AOC A - Petroleum Storage Areas

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5.5.28 AOC A – Petroleum Storage Areas

Area of Concern (AOC) A at the Rhodia Silver Bow Site is the Petroleum Storage Area. Facility records and employee knowledge identified the following petroleum storage and distribution facilities at the Silver Bow Plant:

Description	Status	Documented or Suspected Release	Area of Concern (*see* Figures 5.5.28-1 through 5.5.28-6)
2 USTs - Gasoline	Removed in the 1980s	There was no visible evidence of contamination when they were removed.	
5 ASTs - Diesel	Three of the five large above-ground diesel tanks have been removed. The two remaining tanks are empty and are not used.	There is stained soil in the containment areas of the two remaining large diesel storage tanks.	AOC A-1 AOC A-2 AOC A-3
1 AST - Gasoline (1,000-gallon)	Gasoline storage tank was sold on February 1, 2006 and was removed.	There was no visible evidence of contamination when it was removed.	
1 AST – Diesel (200-gallon) portable	Currently unused. Stored next to Brick Shed	None.	
1 AST – Diesel (100-gallon)	In use at Final Pump Station.	None.	AOC A-4
3 AST – Lubricating Oil (1,000-gallon)	In use at Shop Building	None.	
1 AST – Waste Oil (200-gallon)	In use at Shop Building	None.	

UST – Underground Storage Tank
AST – Above Ground Storage Tank

Four of these petroleum storage areas were identified as AOCs in the Phase 1 RFI Work Plan. The locations of AOC A-1 through A-4 are shown on Figure 5.5.28-1.

5.5.28.1 RFI Investigation and Results

The areas of concern identified as AOC A-1 through AOC A-4 were investigated during the summer of 2009 as part of the Phase 1 RFI. The objective for this investigation was to evaluate whether petroleum products had been released from these facilities and to delineate the lateral and vertical extent of the release. Hand augers and test trenches were installed to collect soil samples for field screening and laboratory analysis. Hand augers were installed at AOC A-1 due to the limited space inside the containment area. A backhoe was used to excavate trenches at AOC A-2 and AOC A-3 since these tanks had already been removed and AOC A-4 was visually inspected. Photographs of AOC A-1 through AOC A-4 are shown on Figures 5.5.28-2 through 5.5.28-5, respectively.

Soil samples were collected from each boring or trench, and the soil samples were screened for indications of petroleum impacts (i.e., elevated headspace, discoloration, odor, sheen). Analytical soil samples were collected to characterize the observed conditions. Deeper soil samples were targeted to characterize the more heavily impacted soil (based on field screening results) encountered as compared to surface soils, which, based on the field screening, appear to be degraded due to weathering. The analytical samples were analyzed for VOCs, SVOCs and lead.

5.5.28.1.1 AOC A-1

Stained soil was observed in the containment area of the two remaining large diesel storage tanks designated as AOC A-1. The tanks are empty and were permanently closed as of January 16, 2003. Photographs of the tanks and containment area are provided on Figure 5.5.28-2. The location of AOC A-1 is shown on 5.5.28-6.

Nine hand auger borings (AOC A-1-1 through AOC A-1-9) were installed to evaluate the vertical and horizontal extent of stained soil in area AOC A-1. Two hand auger borings (AOC A 1-1 and AOC A-1-6) were advanced through the most highly stained areas. AOC A-1-1 corresponds to the location of the fuel pumps that are located between the two AST's and AOC A-1-6 corresponds to the AST fill pipe connection located at the north end of the containment area. The other hand auger borings were installed outside the visibly stained surface soil areas. The locations of the hand auger borings are shown on Figure 5.5.28-7 and depicted in cross section on Figure 5.5.28-8. Figure 5.5.28-7 also shows the areas of surficial petroleum impacts.

The soil samples were collected over about 6-inch intervals, described, and screened for indications of petroleum impacts (i.e., elevated headspace, discoloration, odor, sheen). The sample descriptions and screening results are summarized in Table 5.5.28-1. The depth of the hand auger borings was limited by obstructions (i.e., base of containment cell) encountered in several borings. Hand auger AOC A-1-1 encountered an obstruction at about 3.5 feet below ground surface (bgs). The 3- to 3.5-feet interval had the highest headspace reading so an analytical sample was collected from this interval. The analytical results are summarized in Tables 5.5.28-2 through 5.5.28-4. The SVOC results were rejected based the data validation process. Low concentrations of petroleum-related VOCs were reported in this sample. Lead was not detected at the method detection limit of 3.4 mg/kg.

Hand auger AOC A-1-6 encountered an obstruction at about 3.8 feet bgs. Analytical samples were collected from the 4- to 10-inch bgs, 2.5- to 3-feet bgs, and 3.5- to 3.8-feet bgs interval. The 2.5- to 3-feet bgs interval had the highest PID headspace for this boring and it also had pea-sized pieces of

bright green sand. The analytical results are summarized in Tables 5.5.28-2 through 5.5.28-4. Very low concentrations (i.e., below the method reporting limit) of petroleum-related SVOCs and VOCs were reported in the samples for the 4- to 10-inch bgs and 2.5- to 3- feet bgs intervals. These samples also contained low concentrations (about 50 mg/kg) of lead. SVOCs and VOCs were not detected in the sample from the 3.5- to 3.8-feet bgs interval.

Petroleum impacts were also identified at hand augers AOC A-1-2 and AOC A-1-8 based on field screening information. These borings were obstructed at 1-foot and 1.4-feet bgs, respectively.

Petroleum impacts were not identified at hand augers AOC A-1-3, AOC A-1-4, AOC A-1-5, AOC A-1-7 and AOC A-1-9. However, each of these borings was obstructed at the depth listed in Table 5.5.28-1.

Spatial distribution of organic vapor field screening results are presented on conceptual sections A-A' and B-B' (*see* Figures 5.5.28-8 and 5.5.28-9, respectively). The locations of the conceptual sections are shown on Figure 5.5.28-6. The concentrations for 1,2,4-trimethylbenzene and 1,3,5-trimethylbenzene are depicted on the conceptual cross sections since they were reported at the highest concentrations.

Based on the field screening, vertical extent of the petroleum-impacted soil was determined in the area of stained soil associated with the existing out-of -service diesel AST's filling pipes. The vertical extent of stained soil in the vicinity of the fueling pumps was not determined due to obstructions encountered at depths ranging from 1 to 3.5 feet in hand auger borings AOC A-1-1, AOC A-1-2, AOC A-1-8 and AOC A-1-9. Field screening results (Table 5.5.28-1) indicate the most petroleum impacted soil to be present at the base of hand auger boring AOC A-1, where the analytical soil sample was collected. This indicates that the obstruction may be concentrating the petroleum at these locations. If the obstruction is the base of the containment cell, then the tank and concrete containment cell would need to be demolished and removed from the area before further investigation could be conducted. The laboratory reported results for this sample contain low concentrations of petroleum constituents that would be consistent with weathered petroleum impacted soil.

5.5.28.1.2 AOC A-2

AOC A-2 is the former location of an above-ground diesel storage tank that was located southeast of the clarifier (*see* Figures 5.5.28-3 and 5.5.28-6). The tank was removed and the area was covered with slag during the plant demolition activities in the late 1990's. A shallow "L" shaped test pit was

excavated to expose the soil and evaluate whether the soils were impacted by a petroleum release. The test pit measured approximately 12- by 20-feet and ranged in depth from approximately 2- to 2.5-feet. Photographs of the test pits are provided in Figure 5.5.28-3. The test pit encountered the remnants of the AST's concrete containment walls. Soil samples were collected at the base of the excavation. No stained soil or soil impacts were identified by field screening, so no analytical samples were collected. The test trench log summarizes the soil descriptions and field screening results (*see* Appendix 5.5.28-A). Additionally, because this intrusive work was conducted within the Elemental Phosphorus Production Area (SWMU 7), it is noted that exposed soils did not smoke or ignite.

5.5.28.1.3 AOC A-3

AOC A-3 is the former locations of an above-ground diesel storage tank that was located north of the clarifier (*see* Figures 5.5.28-4 and 5.5.28-6). The tank was removed and the area was covered with slag during the plant demolition activities in the late 1990's. A backhoe was used to remove the 1.5- to 3-feet of coarse slag and excavate two test trenches. The first test trench encountered the remnants of the AST's west concrete containment wall. A second test trench was excavated approximately 10 feet to the east of the first test pit and was near the center of the secondary containment based on the size of the former AST. The test trench log is provided in Appendix 5.5.28-A and photographs of the test pits are provided in Figure 5.5.28-4. Because these test trenches were excavated in the Elemental Phosphorus Production Area, it is noted that exposed soils did not smoke or ignite.

Field screening identified petroleum-impacted soil beginning at about 3.5-feet bgs and extending to the bottom of the excavation at 12.5 feet bgs (i.e., the maximum depth for the excavator). Stained soil with rainbow sheen was observed beginning at approximately 5.5-feet bgs and continuing to the bottom of the test trench at 12.5 feet bgs. An analytical sample was collected from the base of the excavation (12- to 12.5-feet bgs) which also has the highest headspace reading for this test trench (i.e., > 700 parts per million). The analytical results are summarized in Tables 5.5.28-2 through 5.5.28-4. Low concentrations of petroleum-related SVOCs and VOCs were reported in this sample. Lead was also detected in the soil sample, but the concentration is consistent with background/reference area concentrations.

Field screening and the analytical results for this soil sample are consistent with weathered petroleum impacts. Although the horizontal extent has not been defined, the horizontal extent would not be much larger than the concrete containment walls. The vertical limit of diesel-impacted soils has not been defined due to the limitation of the excavator.

Groundwater samples from a downgradient monitoring well (MW-02-1) have low concentrations of petroleum-related VOCs. Groundwater monitoring results for MW-02-1 are shown on Tables 5.5.28-5 and 5.5.28-6. These are the same petroleum-related VOCs that were detected in soil sample AOC A-3. Consequently, the petroleum-impacted soil likely extends to the groundwater surface, approximately 33 feet below ground surface based on measurements at MW-02-1. The concentrations of these organic compounds have decreased over time as shown on the charts contained in Appendix 5.5.28-B.

5.5.28.1.4 AOC A-4

AOC A-4 is the former location of an above-ground gasoline (1,000 gallon) tank that provided fuel to the back-up generator at the final pump station (SWMU 27) as shown on Figures 5.5.28-5 and 5.5.28-6. The tank was located in an area approximately 12 feet long and 3 feet wide. This area was inspected for visible signs of a petroleum release and photographed. No stained soil was observed in AOC A-4.

5.5.28.2 Conclusions

Stained soil identified at AOC A areas field designated as AOC A-1 and AOC A-3 is consistent with weathered petroleum soil impacts based on field screening and analytical soil sample results. Field screening results for AOC A-1 indicate the most petroleum impacted soil to be present at the base of hand auger boring AOC A-1 where the analytical soil sample was collected. Therefore, the more highly impacted soils have been characterized for petroleum constituents. Although the lateral and vertical extents are not fully delineated, there is sufficient information to conduct the risk assessment for theses AOCs. The risk assessment will identify which parameters, if any, are present at concentrations that warrant corrective measures. The dataset would be reviewed at that time and additional sampling may be necessary to inform the corrective measures study or later during the corrective measures design phase.Petroleum impacted soil likely extends to the groundwater surface since groundwater quality impacts were observed downgradient of AOC A-3. The petroleum constituent concentrations have decreased over time.

For the AOC A locations where no soil staining was observed, where no documented or suspected releases occurred, or, in the case of previously removed UST's, where no evidence of contamination was observed during removal, no additional investigation appears warranted.

Tables

Table 5.5.28-1
Soil Boring and Field Screening Summary
AOC-A-1 Hand Auger Borings - June 2009
Rhodia Silver Bow Plant

Boring ID	Screening Interval	Soil Classification (ASTM)	Moisture	Petroleum Odor	Sheen	Discoloration	PID (PPM)	Description
AOC A-1-1	0 - 2 inches	GM	M	Lt - Mod	Lt - Mod	Dark Brown	20.8	Silty Gravel with Sand, stained dark brown.
	2 - 6 inches	SP-SM/SM	M	Lt - Mod	Lt	Dark Brown	232	Poorly Graded Sand with Silt to Silty Sand, stained dark brown.
	6 - 12 inches	SP-SM/SM, ML	M	Lt - Mod	Lt	Dark Brown / Gray	268	(6 - 8 inches) Poorly Graded Sand with Silt to Silty Sand, stained dark brown. (8 - 12 inches) Silt, stained gray.
	1 - 1.5 feet	SP-SM	M	Lt	Lt	Grayish Brown	255	Silty Sand, stained grayish brown.
	1.5 - 2 feet	SP-SM	M	Lt	Lt	Grayish Brown	251	Silty Sand, stained grayish brown.
	2 - 2.5 feet	SP-SM	M	Lt	Lt - Mod	Grayish Brown	231	Silty Sand, stained grayish brown.
	2.5 - 3 feet	ML	M	Lt	Rbw	Grayish Brown to Olive Gray	200	Silt with Sand, stained grayish brown to olive gray.
	3 - 3.5 feet	ML	M	Lt	Rbw	Olive Gray	442	Silt with Sand and Gravel, stained olive gray. (obstruct at 3.5 feet bgs.) **(Analytical sample collected.)**

Hand auger boring obstructed on a rock at 3.5 feet bgs.

PID background reading = 0.4 - 2.0

Boring ID	Screening Interval	Soil Classification (ASTM)	Moisture	Petroleum Odor	Sheen	Discoloration	PID (PPM)	Description
AOC A-1-2	0 - 6 inches	GM	M	Tr	N	N	1.5	Silty Gravel with Sand, stained dark brown.
	6 - 12 inches	SM	M	Mod	Lt - Mod	Very Dark Brown	295	Silty Sand with Gravel, stained very dark brown. (obstruct at 12 inches bgs.)

Hand auger boring obstructed on a rock at 12 inches bgs.

PID background reading = 0.4 - 2.0

Table 5.5.28-1
Soil Boring and Field Screening Summary
AOC-A-1 Hand Auger Borings - June 2009
Rhodia Silver Bow Plant

Boring ID	Screening Interval	Soil Classification (ASTM)	Moisture	Petroleum Odor	Sheen	Discoloration	PID (PPM)	Description
AOC A-1-3	0 - 6 inches	SM	M	Tr	N	N	7.2	Silty Sand with Gravel.
	6 - 9 inches	SM	M	Tr	N	Dark Brown	8	Silty Sand with Gravel, stained dark brown.
	9 - 12 inches	SM	M	Lt	N	N	8.5	Silty Sand with Gravel. (obstruct at 12 inches bgs.)

Hand auger boring obstructed on a rock at 12 inches bgs.

PID background reading = 0.4 - 2.0

Boring ID	Screening Interval	Soil Classification (ASTM)	Moisture	Petroleum Odor	Sheen	Discoloration	PID (PPM)	Description
AOC A-1-4	0 - 6 inches	GM	M	Tr	N	N	0.5	Silty Gravel with Sand, old rag encountered at 6 inches bgs.
	6 - 12 inches	GM	M	Tr	N	N	1.3	Silty Gravel with Sand.
	1 - 1.5 feet	SM	M	N	N	N	2.4	Silty Sand, brown to light yellowish brown, abundant mica.
	1.5 - 2 feet	SM	M	N	N	N	6.7	Silty Sand, brown to light yellowish brown, abundant mica.
	2 - 2.5 feet	SM	M	N	N	N	2.8	Silty Sand, brown to light yellowish brown, abundant mica.
	2.5 - 3 feet	SM	M	N	N	N	2.6	Silty Sand, brown to light yellowish brown, abundant mica. (obstruct at 3 feet bgs.)

Hand auger boring obstructed on a rock at 3 feet bgs.

PID background reading = 0.4 - 2.0

Boring ID	Screening Interval	Soil Classification (ASTM)	Moisture	Petroleum Odor	Sheen	Discoloration	PID (PPM)	Description
AOC A-1-5	0 - 6 inches	GM	M	Tr	Tr	Dark Grayish Brown	1.6	SiltyGravel with Sand. Stained dark grawish brown from approximately 4 - 6 inches bgs.
	0.5 - 1.3 feet	GM	M	N	N	N	2	Silty Gravel with Sand, brown.
	1.3 - 1.8 feet	SM	M	Lt	N	N	5.1	Silty Sand with Gravel, brown to yellowish brown. (obstruct at 2 feet bgs.)

Hand auger boring obstructed on a rock at 2 feet bgs. Soil from 1.8 - 2 foot interval fell out of hand auger while extracting after obstructing.

PID background reading = 0.0

Table 5.5.28-1
Soil Boring and Field Screening Summary
AOC-A-1 Hand Auger Borings - June 2009
Rhodia Silver Bow Plant

Boring ID	Screening Interval	Soil Classification (ASTM)	Moisture	Petroleum Odor	Sheen	Discoloration	PID (PPM)	Description
AOC A-1-6	0 - 4 inches	GM	M	Lt	Tr	Black	9	Silty Gravel with Sand, stained black.
	4 - 10 inches	GM	M	Lt	Lt	Black	7.3	Silty Gravel with Sand, stained black. (***Analytical sample collected.)***
	10 - 14 inches	SM	M	Tr	N	N	8.3	Silty Sand with Gravel.
	1.3 - 1.7 feet	SM	M	N	N	N	3.7	Silty Sand with Gravel.
	2 - 2.5 feet	SM-ML	M	N	N	N	2	Silty Sand to Sandy Silt, brown.
	2.5 - 3 feet	SM-ML	M	Tr	N	*Bright Green	18.2	Silty Sand to Sandy Silt, brown. *Pea size pieces of bright green sand observed. **(Analytical sample collected.)**
	3 - 3.5 feet	SM-ML	M	N	N	N	0.7	Silty Sand to Sandy Silt, light yellowish brown.
	3.5 - 3.8 feet	SM-ML	M	N	N	N	0.3	Silty Sand to Sandy Silt, light yellowish brown. **(Analytical sample collected.)**

PID background reading = 0.0

Boring ID	Screening Interval	Soil Classification (ASTM)	Moisture	Petroleum Odor	Sheen	Discoloration	PID (PPM)	Description
AOC A-1-7	0 - 6 inches	GM	D	N	N	N	0.6	Silty Gravel with Sand, grayish brown to brown.
	6 - 12 inches	SM	M	N	N	N	0.8	Silty sand, grayish brown to brown.
	1 - 1.6 feet	SM	M	N	N	N	1.4	Silty sand, grayish brown to brown. (rock obstruction at 1.6 feet bgs cleared with hand auger.)
	2 - 2.5 feet	SC	M	N	N	N	4.8	Clayey Sand, brown to yellowish brown.
	2.5 - 3 feet	SC	M	N	N	N	2.3	Clayey Sand, brown.

PID background reading = 0.3

Table 5.5.28-1
Soil Boring and Field Screening Summary
AOC-A-1 Hand Auger Borings - June 2009
Rhodia Silver Bow Plant

Boring ID	Screening Interval	Soil Classification (ASTM)	Moisture	Petroleum Odor	Sheen	Discoloration	PID (PPM)	Description
AOC A-1-8	0 - 6 inches	GM	D	N	N	N	1.2	Silty Sand with Gravel, yellowish brown to brown.
	6 - 12 inches	SM	M	Lt	Tr	Brownish Gray	115	Silty Sand with Gravel, stained dark brown.
	1 - 1.4 feet	SM	M	Lt	NR	Brownish Gray	119	Silty Sand with Gravel. (obstruct at 1.4 feet bgs.)

Hand auger boring obstructed on a rock at 1.4 feet bgs.

PID background reading = 0.3

Boring ID	Screening Interval	Soil Classification (ASTM)	Moisture	Petroleum Odor	Sheen	Discoloration	PID (PPM)	Description
AOC A-1-9	0 - 6 inches	GM	D	N	N	Brown	1.4	Silty Gravel with Sand.
	6 - 12 inches	SM	M	Lt	N	Brown	6.9	Silty Sand with Gravel. (obstruct at 12 inches bgs.)

Hand auger boring obstructed on a rock at 12 inches bgs.

PID background reading = 0.4

Organic vapor concentration measured using a RAE Systems MiniRae PGM-2000 Photo Ionization Detector equiped w/ 10.6 eV bulb and calibrated with 100 ppm isobutylene gas.

LEGEND

bgs = Below Ground Surface
N = No or None
NR = Not Recorded
D = Dry
M = Moist
W = Wet
Tr = Trace
Lt = Light
Mod = Moderate
Hvy = Heavy
Rbw = Rainbow

Table 5.5.28-2
Soil Data - Metals
AOC-A
Rhodia Silver Bow Plant
[concentrations in mg/kg]

			Chemical Name	Lead
Location ID	Sample Date	Depth	Sample Type	
AOC-A-1-1	06/01/2009	3 - 3.5 ft	N	< 3.4
AOC-A-1-6	06/01/2009	2.5 - 3 ft	N	**56.1**
AOC-A-1-6	06/01/2009	3.5 - 3.8 ft	N	< 3.3
AOC-A-1-6	06/01/2009	4 - 10 in	N	**50.7**
AOC-A-3	06/02/2009	12 - 12.5 ft	N	**6.9 J**

Table 5.5.28-3
Soil Data - SVOCs
AOC-A
Rhodia Silver Bow Plant
[concentrations in mg/kg]

Chemical Name				1,2,4-Trichlorobenzene	1,2-Dichlorobenzene	1,2-Diphenylhydrazine	1,3-Dichlorobenzene	1,4-Dichlorobenzene	2,4,5-Trichlorophenol	2,4,6-Trichlorophenol	2,4-Dichlorophenol	2,4-Dimethylphenol	2,4-Dinitrophenol	2,4-Dinitrotoluene	2,6-Dinitrotoluene
Location ID	Sample Date	Depth	Sample Type												
AOC-A-1-1	06/01/2009	3 - 3.5 ft	N	< 0.19 R	< 0.031 R	< 0.26 R	< 0.032 R	< 0.030 R	< 0.30 R	< 0.25 R	< 0.29 R	< 0.26 R	< 2.0 R	< 0.26 R	< 0.27 R
AOC-A-1-6	06/01/2009	2.5 - 3 ft	N	< 0.011	< 0.018	< 0.015	< 0.019	< 0.018	< 0.018	< 0.015	< 0.017	< 0.016	< 0.12	< 0.015	< 0.016
AOC-A-1-6	06/01/2009	3.5 - 3.8 ft	N	< 0.011	< 0.018	< 0.015	< 0.019	< 0.018	< 0.018	< 0.015	< 0.017	< 0.016	< 0.12	< 0.015	< 0.016
AOC-A-1-6	06/01/2009	4 - 10 in	N	< 0.011	< 0.018	< 0.015	< 0.019	< 0.018	< 0.018	< 0.015	< 0.017	< 0.016	< 0.12	< 0.015	< 0.016
AOC-A-3	06/02/2009	12 - 12.5 ft	N	< 0.011	< 0.018	< 0.015	< 0.019	< 0.018	< 0.018	< 0.015	< 0.017	< 0.016	< 0.12	< 0.015	< 0.016

Table 5.5.28-3
Soil Data - SVOCs
AOC-A
Rhodia Silver Bow Plant
[concentrations in mg/kg]

			Chemical Name	2-Chloronaphthalene	2-Chlorophenol	2-Methyl-4,6-dinitrophenol	2-Methylnaphthalene	2-Nitroaniline	2-Nitrophenol	3,3`-Dichlorobenzidine	3-Nitroaniline	4-Bromophenyl phenyl ether	4-Chloro-3-methylphenol	4-Chloroaniline	4-Chlorophenyl phenyl ether	4-Nitroaniline
Location ID	Sample Date	Depth	Sample Type													
AOC-A-1-1	06/01/2009	3 - 3.5 ft	N	< 0.18 R	< 0.017 R	< 2.5 R	**23 R**	< 0.29 R	< 0.24 R	< 0.047 R	< 3.0 R	< 0.21 R	< 0.29 R	< 0.25 R	< 0.28 R	< 3.1 R
AOC-A-1-6	06/01/2009	2.5 - 3 ft	N	< 0.010	< 0.0099	< 0.15	**0.047 J**	< 0.017	< 0.014	< 0.027	< 0.18	< 0.013	< 0.017	< 0.015	< 0.016	< 0.18
AOC-A-1-6	06/01/2009	3.5 - 3.8 ft	N	< 0.010	< 0.0099	< 0.15	< 0.011	< 0.017	< 0.014	< 0.027	< 0.18	< 0.013	< 0.017	< 0.015	< 0.016	< 0.18
AOC-A-1-6	06/01/2009	4 - 10 in	N	< 0.010	< 0.0099	< 0.15	**0.23 J**	< 0.017	< 0.014	< 0.027	< 0.18	< 0.013	< 0.017	< 0.015	< 0.016	< 0.18
AOC-A-3	06/02/2009	12 - 12.5 ft	N	< 0.010	< 0.0099	< 0.15	**0.052 J**	< 0.017	< 0.014	< 0.027	< 0.18	< 0.013	< 0.017	< 0.015	< 0.016	< 0.18

Table 5.5.28-3
Soil Data - SVOCs
AOC-A
Rhodia Silver Bow Plant
[concentrations in mg/kg]

Chemical Name				4-Nitrophenol	Acenaphthene	Acenaphthylene	Anthracene	Benzidine	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Benzoic acid	Benzyl alcohol
Location ID	Sample Date	Depth	Sample Type												
AOC-A-1-1	06/01/2009	3 - 3.5 ft	N	< 2.6 R	< 0.23 R	< 0.28 R	< 0.24 R	< 0.72 R	< 0.022 R	< 0.034 R	< 0.030 R	< 0.035 R	< 0.034 R	< 2.4 R	< 0.029 R
AOC-A-1-6	06/01/2009	2.5 - 3 ft	N	< 0.15	< 0.014	< 0.016	< 0.014	< 0.42 J	**0.021 J**	< 0.020	**0.023 J**	< 0.021	< 0.020	< 0.14	< 0.017
AOC-A-1-6	06/01/2009	3.5 - 3.8 ft	N	< 0.15	< 0.014	< 0.016	< 0.014	< 0.42 J	< 0.013	< 0.020	< 0.018	< 0.021	< 0.020	< 0.14	< 0.017
AOC-A-1-6	06/01/2009	4 - 10 in	N	< 0.15	< 0.014	< 0.016	**0.085 J**	< 0.42 J	**0.046 J**	**0.042 J**	**0.050 J**	**0.049 J**	< 0.020	< 0.14	< 0.017
AOC-A-3	06/02/2009	12 - 12.5 ft	N	< 0.15	< 0.014	< 0.016	< 0.014	< 0.42 J	**0.017 J**	< 0.020	**0.026 J**	< 0.021	< 0.020	< 0.14	< 0.017

Table 5.5.28-3
Soil Data - SVOCs
AOC-A
Rhodia Silver Bow Plant
[concentrations in mg/kg]

Chemical Name				Bis(2-chloroethoxy)methane	Bis(2-chloroethyl)ether	Bis(2-chloroisopropyl)ether	Bis(2-ethylhexyl)phthalate	Butyl benzyl phthalate	Carbazole	Chrysene	Dibenz(a,h)anthracene	Dibenzofuran	Diethyl phthalate	Dimethyl phthalate	Di-n-butyl phthalate
Location ID	**Sample Date**	**Depth**	**Sample Type**												
AOC-A-1-1	06/01/2009	3 - 3.5 ft	N	< 0.19 R	< 0.021 R	< 0.025 R	**0.45 R**	< 0.028 R	< 0.20 R	< 0.021 R	< 0.048 R	**2.5 R**	< 0.25 R	< 0.29 R	< 0.21 R
AOC-A-1-6	06/01/2009	2.5 - 3 ft	N	< 0.011	< 0.012	< 0.015 J	< 0.019	< 0.017	< 0.012	**0.018 J**	< 0.028	< 0.012	< 0.015	< 0.017	< 0.013
AOC-A-1-6	06/01/2009	3.5 - 3.8 ft	N	< 0.011	< 0.012	< 0.015 J	< 0.019	< 0.017	< 0.012	< 0.012	< 0.028	< 0.012	< 0.015	< 0.017	< 0.013
AOC-A-1-6	06/01/2009	4 - 10 in	N	< 0.011	< 0.012	< 0.015 J	**0.083 J**	< 0.017	< 0.012	**0.054 J**	< 0.028	< 0.012	< 0.015	< 0.017	< 0.013
AOC-A-3	06/02/2009	12 - 12.5 ft	N	< 0.011	< 0.012	< 0.015 J	< 0.019	< 0.017	< 0.012	**0.015 J**	< 0.028	< 0.012	< 0.015	< 0.017	**0.013 J**

Table 5.5.28-3
Soil Data - SVOCs
AOC-A
Rhodia Silver Bow Plant
[concentrations in mg/kg]

Chemical Name				Di-n-octyl phthalate	Fluoranthene	Fluorene	Hexachlorobenzene	Hexachlorobutadiene	Hexachlorocyclopentadiene	Hexachloroethane	Indeno(1,2,3-cd)pyrene	Isophorone	Naphthalene	Nitrobenzene
Location ID	**Sample Date**	**Depth**	**Sample Type**											
AOC-A-1-1	06/01/2009	3 - 3.5 ft	N	< 0.042 R	**2.0 R**	**4.7 R**	< 0.26 R	< 0.25 R	< 0.22 R	< 0.038 R	< 0.067 R	< 0.24 R	**8.4 R**	< 0.045 R
AOC-A-1-6	06/01/2009	2.5 - 3 ft	N	< 0.024	**0.017 J**	< 0.013	< 0.015	< 0.015	< 0.013	< 0.022	< 0.039	< 0.014	**0.025 J**	< 0.027
AOC-A-1-6	06/01/2009	3.5 - 3.8 ft	N	< 0.024	< 0.012	< 0.013	< 0.015	< 0.015	< 0.013	< 0.022	< 0.039	< 0.014	< 0.015	< 0.027
AOC-A-1-6	06/01/2009	4 - 10 in	N	< 0.024	**0.11 J**	< 0.013	< 0.015	< 0.015	< 0.013	< 0.022	**0.040 J**	< 0.014	**0.12 J**	< 0.027
AOC-A-3	06/02/2009	12 - 12.5 ft	N	< 0.024	**0.020 J**	< 0.013	< 0.015	< 0.015	< 0.013	< 0.022	< 0.039	< 0.014	**0.029 J**	< 0.027

Table 5.5.28-3
Soil Data - SVOCs
AOC-A
Rhodia Silver Bow Plant
[concentrations in mg/kg]

Chemical Name				N-Nitrosodimethylamine	N-Nitrosodi-n-propylamine	N-Nitrosodiphenylamine	o-Cresol	p-Cresol	Pentachlorophenol	Phenanthrene	Phenol	Pyrene	Pyridine
Location ID	Sample Date	Depth	Sample Type										
AOC-A-1-1	06/01/2009	3 - 3.5 ft	N	< 0.044 R	< 0.033 R	< 0.31 R	< 0.029 R	< 0.029 R	< 2.2 R	**3.3 R**	< 0.034 R	**0.35 R**	< 0.035 R
AOC-A-1-6	06/01/2009	2.5 - 3 ft	N	< 0.026	< 0.020	< 0.018	< 0.017	< 0.017	< 0.13	**0.036 J**	< 0.020	**0.016 J**	< 0.020
AOC-A-1-6	06/01/2009	3.5 - 3.8 ft	N	< 0.026	< 0.020	< 0.018	< 0.017	< 0.017	< 0.13	< 0.010	< 0.020	< 0.014	< 0.020
AOC-A-1-6	06/01/2009	4 - 10 in	N	< 0.026	< 0.020	< 0.018	< 0.017	< 0.017	< 0.13	**0.13 J**	< 0.020	**0.18 J**	< 0.020
AOC-A-3	06/02/2009	12 - 12.5 ft	N	< 0.026	< 0.020	< 0.018	< 0.017	< 0.017	< 0.13	**0.039 J**	< 0.020	**0.020 J**	< 0.020

Table 5.5.28-4
Soil Data - VOCs
AOC-A
Rhodia Silver Bow Plant
[concentrations in mg/kg]

			Chemical Name	1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane	1,1-Dichloro-1-propene	1,1-Dichloroethane	1,1-Dichloroethylene	1,2,3-Trichlorobenzene	1,2,3-Trichloropropane	1,2,4-Trichlorobenzene	1,2,4-Trimethylbenzene
Location ID	Sample Date	Depth	Sample Type											
AOC-A-1-1	06/01/2009	3 - 3.5 ft	N	< 0.039	< 0.016	< 0.034	< 0.048	< 0.091	< 0.042	< 0.096	< 0.034	< 0.10	< 0.023	**15**
AOC-A-1-6	06/01/2009	2.5 - 3 ft	N	< 0.0085	< 0.0034	< 0.0074	< 0.011	< 0.020	< 0.0091	< 0.021	< 0.0073	< 0.022	< 0.0050	**0.030 J**
AOC-A-1-6	06/01/2009	3.5 - 3.8 ft	N	< 0.011	< 0.0041	< 0.0090	< 0.013	< 0.024	< 0.011	< 0.026	< 0.0089	< 0.027	< 0.0088 J	< 0.0081
AOC-A-1-6	06/01/2009	4 - 10 in	N	< 0.0081	< 0.0032	< 0.0071	< 0.010	< 0.019	< 0.0087	< 0.020	< 0.0070	< 0.021	< 0.0048	**0.054 J**
AOC-A-3	06/02/2009	12 - 12.5 ft	N	< 0.052	< 0.021	< 0.046	< 0.064	< 0.13	< 0.056	< 0.13	< 0.045	< 0.14	< 0.031	**98**

Table 5.5.28-4
Soil Data - VOCs
AOC-A
Rhodia Silver Bow Plant
[concentrations in mg/kg]

Chemical Name				1,2-Dibromo-3-chloropropane	1,2-Dibromoethane	1,2-Dichlorobenzene	1,2-Dichloroethane	1,2-Dichloroethylene, cis	1,2-Dichloroethylene, trans	1,2-Dichloropropane	1,3,5-Trimethylbenzene	1,3-Dichloro-1-propene, cis	1,3-Dichloro-1-propene, trans	1,3-Dichlorobenzene
Location ID	Sample Date	Depth	Sample Type											
AOC-A-1-1	06/01/2009	3 - 3.5 ft	N	< 0.16	< 0.035	< 0.026	< 0.026	< 0.053	< 0.043	< 0.039	**8.1**	< 0.043	< 0.044	< 0.029
AOC-A-1-6	06/01/2009	2.5 - 3 ft	N	< 0.035	< 0.0076	< 0.0056	< 0.0057	< 0.012	< 0.0094	< 0.0086	< 0.0087	< 0.0093	< 0.0095	< 0.0062
AOC-A-1-6	06/01/2009	3.5 - 3.8 ft	N	< 0.042	< 0.0092	< 0.0067	< 0.0069	< 0.014	< 0.012	< 0.011	< 0.011	< 0.012	< 0.012	< 0.0075
AOC-A-1-6	06/01/2009	4 - 10 in	N	< 0.033	< 0.0073	< 0.0053	< 0.0054	< 0.011	< 0.0090	< 0.0082	**0.016 J**	< 0.0089	< 0.0091	< 0.0059
AOC-A-3	06/02/2009	12 - 12.5 ft	N	< 0.22	< 0.047	< 0.034	< 0.035	< 0.071	< 0.058	< 0.053	**37**	< 0.057	< 0.059	< 0.038

Table 5.5.28-4
Soil Data - VOCs
AOC-A
Rhodia Silver Bow Plant
[concentrations in mg/kg]

			Chemical Name	1,3-Dichloropropane	1,4-Dichlorobenzene	2,2-Dichloropropane	2-Chloroethyl vinyl ether	2-Hexanone	Acetone	Acrolein	Acrylonitrile	Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform
Location ID	Sample Date	Depth	Sample Type													
AOC-A-1-1	06/01/2009	3 - 3.5 ft	N	< 0.042	< 0.036	< 0.091 J	< 0.21 J	< 0.91	< 1.2	< 0.81	< 0.16	< 0.033	< 0.048	< 0.046	< 0.042	< 0.046
AOC-A-1-6	06/01/2009	2.5 - 3 ft	N	< 0.0091	< 0.0078	< 0.020 J	< 0.045 J	< 0.20	< 0.25	< 0.18	< 0.034	< 0.0071	< 0.011	< 0.010	< 0.0091	< 0.010
AOC-A-1-6	06/01/2009	3.5 - 3.8 ft	N	< 0.011	< 0.0095	< 0.024 J	< 0.055 J	< 0.24	< 0.31	< 0.22	< 0.041	< 0.0086	< 0.013	< 0.013	< 0.011	< 0.013
AOC-A-1-6	06/01/2009	4 - 10 in	N	< 0.0087	< 0.0075	< 0.019 J	< 0.043 J	< 0.19	**0.39 J**	< 0.17	< 0.032	< 0.0068	< 0.010	< 0.0096	< 0.0087	< 0.0096
AOC-A-3	06/02/2009	12 - 12.5 ft	N	< 0.056	< 0.048	< 0.13	< 0.28 J	< 1.3	< 1.6	< 1.1	< 0.21	**0.31 J**	< 0.064	< 0.062	< 0.056	< 0.062

Table 5.5.28-4
Soil Data - VOCs
AOC-A
Rhodia Silver Bow Plant
[concentrations in mg/kg]

			Chemical Name	Bromomethane	Butyl benzene	Butylbenzene, sec	Butylbenzene, tert	Carbon disulfide	Carbon tetrachloride	Chlorobenzene	Chlorodibromomethane	Chloroethane	Chloroform	Chloromethane	Chlorotoluene o-	Chlorotoluene p-
Location ID	Sample Date	Depth	Sample Type													
AOC-A-1-1	06/01/2009	3 - 3.5 ft	N	< 0.091	< 4.2	**0.84 J**	**0.062 J**	< 0.072	< 0.10	< 0.030	< 0.033	< 0.072	< 0.043	< 0.046	< 0.030	< 0.039
AOC-A-1-6	06/01/2009	2.5 - 3 ft	N	< 0.020	**0.023 J**	< 0.0082	< 0.011	< 0.016	< 0.022	< 0.0066	< 0.0071	< 0.016	< 0.0094	< 0.010	< 0.0065	< 0.0086
AOC-A-1-6	06/01/2009	3.5 - 3.8 ft	N	< 0.024	< 0.0094	< 0.0099	< 0.013	< 0.019	< 0.027	< 0.0080	< 0.0086	< 0.019	< 0.012	< 0.013	< 0.0079	< 0.011
AOC-A-1-6	06/01/2009	4 - 10 in	N	< 0.019	**0.019 J**	< 0.0078	< 0.010	< 0.015	< 0.021	< 0.0063	< 0.0068	< 0.015	< 0.0090	< 0.0096	< 0.0062	< 0.0082
AOC-A-3	06/02/2009	12 - 12.5 ft	N	< 0.13	< 23	**10 J**	**0.37 J**	< 0.096	< 0.14	< 0.041	< 0.044	< 0.096	< 0.058	< 0.062	< 0.040	< 0.053

Table 5.5.28-4
Soil Data - VOCs
AOC-A
Rhodia Silver Bow Plant
[concentrations in mg/kg]

			Chemical Name	Cumene (isopropyl benzene)	Cymene p- (Toluene isopropyl p-)	Dibromomethane (methylene bromide)	Dichlorodifluoromethane (CFC-12)	Ethyl benzene	Hexachlorobutadiene	Iodomethane	Methyl ethyl ketone	Methyl isobutyl ketone	Methyl tertiary butyl ether (MTBE)	Methylene chloride
Location ID	Sample Date	Depth	Sample Type											
AOC-A-1-1	06/01/2009	3 - 3.5 ft	N	**0.17 J**	**1.2 J**	< 0.081	< 0.10	**0.16 J**	< 0.077	< 0.31	< 1.0	< 1.7	< 0.072	< 0.052
AOC-A-1-6	06/01/2009	2.5 - 3 ft	N	< 0.0097	< 0.0072	< 0.018	< 0.022	**0.047 J**	< 0.017	< 0.068	< 0.22	< 0.36	< 0.016	< 0.012
AOC-A-1-6	06/01/2009	3.5 - 3.8 ft	N	< 0.012	< 0.0087	< 0.022	< 0.027	< 0.0057	< 0.021	< 0.082	< 0.27	< 0.43	< 0.019	< 0.011
AOC-A-1-6	06/01/2009	4 - 10 in	N	< 0.0093	< 0.0069	< 0.017	< 0.021	**0.021 J**	< 0.016	< 0.065	< 0.21	< 0.34	< 0.015	< 0.012
AOC-A-3	06/02/2009	12 - 12.5 ft	N	**4.4 J**	**9.9 J**	< 0.11	< 0.14	**10**	< 0.11	< 0.42	< 1.4	< 2.2	< 0.096	**0.070 J**

Table 5.5.28-4
Soil Data - VOCs
AOC-A
Rhodia Silver Bow Plant
[concentrations in mg/kg]

			Chemical Name	Naphthalene	Propylbenzene	Styrene	Tetrachloroethylene	Toluene	Trichloroethylene	Trichlorofluoromethane	Vinyl acetate	Vinyl chloride	Xylene, m & p	Xylene, o
Location ID	Sample Date	Depth	Sample Type											
AOC-A-1-1	06/01/2009	3 - 3.5 ft	N	**5.4 J**	**0.37 J**	< 0.022	< 0.072	< 0.041	< 0.062	< 0.11	< 0.18	< 0.091	**1.3 J**	**0.52 J**
AOC-A-1-6	06/01/2009	2.5 - 3 ft	N	< 0.048	< 0.0097	< 0.0047	**0.076 J**	**0.034 J**	< 0.014	< 0.024	< 0.039	< 0.020	**0.13 J**	**0.029 J**
AOC-A-1-6	06/01/2009	3.5 - 3.8 ft	N	< 0.0086	< 0.012	< 0.0057	< 0.019	< 0.013	< 0.017	< 0.029	< 0.047	< 0.024	< 0.012	< 0.0086
AOC-A-1-6	06/01/2009	4 - 10 in	N	**0.11 J**	**0.017 J**	< 0.018	< 0.015	**0.11 J**	< 0.013	< 0.023	< 0.037	< 0.019	**0.063 J**	**0.020 J**
AOC-A-3	06/02/2009	12 - 12.5 ft	N	**37**	**12 J**	< 0.029	< 0.096	**0.10 J**	< 0.083	< 0.15	< 0.24	< 0.13	**20**	**0.29 J**

Table 5.5.28-5
Groundwater Quality Data - SVOCs
MW-02-1
Rhodia Silver Bow Plant
[concentrations in ug/l]

Chemical Name			1,2,4-Trichlorobenzene	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	1-Methylnaphthalene	2,4,5-Trichlorophenol	2,4,6-Trichlorophenol	2,4-Dichlorophenol	2,4-Dimethylphenol	2,4-Dinitrophenol	2,4-Dinitrotoluene	2,6-Dinitrotoluene
Location ID	Sample Date	Sample Type												
MW-02-1	01/17/2002	N	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 50	< 10	< 10
		SPLIT	< 11	< 11	< 11	< 11	--	< 21	< 11	< 11	< 11	< 11	< 11	< 11
MW-02-1	05/29/2008	N	< 0.16	< 0.22	< 0.21	< 0.29	--	< 0.31	< 0.58	< 0.47	< 22 R	< 1.7	< 0.18	< 0.33
		FD	< 0.32	< 0.44	< 0.42	< 0.58	--	< 0.62	< 1.2	< 0.94	< 44 R	< 3.4	< 0.36	< 0.66
MW-02-1	09/26/2008	N	< 0.016	< 0.022	< 0.021	< 0.029	--	< 0.031	< 0.058	< 0.047	< 2.2 R	< 0.17	< 0.018	< 0.033

Table 5.5.28-5
Groundwater Quality Data - SVOCs
MW-02-1
Rhodia Silver Bow Plant
[concentrations in ug/l]

Chemical Name			2-Chloronaphthalene	2-Chlorophenol	2-Methyl-4,6-dinitrophenol	2-Methylnaphthalene	2-Nitroaniline	2-Nitrophenol	3,3`-Dichlorobenzidine	3,4-Methylphenol (m,p cresols)	3-Nitroaniline	4-Bromophenyl phenyl ether	4-Chloro-3-methylphenol	4-Chloroaniline	4-Chlorophenol
Location ID	Sample Date	Sample Type													
MW-02-1	01/17/2002	N	< 10	< 10	< 50	< 10	--	< 10	< 20	< 10	--	< 10	< 10	--	< 10
		SPLIT	< 11	< 11	< 21	< 11	< 11	< 11	< 21	--	< 11	< 11	< 11	< 21	--
MW-02-1	05/29/2008	N	< 0.41	< 0.54	< 0.25	< 0.26	< 0.24	< 0.63	< 4.3	--	< 0.29	< 0.26	< 0.37	< 0.25	--
		FD	< 0.82	< 1.1	< 0.50	< 0.52	< 0.48	< 1.3	< 8.6	--	< 0.58	< 0.52	< 0.74	< 0.50	--
MW-02-1	09/26/2008	N	< 0.041	< 0.054	< 0.025	< 0.22	< 0.024	< 0.063	< 0.43	--	< 0.029	< 0.026	< 0.037	< 0.025	--

Table 5.5.28-5
Groundwater Quality Data - SVOCs
MW-02-1
Rhodia Silver Bow Plant
[concentrations in ug/l]

Chemical Name			4-Chlorophenyl phenyl ether	4-Nitroaniline	4-Nitrophenol	Acenaphthene	Acenaphthylene	Anthracene	Azobenzene	Benzidine	Benzo(a) anthracene	Benzo(a) pyrene	Benzo(b) fluoranthene	Benzo(g,h,i) perylene	Benzo(k) fluoranthene	Benzoic acid	Benzyl alcohol	Bis(2-chloroethoxy) methane
Location ID	Sample Date	Sample Type																
MW-02-1	01/17/2002	N	< 10	--	< 50	< 10	< 10	< 10	< 10	< 20	< 10	< 10	< 10	< 10	< 10	--	--	< 10
		SPLIT	< 11	< 11	< 11	< 11	< 11	< 11	--	--	< 11	< 21	< 11	< 11	< 11	< 53	< 21	< 11
MW-02-1	05/29/2008	N	< 0.27	< 0.19	< 2.8	< 0.26	< 0.15	< 0.24	< 0.21	--	< 0.18	< 0.31	< 0.17	< 0.19	< 0.24	< 11 R	< 0.73	< 0.24
		FD	< 0.54	< 0.38	< 5.6	< 0.52	< 0.30	< 0.48	< 0.42	--	< 0.36	< 0.62	< 0.34	< 0.38	< 0.48	< 22 R	< 1.5	< 0.48
MW-02-1	09/26/2008	N	< 0.027	< 0.019	< 0.28	**0.46**	< 0.015	< 0.024	< 0.021	--	< 0.018	< 0.031	< 0.017	< 0.019	< 0.024	< 1.1	< 0.073	< 0.024

Table 5.5.28-5
Groundwater Quality Data - SVOCs
MW-02-1
Rhodia Silver Bow Plant
[concentrations in ug/l]

Chemical Name			Bis(2-chloroethyl) ether	Bis(2-chloroisopropyl) ether	Bis(2-ethylhexyl) phthalate	Butyl benzyl phthalate	Carbazole	Chrysene	Dibenz(a,h) anthracene	Dibenzofuran	Diethyl phthalate	Dimethyl phthalate	Di-n-butyl phthalate	Di-n-octyl phthalate	Fluoranthene	Fluorene	Hexachlorobenzene
Location ID	Sample Date	Sample Type															
MW-02-1	01/17/2002	N	< 10	< 10	< 10	< 10	--	< 10	< 10	--	< 10	< 10	< 10	< 10	< 10	< 10	< 10
		SPLIT	< 21 *	< 11	< 21	< 11	< 32	< 11	< 21	< 11	< 32	< 11	< 11	< 11	< 11	< 11	< 11
MW-02-1	05/29/2008	N	< 0.35	< 0.26	**1400 J**	< 0.18	< 0.18	< 0.28	< 0.17	< 0.18	< 0.12	< 0.21	< 0.23	< 0.18	< 0.20	< 0.27	< 0.22
		FD	< 0.70	< 0.52	**22000 J**	< 0.36	< 0.36	< 0.56	< 0.34	< 0.36	< 0.24	< 0.42	< 0.46	< 0.36	< 0.40	< 0.54	< 0.44
MW-02-1	09/26/2008	N	< 0.035	< 0.026	< 160	< 0.018	< 0.018	< 0.028	< 0.017	**0.70**	< 0.012	< 0.021	< 0.023	< 0.018	< 0.020	**0.64**	< 0.022

Table 5.5.28-5
Groundwater Quality Data - SVOCs
MW-02-1
Rhodia Silver Bow Plant
[concentrations in ug/l]

Chemical Name			Hexachlorobutadiene	Hexachlorocyclopentadiene	Hexachloroethane	Indeno(1,2,3-cd) pyrene	Isophorone	Naphthalene	Nitrobenzene	N-Nitrosodimethylamine	N-Nitrosodi-n-propylamine	N-Nitrosodiphenylamine	o-Cresol	p-Cresol
Location ID	Sample Date	Sample Type												
MW-02-1	01/17/2002	N	< 10	< 20	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	--
		SPLIT	< 11	< 11	< 11	< 11	< 11	< 11	< 11	< 11 *	< 11	< 11	< 11	< 11
MW-02-1	05/29/2008	N	< 0.27 R	< 1.9 R	< 0.24 R	< 0.21	< 0.16	< 0.22	< 0.28	< 4.2	< 0.37	< 0.48	< 1.1	< 1.2
		FD	< 0.54 R	< 3.8 R	< 0.48 R	< 0.42	< 0.32	< 0.44	< 0.56	< 8.4	< 0.74	< 0.96	< 2.2	< 2.4
MW-02-1	09/26/2008	N	< 0.027	< 0.19 R	< 0.024	< 0.021	< 0.016	< 0.022	< 0.028	< 0.42	< 0.037	< 0.048	< 0.11	< 0.12

Table 5.5.28-5
Groundwater Quality Data - SVOCs
MW-02-1
Rhodia Silver Bow Plant
[concentrations in ug/l]

		Chemical Name	Pentachlorophenol	Phenanthrene	Phenol	Pyrene	Pyridine
Location ID	Sample Date	Sample Type					
MW-02-1	01/17/2002	N	< 50	< 10	< 10	< 10	< 20
		SPLIT	< 11	< 11	< 11 *	< 11	< 11
MW-02-1	05/29/2008	N	< 3.4	< 0.22	< 13	< 0.19	--
		FD	< 6.8	< 0.44	< 15	< 0.38	--
MW-02-1	09/26/2008	N	< 0.34	**0.56**	**2.0**	< 0.019	< 1.4 R

Table 5.5.28-6
Groundwater Quality Data - VOCs
MW-02-1
Rhodia Silver Bow Plant
[concentrations in ug/l]

Chemical Name			1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane	1,1-Dichloro-1-propene	1,1-Dichloroethane	1,1-Dichloroethylene	1,2,3-Trichlorobenzene	1,2,3-Trichloropropane	1,2,4-Trichlorobenzene	1,2,4-Trimethylbenzene	1,2-Dibromo-3-chloropropane
Location ID	Sample Date	Sample Type												
MW-02-1	01/17/2002	N	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	**12**	< 1.0
		SPLIT	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	**14**	< 5
MW-02-1	05/29/2008	N	< 0.047	< 0.050	< 0.064	< 0.061	< 0.051	< 0.042	< 0.10	< 0.10	< 0.14	< 0.13	< 0.037	< 0.22
		FD	< 0.047	< 0.050	< 0.064	< 0.061	< 0.051	< 0.042	< 0.10	< 0.10	< 0.14	< 0.13	< 0.037	< 0.22
MW-02-1	09/26/2008	N	< 0.047	< 0.050	< 0.064	< 0.061	< 0.051	< 0.042	< 0.10	< 0.10	< 0.14	< 0.13	< 0.037	< 0.22 J

Table 5.5.28-6
Groundwater Quality Data - VOCs
MW-02-1
Rhodia Silver Bow Plant
[concentrations in ug/l]

Chemical Name			1,2-Dibromoethane	1,2-Dichlorobenzene	1,2-Dichloroethane	1,2-Dichloroethylene, cis	1,2-Dichloroethylene, trans	1,2-Dichloropropane	1,3,5-Trimethylbenzene	1,3-Dichloro-1-propene, cis	1,3-Dichloro-1-propene, trans	1,3-Dichlorobenzene	1,3-Dichloropropane	1,4-Dichlorobenzene
Location ID	**Sample Date**	**Sample Type**												
MW-02-1	01/17/2002	N	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	**5.8**	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
		SPLIT	< 1	< 1	< 1	< 1	< 1	< 1	**7**	--	--	< 1	< 1	< 1
MW-02-1	05/29/2008	N	< 0.084	< 0.044	< 0.073	< 0.045	< 0.048	< 0.042	**0.78**	< 0.038	< 0.041	< 0.041	< 0.032	< 0.054
		FD	< 0.084	< 0.044	< 0.073	< 0.045	< 0.048	< 0.042	**0.32 J**	< 0.038	< 0.041	< 0.041	< 0.032	< 0.054
MW-02-1	09/26/2008	N	< 0.084	< 0.044	< 0.073	< 0.045	< 0.048	< 0.042	**0.31 J**	< 0.038	< 0.041	< 0.041	< 0.032	< 0.054

Table 5.5.28-6
Groundwater Quality Data - VOCs
MW-02-1
Rhodia Silver Bow Plant
[concentrations in ug/l]

Chemical Name			2,2-Dichloropropane	2-Chloroethyl vinyl ether	2-Hexanone	Acetone	Acrolein	Acrylonitrile	Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane	Butyl benzene	Butylbenzene, sec
Location ID	Sample Date	Sample Type														
MW-02-1	01/17/2002	N	< 1.0	< 1.0	< 20	< 20	< 20	< 20	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	**4.7**
		SPLIT	< 1	--	--	--	--	--	< 1	< 1	< 1	< 1	< 1	< 1	**2**	**5**
MW-02-1	05/29/2008	N	< 0.050	< 0.19 R	< 2.9	< 2.5	< 2.0 J	< 0.31	< 0.045	< 0.027	< 0.091	< 0.036	< 0.080	< 0.072	< 0.72	**2.9**
		FD	< 0.050	< 0.19 R	< 2.9	< 2.5	< 2.0 J	< 0.31	< 0.045	< 0.027	< 0.091	< 0.036	< 0.080	< 0.072	< 0.056	**0.69 J**
MW-02-1	09/26/2008	N	< 0.050	< 0.19 R	< 2.9	< 2.5	< 2.0	< 0.31	**0.12 J**	< 0.027	< 0.091	< 0.036	< 0.080 J	< 0.072	**0.35 J**	**1.6 J**

Table 5.5.28-6
Groundwater Quality Data - VOCs
MW-02-1
Rhodia Silver Bow Plant
[concentrations in ug/l]

Chemical Name			Butylbenzene, tert	Carbon disulfide	Carbon tetrachloride	Chlorobenzene	Chlorodibromomethane	Chloroethane	Chloroform	Chloromethane	Chlorotoluene o-	Chlorotoluene p-	Cumene (isopropyl benzene)	Cymene p- (Toluene isopropyl p-)
Location ID	Sample Date	Sample Type												
MW-02-1	01/17/2002	N	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	**1.6**	< 1.0
		SPLIT	**4**	--	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	**2**	--
MW-02-1	05/29/2008	N	**0.13 J**	< 0.045	< 0.068	< 0.045	< 0.057	< 0.13	< 0.042	< 0.053	< 0.035	< 0.025	**0.34 J**	**1.4 J**
		FD	**0.050 J**	< 0.045	< 0.068	< 0.045	< 0.057	**0.22 J**	< 0.042	< 0.053	< 0.035	< 0.025	**0.16 J**	< 0.044
MW-02-1	09/26/2008	N	**0.060 J**	< 0.28	< 0.068	< 0.045	< 0.057	< 0.13	< 0.042	< 0.053	< 0.035	< 0.025	**0.17 J**	< 0.044

Table 5.5.28-6
Groundwater Quality Data - VOCs
MW-02-1
Rhodia Silver Bow Plant
[concentrations in ug/l]

Chemical Name			Dibromomethane (methylene bromide)	Dichlorodifluoromethane (CFC-12)	Ethyl benzene	Hexachlorobutadiene	Iodomethane	Isopropyl toluene	Methyl ethyl ketone	Methyl isobutyl ketone	Methyl tertiary butyl ether (MTBE)	Methylene chloride	Naphthalene	Propylbenzene	Styrene
Location ID	**Sample Date**	**Sample Type**													
MW-02-1	01/17/2002	N	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	--	< 20	< 20	< 1.0	< 1.0	< 1.0	**0.86 J**	< 1.0
		SPLIT	< 1	< 1	< 1	< 1	--	< 1	--	--	< 1	< 5	< 5	**1**	< 1
MW-02-1	05/29/2008	N	< 0.089	< 0.083	< 0.042	< 0.19	< 0.27	--	< 3.8	< 3.0	< 0.070	< 0.23	< 0.53	**0.18 J**	< 0.039
		FD	< 0.089	< 0.083	< 0.042	< 0.19	< 0.27	--	< 3.8	< 3.0	< 0.070	< 0.23	< 0.38	**0.070 J**	< 0.039
MW-02-1	09/26/2008	N	< 0.089	< 0.083	< 0.042	< 0.19	< 0.27	--	< 3.8	< 3.0	< 0.070	< 0.23	< 0.10	**0.080 J**	**0.060 J**

Table 5.5.28-6
Groundwater Quality Data - VOCs
MW-02-1
Rhodia Silver Bow Plant
[concentrations in ug/l]

Chemical Name			Tetrachloroethylene	Toluene	Trichloroethylene	Trichlorofluoromethane	Vinyl acetate	Vinyl chloride	Xylene, m & p	Xylene, o	Xylenes, total
Location ID	Sample Date	Sample Type									
MW-02-1	01/17/2002	N	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
		SPLIT	< 1	< 1	< 1	< 1	--	< 1	--	--	< 2
MW-02-1	05/29/2008	N	< 0.077	< 0.060	< 0.061	< 0.086	< 0.91	< 0.071	< 0.078	< 0.037	--
		FD	< 0.077	< 0.20	< 0.061	< 0.086	< 0.91	< 0.071	< 0.078	< 0.037	--
MW-02-1	09/26/2008	N	< 0.077	< 0.15	< 0.061	< 0.086	< 0.91	< 0.071	< 0.078	< 0.037	--

Figures

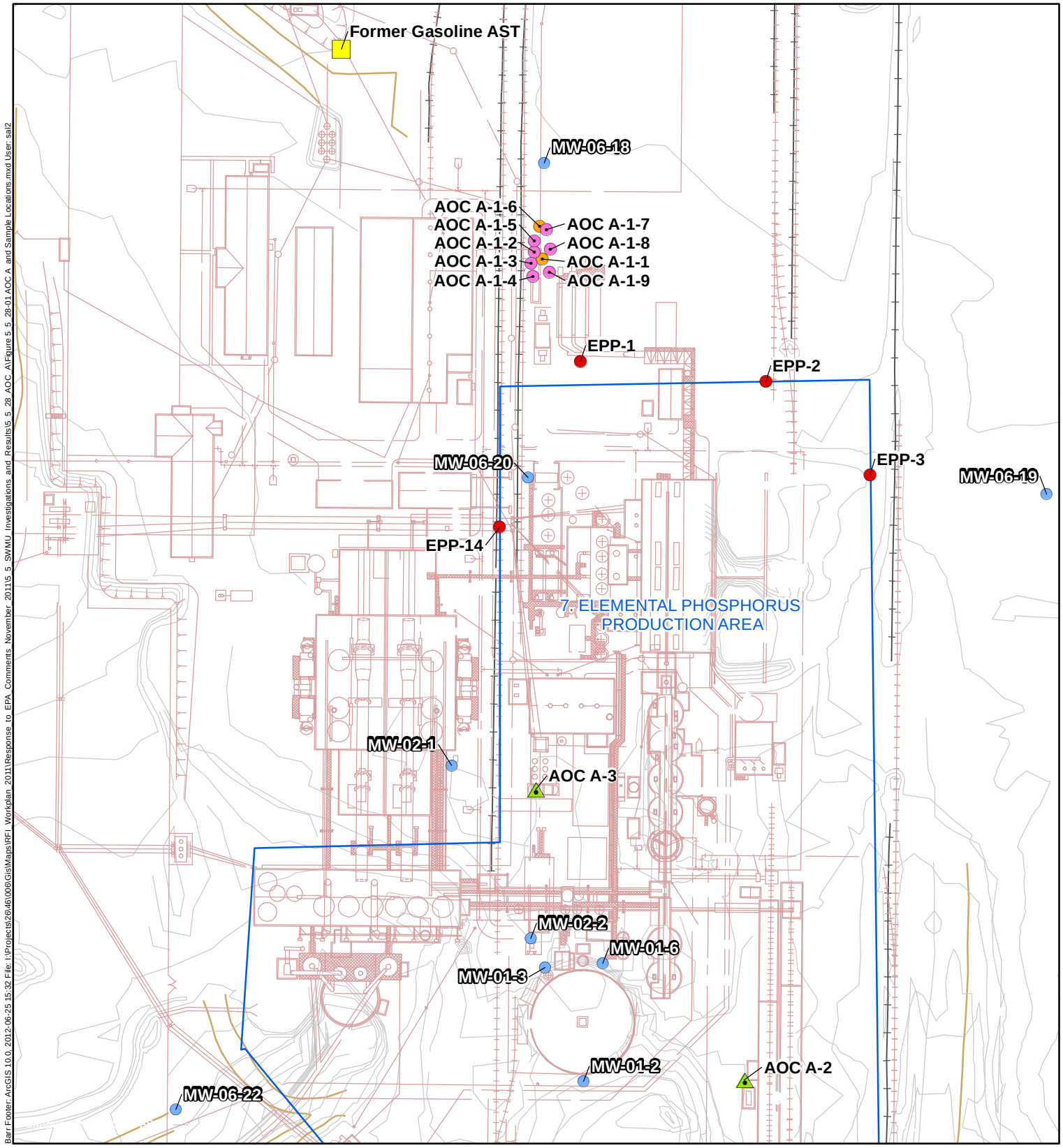


Figure 5.5.28-1

AOC A AND SAMPLE LOCATIONS
Rhodia Silver Bow Plant
Montana

Figure 5.5.28-2

AOC A-1
Rhodia Silver Bow Plant

Figure 5.5.28-3

AOC A-2
Rhodia Silver Bow Plant

Figure 5.5.28-4

AOC A-3
Rhodia Silver Bow Plant

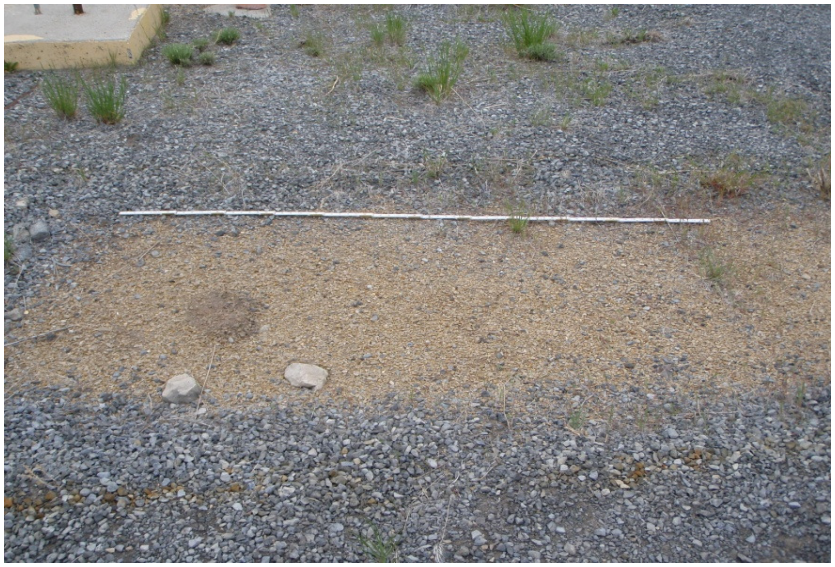
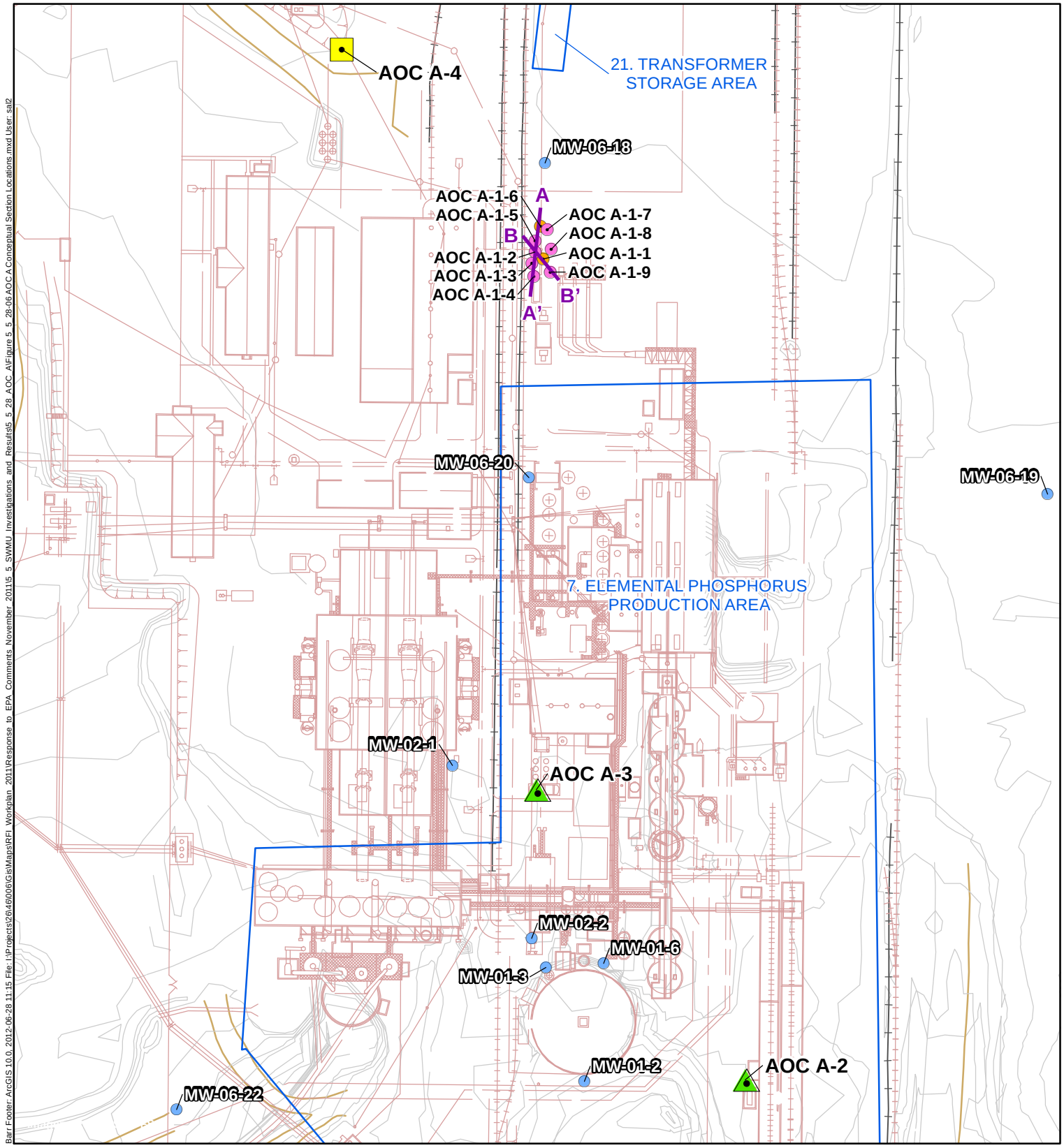


Figure 5.5.28-5

AOC A-4
Rhodia Silver Bow Plant



2009 AOC A Hand Auger Boring (Field Screening and Analytical)

2009 AOC A Hand Auger Boring (Field Screening)

2009 AOC A Test Pit (Analytical)

2009 AOC A (Visual Inspection)

Monitoring Well

Cross Section Location

Solid Waste Management Units and Areas Of Concern

Former Plant Structures

Elevation Contour

Drainage

Railroad

Road

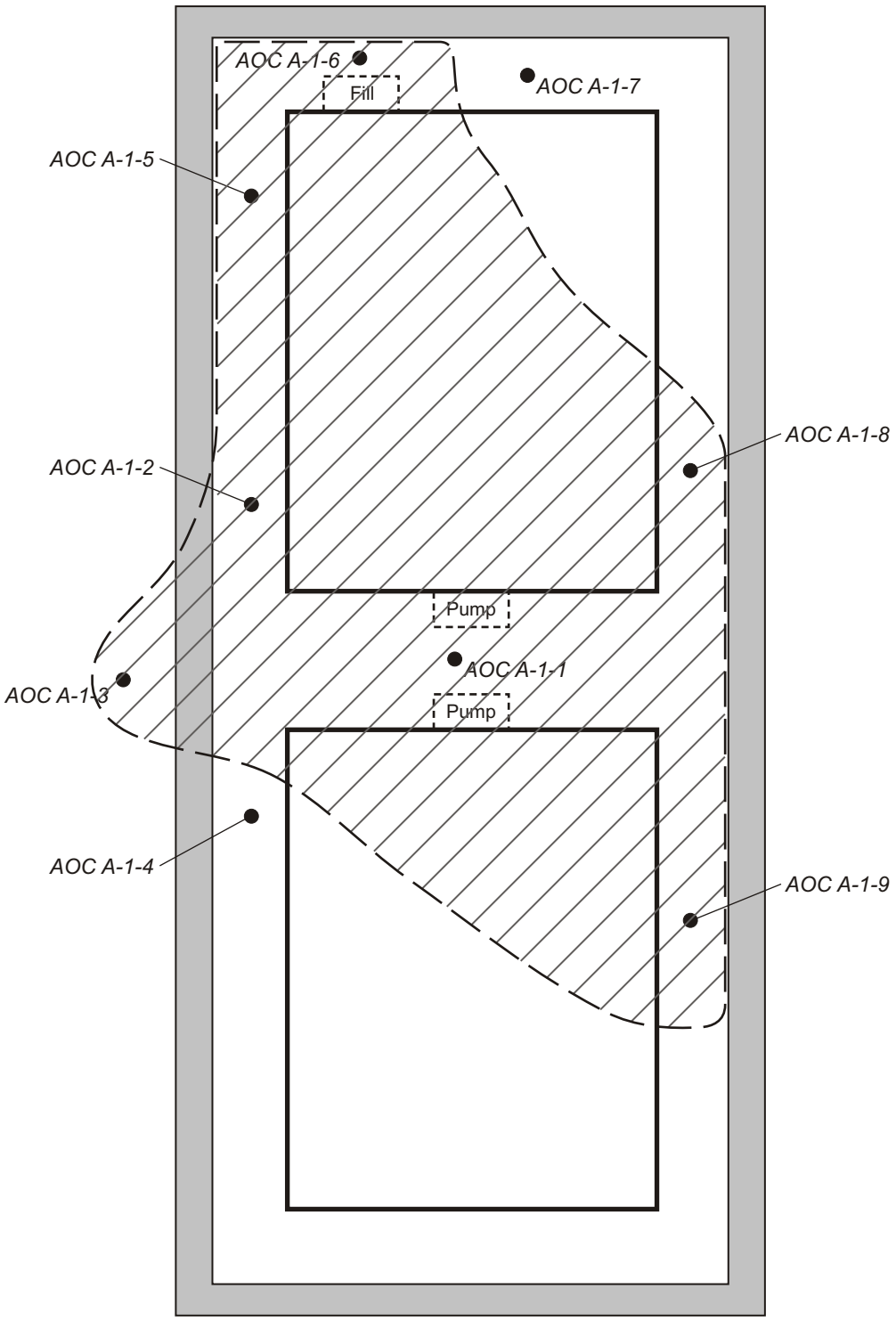
N

Feet

100 0 100

Figure 5.5.28-6

AOC A SOIL BORING, TEST TRENCH, VISUAL INSPECTION, AND CONCEPTUAL SECTION LOCATIONS
Rhodia Silver Bow Plant
Montana



Not to Scale

LEGEND

Auger Locations

Petroleum Impacted Area

Figure 5.5.28-7

AOC A-1 BORING LOCATIONS
AND PETROLEUM IMPACTS
Rhodia Silver Bow Plant
Montana

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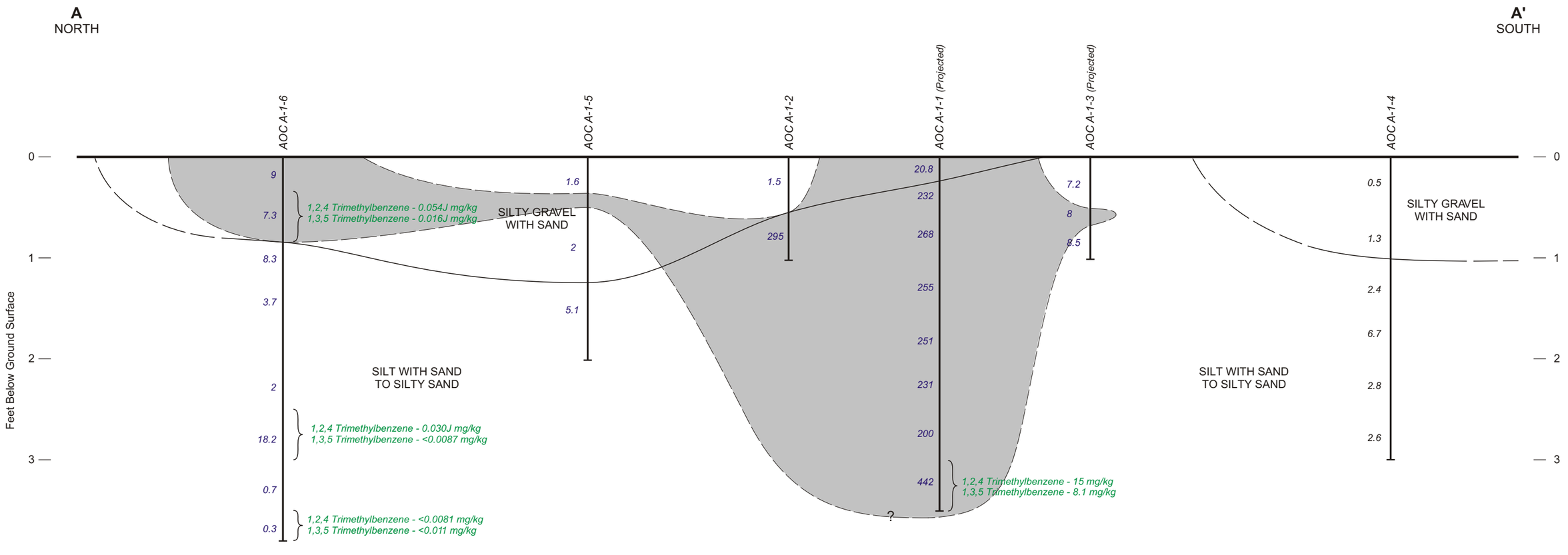


LEGEND

- Ground Surface
- Geologic Contact (Dashed where inferred)
- Stained Soil

Hand Auger Boring

PID Measurement (ppm) — 442 — 1,2,4 Trimethylbenzene - 15 mg/kg Constituent Concentrations

No Horizontal Scale

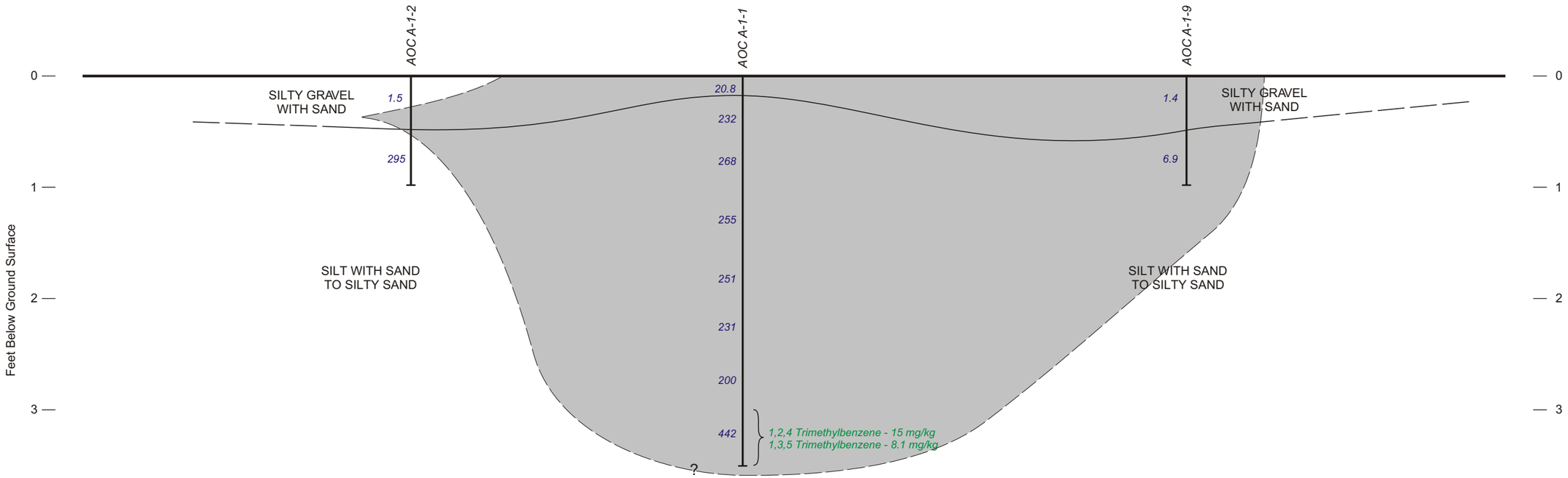
Figure 5.5.28-8

CONCEPTUAL CROSS SECTION A-A' THROUGH AOC A-1
Rhodia Silver Bow Plant
Montana

P:\Mpls\26 MT\46\2646006\WorkFiles\Figures_Graphics\2012 Cross Sections\Conceptual Cross Section A-A' Through AOC A-1.CDR RLG 12-31-12

B
NORTHWEST

B'
SOUTHEAST



No Horizontal Scale

LEGEND

- Ground Surface
- Geologic Contact (Dashed where inferred)
- Stained Soil

Hand Auger Boring

PID Measurement (ppm) — 442 — 1,2,4 Trimethylbenzene - 15 mg/kg Constituent Concentrations

Figure 5.5.28-9

CONCEPTUAL CROSS SECTION B-B' THROUGH AOC A-1
Rhodia Silver Bow Plant
Montana

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Appendices

Appendix 5.5.28-A

Test Trench Logs

PROJECT NO. 26400006

TEST PIT NO. AOC A-2 SHEET 1 OF 1

TEST PIT WALL LOG

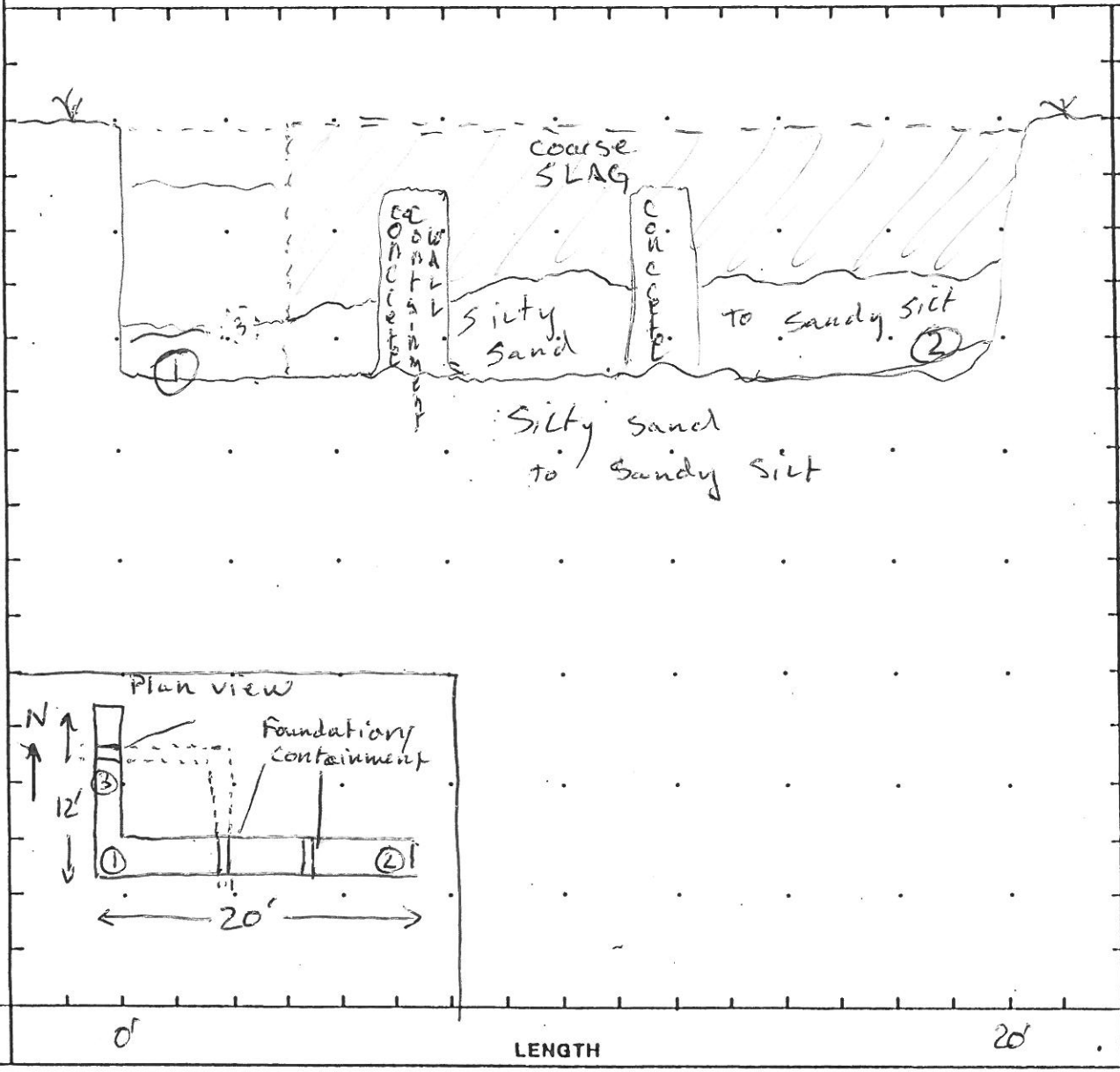
PROJECT Rhodia RFI LOCATION AOC A-2 (in Summit) MAP OF N WALL OF PIT

ELEVATION NA CONTRACTOR Mt. Reclamation & Landscaping DATE EXCAVATED 6/2/09

WATER LEVEL AND DATE NA EXCAVATION METHOD Rubbertire backhoe LOGGER KAM

APPROXIMATE DIMENSIONS LENGTH 20' WIDTH 2' DEPTH 2-2.5' REMARKS

ELEVATION | DEPTH BELOW SURFACE ( ) | SAMPLE: INTERVAL | SAMPLE: TYPE AND NUMBER



COMMENTS

	OD	SH	Disco	PID
①	No	No	No	0.1
	(at base ~2.5')			
②	NO	NO	NO	0.20
	(at base ~2')			
③	No	NO	NO	0.1
	(at base ~2.5')			

- Test pit completed in "L" shape after fiding Remnants of the tank Containment
- No discolored Soil observed
- No Smoking Soil observed.

PROJECT NO. 2460004

TEST PIT NO. AOC A-3 SHEET 1 OF 1

TEST PIT WALL LOG

PROJECT Rhodia RFI LOCATION AOC A-3 (in Swmu 7) MAP OF East WALL OF PIT

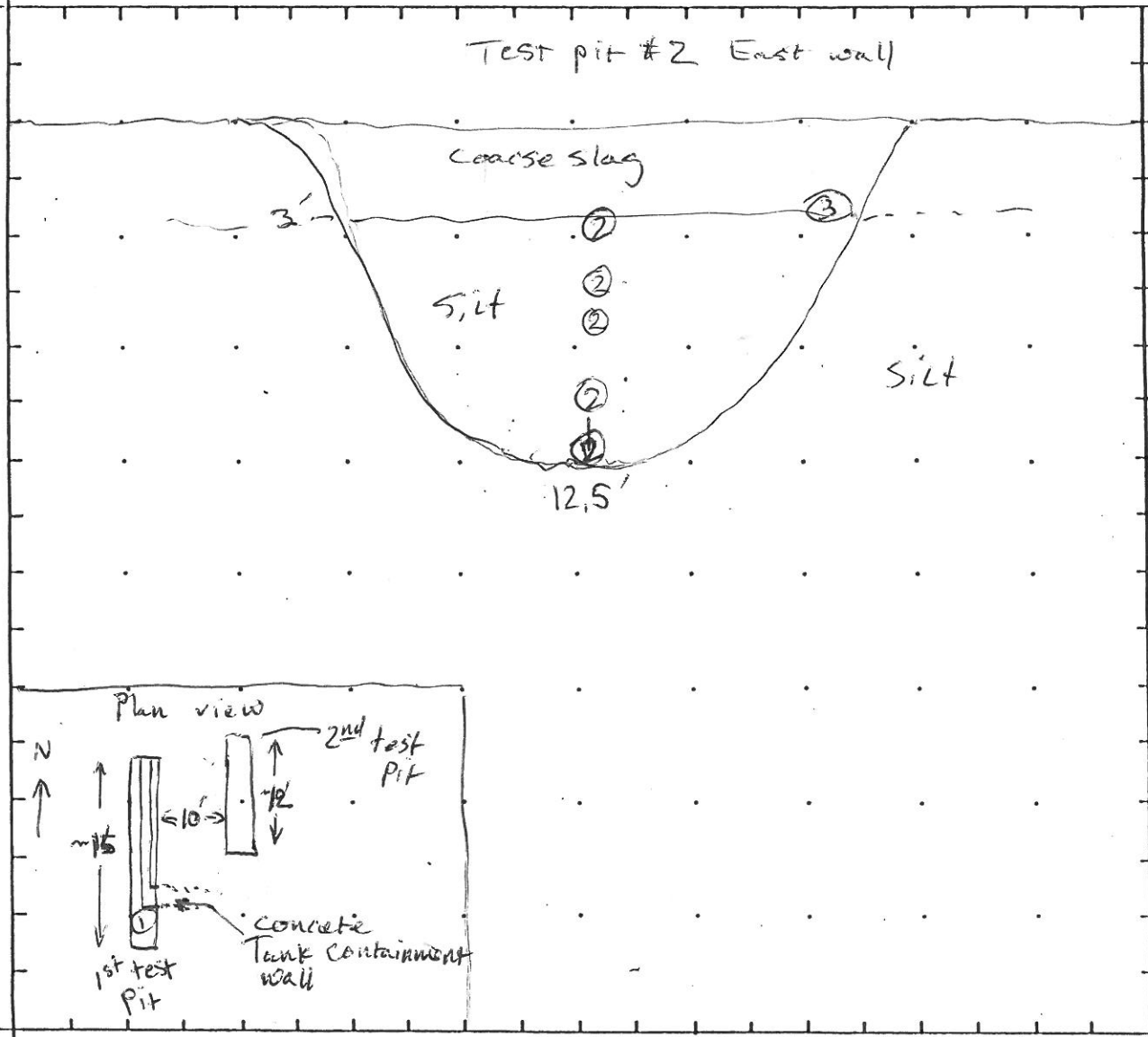
ELEVATION NA CONTRACTOR NW. Reclamation & Landscaping DATE EXCAVATED 6/2/09

WATER LEVEL AND DATE NA EXCAVATION METHOD Rubber tire backhoe LOGGER KAM

APPROXIMATE DIMENSIONS LENGTH ~12' WIDTH ~2' DEPTH ~12.5' REMARKS

ELEVATION | DEPTH BELOW SURFACE ( ) | SAMPLE: INTERVAL | SAMPLE: TYPE AND NUMBER

Test pit #2 East wall



COMMENTS

Field screen

Locn	Depth	OD	SN	Disco	PID
①	1.5'	No	No	No	0.3
②	3.5	No	No	No	278
②	5-5.5	St.	Rbw	Olive/Bk	473
②	7	St	Rbw	Olive gy	717
②	9	St	Rbw	olive gy	743
②	12-12.5	St	Rbw	olive gy	756
③	3	No	No	No	5.2

- 1st test pit found tank containment wall, 2nd Pit placed near center based on former AST site.
- Discolored/stained soil present at bottom of Test pit - 12.5' bgs
- No smoking soil observed

Appendix 5.5.28-B

Groundwater Quality Charts - MW-02-1

Appendix 5.5.28-B
Groundwater Quality over Time
MW-02-1