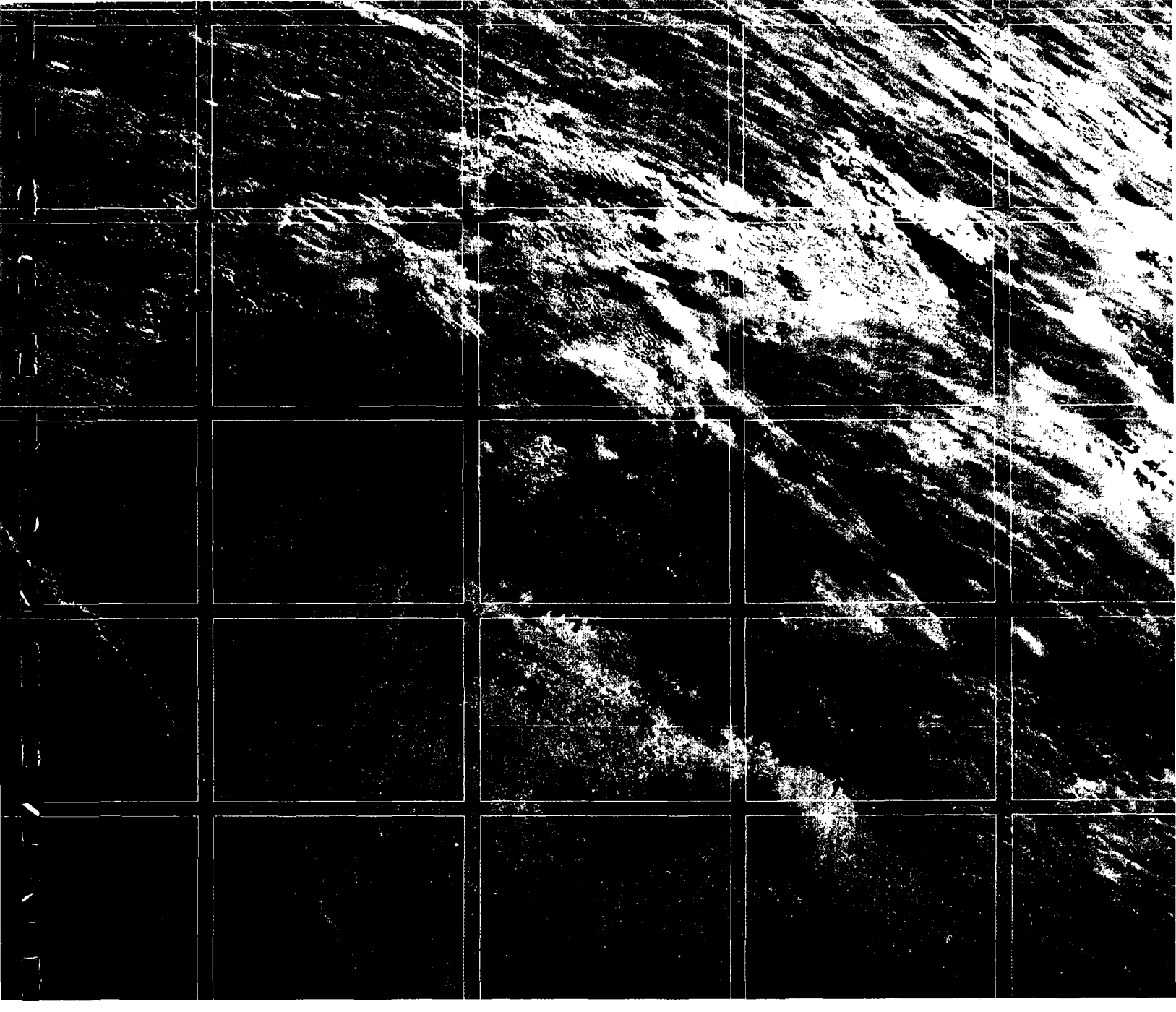

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Presented to
Mr Dennis R Downs
Executive Secretary
Utah Solid and Hazardous Waste Control Board
Utah Department of Environmental Quality
288 North 1460 West
P O Box 144880
Salt Lake City Utah 84114-4880

Phase II RFI Supplemental Investigation - Groundwater and Surface Water Monitoring Report

Vertellus Specialties Inc
Provo, Utah
UTD009087644

April 28 2010

ENVIRONMENTAL RESOURCES MANAGEMENT
102 West 500 South Suite 650
Salt Lake City Utah 84101
(801) 595 8400
www erm com

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1 0 INTRODUCTION AND BACKGROUND

Environmental Resources Management (ERM) has prepared this report to summarize additional groundwater and surface water monitoring activities that have been performed at the former Reilly Industries site (Site) m Ironton, Utah The activities described herein were conducted as part of the Phase II RCRA Facility Investigation (RFI) Supplemental Investigation m accordance with the *Phase II RFI Supplemental Work Plan* submitted to the Division of Solid and Hazardous Waste (DSHW) by Vertellus Specialties Inc (Vertellus) on May 30, 2008 and approved by the DSHW on August 14, 2008

From October 2008 to July 2009, portions of the *Phase II RFI Supplemental Work Plan* were implemented by Vertellus, including performance of soil borings and test pits, monitoring well, piezometers, and temporary well installation, surface soil, subsurface soil, sediment, surface water and groundwater sampling, surveying, and well repair activities A summary of these initial activities and the associated findings were presented to DSHW in the *Phase II RFI Supplemental Investigation Report* that was initially submitted on October 1, 2009 and revised on April 5, 2010 The remainder of the investigation activities described within the *Phase II RFI Supplemental Work Plan were* conducted from August 2009 to January 2010 and are described herein

1 1 REPORT CONTENT

This Report is organized mto the following sections

- Section 1 - Introduction, which describes the contents of this report,
- Section 2 - Scope of Work, which details the sample locations, analytical methods and field measurements performed,
- Section 3 - Analytical Results, which presents the laboratory analytical results for the ground water and surface water samples that were collected between August 2009 and January 2010,
- Section 4 - Data Usability Reviews, which evaluated QA/QC data for the purposes of assessing data quality and usability and assigning data qualifiers beyond those assigned by the laboratory,
- Section 5 - Summary and Conclusions, which details a summary and results of the investigation activities, and

- Section 6 - References, which presents the references for the supporting documents used to prepare this report

A Site Location Map is provided as Figure 1 and a Site Layout Map depicting the location of the identified SWMU Areas, including the following, is presented as Figure 2

SWMU Area 1 - Ironton Canal

SWMU Area 2 - North and South Impoundments and Evaporation Pan

SWMU Area 3 - Process Area

SWMU Area 4 - By-Product Lagoons and Evaporation Areas

SWMU Area 5 is not depicted on Figure 2, but was established for site-wide groundwater and includes groundwater for the other four SWMU Areas

2 2 *FLUID-LEVEL MEASUREMENTS*

On October 1 and 2, 2009, prior to the performance of the site-wide groundwater sampling event, the depth to groundwater was measured in all piezometers, temporary wells, monitoring wells, and staff gages located at the Site and surrounding properties (e g , Novatek and PSCIPCO properties) An oil water interface probe was used to check for the potential presence of Tar Derived Materials (TDM), and depth to water measurements were performed using a GeoTech water level indicator and recorded to the nearest 0 01 foot Fluid level measurements are summarized in Table 1 and are described m Section 3 1 No TDM was identified during the performance of fluid level measurements or other groundwater sampling activities

Additional fluid level measurements have also been performed regularly for selected monitoring wells (MW-2, MW-3, MW-5, MW-7, MW-8, MW-31, MW-34 and MW-35), piezometers (PZ-1 to PZ-3, PZ-8, and PZ-9) and staff gages (SG-1 and SG-2) to evaluate fluctuations in the Ironton Canal and the groundwater gradient in the northwest corner of the Site Water level measurements for these monitoring points were performed on July 30, August 14, October 1, December 17, 2009 and January 28, 2010 (Table 1)

2 3 *GROUNDWATER SAMPLING*

Groundwater sampling was conducted to evaluate groundwater conditions and delineate the extent of potential impacts to groundwater Monitoring well and piezometer locations are shown in Figure 3 Groundwater samples were collected from 31 monitoring wells (all monitoring wells except MW-4 and MW-7, which were abandoned in October 2008), three piezometers (i e , PZ-4, PZ-5, and PZ-6), and three Temporary Wells (i e , TW-1, TW-2, and TW-3) Sampling activities were conducted between October 1 and 9, 2009, with the exception of MW-20 which was sampled on November 13, 2009 due to access limitations at PSCIPCO

Groundwater sampling was performed at wells and piezometers utilizing low-flow purging and sampling methods and using a peristaltic pump and dedicated, disposable tubing at each sampling location During purging, water levels were monitored for drawdown and water quality parameters (including dissolved oxygen (DO), temperature, pH, specific conductance, and oxidation-reduction potential (ORP)) were measured using a flow-through cell equipped with an YSI 556 Multi-Parameter Meter Groundwater samples were collected after water quality parameters had stabilized The temporary wells were all purged dry

during sampling These wells were allowed to recharge and samples were collected after the wells had sufficiently recharged

Groundwater samples were analyzed for VOCs, SVOCs, and cyanide Samples from monitoring wells associated with SWMU Area 4 were also analyzed for sodium and sulfate QA samples collected included field duplicate samples and trip blanks

2 4 *DEVIATIONS FROM WORK PLAN*

The following activities were deviations from the *Phase II RFI Supplemental Work Plan*

- Surface water samples were only collected from three locations (SW-2 to SW-4) during the October 2009 sampling event because the drain m the western portion of the property was dry and a sample could not be collected from location SW-5

2 5 *WASTE MANAGEMENT*

Investigation-derived waste materials generated during the sampling activities consisted of purge water All purge water obtained during the sampling activities was containerized m a 55-gallon drum, labeled and stored temporarily on a concrete pad located on the site for future disposal

3 0 ANALYTICAL RESULTS

3 1 GROUNDWATER AND SURFACE WATER ELEVATIONS

Groundwater elevations were measured m the monitoring wells, piezometers, and temporary wells on October 1 and 2, 2009, prior to the commencement of the site-wide groundwater sampling Groundwater elevations were also measured at least bimonthly at selected monitoring wells and piezometers located adjacent to the canal Groundwater elevation measurements are summarized in Table 1 Stage measurements withm the Ironton Canal were collected concurrent with groundwater elevation measurements and are also summarized m Table 1

The October 2009 water level measurements are shown with interpreted groundwater elevation contours in Figure 4 The potentiometric surface map for the October 2009 groundwater measurements (Figure 4) appears to be generally consistent with previous monitoring events with a southward component of groundwater flow Groundwater mounding had been previously observed in the north central portion of the site to the south of the Ironton Canal The mounding was believed to have been caused by a leaking deep well (DW-1) DW-1 was repaired in June 2009 and no indication of groundwater mounding was observed in this area during the October 2009 monitoring event

A comparison of the Ironton canal stage and the groundwater elevations m the surrounding wells is presented in Table 2 As showed m Table 2, the canal stage appears to be higher than the surrounding groundwater elevations (suggesting that the canal is a "losing stream" or that the canal recharges groundwater) during portions of the year, while it is also lower than surrounding groundwater elevations (suggesting that the canal is a "gaming stream" or that groundwater is flowing into the canal) at other times The canal generally appears to be a losing stream during the summer and fall, while it is a gaming stream during winter and early spring months The previously noted groundwater mounding believed to be associated with DW-1 was located in the vicinity of staff gauge SG-1 and appears to have impacted the groundwater elevations in this area prior to the repair of the well in June 2009

3 2 GROUNDWATER SAMPLE RESULTS

Groundwater samples were collected from monitoring wells, temporary wells, and select piezometers Groundwater samples were analyzed for VOCs, SVOCs, cyanide, and if located in SWMU Area 4, sodium and

sulfate These groundwater sample results are presented in Table 3 and are summarized in the following subsections The results from previous monitoring events have also been included in Table 3 for comparison purposes

Analytical results from the investigation are compared against screening levels to help evaluate the extent of impacts at the Site Groundwater sample results have been compared against the Utah Groundwater Quality Standards (UT GWQS), UAC 317-6 2 1 Table 1

Temporary Wells

Groundwater samples were collected from the three temporary wells (TW-1 to TW-3) installed along the south bank of the Ironton Canal (Figure 3) Benzene was detected above the UT GWQS (5 µg/L) in samples from temporary wells TW-1 (79 2 pg/L) and TW-2 (20 6 pg/L) Other VOCs were not detected above UT GWQSs m the temporary well samples Benzo(a)pyrene was detected above the UT GWQS (0 2 pg/L) in samples from TW-1 (0 42 pg/L) and TW-3 (0 37 pg/L) Multiple other SVOCs were detected in the temporary wells, however, UT GWQS are not established for any of the other detected constituents

Piezometers

Groundwater samples were collected from piezometers PZ-4, PZ-5, and PZ-6 near the south property boundary (Figure 3) Toluene was detected at an estimated value of 0 45 µg/L in PZ-4, well below the UT GWQS of 1,000 pg/L Acetone was detected at an estimated value of 5 4 pg/L m PZ-5, a UT GWQS has not been established for acetone No other VOCs or any SVOCs were detected in any of the groundwater sample collected from the piezometers

Groundwater Monitoring Wells

Groundwater samples were collected from 31 monitoring wells (Figure 3) All monitoring wells were sampled except MW-4 and MW-7, which were abandoned m October 2008

A summary of the analytical results is presented below

- Benzene, methylene chloride, and toluene were detected m select samples at concentrations exceeding UT GWQSs No other VOCs were detected at concentrations exceeding UT GWQSs
    - Benzene was detected above the UT GWQS (5 pg/L) in samples from MW-3, MW-8, MW-9, MW-10, MW-12, MW-13, MW-14, MW-17, MW-31, MW-32, MW-33 and MW-34, at concentrations ranging from 10 9 pg/L to 3,280 pg/L Detected benzene

VOCs

- No VOCs were detected in the October 2009 surface water samples

- The surface water sample collected from SW-4 (located in the northwest portion of the north parcel) in January 2010 contained concentrations of benzene (17 pg/L), ethylbenzene (1 0 pg/L), tolune (4 3 pg/L), and total xylenes (1 8 pg/L) at concentrations below the UT WQSs VOCs were not detected in all other surface water samples during the January 2010 sampling event

SVOCs

- SVOCs were not detected above the UT WQS m SW-2, SW-3 and SW-4 in either the October 2009 or the January 2010 sampling events The reporting limits for cPAHs were slightly higher than the UT WQS These analyses were conducted using Selective Ion Monitoring (SIM) to achieve the lowest reporting limits technically practical using routing analytical methods

- The surface water sample collected from SW-5 m January 2010 contained benzo(a)anthracene (0 37 pg/L), benzo(a)pyrene (0 48 pg/L), benzo(b)fluoranthene (0 71 pg/L), benzo(k)fluoranthene (0 23 pg/L), chrysene (0 41 pg/L), and indeno(1,2,3-cd)pyrene (0 37 pg/L) at concentrations that exceed UT WQS (0 018 pg/L for each of these constituents) A surface water sample was not collected form SW-5 m October 2009, as this drain in the western portion of the property was dry at that time

- Low concentrations of cyanide were detected m samples SW-4 and SW-5 in January 2010 (0 029 and 0 0074 mg/L, respectively) Cyanide was not detected m SW-4 in October 2009 SW-5 was not sampled m October 2009 The detected cyanide concentrations were well below the UT WQS of 0 14 mg/L

- Resorcinol was not spiked in the blank spike, matrix spike/matrix spike duplicate, laboratory control samples or calibration standards for water sample analyses associated with groundwater samples The laboratory evaluated the presence or absence of resorcmol m water samples using TIC (tentatively identified compounds) analysis Resorcmol was not reported present m any TIC water sample results, however, TIC analysis is not a valid means for assessing the absence of a compound, non-detect water results for resorcmol are qualified as rejected and flagged "R "

5 0 SUMMARY AND CONCLUSIONS

5 1 GROUNDWATER

The groundwater monitoring network at the Site includes 31 monitoring wells, 9 piezometers, and 3 temporary wells (Figure 3) This network encircles the Site and provides sampling points throughout each SWMU and m off-site areas to the north, east, and west of the Site

No TDM was observed withm any of the monitoring wells, piezometers, or temporary wells during the October 2009 sampling, whereas TDM was observed m three wells (MW-8, MW-13, and MW-14) m the April 2009 event TDM was bailed from the wells during the April 2009 event and subsequent surface water sampling and gauging events

Benzene is the primary VOC constituent that was detected in groundwater at concentrations that exceed the UT GWQS (5 pg/L) Toluene was detected above the UT GWQS (1,000 pg/L) in two samples (MW-14 and MW-32), benzene also exceeded the UT GWQS in these same samples Methylene chloride, a common laboratory contaminant, was detected at an estimated value slightly exceeding the UT GWQS (5 pg/L) in one sample (MW-8)

Benzene concentrations in groundwater samples from the October 2009 sampling event are shown on Figure 5 In the eastern portion of the Site, an area of impacted groundwater occurs around the former metal evaporation pan and north impoundment m SWMU Area 2, while in the western portion of the Site a zone of impacted groundwater is associated with SWMU Area 4 and the western portion of SWMU Area 3 As indicated in Table 3, benzene concentrations observed in October 2009 were generally consistent with the April 2009 results with the following exceptions

- Three wells (MW-8, MW-13, and MW-14) were not sampled during the April 2009 event, as TDM was observed in the wells at that time TDM was not observed in these wells in October 2009 and groundwater samples were collected and analyzed Benzene concentrations ranged from 23 4 to 3,280 pg/L in these wells

- The detected benzene concentration m MW-17 exceed the UT GWQS Benzene had not been detected at this location during the April 2009 monitoring event The detected October 2009 concentration (10 9 pg/L) was withm the range observed during 2004 and 2005 monitoring events (9 to 18 pg/L)

- Increased benzene concentrations were observed in the three sample locations in the vicinity of the Cooling Pond and the deep well that was formerly leaking (DW-1) Detected concentrations in these wells ranged from 16 4 to 667 pg/L m October 2009, whereas previous detected concentrations ranged from 4 4 to 23 9 µg/L

- Benzene concentrations were observed to be below the UT GWQS durmg the October 2009 sampling event at three sample locations (MW-5, MW-27, and TW-3) where previous exceedances had been observed Most notably, benzene concentrations near the northwest corner of the Site (TW-3 and MW-9) were observed at concentrations of 0 5 and 2 9 pg/L, respectively, m comparison to concentrations of 109 and 79 1 µg/L during the April 2009 sampling event

Benzo(a)pyrene was detected slightly above the UT GWQS (0 2 µg/L) at two sample locations (TW-1 and TW-3) in the northern portion of the Site in October 2009 Laboratory detection limits exceeded the UT GWQS in four additional samples in the western portion of the Site In addition, elevated concentrations (>1,000 µg/L) of naphthalene and phenols (phenol, 2-methylphenol, 3&4-methylphenol, and 2,4-dimethylphenol) have been detected m wells m the western portion of the Site The area of groundwater impacted by SVOCs appears to be consistent with the western zone of groundwater impacted with benzene concentrations exceeding UT GWQS, as shown in Figure 5 and is generally consistent with the results of previous monitoring events

The extent of impacts to groundwater appear to be delineated, with the exception of the northern portion of the Site m the vicinity of monitoring well MW-34

5 2 *SURFACE WATER*

None of the surface water samples collected from the Site have contained VOCs above UT WQS during any of the previous surface water sampling events

Surface water samples collected during the Phase II RFI (October 2004 and April 2005) contained cPAHs and indeno(1,2,3-cd)pyrene concentrations exceeding UT WQS None of these constituents were detected in samples from SW-2 and SW-3 (Ironton Canal samples) or SW-4 (western drain sample near the discharge to the Ironton Canal) during the four monitoring events that were conducted during the Phase II RFI Supplemental Investigation The cPAH reporting limits during each of these four events exceeded the UT WQS Selective Ion Monitoring (SIM)

analyses were conducted for PAHs to achieve lower reporting limits that are close to, but slightly exceed, UT WQS during the October 2009 and January 2010 sampling events SIM analyses achieve the lowest reporting limits technically practical using routing analytical methods

The January 2010 surface water sample collected from SW-5 (central portion of the western dram) contained select cPAH and indeno(1,2,3-cd)pyrene concentrations in exceedance of the UT QWS Samples were not collected from SW-5 during July 2009 or October 2009, as the sample location was dry at that time The April 2009 reporting limits were higher than the concentrations detected in SW-5 during the January 2010 sampling event, as SIM analyses were not conducted m April 2009

Based on the data collected to date, surface water quality withm the Ironton Canal is not impacted above UT WQS Concentrations exceeding UT WQS were identified m the central portion of the western dram (SW-5), but have not been observed m the sampling location within the downstream western dram sample location (SW-4, located m the northwestern portion of the Site near the discharge to the Ironton Canal)

6 0 REFERENCES

Environmental Resources Management 2009 *Phase II RFI Supplemental Investigation Report, Vertellus Specialties Inc , Provo, Utah* Presented to Mr Dennis R Downs, Executive Secretary, Utah Solid and Hazardous Waste Control Board

Tables

TABLE 1

Groundwater Level Measurements
Vertellus Specialties
Ironton, Utah

Monitoring Well Identifier	Date Measured	Depth to Water (ft btoc)	Elevation Top of Casing (ft amsl)	Groundwater Elevation (ft amsl)
MW-1*	12/1/2004	6.95	4502.29	4495.34
	4/1/2005	6.25		4496.04
	4/8/2009	3.61	4499.09	4495.48
	6/11/2009	3.69		4495.40
	10/1/2009	4.32		4494.77
MW-2	12/1/2004	5.60	4501.34	4495.74
	4/1/2005	5.30		4496.04
	2/2/2009	6.00		4495.34
	4/8/2009	6.12		4495.22
	6/11/2009	6.01		4495.33
	6/18/2009	5.85		4495.49
	7/14/2009	5.88		4495.46
	7/30/2009	5.90		4495.44
	8/14/2009	5.81		4495.53
	10/1/2009	6.11		4495.23
	12/17/2009	5.86		4495.48
	1/28/2010	6.03		4495.31
MW-3	12/1/2004	6.85	4501.53	4494.68
	4/1/2005	6.65		4494.88
	2/2/2009	6.76		4494.77
	4/8/2009	6.85		4494.68
	6/11/2009	6.83		4494.70
	6/18/2009	6.76		4494.77
	7/14/2009	6.95		4494.58
	7/30/2009	7.09		4494.44
	8/14/2009	6.88		4494.65
	10/1/2009	7.02		4494.51
	12/17/2009	6.47		4495.06
	1/28/2010	6.88		4494.65
MW-4**	12/1/2004	5.46	4499.85	4494.39
	4/1/2005	5.20		4494.65
MW-5	12/1/2004	4.74	4498.84	4494.10
	4/1/2005	4.40		4494.44
	2/2/2009	4.76		4494.08
	4/8/2009	4.69		4494.15
	6/11/2009	4.63		4494.21
	6/18/2009	4.35		4494.49
	7/14/2009	4.84		4494.00
	7/30/2009	4.86		4493.98
	8/14/2009	4.14		4494.70
	10/1/2009	4.30		4494.54
	12/17/2009	3.89		4494.95
	1/28/2010	4.55		4494.29

TABLE 1

Groundwater Level Measurements
Vertellus Specialties
Ironton, Utah

Monitoring Well Identifier	Date Measured	Depth to Water (ft btoc)	Elevation Top of Casing (ft amsl)	Groundwater Elevation (ft amsl)
MW-6	12/1/2004	2.29	4499.04	4496.75
	4/1/2005	1.78		4497.26
	4/8/2009	1.97		4497.07
	10/1/2009	5.34		4493.70
MW-7**	12/1/2004	5.64	4501.05	4495.41
	4/1/2005	5.18		4495.87
MW-8*	12/1/2004	3.98	4498.55	4494.57
	4/1/2005	3.86		4494.69
	4/8/2009	0.50	4495.42	4494.92
	6/11/2009	1.90		4493.52
	6/18/2009	1.33		4494.09
	7/14/2009	2.35		4493.07
	7/30/2009	2.74		4492.68
	8/14/2009	3.09		4492.33
	10/1/2009	3.63		4491.79
	12/17/2009	1.46		4493.96
	1/28/2010	0.67		4494.75
MW-9	12/1/2004	3.90	4498.15	4494.25
	4/1/2005	3.64		4494.51
	4/8/2009	3.65		4494.50
	10/1/2009	3.96		4494.19
MW-10	4/8/2009	3.72	4499.08	4495.36
	10/1/2009	9.19		4489.89
MW-11	4/8/2009	3.31	4497.89	4494.58
	10/1/2009	8.29		4489.60
MW-12	12/1/2004	3.41	4497.78	4494.37
	4/1/2005	3.05		4494.73
	4/8/2009	2.91		4494.87
	10/1/2009	6.00		4491.78
MW-13	12/1/2004	3.44	4497.73	4494.29
	4/1/2005	3.15		4494.58
	4/8/2009	3.02		4494.71
	10/1/2009	3.84		4493.89
MW-14	12/1/2004	4.41	4498.36	4493.95
	4/1/2005	3.78		4494.58
	4/8/2009	3.63		4494.73
	10/1/2009	5.06		4493.30

TABLE 1

Groundwater Level Measurements
Vertellus Specialties
Ironton, Utah

Monitoring Well Identifier	Date Measured	Depth to Water (ft btoc)	Elevation Top of Casing (ft amsl)	Groundwater Elevation (ft amsl)
MW-15	12/1/2004	6.75	4500.43	4493.68
	4/1/2005	3.06		4497.37
	4/8/2009	5.10		4495.33
	10/1/2009	8.16		4492.27
MW-16	4/8/2009	3.69	4497.94	4494.25
	10/1/2009	8.64		4489.30
MW-17	12/1/2004	4.15	4497.71	4493.56
	4/1/2005	3.10		4494.61
	4/8/2009	3.06		4494.65
	10/1/2009	5.16		4492.55
MW-18	12/1/2004	4.65	4497.09	4492.44
	4/1/2005	4.30		4492.79
	4/8/2009	4.19		4492.90
	10/2/2009	5.36		4491.73
MW-19	12/1/2004	3.77	4497.98	4494.21
	4/1/2005	3.66		4494.32
	4/8/2009	3.75		4494.23
	10/2/2009	3.40		4494.58
MW-20	4/8/2009	1.79	4496.05	4494.26
	11/13/2009	2.04		4494.01
MW-21	4/8/2009	5.17	4500.14	4494.97
	10/2/2009	6.34		4493.80
MW-22	4/8/2009	4.97	4499.67	4494.70
	10/2/2009	7.55		4492.12
MW-26	4/8/2009	3.72	4499.42	4495.70
	10/1/2009	8.86		4490.56
MW-27	4/8/2009	3.33	4499.10	4495.77
	10/1/2009	8.17		4490.93
MW-28	4/8/2009	3.09	4498.94	4495.85
	10/1/2009	7.56		4491.38
MW-29	4/8/2009	5.70	4501.46	4495.76
	10/1/2009	8.26		4493.20
MW-30	4/8/2009	4.91	4500.04	4495.13
	10/1/2009	8.51		4491.53

TABLE 1

Groundwater Level Measurements
Vertellus Specialties
Ironton, Utah

Monitoring Well Identifier	Date Measured	Depth to Water (ft btoc)	Elevation Top of Casing (ft amsl)	Groundwater Elevation (ft amsl)
MW-31	2/2/2009	5.97	4501.51	4495.54
	4/8/2009	6.02		4495.49
	6/11/2009	6.27		4495.24
	6/18/2009	6.55		4494.96
	7/14/2009	6.79		4494.72
	7/30/2009	6.93		4494.58
	8/14/2009	6.96		4494.55
	10/1/2009	7.10		4494.41
	12/17/2009	6.41		4495.10
	1/28/2010	6.57		4494.94
MW-32	4/8/2009	3.39	4498.31	4494.92
	10/1/2009	6.29		4492.02
MW-33	4/8/2009	1.81	4496.47	4494.66
	10/2/2009	3.37		4493.10
MW-34	2/2/2009	3.82	4497.68	4493.86
	4/8/2009	3.61		4494.07
	6/11/2009	3.59		4494.09
	6/18/2009	3.37		4494.31
	7/14/2009	3.67		4494.01
	7/30/2009	3.74		4493.94
	8/4/2009	3.08		4494.60
	10/1/2009	3.18		4494.50
	12/17/2009	3.01		4494.67
	1/28/2010	3.23		4494.45
MW-35	2/2/2009	2.47	4496.52	4494.05
	4/8/2009	2.43		4494.09
	6/11/2009	2.23		4494.29
	6/18/2009	2.20		4494.32
	7/14/2009	2.53		4493.99
	7/30/2009	2.61		4493.91
	8/14/2009	2.01		4494.51
	10/1/2009	2.19		4494.33
	12/17/2009	1.62		4494.90
	1/28/2010	2.31		4494.21
MW-36	4/8/2009	5.09	4498.83	4493.74
	10/1/2009	9.84		4488.99
PZ-1	12/1/2004	3.04	4497.85	4494.81
	4/1/2005	2.97		4494.88
	2/2/2009	2.28		4495.57
	4/8/2009	2.66		4495.19
	6/11/2009	1.70		4496.15
	6/18/2009	2.60		4495.25
	7/14/2009	2.94		4494.91
	7/30/2009	3.02		4494.83
	8/14/2009	2.83		4495.02
	10/1/2009	2.99		4494.86
	12/17/2009	2.75		4495.10
	1/28/2010	2.91		4494.94

TABLE 1

Groundwater Level Measurements
Vertellus Specialties
Ironton, Utah

Monitoring Well Identifier	Date Measured	Depth to Water (ft btoc)	Elevation Top of Casing (ft amsl)	Groundwater Elevation (ft amsl)
PZ-2	12/1/2004	3.19	4498.07	4494.88
	4/1/2005	3.20		4494.87
	4/8/2009	2.75		4495.32
	6/11/2009	2.69		4495.38
	6/18/2009	2.96		4495.11
	7/14/2009	3.06		4495.01
	7/30/2009	3.09		4494.98
	8/14/2009	3.01		4495.06
	10/1/2009	3.11		4494.96
	12/17/2009	2.93		4495.14
	1/28/2010	3.01		4495.06
PZ-3	12/1/2004	2.45	4498.73	4496.28
	4/1/2005	2.31		4496.42
	2/2/2009	1.46		4497.27
	4/8/2009	2.06		4496.67
	6/11/2009	2.68		4496.05
	6/18/2009	2.62		4496.11
	7/14/2009	2.84		4495.89
	7/30/2009	2.95		4495.78
	8/14/2009	3.09		4495.64
	10/1/2009	3.69		4495.04
	12/17/2009	1.89		4496.84
	1/28/2010	1.90		4496.83
PZ-4	12/1/2004	7.39	4498.02	4490.63
	4/1/2005	3.82		4494.20
	4/8/2009	4.04		4493.98
	10/1/2009	9.36		4488.66
PZ-5	12/1/2004	10.62	4500.12	4489.50
	4/1/2005	5.70		4494.42
	4/8/2009	5.29		4494.83
	10/1/2009	10.01		4490.11
PZ-6	12/1/2004	12.26	4500.15	4487.89
	4/1/2005	6.95		4493.20
	4/8/2009	8.08		4492.07
	10/1/2009	10.69		4489.46
PZ-7	12/1/2004	6.57	4498.63	4492.06
	4/1/2005	3.75		4494.88
	4/8/2009	3.66		4494.97
	10/1/2009	8.78		4489.85

TABLE 1

Groundwater Level Measurements
Vertellus Specialties
Ironton, Utah

Monitoring Well Identifier	Date Measured	Depth to Water (ft btoc)	Elevation Top of Casing (ft amsl)	Groundwater Elevation (ft amsl)
PZ-8	2/2/2009	2.39	4497.35	4494.96
	4/8/2009	2.45		4494.90
	6/11/2009	2.79		4494.56
	6/18/2009	2.84		4494.51
	7/14/2009	2.98		4494.37
	7/30/2009	3.21		4494.14
	8/14/2009	3.27		4494.08
	10/1/2009	3.35		4494.00
	12/17/2009	2.36		4494.99
	1/28/2010	2.37		4494.98
PZ-9	2/2/2009	0.40	4495.08	4494.68
	4/8/2009	0.50		4494.58
	6/11/2009	0.69		4494.39
	6/18/2009	0.75		4494.33
	7/14/2009	0.88		4494.20
	7/30/2009	1.14		4493.94
	8/14/2009	1.29		4493.79
	10/1/2009	1.37		4493.71
	12/17/2009	-0.10		4495.18
	1/28/2010	0.08		4495.00
TW-1	2/2/2009	6.36	4500.74	4494.38
	4/8/2009	6.42		4494.32
	6/11/2009	6.26		4494.48
	6/18/2009	6.14		4494.60
	7/14/2009	6.32		4494.42
	7/30/2009	6.60		4494.14
	8/14/2009	6.30		4494.44
	10/1/2009	6.22		4494.52
	12/17/2009	5.91		4494.83
	1/28/2010	6.36		4494.38
TW-2	2/2/2009	4.95	4499.04	4494.09
	4/8/2009	4.90		4494.14
	6/11/2009	4.89		4494.15
	6/18/2009	4.68		4494.36
	7/14/2009	4.94		4494.10
	7/30/2009	5.13		4493.91
	8/14/2009	4.62		4494.42
	10/1/2009	4.64		4494.40
	12/17/2009	4.23		4494.81
	1/28/2010	5.13		4493.91
TW-3	2/2/2009	4.61	4498.51	4493.90
	4/8/2009	4.50		4494.01
	6/11/2009	4.47		4494.04
	6/18/2009	6.14		4492.37
	7/14/2009	4.42		4494.09
	7/30/2009	4.61		4493.90
	8/14/2009	3.89		4494.62
	10/1/2009	4.04		4494.47
	12/17/2009	3.77		4494.74
	1/28/2010	4.59		4493.92

TABLE 1

Groundwater Level Measurements
Vertellus Specialties
Ironton, Utah

Monitoring Well Identifier	Date Measured	Depth to Water (ft btoc)	Elevation Top of Casing (ft amsl)	Groundwater Elevation (ft amsl)
SG-1	2/2/2009	1.36	4492.78	4494.14
	4/8/2009	1.34		4494.12
	6/11/2009	1.78		4494.56
	6/18/2009	1.90		4494.68
	7/14/2009	1.64		4494.42
	8/14/2009	2.00		4494.78
	10/1/2009	1.82		4494.60
	12/17/2009	2.04		4494.82
	1/28/2010	1.06		4493.84
SG-2	2/2/2009	1.14	4492.50	4493.64
	4/8/2009	1.42		4493.92
	6/11/2009	1.58		4494.08
	6/18/2009	1.84		4494.34
	7/14/2009	1.82		4494.32
	8/14/2009	2.16		4494.66
	10/1/2009	2.00		4494.50
	12/17/2009	2.28		4494.78
	1/28/2010	1.48		4493.98
Cooling Pond	2/2/2009	5.71	4500.75	4495.04
	4/8/2009	5.90		4494.85
	6/11/2009	6.08		4494.67
	6/18/2009	6.08		4494.67
	7/14/2009	6.42		4494.33
	7/30/2009	6.75		4494.00
	8/14/2009	6.83		4493.92
	10/1/2009	7.10		4493.65
	12/17/2009	6.25		4494.50
	1/28/2010	6.20		4494.55

ft btoc = feet below top of casing
ft amsl = feet above mean sea level
UTM = unable to measure
-- = not available
* = Well was repaired 10/08, resulting in a change in casing elevation
** = Well was abandoned

TABLE 2

Water Level Measurement Comparison
Vertellus Specialties
Ironton, Utah

Date	Water Level Elevation (ft amsl)				Gaining or Losing Canal?
	SG-1	TW-1	MW-3	MW-31	
2/2/2009	4494.14	4494.384	4494.77	4495.54	Gaining
4/8/2009	4494.12	4494.324	4494.68	4495.49	Gaining
6/11/2009	4494.56	4494.484	4494.70	4495.24	?
6/18/2009	4494.68	4494.604	4494.77	4494.96	?
7/14/2009	4494.42	4494.424	4494.58	4494.72	Gaining
8/14/2009	4494.78	4494.444	4494.65	4494.55	Losing
10/1/2009	4494.60	4494.524	4494.51	4494.41	Losing
12/17/2009	4494.82	4494.834	4495.06	4495.10	Gaining
1/28/2010	4493.84	4494.384	4494.65	4494.94	Gaining

Date	Water Level Elevation (ft amsl)			Gaining or Losing Canal?
	SG-2	MW-35	TW-3	
2/2/2009	4493.64	4494.05	4493.90	Gaining
4/8/2009	4493.92	4494.09	4494.01	Gaining
6/11/2009	4494.08	4494.29	4494.04	?
6/18/2009	4494.34	4494.32	4492.37	?
7/14/2009	4494.32	4493.99	4494.09	Losing
8/14/2009	4494.66	4494.51	4494.62	Losing
10/1/2009	4494.50	4494.33	4494.47	Losing
12/17/2009	4494.78	4494.90	4494.74	?
1/28/2010	4493.98	4494.21	4493.92	?

Notes:

SG-1 and SG-2 are guaging points in the Ironton Canal.

MW-3, MW-31, MW-35, TW-1 and TW-3 are groundwater monitoring wells located in the vicinity of the guaging points..

Monitoring well water elevations higher than the canal stage are highlighted in red.

Monitoring well water elevations lower than the canal stage are highlighted in blue.

Table 3
Groundwater Analytical Results
Vertellus Specialties Inc.
Provo, Utah

Constituent	UT GWQS	Monitoring Wells													
		MW-1				MW-2				MW-3				MW-4	
		Dec 2004	Apr 2005	Apr 9, 2009	Oct 5, 2009	Dec 2004	Apr 2005	Apr 9, 2009	Oct 5, 2009	Dec 2004	Apr 2005	Apr 14, 2009	Oct 8, 2009	Dec 2004	Apr 2005
VOCs (ug/L)															
Acetone	--	4.49 U	4.49 U	2.6 U	4.7 U	4.49 U	4.49 U	2.6 U	4.7 U	4.49 U	4.49 U	2.6 U	4.7 U	240	210
Benzene	5	0.127 U	0.127 U	0.46 U	0.5 U	0.127 U	0.127 U	0.46 U	0.5 U	18	4.4	15.9 J	16.4	83	52
Carbon disulfide	--	0.219 U	0.219 U	0.51 U	0.53 U	0.219 U	0.219 U	0.51 U	0.53 U	0.219 U	0.219 U	0.51 U	0.53 U	2.2 U	2.2 U
Chloroform	--	0.151 U	0.151 U	0.54 U	0.64 U	0.151 U	0.151 U	0.54 U	0.64 U	0.151 U	0.151 U	0.54 U	0.64 U	0.75 J	0.75 J
Ethylbenzene	700	0.0526 U	0.0526 U	0.45 U	0.55 U	2.4	0.60 J	0.45 U	0.55 U	29	9.6	6.5 J	3.9	110	67
Methyl ethyl ketone	--	1.95 U	1.95 U	2.5 U	3.9 U	1.95 U	1.95 U	2.5 U	3.9 U	1.95 U	1.95 U	2.5 U	3.9 U	20 U	24 J
Methylene bromide	--	0.149 U	0.149 U	0.41 U	0.65 U	0.149 U	0.149 U	0.41 U	0.65 U	0.149 U	0.149 U	0.41 U	0.65 U	1.5 U	1.5 U
Methylene chloride	5	0.123 U	0.123 U	0.41 U	0.41 U	0.123 U	0.123 U	0.41 U	0.41 U	0.123 U	0.123 U	0.41 U	0.41 U	1.2 U	1.2 U
Toluene	1000	0.0574 U	0.0574 U	0.48 U	0.43 U	0.29 J	0.14 J	0.48 U	0.43 U	4	1.4	0.48 UJ	0.43 U	170	110
Xylene (total)	10000	0.109 U	0.109 U	1.4 U	1.7 U	2.87 J	1.0 J	1.4 U	1.7 U	23.8	7.8	15.6 J	5.6 J	253	150
SVOCs (ug/L)															
2,4-Dimethylphenol	--	2.10 U	0.087	2.5 U	1.3 U	2.10 U	0.7	2.5 U	1.3 U	3.8 J	1.1	91.9 J	1.3 U	2.10 U	3600
2-Methylphenol	--	0.149 U	0.099	1.1 U	0.83 U	0.18 J	0.099	1.1 U	0.83 U	1.7 J	0.68	1.1 U	0.83 U	0.21 J	3300
3&4-Methylphenol	--	0.10 J	0.24	1.1 U	1.6 U	0.25 J	0.19	1.1 U	1.6 U	1.7 J	0.98	1.1 U	1.6 U	0.29 J	8300
Acenaphthene	--	3.7 J	4.2	1.4 U	0.86	30	55	33.1	9.2	490*	620	5.6 J	319	60	440
Acenaphthylene	--	0.380 U	0.064	1.5 U	0.072 U	1.2 J	3	1.5 U	0.39	11	12	1.5 U	4.2	2.4 J	50
Anthracene	--	0.22 J	0.07	1.7 U	0.091 J	1.3 J	1.9	1.7 U	0.22	7	8.1	1.6 U	7.6	0.57 J	17
Benzenethiol	--	0.064 J	0.52	9.6 UR	1.3 U	0.65 J	3.8	9.6 UR	1.3 U	ND	0.25	9.3 UR	1.3 U	0.67 J	ND
Benzo(a)anthracene	--	0.32 J	0.091	1.4 U	0.084 J	0.29 J	0.22	1.4 U	0.041 U	0.1055 J	0.94	1.3 U	1.3	0.1055 J	1.9
Benzo(a)pyrene	0.2	0.0795 J	0.088	1.5 U	0.064 U	0.0795 J	0.17	1.5 U	0.064 U	0.0795 J	0.34	1.4 U	0.064 U	0.0795 J	0.86
Benzo(b)fluoranthene	--	0.097 J	0.11	1.4 U	0.06 U	0.27 J	0.2	1.4 U	0.06 U	0.097 J	0.44	1.4 U	0.06 U	0.097 J	1.1
Benzo(k)fluoranthene	--	0.147 U	0.061	1.5 U	0.056 U	0.30 J	0.092	1.5 U	0.056 U	0.147 U	0.16	1.5 U	0.056 U	0.147 U	0.42
Chrysene	--	0.27 J	0.098	1.2 U	0.1 J	0.186 U	0.25	1.2 U	0.044 U	0.186 U	0.73	1.2 U	0.25	0.186 U	2
Dibenzo(a,h)anthracene	--	0.08 J	0.043 J	1.2 U	0.06 U	0.08 J	0.084	1.2 U	0.06 U	0.08 J	0.082	1.2 U	0.06 U	0.08 J	0.14
Fluoranthene	--	0.47 J	0.12	1.5 U	0.33	1.7 J	1.8	1.5 U	1.2	0.216 U	13	1.5 U	22.2	0.216 U	21
Fluorene	--	1.5 J	0.99	2.0 U	0.27	5.4	6.5	3.6 J	0.71	120	190	1.9 U	47.3	11	130
Indeno(1,2,3-cd)pyrene	--	0.0835 J	0.089	2.3 U	0.061 U	0.0835 J	0.22	2.3 U	0.061 U	0.0835 J	0.22	2.2 U	0.061 U	0.0835 J	0.47
Naphthalene	--	1.7 J	0.34 JB	1.4 U	0.075 U	1.4 JB	5.6 B	1.4 U	0.43	190 B	100 B	1.3 U	1.3	26 B	5,600 B
Phenanthrene	--	1.0 J	0.28	1.5 U	0.075 U	1.9 J	2.3	1.5 U	0.075 U	34	18	1.5 U	1.1	2.8 J	150
Phenol	--	0.20 J	0.14	6.2	0.75 U	0.18 J	0.16	0.50 U	0.75 U	0.89 J	0.4	0.48 U	0.75 U	0.22 J	1800
Pyrene	--	0.77 J	0.15	1.1 U	0.54	1.9 J	1.6	1.1 U	0.82	0.34 J	10	1.0 U	14.1	0.164 U	13
Resorcinol	--	ND	ND	--	--	ND	ND	--	--	ND	ND	--	--	ND	ND
Metals / Conventionals															
Cyanide, Total (mg/L)	200	0.01	0.00141 U	0.0014 B	0.004 J	0.085	0.083	0.17	0.13	0.006 B	0.00141 U	0.0013 U	0.012	0.036	0.0028 B
Sodium (mg/L)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate (mg/L)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 3
Groundwater Analytical Results
Vertellus Specialties Inc.
Provo, Utah

Constituent	UT GWQS	Monitoring Wells														
		MW-5					MW-6				MW-7		MW-8			
		Dec 2004	Apr 2005	Apr 14, 2009	Oct 9, 2009	Oct 9, 2009 (DUP)	Dec 2004	Apr 2005	Apr 13, 2009	Oct 1, 2009	Dec 2004	Apr 2005	Dec 2004	Apr 2005	Apr 13, 2009	Oct 8, 2009
VOCs (ug/L)																
Acetone	--	9.0 U	230	23.4 J	4.7 U	4.7 U	4.49 U	4.49 U	2.6 U	4.7 U	4.49 U	4.49 U	530	220 U	NS	61.7 J
Benzene	5	25	120	79.1 J	2.9	2.8	0.127 U	0.43 J	0.46 UJ	0.5 U	0.127 U	0.127 U	2800	970	NS	528
Carbon disulfide	--	0.44 U	2.2 U	0.51 U	0.53 U	0.53 U	0.219 U	0.219 U	0.51 U	0.53 U	0.219 U	0.54 J	4.4 U	11 U	NS	2.6 U
Chloroform	--	0.15 J	0.75 J	0.54 U	0.64 U	0.64 U	0.151 U	0.151 U	0.54 U	0.64 U	0.151 U	0.151 U	1.5 J	3.8 J	NS	3.2 U
Ethylbenzene	700	33	51	32.9 J	3.7	3.6	0.0526 U	0.0526 U	0.45 UJ	0.55 U	0.0526 U	0.0526 U	37	16 J	NS	19.2
Methyl ethyl ketone	--	3.9 U	27 J	28.4	3.9 U	3.9 U	1.95 U	1.95 U	2.5 U	3.9 U	1.95 U	1.95 U	39 U	98 U	NS	19 U
Methylene bromide	--	0.30 U	1.5 U	0.41 U	0.65 U	0.65 U	0.149 U	0.149 U	0.41 U	0.65 U	0.149 U	0.149 U	3.0 U	7.5 U	NS	3.2 U
Methylene chloride	5	0.25 U	1.2 U	0.41 U	0.41 U	0.41 U	1.1	0.123 U	0.41 U	0.41 U	0.50 J	0.123 U	2.5 U	3.1 J	NS	6.8 J
Toluene	1000	10	90	54.6 J	1.7 J	1.6 J	0.0574 U	0.28 J	0.48 UJ	0.43 U	0.0574 U	0.0574 U	1500	570	NS	225
Xylene (total)	10000	24.4	72	45.6 J	2.4 J	2.3 J	0.109 U	0.109 U	1.4 UJ	1.7 U	0.109 U	0.109 U	540	228	NS	155
SVOCs (ug/L)																
2,4-Dimethylphenol	--	540	17000	4920 J	10.3	8.9	2.10 U	1.5	2.4 U	1.3 U	2.10 U	4	6400	3,100 J	NS	4870
2-Methylphenol	--	310	13000	3970	1.6 J	1.3 J	0.149 U	0.46	1.1 U	0.83 U	0.149 U	2.2	2900	11000	NS	7110
3&4-Methylphenol	--	620	36000	7670 J	1.6 U	1.6 U	0.0912 U	2.3	1.1 U	1.6 U	0.0912 U	6	3000	36000	NS	23400
Acenaphthene	--	440*	650	334 J	110	119	0.19 J	0.29	1.3 U	0.042 U	0.39 J	1.3	400 J	180 J	NS	73.1
Acenaphthylene	--	3.3 J	2.3	1.5 U	2	1.8	0.380 U	0.033 J	1.5 U	0.072 U	0.380 U	0.037 J	230 J	90 U	NS	52.9
Anthracene	--	13	8.9	10.3 J	4.6	5.3	0.68 J	0.15	1.6 U	0.054 U	0.183 U	0.2	50 J	550 U	NS	53.9
Benzenethiol	--	2.7 J	ND	9.3 U	1.3 U	1.3 U	ND	ND	9.3 U	1.3 U	ND	0.28	54 J	ND	NS	52 U
Benzo(a)anthracene	--	1.4 J	0.68	1.3 U	0.86	0.85	0.1055 J	0.045 J	1.3 U	0.041 U	0.1055 J	0.038 J	10.5 J	55 J	NS	7.8
Benzo(a)pyrene	0.2	1.0 J	0.21	1.4 U	0.064 U	0.064 U	0.0795 J	0.031 J	1.4 U	0.064 U	0.0795 J	0.017 J	8 J	41.5 J	NS	0.64 U
Benzo(b)fluoranthene	--	0.61 J	0.24	1.4 U	0.06 U	0.16 J	0.097 J	0.040 J	1.4 U	0.06 U	0.097 J	0.023 J	9.5 J	55 J	NS	3.1
Benzo(k)fluoranthene	--	0.40 J	0.094	1.5 U	0.056 U	0.056 U	0.147 U	0.019 J	1.5 U	0.056 U	0.147 U	0.00886 U	7.5 J	50 J	NS	0.56 U
Chrysene	--	1.1 J	0.49	1.2 U	0.21	0.29	0.186 U	0.045 J	1.2 U	0.044 U	0.186 U	0.033 J	9.5 J	75 J	NS	4.8
Dibenzo(a,h)anthracene	--	0.08 J	0.052	1.2 U	0.06 U	0.06 U	0.08 J	0.038 J	1.2 U	0.06 U	0.08 J	0.00805 J	8 J	395 J	NS	0.6 U
Fluoranthene	--	16	14	21.4	12.8	14	0.52 J	0.22	1.5 U	0.046 U	0.216 U	0.28	22 U	110 U	NS	34.3
Fluorene	--	140 J	170	90.1	45.8	41.8	0.35 J	0.11	1.9 U	0.064 U	0.131 U	0.54	96 J	180 U	NS	39.1
Indeno(1,2,3-cd)pyrene	--	0.0835 J	0.25	2.2 U	0.061 U	0.061 U	0.0835 J	0.048 J	2.2 U	0.061 U	0.0835 J	0.0217 U	8.5 J	95 J	NS	0.61 U
Naphthalene	--	690 B	3,600 B	530 J	2.7	3.5	0.47 J	1.5 B	1.3 U	0.075 U	0.40 J	1.5 B	3,700 B	5,300 J	NS	4600
Phenanthrene	--	140 J	150	54.9 J	11.5	11.7	0.69 J	0.099	1.5 U	0.075 U	0.227 U	0.79	120 J	140 U	NS	67.9
Phenol	--	290	17000	3560	0.75 U	0.75 U	0.18 J	0.59	0.48 U	0.75 U	0.25 J	2.4	2600	120000	NS	53900
Pyrene	--	24	9.3	12.2	8.6	10.3	0.46 J	0.21	1.0 U	0.079 U	0.18 J	0.27	16 U	110 U	NS	36.9
Resorcinol	--	ND	ND	--	--	--	ND	ND	--	--	ND	ND	ND	ND	NS	--
Metals / Conventionals																
Cyanide, Total (mg/L)	200	0.12	0.037	0.018	0.0059 J	0.0068 J	0.038	0.014	0.022	0.02	0.073	0.018	0.57	0.25	NS	0.17
Sodium (mg/L)	--	--	--	--	--	--	--	--	--	--	--	--	0.0184 U	2070	NS	4990
Sulfate (mg/L)	--	--	--	--	--	--	--	--	--	--	--	--	14000	4.3	NS	4330

Table 3
Groundwater Analytical Results
Vertellus Specialties Inc.
Provo, Utah

Constituent	UT GWQS	Monitoring Wells												
		MW-9					MW-10		MW-11		MW-12			
		Dec 2004	Apr 2005	Apr 16, 2009	Apr 16, 2009 (DUP)	Oct 8, 2009	Apr 13, 2009	Oct 7, 2009	Apr 15, 2009	Oct 6, 2009	Dec 2004	Apr 2005	Apr 16, 2009	Oct 7, 2009
VOCs (ug/L)														
Acetone	--	45 U	45 U	5 J	4.9 J	4.7 U	2.6 U	4.7 U	2.6 U	4.7 U	90 U	450 U	26 U	4.7 U
Benzene	5	83	75	133 J	135 J	121	332 J	860	0.46 U	1.5 J	1600	1300	684	673
Carbon disulfide	--	12	5.8 J	2.8 J	4.4 J	0.53 U	0.51 U	0.53 U	0.51 U	0.53 U	4.4 U	22 U	5.1 U	0.53 U
Chloroform	--	0.75 J	0.75 J	0.54 UJ	0.54 UJ	0.64 U	0.54 U	0.64 U	0.54 U	0.64 U	1.5 J	7.5 J	5.4 U	0.64 U
Ethylbenzene	700	14	12	11.4 J	12.3 J	15.9	69.3 J	136	0.45 U	0.55 U	100	83 J	48.3	46.9
Methyl ethyl ketone	--	20 U	20 U	2.5 UJ	2.5 UJ	3.9 U	2.5 U	3.9 U	2.5 U	3.9 U	39 U	200 U	25 U	3.9 U
Methylene bromide	--	1.5 U	1.5 U	0.41 UJ	0.41 UJ	0.65 U	0.41 U	0.65 U	0.41 U	0.65 U	3.0 U	15. U	4.1 U	0.65 U
Methylene chloride	5	1.2 U	1.2 U	0.41 UJ	0.41 UJ	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	2.5 U	6 J	4.1 U	0.41 U
Toluene	1000	31	27	11.5 J	12.7 J	33.3	6.3 J	12.4	0.48 U	0.43 U	550	390	295	224
Xylene (total)	10000	42	33	34.8 J	37.2 J	52.5	44.9 J	146	1.4 U	1.7 U	340	270	212	166
SVOCs (ug/L)														
2,4-Dimethylphenol	--	2200	8100	2140	2090	3340	2.4 U	11.3	2.6 U	1.3 U	3,300 J	1800	835	649
2-Methylphenol	--	1200	3200	60.2 J	101 J	400	1.1 U	0.83 U	1.2 UJ	0.83 U	12000	460 J	177 J	167
3&4-Methylphenol	--	1700	4300	58.1 J	112 J	259	1.1 U	1.6 U	1.1 UJ	1.6 U	32000	530	166 J	119
Acenaphthene	--	430 J	360 J	312	307	235	80.1 J	136	1.5 U	0.042 U	160 J	300 J	177	178
Acenaphthylene	--	38 U	6.0 U	1.5 U	1.5 U	8.5	6.7 J	8.5	1.6 U	0.072 U	380 U	24 J	9.6	9.6
Anthracene	--	63 J	37 U	10.4	10.3 J	8.6	1.6 U	0.054 U	1.8 U	0.054 U	180 U	37 U	17.9	16.5
Benzenethiol	--	ND	75 J	20.2	15.7	46.7	9.3 U	1.3 U	10 U	1.3 U	ND	ND	11.4	5.2 U
Benzo(a)anthracene	--	10.5 J	3.75 J	1.4 UJ	1.4 UJ	0.16 U	1.3 U	0.041 U	1.4 U	0.041 U	105 J	3.75 J	1.4 U	0.041 U
Benzo(a)pyrene	0.2	8 J	2.75 J	1.5 UJ	1.5 UJ	0.26 U	1.4 U	0.064 U	1.6 U	0.064 U	80 J	2.75 J	1.5 U	0.064 U
Benzo(b)fluoranthene	--	9.5 J	3.7 J	1.4 UJ	1.4 UJ	0.24 U	1.4 U	0.06 U	1.5 U	0.06 U	95 J	3.7 J	1.4 U	0.06 U
Benzo(k)fluoranthene	--	7.5 J	3.5 J	1.5 UJ	1.5 UJ	0.22 U	1.5 U	0.056 U	1.6 U	0.056 U	75 J	3.5 J	1.5 U	0.056 U
Chrysene	--	9.5 J	5 J	1.2 UJ	1.2 UJ	0.18 U	1.2 U	0.044 U	1.3 U	0.044 U	95 J	5 J	1.2 U	0.044 U
Dibenzo(a,h)anthracene	--	8 J	26.5 J	1.2 UJ	1.2 UJ	0.24 U	1.2 U	0.06 U	1.3 U	0.06 U	80 J	26.5 J	1.2 U	0.06 U
Fluoranthene	--	41 J	7.5 U	1.5 U	1.5 UJ	3.8	1.5 U	0.046 U	1.6 U	0.046 U	220 U	55 J	9.1	8
Fluorene	--	150 J	120 J	23.5	27.1	34.1	1.9 U	1.9	2.1 U	0.064 U	130 U	140 J	56.9	58.8
Indeno(1,2,3-cd)pyrene	--	8.5 J	6.5 J	2.3 UJ	2.3 UJ	0.24 U	2.2 U	0.061 U	2.4 U	0.061 U	85 J	6.5 J	2.3 U	0.061 U
Naphthalene	--	7,500 B	3300	2160	2200	1690	30.9 J	194	1.5 U	0.32	7,100 B	8500	2970	3950
Phenanthrene	--	190 J	110 J	47.1	47.6 J	64.2	6.4 J	21.3	1.6 U	0.075 U	230 U	180 J	70.9	67.5
Phenol	--	1300	3500	17.3 J	51.4 J	147	0.48 U	2.4 J	0.52 UJ	0.75 U	84000	190 J	32.1 J	26.4
Pyrene	--	21 J	7.0 U	2.9 J	1.1 UJ	3.4	1.0 U	0.079 U	1.1 U	0.079 U	160 U	42 J	6.9	7
Resorcinol	--	ND	25 J	--	--	--	--	--	--	--	ND	ND	--	--
Metals / Conventionals														
Cyanide, Total (mg/L)	200	0.022	0.043	0.38 J	0.88 J	0.047	0.1	0.059	0.024 J	0.025	0.091	0.062	0.22 J	0.25
Sodium (mg/L)	--	0.0184 U	3500	11200	11600	1840	--	--	--	--	0.0184 U	9830	6730	5640
Sulfate (mg/L)	--	5900	6.6	17300	20800	3340	--	--	--	--	20000	19	2590	4360

Table 3
Groundwater Analytical Results
Vertellus Specialties Inc.
Provo, Utah

Constituent	UT GWQS	Monitoring Wells													
		MW-13				MW-14				MW-15				MW-16	
		Dec 2004	Apr 2005	Apr 17, 2009	Oct 7, 2009	Dec 2004	Apr 2005	Apr 17, 2009	Oct 7, 2009	Dec 2004	Apr 2005	Apr 9, 2009	Oct 1, 2009	Apr 13, 2009	Oct 6, 2009
VOCs (ug/L)															
Acetone	--	45 U	90 U	NS	4.7 U	450 U	120	NS	275	4.49 U	4.49 U	2.6 U	4.7 U	2.6 U	4.7 U
Benzene	5	26	25	NS	23.4	1800	2000	NS	3280	0.127 U	0.85 J	0.46 U	0.5 U	0.46 U	0.5 U
Carbon disulfide	--	2.2 U	4.4 U	NS	0.53 U	22 U	4.4 U	NS	0.53 U	0.219 U	0.219 U	0.51 U	0.53 U	0.51 U	0.53 U
Chloroform	--	0.75 J	1.5 J	NS	0.64 U	7.5 J	1.5 J	NS	0.64 U	0.151 U	0.151 U	0.54 U	0.64 U	0.54 U	0.64 U
Ethylbenzene	700	13	9.4 J	NS	16.2	64 J	85	NS	100	0.0526 U	0.0526 U	0.45 U	0.55 U	0.45 U	0.55 U
Methyl ethyl ketone	--	20 U	39 U	NS	3.9 U	200 U	39 U	NS	3.9 U	1.95 U	1.95 U	2.5 U	3.9 U	2.5 U	3.9 U
Methylene bromide	--	1.5 U	3.0 U	NS	0.65 U	15 U	3.0 U	NS	0.65 U	0.149 U	0.149 U	0.41 U	0.65 U	0.41 U	0.65 U
Methylene chloride	5	1.2 U	2.5 U	NS	0.41 U	6 J	2.5 U	NS	0.41 U	1.1	0.123 U	0.41 U	0.41 U	0.41 U	0.41 U
Toluene	1000	29	25	NS	27.1	850	1000	NS	1380	0.0574 U	0.41 J	0.48 U	0.43 U	0.48 U	0.43 U
Xylene (total)	10000	45	34 J	NS	40.2	270 J	320	NS	378	0.109 U	0.109 U	1.4 U	1.7 U	1.4 U	1.7 U
SVOCs (ug/L)															
2,4-Dimethylphenol	--	250E	190 J	NS	86.3	2900	5600	NS	2010	2.10 U	0.5	2.5 U	1.3 U	2.4 U	1.3 U
2-Methylphenol	--	15	29 J	NS	13.8 J	6600	13000	NS	5110	0.149 U	0.53	1.1 U	0.83 U	1.1 U	0.83 U
3&4-Methylphenol	--	24	38 J	NS	37.4	14000	29000	NS	19600	0.0912 U	1.3	1.1 U	1.6 U	1.1 U	1.6 U
Acenaphthene	--	190E	390	NS	271	360 J	540 J	NS	330	0.140 U	0.25	1.4 U	0.042 U	1.3 U	0.042 U
Acenaphthylene	--	2.6 J	6.8 J	NS	2.3	110 U	48 U	NS	22.7	0.380 U	0.034 J	1.5 U	0.072 U	1.5 U	0.072 U
Anthracene	--	8.8	18 U	NS	10	55 U	290 U	NS	29.8	0.183 U	0.13	1.7 U	0.054 U	1.6 U	0.054 U
Benzenethiol	--	ND	ND	NS	5.4 U	ND	ND	NS	52 U	ND	ND	9.6 UR	1.3 U	9.3 U	1.3 U
Benzo(a)anthracene	--	0.44 J	1.85 J	NS	0.042 U	31.5 J	30 J	NS	0.41 U	0.1055 J	0.029 J	1.4 U	0.041 U	1.3 U	0.041 U
Benzo(a)pyrene	0.2	0.0795 J	2.4 J	NS	0.066 U	24 J	22 J	NS	0.64 U	0.0795 J	0.021 J	1.5 U	0.064 U	1.4 U	0.064 U
Benzo(b)fluoranthene	--	0.097 J	1.85 J	NS	0.062 U	29 J	29.5 J	NS	0.6 U	0.0985 J	0.024 J	1.4 U	0.06 U	1.4 U	0.06 U
Benzo(k)fluoranthene	--	0.147 U	1.75 J	NS	0.057 U	22 J	28 J	NS	0.56 U	0.147 U	0.011 J	1.5 U	0.056 U	1.5 U	0.056 U
Chrysene	--	0.24 J	2.5 J	NS	0.046 U	28 J	40 J	NS	0.44 U	0.186 U	0.027 J	1.2 U	0.044 U	1.2 U	0.044 U
Dibenzo(a,h)anthracene	--	0.08 J	13 J	NS	0.061 U	24 J	210 J	NS	0.6 U	0.08 J	0.027 J	1.2 U	0.06 U	1.2 U	0.06 U
Fluoranthene	--	8.9	9.6 J	NS	6.4	65 U	60 U	NS	4.7	0.216 U	0.18	1.5 U	0.046 U	1.5 U	0.046 U
Fluorene	--	67	78 J	NS	43.7	120 J	240 J	NS	87.4	0.131 U	0.19	2.0 U	0.064 U	1.9 U	0.064 U
Indeno(1,2,3-cd)pyrene	--	0.0835 J	3.15 J	NS	0.062 U	25 J	50 J	NS	0.61 U	0.0835 J	0.036 J	2.3 U	0.061 U	2.2 U	0.061 U
Naphthalene	--	3600	3200	NS	1270	8700	14000	NS	3630	0.22 J	1.5 B	1.4 U	0.075 U	1.3 U	0.075 U
Phenanthrene	--	71	110 J	NS	63.8	140 J	230 J	NS	41.2	0.227 U	0.46	1.5 U	0.075 U	1.5 U	0.075 U
Phenol	--	3.2 J	12 J	NS	34.5	21000	58000	NS	41900	0.17 J	1.2	0.50 U	0.75 U	0.48 U	0.75 U
Pyrene	--	3.0 J	6.4 J	NS	3.6	49 U	56 U	NS	4.3	0.19 J	0.17	1.1 U	0.079 U	1.0 U	0.079 U
Resorcinol	--	ND	ND	NS	--	ND	ND	NS	--	ND	ND	--	--	--	--
Metals / Conventionals															
Cyanide, Total (mg/L)	200	0.034	0.032	NS	0.037	0.34	0.14	NS	0.6	0.011	0.00141 U	0.0043 B	0.004 U	0.15	0.11
Sodium (mg/L)	--	5300	5140	NS	3410	9200	8810	NS	8410	--	--	--	--	--	--
Sulfate (mg/L)	--	13000	11	NS	4950	21000	16	NS	5610	--	--	--	--	--	--

Table 3
Groundwater Analytical Results
Vertellus Specialties Inc.
Provo, Utah

Constituent	UT GWQS	Monitoring Wells													
		MW-17				MW-18				MW-19				MW-20	
		Dec 2004	Apr 2005	Apr 17, 2009	Oct 7, 2009	Dec 2004	Apr 2005	Apr 10, 2009	Oct 2, 2009	Dec 2004	Apr 2005	Apr 10, 2009	Oct 2, 2009	Apr 10, 2009	Nov 13, 2009
VOCs (ug/L)															
Acetone	--	8.4	4.49 U	2.6 U	4.7 U	45 U	45. U	2.6 U	4.7 U	4.49 U	4.49 U	2.6 U	4.7 U	2.6 U	4.7 U
Benzene	5	9	18	0.46 U	10.9	0.65 J	2.8 J	4.4	2	2.2	1.8	0.46 U	0.5 U	0.46 U	0.50 U
Carbon disulfide	--	0.219 U	0.219 U	0.51 U	0.53 U	2.2 U	2.2 U	0.51 U	0.53 U	0.219 U	0.28 J	0.51 U	0.53 U	0.51 U	0.64 U
Chloroform	--	0.151 U	0.151 U	0.54 U	0.64 U	0.75 J	0.75 J	0.54 U	0.64 U	0.151 U	0.151 U	0.54 U	0.64 U	0.54 U	0.53 U
Ethylbenzene	700	2.1	4.4	0.45 U	3.5	1.8 J	2.2 J	2.1	1.3 J	0.34 J	0.23 J	0.45 U	0.55 U	0.45 U	0.55 U
Methyl ethyl ketone	--	1.95 U	1.95 U	2.5 U	3.9 U	20 U	20 U	2.5 U	3.9 U	1.95 U	1.95 U	2.5 U	3.9 U	2.5 U	0.65 U
Methylene bromide	--	0.149 U	0.149 U	0.41 U	0.65 U	1.5 U	1.5 U	0.41 U	0.65 U	0.149 U	0.149 U	0.41 U	0.65 U	0.41 U	0.41 U
Methylene chloride	5	0.123 U	0.123 U	0.41 U	0.41 U	1.2 U	1.2 U	0.41 U	0.41 U	0.123 U	0.123 U	0.41 U	0.41 U	0.41 U	3.9 U
Toluene	1000	1.3	0.32 J	0.48 U	0.43 U	1.8 J	3.2 J	1.1 J	0.98 J	0.73 J	0.54 J	0.48 U	0.43 U	0.48 U	0.43 U
Xylene (total)	10000	0.77 J	0.38 J	1.4 U	1.7 U	1.4 J	3.8 J	10.7	2.1 J	0.56 J	0.46 J	1.4 U	1.7 U	1.4 U	1.7 U
SVOCs (ug/L)															
2,4-Dimethylphenol	--	3.3 J	1.3	2.5 U	1.3 U	2200	3700	338	475	2.10 U	0.73	2.5 U	1.3 U	2.5 U	1.3 U
2-Methylphenol	--	0.149 U	0.66	1.1 U	0.83 U	3700	4900	249	499	0.149 U	1.3	1.1 U	0.83 U	1.1 U	0.83 U
3&4-Methylphenol	--	0.18 J	1.8	1.1 U	1.6 U	9500	14000	496	727	0.15 J	3.2	1.1 U	1.6 U	1.1 U	1.6 U
Acenaphthene	--	6.1 J	4.2	1.4 U	0.12 J	160 J	210 J	64.6	108	6.9	9.1	2 J	0.4	1.4 U	0.042 U
Acenaphthylene	--	0.380 U	0.29	1.5 U	0.41	95 U	24 U	1.5 U	2	0.380 U	1.2	1.5 U	0.072 U	1.5 U	0.072 U
Anthracene	--	1.3 J	0.42	1.7 U	0.054 U	46 U	150 U	9.6	12	0.37 J	0.27	1.7 U	0.054 U	1.7 U	0.054 U
Benzenethiol	--	2.5 J	14	9.6 U	1.3 U	ND	ND	9.6 UR	1.3 U	0.78 J	8.8	9.6 UR	1.3 U	9.6 UR	1.3 U
Benzo(a)anthracene	--	0.1055 J	0.09	1.4 U	0.041 U	26.5 J	15 J	1.4 U	0.041 U	0.1055 J	0.00394 U	1.4 U	0.041 U	1.4 U	0.041 U
Benzo(a)pyrene	0.2	0.0795 J	0.056	1.5 U	0.064 U	20 J	11 J	1.5 U	0.064 U	0.0795 J	0.00758 U	1.5 U	0.064 U	1.5 U	0.064 U
Benzo(b)fluoranthene	--	0.0985 J	0.083	1.4 U	0.06 U	24.5 J	14.5 J	1.4 U	0.06 U	0.0985 J	0.00406 U	1.4 U	0.06 U	1.4 U	0.060 U
Benzo(k)fluoranthene	--	0.147 U	0.029 J	1.5 U	0.056 U	18.5 J	14 J	1.5 U	0.056 U	0.147 U	0.00886 U	1.5 U	0.056 U	1.5 U	0.056 U
Chrysene	--	0.186 U	0.086	1.2 U	0.044 U	23.5 J	20 J	1.2 U	0.044 U	0.186 U	0.00764 U	1.2 U	0.044 U	1.2 U	0.044 U
Dibenzo(a,h)anthracene	--	0.08 J	0.036 J	1.2 U	0.06 U	20 J	105 J	1.2 U	0.06 U	0.08 J	0.035 J	1.2 U	0.06 U	1.2 U	0.060 U
Fluoranthene	--	1.2 J	0.55	1.5 U	0.16 J	54 U	30 U	2.4 J	2.5	0.67 J	0.29	1.5 U	0.046 U	1.5 U	0.046 U
Fluorene	--	3.7 J	0.88	2.0 U	0.064 U	49 J	47 U	16.5	25.1	0.79 J	0.73	2.0 U	0.064 U	2.0 U	0.064 U
Indeno(1,2,3-cd)pyrene	--	0.0835 J	0.059	2.3 U	0.061 U	21 J	25 J	2.3 U	0.061 U	0.0835 J	0.033 J	2.3 U	0.061 U	2.3 U	0.061 U
Naphthalene	--	1.5 J	1.6 B	1.4 U	0.075 U	1,100 J	1,300 J	184	297	1.1 J	2.1 B	3.7 J	1.8	1.4 U	0.075 U
Phenanthrene	--	5.5	1.7	1.5 U	0.28	63 J	46 J	30.3	47.5	0.43 J	0.98	1.5 U	0.075 U	1.5 U	0.075 U
Phenol	--	0.50 J	2.3	0.50 U	0.75 U	14000	28000	953	1410	0.53 J	4.2	2.4 J	0.75 U	0.50 U	0.075 U
Pyrene	--	0.82 J	0.45	1.1 U	0.18 J	41 U	28 U	1.9 J	1.6	0.63 J	0.24	1.1 U	0.079 U	1.1 U	0.079 U
Resorcinol	--	ND	7.8	--	--	ND	ND	--	--	ND	4.6	--	--	--	--
Metals / Conventionals															
Cyanide, Total (mg/L)	200	0.024	0.025	0.28	0.1	0.019	0.00141 U	0.068	0.034	0.037	0.038	0.027	0.0087 J	0.0054 B	0.0067 B
Sodium (mg/L)	--	--	--	6920	7010	869	843	2720	916	--	--	3910	--	264	186
Sulfate (mg/L)	--	--	--	20100	5230	2000	2.6	2240	2040	--	--	1950	--	409	210

Table 3
Groundwater Analytical Results
Vertellus Specialties Inc.
Provo, Utah

Constituent	UT GWQS	Monitoring Wells														
		MW-21		MW-22		MW-26		MW-27			MW-28		MW-29		MW-30	
		Apr 10, 2009	Oct 2, 2009	Apr 10, 2009	Oct 2, 2009	Apr 13, 2009	Oct 6, 2009	Apr 13, 2009	Oct 7, 2009	Oct 7, 2009 (DUP)	Apr 15, 2009	Oct 7, 2009	Apr 9, 2009	Oct 5, 2009	Apr 9, 2009	Oct 5, 2009
VOCs (ug/L)																
Acetone	--	2.6 U	4.7 U	6.5 J	4.7 U	2.6 U	4.7 U	3.4 J	4.7 U	4.7 U	2.6 U	4.7 U	2.6 U	4.7 U	2.6 U	4.7 U
Benzene	5	0.46 U	0.5 U	0.46 U	0.5 U	0.46 UJ	0.5 U	5.7 J	0.73 J	0.75 J	0.46 UJ	0.5 U	0.46 U	0.5 U	0.46 U	0.5 U
Carbon disulfide	--	0.51 U	0.53 U	0.51 U	0.53 U	0.51 U	0.53 U	0.51 U	0.53 U	0.53 U	0.51 U	0.53 U	0.51 U	0.53 U	0.51 U	0.53 U
Chloroform	--	0.54 U	0.64 U	0.54 U	0.64 U	0.54 U	0.64 U	0.54 U	0.64 U	0.64 U	0.54 U	0.64 U	0.54 U	0.64 U	0.54 U	0.64 U
Ethylbenzene	700	0.45 U	0.55 U	0.45 U	0.55 U	0.45 UJ	0.55 U	54.2 J	4.8	5.1	7.9 J	2.9	0.45 U	0.55 U	0.49 J	0.55 U
Methyl ethyl ketone	--	2.5 U	3.9 U	2.5 U	3.9 U	2.5 U	3.9 U	2.5 U	3.9 U	3.9 U	2.5 U	3.9 U	2.5 U	3.9 U	2.5 U	3.9 U
Methylene bromide	--	0.41 U	0.65 U	0.41 U	0.65 U	0.41 U	0.65 U	0.41 U	0.65 U	0.65 U	0.41 U	0.65 U	0.41 U	0.65 U	0.41 U	0.65 U
Methylene chloride	5	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U
Toluene	1000	0.48 U	0.43 U	0.48 U	0.43 U	0.48 UJ	0.43 U	17.4 J	6.6	6.9	4.7 J	0.53 J	0.48 U	0.43 U	0.48 U	0.43 U
Xylene (total)	10000	1.4 U	1.7 U	1.4 U	1.7 U	1.4 UJ	1.7 U	70.9 J	20.2	21.3	25.6 J	2 J	1.4 U	1.7 U	1.4 U	1.7 U
SVOCs (ug/L)																
2,4-Dimethylphenol	--	2.5 U	1.3 U	2.5 U	1.3 U	2.4 U	1.3 U	2.4 U	1.3 U	1.3 U	2.6 U	1.3 U	2.5 U	1.3 U	2.5 U	1.3 U
2-Methylphenol	--	1.1 U	0.83 U	1.1 U	0.83 U	1.1 U	0.83 U	1.8 J	0.83 U	0.97 J	1.2 UJ	0.83 U	1.1 U	0.83 U	1.1 U	0.83 U
3&4-Methylphenol	--	1.1 U	1.6 U	1.1 U	1.6 U	1.1 U	1.6 U	5.5 J	1.6 U	2.8 J	1.1 UJ	1.6 U	1.1 U	1.6 U	1.1 U	1.6 U
Acenaphthene	--	1.4 U	0.1 J	1.4 U	0.081 J	1.3 U	0.17 J	491 J	38.6	42	161	103	1.4 U	0.079 J	35.6	21.7
Acenaphthylene	--	1.5 U	0.072 U	1.5 U	0.072 U	1.5 U	0.072 U	1.5 U	0.09 J	0.33	1.6 U	0.11 J	1.5 U	0.072 U	1.5 U	0.072 U
Anthracene	--	1.7 U	0.054 U	1.7 U	0.054 U	1.6 U	0.054 U	5 J	0.81	1	6.6	1.8	1.7 U	0.72	1.7 U	0.21
Benzenethiol	--	9.6 UR	1.3 U	9.6 UR	1.3 U	9.3 U	1.3 U	9.3 U	1.3 U	1.3 U	9.9 U	1.3 U	9.6 UR	1.3 U	9.6 U	1.3 U
Benzo(a)anthracene	--	1.4 U	0.041 U	1.4 U	0.041 U	1.3 U	0.041 U	1.3 U	0.041 U	0.21	1.4 U	1.4	1.4 U	0.097 J	1.4 U	0.14 J
Benzo(a)pyrene	0.2	1.5 U	0.064 U	1.5 U	0.064 U	1.4 U	0.064 U	1.4 U	0.064 U	0.064 U	1.5 U	0.064 U	1.5 U	0.064 U	1.5 U	0.064 U
Benzo(b)fluoranthene	--	1.4 U	0.06 U	1.4 U	0.06 U	1.4 U	0.06 U	1.4 U	0.06 U	0.06 U	1.5 U	0.06 U	1.4 U	0.21	1.4 U	0.06 U
Benzo(k)fluoranthene	--	1.5 U	0.056 U	1.5 U	0.056 U	1.5 U	0.056 U	1.5 U	0.056 U	0.056 U	1.6 U	0.056 U	1.5 U	0.056 U	1.5 U	0.056 U
Chrysene	--	1.2 U	0.044 U	1.2 U	0.044 U	1.2 U	0.044 U	1.2 U	0.044 U	0.11 J	1.3 J	1.1	1.2 U	0.15 J	1.2 U	0.1 J
Dibenzo(a,h)anthracene	--	1.2 U	0.06 U	1.2 U	0.06 U	1.2 U	0.06 U	1.2 U	0.06 U	0.06 U	1.2 U	0.06 U	1.2 U	0.06 U	1.2 U	0.06 U
Fluoranthene	--	1.5 U	0.046 U	1.5 U	0.046 U	1.5 U	0.046 U	4.6	2.1	2.5	19.1	10.5	1.5 U	0.49	1.5 U	0.5
Fluorene	--	2.0 U	0.064 U	2.0 U	0.064 U	1.9 U	0.064 U	106	8.9	11.1	60	29	2.0 U	0.064 U	2.0 U	0.39
Indeno(1,2,3-cd)pyrene	--	2.3 U	0.061 U	2.3 U	0.061 U	2.2 U	0.061 U	2.2 U	0.061 U	0.061 U	2.4 U	0.061 U	2.3 U	0.061 U	2.3 U	0.061 U
Naphthalene	--	1.4 U	0.075 U	1.4 U	0.081 J	1.3 U	0.075 U	298 J	62.2	71.1	42.8	9.2	1.4 U	0.075 U	6.4	0.54
Phenanthrene	--	1.5 U	0.11 J	1.5 U	0.075 U	1.5 U	0.075 U	31.7 J	8.7	7.9	65.8	30.1	1.5 U	0.13 J	2.6 J	0.19 J
Phenol	--	0.50 U	0.75 U	0.50 U	0.75 U	0.48 U	0.75 U	4.4 J	0.75 U	9.9	0.52 UJ	0.75 U	2.6 J	0.75 U	10.2	0.75 U
Pyrene	--	1.1 U	0.079 U	1.1 U	0.079 U	1.0 U	0.079 U	2.6 J	1.5	1.8	13.2	10.4	1.1 U	0.6	1.1 U	0.57
Resorcinol	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals / Conventionals																
Cyanide, Total (mg/L)	200	0.0071 B	0.004 U	0.013	0.004 U	0.12	0.053	0.013	0.023	0.021	0.0094 BJ	0.015	0.0032 B	0.005 J	0.017	0.015
Sodium (mg/L)	--	117	92.8	920	522	--	--	--	--	--	--	--	--	--	--	--
Sulfate (mg/L)	--	1510	1400	2380	2810	--	--	--	--	--	--	--	--	--	--	--

Table 3
Groundwater Analytical Results
Vertellus Specialties Inc.
Provo, Utah

Constituent	UT GWQS	Monitoring Wells													
		MW-31		MW-32			MW-33		MW-34		MW-35			MW-36	
		Apr 15, 2009	Oct 8, 2009	Apr 9, 2009	Oct 8, 2009	Oct 8, 2009 (DUP)	Apr 10, 2009	Oct 2, 2009	Apr 16, 2009	Oct 9, 2009	Apr 16, 2009	Apr 16, 2009 (DUP)	Oct 5, 2009	Apr 13, 2009	Oct 6, 2009
VOCs (ug/L)															
Acetone	--	2.6 U	4.7 U	130 U	4.7 U	4.7 U	106	46.6 J	7.8 J	4.7 U	3.3 J	2.6 U	4.7 U	2.6 U	4.7 U
Benzene	5	23.9 J	667	6950	3220	3280	46	57	95.3 J	73.7	0.46 UJ	0.46 UJ	0.5 U	0.46 U	0.5 U
Carbon disulfide	--	0.51 U	0.53 U	25 U	0.53 U	0.53 U	0.51 U	0.53 U	1.4 J	0.53 U	1.1 J	0.7 J	0.53 U	0.51 U	0.53 U
Chloroform	--	0.54 U	0.64 U	27 U	0.64 U	0.64 U	0.54 U	0.64 U	0.54 U	0.64 U	0.54 UJ	0.54 U	0.64 U	0.54 U	0.64 U
Ethylbenzene	700	51 J	522	231	132	131	5.2	5	70.1 J	46.3	0.45 U	0.45 UJ	0.55 U	0.45 U	0.55 U
Methyl ethyl ketone	--	2.5 U	3.9 U	120 U	3.9 U	3.9 U	2.5 U	3.9 U	2.5 U	3.9 U	2.5 U	2.5 U	3.9 U	2.5 U	3.9 U
Methylene bromide	--	0.41 U	0.65 U	20 U	0.65 U	0.65 U	0.41 U	0.65 U	0.41 U	0.65 U	0.41 UJ	0.41 U	0.65 U	0.41 U	0.65 U
Methylene chloride	5	0.41 U	0.41 U	20 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 UJ	0.41 U	0.41 U	0.41 U	0.41 U
Toluene	1000	6.4 J	114	3600	1270	1330	19.1	18.2	111 J	53.7	0.48 U	0.48 UJ	0.43 U	0.48 U	0.43 U
Xylene (total)	10000	34.8 J	343	1620	356 J	778	34.7	27.1	130 J	85.6	1.4 UJ	1.4 UJ	1.7 U	1.4 U	1.7 U
SVOCs (ug/L)															
2,4-Dimethylphenol	--	2.5 U	55.1	14600	4940	6460	793	889	4090	1980	2.5 U	2.5 U	1.3 U	2.4 U	1.3 U
2-Methylphenol	--	1.1 UJ	3.7 J	27100	3130	4560	879	1500	1550 J	109	1.2 UJ	1.1 UJ	0.83 U	1.1 U	0.83 U
3&4-Methylphenol	--	1.1 UJ	1.6 U	65200	10100	11000	3430	5960	1660 J	24.1 J	1.1 UJ	1.1 UJ	1.6 U	1.1 U	1.6 U
Acenaphthene	--	26.4	219	241	71.2	82.7	292	441	92.8	50.8	26	32	55.2	1.3 U	0.042 U
Acenaphthylene	--	2.7 J	19.6	70.9 J	9.1	12.5	6.2 U	45.5	3.1 J	1.8	1.6 U	1.5 U	0.072 U	1.5 U	0.072 U
Anthracene	--	4.9	6.6	68 U	8.3	8.5	103	170	2.1 J	1.5	1.7 U	1.7 U	0.076 J	1.6 U	0.054 U
Benzenethiol	--	9.6 U	1.3 U	380 UR	52 U	52 U	38 UR	13 U	9.6 U	13 U	9.7 U	9.6 U	1.3 U	9.3 U	1.3 U
Benzo(a)anthracene	--	1.4 U	0.041 U	55 U	0.41 U	0.41 U	5.5 U	0.41 U	1.4 U	0.041 U	1.4 U	1.4 U	0.041 U	1.3 U	0.041 U
Benzo(a)pyrene	0.2	1.5 U	0.064 U	60 U	0.64 U	0.64 U	6.0 U	0.64 U	1.5 UJ	0.064 U	1.5 U	1.5 U	0.064 U	1.4 U	0.064 U
Benzo(b)fluoranthene	--	1.4 U	0.06 U	57 U	0.6 U	0.6 U	5.7 U	0.6 U	1.4 UJ	0.06 U	1.4 U	1.4 U	0.06 U	1.4 U	0.06 U
Benzo(k)fluoranthene	--	1.5 U	0.056 U	61 U	0.56 U	0.56 U	6.1 U	0.56 U	1.5 UJ	0.056 U	1.5 U	1.5 U	0.056 U	1.5 U	0.056 U
Chrysene	--	1.2 U	0.044 U	50 U	0.44 U	0.44 U	5.0 U	0.44 U	1.2 U	0.044 U	1.3 U	1.2 U	0.044 U	1.2 U	0.044 U
Dibenzo(a,h)anthracene	--	1.2 U	0.06 U	48 U	0.6 U	0.6 U	4.8 U	0.6 U	1.2 UJ	0.06 U	1.2 U	1.2 U	0.06 U	1.2 U	0.06 U
Fluoranthene	--	14.4	8.9	62 U	10.3	10.1	10.8 J	11.7	1.5 U	0.92	1.6 U	1.5 U	0.046 U	1.5 U	0.046 U
Fluorene	--	6.4	75.4	79 U	11.4	13.1	92.3	140	21.1	4.1	2.0 U	2.0 U	0.064 U	1.9 U	0.064 U
Indeno(1,2,3-cd)pyrene	--	2.3 U	0.061 U	92 U	0.61 U	0.61 U	9.2 U	0.61 U	2.3 UJ	0.061 U	2.3 U	2.3 U	0.061 U	2.2 U	0.061 U
Naphthalene	--	55.5	274	6870	2630	4780	3010	5150	2090	796	7.1	7.2	0.23	1.3 U	0.075 U
Phenanthrene	--	1.5 U	31.6	60 U	36.5	37.1	100	127	22.6	9.4	1.5 U	1.5 U	0.075 U	1.5 U	0.075 U
Phenol	--	0.50 UJ	5.9	81700	15500	17800	4110	9010	357 J	7.5 U	0.51 UJ	0.50 UJ	0.75 U	0.48 U	0.75 U
Pyrene	--	6.3	8.3	43 U	5.3	5.9	9.3 J	7.5	1.1 U	0.41	1.1 U	1.1 U	0.079 U	1.0 U	0.079 U
Resorcinol	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals / Conventionals															
Cyanide, Total (mg/L)	200	0.0097 BJ	0.004 U	0.087	0.26	0.37	0.38	0.29	0.0058 BJ	0.0042 J	0.059 J	0.066 J	0.085	0.05	0.063
Sodium (mg/L)	--	--	--	--	--	--	3200	3070	--	--	--	--	--	--	--
Sulfate (mg/L)	--	--	--	--	--	--	1990	5030	--	--	--	--	--	--	--

Table 3
Groundwater Analytical Results
Vertellus Specialties Inc.
Provo, Utah

Constituent	UT GWQS	Temporary Wells						Piezometers					
		TW-1		TW-2		TW-3		PZ-4		PZ-5		PZ-6	
		Apr 14, 2009	Oct 8, 2009	Apr 14, 2009	Oct 5, 2009	Apr 14, 2009	Oct 8, 2009	Apr 17, 2009	Oct 6, 2009	Apr 17, 2009	Oct 6, 2009	Apr 17, 2009	Oct 6, 2009
VOCs (ug/L)													
Acetone	--	11.2 J	4.7 U	4.2 J	20.1 J	3.8 J	4.7 U	2.6 U	4.7 U	2.6 U	5.4 J	2.6 U	4.7 U
Benzene	5	21.2 J	79.2	3.6 J	20.6	109 J	0.5 J	0.46 U	0.5 U	0.46 U	0.5 U	0.46 U	0.5 U
Carbon disulfide	--	0.51 U	0.53 U	0.51 U	0.53 U	0.89 J	0.53 U	0.51 U	0.53 U	0.51 U	0.53 U	0.51 U	0.53 U
Chloroform	--	0.54 U	0.64 U	0.54 U	0.64 U	0.54 U	0.64 U	0.54 U	0.64 U	0.54 U	0.64 U	0.54 U	0.64 U
Ethylbenzene	700	39.6 J	125	5.9 J	24.8	12.4 J	0.59 J	0.45 U	0.55 U	0.45 U	0.55 U	0.45 U	0.55 U
Methyl ethyl ketone	--	2.5 U	3.9 U	2.5 U	3.9 U	2.5 U	3.9 U	2.5 U	3.9 U	2.5 U	3.9 U	2.5 U	3.9 U
Methylene bromide	--	0.41 U	0.65 U	0.41 U	0.65 U	0.41 U	0.65 U	0.41 U	0.65 U	0.41 U	0.65 U	0.41 U	0.65 U
Methylene chloride	5	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U
Toluene	1000	5.6 J	7.1	5.4 J	25.8	5 J	0.43 U	0.48 U	0.45 J	0.48 U	0.43 U	0.48 U	0.43 U
Xylene (total)	10000	28.5 J	51.6	1.4 UJ	50.4	24.5 J	1.7 U	1.4 U	1.7 U	1.4 U	1.7 U	1.4 U	1.7 U
SVOCs (ug/L)													
2,4-Dimethylphenol	--	3.3 U	3 J	2.4 U	1410	18.9 J	1.9 J	2.5 U	1.3 U	2.6 U	1.3 U	2.6 U	1.3 U
2-Methylphenol	--	1.5 U	2.1 J	1.1 UJ	571	1.1 UJ	2.2 J	1.1 U	0.83 U	1.2 U	0.83 U	1.2 U	0.83 U
3&4-Methylphenol	--	1.4 U	3.8 J	1.1 UJ	708	1.1 U	4.2 J	1.1 U	1.6 U	1.1 U	1.6 U	1.1 U	1.6 U
Acenaphthene	--	465 J	141	162 J	71.4	4.6 J	0.59	1.4 U	0.042 U	1.4 U	0.042 U	171	0.042 U
Acenaphthylene	--	2.0 U	16	38.6 J	1.9	1.5 U	0.072 U	1.5 U	0.072 U	1.6 U	0.072 U	1.6 U	0.072 U
Anthracene	--	4.7 J	8.8	25.2 J	1.5	1.6 U	0.054 U	1.7 U	0.054 U	1.7 U	0.054 U	5.9	0.054 U
Benzenethiol	--	13 U	1.3 U	9.3 U	1.3 U	9.3 U	1.3 U	9.6 U	1.3 U	9.8 U	1.3 U	9.9 U	1.3 U
Benzo(a)anthracene	--	1.8 U	0.84	9.3	0.041 U	1.3 U	0.37	1.4 U	0.041 U	1.4 U	0.041 U	1.4 U	0.041 U
Benzo(a)pyrene	0.2	1.9 U	0.42	6.9	0.064 U	1.4 U	0.37	1.5 U	0.064 U	1.5 U	0.064 U	1.5 U	0.064 U
Benzo(b)fluoranthene	--	1.9 U	0.38	8.6	0.06 U	1.4 U	0.51	1.4 U	0.06 U	1.5 U	0.06 U	1.5 U	0.06 U
Benzo(k)fluoranthene	--	2.0 U	0.12 J	2.8 J	0.056 U	1.5 U	0.41	1.5 U	0.056 U	1.6 U	0.056 U	1.6 U	0.056 U
Chrysene	--	1.6 U	0.31	10.4 J	0.044 U	1.2 U	0.32	1.2 U	0.044 U	1.3 U	0.044 U	1.5 J	0.044 U
Dibenzo(a,h)anthracene	--	1.6 U	0.06 U	1.2 U	0.06 U	1.2 U	0.06 U	1.2 U	0.06 U	1.2 U	0.06 U	1.2 U	0.06 U
Fluoranthene	--	6 J	7.4	49.5	0.5	1.5 U	0.75	1.5 U	0.046 U	1.6 U	0.046 U	17.9	0.046 U
Fluorene	--	79.6	35.9	75.7	12	1.9 U	0.064 U	2.0 U	0.064 U	2.0 U	0.064 U	58	0.064 U
Indeno(1,2,3-cd)pyrene	--	3.0 U	0.18 J	2.2 U	0.061 U	2.2 U	0.061 U	2.3 U	0.061 U	2.4 U	0.061 U	2.4 U	0.061 U
Naphthalene	--	1.8 U	9.4	825 J	2030	1.3 U	2.6	1.4 U	0.075 U	1.4 U	0.075 U	42.6	0.075 U
Phenanthrene	--	2.0 U	18.2	101 J	15.9	1.5 U	0.21	1.5 U	0.075 U	1.5 U	0.075 U	60.7	0.075 U
Phenol	--	1.8 J	5.6	0.48 UJ	281	0.48 U	10.8	0.50 U	0.75 U	0.51 U	0.75 U	0.52 U	0.75 U
Pyrene	--	4.3 J	8.6	36.7	0.19 J	1.0 U	0.61	1.1 U	0.079 U	1.1 U	0.079 U	14	0.079 U
Resorcinol	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals / Conventionals													
Cyanide, Total (mg/L)	200	0.037	0.032	0.032	0.017	0.019	0.0083 J	0.036	0.039	0.016	0.021	0.0017 B	0.0068 J
Sodium (mg/L)	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate (mg/L)	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes:

U = compound was not detected above the reporting limit shown

J = estimated value

B = compound was detected above the method detection limit but below the practical quantitation limit; value is approximate.

ND = Not retected, repoting limit not provided

NS = Not sampled due to interference by product in monitoring well

R = Rejected result

UT GWQS = Utah Groundwater Quality Standard

Green Shading Green shading denotes non-detected result where reporting limit exceeds UT GWQS

Blue shading Blue shading denotes detected concentration which exceeds UT GWQS

Table 4
Surface Water Analytical Results
Vertellus Specialties
Provo, Utah

Constituent	UT WQS Human Health (Consumption)	SW-1			SW-2										
		Oct 1, 2004			Oct 1, 2004			Apr 11, 2005			Apr 17, 2009	Jul 14, 2009	Oct 1, 2009	Jan 28, 2010	
		SW-1A	SW-1B	SW-1C	SW-2A	SW-2B	SW-2C	SW-2A	SW-2B	SW-2C	SW-2	SW-2	SW-2	SW-2	SW-2 DUP
VOCs (ug/L)															
Acetone	–	4.49 U	4.49 U	4.49 U	4.49 U	4.49 U	4.49 U	2.93 U	2.93 U	2.93 U	2.6 U	2.6 U	4.7 U	4.7 U	4.7 U
Benzene	51	0.127 U	0.127 U	0.127 U	0.127 U	0.127 U	0.127 U	0.142 U	0.142 U	0.142 U	0.46 U	0.46 U	0.5 U	0.50 U	0.50 U
Carbon disulfide	–	0.219 U	0.219 U	0.219 U	0.219 U	0.219 U	0.219 U	1.3	0.51 J	0.130 U	0.51 U	0.51 U	0.53 U	0.53 U	0.53 U
Chloroform	470	0.151 U	0.151 U	0.151 U	0.151 U	0.151 U	0.151 U	0.0925 J	0.0925 J	0.0925 J	0.54 U	0.54 U	0.64 U	0.64 U	0.64 U
Ethylbenzene	2100	0.0526 U	0.0526 U	0.0526 U	0.0526 U	0.0526 U	0.0526 U	0.142 U	0.142 U	0.142 U	0.45 U	0.45 U	0.55 U	0.55 U	0.55 U
Methyl ethyl ketone	–	1.95 U	1.95 U	1.95 U	1.95 U	1.95 U	1.95 U	2.44 U	2.44 U	2.44 U	2.5 U	2.5 U	3.9 U	3.9 U	3.9 U
Methylene bromide	–	0.0551 U	0.0551 U	0.0551 U	0.0551 U	0.0551 U	0.0551 U	0.289 U	0.289 U	0.289 U	0.41 U	0.41 U	0.65 U	0.65 U	0.65 U
Methylene chloride	590	0.123 U	0.123 U	0.123 U	0.123 U	0.123 U	0.123 U	0.231 U	1.3	0.231 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U
Toluene	15000	0.0574 U	0.0574 U	0.10 J	0.13 J	0.11 J	0.11 J	0.163 U	0.163 U	0.163 U	0.48 U	0.48 U	0.43 U	0.43 U	0.43 U
Xylene (total)	10000	0.109 U	0.109 U	0.109 U	0.109 U	0.109 U	0.109 U	0.246 U	0.246 U	0.246 U	1.4 U	1.4 U	1.7 U	1.7 U	1.7 U
SVOCs (ug/L)															
2,4-Dimethylphenol	850	1.900 U	1.900 U	1.900 U	1.900 U	1.800 U	1.8100 U	0.862 U	0.862 U	0.87 U	2.6 U	1.3 U	1.3 U	1.3 U	1.3 U
2-Methylphenol	–	0.065 U	0.065 U	0.065 U	0.065 U	0.064 U	0.0633 U	0.103 U	0.103 U	0.10 U	1.2 U	0.83 U	0.86 U	0.83 U	0.83 U
3&4-Methylphenol	–	0.053 U	0.053 U	0.053 U	0.053 U	0.052 U	0.0519 U	0.102 U	0.37 J	0.10 U	1.1 U	1.6 U	1.6 U	1.6 U	1.6 U
Acenaphthene	990	0.082 U	0.082 U	0.082 U	0.082 U	0.081 U	0.080 U	0.0781 U	0.0781 U	0.079 U	1.4 U	1.6 U	0.043 U	0.042 U	0.042 U
Acenaphthylene	–	0.390 U	0.390 U	0.390 U	0.390 U	0.380 U	0.380 U	0.0599 U	0.0599 U	0.061 U	1.6 U	1.2 U	0.074 U	0.072 U	0.072 U
Anthracene	–	0.092 U	0.092 U	0.092 U	0.092 U	0.091 U	0.0899 U	0.365 U	0.365 U	0.37 U	1.8 U	1.1 U	0.055 U	0.054 U	0.054 U
Benzenethiol	–	ND	ND	ND	ND	ND	ND	ND	ND	ND	9.9 U	1.3 U	1.3 U	1.3 U	1.3 U
Benzo(a)anthracene	0.018	0.047 J	0.047 J	0.047 J	0.047 J	0.0465 J	0.0919 U	0.0745 U	0.95 J	0.075 U	1.4 U	1.1 U	0.042 U	0.041 U	0.041 U
Benzo(a)pyrene	0.018	0.0445 J	0.0445 J	0.0445 J	0.0445 J	0.044 J	0.0434 J	0.0275 J	1.2 J	0.028 J	1.5 U	1.1 U	0.066 U	0.064 U	0.064 U
Benzo(b)fluoranthene	0.018	0.080 U	0.080 U	0.080 U	0.080 U	0.079 U	0.0782 U	0.0736 U	1.2 J	0.074 U	1.5 U	0.87 U	0.062 U	0.060 U	0.060 U
Benzo(k)fluoranthene	0.018	0.140 U	0.140 U	0.140 U	0.140 U	0.140 U	0.140 U	0.0698 U	0.55 J	0.071 U	1.6 U	1.1 U	0.057 U	0.056 U	0.056 U
Chrysene	0.018	0.075 U	0.075 U	0.075 U	0.075 U	0.074 U	0.0736 U	0.100 U	1.2 J	0.10 U	1.3 U	0.98 U	0.046 U	0.044 U	0.044 U
Dibenzo(a,h)anthracene	0.018	0.08 J	0.08 J	0.08 J	0.08 J	0.08 J	0.08 J	0.2625 J	0.2625 J	0.265 J	1.2 U	1.6 U	0.061 U	0.060 U	0.060 U
Fluoranthene	140	0.058 U	0.058 U	0.058 U	0.058 U	0.057 U	0.0569 U	0.0748 U	1.9 J	0.076 U	1.6 U	0.97 U	0.047 U	0.046 U	0.046 U
Fluorene	5300	0.062 U	0.062 U	0.062 U	0.062 U	0.061 U	0.0607 U	0.117 U	0.117 U	0.12 U	2.0 U	1.3 U	0.066 U	0.064 U	0.064 U
Indeno(1,2,3-cd)pyrene	0.018	0.085 J	0.085 J	0.085 J	0.085 J	0.085 J	0.0835 J	0.063 J	1.0 J	0.065 J	2.4 U	1.8 U	0.062 U	0.061 U	0.061 U
Naphthalene	–	0.087 U	0.087 U	0.087 U	0.220 J	0.086 U	0.0851 U	0.38 J	0.65 J	0.065 U	1.4 U	1.1 U	0.26	0.075 U	0.075 U
Phenanthrene	–	0.089 U	0.089 U	0.089 U	0.089 U	0.087 U	0.0866 U	0.09 U	1.2 J	0.091 U	1.6 U	0.97 U	0.077 U	0.075 U	0.075 U
Phenol	1700000	0.170 U	0.170 U	0.170 U	0.170 U	0.170 U	0.1670 U	0.21 J	0.56 J	0.092 U	0.52 U	0.75 U	0.78 U	0.75 U	0.75 U
Pyrene	4000	0.093 U	0.093 U	0.093 U	0.093 U	0.092 U	0.0910 U	0.0702 U	1.9 J	0.071 U	1.1 U	1.7 U	0.081 U	0.079 U	0.079 U
Conventionals															
Cyanide, Total (mg/L)	0.14	0.00232 U	0.003 B	0.00232 U	0.00232 U	0.00232 U	0.00232 U	0.00141 U	0.00141 U	0.00141 U	0.0054 B	0.0013 U	0.004 U	0.0040 U	0.0040 U

Table 4
Surface Water Analytical Results
Vertellus Specialties
Provo, Utah

Constituent	UT WQS Human Health (Consumption)	SW-3											
		Oct 1, 2004			Apr 11, 2005			Apr 17, 2009	Jul 14, 2009		Oct 1, 2009		Jan 28, 2010
		SW-3A	SW-3B	SW-3C	SW-3A	SW-3B	SB-3C	SW-3	SW-3	SW-3 DUP	SW-3	SW-3 DUP	SW-3
VOCs (ug/L)													
Acetone	–	4.49 U	4.49 U	4.49 U	2.93 U	3.5 J	2.93 U	2.7 J	2.6 U	2.6 U	4.7 U	4.7 U	4.7 U
Benzene	51	0.127 U	0.127 U	0.127 U	0.142 U	0.142 U	0.142 U	0.46 UJ	0.46 U	0.46 U	0.5 U	0.5 U	0.50 U
Carbon disulfide	–	0.219 U	0.219 U	0.219 U	0.130 U	0.130 U	0.130 U	0.51 U	0.51 U	0.51 U	0.53 U	0.53 U	0.53 U
Chloroform	470	0.151 U	0.151 U	0.151 U	0.0925 J	0.0925 J	0.0925 J	0.54 UJ	0.54 U	0.54 U	0.64 U	0.64 U	0.64 U
Ethylbenzene	2100	0.0526 U	0.0526 U	0.0526 U	0.142 U	0.142 U	0.142 U	0.45 UJ	0.45 U	0.45 U	0.55 U	0.55 U	0.55 U
Methyl ethyl ketone	–	1.95 U	1.95 U	1.95 U	2.44 U	2.44 U	2.44 U	2.5 U	2.5 U	2.5 U	3.9 U	3.9 U	3.9 U
Methylene bromide	–	0.0551 U	0.0551 U	0.0551 U	0.289 U	0.289 U	0.289 U	0.41 UJ	0.41 U	0.41 U	0.65 U	0.65 U	0.65 U
Methylene chloride	590	0.123 U	0.123 U	0.123 U	0.231 U	0.231 U	0.231 U	0.41 UJ	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U
Toluene	15000	0.10 J	0.11 J	0.14 J	0.163 U	0.163 U	0.163 U	0.48 U	0.48 U	0.48 U	0.43 U	0.43 U	0.43 U
Xylene (total)	10000	0.109 U	0.109 U	0.109 U	0.246 U	0.246 U	0.246 U	1.4 UJ	1.4 U	1.4 U	1.7 U	1.7 U	1.7 U
SVOCs (ug/L)													
2,4-Dimethylphenol	850	1.900 U	1.800 U	1.800 U	0.88 U	0.88 U	0.88 U	2.6 U	1.3 U	1.3 U	1.3 U	1.3 U	10.4
2-Methylphenol	–	0.065 U	0.065 U	0.065 U	0.11 U	0.11 U	0.11 U	1.2 U	0.83 U	0.83 U	0.83 U	0.85 U	13.6
3&4-Methylphenol	–	0.053 U	0.053 U	0.053 U	0.10 U	0.10 U	0.10 U	1.1 U	1.6 U	1.6 U	1.6 U	1.6 U	3.2 J
Acenaphthene	990	0.082 U	0.082 U	0.082 U	0.080 U	0.080 U	0.080 U	1.4 U	1.6 U	1.6 U	0.042 U	0.042 U	0.042 U
Acenaphthylene	–	0.390 U	0.390 U	0.390 U	0.061 U	0.061 U	0.061 U	1.6 U	1.2 U	1.2 U	0.072 U	0.073 U	0.072 U
Anthracene	–	0.092 U	0.092 U	0.092 U	0.37 U	0.37 U	0.37 U	1.7 U	1.1 U	1.1 U	0.054 U	0.054 U	0.054 U
Benzenethiol	–	ND	ND	ND	ND	ND	ND	9.8 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
Benzo(a)anthracene	0.018	0.047 J	0.047 J	0.047 J	0.076 U	0.076 U	0.31 J	1.4 U	1.1 U	1.1 U	0.041 U	0.042 U	0.041 U
Benzo(a)pyrene	0.018	0.0445 J	0.0445 J	0.0445 J	0.028 J	0.028 J	0.028 J	1.5 U	1.1 U	1.1 U	0.064 U	0.065 U	0.064 U
Benzo(b)fluoranthene	0.018	0.080 U	0.080 U	0.080 U	0.075 U	0.075 U	0.075 U	1.5 U	0.87 U	0.87 U	0.06 U	0.061 U	0.060 U
Benzo(k)fluoranthene	0.018	0.140 U	0.140 U	0.140 U	0.071 U	0.071 U	0.071 U	1.6 U	1.1 U	1.1 U	0.056 U	0.057 U	0.056 U
Chrysene	0.018	0.075 U	0.075 U	0.075 U	0.10 U	0.10 U	0.37 J	1.3 U	0.98 U	0.98 U	0.044 U	0.045 U	0.044 U
Dibenzo(a,h)anthracene	0.018	0.08 J	0.08 J	0.08 J	0.27 J	0.27 J	0.27 J	1.2 U	1.6 U	1.6 U	0.06 U	0.06 U	0.060 U
Fluoranthene	140	0.058 U	0.058 U	0.058 U	0.076 U	0.076 U	0.56 J	1.6 U	0.97 U	0.97 U	0.046 U	0.046 U	0.064 J
Fluorene	5300	0.062 U	0.062 U	0.062 U	0.12 U	0.12 U	0.12 U	2.0 U	1.3 U	1.3 U	0.064 U	0.065 U	0.25
Indeno(1,2,3-cd)pyrene	0.018	0.085 J	0.085 J	0.085 J	0.065 J	0.065 J	0.065 J	2.4 U	1.8 U	1.8 U	0.061 U	0.061 U	0.061 U
Naphthalene	–	0.087 U	0.087 U	0.087 U	0.066 U	0.30 J	0.37 J	1.4 U	1.1 U	1.1 U	0.075 U	0.076 U	21.8
Phenanthrene	–	0.088 U	0.088 U	0.088 U	0.092 U	0.092 U	0.39 J	1.5 U	0.97 U	0.97 U	0.075 U	0.076 U	0.32
Phenol	1700000	0.170 U	0.170 U	0.170 U	0.093 U	0.20 J	0.093 U	0.51 U	0.75 U	0.75 U	0.75 U	0.76 U	4.9 J
Pyrene	4000	0.093 U	0.093 U	0.093 U	0.072 U	0.072 U	0.56 J	1.1 U	1.7 U	1.7 U	0.079 U	0.08 U	0.079 U
Conventionals													
Cyanide, Total (mg/L)	0.14	0.00232 U	0.0024 B	0.0032 B	0.00141 U	0.00141 U	0.00141 U	0.0039 B	0.0016 B	0.0022 B	0.004 U	–	0.0040 U

Table 4
Surface Water Analytical Results
Vertellus Specialties
Provo, Utah

Constituent	UT WQS Human Health (Consumption)	SW-4						SW-5				
		Apr 11, 2005			Apr 17, 2009	Oct 1, 2009	Jan 28, 2010	Apr 11, 2005			Apr 17, 2009	Jan 28, 2010
		SB-4A	SW-4B	SW-4C	SW-4	SW-4	SW-4	SW-5A	SW-5B	SW-5C	SW-5	SW-5
VOCs (ug/L)												
Acetone	–	4.3 J	2.93 U	2.93 U	4.3 J	4.7 U	4.7 U	2.93 U	2.93 U	2.93 U	4.9 J	4.7 U
Benzene	51	0.20 J	0.18 J	0.16 J	3.4 J	0.5 U	17.8	0.142 U	0.142 U	0.142 U	0.46 U	0.50 U
Carbon disulfide	–	0.24 J	0.130 U	0.130 U	0.51 U	0.53 U	0.53 U	0.130 U	0.130 U	0.130 U	0.51 U	0.53 U
Chloroform	470	0.0925 J	0.0925 J	0.0925 J	0.54 UJ	0.64 U	0.64 U	0.0925 J	0.0925 J	0.0925 J	0.54 U	0.64 U
Ethylbenzene	2100	0.142 U	0.142 U	0.142 U	0.45 UJ	0.55 U	1.0 J	0.142 U	0.142 U	0.142 U	0.45 U	0.55 U
Methyl ethyl ketone	–	2.44 U	2.44 U	2.44 U	2.5 U	3.9 U	3.9 U	2.44 U	2.44 U	2.44 U	2.5 U	3.9 U
Methylene bromide	–	0.289 U	0.289 U	0.289 U	0.41 UJ	0.65 U	0.65 U	0.289 U	0.289 U	0.289 U	0.41 U	0.65 U
Methylene chloride	590	0.231 U	0.231 U	0.27 J	0.41 UJ	0.41 U	0.41 U	0.231 U	0.231 U	0.231 U	0.41 U	0.41 U
Toluene	15000	0.163 U	0.163 U	0.163 U	4.2	0.43 U	4.3	0.163 U	0.163 U	0.163 U	0.48 U	0.43 U
Xylene (total)	10000	0.246 U	0.246 U	0.246 U	1.4 UJ	1.7 U	1.8 J	0.246 U	0.246 U	0.246 U	1.4 U	1.7 U
SVOCs (ug/L)												
2,4-Dimethylphenol	850	0.87 U	0.862 U	0.862 U	2.6 U	1.3 U	9.2	0.862 U	0.862 U	0.862 U	2.6 U	1.3 U
2-Methylphenol	–	0.10 U	0.103 U	0.103 U	1.2 U	0.85 U	10.3	0.103 U	0.103 U	0.103 U	1.2 U	0.83 U
3&4-Methylphenol	–	0.10 U	0.102 U	0.102 U	1.1 U	1.6 U	384	0.102 U	0.102 U	0.102 U	1.1 U	1.6 U
Acenaphthene	990	0.079 U	0.0781 U	0.0781 U	1.4 U	0.042 U	0.042 U	0.15 J	0.0781 U	0.0781 U	1.5 U	0.042 U
Acenaphthylene	–	0.061 U	0.0599 U	0.0599 U	1.6 U	0.073 U	0.072 U	0.0599 U	0.0599 U	0.0599 U	1.6 U	0.072 U
Anthracene	–	0.37 U	0.365 U	0.365 U	1.8 U	0.055 U	0.054 U	0.365 U	0.365 U	0.365 U	1.8 U	0.063 J
Benzenethiol	–	ND	ND	ND	9.9 U	1.3 U	1.3 U	ND	ND	ND	10 U	1.3 U
Benzo(a)anthracene	0.018	0.075 U	0.0745 U	0.0745 U	1.4 U	0.042 U	0.041 U	0.0745 U	0.0745 U	0.0745 U	1.4 U	0.37
Benzo(a)pyrene	0.018	0.028 J	0.0275 J	0.0275 J	1.5 U	0.066 U	0.064 U	0.0275 J	0.0275 J	0.0275 J	1.6 U	0.48
Benzo(b)fluoranthene	0.018	0.074 U	0.0736 U	0.0736 U	1.5 U	0.062 U	0.060 U	0.0736 U	0.0736 U	0.0736 U	1.5 U	0.71
Benzo(k)fluoranthene	0.018	0.071 U	0.0698 U	0.0698 U	1.6 U	0.057 U	0.056 U	0.0698 U	0.0698 U	0.0698 U	1.6 U	0.23
Chrysene	0.018	0.10 U	0.100 U	0.100 U	1.3 U	0.045 U	0.044 U	0.100 U	0.100 U	0.100 U	1.3 U	0.41
Dibenzo(a,h)anthracene	0.018	0.265 J	0.2625 J	0.2625 J	1.2 U	0.061 U	0.060 U	0.2625 J	0.2625 J	0.2625 J	1.3 U	0.060 U
Fluoranthene	140	0.076 U	0.0748 U	0.0748 U	1.6 U	0.047 U	0.045	0.0748 U	0.0748 U	0.0748 U	1.6 U	0.63
Fluorene	5300	0.12 U	0.117 U	0.117 U	2.0 U	0.066 U	0.064 U	0.117 U	0.117 U	0.117 U	2.1 U	0.064 U
Indeno(1,2,3-cd)pyrene	0.018	0.065 J	0.063 J	0.063 J	2.4 U	0.061 U	0.062 U	0.063 J	0.063 J	0.063 J	2.4 U	0.37
Naphthalene	–	0.065 U	0.18 J	0.42 J	2.9 J	0.077U	1.3	0.50 J	0.23 J	0.42 J	1.5 U	0.075 U
Phenanthrene	–	0.16 J	0.16 J	0.0900 U	1.6 U	0.077 U	0.075 U	0.16 J	0.0900 U	0.0900 U	1.6 U	0.17 J
Phenol	1700000	0.43 J	0.44 J	0.50 J	0.52 U	0.77 U	1.7 J	0.51 J	0.46 J	0.44 J	0.52 U	0.75 U
Pyrene	4000	0.071 U	0.0702 U	0.0702 U	1.1 U	0.081 U	0.079 U	0.0702 U	0.0702 U	0.0702 U	1.1 U	0.69
Conventionals												
Cyanide, Total (mg/L)	0.14	0.00141 U	0.00141 U	0.00141 U	0.0082 B	0.004 U	0.029	0.00141 U	0.00141 U	0.0045 B	0.0071 B	0.0074 B

Notes:

U = compound was not detected above the reporting limit shown

J = estimated value

B = compound was detected above the method detection limit but below the practical quantitation limit; value is approximate

ND = Not retected, repoting limit not provided

NR = Not reported; compound does not recover from water-matrix samples

UT WQS = Utah Water Quality Standard (UT WQS) for human health criteria for consumption of organism only, Designated Use Classes 3A, 3B, 3C, 3D (UAC R317-2 Table 2.14.6)

Green Shading Green shading denotes non-detected result where reporting limit exceeds UT WQS

Blue shading Blue shading denotes detected concentration which exceeds UT WQS

Figures

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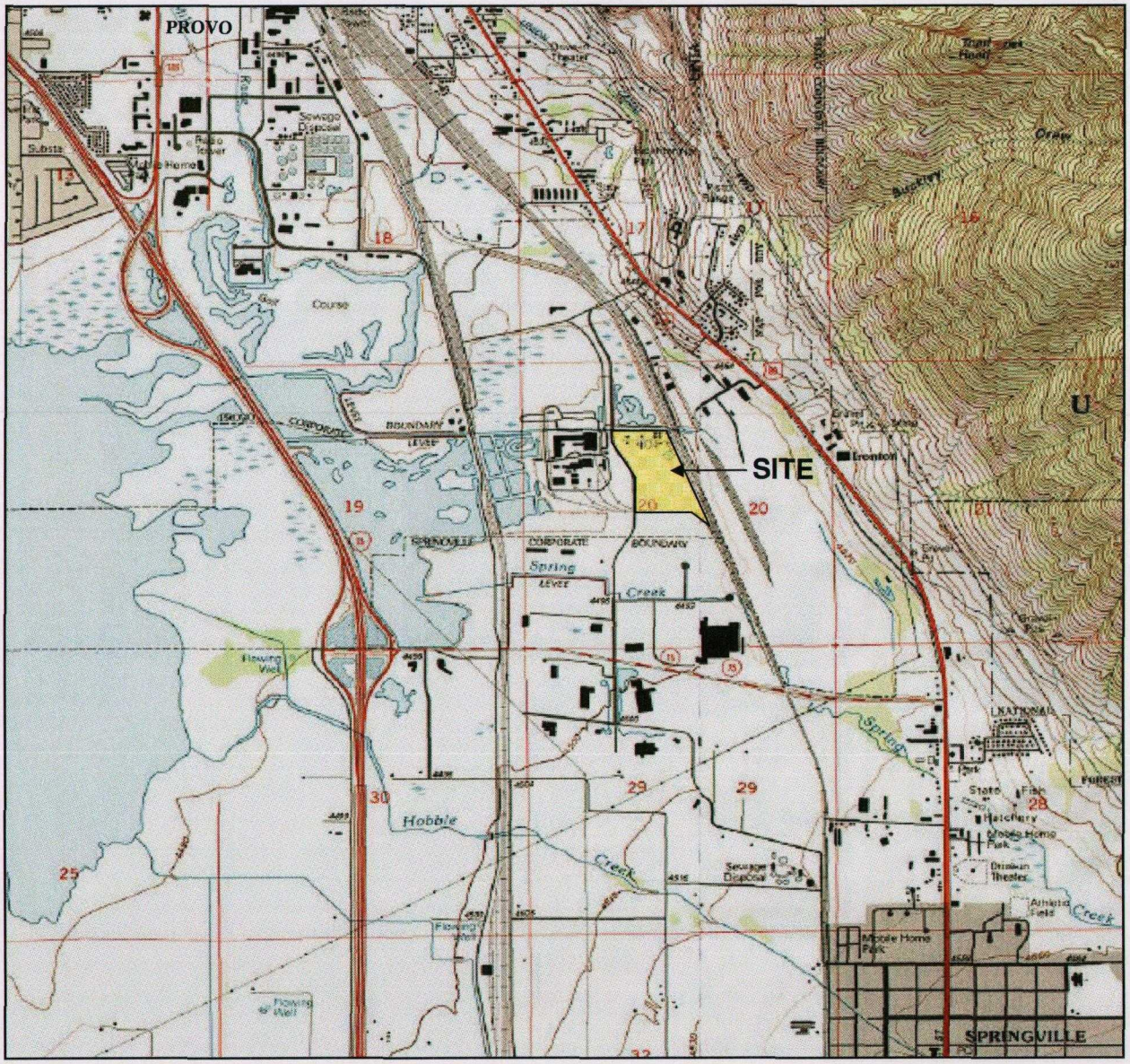

Figure 1-1
Site Location
Vertellus Specialties Inc.
Provo, Utah
ERM 08/2009

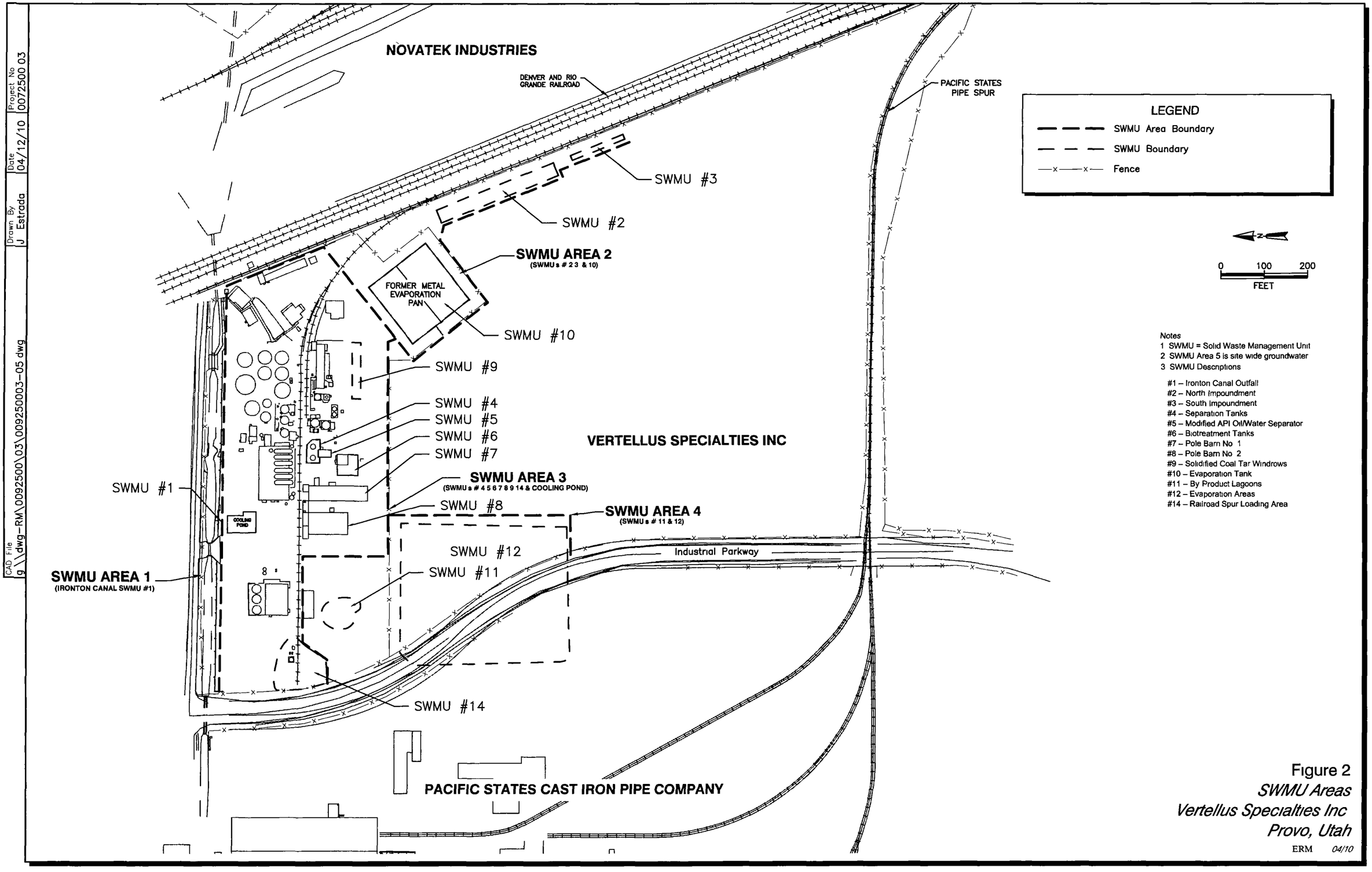

Figure 2
SWMU Areas
Vertellus Specialties Inc
Provo, Utah
ERM *04/10*

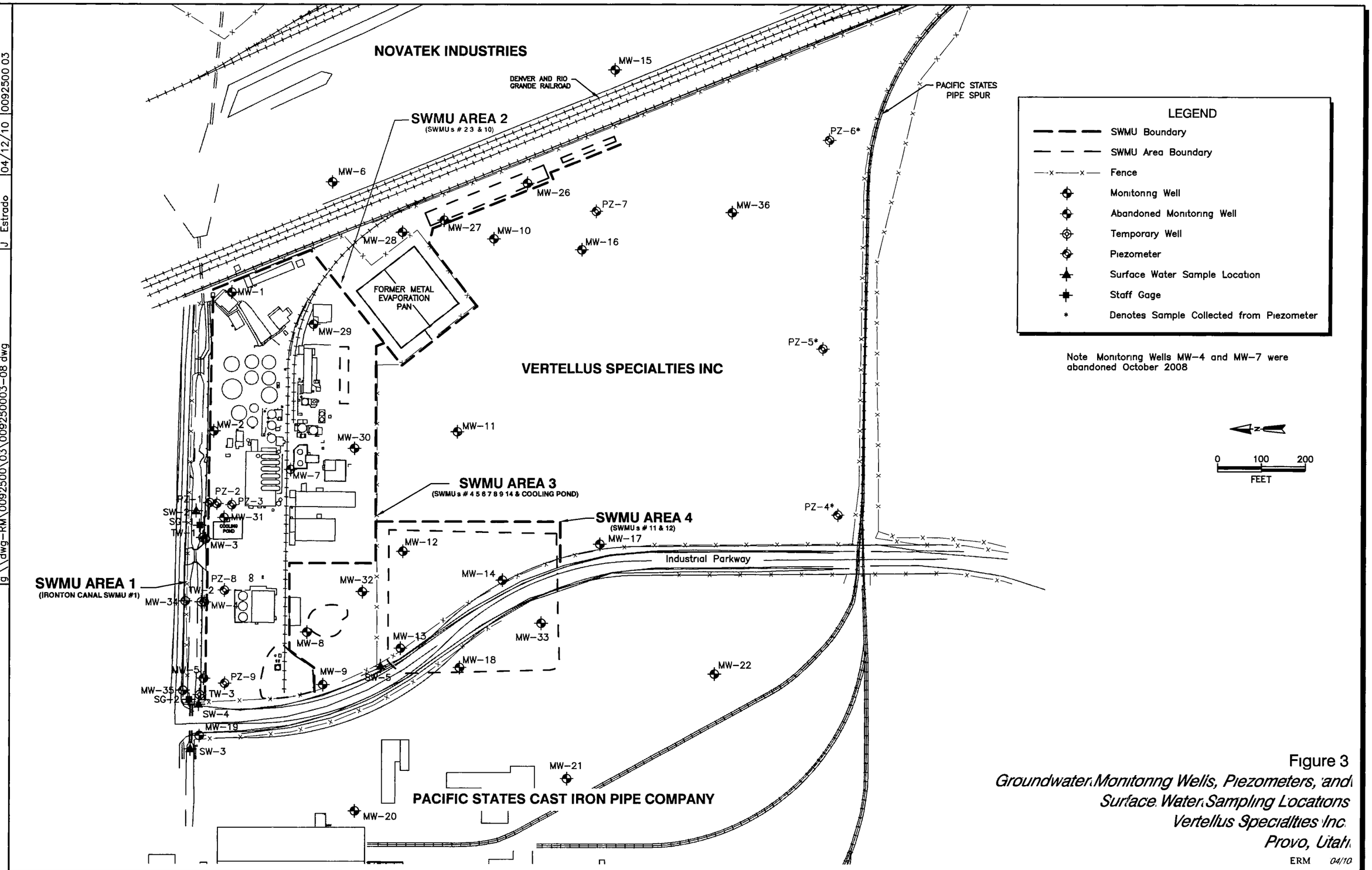

Figure 3
Groundwater Monitoring Wells, Piezometers, and Surface Water Sampling Locations
Vertellus Specialties Inc.
Provo, Utah
ERM 04/10

Project No 0092500 03
Date 04/12/10
Drawn By J Estrado
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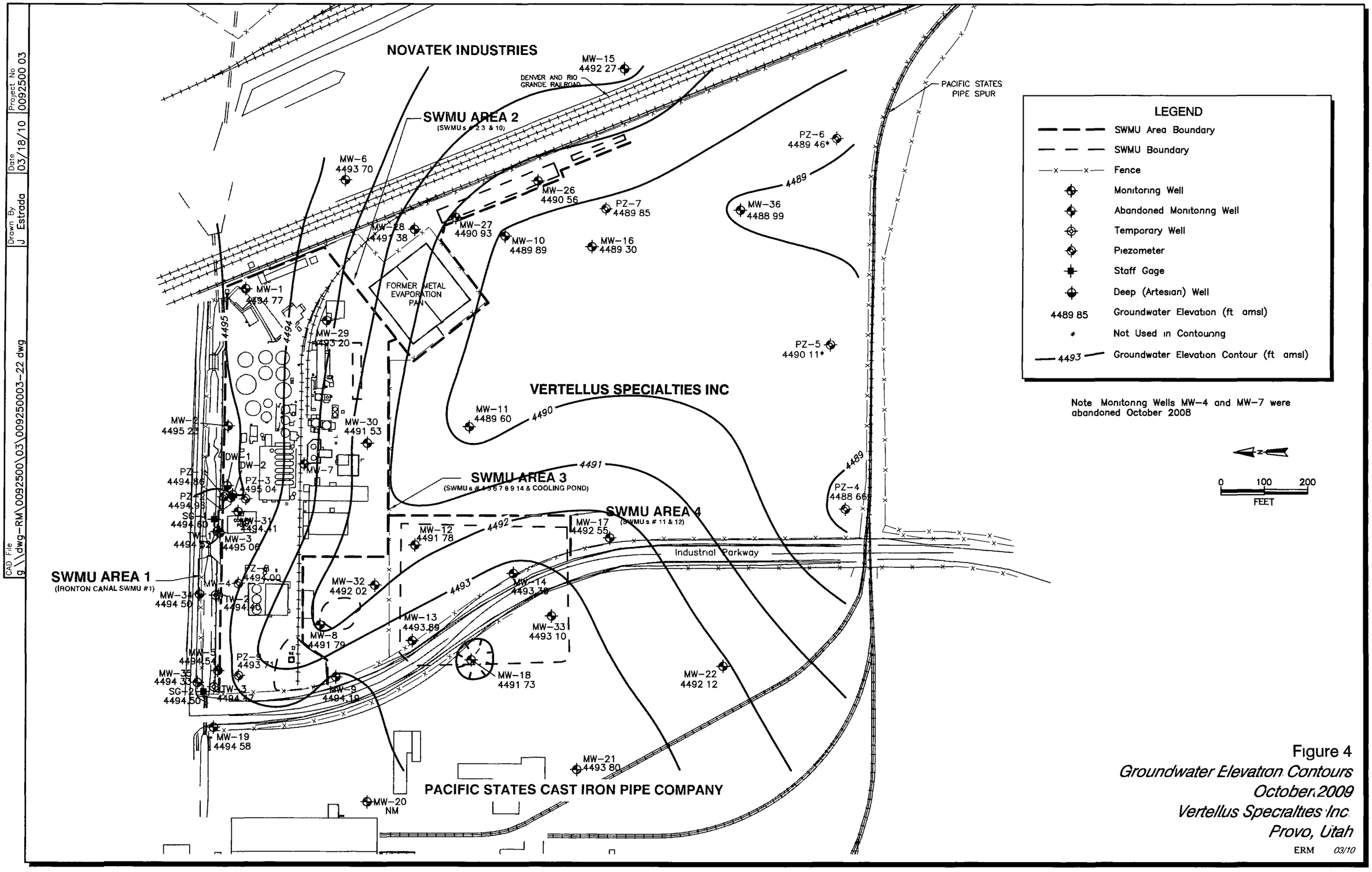

Figure 4
Groundwater Elevation Contours
October 2009
Vertellus Specialties Inc
Provo, Utah
ERM 03/10

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Date 03/18/10
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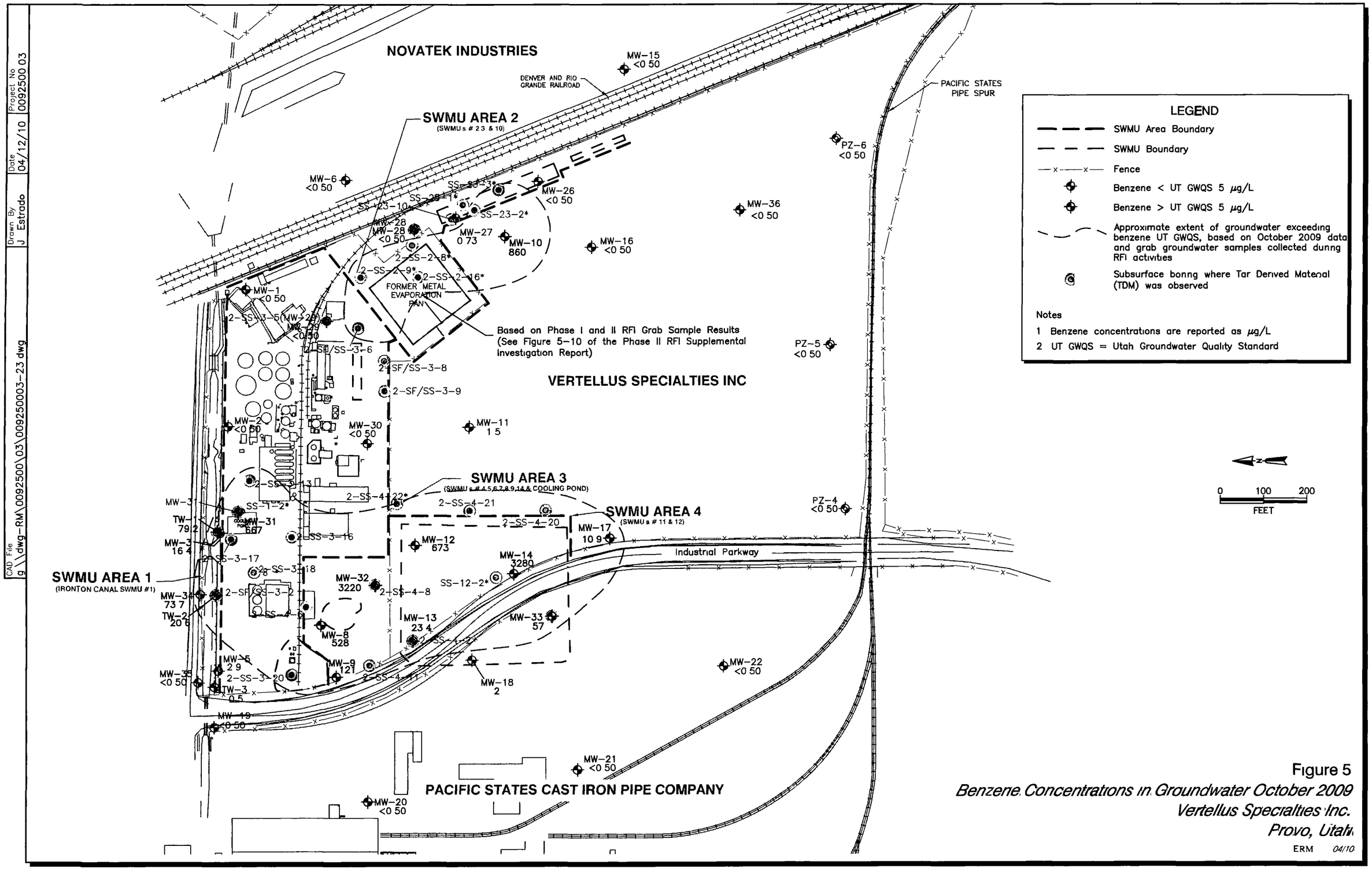

Figure 5

Benzene Concentrations in Groundwater October 2009

Vertellus Specialties Inc.

Provo, Utah

ERM 04/10

Appendix A
Laboratory Analytical Reports
(Located on Attached CD)

Appendix B
Data Usability Reports

Data Usability (Quality Assurance/Quality Control) Summary

Sample Event Phase II RFI Supplemental
Facility Provo, Utah
Laboratory Accutest Laboratories, Houston, Texas
Sample Report #T39169 Review date 11/18/09 Reviewer Robert Perry

General

This review covers 7 samples (T39169-1 through T39169-7, 5 ground water samples, one blind duplicate, and one trip blank) Samples were collected on October 1, 2009 Ground water samples were analyzed for specific lists of volatile organics (VOCs), semi-volatile organics (SVOCs), and cyanide by EPA methods SW-846 8260B, 8270C, and EPA 335 4 Select PAHs were analyzed by EPA methods SW-846 8270C using SIMs

This Data Usability Summary covers the review of QA/QC data for the purpose of assessing data quality and usability by assigning data qualifiers beyond those assigned by the laboratory The QA/QC parameters reviewed and the results of the review are summarized below These samples were reviewed using Level III protocol This QA/QC review include the review of holding times, shipping temperature, surrogates, matrix spike/matrix spike (MS/MSD) results lab control samples (blank spikes at Accutest) method blank results, field and trip blank results, and field duplicate results

Holding times

Holdmg times are noted on Table 5-11 and 5-12 of the 2004 Phase II RFI Work Plan – Revision II No exceedences of holding times noted No data qualified due to holding times

Shipping temperature Samples should be shipped at less than 6 0°C The sample coolers were noted by the lab at receipt to be at 1 2 and 4 0°C, or acceptable No data qualified based on shipping temperature

Surrogates (acceptance limits defined by Accutest laboratory limits)

Recoveries for spiked compounds were within laboratory defined limits for each field sample for both VOC and SVOC analysis No data qualified based on surrogate results

Lab Control Samples (acceptance limits defined by Accutest laboratory limits)

Lab control samples are called blank spike samples by Accutest Recoveries for the spiked compounds were within laboratory defined limits for VOC, SVOC and cyanide analysis No data qualified based on blank spike results

Resorcinol was not spiked in the blank spike, matrix spike, and matrix spike supplicate samples for SVOC batch OP13205 This batch is for water samples and resorcinol dose not recover well from water Laboratory did not spike any water control or calibration samples with resorcinol Resorcinol was not added to the semi volatile calibration standards, but its presence or absence in a water sample was assessed using TIC

Data Usability (Quality Assurance/Quality Control) Summary

Sample Event Phase II RFI Supplemental
Facility Provo, Utah
Laboratory Accutest Laboratories, Houston, Texas
Sample Report #T39169 Review date 11/18/09 Reviewer Robert Perry

(tentatively identified compounds) analysis Resorcmol was not reported present in any TIC water sample results However, considering the general poor recovery of resorcimol from water and that TIC analysis is not a valid means for assessing the absence of a compound, non-detect water results for resorcmol are qualified as rejected (R)

Matrix Spike/Matrix Spike Duplicate (acceptance limits defined by Accutest laboratory limits)

MS/MSD recoveries (%R) and relative percent difference (%RSD) for VOC, SVOC, and cyanide were within a laboratory defined limits except as noted below

For SVOC batch OP13205, the %R for 2-methylphenol was out high in the MS sample and the %RPD was out high between the MS and MSD samples Associates sample data is non-detect for 2-methylphenol, no data is qualified based on MS/MSD results

The analysis of select SVOCs by SIM (i e , prep batch OP13269) was conducted using the same prep batch as used for the regular analysis of SVOCs (OP13205) There was no separate extraction for the analysis of SVOCs by SIMs As a result, there is no MS/MSD data reported for the analysis of select SVOC by SIM from prep batch OP13269 Instead a BS/BSD was analyzed No data qualified due to the lack of MS/MSD data

For cyanide batch GP6079/GN17418, a non-site specific sample was used for the MS and duplicated analysis, no data qualified based on MS or duplicate sample results

Method Blank

Laboratory method blank results reported as ND tor VOC, SVOC and cyanide No data qualified based on method blank results

Field and Trip Blanks

One trip blank was analyzed as part of this sample group for VOCs VOC results were non-detect in the trip blank No data qualified based on trip blank results

Field Duplicates

One field duplicates were analyzed as part of this sample group Sample 39169-4 (SWDUP) is a blind duplicate for sample 39169-1 (SW3) Sample results for VOC and SVOC analysis were non-detect in both samples No relative percent difference in the VOC and SVOC results can be calculated No VOC or SVOC data are qualified based on field duplicate results No sample for cyanide duplicate analysis was received by the lab even though a sample was listed on the COC

Data Usability (Quality Assurance/Quality Control) Summary

Sample Event	Phase II RFI Supplemental
Facility	Provo, Utah
Laboratory	Accutest Laboratories, Houston, Texas

Sample Report #T39169 Review date 11/18/09 Reviewer Robert Perry

Data Usability

The data are usable for the intended purpose of characterizing the concentrations of VOC, SVOC, and cyanide in ground water samples except as noted above

Data Usability (Quality Assurance/Quality Control) Summary

Sample Event Phase II RFI Supplemental
Facility Provo, Utah
Laboratory Accutest Laboratories, Houston, Texas
Sample Report #T39187 Review date 11/18/09 Reviewer Robert Perry

General

This review covers 6 samples (T39187-1 through T39187-6, 5 ground water samples and one trip blank) Samples were collected on October 2, 2009 Ground water samples were analyzed for specific lists of volatile organics (VOCs), semi-volatile organics (SVOCs), sodium, sulfate, and cyanide by EPA methods SW-846 8260B, 8270C, 6010B, SM 4500, and EPA 335 4 Select PAHs were analyzed by EPA methods SW-846 8270C using SIMs

This Data Usability Summary covers the review of QA/QC data for the purpose of assessing data quality and usability by assigning data qualifiers beyond those assigned by the laboratory The QA/QC parameters reviewed and the results of the review are summarized below These samples were reviewed using Level III protocol This QA/QC review include the review of holding times, shipping temperature, surrogates, matrix spike/matrix spike (MS/MSD) results, lab control samples (blank spikes at Accutest), method blank results, field and trip blank results, and field duplicate results

Holding times

Holding times are noted on Table 5-11 and 5-12 of the 2004 Phase II RFI Work Plan – Revision II No exceedences of holding times noted No data qualified due to holding times

Shipping temperature Samples should be shipped at less than 6 0°C The sample cooler was noted by the lab at receipt to be at 3 2°C, or acceptable No data qualified based on shipping temperature

Surrogates (acceptance limits defined by Accutest laboratory limits)

Recoveries for spiked compounds were within laboratory defined limits for each field sample for both VOC and SVOC analysis No data qualified based on surrogate results

Lab Control Samples (acceptance limits defined by Accutest laboratory limits)

Lab control samples are called blank spike samples by Accutest Recoveries for the spiked compounds were within laboratory defined limits for VOC, SVOC, sodium, sulfate, and cyanide analysis No data qualified based on blank spike results

Resorcinol was not spiked in the blank spike, matrix spike, and matrix spike supplicate samples for SVOC batch OP13205 This batch is for water samples and resorcinol dose not recover well from water Laboratory did not spike any water control or calibration samples with resorcinol Resorcinol was not added to the semi-volatile calibration

Data Usability (Quality Assurance/Quality Control) Summary

Sample Event Phase II RFI Supplemental
Facility Provo, Utah
Laboratory Accutest Laboratories, Houston, Texas
Sample Report #T39187 Review date 11/18/09 Reviewer Robert Perry

standards, but its presence or absence in a water sample was assessed using TIC (tentatively identified compounds) analysis Resorcinol was not reported present in any TIC water sample results However considering the general poor recovery of resorcinol from water and that TIC analysis is not a valid means for assessing the absence of a compound, non-detect water results for resorcinol are qualified as rejected (R)

Matrix Spike/Matrix Spike Duplicate (acceptance limits defined by Accutest laboratory limits)

MS/MSD recoveries (%R) and relative percent difference (%RSD) for VOC, SVOC, sodium sulfate and cyanide were within a laboratory defined limits except as noted below

For SVOC batch OP13205, the %R for 2-methylphenol was out high in the MS sample and the %RPD was out high between the MS and MSD samples Positive associates sample data for 2-methylphenol is estimated and qualified as J Affect samples results include those for samples 39187-3 and 39187-4

The analysis of select SVOCs by SIM (i e prep batch OP13269) was conducted using the same prep batch as used for the regular analysis of SVOCs (OP13205) There was no separate extraction for the analysis of SVOCs by SIMs As a result, there is no MS/MSD data reported for the analysis of select SVOC by SIM from prep batch OP13269 Instead a BS/BSD was analyzed No data qualified due to the lack of MS/MSD data

For sodium batch MP10399, a non-site specific sample was used for the MS and duplicated analysis, no data qualified based on MS or duplicate sample results

Method Blank

Laboratory method blank results reported as ND for VOC, SVOC, sodium, sulfate, and cyanide No data qualified based on method blank results

Field and Trip Blanks

One trip blank was analyzed as part of this sample group for VOCs VOC results were non-detect in the trip blank No data qualified based on trip blank results

Field Duplicates

No field duplicates were analyzed as part of this laboratory report

Data Usability (Quality Assurance/Quality Control) Summary

Sample Event Phase II RFI Supplemental
Facility Provo, Utah
Laboratory Accutest Laboratories, Houston, Texas
Sample Report #T39187 Review date 11/18/09 Reviewer Robert Perry

Internal Standards

The laboratory case narrative indicated that the recoveries for internal standards (i e , chrysene-d12 and perylene-d12) in sample 39187-3 were outside of acceptance limits No reported compounds are associated with these internal standards No sample results based on internal standard results

Data Usability

The data are usable for the intended purpose of characterizing the concentrations of VOC, SVOC, sodium, sulfate, and cyanide in ground water samples except as noted above

Data Usability (Quality Assurance/Quality Control) Summary

Sample Event Phase II RFI Supplemental
Facility Provo, Utah
Laboratory Accutest Laboratories, Houston, Texas
Sample Report #T39314 Review date 11/19/09 Reviewer Robert Perry

General

This review covers 7 samples (T39314-1 through T39314-7, 6 ground water samples and one trip blank) Samples were collected on October 5, 2009 Ground water samples were analyzed for specific lists of volatile organics (VOCs), semi-volatile organics (SVOCs), and cyanide by EPA methods SW-846 8260B, 8270C, and EPA 335 4 Select PAHs were analyzed by EPA methods SW-846 8270C using SIMs

This Data Usability Summary covers the review of QA/QC data for the purpose of assessing data quality and usability by assigning data qualifiers beyond those assigned by the laboratory The QA/QC parameters reviewed and the results of the review are summarized below These samples were reviewed using Level III protocol This QA/QC review include the review of holding times, shipping temperature, surrogates, matrix spike/matrix spike (MS/MSD) results, lab control samples (blank spikes at Accutest), method blank results, field and trip blank results, and field duplicate results

Holding times

Holding times are noted on Table 5-11 and 5-12 of the 2004 Phase II RFI Work Plan – Revision II No exceedences of holdmg tunes noted No data qualified due to holding times

Shipping temperature Samples should be shipped at less than 6 0°C The sample coolers were noted by the lab at receipt to be at 3 6 and 2 6°C, or acceptable No data qualified based on shipping temperature

Surrogates (acceptance limits defined by Accutest laboratory limits)

Recoveries for spiked compounds were within laboratory defined limits for each field sample for both VOC and SVOC analysis except for terphenyl-D14 for sample 39314-1 One base neutral surrogate is allowed to be out without the need to qualify data No data qualified based on surrogate results

Lab Control Samples (acceptance limits defined by Accutest laboratory limits)

Lab control samples are called blank spike samples by Accutest Recoveries for the spiked compounds were within laboratory defined limits for VOC, SVOC, and cyanide analysis A blink spike duplicate was run for the SVOC analysis of batch OP13205, the %RPDs were acceptable No data qualified based on blank spike results

Resorcmol was not spiked m the blank spike, matrix spike, and matrix spike supplicate samples for SVOC batch OP13205 This batch is for water samples and resorcinol dose

Data Usability (Quality Assurance/Quality Control) Summary

Sample Event Phase 11 RFI Supplemental
Facility Provo, Utah
Laboratory Accutest Laboratories, Houston, Texas
Sample Report #T39423 Review date 11/19/09 Reviewer Robert Perry

standards, but its presence or absence in a water sample was assessed using TIC (tentatively identified compounds) analysis Resorcinol was not reported present in any TIC water sample results However, considering the general poor recovery of resorcinol from water and that TIC analysis is not a valid means for assessing the absence of a compound, non-detect water results for resorcinol are qualified as rejected (R)

Matrix Spike/**Matrix** Spike **D**uplicate (acceptance limits defined by Accutest laboratory limits)

MS/MSD recoveries (%R) and relative percent difference (%RSD) for VOC, SVOC, and cyanide were within a laboratory defined limits except as noted below

For VOC batch VF3596 the %R for benzene, chloroform, methylene bromide, and methylene chloride were out high in the MS sample and the %R was out high for benzene in the MSD sample Associated sample data for these compounds were either non detect (no need to qualify data) or the data was already flagged as estimated (J) by the laboratory No additional data qualifiers applied

For SVOC batch OP13230, the %R for phenol was out high in the MS and the MSD samples and the %R for 3&4-methylphenol was out high in the MSD sample In addition, recoveries for two acid surrogates were out high in the MSD sample Associates sample data is non-detect for phenol and 3&4-methylphenol, no data qualifiers were applied

The analysis of select SVOCs by SIM (i e , prep batch OP13270) was conducted using the same prep batch as used for the regular analysis of SVOCs (OP13230) There was no separate extraction for the analysis of SVOCs by SIMs As a result there is no MS/MSD data reported for the analysis of select SVOC by SIM from prep batch OP13270 Instead a BS/BSD was analyzed No data qualified due to the lack of MS/MSD data

The MS %R was out low and the duplicate %RPD for cyanide analysis was out high for batch GP7018/GN18369 (samples 39423-3 through -7) Associated sample results for cyanide are estimated and qualified as J

Method Blank

Laboratory method blank results were reported as non-detect for VOC, SVOC, and cyanide analysis except for 2 ug/l methylene chloride in the method blank for VOC batch VF3596 No methylene chloride was reported present in associated samples No data qualified based on method blank results

Data Usability (Quality Assurance/Quality Control) Summary

Sample Event Phase II RFI Supplemental
Facility Provo, Utah
Laboratory Accutest Laboratories, Houston, Texas
Sample Report #T39314 Review date 11/19/09 Reviewer Robert Perry

Field and Trip Blanks

One trip blank was analyzed as part of this sample group for VOCs VOC results were non-detect in the trip blank No data qualified based on trip blank results

Field Duplicates

No field duplicates were analyzed as part of this sample group

Internal Standards

The laboratory case narrative indicated that the recoveries for the internal standard perylene-d12 for samples 39314-1 and 39314-6 were out low, associated sample results for benzo(b)floranthene, benzo(k)floranthene, benzoe(a)pyrene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene are estimated biased low and qualified as J In addition, the recoveries for the internal standard naphthalene-d8 were out high and recoveries for the internal standard acenaphthen-d10 were out low in sample 39314-5 No compounds associated with naphthalene-d8 were reported Acenaphthylene results in sample 39314-5 are estimated biased low, and qualified as J

Data Usability

The data are usable for the intended purpose of characterizing the concentrations of VOC, SVOC, and cyanide in ground water samples except as noted above

Data Usability (Quality Assurance/Quality Control) Summary

Sample Event Phase II RFI Supplemental
Facility Provo, Utah
Laboratory Accutest Laboratories, Houston, Texas
Sample Report #T39423 Review date 11/19/09 Reviewer Robert Perry

General

This review covers 8 samples (T39432-1 through T39423-8 7 ground water samples and one trip blank) Samples were collected on October 6, 2009 Ground water samples were analyzed for specific lists of volatile organics (VOCs), semi-volatile organics (SVOCs), and cyanide by EPA methods SW-846 8260B, 8270C, and EPA 335 4 Select PAHs were analyzed by EPA methods SW 846 8270C using SIMs

This Data Usability Summary covers the review of QA/QC data for the purpose of assessing data quality and usability by assigning data qualifiers beyond those assigned by the laboratory The QA/QC parameters reviewed and the results of the review are summarized below These samples were reviewed using Level III protocol This QA/QC review include the review of holding times, shipping temperature, surrogates, matrix spike/matrix spike (MS/MSD) results, lab control samples (blank spikes at Accutest), method blank results, field and trip blank results, and field duplicate results

Holding times

Holding times are noted on Table 5-11 and 5-12 of the 2004 Phase II RFI Work Plan – Revision II No exceedences of holding times noted No data qualified due to holding times

Shipping temperature Samples should be shipped at less than 6 0°C The sample coolers were noted by the lab at receipt to be at 1 8 and 2 4°C, or acceptable No data qualified based on shipping temperature

Surrogates (acceptance limits defined by Accutest laboratory limits)

Recoveries for spiked compounds were within laboratory defined limits for each field sample for both VOC and SVOC analysis No data qualified based on surrogate results

Lab Control Samples (acceptance limits defined by Accutest laboratory limits)

Lab control samples are called blank spike samples by Accutest Recoveries for the spiked compounds were within laboratory defined limits for VOC, SVOC and cyanide analysis A blink spike duplicate was run for the SVOC analysis of batches OP13230 and OP13270, the %RPDs were acceptable No data qualified based on blank spike results

Resorcinol was not spiked in the blank spike, matrix spike, and matrix spike supplicate samples for SVOC batch OP13230 This batch is for water samples and resorcinol dose not recover well from water Laboratory did not spike any water control or calibration samples with resorcinol Resorcinol was not added to the semi-volatile calibration

standards, but its presence or absence in a water sample was assessed using TIC (tentatively identified compounds) analysis Resorcinol was not reported present in any TIC water sample results However, considering the general poor recovery of resorcimol from water and that TIC analysis is not a valid means for assessing the absence of a compound, non-detect water results for resorcinol are qualified as rejected (R)

Matrix Spike/Matrix Spike Duplicate (acceptance limits defined by Accutest laboratory limits)

MS/MSD recoveries (%R) and relative percent difference (%RSD) for VOC, SVOC, and cyanide were within a laboratory defined limits except as noted below

For VOC batch VF3596 the %R for benzene, chloroform methylene bromide, and methylene chloride were out high in the MS sample and the %R was out high for benzene in the MSD sample Associated sample data for these compounds were either non-detect (no need to qualify data) or the data was already flagged as estimated (J) by the laboratory No additional data qualifiers applied

For SVOC batch OP13230 the %R for phenol was out high in the MS and the MSD samples and the %R for 3&4-methylphenol was out high in the MSD sample In addition, recoveries for two acid surrogates were out high in the MSD sample Associates sample data is non-detect for phenol and 3&4-methylphenol, no data qualifiers were applied

The analysis of select SVOCs by SIM (i e , prep batch OP13270) was conducted using the same prep batch as used for the regular analysis of SVOCs (OP13230) There was no separate extraction for the analysis of SVOCs by SIMs As a result, there is no MS/MSD data reported for the analysis of select SVOC by SIM from prep batch OP13270 Instead a BS/BSD was analyzed No data qualified due to the lack of MS/MSD data

The MS %R was out low and the duplicate %RPD for cyanide analysis was out high for batch GP7018/GN18369 (samples 39423 3 through -7) Associated sample results for cyanide are estimated and qualified as J

Method Blank

Laboratory method blank results were reported as non-detect for VOC, SVOC, and cyanide analysis except for 2 ug/l methylene chloride in the method blank for VOC batch VF3596 No methylene chloride was reported present in associated samples No data qualified based on method blank results

Data Usability (Quality Assurance/Quality Control) Summary

Sample Event Phase II RFI Supplemental
Facility Provo, Utah
Laboratory Accutest Laboratories, Houston, Texas
Sample Report #T39423 Review date 11/19/09 Reviewer Robert Perry

Field and Trip Blanks

One trip blank was analyzed as part of this sample group for VOCs VOC results were non-detect in the trip blank No data qualified based on trip blank results

Field Duplicates

No field duplicates were analyzed as part of this sample group

Data Usability

The data are usable for the intended purpose of characterizing the concentrations of VOC, SVOC, and cyanide in ground water samples except as noted above

Data Usability (Quality Assurance/Quality Control) Summary

Sample Event Phase II RFI Supplemental
Facility Provo, Utah
Laboratory Accutest Laboratories, Houston, Texas
Sample Report #T39513 Review date 12/7/09 Reviewer Robert Perry

General

This review covers 9 samples (T39513-1 through T39513-9, 7 ground water samples, one blind duplicate, and one trip blank) Samples were collected on October 7, 2009 Ground water samples were analyzed for specific lists of volatile organics (VOCs), semi-volatile organics (SVOCs), sodium, sulfate, and cyanide by EPA methods SW-846 8260B, 8270C, 6010B, SM 4500, and EPA 335 4 Select PAHs were analyzed by EPA methods SW-846 8270C using SIMs

This Data Usability Summary covers the review of QA/QC data for the purpose of assessing data quality and usability by assigning data qualifiers beyond those assigned by the laboratory The QA/QC parameters reviewed and the results of the review are summarized below These samples were reviewed using Level III protocol This QA/QC review include the review of holding times, shipping temperature, surrogates, matrix spike/matrix spike (MS/MSD) results, lab control samples (blank spikes at Accutest), method blank results, field and trip blank results, and field duplicate results

Holding times

Holding times are noted on Table 5-11 and 5-12 of the 2004 Phase II RFI Work Plan – Revision II No exceedences of holding times noted No data qualified due to holding times

Shipping temperature Samples should be shipped at less than 6 0°C The sample coolers were noted by the lab at receipt to be at 0 8 and 3 0°C, or acceptable No data qualified based on shipping temperature

Surrogates (acceptance limits defined by Accutest laboratory limits)

Recoveries for spiked compounds were within laboratory defined limits for each field sample for both VOC and SVOC analysis No data qualified based on surrogate results

Lab Control Samples (acceptance limits defined by Accutest laboratory limits)

Lab control samples (LCS) are called blank spike samples by Accutest Recoveries for the spiked compounds were within laboratory defined limits for VOC SVOC, sodium, sulfate, and cyanide analysis except as discussed below A blink spike duplicate was run for the SVOC analysis of batches OP13230 and OP13270, the %RPDs were acceptable No data qualified based on blank spike results

Data Usability (Quality Assurance/Quality Control) Summary

Sample Event Phase II RFI Supplemental
Facility Provo, Utah
Laboratory Accutest Laboratories, Houston, Texas
Sample Report #T39513 Review date 12/7/09 Reviewer Robert Perry

The %R for methylene chloride in batch VF3599 was marginally high Methylene chloride was reported as non-detect in the associated samples No data were qualified based on blank spike results

Resorcinol was not spiked in the blank spike, matrix spike and matrix spike supplicate samples for SVOC batch OP13230 This batch is for water samples and resorcmol dose not recover well from water Laboratory did not spike any water control or calibration samples with resorcinol Resorcinol was not added to the semi-volatile calibration standards, but its presence or absence in a water sample was assessed using TIC (tentatively identified compounds) analysis Resorcinol was not reported present m any TIC water sample results However considering the general poor recovery of resorcimol from water and that TIC analysis is not a valid means for assessing the absence of a compound, non-detect water results for resorcinol are qualified as rejected (R)

Matrix Spike/Matrix Spike Duplicate (acceptance limits defined by Accutest laboratory limits)

MS/MSD recoveries (%R) and relative percent difference (%RSD) for VOC, SVOC sodium, sulfate, and cyanide were within a laboratory defined limits except as noted below

For VOC batch VF3599 the %R for acetone and methylene bromide were out high in the MS and MSD samples Associated sample data for these compounds were either non detect (no need to qualify data) or the data was already flagged as estimated (J) by the laboratory No additional data qualifiers applied

For SVOC batch OP13230, the %R for phenol was out high in the MS and the MSD samples and the %R for 3&4-methylphenol was out high in the MSD sample In addition, recoveries for two acid surrogates were out high in the MSD sainple Associates sample data is non-detect for phenol and 3&4-methylphenol, no data qualifiers were applied

The analysis of select SVOCs by SIM (i e , prep batch OP13270) was conducted using the same prep batch as used for the regular analysis of SVOCs (OP13230) There was no separate extraction for the analysis of SVOCs by SIMs As a result, there is no MS/MSD data reported for the analysis of select SVOC by SIM from prep batch OP13270 Instead a BS/BSD was analyzed No data qualified due to the lack of MS/MSD data

The MS %R was out low and the duplicate %RPD for cyanide analysis was out high for batch GP7018/GN18369 (samples 39513-1 through -4) Associated sample results for cyanide are estimated and qualified as J

Data Usability (Quality Assurance/Quality Control) Summary

Sample Event Phase II RFI Supplemental
Facility Provo, Utah
Laboratory Accutest Laboratories, Houston, Texas
Sample Report #T39513 Review date 12/7/09 Reviewer Robert Perry

The %R was out low for sodium analysis but the amount of the spike was small compared to the amount of sodium in the original sample The %RDP for the sodium duplicate analysis was acceptable No sodium data was qualified due to MS/MSD data

Method Blank

Laboratory method blank results were reported as non-detect for VOC, SVOC, sodium, sulfate, and cyanide analysis No data qualified based on method blank results

Field and Trip Blanks

One trip blank was analyzed as part of this sample group for VOCs VOC results were non-detect in the trip blank No data qualified based on trip blank results

Field Duplicates

One field duplicate was analyzed as part of this sample group Sample 39513-7 (DUP) was a blind duplicate of sample 39513-3 (MW27) The %RPD should be less than 30% for water samples when both results are greater than 5 times the reporting limit or within a range equal to the reporting limit if results are less than the 5 times the reporting limit Duplicate results were within acceptable limits except for phenol and acenaphthylene Results for phenol and acenaphthylene in sample 39513-3 (MW27) are estimated and qualified as J, although the results for acenaphthylene are already flagged J by the laboratory

Compound	39513-7 (DUP)	39513-3 (MW27)	Reporting Limit	%RPD
Benzene	0 75 J	0 73 J	2 0	NA
Ethylbenzene	5 1	4 8		6 06
Toluene	6 9	6 6		4 44
Xylene	20 2	20 2		0 0
2-methylphenol	0 97 J	0 83 U	5 0	NA
3&4 methylphenol	2 8 J	1 6 U	5 0	NA
Phenol	9 9	0 75U	5 0	NA
Acenaphthene	42 0	38 6		8 44
Flourene	11 1	8 9		22 09
Naphthalene	71 1	62 2		13 35
Phenanthrene	7 9	8 7		9 64
Acenaphthylene	0 33	0 090 J	0 2	NA
Anthracene	1 0	0 81		20 99

Data Usability (Quality Assurance/Quality Control) Summary

Sample Event Phase II RFI Supplemental
Facility Provo, Utah
Laboratory Accutest Laboratories, Houston, Texas
Sample Report #T39513 Review date 12/7/09 Reviewer Robert Perry

Compound	39513-7 (DUP)	39513-3 (MW27)	Reporting Limit	%RPD
Benzo(a)anthracene	0 21	0 041 U	0 2	NA
Chrysene	0 11 J	0 044 U	0 2	NA
Fluoranthene	2 5	2 1		17 39
Pyrene	1 8	1 5		18 18
Cyanide	0 021	023		9 09

Data Usability

The data are usable for the intended purpose of characterizing the concentrations of VOC, SVOC, sodium, sulfate, and cyanide in ground water samples except as noted above

Data Usability (Quality Assurance/Quality Control) Summary

Sample Event Phase II RFI Supplemental
Facility Provo, Utah
Laboratory Accutest Laboratories, Houston, Texas
Sample Report #T39646 Review date 11/23/09 Reviewer Robert Perry

General

This review covers 12 samples (T39646-1 through T39646-12, 9 ground water samples, two blind duplicate, and one trip blank) Samples were collected on October 8 & 9, 2009 Ground water samples were analyzed for specific lists of volatile organics (VOCs), semi-volatile organics (SVOCs), sodium, sulfate, and cyanide by EPA methods SW-846 8260B, 8270C, 6010B, SM 4500, and EPA 335 4 Select PAHs were analyzed by EPA methods SW-846 8270C using SIMs

This Data Usability Summary covers the review of QA/QC data for the purpose of assessing data quality and usability by assigning data qualifiers beyond those assigned by the laboratory The QA/QC parameters reviewed and the results of the review are summarized below These samples were reviewed using Level III protocol This QA/QC review include the review of holding times, shipping temperature, surrogates, matrix spike/matrix spike (MS/MSD) results lab control samples (blank spikes at Accutest), method blank results, field and trip blank results, and field duplicate results

Holding times

Holding times are noted on Table 5-11 and 5 12 of the 2004 Phase II RFI Work Plan – Revision II No exceedences of holding times noted No data qualified due to holding times

Shipping temperature Samples should be shipped at less than 6 0°C The sample coolers were noted by the lab at receipt to be at 2 6 and 4 2°C, or acceptable No data qualified based on shipping temperature

Surrogates (acceptance limits defined by Accutest laboratory limits)

Recoveries for spiked compounds were within laboratory defined limits for each field sample for both VOC and SVOC analysis except as noted as follows Surrogates were diluted out for several samples that were diluted due to the presence of elevated concentrations of target compounds In these cases, the surrogate recoveries in the initial undiluted runs were acceptable One SVOC surrogate (2-fluorobiphenyl was out high for the first SIM run of sample 39346-6 No data qualified based on surrogate results

Lab Control Samples (acceptance limits defined by Accutest laboratory limits)

Lab control samples (LCS) are called blank spike samples by Accutest Recoveries for the spiked compounds were within laboratory defined limits for VOC, SVOC sodium sulfate, and cyanide analysis except as discussed below A blink spike duplicate was run for the SVOC analysis of batches OP13250 and OP13271, the %RPDs were acceptable

Data Usability (Quality Assurance/Quality Control) Summary

Sample Event Phase II RFI Supplemental
Facility Provo, Utah
Laboratory Accutest Laboratories, Houston, Texas
Sample Report #T39646 Review date 11/23/09 Reviewer Robert Perry

The %R for methylene chloride in batch VF3599 was marginally high Methylene chloride was reported as non-detect in the associated samples No data were qualified based on blank spike results

Resorcinol was not spiked in the blank spike, matrix spike, and matrix spike supplicate samples for SVOC batch OP13250 This batch is for water samples and resorcinol dose not recover well from water Laboratory did not spike any water control or calibration samples with resorcmol Resorcinol was not added to the semi-volatile calibration standards, but its presence or absence in a water sample was assessed usmg TIC (tentatively identified compounds) analysis Resorcinol was not reported present in any TIC water sample results However considering the general poor recovery ofiresorcimol from water and that TIC analysis is not a valid means for assessing the absence ofia compound, non-detect water results for resorcinol are qualified as rejected (R)

Matrix Spike/Matrix Spike Duplicate (acceptance limits defined by Accutest laboratory limits)

MS/MSD recoveries (%R) and relative percent difference (%RSD) for VOC SVOC. sodium sulfate and cyanide were within a laboratory defined limits except as noted below

For VOC batch VF3599 the %R for acetone and methylene bromide were out high in the MS and MSD samples Associated sample data for these compounds were non-detect No data qualifiers applied For VOC batches VF3600, VC175, and VF3603, a non-site specific sample was used for the MS/MSD analysis, no data qualified based on MS/MSD results

For SVOC batch OP13250 the %R for fluoranthene was out marginally low in the MS sample, no data was qualified In addition, the MS/MSD samples were not spiked for benzenthiol

The analysis ofiselect SVOCs by SIM (i e prep batch OP13271) was conducted using the same prep batch as used for the regular analysis of SVOCs (OP13250) There was no separate extraction for the analysis ofiSVOCs by SIMs As a result there is no MS/MSD data reported for the analysis of select SVOC by SIM from prep batch OP13271 Instead a BS/BSD was analyzed No data qualified due to the lack ofiMS/MSD data

For sodium analysis, the %R for sodium was low in the MS and MSD samples but the amount spiked was less than 25% ofithe amount in the original sainple The %RPD for the duplicate analysis was acceptable No data qualified based on MS/MSD or duplicate results

Data Usability (Quality Assurance/Quality Control) Summary

Sample Event Phase II RFI Supplemental
Facility Provo, Utah
Laboratory Accutest Laboratories, Houston, Texas
Sample Report #T39646 Review date 11/23/09 Reviewer Robert Perry

For cyanide analysis batch GP7035, the MS %R was out marginally low and the duplicate %RPD for cyanide analysis was out high However the dulicate results were both less than 5 time the reporting level and the difference in results was less than the reporting level No cyanide data associated with batch GP7035 was qualified based on MS and duplicate results For cyanide batch GP7036, a non-site specific sample was spiked, no data for this batch was qualified based on MS or duplicate results

For sulfate analysis, the sample used for MS and duplicate analysis was not site specific, no data qualified based on MS or duplicate results

Internal Standards

The laboratory case narrative indicated that the recoveries for the internal standard naphthalene-d8 was out high for samples 39646-1 and 39646-10 and out low for sample 39646-2 The only associated reported constituent is naphthalene No reported positive naphthalene results was associated with this internal standard, no data was qualified In addition, the internal standard chrysene-d12 was out high for samples 39646-6, 39646-9, and 39646-11 Associated reported constituents include benzo(a)anthracene and pyrene Positive benzo(a)anthracene results in samples 39646-6 39646 9 and 39646-11 are estimated and qualified as J Positive pyrene results in sample 39646-11 is estimated and qualified as J

Method Blank

Laboratory method blank results were reported as non-detect for VOC, SVOC, sodium sulfate and cyanide analysis No data qualified based on method blank results

Field and Trip Blanks

One trip blank was analyzed as part of this sample group for VOCs VOC results were non-detect in the trip blank No data qualified based on trip blank results

Field Duplicates

Two field duplicate was analyzed as part of this sample group Sample 39946-5 (DUP) was a blind duplicate of sample 39946-3 (MW32), and sample 39646-11 (DUP2) was a blind duplicate of sample 39946-9 (MW5) The %RPD should be less than 30% for water samples when both results are greater than 5 times the reporting limit or within a range equal to the reporting limit if results are less than the 5 times the reporting limit Duplicate results were within acceptable limits except for xylene, naphthalene, acenaphthylene and cyanide in sample 39646-3 Results for these compounds in sample 39646-3 are estimated and qualified as J

Data Usability (Quality Assurance/Quality Control) Summary

Sample Event Phase II RFI Supplemental
Facility Provo, Utah
Laboratory Accutest Laboratories, Houston, Texas
Sample Report #T39646 Review date 11/23/09 Reviewer Robert Perry

Compound	39464-5 (DUP)	39464-3 (MW32)	%RPD
Benzene	3280	3220	1 85
Ethylbenzene	131	132	0 76
Toluene	1330	1270	4 62
Xylene	778	356	**74 43**
2,4-dimethylphenol	6460	4940	26 67
2-methylphenol	4560	3130	**37 19**
3&4-methylphenol	11000	10100	8 53
Phenol	17800	15500	13 81
Naphthalene	4780	2630	**58 03**
Acenaphthene	82 7	71 2	14 94
Flourene	13 1	11 4	13 88
Phenanthrene	37 1	36 5	1 63
Acenaphthylene	12 5	9 1	**31 48**
Anthracene	8 5	8 3	2 38
Fluoranthene	10 1	10 3	1 96
Pyrene	5 9	5 3	10 71
Cyanide	0 37	0 26	**34 82**

Compound	39464-11 (DUP2)	39464-9 (MW5)	Reporting Limit	%RPD
Benzene	2 8	2 9		3 51
Ethylbenzene	3 6	3 7		2 74
Toluene	1 6	1 7		6 06
Xylene	2 3	2 4		4 26
2,4-dimethylphenol	8 9	10 3		14 58
2-methylphenol	1 3	1 6		20 69
Naphthalene	3 5	2 7		25 81
Acenaphthene	119	110		7 86
Flourene	41 8	45 8		9 13
Phenanthrene	11 7	11 5		1 72
Acenaphthylene	1 8	2 0		10 53
Anthracene	5 3	4 6		14 14
Benzo(a)anthracene	0 85	0 86	0 2	NA
Benzo(b)fluoranthene	0 16	0 060 U	0 2	NA
Chrysene	0 29	0 21	0 2	NA
Fluoranthene	14 0	12 8		8 96
Pyrene	9 0	8 6		4 55
Cyanide	0 0068B	0 0059 B	0 01	14 17

Data Usability (Quality Assurance/Quality Control) Summary

Sample Event Phase II RFI Supplemental
Facility Provo, Utah
Laboratory Accutest Laboratories, Houston, Texas
Sample Report #T39646 Review date 11/23/09 Reviewer Robert Perry

Data Usability

The data are usable for the intended purpose of characterizing the concentrations of VOC, SVOC, sodium, sulfate, and cyanide in ground water samples except as noted above

Accutest Laboratories

Report of Analysis

Client Sample ID	MW33 1009		
Lab Sample ID	T39187 4	Date Sampled	10/02/09
Matrix	AQ Ground Water	Date Received	10/03/09
Method	SW846 8270C SW846 3510C	Percent Solids	n/a
Project	Vertellus Provo		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	J13748 D	10	10/09/09	SC	10/07/09	OP13205	EJ631
Run #2	J13743 D	160	10/09/09	SC	10/07/09	OP13205	EJ631

	Initial Volume	Final Volume
Run #1	1000 ml	1 0 ml
Run #2	1000 ml	1 0 ml

SW-846 8270C

CAS No	Compound	Result	RL	MDL	Units	Q
108 98 5	Benzenethiol	13 U	100	13	ug/l	
105 67 9	2 4 Dimethylphenol	889	50	13	ug/l	
95 48 7	2 Methylphenol	1500 [b]	800	130	ug/l	J RGP, lists
	3&4 Methylphenol	5960 [b]	800	250	ug/l	
108 95 2	Phenol	9010 [b]	800	120	ug/l	
83 32 9	Acenaphthene	441	50	16	ug/l	
120 12 7	Anthracene	170	50	11	ug/l	
86 73 7	Fluorene	140	50	13	ug/l	
91 20 3	Naphthalene	5150 [b]	800	180	ug/l	
85 01 8	Phenanthrene	127	50	9 7	ug/l	

CAS No	Surrogate Recoveries	Run# 1	Run# 2	Limits
367 12 4	2 Fluorophenol	43%	0% [c]	10 66%
4165 62 2	Phenol d5	19%	0% [c]	10 53%
118 79 6	2 4 6 Tribromophenol	54%	0% [c]	32 128%
4165 60 0	Nitrobenzene d5	45%	0% [c]	29 115%
321 60 8	2 Fluorobiphenyl	81%	0% [c]	34 113%
1718 51 0	Terphenyl d14	94%	91%	12 145%

CAS No	Tentatively Identified Compounds [d]	R T	Est Conc	Units	Q
108 99 6	Pyridine 3 methyl	3 56	290	ug/l	JN
108 47 4	Pyridine 2 4 dimethyl	3 73	490	ug/l	JN
108 47 4	Pyridine 2 4 dimethyl	4 12	1300	ug/l	JN
583 61 9	Pyridine 2 3 dimethyl	4 22	430	ug/l	JN
583 58 4	Pyridine 3 4 dimethyl	4 85	900	ug/l	JN
95 13 6	Indene	4 94	410	ug/l	JN
95 48 7	Phenol 2 methyl	5 05	430	ug/l	JN
695 98 7	Pyridine 2 3 5 trimethyl	5 20	810	ug/l	JN
108 39 4	Phenol 3 methyl	5 26	1200	ug/l	JN
533 37 9	2 3 Cyclopentenopyridine	5 53	130	ug/l	JN

U = Not detected MDL Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Chent Sample ID	MW32 1009		
Lab Sample ID	T39646 3	Date Sampled	10/08/09
Matrix	AQ Ground Water	Date Received	10/10/09
Method	SW846 8270C SW846 3510C	Percent Sohds	n/a
Project	Vertellus Provo		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	J13841 D	40	10/15/09	SC	10/14/09	OP13250	EJ635
Run #2	J13842 D	400	10/15/09	SC	10/14/09	OP13250	EJ635

	Initial Volume	Final Volume
Run #1	1000 ml	1 0 ml
Run #2	1000 ml	1 0 ml

SW 846 8270C

CAS No	Compound	Result	RL	MDL	Units	Q
108 98 5	Benzenethiol	52 U	400	52	ug/l	
105 67 9	2 4 Dimethylphenol	4940	200	51	ug/l	
95 48 7	2 Methylphenol	3130	200	33	ug/l	J RJ 12/7/09
	3&4 Methylphenol	10100 [a]	2000	630	ug/l	
108 95 2	Phenol	15500 [a]	2000	300	ug/l	
91 20 3	Naphthalene	2630	200	45	ug/l	J RJ 12/7/09

CAS No	Surrogate Recoveries	Run# 1	Run# 2	Limits
367 12 4	2 Fluorophenol	33%	0% [b]	10 66%
4165 62 2	Phenol d5	34%	0% [b]	10 53%
118 79 6	2 4 6 Tribromophenol	33%	0% [b]	32 128%
4165 60 0	Nitrobenzene d5	43%	0% [b]	29 115%
321 60 8	2 Fluorobiphenyl	42%	0% [b]	34 113%
1718 51 0	Terphenyl d14	45%	0% [b]	12 145%

CAS No	Tentatively Identified Compounds [c]	R T	Est Conc	Units	Q
108 88 3	Toluene	2 66	170	ug/l	JN
109 06 8	Pyridine 2 methyl	3 22	220	ug/l	JN
108 89 4	Pyridine 4 methyl	3 68	410	ug/l	JN
271 89 6	Benzofuran	4 60	420	ug/l	JN
576 26 1	Phenol 2 6 dimethyl	5 33	450	ug/l	JN
108 68 9	Phenol 3 5 dimethyl	5 74	3000	ug/l	JN
526 75 0	Phenol 2 3 dimethyl	5 80	310	ug/l	JN
95 15 8	Benzo[b]thiophene	5 99	190	ug/l	JN
1000129 53 52 3	Dihydroindole 2 one	8 30	430	ug/l	JN
90 15 3	1 Naphthalenol	8 61	220	ug/l	JN
59 31 4	2(1H) Quinolinone	10 43	570	ug/l	JN
	Total TIC Semi Volatile		6390	ug/l	J

(a) Result is from Run# 2

U = Not detected MDL Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Chent Sample ID	MW32 1009		
Lab Sample ID	T39646 3	Date Sampled	10/08/09
Matrix	AQ Ground Water	Date Received	10/10/09
Method	SW846 8270C BY SIM SW846 3510C	Percent Sohds	n/a
Project	Vertellus Provo		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H35596 D	10	10/23/09	SC	10/14/09	OP13271	EH1920
Run #2							

	Initial Volume	Fmal Volume
Run #1	1000 ml	1 0 ml
Run #2		

SW846 8270 PAH Special List

CAS No	Compound	Resuh	RL	MDL	Units	Q
83 32 9	Acenaphthene	71 2	2 0	0 42	ug/l	
208 96 8	Acenaphthylene	9 1	2 0	0 72	ug/l	J RCP 2/2/09
120 12 7	Anthracene	8 3	2 0	0 54	ug/l	
56 55 3	Benzo(a)anthracene	0 41 U	2 0	0 41	ug/l	
50 32 8	Benzo(a)pyrene	0 64 U	2 0	0 64	ug/l	
205 99 2	Benzo(b)fluoranthene	0 60 U	2 0	0 60	ug/l	
207 08 9	Benzo(k)fluoranthene	0 56 U	2 0	0 56	ug/l	
218 01 9	Chrysene	0 44 U	2 0	0 44	ug/l	
53 70 3	Dibenzo(a h)anthracene	0 60 U	2 0	0 60	ug/l	
206 44 0	Fluoranthene	10 3	2 0	0 46	ug/l	
86 73 7	Fluorene	11 4	2 0	0 64	ug/l	
193 39 5	Indeno(1 2 3 cd)pyrene	0 61 U	2 0	0 61	ug/l	
85 01 8	Phenanthrene	36 5	2 0	0 75	ug/l	
129 00 0	Pyrene	5 3	2 0	0 79	ug/l	

CAS No	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165 60 0	Nitrobenzene d5	52% [a]		17 131%
321 60 8	2 Fluorobiphenyl	127% [a]		15 137%
1718 51 0	Terphenyl d14	156% [a]		10 160%

(a) Recovery was adjusted for 10x spiking

U = Not detected MDL Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Chent Sample ID	MW32 1009		
Lab Sample ID	T39646 3	Date Sampled	10/08/09
Matrix	AQ Ground Water	Date Received	10/10/09
		Percent Solids	n/a
Project	Vertellus Provo		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0 26 J	0 010	0 0040	mg/l	1	10/21/09 12 09	CV	EPA 335 4

Rcd 10/21/09

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

Chent Sample ID	MW3 1009		
Lab Sample ID	T39646 6	Date Sampled	10/08/09
Matrix	AQ Ground Water	Date Received	10/10/09
Method	SW846 8270C BY SIM SW846 3510C	Percent Sohds	n/a
Project	Vertellus Provo		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	H35620 D	1	10/26/09	SC	10/14/09	OP13271	EH1921
Run #2	H35599 D	4	10/23/09	SC	10/14/09	OP13271	EH1920

	Initial Volume	Final Volume
Run #1	1000 ml	1 0 ml
Run #2	1000 ml	1 0 ml

SW846 8270 PAH Special List

CAS No	Compound	Result	RL	MDL	Units	Q
208 96 8	Acenaphthylene	4 2	0 20	0 072	ug/l	
120 12 7	Anthracene	7 6	0 20	0 054	ug/l	
56 55 3	Benzo(a)anthracene	1 3	0 20	0 041	ug/l	J RGP 1/23/09
50 32 8	Benzo(a)pyrene	0 064 U	0 20	0 064	ug/l	
205 99 2	Benzo(b)fluoranthene	0 060 U	0 20	0 060	ug/l	
207 08 9	Benzo(k)fluoranthene	0 056 U	0 20	0 056	ug/l	
218 01 9	Chrysene	0 25	0 20	0 044	ug/l	
53 70 3	Dibenzo(a h)anthracene	0 060 U	0 20	0 060	ug/l	
206 44 0	Fluoranthene	22 2 [b]	0 80	0 18	ug/l	
193 39 5	Indeno(1 2 3 cd)pyrene	0 061 U	0 20	0 061	ug/l	
91 20 3	Naphthalene	1 3	0 20	0 075	ug/l	
85 01 8	Phenanthrene	1 1	0 20	0 075	ug/l	
129 00 0	Pyrene	14 1 [b]	0 80	0 32	ug/l	

CAS No	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165 60 0	Nitrobenzene d5	110% [c]	125% [c]	17 131%
321 60 8	2 Fluorobiphenyl	157% [d]	92% [c]	15 137%
1718 51 0	Terphenyl d14	160% [c]	132% [c]	10 160%

(a) Internal standards are not within the advisory limits due to a matrix interference Confirmed by reanalysis
(b) Result is from Run# 2
(c) Recovery was adjusted for 10x spiking
(d) Recovery was adjusted for 10x spiking Outside of control limits due to matrix interference

U = Not detected MDL Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Chent Sample ID	MW5 1009		
Lab Sample ID	T39646 9	Date Sampled	10/09/09
Matrix	AQ Ground Water	Date Received	10/10/09
Method	SW846 8270C BY SIM SW846 3510C	Percent Sohds	n/a
Project	Vertellus Provo		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	H35590 D	1	10/23/09	SC	10/14/09	OP13271	EH1920
Run #2	H35626 D	10	10/26/09	SC	10/14/09	OP13271	EH1921

	Initial Volume	Final Volume
Run #1	1000 ml	1 0 ml
Run #2	1000 ml	1 0 ml

SW846 8270 PAH Special List

CAS No	Compound	Result	RL	MDL	Units	Q
208 96 8	Acenaphthylene	2 0	0 20	0 072	ug/l	
120 12 7	Anthracene	4 6	0 20	0 054	ug/l	
56 55 3	Benzo(a)anthracene	0 86	0 20	0 041	ug/l	J RLP 11/23/09
50 32 8	Benzo(a)pyrene	0 064 U	0 20	0 064	ug/l	
205 99 2	Benzo(b)fluoranthene	0 060 U	0 20	0 060	ug/l	
207 08 9	Benzo(k)fluoranthene	0 056 U	0 20	0 056	ug/l	
218 01 9	Chrysene	0 21	0 20	0 044	ug/l	
53 70 3	Dibenzo(a h)anthracene	0 060 U	0 20	0 060	ug/l	
193 39 5	Indeno(1 2 3 cd)pyrene	0 061 U	0 20	0 061	ug/l	
91 20 3	Naphthalene	2 7	0 20	0 075	ug/l	

CAS No	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165 60 0	Nitrobenzene d5	62% [b]	126% [b]	17 131%
321 60 8	2 Fluorobiphenyl	93% [b]	54% [b]	15 137%
1718 51 0	Terphenyl d14	100% [b]	93% [b]	10 160%

(a) Internal standards are not within the advisory limits due to a matrix interference Confirmed by reanalysis
(b) Recovery was adjusted for 10x spiking

U = Not detected MDL Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Chent Sample ID	DUP2		
Lab Sample ID	T39646 11	Date Sampled	10/09/09
Matrix	AQ Ground Water	Date Received	10/10/09
Method	SW846 8270C BY SIM SW846 3510C	Percent Sohds	n/a
Project	Vertellus Provo		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	H35592 D	1	10/23/09	SC	10/14/09	OP13271	EH1920
Run #2	H35600 D	10	10/23/09	SC	10/14/09	OP13271	EH1920

	Initial Volume	Fmal Volume
Run #1	1000 ml	1 0 ml
Run #2	1000 ml	1 0 ml

SW846 8270 PAH Special List

CAS No	Compound	Result	RL	MDL	Units	Q
208 96 8	Acenaphthylene	1 8	0 20	0 072	ug/l	
120 12 7	Anthracene	5 3	0 20	0 054	ug/l	
56 55 3	Benzo(a)anthracene	0 85	0 20	0 041	ug/l	J RG 11/23/09
50 32 8	Benzo(a)pyrene	0 064 U	0 20	0 064	ug/l	
205 99 2	Benzo(b)fluoranthene	0 16	0 20	0 060	ug/l	J
207 08 9	Benzo(k)fluoranthene	0 056 U	0 20	0 056	ug/l	
218 01 9	Chrysene	0 29	0 20	0 044	ug/l	
53 70 3	Dibenzo(a h)anthracene	0 060 U	0 20	0 060	ug/l	
193 39 5	Indeno(1 2 3 cd)pyrene	0 061 U	0 20	0 061	ug/l	
91 20 3	Naphthalene	3 5	0 20	0 075	ug/l	
129 00 0	Pyrene	9 0	0 20	0 079	ug/l	J RG 12/3/09

CAS No	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165 60 0	Nitrobenzene d5	59% [b]	46% [b]	17 131%
321 60 8	2 Fluorobiphenyl	75% [b]	65% [b]	15 137%
1718 51 0	Terphenyl d14	93% [b]	132% [b]	10 160%

(a) Internal standards are not within the advisory limits due to a matrix interference Confirmed by reanalysis
(b) Recovery was adjusted for 10x spiking

U = Not detected MDL Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Chent Sample ID	MW17 1009		
Lab Sample ID	T39513 1	Date Sampled	10/07/09
Matrix	AQ Ground Water	Date Received	10/08/09
		Percent Solids	n/a
Project	Vertellus Provo		

General Chemistry

Analyte	Resuh	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0 10 J	0 010	0 0040	mg/l	1	10/17/09 12 48	CV	EPA 335 4
Sulfate	5230	100	2 6	mg/l	1	10/11/09 09 00	MC	SM 4500 SO4

12/7/09

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

Client Sample ID	MW28 1009		
Lab Sample ID	T39513 2	Date Sampled	10/07/09
Matrix	AQ Ground Water	Date Received	10/08/09
		Percent Solids	n/a
Project	Vertellus Provo		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0 015 J	0 010	0 0040	mg/l	1	10/17/09 12 58	CV	EPA 335 4

RLP
12/7/09

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

Chent Sample ID	MW27 1009		
Lab Sample ID	T39513 3	Date Sampled	10/07/09
Matrix	AQ Ground Water	Date Received	10/08/09
Method	SW846 8270C SW846 3510C	Percent Sohds	n/a
Project	Vertellus Provo		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	J13797 D	1	10/13/09	SC	10/09/09	OP13230	EJ633
Run #2							

	Initial Volume	Fmal Volume
Run #1	1000 ml	1 0 ml
Run #2		

SW 846 8270C

CAS No	Compound	Resuh	RL	MDL	Units	Q
108 98 5	Benzenethiol	1 3 U	10	1 3	ug/l	
105 67 9	2 4 Dimethylphenol	1 3 U	5 0	1 3	ug/l	
95 48 7	2 Methylphenol	0 83 U	5 0	0 83	ug/l	
	3&4 Methylphenol	1 6 U	5 0	1 6	ug/l	
108 95 2	Phenol	0 75 U	5 0	0 75	ug/l	J Rep 12/7/09
83 32 9	Acenaphthene	38 6	5 0	1 6	ug/l	
91 20 3	Naphthalene	62 2	5 0	1 1	ug/l	

CAS No	Surrogate Recoveries	Run# 1	Run# 2	Limits
367 12 4	2 Fluorophenol	49%		10 66%
4165 62 2	Phenol d5	37%		10 53%
118 79 6	2 4 6 Tribromophenol	71%		32 128%
4165 60 0	Nitrobenzene d5	66%		29 115%
321 60 8	2 Fluorobiphenyl	57%		34 113%
1718 51 0	Terphenyl d14	91%		12 145%

CAS No	Tentatively Identified Compounds [a]	R T	Est Conc	Units	Q
106 42 3	p Xylene	3 62	4 7	ug/l	JN
271 89 6	Benzofuran	4 59	15	ug/l	JN
496 11 7	Indane	4 85	15	ug/l	JN
95 15 8	Benzo[b]thiophene	5 98	8 2	ug/l	JN
	Total TIC Semi Volatile		42 9	ug/l	J

(a) Resorcinol was not detected m the sample

U = Not detected MDL Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID	MW27 1009		
Lab Sample ID	T39513 3	Date Sampled	10/07/09
Matrix	AQ Ground Water	Date Received	10/08/09
		Percent Solids	n/a
Project	Vertellus Provo		

General Chemistry

Analyte		Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	J RCP 11/1/09	0 023	0 010	0 0040	mg/l	1	10/17/09 12 58	CV	EPA 335 4

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

Chent Sample ID	MWI0 1009		
Lab Sample ID	T39513 4	Date Sampled	10/07/09
Matrix	AQ Ground Water	Date Received	10/08/09
		Percent Sohds	n/a
Project	Vertellus Provo		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0 059 J	0 010	0 0040	mg/l	1	10/17/09 13 00	CV	EPA 335 4

RCP
2/1/09

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

Chent Sample ID	MW16 1009		
Lab Sample ID	T39423 3	Date Sampled	10/06/09
Matrix	AQ Ground Water	Date Received	10/07/09
		Percent Sohds	n/a
Project	Vertellus Provo		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0 11 J	0 010	0 0040	mg/l	1	10/17/09 12 48	CV	EPA 335 4

Rep 1/19/09

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

Chent Sample ID	MW36 1009		
Lab Sample ID	T39423 4	Date Sampled	10/06/09
Matrix	AQ Ground Water	Date Recerved	10/07/09
		Percent Sohds	n/a
Project	Vertellus Provo		

General Chemistry

Analyte	Resuh		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0 063	J	0 010	0 0040	mg/l	1	10/17/09 12 ɔ0	CV	EPA 335 4

RGP 1/19/09

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

Ghent Sample ID	PZ6 1009		
Lab Sample ID	T39423 5	Date Sampled	10/06/09
Matrix	AQ Ground Water	Date Received	10/07/09
		Percent Solids	n/a
Project	Vertellus Provo		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0 0068 B J	0 010	0 0040	mg/l	1	10/17/09 12 51	CV	EPA 335 4

Rep (HCl)

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

Chent Sample ID	PZ5 1009		
Lab Sample ID	T39423 6	Date Sampled	10/06/09
Matrix	AQ Ground Water	Date Recerved	10/07/09
		Percent Sohds	n/a
Project	Vertellus Provo		

General Chemistry

Analyte	Resuh		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0 021	J	0 010	0 0040	mg/l	1	10/17/09 12 55	CV	EPA 335 4

RGB
11/17/09

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

Chent Sample ID	PZ4 1009		
Lab Sample ID	T39423 7	Date Sampled	10/06/09
Matr ix	AQ Ground Water	Date Received	10/07/09
		Percent Sohds	n/a
Project	Vertellus Provo		

General Chemistry

Analyte	Resuh	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0 039 J	0 010	0 0040	mg/l	1	10/17/09 12 56	CV	EPA 335 4

Ref
under

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

Ghent Sample ID	MW1 1009		
Lab Sample ID	T39314 1	Date Sampled	10/05/09
Matrix	AQ Ground Water	Date Received	10/06/09
Method	SW846 8270C BY SIM SW846 3510C	Percent Solids	n/a
Project	Vertellus Provo		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	H35504 D	1	10/20/09	SC	10/07/09	OP13269	EH1917
Run #2	H35524 D	1	10/21/09	SC	10/07/09	OP13269	EH1918

	Initial Volume	Final Volume
Run #1	1000 ml	1 0 ml
Run #2	1000 ml	1 0 ml

SW846 8270 PAH Special List

CAS No	Compound	Result	RL	MDL	Units	Q
83 32 9	Acenaphthene	0 86	0 20	0 042	ug/l	
208 96 8	Acenaphthylene	0 072 U	0 20	0 072	ug/l	
120 12 7	Anthracene	0 091	0 20	0 054	ug/l	J
56 55 3	Benzo(a)anthracene	0 084	0 20	0 041	ug/l	J
50 32 8	Benzo(a)pyrene	0 064 U	0 20	0 064	ug/l	J
205 99 2	Benzo(b)fluoranthene	0 060 U	0 20	0 060	ug/l	J
207 08 9	Benzo(k)fluoranthene	0 056 U	0 20	0 056	ug/l	J
218 01 9	Chrysene	0 10	0 20	0 044	ug/l	J
53 70 3	Dibenzo(a h)anthracene	0 060 U	0 20	0 060	ug/l	J
206 44 0	Fluoranthene	0 33	0 20	0 046	ug/l	
86 73 7	Fluorene	0 27	0 20	0 064	ug/l	
193 39 5	Indeno(1 2 3 cd)pyrene	0 061 U	0 20	0 061	ug/l	J
91 20 3	Naphthalene	0 075 U	0 20	0 075	ug/l	
85 01 8	Phenanthrene	0 075 U	0 20	0 075	ug/l	
129 00 0	Pyrene	0 54	0 20	0 079	ug/l	

PGP 1/13/09

CAS No	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165 60 0	Nitrobenzene d5	71% [b]	71% [b]	17 131%
321 60 8	2 Fluorobiphenyl	79% [b]	90% [b]	15 137%
1718 51 0	Terphenyl d14	125% [b]	180% [c]	10 160%

(a) Internal standards are not within the advisory limits due to a matrix interference Confirmed by reanalysis
(b) Recovery was adjusted for 10x spiking
(c) Recovery was adjusted for 10x spiking Biased high due to matrix interference

U = Not detected MDL Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID	TW2 1009		
Lab Sample ID	T39314 5	Date Sampled	10/05/09
Matrix	AQ Ground Water	Date Received	10/06/09
Method	SW846 8260B	Percent Solids	n/a
Project	Vertellus Provo		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F020668 D	1	10/09/09	AP	n/a	n/a	VF3596
Run #2							

	Purge Volume
Run #1	5 0 ml
Run #2	

8260 Special List

CAS No	Compound	Resuh	RL	MDL	Units	Q
67 64 1	Acetone	20 1	50	4 7	ug/l	J
71 43 2	Benzene	20 6	2 0	0 50	ug/l	J
67 66 3	Chloroform	0 64 U	2 0	0 64	ug/l	
75 15 0	Carbon disulflde	0 53 U	2 0	0 53	ug/l	
100 41 4	Ethylbenzene	24 8	2 0	0 55	ug/l	
74 95 3	Methylene bromide	0 65 U	2 0	0 65	ug/l	
75 09 2	Methylene chloride	0 41 U	5 0	0 41	ug/l	
78 93 3	Methyl ethyl ketone	3 9 U	10	3 9	ug/l	
108 88 3	Toluene	25 8	2 0	0 43	ug/l	
1330 20 7	Xylene (total)	50 4	6 0	1 7	ug/l	

PGC 10/19/09

CAS No	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868 53 7	Dibromofluoromethane	97%		79 122%
17060 07 0	1 2 Dichloroethane D4	95%		75 121%
2037 26 5	Toluene D8	89%		87 119%
460 00 4	4 Bromofluorobenzene	90%		80 133%

U = Not detected MDL Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J – Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data J13746.D J13722.D

Accutest Laboratories

Report of Analysis

Chent Sample ID	TW2 1009		
Lab Sample ID	T39314 5	Date Sampled	10/05/09
Matrix	AQ Ground Water	Date Received	10/06/09
Method	SW84b 8270C SW846 3510C	Percent Solids	n/a
Project	Vertellus Provo		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	J13746 D	1	10/09/09	SC	10/07/09	OP13205	LJ631
Run #2	J13722 D	40	10/09/09	SC	10/07/09	OP13205	EJ630

	Initial Volume	Fmal Volume
Run #1	1000 ml	1 0 ml
Run #2	1000 ml	1 0 ml

SW-846 8270C

CAS No	Compound	Result	RL	MDL	Units	Q
108 98 5	Benzenethiol	1 3 U	10	1 3	ug/l	
105 67 9	2 4 Dimethylphenol	1410 [a]	200	51	ug/l	
95 48 7	2 Methylphenol	571 [a]	200	33	ug/l	J Ref/10/20
	3&4 Methylphenol	708 [a]	200	63	ug/l	
108 95 2	Phenol	281 [a]	200	30	ug/l	
83 32 9	Acenaphthene	71 4	5 0	1 6	ug/l	
86 73 7	Fluorene	12 0	5 0	1 3	ug/l	
91 20 3	Naphthalene	2030 [a]	200	45	ug/l	
85 01 8	Phenanthrene	15 9	5 0	0 97	ug/l	

CAS No	Surrogate Recoveries	Run# 1	Run# 2	Lunits
367 12 4	2 Fluorophenol	45%	42%	10 66%
4165 62 2	Phenol d5	41%	31%	10 53%
118 79 b	2 4 6 Tribromophenol	72%	55%	32 128%
4165 60 0	Nitrobenzene d5	106%	65%	29 115%
321 60 8	2 Fluorobiphenyl	60%	120% [b]	34 113%
1718 51 0	Terphenyl d14	81%	85%	12 145%

CAS No	Tentatively Identified Compounds [c]	R T	Est Conc	Units	Q
109 06 8	Pyridine 2 methyl	3 14	72	ug/l	JN
108 89 4	Pyridine 4 methyl	3 56	52	ug/l	JN
108 38 3	Benzene 1 3 dimethyl	3 64	15	ug/l	JN
108 47 4	Pyridine 2 4 dimethyl	4 12	36	ug/l	JN
620 14 4	Benzene 1 ethyl 3 methyl	4 78	15	ug/l	IN
496 11 7	Indane	4 88	180	ug/l	JN
95 13 6	Indene	4 95	40	ug/l	JN
95 65 8	Phenol 3 4 dimethyl	5 84	15	ug/l	JN
92 52 4	Biphenyl	7 49	17	ug/l	JN
1127 76 0	Naphthalene 1 ethyl	7 63	26	ug/l	JN
5779 72 6	Benzaldehyde 2 4 5 trimethyl	7 68	20	ug/l	JN

U = Not detected MDL Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID	TW2 1009		
Lab Sample ID	T39314 5	Date Sampled	10/05/09
Matrix	AQ Ground Water	Date Received	10/06/09
Method	SW846 8270C BY SIM SW846 3510C	Percent Solids	n/a
Project	Vertellus Provo		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H35b04 D	1	10/23/09	SC	10/07/09	OP13269	EH1920
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1 0 ml
Run #2		

SW846 8270 PAH Special List

CAS No	Compound	Result	RL	MDL	Units	Q
208 96 8	Acenaphthylene	1 9	0 20	0 072	ug/l	J
120 12 7	Anthracene	1 5	0 20	0 054	ug/l	
56 55 3	Benzo(a)anthracene	0 041 U	0 20	0 041	ug/l	
50 32 8	Benzo(a)pyrene	0 064 U	0 20	0 064	ug/l	
205 99 2	Benzo(b)fluoranthene	0 060 U	0 20	0 060	ug/l	
207 08 9	Benzo(k)fluoranthene	0 056 U	0 20	0 056	ug/l	
218 01 9	Chrysene	0 044 U	0 20	0 044	ug/l	
53 70 3	Dibenzo(a h)anthracene	0 060 U	0 20	0 060	ug/l	
206 44 0	Fluoranthene	0 50	0 20	0 046	ug/l	
193 39 5	Indeno(1 2 3 cd)pyrene	0 061 U	0 20	0 061	ug/l	
129 00 0	Pyrene	0 19	0 20	0 079	ug/l	J

RLP 11/19/09

CAS No	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165 60 0	Nitrobenzene d5	24% [a]		17 131%
321 60 8	2 Fluorobiphenyl	92% [a]		15 137%
1718 51 0	Terphenyl d14	111% [a]		10 160%

(a) Recovery was adjusted for 10x spiking

U = Not detected MDL Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data H35508.D H35527.D

Accutest Laboratories

Report of Analysis

Client Sample ID	MW35 1009		
Lab Sample ID	T39314 6	Date Sampled	10/05/09
Matrix	AQ Ground Water	Date Received	10/06/09
Method	SW846 8270C BY SIM SW846 3510C	Percent Solids	n/a
Project	Vertellus Provo		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	H35508 D	1	10/20/09	SC	10/07/09	OP13269	EH1917
Run #2	H35527 D	10	10/21/09	SC	10/07/09	OP13269	EH1918

	Initial Volume	Final Volume
Run #1	1000 ml	1 0 ml
Run #2	1000 ml	1 0 ml

SW846 8270 PAH Special List

CAS No	Compound	Result	RL	MDL	Units	Q
83 32 9	Acenaphthene	55 2 [b]	2 0	0 42	ug/l	
208 96 8	Acenaphthylene	0 072 U	0 20	0 072	ug/l	
120 12 7	Anthracene	0 076	0 20	0 054	ug/l	J
56 55 3	Benzo(a)anthracene	0 041 U	0 20	0 041	ug/l	
50 32 8	Benzo(a)pyrene	0 064 U	0 20	0 064	ug/l	J
205 99 2	Benzo(b)fluoranthene	0 060 U	0 20	0 060	ug/l	J
207 08 9	Benzo(k)fluoranthene	0 056 U	0 20	0 056	ug/l	J
218 01 9	Chrysene	0 044 U	0 20	0 044	ug/l	
53 70 3	Dibenzo(a h)anthracene	0 060 U	0 20	0 060	ug/l	J
206 44 0	Fluoranthene	0 046 U	0 20	0 046	ug/l	
86 73 7	Fluorene	0 064 U	0 20	0 064	ug/l	
193 39 5	Indeno(1 2 3 cd)pyrene	0 061 U	0 20	0 061	ug/l	J
91 20 3	Naphthalene	0 23	0 20	0 075	ug/l	
85 01 8	Phenanthrene	0 075 U	0 20	0 075	ug/l	
129 00 0	Pyrene	0 079 U	0 20	0 079	ug/l	

PAH 1/15/09

CAS No	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165 60 0	Nitrobenzene d5	89% [c]	105% [c]	17 131%
321 60 8	2 Fluorobiphenyl	111% [c]	130% [c]	15 137%
1718 51 0	Terphenyl d14	141% [c]	176% [d]	10 160%

(a) Internal standards are not within the advisory limits due to a matrix interference Confirmed by reanalysis
(b) Result is from Run# 2
(c) Recovery was adjusted for 10x spiking
(d) Recovery was adjusted for 10x spiking Outside control limits due to dilution

U = Not detected MDL Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound