19 U
50-32-8	Benzo(a)pyrene	19	< 19 U
193-39-5	Indeno(1,2,3-cd)pyrene	19	< 19 U
53-70-3	Dibenz(a,h)anthracene	19	< 19 U
191-24-2	Benzo(g,h,i)perylene	19	< 19 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	66.9%	2-Fluorobiphenyl	83.4%
d14-p-Terphenyl	105%	d4-1,2-Dichlorobenzene	71.2%
d5-Phenol	71.1%	2-Fluorophenol	68.6%
2,4,6-Tribromophenol	95.4%	d4-2-Chlorophenol	75.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by GC/MS

Sample ID: BERM-02-10-16
SAMPLE

Lab Sample ID: GY57E
LIMS ID: 04-12757
Matrix: Soil
Data Release Authorized:
Reported: 08/19/04

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500
Date Sampled: 08/12/04
Date Received: 08/13/04

Date Extracted: 08/18/04
Date Analyzed: 08/18/04 21:50
Instrument/Analyst: NT6/LJR
GPC Cleanup: NO

Sample Amount: 25.1 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 3.7%
pH: 8.3

CAS Number	Analyte	RL	Result
108-95-2	Phenol	20	< 20 U
111-44-4	Bis-(2-Chloroethyl) Ether	40	< 40 U
95-57-8	2-Chlorophenol	20	< 20 U
541-73-1	1,3-Dichlorobenzene	20	< 20 U
106-46-7	1,4-Dichlorobenzene	20	< 20 U
100-51-6	Benzyl Alcohol	20	< 20 U
95-50-1	1,2-Dichlorobenzene	20	< 20 U
95-48-7	2-Methylphenol	20	< 20 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	20	< 20 U
106-44-5	4-Methylphenol	20	< 20 U
621-64-7	N-Nitroso-Di-N-Propylamine	40	< 40 U
67-72-1	Hexachloroethane	20	< 20 U
98-95-3	Nitrobenzene	20	< 20 U
78-59-1	Isophorone	20	< 20 U
88-75-5	2-Nitrophenol	99	< 99 U
105-67-9	2,4-Dimethylphenol	20	< 20 U
65-85-0	Benzoic Acid	200	< 200 U
111-91-1	bis(2-Chloroethoxy) Methane	20	< 20 U
120-83-2	2,4-Dichlorophenol	60	< 60 U
120-82-1	1,2,4-Trichlorobenzene	20	< 20 U
91-20-3	Naphthalene	20	< 20 U
106-47-8	4-Chloroaniline	60	< 60 U
87-68-3	Hexachlorobutadiene	20	< 20 U
59-50-7	4-Chloro-3-methylphenol	40	< 40 U
91-57-6	2-Methylnaphthalene	20	< 20 U
77-47-4	Hexachlorocyclopentadiene	99	< 99 U
88-06-2	2,4,6-Trichlorophenol	99	< 99 U
95-95-4	2,4,5-Trichlorophenol	99	< 99 U
91-58-7	2-Chloronaphthalene	20	< 20 U
88-74-4	2-Nitroaniline	99	< 99 U
131-11-3	Dimethylphthalate	20	< 20 U
208-96-8	Acenaphthylene	20	< 20 U
99-09-2	3-Nitroaniline	120	< 120 U
83-32-9	Acenaphthene	20	< 20 U
51-28-5	2,4-Dinitrophenol	200	< 200 U
100-02-7	4-Nitrophenol	99	< 99 U
132-64-9	Dibenzofuran	20	< 20 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by GC/MS

Sample ID: BERM-02-10-16
SAMPLE

Lab Sample ID: GY57E
LIMS ID: 04-12757
Matrix: Soil
Date Analyzed: 08/18/04 21:50

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500

CAS Number	Analyte	RL	Result
606-20-2	2,6-Dinitrotoluene	99	< 99 U
121-14-2	2,4-Dinitrotoluene	99	< 99 U
84-66-2	Diethylphthalate	20	< 20 U
7005-72-3	4-Chlorophenyl-phenylether	20	< 20 U
86-73-7	Fluorene	20	< 20 U
100-01-6	4-Nitroaniline	99	< 99 U
534-52-1	4,6-Dinitro-2-Methylphenol	200	< 200 U
86-30-6	N-Nitrosodiphenylamine	20	< 20 U
101-55-3	4-Bromophenyl-phenylether	20	< 20 U
118-74-1	Hexachlorobenzene	20	< 20 U
87-86-5	Pentachlorophenol	99	< 99 U
85-01-8	Phenanthrene	20	< 20 U
86-74-8	Carbazole	20	< 20 U
120-12-7	Anthracene	20	< 20 U
84-74-2	Di-n-Butylphthalate	20	< 20 U
206-44-0	Fluoranthene	20	< 20 U
129-00-0	Pyrene	20	< 20 U
85-68-7	Butylbenzylphthalate	20	< 20 U
91-94-1	3,3'-Dichlorobenzidine	99	< 99 U
56-55-3	Benzo(a)anthracene	20	< 20 U
117-81-7	bis(2-Ethylhexyl)phthalate	20	< 20 U
218-01-9	Chrysene	20	< 20 U
117-84-0	Di-n-Octyl phthalate	20	< 20 U
205-99-2	Benzo(b)fluoranthene	20	< 20 U
207-08-9	Benzo(k)fluoranthene	20	< 20 U
50-32-8	Benzo(a)pyrene	20	< 20 U
193-39-5	Indeno(1,2,3-cd)pyrene	20	< 20 U
53-70-3	Dibenz(a,h)anthracene	20	< 20 U
191-24-2	Benzo(g,h,i)perylene	20	< 20 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	66.4%	2-Fluorobiphenyl	80.9%
d14-p-Terphenyl	105%	d4-1,2-Dichlorobenzene	71.5%
d5-Phenol	66.0%	2-Fluorophenol	65.0%
2,4,6-Tribromophenol	85.3%	d4-2-Chlorophenol	72.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by GC/MS

Sample ID: BERM-01-10-16
SAMPLE

Lab Sample ID: GY57F
LIMS ID: 04-12758
Matrix: Soil
Data Release Authorized:
Reported: 08/19/04

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500
Date Sampled: 08/12/04
Date Received: 08/13/04

Date Extracted: 08/18/04
Date Analyzed: 08/18/04 22:21
Instrument/Analyst: NT6/LJR
GPC Cleanup: NO

Sample Amount: 25.8 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 3.6%
pH: 7.9

CAS Number	Analyte	RL	Result
108-95-2	Phenol	19	< 19 U
111-44-4	Bis-(2-Chloroethyl) Ether	39	< 39 U
95-57-8	2-Chlorophenol	19	< 19 U
541-73-1	1,3-Dichlorobenzene	19	< 19 U
106-46-7	1,4-Dichlorobenzene	19	< 19 U
100-51-6	Benzyl Alcohol	19	< 19 U
95-50-1	1,2-Dichlorobenzene	19	< 19 U
95-48-7	2-Methylphenol	19	< 19 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	19	< 19 U
106-44-5	4-Methylphenol	19	< 19 U
621-64-7	N-Nitroso-Di-N-Propylamine	39	< 39 U
67-72-1	Hexachloroethane	19	< 19 U
98-95-3	Nitrobenzene	19	< 19 U
78-59-1	Isophorone	19	< 19 U
88-75-5	2-Nitrophenol	97	< 97 U
105-67-9	2,4-Dimethylphenol	19	< 19 U
65-85-0	Benzoic Acid	190	< 190 U
111-91-1	bis(2-Chloroethoxy) Methane	19	< 19 U
120-83-2	2,4-Dichlorophenol	58	< 58 U
120-82-1	1,2,4-Trichlorobenzene	19	< 19 U
91-20-3	Naphthalene	19	< 19 U
106-47-8	4-Chloroaniline	58	< 58 U
87-68-3	Hexachlorobutadiene	19	< 19 U
59-50-7	4-Chloro-3-methylphenol	39	< 39 U
91-57-6	2-Methylnaphthalene	19	< 19 U
77-47-4	Hexachlorocyclopentadiene	97	< 97 U
88-06-2	2,4,6-Trichlorophenol	97	< 97 U
95-95-4	2,4,5-Trichlorophenol	97	< 97 U
91-58-7	2-Chloronaphthalene	19	< 19 U
88-74-4	2-Nitroaniline	97	< 97 U
131-11-3	Dimethylphthalate	19	< 19 U
208-96-8	Acenaphthylene	19	< 19 U
99-09-2	3-Nitroaniline	120	< 120 U
83-32-9	Acenaphthene	19	< 19 U
51-28-5	2,4-Dinitrophenol	190	< 190 U
100-02-7	4-Nitrophenol	97	< 97 U
132-64-9	Dibenzofuran	19	< 19 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by GC/MS

Sample ID: BERM-01-10-16
SAMPLE

Lab Sample ID: GY57F
LIMS ID: 04-12758
Matrix: Soil
Date Analyzed: 08/18/04 22:21

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500

CAS Number	Analyte	RL	Result
606-20-2	2,6-Dinitrotoluene	97	< 97 U
121-14-2	2,4-Dinitrotoluene	97	< 97 U
84-66-2	Diethylphthalate	19	< 19 U
7005-72-3	4-Chlorophenyl-phenylether	19	< 19 U
86-73-7	Fluorene	19	< 19 U
100-01-6	4-Nitroaniline	97	< 97 U
534-52-1	4,6-Dinitro-2-Methylphenol	190	< 190 U
86-30-6	N-Nitrosodiphenylamine	19	< 19 U
101-55-3	4-Bromophenyl-phenylether	19	< 19 U
118-74-1	Hexachlorobenzene	19	< 19 U
87-86-5	Pentachlorophenol	97	< 97 U
85-01-8	Phenanthrene	19	< 19 U
86-74-8	Carbazole	19	< 19 U
120-12-7	Anthracene	19	< 19 U
84-74-2	Di-n-Butylphthalate	19	< 19 U
206-44-0	Fluoranthene	19	< 19 U
129-00-0	Pyrene	19	< 19 U
85-68-7	Butylbenzylphthalate	19	< 19 U
91-94-1	3,3'-Dichlorobenzidine	97	< 97 U
56-55-3	Benzo(a)anthracene	19	< 19 U
117-81-7	bis(2-Ethylhexyl)phthalate	19	< 19 U
218-01-9	Chrysene	19	< 19 U
117-84-0	Di-n-Octyl phthalate	19	< 19 U
205-99-2	Benzo(b)fluoranthene	19	< 19 U
207-08-9	Benzo(k)fluoranthene	19	< 19 U
50-32-8	Benzo(a)pyrene	19	< 19 U
193-39-5	Indeno(1,2,3-cd)pyrene	19	< 19 U
53-70-3	Dibenz(a,h)anthracene	19	< 19 U
191-24-2	Benzo(g,h,i)perylene	19	< 19 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	63.1%	2-Fluorobiphenyl	79.2%
d14-p-Terphenyl	100%	d4-1,2-Dichlorobenzene	68.1%
d5-Phenol	59.4%	2-Fluorophenol	60.1%
2,4,6-Tribromophenol	65.3%	d4-2-Chlorophenol	67.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by GC/MS

Sample ID: BERM-08-10-14
SAMPLE

Lab Sample ID: GY57G
LIMS ID: 04-12759
Matrix: Soil
Data Release Authorized:
Reported: 08/19/04

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500
Date Sampled: 08/13/04
Date Received: 08/13/04

Date Extracted: 08/18/04
Date Analyzed: 08/18/04 23:25
Instrument/Analyst: NT6/LJR
GPC Cleanup: NO

Sample Amount: 26.6 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 4.1%
pH: 8.4

CAS Number	Analyte	RL	Result
108-95-2	Phenol	19	< 19 U
111-44-4	Bis-(2-Chloroethyl) Ether	38	< 38 U
95-57-8	2-Chlorophenol	19	< 19 U
541-73-1	1,3-Dichlorobenzene	19	< 19 U
106-46-7	1,4-Dichlorobenzene	19	< 19 U
100-51-6	Benzyl Alcohol	19	< 19 U
95-50-1	1,2-Dichlorobenzene	19	< 19 U
95-48-7	2-Methylphenol	19	< 19 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	19	< 19 U
106-44-5	4-Methylphenol	19	< 19 U
621-64-7	N-Nitroso-Di-N-Propylamine	38	< 38 U
67-72-1	Hexachloroethane	19	< 19 U
98-95-3	Nitrobenzene	19	< 19 U
78-59-1	Isophorone	19	< 19 U
88-75-5	2-Nitrophenol	94	< 94 U
105-67-9	2,4-Dimethylphenol	19	< 19 U
65-85-0	Benzoic Acid	190	< 190 U
111-91-1	bis(2-Chloroethoxy) Methane	19	< 19 U
120-83-2	2,4-Dichlorophenol	56	< 56 U
120-82-1	1,2,4-Trichlorobenzene	19	< 19 U
91-20-3	Naphthalene	19	< 19 U
106-47-8	4-Chloroaniline	56	< 56 U
87-68-3	Hexachlorobutadiene	19	< 19 U
59-50-7	4-Chloro-3-methylphenol	38	< 38 U
91-57-6	2-Methylnaphthalene	19	< 19 U
77-47-4	Hexachlorocyclopentadiene	94	< 94 U
88-06-2	2,4,6-Trichlorophenol	94	< 94 U
95-95-4	2,4,5-Trichlorophenol	94	< 94 U
91-58-7	2-Chloronaphthalene	19	< 19 U
88-74-4	2-Nitroaniline	94	< 94 U
131-11-3	Dimethylphthalate	19	< 19 U
208-96-8	Acenaphthylene	19	< 19 U
99-09-2	3-Nitroaniline	110	< 110 U
83-32-9	Acenaphthene	19	< 19 U
51-28-5	2,4-Dinitrophenol	190	< 190 U
100-02-7	4-Nitrophenol	94	< 94 U
132-64-9	Dibenzofuran	19	< 19 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by GC/MS

Sample ID: BERM-08-10-14
SAMPLE

Lab Sample ID: GY57G
LIMS ID: 04-12759
Matrix: Soil
Date Analyzed: 08/18/04 23:25

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500

CAS Number	Analyte	RL	Result
606-20-2	2,6-Dinitrotoluene	94	< 94 U
121-14-2	2,4-Dinitrotoluene	94	< 94 U
84-66-2	Diethylphthalate	19	< 19 U
7005-72-3	4-Chlorophenyl-phenylether	19	< 19 U
86-73-7	Fluorene	19	< 19 U
100-01-6	4-Nitroaniline	94	< 94 U
534-52-1	4,6-Dinitro-2-Methylphenol	190	< 190 U
86-30-6	N-Nitrosodiphenylamine	19	< 19 U
101-55-3	4-Bromophenyl-phenylether	19	< 19 U
118-74-1	Hexachlorobenzene	19	< 19 U
87-86-5	Pentachlorophenol	94	< 94 U
85-01-8	Phenanthrene	19	< 19 U
86-74-8	Carbazole	19	< 19 U
120-12-7	Anthracene	19	< 19 U
84-74-2	Di-n-Butylphthalate	19	< 19 U
206-44-0	Fluoranthene	19	< 19 U
129-00-0	Pyrene	19	< 19 U
85-68-7	Butylbenzylphthalate	19	< 19 U
91-94-1	3,3'-Dichlorobenzidine	94	< 94 U
56-55-3	Benzo(a)anthracene	19	< 19 U
117-81-7	**bis(2-Ethylhexyl)phthalate**	**19**	**340**
218-01-9	Chrysene	19	< 19 U
117-84-0	Di-n-Octyl phthalate	19	< 19 U
205-99-2	Benzo(b)fluoranthene	19	< 19 U
207-08-9	Benzo(k)fluoranthene	19	< 19 U
50-32-8	Benzo(a)pyrene	19	< 19 U
193-39-5	Indeno(1,2,3-cd)pyrene	19	< 19 U
53-70-3	Dibenz(a,h)anthracene	19	< 19 U
191-24-2	Benzo(g,h,i)perylene	19	< 19 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	68.0%	2-Fluorobiphenyl	88.9%
d14-p-Terphenyl	104%	d4-1,2-Dichlorobenzene	67.7%
d5-Phenol	70.3%	2-Fluorophenol	71.2%
2,4,6-Tribromophenol	97.9%	d4-2-Chlorophenol	79.9%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by GC/MS

Sample ID: BERM-07-7-11
SAMPLE

Lab Sample ID: GY57H
LIMS ID: 04-12760
Matrix: Soil
Data Release Authorized:
Reported: 08/19/04

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500
Date Sampled: 08/13/04
Date Received: 08/13/04

Date Extracted: 08/18/04
Date Analyzed: 08/18/04 22:53
Instrument/Analyst: NT6/LJR
GPC Cleanup: NO

Sample Amount: 26.2 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 0.3%
pH: 8.3

CAS Number	Analyte	RL	Result
108-95-2	Phenol	19	< 19 U
111-44-4	Bis-(2-Chloroethyl) Ether	38	< 38 U
95-57-8	2-Chlorophenol	19	< 19 U
541-73-1	1,3-Dichlorobenzene	19	< 19 U
106-46-7	1,4-Dichlorobenzene	19	< 19 U
100-51-6	Benzyl Alcohol	19	< 19 U
95-50-1	1,2-Dichlorobenzene	19	< 19 U
95-48-7	2-Methylphenol	19	< 19 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	19	< 19 U
106-44-5	4-Methylphenol	19	< 19 U
621-64-7	N-Nitroso-Di-N-Propylamine	38	< 38 U
67-72-1	Hexachloroethane	19	< 19 U
98-95-3	Nitrobenzene	19	< 19 U
78-59-1	Isophorone	19	< 19 U
88-75-5	2-Nitrophenol	96	< 96 U
105-67-9	2,4-Dimethylphenol	19	< 19 U
65-85-0	Benzoic Acid	190	< 190 U
111-91-1	bis(2-Chloroethoxy) Methane	19	< 19 U
120-83-2	2,4-Dichlorophenol	57	< 57 U
120-82-1	1,2,4-Trichlorobenzene	19	< 19 U
91-20-3	Naphthalene	19	< 19 U
106-47-8	4-Chloroaniline	57	< 57 U
87-68-3	Hexachlorobutadiene	19	< 19 U
59-50-7	4-Chloro-3-methylphenol	38	< 38 U
91-57-6	2-Methylnaphthalene	19	< 19 U
77-47-4	Hexachlorocyclopentadiene	96	< 96 U
88-06-2	2,4,6-Trichlorophenol	96	< 96 U
95-95-4	2,4,5-Trichlorophenol	96	< 96 U
91-58-7	2-Chloronaphthalene	19	< 19 U
88-74-4	2-Nitroaniline	96	< 96 U
131-11-3	Dimethylphthalate	19	< 19 U
208-96-8	Acenaphthylene	19	< 19 U
99-09-2	3-Nitroaniline	110	< 110 U
83-32-9	Acenaphthene	19	< 19 U
51-28-5	2,4-Dinitrophenol	190	< 190 U
100-02-7	4-Nitrophenol	96	< 96 U
132-64-9	Dibenzofuran	19	< 19 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by GC/MS

Sample ID: BERM-07-7-11
SAMPLE

Lab Sample ID: GY57H
LIMS ID: 04-12760
Matrix: Soil
Date Analyzed: 08/18/04 22:53

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500

CAS Number	Analyte	RL	Result
606-20-2	2,6-Dinitrotoluene	96	< 96 U
121-14-2	2,4-Dinitrotoluene	96	< 96 U
84-66-2	Diethylphthalate	19	< 19 U
7005-72-3	4-Chlorophenyl-phenylether	19	< 19 U
86-73-7	Fluorene	19	< 19 U
100-01-6	4-Nitroaniline	96	< 96 U
534-52-1	4,6-Dinitro-2-Methylphenol	190	< 190 U
86-30-6	N-Nitrosodiphenylamine	19	< 19 U
101-55-3	4-Bromophenyl-phenylether	19	< 19 U
118-74-1	Hexachlorobenzene	19	< 19 U
87-86-5	Pentachlorophenol	96	< 96 U
85-01-8	Phenanthrene	19	< 19 U
86-74-8	Carbazole	19	< 19 U
120-12-7	Anthracene	19	< 19 U
84-74-2	Di-n-Butylphthalate	19	< 19 U
206-44-0	Fluoranthene	19	< 19 U
129-00-0	Pyrene	19	< 19 U
85-68-7	Butylbenzylphthalate	19	< 19 U
91-94-1	3,3'-Dichlorobenzidine	96	< 96 U
56-55-3	Benzo(a)anthracene	19	< 19 U
117-81-7	bis(2-Ethylhexyl)phthalate	19	< 19 U
218-01-9	Chrysene	19	< 19 U
117-84-0	Di-n-Octyl phthalate	19	< 19 U
205-99-2	Benzo(b)fluoranthene	19	< 19 U
207-08-9	Benzo(k)fluoranthene	19	< 19 U
50-32-8	Benzo(a)pyrene	19	< 19 U
193-39-5	Indeno(1,2,3-cd)pyrene	19	< 19 U
53-70-3	Dibenz(a,h)anthracene	19	< 19 U
191-24-2	Benzo(g,h,i)perylene	19	< 19 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	65.0%	2-Fluorobiphenyl	80.5%
d14-p-Terphenyl	104%	d4-1,2-Dichlorobenzene	69.4%
d5-Phenol	60.2%	2-Fluorophenol	60.1%
2,4,6-Tribromophenol	67.3%	d4-2-Chlorophenol	68.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by GC/MS

Sample ID: LCS-081804
LAB CONTROL

Lab Sample ID: LCS-081804
LIMS ID: 04-12753
Matrix: Soil
Data Release Authorized:
Reported: 08/19/04

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500
Date Sampled: 08/11/04
Date Received: 08/13/04

Date Extracted: 08/18/04
Date Analyzed: 08/18/04 18:09
Instrument/Analyst: NT6/LJR
GPC Cleanup: NO

Sample Amount: 25.0 g
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: NA
pH: NA

Analyte	Lab Control	Spike Added	Recovery
Phenol	516	750	68.8%
2-Chlorophenol	546	750	72.8%
1,4-Dichlorobenzene	336	500	67.2%
N-Nitroso-Di-N-Propylamine	266	500	53.2%
1,2,4-Trichlorobenzene	377	500	75.4%
4-Chloro-3-methylphenol	620	750	82.7%
Acenaphthene	370	500	74.0%
4-Nitrophenol	718	750	95.7%
2,4-Dinitrotoluene	342	500	68.4%
Pentachlorophenol	832	750	111%
Pyrene	446	500	89.2%

Semivolatile Surrogate Recovery	
d5-Nitrobenzene	68.9%
2-Fluorobiphenyl	85.0%
d14-p-Terphenyl	109%
d4-1,2-Dichlorobenzene	77.5%
d5-Phenol	75.1%
2-Fluorophenol	73.4%
2,4,6-Tribromophenol	104%
d4-2-Chlorophenol	79.8%

Results reported in µg/kg

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD

Sample ID: MB-081804
METHOD BLANK

Lab Sample ID: MB-081804
LIMS ID: 04-12753
Matrix: Soil
Data Release Authorized:
Reported: 08/24/04

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500
Date Sampled: NA
Date Received: NA

Date Extracted: 08/18/04
Date Analyzed: 08/23/04 12:43
Instrument/Analyst: ECD5/PK
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes

Sample Amount: 25.0 g
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: No
pH: NA
Percent Moisture: NA

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	20	< 20 U
53469-21-9	Aroclor 1242	20	< 20 U
12672-29-6	Aroclor 1248	20	< 20 U
11097-69-1	Aroclor 1254	20	< 20 U
11096-82-5	Aroclor 1260	20	< 20 U
11104-28-2	Aroclor 1221	20	< 20 U
11141-16-5	Aroclor 1232	20	< 20 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery	
Decachlorobiphenyl	93.0%
Tetrachlorometaxylene	82.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD

Sample ID: BERM-06-10-16
SAMPLE

Lab Sample ID: GY57A
LIMS ID: 04-12753
Matrix: Soil
Data Release Authorized:
Reported: 08/24/04

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500
Date Sampled: 08/11/04
Date Received: 08/13/04

Date Extracted: 08/18/04
Date Analyzed: 08/23/04 13:24
Instrument/Analyst: ECD5/PK
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes

Sample Amount: 25.6 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: No
pH: 8.2
Percent Moisture: 3.1%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	20	< 20 U
53469-21-9	Aroclor 1242	20	< 20 U
12672-29-6	Aroclor 1248	20	< 20 U
11097-69-1	Aroclor 1254	20	< 20 U
11096-82-5	Aroclor 1260	20	< 20 U
11104-28-2	Aroclor 1221	20	< 20 U
11141-16-5	Aroclor 1232	20	< 20 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery	
Decachlorobiphenyl	88.0%
Tetrachlorometaxylene	76.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD

Sample ID: BERM-06-10-16
MATRIX SPIKE

Lab Sample ID: GY57A
LIMS ID: 04-12753
Matrix: Soil
Data Release Authorized:
Reported: 08/24/04

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500
Date Sampled: 08/11/04
Date Received: 08/13/04

Date Extracted: 08/18/04
Date Analyzed: 08/23/04 13:44
Instrument/Analyst: ECD5/PK
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes

Sample Amount: 25.6 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: No
pH: 8.2
Percent Moisture: 3.1%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	20	---
53469-21-9	Aroclor 1242	20	< 20 U
12672-29-6	Aroclor 1248	20	< 20 U
11097-69-1	Aroclor 1254	20	< 20 U
11096-82-5	Aroclor 1260	20	---
11104-28-2	Aroclor 1221	20	< 20 U
11141-16-5	Aroclor 1232	20	< 20 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery	
Decachlorobiphenyl	91.0%
Tetrachlorometaxylene	62.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD

Sample ID: BERM-06-10-16
MATRIX SPIKE DUP

Lab Sample ID: GY57A
LIMS ID: 04-12753
Matrix: Soil
Data Release Authorized:
Reported: 08/24/04

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500
Date Sampled: 08/11/04
Date Received: 08/13/04

Date Extracted: 08/18/04
Date Analyzed: 08/23/04 14:04
Instrument/Analyst: ECD5/PK
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes

Sample Amount: 25.4 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: No
pH: 8.2
Percent Moisture: 3.1%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	20	---
53469-21-9	Aroclor 1242	20	< 20 U
12672-29-6	Aroclor 1248	20	< 20 U
11097-69-1	Aroclor 1254	20	< 20 U
11096-82-5	Aroclor 1260	20	---
11104-28-2	Aroclor 1221	20	< 20 U
11141-16-5	Aroclor 1232	20	< 20 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery	
Decachlorobiphenyl	84.0%
Tetrachlorometaxylene	73.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD

Sample ID: BERM-06-10-16
MS/MSD

Lab Sample ID: GY57A
LIMS ID: 04-12753
Matrix: Soil
Data Release Authorized:
Reported: 08/24/04

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500
Date Sampled: 08/11/04
Date Received: 08/13/04

Date Extracted MS/MSD: 08/18/04

Date Analyzed MS: 08/23/04 13:44
MSD: 08/23/04 14:04
Instrument/Analyst MS: ECD5/PK
MSD: ECD5/PK
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes

Sample Amount MS: 25.6 g-dry-wt
MSD: 25.4 g-dry-wt
Final Extract Volume MS: 5.0 mL
MSD: 5.0 mL
Dilution Factor MS: 1.00
MSD: 1.00
Silica Gel: No
pH: 8.2
Percent Moisture: 3.1%

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
Aroclor 1016	< 19.5 U	73.0	100	73.0%	77.0	101	76.2%	5.3%
Aroclor 1260	< 19.5 U	91.0	100	91.0%	86.1	101	85.2%	5.5%

Results reported in µg/kg (ppb)
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD

Sample ID: BERM-05-8-14
SAMPLE

Lab Sample ID: GY57B
LIMS ID: 04-12754
Matrix: Soil
Data Release Authorized:
Reported: 08/24/04

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500
Date Sampled: 08/11/04
Date Received: 08/13/04

Date Extracted: 08/18/04
Date Analyzed: 08/23/04 14:24
Instrument/Analyst: ECD5/PK
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes

Sample Amount: 26.0 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: No
pH: 7.6
Percent Moisture: 4.2%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	19	< 19 U
53469-21-9	Aroclor 1242	19	< 19 U
12672-29-6	Aroclor 1248	19	< 19 U
11097-69-1	Aroclor 1254	19	< 19 U
11096-82-5	Aroclor 1260	19	< 19 U
11104-28-2	Aroclor 1221	19	< 19 U
11141-16-5	Aroclor 1232	19	< 19 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery	
Decachlorobiphenyl	87.5%
Tetrachlorometaxylene	73.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD

Sample ID: BERM-04-8-14
SAMPLE

Lab Sample ID: GY57C
LIMS ID: 04-12755
Matrix: Soil
Data Release Authorized:
Reported: 08/24/04

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500
Date Sampled: 08/12/04
Date Received: 08/13/04

Date Extracted: 08/18/04
Date Analyzed: 08/23/04 14:45
Instrument/Analyst: ECD5/PK
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes

Sample Amount: 26.0 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: No
pH: 8.7
Percent Moisture: 4.6%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	19	< 19 U
53469-21-9	Aroclor 1242	19	< 19 U
12672-29-6	Aroclor 1248	19	< 19 U
11097-69-1	Aroclor 1254	19	< 19 U
11096-82-5	Aroclor 1260	19	< 19 U
11104-28-2	Aroclor 1221	19	< 19 U
11141-16-5	Aroclor 1232	19	< 19 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	86.0%
Tetrachlorometaxylene	67.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD

Sample ID: BERM-03-10-16
SAMPLE

Lab Sample ID: GY57D
LIMS ID: 04-12756
Matrix: Soil
Data Release Authorized:
Reported: 08/24/04

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500
Date Sampled: 08/12/04
Date Received: 08/13/04

Date Extracted: 08/18/04
Date Analyzed: 08/23/04 15:05
Instrument/Analyst: ECD5/PK
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes

Sample Amount: 26.0 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: No
pH: 8.8
Percent Moisture: 5.9%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	19	< 19 U
53469-21-9	Aroclor 1242	19	< 19 U
12672-29-6	Aroclor 1248	19	< 19 U
11097-69-1	Aroclor 1254	19	< 19 U
11096-82-5	Aroclor 1260	19	< 19 U
11104-28-2	Aroclor 1221	19	< 19 U
11141-16-5	Aroclor 1232	19	< 19 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery	
Decachlorobiphenyl	91.5%
Tetrachlorometaxylene	69.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD

Sample ID: BERM-02-10-16
SAMPLE

Lab Sample ID: GY57E
LIMS ID: 04-12757
Matrix: Soil
Data Release Authorized:
Reported: 08/24/04

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500
Date Sampled: 08/12/04
Date Received: 08/13/04

Date Extracted: 08/18/04
Date Analyzed: 08/23/04 15:25
Instrument/Analyst: ECD5/PK
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes

Sample Amount: 25.1 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: No
pH: 8.3
Percent Moisture: 3.7%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	20	< 20 U
53469-21-9	Aroclor 1242	20	< 20 U
12672-29-6	Aroclor 1248	20	< 20 U
11097-69-1	Aroclor 1254	20	< 20 U
11096-82-5	Aroclor 1260	20	< 20 U
11104-28-2	Aroclor 1221	20	< 20 U
11141-16-5	Aroclor 1232	20	< 20 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery	
Decachlorobiphenyl	90.0%
Tetrachlorometaxylene	76.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD

Sample ID: BERM-01-10-16
SAMPLE

Lab Sample ID: GY57F
LIMS ID: 04-12758
Matrix: Soil
Data Release Authorized:
Reported: 08/24/04

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500
Date Sampled: 08/12/04
Date Received: 08/13/04

Date Extracted: 08/18/04
Date Analyzed: 08/23/04 15:45
Instrument/Analyst: ECD5/PK
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes

Sample Amount: 25.1 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: No
pH: 7.9
Percent Moisture: 3.6%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	20	< 20 U
53469-21-9	Aroclor 1242	20	< 20 U
12672-29-6	Aroclor 1248	20	< 20 U
11097-69-1	Aroclor 1254	20	< 20 U
11096-82-5	Aroclor 1260	20	< 20 U
11104-28-2	Aroclor 1221	20	< 20 U
11141-16-5	Aroclor 1232	20	< 20 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery	
Decachlorobiphenyl	89.0%
Tetrachlorometaxylene	74.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD

Sample ID: BERM-08-10-14
SAMPLE

Lab Sample ID: GY57G
LIMS ID: 04-12759
Matrix: Soil
Data Release Authorized:
Reported: 08/24/04

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500
Date Sampled: 08/13/04
Date Received: 08/13/04

Date Extracted: 08/18/04
Date Analyzed: 08/23/04 16:06
Instrument/Analyst: ECD5/PK
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes

Sample Amount: 26.0 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: No
pH: 8.4
Percent Moisture: 4.1%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	19	< 19 U
53469-21-9	Aroclor 1242	19	< 19 U
12672-29-6	Aroclor 1248	19	< 19 U
11097-69-1	Aroclor 1254	19	< 19 U
11096-82-5	Aroclor 1260	19	< 19 U
11104-28-2	Aroclor 1221	19	< 19 U
11141-16-5	Aroclor 1232	19	< 19 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery	
Decachlorobiphenyl	86.0%
Tetrachlorometaxylene	75.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD

Sample ID: BERM-07-7-11
SAMPLE

Lab Sample ID: GY57H
LIMS ID: 04-12760
Matrix: Soil
Data Release Authorized:
Reported: 08/24/04

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500
Date Sampled: 08/13/04
Date Received: 08/13/04

Date Extracted: 08/18/04
Date Analyzed: 08/23/04 16:26
Instrument/Analyst: ECD5/PK
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes

Sample Amount: 26.2 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: No
pH: 8.3
Percent Moisture: 0.3%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	19	< 19 U
53469-21-9	Aroclor 1242	19	< 19 U
12672-29-6	Aroclor 1248	19	< 19 U
11097-69-1	Aroclor 1254	19	< 19 U
11096-82-5	Aroclor 1260	19	< 19 U
11104-28-2	Aroclor 1221	19	< 19 U
11141-16-5	Aroclor 1232	19	< 19 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery	
Decachlorobiphenyl	86.0%
Tetrachlorometaxylene	76.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD

Sample ID: LCS-081804
LAB CONTROL

Lab Sample ID: LCS-081804
LIMS ID: 04-12753
Matrix: Soil
Data Release Authorized:
Reported: 08/24/04

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500
Date Sampled: 08/11/04
Date Received: 08/13/04

Date Extracted: 08/18/04
Date Analyzed: 08/23/04 13:04
Instrument/Analyst: ECD5/PK
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes

Sample Amount: 25.0 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: No
pH: NA
Percent Moisture: NA

Analyte	Lab Control	Spike Added	Recovery
Aroclor 1016	88.6	102	86.9%
Aroclor 1260	93.0	102	91.2%

PCB Surrogate Recovery

Decachlorobiphenyl	90.0%
Tetrachlorometaxylene	86.0%

Results reported in µg/kg (ppb)

METHOD BLANK RESULTS-CONVENTIONALS
GY57-The Retec Group

ANALYTICAL RESOURCES INCORPORATED

Matrix: Soil
Data Release Authorized:
Reported: 08/20/04

Project: ASB Berm
Event: PORTB-16846-500
Date Sampled: NA
Date Received: NA

Analyte	Date	Units	Blank
Total Solids	08/17/04	Percent	< 0.01 U
Preserved Total Solids	08/17/04	Percent	< 0.01 U
N-Ammonia	08/19/04	mg-N/kg	< 0.10 U
Sulfide	08/17/04	mg/kg	< 1.0 U
Total Organic Carbon	08/19/04	Percent	< 0.020 U

SAMPLE RESULTS-CONVENTIONALS
GY57-The Retec Group

ANALYTICAL RESOURCES INCORPORATED

Matrix: Soil
Data Release Authorized: AP
Reported: 08/20/04

Project: ASB Berm
Event: PORTB-16846-500
Date Sampled: 08/11/04
Date Received: 08/13/04

Client ID: BERM-06-10-16
ARI ID: 04-12753 GY57A

Analyte	Date	Method	Units	RL	Sample
pH	08/19/04 081904#1	EPA 150.1	std units	0.01	7.11
Total Solids	08/17/04 081704#1	EPA 160.3	Percent	0.01	78.60
Preserved Total Solids	08/17/04 081704#1	EPA 160.3	Percent	0.01	94.50
N-Ammonia	08/19/04 081904#1	EPA 350.1M	mg-N/kg	0.11	0.20
Sulfide	08/17/04 081704#1	EPA 376.2	mg/kg	6.4	< 6.4 U
Total Organic Carbon	08/19/04 081904#1	Plumb,1981	Percent	0.020	0.120

RL Analytical reporting limit
U Undetected at reported detection limit

pH determined on 1:1 soil:D.I. water extracts.
Ammonia determined on 2N KCl extracts.

SAMPLE RESULTS-CONVENTIONALS
GY57-The Retec Group

ANALYTICAL RESOURCES INCORPORATED

Matrix: Soil
Data Release Authorized:
Reported: 08/20/04

Project: ASB Berm
Event: PORTB-16846-500
Date Sampled: 08/11/04
Date Received: 08/13/04

Client ID: BERM-05-8-14
ARI ID: 04-12754 GY57B

Analyte	Date	Method	Units	RL	Sample
pH	08/19/04 081904#1	EPA 150.1	std units	0.01	7.70
Total Solids	08/17/04 081704#1	EPA 160.3	Percent	0.01	97.20
Preserved Total Solids	08/17/04 081704#1	EPA 160.3	Percent	0.01	94.30
N-Ammonia	08/19/04 081904#1	EPA 350.1M	mg-N/kg	0.09	0.17
Sulfide	08/17/04 081704#1	EPA 376.2	mg/kg	4.9	< 4.9 U
Total Organic Carbon	08/19/04 081904#1	Plumb,1981	Percent	0.020	0.133

RL Analytical reporting limit
U Undetected at reported detection limit

pH determined on 1:1 soil:D.I. water extracts.
Ammonia determined on 2N KCl extracts.

SAMPLE RESULTS-CONVENTIONALS
GY57-The Retec Group

ANALYTICAL RESOURCES INCORPORATED

Matrix: Soil
Data Release Authorized: ph
Reported: 08/20/04

Project: ASB Berm
Event: PORTB-16846-500
Date Sampled: 08/12/04
Date Received: 08/13/04

Client ID: BERM-04-8-14
ARI ID: 04-12755 GY57C

Analyte	Date	Method	Units	RL	Sample
pH	08/19/04 081904#1	EPA 150.1	std units	0.01	8.91
Total Solids	08/17/04 081704#1	EPA 160.3	Percent	0.01	96.40
Preserved Total Solids	08/17/04 081704#1	EPA 160.3	Percent	0.01	94.60
N-Ammonia	08/19/04 081904#1	EPA 350.1M	mg-N/kg	0.10	0.13
Sulfide	08/17/04 081704#1	EPA 376.2	mg/kg	1.7	< 1.7 U
Total Organic Carbon	08/19/04 081904#1	Plumb,1981	Percent	0.020	0.127

RL Analytical reporting limit
U Undetected at reported detection limit

pH determined on 1:1 soil:D.I. water extracts.
Ammonia determined on 2N KCl extracts.

SAMPLE RESULTS-CONVENTIONALS
GY57-The Retec Group

ANALYTICAL RESOURCES INCORPORATED

Matrix: Soil
Data Release Authorized: AH
Reported: 08/20/04

Project: ASB Berm
Event: PORTB-16846-500
Date Sampled: 08/12/04
Date Received: 08/13/04

Client ID: BERM-03-10-16
ARI ID: 04-12756 GY57D

Analyte	Date	Method	Units	RL	Sample
pH	08/19/04 081904#1	EPA 150.1	std units	0.01	9.07
Total Solids	08/17/04 081704#1	EPA 160.3	Percent	0.01	95.90
Preserved Total Solids	08/17/04 081704#1	EPA 160.3	Percent	0.01	93.30
N-Ammonia	08/19/04 081904#1	EPA 350.1M	mg-N/kg	0.10	0.33
Sulfide	08/17/04 081704#1	EPA 376.2	mg/kg	1.9	< 1.9 U
Total Organic Carbon	08/19/04 081904#1	Plumb,1981	Percent	0.020	0.091

RL Analytical reporting limit
U Undetected at reported detection limit

pH determined on 1:1 soil:D.I. water extracts.
Ammonia determined on 2N KCl extracts.

SAMPLE RESULTS-CONVENTIONALS
GY57-The Retec Group

ANALYTICAL RESOURCES INCORPORATED

Matrix: Soil
Data Release Authorized:
Reported: 08/20/04

Project: ASB Berm
Event: PORTB-16846-500
Date Sampled: 08/12/04
Date Received: 08/13/04

Client ID: BERM-02-10-16
ARI ID: 04-12757 GY57E

Analyte	Date	Method	Units	RL	Sample
pH	08/19/04 081904#1	EPA 150.1	std units	0.01	8.54
Total Solids	08/17/04 081704#1	EPA 160.3	Percent	0.01	95.90
Preserved Total Solids	08/17/04 081704#1	EPA 160.3	Percent	0.01	93.80
N-Ammonia	08/19/04 081904#1	EPA 350.1M	mg-N/kg	0.10	0.42
Sulfide	08/17/04 081704#1	EPA 376.2	mg/kg	2.0	< 2.0 U
Total Organic Carbon	08/19/04 081904#1	Plumb,1981	Percent	0.020	0.088

RL Analytical reporting limit
U Undetected at reported detection limit

pH determined on 1:1 soil:D.I. water extracts.
Ammonia determined on 2N KCl extracts.

SAMPLE RESULTS-CONVENTIONALS
GY57-The Retec Group

ANALYTICAL RESOURCES INCORPORATED

Matrix: Soil
Data Release Authorized: ds
Reported: 08/20/04

Project: ASB Berm
Event: PORTB-16846-500
Date Sampled: 08/12/04
Date Received: 08/13/04

Client ID: BERM-01-10-16
ARI ID: 04-12758 GY57F

Analyte	Date	Method	Units	RL	Sample
pH	08/19/04 081904#1	EPA 150.1	std units	0.01	8.29
Total Solids	08/17/04 081704#1	EPA 160.3	Percent	0.01	96.40
Preserved Total Solids	08/17/04 081704#1	EPA 160.3	Percent	0.01	94.70
N-Ammonia	08/19/04 081904#1	EPA 350.1M	mg-N/kg	0.09	0.31
Sulfide	08/17/04 081704#1	EPA 376.2	mg/kg	2.7	< 2.7 U
Total Organic Carbon	08/19/04 081904#1	Plumb,1981	Percent	0.020	0.171

RL Analytical reporting limit
U Undetected at reported detection limit

pH determined on 1:1 soil:D.I. water extracts.
Ammonia determined on 2N KCl extracts.

SAMPLE RESULTS-CONVENTIONALS
GY57-The Retec Group

ANALYTICAL RESOURCES INCORPORATED

Matrix: Soil
Data Release Authorized:
Reported: 08/20/04

Project: ASB Berm
Event: PORTB-16846-500
Date Sampled: 08/13/04
Date Received: 08/13/04

Client ID: BERM-08-10-14
ARI ID: 04-12759 GY57G

Analyte	Date	Method	Units	RL	Sample
pH	08/19/04 081904#1	EPA 150.1	std units	0.01	8.43
Total Solids	08/17/04 081704#1	EPA 160.3	Percent	0.01	96.10
Preserved Total Solids	08/17/04 081704#1	EPA 160.3	Percent	0.01	91.60
N-Ammonia	08/19/04 081904#1	EPA 350.1M	mg-N/kg	0.10	0.64
Sulfide	08/17/04 081704#1	EPA 376.2	mg/kg	2.8	< 2.8 U
Total Organic Carbon	08/19/04 081904#1	Plumb,1981	Percent	0.020	0.320

RL Analytical reporting limit
U Undetected at reported detection limit

pH determined on 1:1 soil:D.I. water extracts.
Ammonia determined on 2N KCl extracts.

SAMPLE RESULTS-CONVENTIONALS
GY57-The Retec Group

ANALYTICAL RESOURCES INCORPORATED

Matrix: Soil
Data Release Authorized:
Reported: 08/20/04

Project: ASB Berm
Event: PORTB-16846-500
Date Sampled: 08/13/04
Date Received: 08/13/04

Client ID: BERM-07-7-11
ARI ID: 04-12760 GY57H

Analyte	Date	Method	Units	RL	Sample
pH	08/19/04 081904#1	EPA 150.1	std units	0.01	8.87
Total Solids	08/17/04 081704#1	EPA 160.3	Percent	0.01	91.90
Preserved Total Solids	08/17/04 081704#1	EPA 160.3	Percent	0.01	89.50
N-Ammonia	08/19/04 081904#1	EPA 350.1M	mg-N/kg	0.10	0.63
Sulfide	08/17/04 081704#1	EPA 376.2	mg/kg	2.0	< 2.0 U
Total Organic Carbon	08/19/04 081904#1	Plumb,1981	Percent	0.020	0.128

RL Analytical reporting limit
U Undetected at reported detection limit

pH determined on 1:1 soil:D.I. water extracts.
Ammonia determined on 2N KCl extracts.

REPLICATE RESULTS-CONVENTIONALS
GY57-The Retec Group

ANALYTICAL RESOURCES INCORPORATED

Matrix: Soil
Data Release Authorized: ajp
Reported: 08/20/04

Project: ASB Berm
Event: PORTB-16846-500
Date Sampled: 08/11/04
Date Received: 08/13/04

Analyte	Date	Units	Sample	Replicate(s)	RPD/RSD
ARI ID: GY57A Client ID: BERM-06-10-16					
Total Solids	08/17/04	Percent	94.50	95.20 94.80 78.10 79.50	10.2%
Preserved Total Solids	08/17/04	Percent	94.50	95.20 94.80	0.4%
N-Ammonia	08/19/04	mg-N/kg	0.20	< 0.11	NA
Sulfide	08/17/04	mg/kg	< 6.4	< 3.8	NA
Total Organic Carbon	08/19/04	Percent	0.120	0.103 0.100	10.0%
ARI ID: GY57B Client ID: BERM-05-8-14					
pH	08/19/04	std units	7.70	7.84	1.8%

MS/MSD RESULTS-CONVENTIONALS
GY57-The Retec Group

ANALYTICAL RESOURCES INCORPORATED

Matrix: Soil
Data Release Authorized:
Reported: 08/20/04

Project: ASB Berm
Event: PORTB-16846-500
Date Sampled: 08/11/04
Date Received: 08/13/04

Analyte	Date	Units	Sample	Spike	Spike Added	Recovery
ARI ID: GY57A Client ID: BERM-06-10-16						
N-Ammonia	08/19/04	mg-N/kg	0.20	132	109	120.7%
Sulfide	08/17/04	mg/kg	< 6.4	1,600	1,800	87.8%
Total Organic Carbon	08/19/04	Percent	0.120	0.507	0.387	99.9%

LAB CONTROL RESULTS-CONVENTIONALS
GY57-The Retec Group

ANALYTICAL RESOURCES INCORPORATED

Matrix: Soil
Data Release Authorized: DH
Reported: 08/20/04

Project: ASB Berm
Event: PORTB-16846-500
Date Sampled: NA
Date Received: NA

Analyte	Date	Units	LCS	Spike Added	Recovery
pH	08/19/04	std units	7.03	7.00	100.4%
Sulfide	08/17/04	mg/kg	0.83	0.76	109.5%
Total Organic Carbon	08/19/04	Percent	0.501	0.500	100.2%

STANDARD REFERENCE RESULTS-CONVENTIONALS
GY57-The Retec Group

ANALYTICAL RESOURCES INCORPORATED

Matrix: Soil
Data Release Authorized:
Reported: 08/20/04

Project: ASB Berm
Event: PORTB-16846-500
Date Sampled: NA
Date Received: NA

Analyte/SRM ID	Date	Units	SRM	True Value	Recovery
N-Ammonia ERA #03043	08/19/04	mg-N/kg	108	100	108.0%
Total Organic Carbon NIST #8704	08/19/04	Percent	3.29	3.35	98.2%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: METHOD BLANK

Lab Sample ID: GY57MB
LIMS ID: 04-12754
Matrix: Soil
Data Release Authorized:
Reported: 08/19/04

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500
Date Sampled: NA
Date Received: NA

Percent Total Solids: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	08/17/04	6010B	08/18/04	7440-36-0	Antimony	5	5	U
3050B	08/17/04	6010B	08/18/04	7440-38-2	Arsenic	5	5	U
3050B	08/17/04	6010B	08/18/04	7440-43-9	Cadmium	0.2	0.2	U
3050B	08/17/04	6010B	08/18/04	7440-47-3	Chromium	0.5	0.5	U
3050B	08/17/04	6010B	08/18/04	7440-50-8	Copper	0.2	0.2	U
3050B	08/17/04	6010B	08/18/04	7439-92-1	Lead	2	2	U
CLP	08/17/04	7471A	08/18/04	7439-97-6	Mercury	0.05	0.05	U
3050B	08/17/04	6010B	08/18/04	7440-02-0	Nickel	1	1	U
3050B	08/17/04	6010B	08/18/04	7440-22-4	Silver	0.3	0.3	U
3050B	08/17/04	6010B	08/18/04	7440-66-6	Zinc	0.6	0.6	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: BERM-06-10-16
SAMPLE

Lab Sample ID: GY57A
LIMS ID: 04-12753
Matrix: Soil
Data Release Authorized:
Reported: 08/19/04

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500
Date Sampled: 08/11/04
Date Received: 08/13/04

Percent Total Solids: 90.7%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	08/17/04	6010B	08/18/04	7440-36-0	Antimony	5	5	U
3050B	08/17/04	6010B	08/18/04	7440-38-2	Arsenic	5	5	U
3050B	08/17/04	6010B	08/18/04	7440-43-9	Cadmium	0.2	0.2	U
3050B	08/17/04	6010B	08/18/04	7440-47-3	Chromium	0.5	18.6	
3050B	08/17/04	6010B	08/18/04	7440-50-8	Copper	0.2	30.9	
3050B	08/17/04	6010B	08/18/04	7439-92-1	Lead	2	2	U
CLP	08/17/04	7471A	08/18/04	7439-97-6	Mercury	0.05	0.05	U
3050B	08/17/04	6010B	08/18/04	7440-02-0	Nickel	1	17	
3050B	08/17/04	6010B	08/18/04	7440-22-4	Silver	0.3	0.3	U
3050B	08/17/04	6010B	08/18/04	7440-66-6	Zinc	0.6	29.0	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: BERM-06-10-16
DUPLICATE

Lab Sample ID: GY57A
LIMS ID: 04-12753
Matrix: Soil
Data Release Authorized:
Reported: 08/19/04

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500
Date Sampled: 08/11/04
Date Received: 08/13/04

MATRIX DUPLICATE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Duplicate	RPD	Control Limit	Q
Antimony	6010B	5 U	5 U	0.0%	+/- 5	L
Arsenic	6010B	5 U	5 U	0.0%	+/- 5	L
Cadmium	6010B	0.2 U	0.2 U	0.0%	+/- 0.2	L
Chromium	6010B	18.6	17.4	6.7%	+/- 20%	
Copper	6010B	30.9	33.3	7.5%	+/- 20%	
Lead	6010B	2 U	2	0.0%	+/- 2	L
Mercury	7471A	0.05 U	0.05 U	0.0%	+/- 0.05	L
Nickel	6010B	17	17	0.0%	+/- 20%	
Silver	6010B	0.3 U	0.3 U	0.0%	+/- 0.3	L
Zinc	6010B	29.0	29.5	1.7%	+/- 20%	

Reported in mg/kg-dry

*-Control Limit Not Met
L-RPD Invalid, Limit = Detection Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: BERM-06-10-16
MATRIX SPIKE

Lab Sample ID: GY57A
LIMS ID: 04-12753
Matrix: Soil
Data Release Authorized:
Reported: 08/19/04

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500
Date Sampled: 08/11/04
Date Received: 08/13/04

MATRIX SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Spike	Spike Added	% Recovery	Q
Antimony	6010B	5 U	53	212	25.0%	N
Arsenic	6010B	5 U	195	212	92.0%	
Cadmium	6010B	0.2 U	50.7	53.1	95.5%	
Chromium	6010B	18.6	79.6	53.1	115%	
Copper	6010B	30.9	86.0	53.1	104%	
Lead	6010B	2 U	195	212	92.0%	
Mercury	7471A	0.05 U	0.55	0.52	106%	
Nickel	6010B	17	69	53	98.1%	
Silver	6010B	0.3 U	51.6	53.1	97.2%	
Zinc	6010B	29.0	78.1	53.1	92.5%	

Reported in mg/kg-dry

N-Control Limit Not Met
H-% Recovery Not Applicable, Sample Concentration Too High
NA-Not Applicable, Analyte Not Spiked

Percent Recovery Limits: 75-125%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: BERM-05-8-14
SAMPLE

Lab Sample ID: GY57B
LIMS ID: 04-12754
Matrix: Soil
Data Release Authorized:
Reported: 08/19/04

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500
Date Sampled: 08/11/04
Date Received: 08/13/04

Percent Total Solids: 96.2%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	08/17/04	6010B	08/18/04	7440-36-0	Antimony	10	10	U
3050B	08/17/04	6010B	08/18/04	7440-38-2	Arsenic	10	10	U
3050B	08/17/04	6010B	08/18/04	7440-43-9	Cadmium	0.5	0.5	U
3050B	08/17/04	6010B	08/18/04	7440-47-3	Chromium	1	23	
3050B	08/17/04	6010B	08/18/04	7440-50-8	Copper	0.5	44.6	
3050B	08/17/04	6010B	08/18/04	7439-92-1	Lead	5	5	U
CLP	08/17/04	7471A	08/18/04	7439-97-6	Mercury	0.04	0.04	U
3050B	08/17/04	6010B	08/18/04	7440-02-0	Nickel	2	21	
3050B	08/17/04	6010B	08/18/04	7440-22-4	Silver	0.7	0.7	U
3050B	08/17/04	6010B	08/18/04	7440-66-6	Zinc	1	37	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: BERM-04-8-14
SAMPLE

Lab Sample ID: GY57C
LIMS ID: 04-12755
Matrix: Soil
Data Release Authorized:
Reported: 08/19/04

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500
Date Sampled: 08/12/04
Date Received: 08/13/04

Percent Total Solids: 96.0%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	08/17/04	6010B	08/18/04	7440-36-0	Antimony	5	5	U
3050B	08/17/04	6010B	08/18/04	7440-38-2	Arsenic	5	5	U
3050B	08/17/04	6010B	08/18/04	7440-43-9	Cadmium	0.2	0.2	U
3050B	08/17/04	6010B	08/18/04	7440-47-3	Chromium	0.5	18.6	
3050B	08/17/04	6010B	08/18/04	7440-50-8	Copper	0.2	27.3	
3050B	08/17/04	6010B	08/18/04	7439-92-1	Lead	2	2	
CLP	08/17/04	7471A	08/18/04	7439-97-6	Mercury	0.05	0.05	U
3050B	08/17/04	6010B	08/18/04	7440-02-0	Nickel	1	19	
3050B	08/17/04	6010B	08/18/04	7440-22-4	Silver	0.3	0.3	U
3050B	08/17/04	6010B	08/18/04	7440-66-6	Zinc	0.6	30.0	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: BERM-03-10-16
SAMPLE

Lab Sample ID: GY57D
LIMS ID: 04-12756
Matrix: Soil
Data Release Authorized:
Reported: 08/19/04

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500
Date Sampled: 08/12/04
Date Received: 08/13/04

Percent Total Solids: 95.3%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	08/17/04	6010B	08/18/04	7440-36-0	Antimony	5	5	U
3050B	08/17/04	6010B	08/18/04	7440-38-2	Arsenic	5	5	U
3050B	08/17/04	6010B	08/18/04	7440-43-9	Cadmium	0.2	0.2	U
3050B	08/17/04	6010B	08/18/04	7440-47-3	Chromium	0.5	21.7	
3050B	08/17/04	6010B	08/18/04	7440-50-8	Copper	0.2	41.4	
3050B	08/17/04	6010B	08/18/04	7439-92-1	Lead	2	2	
CLP	08/17/04	7471A	08/18/04	7439-97-6	Mercury	0.04	0.04	U
3050B	08/17/04	6010B	08/18/04	7440-02-0	Nickel	1	19	
3050B	08/17/04	6010B	08/18/04	7440-22-4	Silver	0.3	0.3	U
3050B	08/17/04	6010B	08/18/04	7440-66-6	Zinc	0.6	32.6	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: BERM-02-10-16
SAMPLE

Lab Sample ID: GY57E
LIMS ID: 04-12757
Matrix: Soil
Data Release Authorized:
Reported: 08/19/04

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500
Date Sampled: 08/12/04
Date Received: 08/13/04

Percent Total Solids: 96.4%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	08/17/04	6010B	08/18/04	7440-36-0	Antimony	5	5	U
3050B	08/17/04	6010B	08/18/04	7440-38-2	Arsenic	5	5	U
3050B	08/17/04	6010B	08/18/04	7440-43-9	Cadmium	0.2	0.2	U
3050B	08/17/04	6010B	08/18/04	7440-47-3	Chromium	0.5	25.7	
3050B	08/17/04	6010B	08/18/04	7440-50-8	Copper	0.2	38.6	
3050B	08/17/04	6010B	08/18/04	7439-92-1	Lead	2	2	
CLP	08/17/04	7471A	08/18/04	7439-97-6	Mercury	0.04	0.04	U
3050B	08/17/04	6010B	08/18/04	7440-02-0	Nickel	1	21	
3050B	08/17/04	6010B	08/18/04	7440-22-4	Silver	0.3	0.3	U
3050B	08/17/04	6010B	08/18/04	7440-66-6	Zinc	0.6	34.8	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: BERM-01-10-16
SAMPLE

Lab Sample ID: GY57F
LIMS ID: 04-12758
Matrix: Soil
Data Release Authorized:
Reported: 08/19/04

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500
Date Sampled: 08/12/04
Date Received: 08/13/04

Percent Total Solids: 96.7%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	08/17/04	6010B	08/18/04	7440-36-0	Antimony	5	5	U
3050B	08/17/04	6010B	08/18/04	7440-38-2	Arsenic	5	5	U
3050B	08/17/04	6010B	08/18/04	7440-43-9	Cadmium	0.2	0.2	U
3050B	08/17/04	6010B	08/18/04	7440-47-3	Chromium	0.5	19.9	
3050B	08/17/04	6010B	08/18/04	7440-50-8	Copper	0.2	36.7	
3050B	08/17/04	6010B	08/18/04	7439-92-1	Lead	2	2	
CLP	08/17/04	7471A	08/18/04	7439-97-6	Mercury	0.05	0.05	U
3050B	08/17/04	6010B	08/18/04	7440-02-0	Nickel	1	18	
3050B	08/17/04	6010B	08/18/04	7440-22-4	Silver	0.3	0.3	U
3050B	08/17/04	6010B	08/18/04	7440-66-6	Zinc	0.6	32.9	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: BERM-08-10-14
SAMPLE

Lab Sample ID: GY57G
LIMS ID: 04-12759
Matrix: Soil
Data Release Authorized:
Reported: 08/19/04

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500
Date Sampled: 08/13/04
Date Received: 08/13/04

Percent Total Solids: 95.6%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	08/17/04	6010B	08/18/04	7440-36-0	Antimony	5	5	U
3050B	08/17/04	6010B	08/18/04	7440-38-2	Arsenic	5	5	U
3050B	08/17/04	6010B	08/18/04	7440-43-9	Cadmium	0.2	0.2	U
3050B	08/17/04	6010B	08/18/04	7440-47-3	Chromium	0.5	22.3	
3050B	08/17/04	6010B	08/18/04	7440-50-8	Copper	0.2	32.1	
3050B	08/17/04	6010B	08/18/04	7439-92-1	Lead	2	4	
CLP	08/17/04	7471A	08/18/04	7439-97-6	Mercury	0.05	0.05	U
3050B	08/17/04	6010B	08/18/04	7440-02-0	Nickel	1	22	
3050B	08/17/04	6010B	08/18/04	7440-22-4	Silver	0.3	0.3	U
3050B	08/17/04	6010B	08/18/04	7440-66-6	Zinc	0.6	38.6	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: BERM-07-7-11
SAMPLE

Lab Sample ID: GY57H
LIMS ID: 04-12760
Matrix: Soil
Data Release Authorized:
Reported: 08/19/04

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500
Date Sampled: 08/13/04
Date Received: 08/13/04

Percent Total Solids: 91.0%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	08/17/04	6010B	08/18/04	7440-36-0	Antimony	5	5	U
3050B	08/17/04	6010B	08/18/04	7440-38-2	Arsenic	5	5	U
3050B	08/17/04	6010B	08/18/04	7440-43-9	Cadmium	0.2	0.2	U
3050B	08/17/04	6010B	08/18/04	7440-47-3	Chromium	0.5	19.9	
3050B	08/17/04	6010B	08/18/04	7440-50-8	Copper	0.2	39.9	
3050B	08/17/04	6010B	08/18/04	7439-92-1	Lead	2	2	
CLP	08/17/04	7471A	08/18/04	7439-97-6	Mercury	0.05	0.05	U
3050B	08/17/04	6010B	08/18/04	7440-02-0	Nickel	1	17	
3050B	08/17/04	6010B	08/18/04	7440-22-4	Silver	0.3	0.3	U
3050B	08/17/04	6010B	08/18/04	7440-66-6	Zinc	0.6	30.9	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: LAB CONTROL

Lab Sample ID: GY57LCS
LIMS ID: 04-12754
Matrix: Soil
Data Release Authorized:
Reported: 08/19/04

QC Report No: GY57-The Retec Group
Project: ASB Berm
PORTB-16846-500
Date Sampled: NA
Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Antimony	6010B	212	200	106%	
Arsenic	6010B	204	200	102%	
Cadmium	6010B	51.9	50.0	104%	
Chromium	6010B	49.7	50.0	99.4%	
Copper	6010B	50.7	50.0	101%	
Lead	6010B	205	200	102%	
Mercury	7471A	1.06	1.00	106%	
Nickel	6010B	50	50	100%	
Silver	6010B	51.4	50.0	103%	
Zinc	6010B	49.7	50.0	99.4%	

Reported in mg/kg-dry

N-Control limit not met
Control Limits: 80-120%

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Client: The Retec Group	Project No.: GY57
Client Project: PortB-16846-500	

Case Narrative

1. The samples were submitted for grain size analysis according to PSEP methodology.
2. The samples were run in a single batch, and one sample was chosen for triplicate analysis. The triplicate data is reported on the QA summary.
3. Some of the samples were mostly sand and contained fewer than the required 5 grams in the pipette portion of the analysis. When this occurs, we generally run the samples anyway, and flag the data.
4. All but samples BERM01-10-16 and BERM-08-10-14 listed in #3 above had less than the required 5 grams in the pipette portion. Our balance has a capacity of 200 g (by 0.0001), and a sample size that would give 5 grams of fines could not be split and stay within the capacity of the balance.
5. The data is provided in summary tables and plots.
6. There were no other noted anomalies in the samples or methods on this project.

Approved by: Patrick Barry Date: 8/24/04
Title: Geotechnical Division Manager

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

ANALYTICAL RESOURCES INCORPORATED

Retec
PortB-16846-500

PSEP Total Solids Analysis
Percent of Wet Weight

Sample No.	Total Solids (%)
BERM-06-10-16	95.9
BERM-06-10-16	95.9
BERM-06-10-16	96.3
BERM-05-8-14	97.1
BERM-04-8-14	96.3
BERM-03-10-16	95.6
BERM-02-10-16	96.8
BERN-01-10-16	96.6
BERM-08-10-14	96.8
BERN-07-7-11	94.4

Triplicate Average	96.0
Standard Deviation	0.22
%RSD	0.23

(Total Solids at 90 C)

GY57

QA SUMMARY

ANALYTICAL RESOURCES INCORPORATED

PROJECT:	Retec	Project No.:	PortB-16846-500
ARI Triplicate Sample ID:	GY57A	Batch No.:	GY57 -01
Client Triplicate Sample ID:	BERM-06-10-16	Page:	1 of 1

Relative Standard Deviation, By Phi Size

Sample ID	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
ERM-06-10-1	100.0	86.7	70.9	59.1	42.1	20.4	5.8	1.9	1.3	1.0	0.8	0.5	0.4	0.2
ERM-06-10-1	100.0	88.1	71.1	58.9	41.4	19.5	5.5	1.8	1.3	1.0	0.7	0.5	0.4	0.2
ERM-06-10-1	100.0	87.9	70.1	58.1	41.1	19.7	5.9	2.2	1.3	1.0	0.7	0.5	0.4	0.2
AVE	NA	87.56	70.70	58.71	41.55	19.88	5.75	2.00	1.30	0.98	0.74	0.54	0.40	0.23
STDEV	NA	0.76	0.50	0.51	0.50	0.49	0.21	0.22	0.04	0.03	0.01	0.01	0.00	0.03
%RSD	NA	0.87	0.71	0.86	1.20	2.48	3.67	11.20	3.37	2.55	1.70	1.89	0.47	13.82

The Triplicate Applies To The Following Samples

ARI ID	Client ID	Date Sampled	Date Extracted	Date Complete	QA Ratio (95-105)	Data Qualifiers	Pipette Portion (5.0-25.0g)
GY57A	BERM-06-10-16	8/11/04	8/17/04	8/23/04	99.8	SS	2.6
GY57A	BERM-06-10-16	8/11/04	8/17/04	8/23/04	99.8	SS	2.4
GY57A	BERM-06-10-16	8/11/04	8/17/04	8/23/04	100.2	SS	2.8
GY57B	BERM-05-8-14	8/11/04	8/17/04	8/23/04	100.4	SS	2.4
GY57C	BERM-04-8-14	8/12/04	8/17/04	8/23/04	100.0	SS	3.2
GY57D	BERM-03-10-16	8/12/04	8/17/04	8/23/04	100.2	SS	4.0
GY57E	BERM-02-10-16	8/12/04	8/17/04	8/23/04	100.1	SS	3.3
GY57F	BERM-01-10-16	8/12/04	8/17/04	8/23/04	100.0		5.2
GY57G	BERM-08-10-14	8/13/04	8/17/04	8/23/04	100.4		9.1
GY57H	BERM-07-7-11	8/13/04	8/17/04	8/23/04	100.1	SS	3.3

* ARI Internal QA limits = 95-105%

Notes to the Testing:

1. Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution. See narrative for discussion of the testing.

ANALYTICAL RESOURCES INCORPORATED

Retec
PortB-16846-500

Apparent Grain Size Distribution Summary
Percent Finer Than Indicated Size

Sample No.	Gravel			Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt				Clay	
Phi Size	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
Sieve Size (microns)	3/8"	#4	#10 (2000)	#18 (1000)	#35 (500)	#60 (250)	#120 (125)	#230 (62)	31.00	15.60	7.80	3.90	2.00	1.00
BERM-06-10-16	100.0	86.7	70.9	59.1	42.1	20.4	5.8	1.9	1.3	1.0	0.8	0.5	0.4	0.2
BERM-06-10-16	100.0	88.1	71.1	58.9	41.4	19.5	5.5	1.8	1.3	1.0	0.7	0.5	0.4	0.2
BERM-06-10-16	100.0	87.9	70.1	58.1	41.1	19.7	5.9	2.2	1.3	1.0	0.7	0.5	0.4	0.2
BERM-05-8-14	100.0	87.7	71.8	58.1	38.1	16.5	5.0	2.2	1.3	1.0	0.8	0.5	0.4	0.3
BERM-04-8-14	100.0	93.8	77.5	63.4	41.8	15.8	5.0	2.6	1.9	1.4	1.1	0.8	0.6	0.3
BERM-03-10-16	100.0	93.3	81.8	70.6	51.3	24.3	7.6	3.5	2.3	1.6	1.2	0.8	0.5	0.3
BERM-02-10-16	100.0	100.0	85.8	70.6	49.6	22.5	7.2	3.1	2.0	1.4	1.1	0.8	0.6	0.3
BERN-01-10-16	100.0	90.4	77.3	66.4	48.8	24.2	8.3	4.2	2.8	2.1	1.6	1.1	0.8	0.5
BERM-08-10-14	100.0	92.1	78.9	68.4	52.8	30.8	15.9	10.6	7.7	5.6	4.1	2.8	1.9	1.3
BERN-07-7-11	100.0	95.0	83.6	73.2	55.3	27.3	8.1	3.6	2.3	1.7	1.3	0.9	0.6	0.4

Notes to the Testing:

1. Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution. See narrative for discussion of the testing.

GY57

ANALYTICAL RESOURCES INCORPORATED

Retec
PortB-16846-500

Apparent Grain Size Distribution Summary
Percent Retained in Each Size Fraction

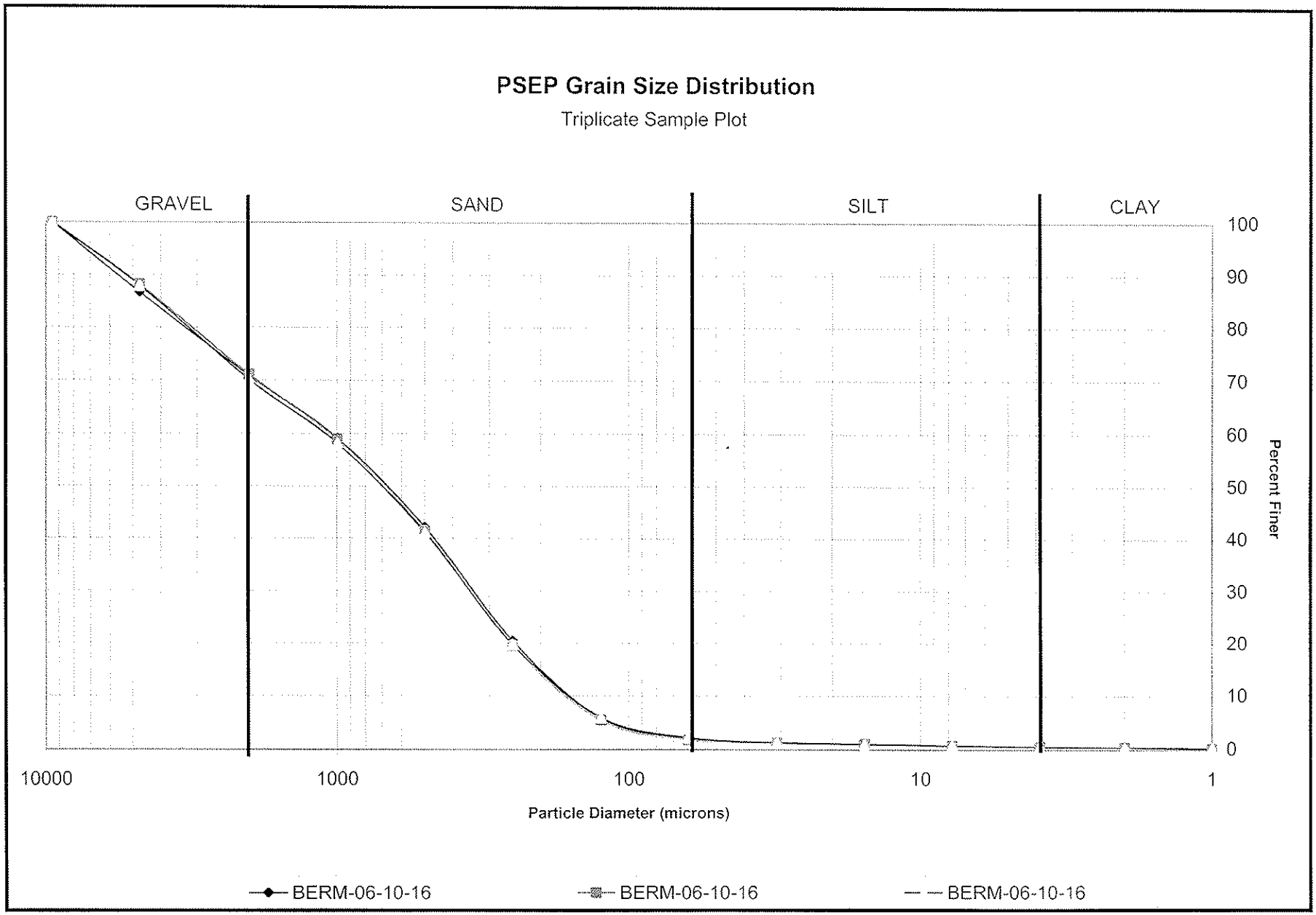
Sample No.	Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Coarse Silt	Medium Silt	Fine Silt	Very Fine Silt	Clay		
Phi Size	> -1	-1 to 0	0 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 6	6 to 7	7 to 8	8 to 9	9 to 10	< 10
Sieve Size (microns)	> #10 (2000)	10 to 18 (2000-1000)	18-35 (1000-500)	35-60 (500-250)	60-120 (250-125)	120-230 (125-62)	62.5-31.0	31.0-15.6	15.6-7.8	7.8-3.9	3.9-2.0	2.0-1.0	<1.0
BERM-06-10-16	29.1	11.8	17.0	21.7	14.6	3.8	0.6	0.3	0.3	0.2	0.1	0.2	0.2
BERM-06-10-16	28.9	12.2	17.4	22.0	14.0	3.7	0.6	0.3	0.2	0.2	0.1	0.2	0.2
BERM-06-10-16	29.9	12.0	17.0	21.4	13.8	3.7	1.0	0.3	0.2	0.2	0.1	0.1	0.2
BERM-05-8-14	28.2	13.7	20.1	21.6	11.5	2.8	0.9	0.3	0.2	0.2	0.1	0.2	0.3
BERM-04-8-14	22.5	14.1	21.6	26.0	10.9	2.4	0.7	0.5	0.3	0.3	0.2	0.2	0.3
BERM-03-10-16	18.2	11.2	19.2	27.0	16.7	4.1	1.2	0.6	0.5	0.4	0.3	0.2	0.3
BERM-02-10-16	14.2	15.2	20.9	27.1	15.3	4.2	1.1	0.6	0.3	0.3	0.2	0.2	0.3
BERN-01-10-16	22.7	10.9	17.6	24.7	15.8	4.2	1.4	0.7	0.5	0.5	0.3	0.3	0.5
BERM-08-10-14	21.1	10.5	15.5	22.0	14.9	5.4	2.9	2.1	1.5	1.3	0.9	0.6	1.3
BERN-07-7-11	16.4	10.4	17.9	28.0	19.2	4.5	1.2	0.7	0.4	0.4	0.2	0.3	0.4

Notes to the Testing:

1. Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution. See narrative for discussion of the testing.

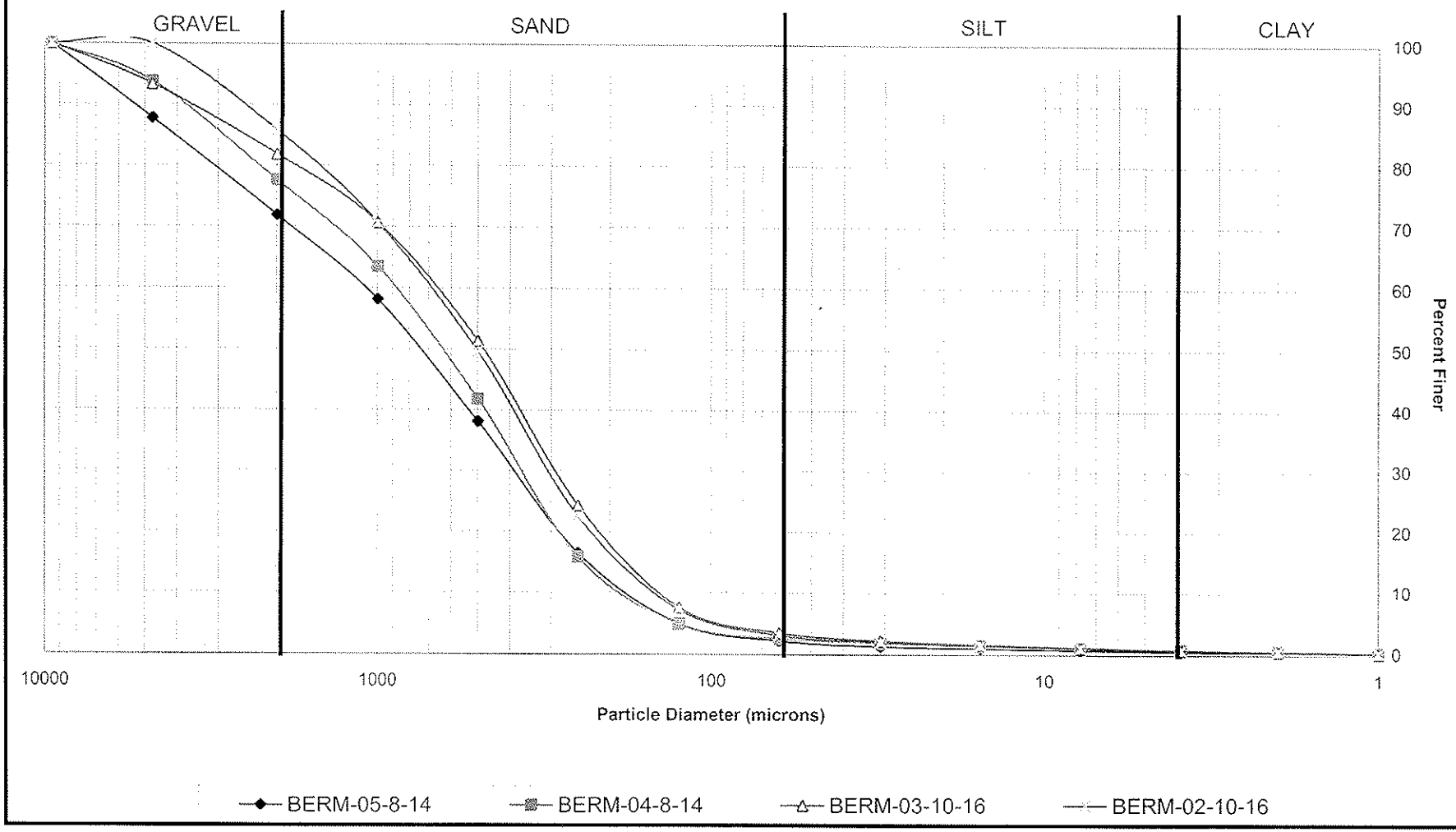
GY57

ANALYTICAL RESOURCES INCORPORATED

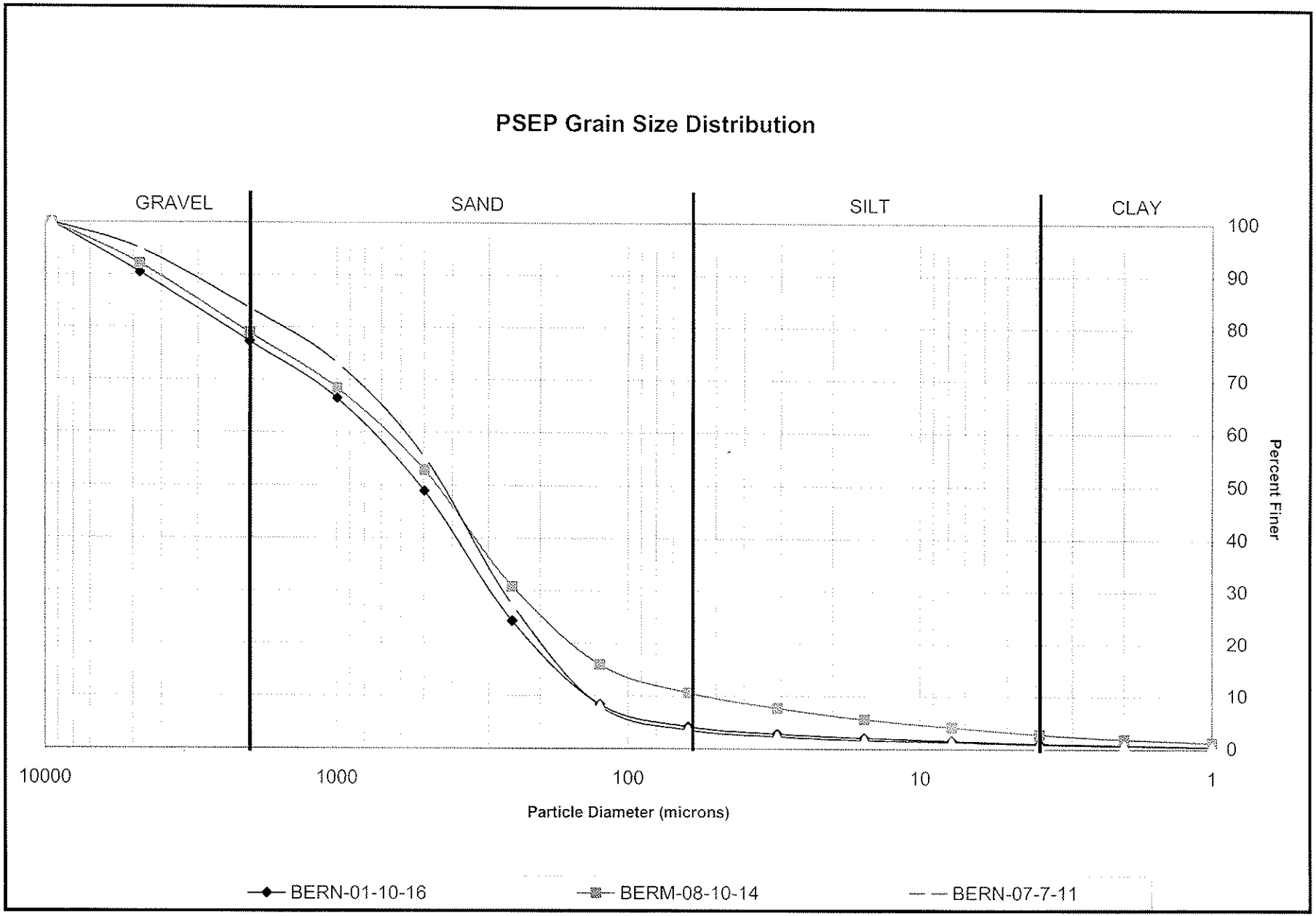


ANALYTICAL RESOURCES INCORPORATED

PSEP Grain Size Distribution



ANALYTICAL RESOURCES INCORPORATED



SEVERN TRENT STL

STL Sacramento
880 Riverside Parkway
West Sacramento, CA 95605

Tel: 916 373 5600 Fax: 916 372 1059
www.stl-inc.com

August 27, 2004

STL SACRAMENTO PROJECT NUMBER: G4H200160
PO/CONTRACT: PortB-16846-500

Ben Howard
The Retec Group
1011 South West Klickitat Way
Suite 207
Seattle, WA 98134-1162

Dear Mr. Howard,

This report contains the analytical results for the samples received under chain of custody by STL Sacramento on August 19, 2004. These samples are associated with your ASB Berm project.

The test results in this report meet all NELAC requirements for parameters that accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The case narrative is an integral part of this report.

Preliminary results were sent via e-mail on August 27, 2004.

If you have any questions, please feel free to call me at (916) 374-4427.

Sincerely,

Nilo Ligi
Project Manager

TABLE OF CONTENTS

STL SACRAMENTO PROJECT NUMBER G4H200160

Case Narrative

STL Sacramento Quality Assurance Program

Sample Description Information

Chain of Custody Documentation

SOLID, 8290, Dioxins/Furans
Samples: 1, 2, 3
- Sample Data Sheets
- Method Blank Reports
- Laboratory QC Reports

SOLID, D 2216-90, Moisture, Percent (D22
Samples: 1, 2, 3
- Sample Data Sheets

CASE NARRATIVE

STL SACRAMENTO PROJECT NUMBER G4H200160

Sample Receipt
Sample(s): 1, 2, 3

The samples were received at 22 C. One bag of wet ice and 3 gel-packs were used as cooling agents. The wet ice was melted and the gel-packs were thawed. Samples were shipped by FedEx on Aug 17 but were not received by the laboratory until August 19.

SOLID, 8290, Dioxins/Furans
Sample(s): 1, 2, 3

The internal standard recovery for the end standard ST0824A on run 24AU045D% was high for 13C-OCDD. All associated samples show normal recoveries for this internal standard and are not affected.

There were no other anomalies associated with this project.

SEVERN TRENT STL

ACCREDITED IN ACCORDANCE WITH nelac

STL Sacramento Certifications/Accreditations

Certifying State	Certificate #	Certifying State	Certificate #
Alaska	UST-055	Oregon	CA 200005
Arizona*	AZ0616	Pennsylvania	68-1272
Arkansas	NA	South Carolina	87014001
California*	01119CA	Utah*	QUAN1
Connecticut	PH-0691	Virginia	00178
Florida*	E87570	Washington	C087
Georgia	960	West Virginia	9930C, 334
Hawaii	NA	Wisconsin	998204680
Louisiana*	01944	NFESC	NA
Michigan	9947	USACE	NA
Nevada	CA 044	USACE	NA
New Jersey*	CA005	USDA Foreign Plant	37-82605
New York*	11666	USDA Foreign Soil	S-46613

*NELAP accredited. A more detailed parameter list is available upon request.

QC Parameter Definitions

QC Batch: The QC batch consists of a set of up to 20 field samples that behave similarly (i.e., same matrix) and are processed using the same procedures, reagents, and standards at the same time.

Method Blank: An analytical control consisting of all reagents, which may include internal standards and surrogates, and is carried through the entire analytical procedure. The method blank is used to define the level of laboratory background contamination.

Laboratory Control Sample and Laboratory Control Sample Duplicate (LCS/LCSD): An aliquot of blank matrix spiked with known amounts of representative target analytes. The LCS (and LCSD as required) is carried through the entire analytical process and is used to monitor the accuracy of the analytical process independent of potential matrix effects. If an LCSD is performed, it may also used to evaluate the precision of the process.

Duplicate Sample (DU): Different aliquots of the same sample are analyzed to evaluate the precision of an analysis.

Surrogates: Organic compounds not expected to be detected in field samples, which behave similarly to target analytes. These are added to every sample within a batch at a known concentration to determine the efficiency of the sample preparation and analytical process.

Matrix Spike and Matrix Spike Duplicate (MS/MSD): An MS is an aliquot of a matrix fortified with known quantities of specific compounds and subjected to an entire analytical procedure in order to indicate the appropriateness of the method for a particular matrix. The percent recovery for the respective compound(s) is then calculated. The MSD is a second aliquot of the same matrix as the matrix spike, also spiked, in order to determine the precision of the method.

Isotope Dilution: For isotope dilution methods, isotopically labeled analogs (internal standards) of the native target analytes are spiked into the sample at time of extraction. These internal standards are used for quantitation, and monitor and correct for matrix effects. Since matrix effects on method performance can be judged by the recovery of these analogs, there is little added benefit of performing MS/MSD for these methods. MS/MSD are only performed for client or QAPP requirements.

Control Limits: The reported control limits are either based on laboratory historical data, method requirements, or project data quality objectives. The control limits represent the estimated uncertainty of the test results.

Sample Summary
G4H200160

WO#	Sample #	Client Sample ID	Sampling Date	Received Date
GNKFD	1	COMP-01-0804	8/12/2004 02:15 PM	8/19/2004 09:15 AM
GNKFH	2	COMP-02-0804	8/13/2004 10:16 AM	8/19/2004 09:15 AM
GNKFL	3	COMP-03-0804	8/17/2004 02:20 PM	8/19/2004 09:15 AM

Notes(s):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity, pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight

G4H200160

Chain of Custody Record

№ 10[illegible]820

The RETEC Group, Inc.
1011 S.W. Klickitat Way, Suite 207 • Seattle, WA 98134-1162
(206) 624-9349 Phone • (206) 624-2839 Fax
www.retec.com

RETEC

Project Name: ASB Berm	Project Number: PORTB-16876-500
Send Report To: Ben Howard	Sampler (Print Name): Ben Howard
Address: 1011 SW Klickitat Way	Sampler (Print Name): Dawn Meehan
Suite 207	Shipment Method: Fed Ex
Seattle, WA 98134	Airbill Number:
Phone: (206) 624-9349	Laboratory Receiving: STL Sac.
Fax: (206) 624-2839	

Page 1 of 1

Purchase Order #:_____

Field Sample ID	Sample Date	Sample Time	Sample Matrix	Number of Containers	Analysis Requested: Dioxins - Furans (8290)	Comments, Special Instructions, etc.	Lab Sample ID (to be completed by lab)
Comp-01-0804	8/12/04	1415	Soil	1	X	☆	
Comp-02-0804	8/13/04	1016	↓	1	X	Please one-week TAT	
* Comp-03-0804	8/17/04	1420	↓	1	X	☆	
* no FD on jar: aa 8-19-04							

RECEIVED IN GOOD CONDITION
UNDER COC
AUG 19 2004
IN:

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
	8-19-04 1800	8/17/04	1632
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

Sample Custodian Remarks (Completed By Laboratory):

QA/QC Level		Turnaround	
Level I	☐	Routine	☐
Level II	☐	24 Hour	☐
Level III	☐	1 Week	☐
Other	☐	Other _____	

Sample Receipt	
Total # Containers Received?	3
COC Seals Present?	NO
COC Seals Intact?	N/A
Received Containers Intact?	YES
Temperature?	25°C

White: Lab Copy Yellow: PM Copy Pink: Field Copy Gold: PM/QA/QC Copy

STL Sacramento (916) 373 - 5600

SEVERN TRENT **STL**

LOT RECEIPT CHECKLIST
STL Sacramento

CLIENT Rutec PM JL LOG # 28256

LOT# (QUANTIMS ID) G4H200160 QUOTE# 60170 LOCATION W13B

	Initials	Date
	DE	8-19-04

DATE RECEIVED 8-19-04 TIME RECEIVED 915

DELIVERED BY
- ☑ FEDEX
- ~~☒ CA OVERNIGHT~~ 8-19-04
- ☐ CLIENT
- ☐ AIRBORNE
- ☐ GOLDENSTATE
- ☐ DHL
- ☐ UPS
- ☐ BAX GLOBAL
- ☐ GO-GETTERS
- ☐ STL COURIER
- ☐ COURIERS ON DEMAND
- ☐ OTHER

CUSTODY SEAL STATUS ☐ INTACT ☐ BROKEN ☒ N/A

CUSTODY SEAL #(S) _____

SHIPPPING CONTAINER(S) ☐ STL ☒ CLIENT ☐ N/A

TEMPERTURE RECORD (IN °C) IR 1☐ 3☒ ☐ OTHER _____

COC #(S) 109820

TEMPERATURE BLANK N/A

SAMPLE TEMPERATURE 2.2

COLLECTOR'S NAME: ☑ Verified from COC ~~☒ Not on COC~~ assigned

pH MEASURED ☐ YES ☐ ANOMALY ☒ N/A

LABELED BY..... DE 8-20-04

LABELS CHECKED BY.....

PEER REVIEW _____ ☒ N/A

SHORT HOLD TEST NOTIFICATION

SAMPLE RECEIVING
- WETCHEM ☒ N/A
- VOA-ENCORES ☒ N/A

☐ METALS NOTIFIED OF FILTER/PRESERVE VIA VERBAL & EMAIL ☒ N/A

☐ COMPLETE SHIPMENT RECEIVED IN GOOD CONDITION WITH APPROPRIATE TEMPERATURES, CONTAINERS, PRESERVATIVES ☒ N/A

☒ Clouseau ☒ TEMPERATURE EXCEEDED (2 °C – 6 °C)*1 ☐ N/A

☒ WET ICE x1 ☐ BLUE ICE ☒ GEL PACK x3 thawed ☐ NO COOLING AGENTS USED ☒ PM NOTIFIED

Notes: melted

#3 - no ID on jar.

*1 Acceptable temperature range for State of Wisconsin samples is ≤ 4°C.

LEAVE NO SPACES BLANK. USE "N/A" IF NOT APPLICABLE. INITIAL AND DATE ALL "N/A" ENTRIES.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VOA *																				
VOAn *																				
____AGB																				
AGBs																				
250AGB																				
250AGBS																				
250AGBn																				
250AGBna																				
____AGJ																				
500AGJ																				
250AGJ																				
125AGJ																				
____CGJ																				
500CGJ																				
250CGJ	/	/	/																	
125CGJ																				
____PB/PJ																				
____PBn/PJn																				
500PB/PJ																				
500PBn/PJn																				
500PBna																				
500PBzn/na																				
250PB																				
250PBn																				
250PBna																				
250PBzn/na																				
____*CT																				
Encore																				
Folder/Filter																				
PUF																				
Petri/Filter																				
XAD Trap																				
Ziploc																				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

h = hydrochloric acid s = sulfuric acid na = sodium hydroxide n = nitric acid zn = zinc acetate

* Number of VOA's with air bubbles present / total number of VOA's

SOLID, 8290, Dioxins/Furans

THE RETEC GROUP

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: COMP-01-0804

Lot-Sample #...:	G4H200160 - 001	Work Order #...:	GNKFD1AC	Matrix.....:	SOLID
Date Sampled...:	08/12/04	Date Received..:	08/19/04	Instrument:	5D5
Prep Date.....:	08/20/04	Analysis Date..:	08/24/04	Units.....:	pg/g
Prep Batch #...:	4233340	Dilution Factor:	1	% Moisture:	4.2

PARAMETER	RESULT	DETECTION LIMIT	TEF FACTOR	TEQ CONCENTRATION
2,3,7,8-TCDD	ND	0.25	1.000	0
Total TCDD	ND	0.25		0
1,2,3,7,8-PeCDD	ND	0.62	0.500	0
Total PeCDD	ND	0.62		0
1,2,3,4,7,8-HxCDD	ND	0.31	0.100	0
1,2,3,6,7,8-HxCDD	ND	0.29	0.100	0
1,2,3,7,8,9-HxCDD	ND	0.28	0.100	0
Total HxCDD	ND	0.31		0
1,2,3,4,6,7,8-HpCDD	ND	0.32	0.010	0
Total HpCDD	ND	0.32		0
OCDD	ND	1.3	0.001	0
2,3,7,8-TCDF	ND	0.22	0.100	0
Total TCDF	ND	0.22		0
1,2,3,7,8-PeCDF	ND	0.33	0.050	0
2,3,4,7,8-PeCDF	ND	0.33	0.500	0
Total PeCDF	ND	0.44		0
1,2,3,4,7,8-HxCDF	ND	0.17	0.100	0
1,2,3,6,7,8-HxCDF	ND	0.17	0.100	0
2,3,4,6,7,8-HxCDF	ND	0.19	0.100	0
1,2,3,7,8,9-HxCDF	ND	0.20	0.100	0
Total HxCDF	ND	0.20		0
1,2,3,4,6,7,8-HpCDF	ND	0.19	0.010	0
1,2,3,4,7,8,9-HpCDF	ND	0.23	0.010	0
Total HpCDF	ND	0.23		0
OCDF	ND	0.46	0.001	0
Total TEQ Concentration				0

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	89	40 - 135
13C-1,2,3,7,8-PeCDD	93	40 - 135
13C-1,2,3,6,7,8-HxCDD	98	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	98	40 - 135
13C-OCDD	104	40 - 135
13C-2,3,7,8-TCDF	88	40 - 135
13C-1,2,3,7,8-PeCDF	93	40 - 135
13C-1,2,3,4,7,8-HxCDF	104	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	100	40 - 135

Notes:

TEF values are cited in U.S. Environmental Protection Agency, (1989) Interim procedures for estimating risks associated with exposures to mixtures of chlorinated dibenzo-p-dioxins and -dibenzofurans (CDDs and CDFs) and 1989 update. U.S. Environmental Protection Agency, Risk Assessment forum, Washington, DC; EPA/625/3-89/016

THE RETEC GROUP

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: COMP-02-0804

Lot-Sample #...:	G4H200160 - 002	Work Order #...:	GNKFH1AC	Matrix....:	SOLID
Date Sampled...:	08/13/04	Date Received..:	08/19/04	Instrument:	5D5
Prep Date.....:	08/20/04	Analysis Date..:	08/24/04	Units.....:	pg/g
Prep Batch #...:	4233340	Dilution Factor:	1	% Moisture:	7.9

PARAMETER	RESULT	DETECTION LIMIT	TEF FACTOR	TEQ CONCENTRATION
2,3,7,8-TCDD	ND	0.17	1.000	0
Total TCDD	ND	0.88		0
1,2,3,7,8-PeCDD	ND	0.33	0.500	0
Total PeCDD	ND	0.97		0
1,2,3,4,7,8-HxCDD	ND	0.20	0.100	0
1,2,3,6,7,8-HxCDD	ND	0.18	0.100	0
1,2,3,7,8,9-HxCDD	ND	0.17	0.100	0
Total HxCDD	**2.9**			
1,2,3,4,6,7,8-HpCDD	ND	2.3	0.010	0
Total HpCDD	ND	2.3		0
OCDD	**19**		**0.001**	**0.0190**
2,3,7,8-TCDF	ND	0.15	0.100	0
Total TCDF	ND	0.15		0
1,2,3,7,8-PeCDF	ND	0.23	0.050	0
2,3,4,7,8-PeCDF	ND	0.23	0.500	0
Total PeCDF	ND	0.29		0
1,2,3,4,7,8-HxCDF	ND	0.50	0.100	0
1,2,3,6,7,8-HxCDF	ND	0.13	0.100	0
2,3,4,6,7,8-HxCDF	ND	0.14	0.100	0
1,2,3,7,8,9-HxCDF	ND	0.15	0.100	0
Total HxCDF	ND	0.50		0
1,2,3,4,6,7,8-HpCDF	ND	0.97	0.010	0
1,2,3,4,7,8,9-HpCDF	ND	0.36	0.010	0
Total HpCDF	ND	0.97		0
OCDF	ND	3.6	0.001	0
Total TEQ Concentration				**0.0190**

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	90	40 - 135
13C-1,2,3,7,8-PeCDD	103	40 - 135
13C-1,2,3,6,7,8-HxCDD	89	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	114	40 - 135
13C-OCDD	134	40 - 135
13C-2,3,7,8-TCDF	93	40 - 135
13C-1,2,3,7,8-PeCDF	98	40 - 135
13C-1,2,3,4,7,8-HxCDF	91	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	104	40 - 135

Notes:

TEF values are cited in U.S. Environmental Protection Agency, (1989) Interim procedures for estimating risks associated with exposures to mixtures of chlorinated dibenzo-p-dioxins and -dibenzofurans (CDDs and CDFs) and 1989 update. U.S. Environmental Protection Agency, Risk Assessment forum, Washington, DC; EPA/625/3-89/016

THE RETEC GROUP

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: COMP-03-0804

Lot-Sample #...:	G4H200160 - 003	Work Order #...:	GNKFL1AC	Matrix....:	SOLID
Date Sampled...:	08/17/04	Date Received..:	08/19/04	Instrument:	5D5
Prep Date.....:	08/20/04	Analysis Date..:	08/24/04	Units.....:	pg/g
Prep Batch #...:	4233340	Dilution Factor:	1	% Moisture:	0.34

PARAMETER	RESULT	DETECTION LIMIT	TEF FACTOR	TEQ CONCENTRATION
2,3,7,8-TCDD	ND	0.16	1.000	0
Total TCDD	ND	0.16		0
1,2,3,7,8-PeCDD	ND	0.32	0.500	0
Total PeCDD	ND	0.43		0
1,2,3,4,7,8-HxCDD	ND	0.18	0.100	0
1,2,3,6,7,8-HxCDD	ND	0.16	0.100	0
1,2,3,7,8,9-HxCDD	ND	0.16	0.100	0
Total HxCDD	ND	0.20		0
1,2,3,4,6,7,8-HpCDD	ND	0.32	0.010	0
Total HpCDD	ND	0.32		0
OCDD	ND	4.6	0.001	0
2,3,7,8-TCDF	ND	0.15	0.100	0
Total TCDF	ND	0.15		0
1,2,3,7,8-PeCDF	ND	0.20	0.050	0
2,3,4,7,8-PeCDF	ND	0.21	0.500	0
Total PeCDF	ND	0.30		0
1,2,3,4,7,8-HxCDF	ND	0.11	0.100	0
1,2,3,6,7,8-HxCDF	ND	0.10	0.100	0
2,3,4,6,7,8-HxCDF	ND	0.11	0.100	0
1,2,3,7,8,9-HxCDF	ND	0.12	0.100	0
Total HxCDF	ND	0.12		0
1,2,3,4,6,7,8-HpCDF	ND	0.13	0.010	0
1,2,3,4,7,8,9-HpCDF	ND	0.16	0.010	0
Total HpCDF	ND	0.16		0
OCDF	ND	0.22	0.001	0
Total TEQ Concentration				**0**

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	77	40 - 135
13C-1,2,3,7,8-PeCDD	91	40 - 135
13C-1,2,3,6,7,8-HxCDD	81	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	94	40 - 135
13C-OCDD	112	40 - 135
13C-2,3,7,8-TCDF	77	40 - 135
13C-1,2,3,7,8-PeCDF	87	40 - 135
13C-1,2,3,4,7,8-HxCDF	82	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	91	40 - 135

Notes:

TEF values are cited in U.S. Environmental Protection Agency. (1989) Interim procedures for estimating risks associated with exposures to mixtures of chlorinated dibenzo-p-dioxins and -dibenzofurans (CDDs and CDFs) and 1989 update. U.S. Environmental Protection Agency, Risk Assessment forum, Washington, DC; EPA/625/3-89/016

QC DATA ASSOCIATION SUMMARY

G4H200160

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	SOLID	SW846 8290		4233340	
	SOLID	ASTM D 2216-90		4233351	
002	SOLID	SW846 8290		4233340	
	SOLID	ASTM D 2216-90		4233351	
003	SOLID	SW846 8290		4233340	
	SOLID	ASTM D 2216-90		4233351	

METHOD BLANK REPORT

Trace Level Organic Compounds

Client Lot #...: G4H200160 Work Order #...: GNK5V1AA Matrix.....: SOLID
MB Lot-Sample #: G4H200000-340
Prep Date.....: 08/20/04
Analysis Date..: 08/24/04 Prep Batch #...: 4233340
Dilution Factor: 1

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	0.22	pg/g	SW846 8290
Total TCDD	ND	0.22	pg/g	SW846 8290
1,2,3,7,8-PeCDD	ND	0.46	pg/g	SW846 8290
Total PeCDD	ND	0.46	pg/g	SW846 8290
1,2,3,4,7,8-HxCDD	ND	0.35	pg/g	SW846 8290
1,2,3,6,7,8-HxCDD	ND	0.31	pg/g	SW846 8290
1,2,3,7,8,9-HxCDD	ND	0.32	pg/g	SW846 8290
Total HxCDD	ND	0.35	pg/g	SW846 8290
1,2,3,4,6,7,8-HpCDD	ND	0.36	pg/g	SW846 8290
Total HpCDD	ND	0.36	pg/g	SW846 8290
OCDD	ND	0.91	pg/g	SW846 8290
2,3,7,8-TCDF	ND	0.16	pg/g	SW846 8290
Total TCDF	ND	0.16	pg/g	SW846 8290
1,2,3,7,8-PeCDF	ND	0.32	pg/g	SW846 8290
2,3,4,7,8-PeCDF	ND	0.31	pg/g	SW846 8290
Total PeCDF	ND	0.32	pg/g	SW846 8290
1,2,3,4,7,8-HxCDF	ND	0.32	pg/g	SW846 8290
1,2,3,6,7,8-HxCDF	ND	0.30	pg/g	SW846 8290
2,3,4,6,7,8-HxCDF	ND	0.33	pg/g	SW846 8290
1,2,3,7,8,9-HxCDF	ND	0.38	pg/g	SW846 8290
Total HxCDF	ND	0.38	pg/g	SW846 8290
1,2,3,4,6,7,8-HpCDF	ND	0.25	pg/g	SW846 8290
1,2,3,4,7,8,9-HpCDF	ND	0.31	pg/g	SW846 8290
Total HpCDF	ND	0.31	pg/g	SW846 8290
OCDF	ND	0.56	pg/g	SW846 8290

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	86	(40 - 135)
13C-1,2,3,7,8-PeCDD	79	(40 - 135)
13C-1,2,3,6,7,8-HxCDD	97	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDD	95	(40 - 135)
13C-OCDD	84	(40 - 135)
13C-2,3,7,8-TCDF	91	(40 - 135)
13C-1,2,3,7,8-PeCDF	82	(40 - 135)
13C-1,2,3,4,7,8-HxCDF	96	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDF	95	(40 - 135)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

Trace Level Organic Compounds

Client Lot #...: G4H200160 Work Order #...: GNK5V1AC Matrix.....: SOLID
LCS Lot-Sample#: G4H200000-340
Prep Date.....: 08/20/04 Analysis Date..: 08/24/04
Prep Batch #...: 4233340
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
2,3,7,8-TCDD	102	(61 - 138)	SW846 8290
1,2,3,7,8-PeCDD	104	(64 - 139)	SW846 8290
1,2,3,4,7,8-HxCDD	102	(56 - 144)	SW846 8290
1,2,3,6,7,8-HxCDD	101	(68 - 134)	SW846 8290
1,2,3,7,8,9-HxCDD	105	(62 - 143)	SW846 8290
1,2,3,4,6,7,8-HpCDD	101	(70 - 132)	SW846 8290
OCDD	97	(70 - 140)	SW846 8290
2,3,7,8-TCDF	101	(65 - 134)	SW846 8290
1,2,3,7,8-PeCDF	106	(70 - 136)	SW846 8290
2,3,4,7,8-PeCDF	105	(63 - 138)	SW846 8290
1,2,3,4,7,8-HxCDF	103	(68 - 137)	SW846 8290
1,2,3,6,7,8-HxCDF	100	(62 - 147)	SW846 8290
2,3,4,6,7,8-HxCDF	108	(65 - 157)	SW846 8290
1,2,3,7,8,9-HxCDF	110	(56 - 151)	SW846 8290
1,2,3,4,6,7,8-HpCDF	98	(70 - 133)	SW846 8290
1,2,3,4,7,8,9-HpCDF	102	(58 - 140)	SW846 8290
OCDF	99	(64 - 142)	SW846 8290

INTERNAL STANDARD	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	86	(40 - 135)
13C-1,2,3,7,8-PeCDD	89	(40 - 135)
13C-1,2,3,6,7,8-HxCDD	88	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDD	96	(40 - 135)
13C-OCDD	97	(40 - 135)
13C-2,3,7,8-TCDF	88	(40 - 135)
13C-1,2,3,7,8-PeCDF	93	(40 - 135)
13C-1,2,3,4,7,8-HxCDF	89	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDF	95	(40 - 135)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

Trace Level Organic Compounds

Client Lot #...: G4H200160 Work Order #...: GNK5V1AC Matrix.....: SOLID
LCS Lot-Sample#: G4H200000-340
Prep Date.....: 08/20/04 Analysis Date..: 08/24/04
Prep Batch #...: 4233340
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
2,3,7,8-TCDD	20.0	20.4	pg/g	102	SW846 8290
1,2,3,7,8-PeCDD	100	104	pg/g	104	SW846 8290
1,2,3,4,7,8-HxCDD	100	102	pg/g	102	SW846 8290
1,2,3,6,7,8-HxCDD	100	101	pg/g	101	SW846 8290
1,2,3,7,8,9-HxCDD	100	105	pg/g	105	SW846 8290
1,2,3,4,6,7,8-HpCDD	100	101	pg/g	101	SW846 8290
OCDD	200	193	pg/g	97	SW846 8290
2,3,7,8-TCDF	20.0	20.1	pg/g	101	SW846 8290
1,2,3,7,8-PeCDF	100	106	pg/g	106	SW846 8290
2,3,4,7,8-PeCDF	100	105	pg/g	105	SW846 8290
1,2,3,4,7,8-HxCDF	100	103	pg/g	103	SW846 8290
1,2,3,6,7,8-HxCDF	100	100	pg/g	100	SW846 8290
2,3,4,6,7,8-HxCDF	100	108	pg/g	108	SW846 8290
1,2,3,7,8,9-HxCDF	100	110	pg/g	110	SW846 8290
1,2,3,4,6,7,8-HpCDF	100	97.6	pg/g	98	SW846 8290
1,2,3,4,7,8,9-HpCDF	100	102	pg/g	102	SW846 8290
OCDF	200	197	pg/g	99	SW846 8290

INTERNAL STANDARD	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	86	(40 - 135)
13C-1,2,3,7,8-PeCDD	89	(40 - 135)
13C-1,2,3,6,7,8-HxCDD	88	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDD	96	(40 - 135)
13C-OCDD	97	(40 - 135)
13C-2,3,7,8-TCDF	88	(40 - 135)
13C-1,2,3,7,8-PeCDF	93	(40 - 135)
13C-1,2,3,4,7,8-HxCDF	89	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDF	95	(40 - 135)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

SOLID, D 2216-90, Moisture, Percent

THE RETEC GROUP

Client Sample ID: COMP-01-0804

General Chemistry

Lot-Sample #...: G4H200160-001 Work Order #...: GNKFD Matrix.....: SO
Date Sampled...: 08/12/04 Date Received..: 08/19/04

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Percent Moisture	4.2		%	ASTM D 2216-90	08/20-08/23/04	4233351

Dilution Factor: 1

THE RETEC GROUP

Client Sample ID: COMP-02-0804

General Chemistry

Lot-Sample #...: G4H200160-002 Work Order #...: GNKFH Matrix.....: SO
Date Sampled...: 08/13/04 Date Received..: 08/19/04

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Percent Moisture	7.9		%	ASTM D 2216-90	08/20-08/23/04	4233351

Dilution Factor: 1

THE RETEC GROUP

Client Sample ID: COMP-03-0804

General Chemistry

Lot-Sample #...: G4H200160-003 Work Order #...: GNKFL Matrix.....: SO
Date Sampled...: 08/17/04 Date Received..: 08/19/04

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Percent Moisture	0.34		%	ASTM D 2216-90	08/20-08/23/04	4233351

Dilution Factor: 1

Analytical Resources, Incorporated
Analytical Chemists and Consultants

August 13, 2004

Mr. Ben Howard
The RETEC Group, Inc.
1011 S.W. Klickitat Way
Suite 207
Seattle, WA 98134

Subject: PORTB-16486-500
ARI Project No.: GX16

Dear Mr. Howard;

Samples from the referenced project have been completed. What little sample residuals remain will be archived for 90 days at no charge. Because the samples were mostly water, very little of them remains.

Please call me to discuss any questions, or comments you may have on the data or its presentation.

Best Regards,
Analytical Resources, Incorporated

Harold Benny
Geotechnical Division Manager

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Client: The Retec Group	Project No.: GX16
Client Project: PORTB-16486-500	

Case Narrative

1. The samples were received on August 8, 2004, in good condition.
2. The grain size analysis was run according to ASTM D422. ASTM D422 is intended for use with soils. These samples were not soils by the normal definition. They were highly organic material, in which only one sample had a specific gravity of over 2.00. ASTM D422 has correction values that are applied when the specific gravity differs from 2.65, but these correction values only extend to 2.50. Using the data provided by ASTM, a correction value was calculated for the specific gravity of each sample, but it is not known if the relationship is linear or not. Also, the individual particles tended to be fibrous in nature, and the material on each sieve tended to be agglomerations that could not be broken up with a brush. Therefore extreme care must be taken when this data is used, as it may not be valid.
3. The total organic matter was determined according to ASTM D2974. The samples took an exceedingly long time to dry in the oven due to their high moisture content and to burn in the furnace, due to their high organic content. The total solids analysis on the water sample may not have been appropriate. Essentially the sample had only 0.13 g of solids, in 750 ml of water. This meant that the total organic content was run on 0.13 g, and the percent organic matter was below detection limits.
4. The density was determined according to ASTM E1109.
5. The pH was determined according to ASTM D2976.
6. The specific gravity was determined according to ASTM D854. This method may have not been the best method available because of the very low specific gravity.
7. The data is provided in summary tables and plots.
8. There were no other noted anomalies in the samples or methods on this project.

Approved by: Hartl Bump Date: 8/13/04
Title: Geotechnical Division Manager

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

GX16

Chain of Custody Record

№ 102801

The RETEC Group, Inc.
1011 S.W. Klickitat Way, Suite 207 • Seattle, WA 98134-1162
(206) 624-9349 Phone • (206) 624-2839 Fax
www.retec.com

RETEC

Project Name: POB ASB Sampling	Project Number: PORTB-16486-500
Send Report To: Ben Howard	Sampler (Print Name): Ben Howard
Address: 1011 SW Klickitat Way	Sampler (Print Name): Chip Brackett
Suite 207	Shipment Method: Fed Ex
Seattle, WA 98134	Airbill Number:
Phone: (206) 624-9349	Laboratory Receiving: ARI
Fax: (206) 624-2839	

Page 1 of 1

Purchase Order #: _____

Field Sample ID		Sample Date	Sample Time	Sample Matrix	Number of Containers	pH - ASTM D-1976	Total Solids - ASTM D-2974	Total Volatile Solids - ASTM D-2974	Ash Content - ASTM D-2974	Density - ASTM E-1109	Specific Gravity - ASTM D-854	Grain Size - ASTM D-422	Comments, Special Instructions, etc.	Lab Sample ID (to be completed by lab)
SS-01-0704	A	7/28/04	1021	Sed.	3	X	X	X	X	X	X	X		
SS-02-0704	B		1214		3	X	X	X	X	X	X	X	Please archive	
SS-03-0704	C		1140		3	X	X	X	X	X	X	X	any remaining	
SS-04-0704	D		1229		3	X	X	X	X	X	X	X	sample after	
SS-05-0704	E		1314		3	X	X	X	X	X	X	X	testing.	
SS-06-0704	F		1052		3	X	X	X	X	X	X	X		
SS-07-0704	G		1111		3	X	X	X	X	X	X	X		
SS-08-0704	H		1414		3	X	X	X	X	X	X	X		
WS-01-0704	I	7/28/04		Water	1	X	X		X					

Relinquished by: (Signature)	Received by: (Signature)	Date: 7/29/04	Time: 1015
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

Sample Custodian Remarks (Completed By Laboratory):

QA/QC Level		Turnaround		Sample Receipt	
Level I	☐	Routine	☐	Total # Containers Received?	
Level II	☐	24 Hour	☐	COC Seals Present?	
Level III	☐	1 Week	☐	COC Seals Intact?	
Other	☐	Other _____		Received Containers Intact?	
				Temperature?	13.6

White: Lab Copy Yellow: PM Copy Pink: Field Copy Gold: PM/QA/QC Copy

pH

ASTM D2976

ANALYTICAL RESOURCES INCORPORATED

The Retec Group
PORTB-16486-500

Sample Identification	pH (in DI water)
pH 4 Standard	3.98
pH 7 Standard	7.01
pH 10 Standard	10.06
SS-01-0704	6.92
SS-01-0704 Duplicate	6.94
SS-02-0704	6.88
SS-03-0704	6.89
SS-04-0704	6.9
SS-05-0704	6.83
SS-06-0704	6.96
SS-07-0704	6.91
SS-08-0704	7.11
WS-01-0704	6.88

pH by ASTM D2976

Density, Moisture Content and Specific Gravity

ASTM E1109, D2216, D854

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Wet and Dry Density, Moisture Content, and Porosity

Sample Identification	Depth (ft)	Wet Density (lbs/ft^3)	Moisture Content (%)	Dry Density (lbs/ft^3)	Specific Gravity
SS-01-0704	NA	66.5	799.5	7.4	1.97
SS-02-0704	NA	64.7	1192.3	5.0	1.97
SS-03-0704	NA	65.2	1041.1	5.7	1.99
SS-04-0704	NA	65.5	1076.1	5.6	1.88
SS-05-0704	NA	64.7	1322.0	4.5	1.76
SS-06-0704	NA	68.2	565.0	10.3	2.09
SS-07-0704	NA	65.9	944.9	6.3	1.84
SS-08-0704	NA	77.9	216.5	24.6	1.32

Notes:

1. The moisture content was determined in accordance with ASTM D-2216.
2. The wet density was determined by ASTM E1109.
3. The dry density was determined by dividing the wet density by (1+ moisture content).
4. The specific gravity was determined according to ASTM D-854.

Total Organic Matter

ASTM D2974

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Percent Moisture and Organic Matter

Sample ID	Moisture Content	% Total Solids	% Organic Matter	% Ash
SS-01-0704	554.4	15.3	40.7	59.3
SS-02-0704	640.9	13.5	72.1	27.9
SS-03-0704	688.0	12.7	64.2	35.8
SS-04-0704	1065.1	8.6	49.2	50.8
SS-05-0704	538.0	15.7	81.2	18.8
SS-06-0704	520.9	16.1	47.1	52.9
SS-07-0704	901.6	10.0	54.2	45.8
SS-08-0704	215.4	31.7	13.5	86.5
WS-01-0704	NA	0*	0.0	100.0

Moisture Content by ASTM D2974 (D2216)
Organic Matter by ASTM D2974

* Sample WS-01-0704 had 0.17 mg/liter solids.

GX16

Grain Size Distribution

ASTM D421/D422

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Percent Finer (Passing) Than the Indicated Size

Sieve Size (microns)	Data Qualifiers	#4 (4750)	#10 (2000)	#20 (850)	#40 (425)	#60 (250)	#100 (150)	#200 (75)	32	22	13	9	7	3.2	1.3
SS-01-0704	Yes	100.0	100.0	99.5	90.7	77.2	67.8	59.7	54.1	34.6	23.8	20.6	15.1	10.8	9.7
SS-02-0704	Yes	100.0	100.0	55.6	38.5	33.0	29.6	26.9	23.6	18.9	15.4	13.0	11.8	9.4	5.9
SS-03-0704	Yes	100.0	100.0	100.0	63.8	42.5	35.3	31.7	27.4	20.8	17.6	15.4	13.2	6.6	5.5
SS-04-0704	Yes	100.0	100.0	57.9	34.8	27.5	23.6	20.7	19.2	16.0	11.8	10.7	8.6	4.3	5.3
SS-05-0704	Yes	100.0	100.0	46.3	32.5	27.1	24.3	21.9	20.4	20.2	17.3	13.0	11.6	5.8	4.3
SS-06-0704	Yes	100.0	100.0	91.9	82.2	73.7	66.6	55.6	44.6	28.6	19.4	16.0	12.6	6.9	5.7
SS-07-0704	Yes	100.0	100.0	95.8	64.8	49.7	41.9	36.5	31.6	26.8	19.5	17.0	14.6	9.7	8.5
SS-08-0704	Yes	100.0	99.7	98.3	95.3	91.7	86.1	69.9	41.9	23.6	14.0	11.3	8.7	5.2	4.4

ASTM D422 is intended for use with soils. These samples were not soils by the normal definition. They were highly organic material, in which only one sample had a specific gravity of over 2.00. ASTM D422 has correction values that are applied when the specific gravity differs from 2.65, but these correction values only extend to 2.50. Using the data provided by ASTM, a correction value was calculated for the specific gravity of each sample, but it is not known if the relationship is linear or not. Also, the individual particles tended to be fibrous in nature, and the material on each sieve tended to be agglomerations that could not be broken up with a brush. Therefore extreme care must be taken when this data is used, as it may not be valid.

Testing performed according to ASTM D421/D422

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PORTB-16486-500

Percent Retained in Each Size Fraction

Sample No.	% Gravel	% Coarse Sand	% Medium Sand	% Fine Sand	% Total Sand	% Very Coarse Silt	% Coarse Silt	% Medium Silt	% Fine Silt	% Very Fine Silt	% Clay
Size (microns)	> 4750	4750-2000	2000-425	425-75	4750-75	75-32	32-22	22-13	13-9	9-3.2	<3.2
SS-01-0704	0.00	0.00	9.33	30.93	40.26	5.65	19.47	10.82	3.25	9.74	10.82
SS-02-0704	0.00	0.00	61.47	11.67	73.14	3.24	4.72	3.54	2.36	3.54	9.45
SS-03-0704	0.00	0.00	36.22	32.06	68.29	4.28	6.58	3.29	2.19	8.78	6.58
SS-04-0704	0.00	0.00	65.20	14.11	79.31	1.45	3.21	4.28	1.07	6.41	4.28
SS-05-0704	0.00	0.00	67.50	10.61	78.11	1.45	0.21	2.89	4.33	7.22	5.78
SS-06-0704	0.00	0.04	17.79	26.54	44.36	11.05	16.01	9.15	3.43	9.15	6.86
SS-07-0704	0.00	0.00	35.22	28.23	63.45	4.93	4.86	7.30	2.43	7.30	9.73
SS-08-0704	0.00	0.29	4.43	25.39	30.12	28.02	18.32	9.59	2.62	6.11	5.23

ASTM D422 is intended for use with soils. These samples were not soils by the normal definition. They were highly organic material, in which only one sample had a specific gravity of over 2.00. ASTM D422 has correction values that are applied when the specific gravity differs from 2.65, but these correction values only extend to 2.50. Using the data provided by ASTM, a correction value was calculated for the specific gravity of each sample, but it is not known if the relationship is linear or not. Also, the individual particles tended to be fibrous in nature, and the material on each sieve tended to be agglomerations that could not be broken up with a brush. Therefore extreme care must be taken when this data is used, as it may not be valid.

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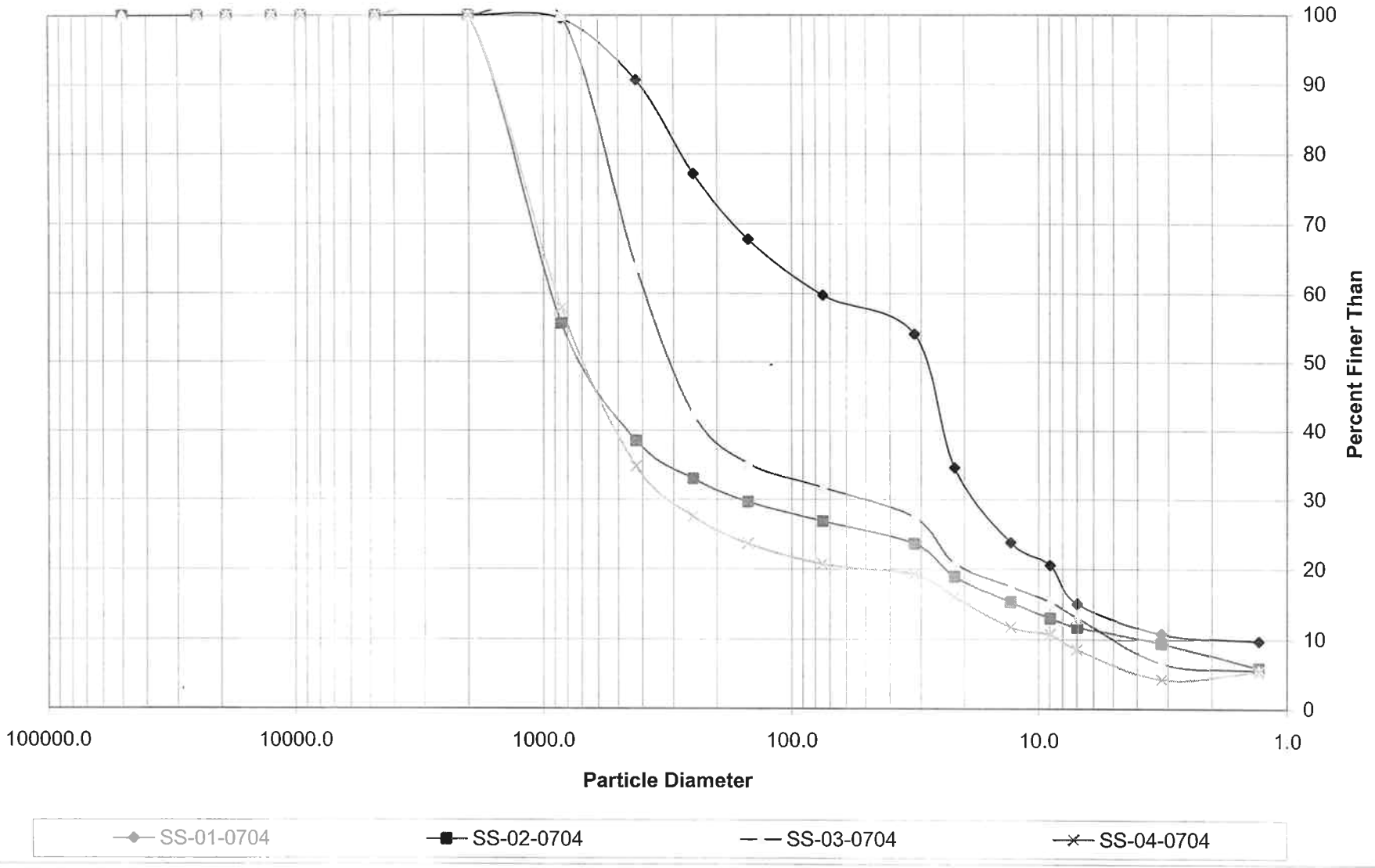
Grain Size Distribution by Hydrometer



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Grain Size Distribution by Hydrometer