

- Ten VOCs were detected and their concentrations are listed below and in Table 3 (Figure 8).

VOC Soil Gas Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration ($\mu\text{g}/\text{m}^3$)
1,1,1-TCA	DP0005	5	130,000
1,1-DCA	DP0005	5	34,000* (2,200)
1,1-DCE	DP0005	5	130,000* (220)
Benzene	DP0005	5	310*
Chloroform	DP0005	5	280
Ethylbenzene	DP0005	5	290
m,p-Xylenes	DP0005	5	1,500
PCE	DP0005	5	3,300* (603)
Toluene	DP0005	5	1,400
TCE	DP0005	5	370

* Exceeded the delineation criterion indicated in parentheses..

Characterization Complete: Review of the analytical data indicates that chemical concentrations for several VOCs in soil gas are above the delineation criteria. Considering soil gas data in adjacent AOIs 25, 26, 30, 32, and 36, it appears that delineation is not complete to the northeast and west. It is anticipated that delineation will be completed during additional soil gas sampling for AOIs 25, 26, and 30.

6.5.5 Former 500-Gal UST - AOI 32

AOI Description: The Former Gasoline UST Area/500-gal Gas AST was located in the perimeter area northwest of the Main Production Building adjacent to the Hazardous Materials Storage Shed (AOI 36) (Figure 2).

Previous Investigation History: Previous lead investigations of the perimeter did not focus on this area (Figure 4). Confirmation sampling during removal of the UST did not detect significant concentrations of TPH or VOCs.

Haley & Aldrich 2005 Investigation Results: One boring (DP0006) was advanced at this AOI to 15 feet bgs. Soil and soil gas samples were both collected at this location (Figure 3).

Summary of Soil Sampling

- Multiple soil samples were collected at near-surface depths of less than 4 feet bgs and analyzed for lead, VOCs, and SVOCs (Table 1-3).
- Lead was detected at a maximum concentration of 64 mg/kg at 0.3 foot bgs in the one sample analyzed (Table 5, Figure 6).
- VOCs and SVOCs were not reported above laboratory detection limits or delineation criteria in the soil sample collected and analyzed at 1 foot bgs (Table 4).

Summary of Soil Gas Sampling

- Four soil gas samples were collected at two locations (EP0005 and DP0006) from 5 feet and 15 feet bgs (Table 1-5).
- Six VOCs were detected. These VOCs and their maximum detected concentrations are listed below and in Table 3 (Figure 8). Benzene was reported above the delineation criteria at one location.

VOC Soil Gas Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration ($\mu\text{g}/\text{m}^3$)
Benzene	DP0006	15	300* (122)
Ethylbenzene	DP0006	15	520
m,p-Xylenes	DP0006	15	2,600
o-Xylene	DP0006	15	700
Toluene	DP0006	15	2,900
CFC-11	DP0006	15	150

* Exceeded the delineation criterion indicated in parentheses.

Characterization Complete: Review of the analytical data indicates that chemical concentrations are delineated vertically and laterally with the exception of benzene in soil gas. Based on soil gas data from the AOI and adjacent AOIs 30 and 36, it appears that delineation is not complete to the southwest. It is anticipated that delineation will be completed during additional soil gas sampling for AOIs 25, 26, 30 and 37.

6.5.6 Potential Former Fuel Oil Tank Area No. 1 in North Loading Dock and SWMU No. 13 – AOI 33

AOI Description: The Former Fuel Oil Tank Area No. 1 NW Corner Main Production Building was located in the perimeter area just north of the northwest corner of the Main Production Building (Figure 2). This AOI has been identified as SWMU No. 13.

Previous Investigation History: Previous testing of concrete for lead was performed in this area. The maximum concentration of lead detected in a concrete chip sample in this area was 858 mg/kg (Figure 4). During 1986, Dames & Moore reported that four fuel oil USTs were removed and confirmation sampling performed under the oversight of the Orange County Health Care Agency (OCHCA). No significant impacts were observed and the tanks were resting on a concrete slab. The maximum hydrocarbon concentration report by EPA method 418.1 was 700 mg/kg and reports indicate that this may have been elevated by the presence of burnt wood chips (Dames & Moore 1986).

Haley & Aldrich 2005 Investigation Results: Twelve borings (DP0065, DP0066, DP0112, DP0113, DP0114, DP0115, DP0116, DP0117, DP0118, DP0119, DP0150, and DP0151) were advanced to multiple depths of 11 to 15 feet bgs. Ten locations were sampled for soil, and 10 locations were sampled for soil gas (Figure X).

Summary of Soil Sampling

- Fifty-seven soil samples were collected from 12 boring locations (DP0065, DP0066, DP0112, DP0113, DP0114, DP0115, DP0116, DP0117, DP0118,

DP0119, DP0150, and DP0151) and analyzed for lead, CAM-17 metals, TPH, PCBs, VOCs, and SVOCs (Table 1-3).

- Lead was analyzed in 41 samples with five samples above the delineation criterion for lead (Table 5, Figure 6). The maximum concentration detected was 65,000 mg/kg in DP0114 at 0.3 feet bgs).
- Thirty-three samples were analyzed for CAM-17 metals at depths between 0.3 foot and 15 feet bgs. Four samples were analyzed for arsenic only. The detected Site-related metals and their maximum concentrations are listed below and in Table 4 (Figure 7). Delineation criteria were exceeded for antimony in 13 samples, arsenic in 16 samples, and mercury in two samples.

Metal Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration (mg/kg)
Antimony	DP0115	0.3	8,900* (6)
Arsenic	DP0114	0.3	2,200* (11.3)
Chromium	DP0114	0.3	31.2
Mercury	DP0115	0.3	4.25* (2)
Zinc	DP0014	0.3	212

* Exceeded the delineation criterion indicated in parentheses.

- Total TPH carbon chain analysis was performed in 32 samples and reported above the detection limit in five samples. The maximum TPH (C4-C40 concentration detected was 3,063 mg/kg in DP0118 at 0.3 foot bgs. The majority of hydrocarbons in these samples were oil range (C23-C40) (Table 4).
- PCBs analyses were performed on 40 samples. Aroclor-1248 was over the delineation criteria for 10 samples. The maximum concentration detected was 136 mg/kg in DP0115 at 0.3 foot bgs (Table 4, Figure 7-3).
- VOCs were analyzed for in 37 samples at depths ranging from 0.3 foot to 20 feet bgs (Table 4, Figure 7). Fourteen VOCs were detected. Maximum concentrations and sample locations are listed below and in Table 4 (Figure 7). Naphthalene and PCE were both over the delineation criteria in one sample.
-

VOC Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration (µg/kg)
1,2,4-Trimethylbenzene	DP0118	0.3	2,480
1,3,5- Trimethylbenzene	DP0118	0.3	1,360
Benzene	DP0151	10	3.6J
Ethylbenzene	DP0118	0.3	50.6
Isopropylbenzene	DP0118	0.3	84.8
m,p-Xylenes	DP0118	0.3	174
Naphthalene	DP0118	0.3	6,970* (4.300) check this 4.300 number
n-Propylbenzene	DP0118	0.3	260
o-Xylene	DP0118	0.3	173

p-Isopropyltoluene	DP0118	0.3	750
sec-Butylbenzene	DP0118	0.3	493
Tert-Butylbenzene	DP0118	0.3	30.2J
PCE	DP0118	0.3	266* (14)
Toluene	DP0118	0.3	92.4

* Exceeded the delineation criterion indicated in parentheses.

- Thirty-one samples were analyzed for SVOCs at depths between 0.3 foot and 20 feet bgs (Table 4, Figure 7). Four SVOCs were detected. Maximum concentrations and associated sample locations are listed below. The delineation criteria for bis(2-ethylhexyl) phthalate was exceeded in one sample (DP0118)

SVOC Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration ($\mu\text{g}/\text{kg}$)
2-Methylnaphthalene	DP0118	0.3	8.25
Bis(2-ethylhexyl) phthalate	DP0118	0.3	9.5* (4)
Naphthalene	DP0118	0.3	3.90
Phenanthrene	DP0118	0.3	0.492J

* Exceeded the delineation criterion indicated in parentheses.

Summary of Soil Gas Sampling

- Twenty-three soil gas samples were collected at 5 feet and 15 feet bgs at 10 boring locations (DP0065, DP0066, DP0112, DP0113, DP0116, DP0117, DP0118, DP0119, DP0150 and DP0151) (Table 1-5).
- Eight VOCs were detected. The maximum concentration and associated sampling location are listed below. PCE and benzene exceeded the delineation criteria in two samples. The other VOCs detected were below delineation criteria.

VOC Soil Gas Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration ($\mu\text{g}/\text{m}^3$)
1,1,1-TCA	DP0113	15	219
1,1,2-TCA	DP0116	5	159
1,1-DCA	DP0118	5	150
1,1-DCE	DP0116	15	2,280
1,2,4-Trimethylbenzene	DP0116	5	381
1,2-Dichloropropane	DP0117	5	250
Freon 114	DP0113	15	9.9
1,3,5-Trimethylbenzene	DP0116	5	174
2-Butanone (MEK)	DP0113	15	44.6
4-Ethyltoluene	DP0116	5	115
4-Methyl-2-pentanone (MIBK)	DP0113	15	255
Acetone	DP0113	15	575
Benzene	DP0116	5	148* (122)
Carbon disulfide	DP0116	5	161
Chloroform	DP0116	5	10.7

Ethylbenzene	DP0116	5	508
m,p-Xylenes	DP0116	5	2,270
MTBE	DP0116	5	4.6
o-Xylene	DP0116	5	555
Styrene	DP0116	5	204
PCE	DP0065	11	1000J* (603)
Toluene	DP0116	5	1,780
TCE	DP0118	15	15
CFC-11	DP0113	15	9.9
Total Xylenes	DP0112/DP0119	5/15	540

* Exceeded the delineation criterion indicated in parentheses.

Characterization Complete: Review of the analytical data indicates that soil gas chemical concentrations are delineated vertically and laterally. However, delineation is not complete antimony, arsenic, mercury and PCBs in soil. It is recommended that additional soil sampling be conducted to the west of this AOI during facility investigation.

6.5.7 Former UST Area No. 2 Used Oil (Excavated) - AOI 34

AOI Description: The former UST Area No. 2 was located in the perimeter area between Warehouse No. 3 and the Main Production Building east of the Oil Pump House (AOI No. 41) (Figure 2). This area has been previously identified as SWMU No. 7.

Previous Investigation History: A previous lead investigation of the area did not indicate lead impacts to concrete (Figure 4). During 1986, Dames & Moore reported that two 12,000 gallon used oil USTs were decommissioned and TPH impacted soil removed under the oversight of the OCHCA.

Haley & Aldrich 2005 Investigation Results: Two borings (DP0103 and DP0104) were advanced to 15 feet bgs (Figure 3) to assess this area. However, at the time of the sampling the figure from the Phase I report was used which showed the former USTs in the wrong location, north of the actual location later identified from the Dames & Moore reports. Soil gas and soil samples were collected at both locations. During the investigation soil borings were advanced near the former USTs for other AOIs. Other borings drilled and sampled nearby for AOIs 42 and 43 included DP0100, DP0109, DP0110, DP0146, DP0147, DP0148 and DP0200. No evidence of impacts from the USTs was found.

Summary of Soil Sampling

- Soil samples were collected at multiple depths of less than 15 feet bgs and analyzed for lead, CAM-17 metals, VOCs, and SVOCs (Table 1-3).
- Lead was detected at a maximum concentration of 36.1 mg/kg in DP0103 at 0.3 feet bgs (Table 5, Figure 6).
- Metals were analyzed at 0.3 foot bgs in both borings. The detected Site-related metals and their maximum concentrations are listed below and in Table 4 (Figure 7).
- Arsenic exceeded the delineation criteria in one sample (Figure 7).

Metal Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration (mg/kg)
Arsenic	DP0103	0.3	20.7* (11.3)
Chromium	DP0103	0.3	12
Zinc	DP0103	0.3	44.3

* Exceeded the delineation criterion indicated in parentheses.

- VOCs and SVOCs were not detected above laboratory detection limits or the delineation criteria in the four samples analyzed (Table 4, Figure 7).

Summary of Soil Gas Sampling

- Soil gas samples were collected at 5 and 15 feet bgs at both borings (Table 1-5).
- Seven VOCs were detected in the four soil gas samples collected (Table 1-5). Maximum concentrations are listed below (Table 3, Figure 8). PCE exceeded the delineation criteria in one sample.

VOC Soil Gas Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration ($\mu\text{g}/\text{m}^3$)
1,1,1-TCA	DP0104	5	2,700
1,1-DCA	DP0104	5	1,600
1,1-DCE	DP0103	15	5,600
m,p-Xylenes	DP0103	15	200
PCE	DP0104	5	900* (603)
Toluene	DP0103	15	1,800
TCE	DP0104	15	200

* Exceeded the delineation criterion indicated in parentheses.

Characterization Complete: Review of the analytical data from this AOI and AOI 40 indicates that delineation of VOCs in soil gas and arsenic in soil is not complete. Therefore it is recommended that soil gas samples be collected in proximity to DP0104 and soil samples be collected in proximity to DP0103 and analyzed for arsenic.

6.5.8 Equipment Cleaning and HazWaste Dock Area – AOI 35

AOI Description: The Equipment Cleaning and HazWaste Dock Area was located in the perimeter area just outside and north of the northwest corner of Main Production Building (Figure 2).

Previous Investigation History: Previous investigations in this area reported a maximum concentration of lead of 858 mg/kg in concrete chip samples (Figure 4).

Haley & Aldrich 2005 Investigation Results: One boring (DP0064) was advanced to 15 feet bgs (Figure 3). Soil and soil gas samples were collected at this location.

Summary of Soil Sampling

- Soil samples were collected at multiple depths of less than 15 feet bgs and analyzed for lead and VOCs (Table 1-3).
- Lead was analyzed in three samples. The maximum concentration detected was 317 mg/kg in DP0064 at 0.3 feet (Table 5, Figure 6).
- VOCs were not detected above laboratory detection limits in the two soil samples collected and analyzed (Table 4, Figure 7).

Summary of Soil Gas Sampling

- Soil gas was sampled at 5 and 15 feet bgs (Table 1-5).
- Two VOCs were detected and the maximum concentrations are listed below and in Table 3 (Figure 8).

VOC Soil Gas Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration ($\mu\text{g}/\text{m}^3$)
Benzene	DP0064	5	100J
PCE	DP0064	15	500J

Characterization Complete: Review of the analytical data from this AOI indicates that delineation is complete. The detected concentration of lead (317 mg/kg) at the ground surface is slightly above the delineation criterion but well below the remedial action level. Therefore, no further soil gas or soil sampling is recommended.

6.5.9 Hazardous Materials Storage Area Shed on N Driveway – AOI 36

AOI Description: The Hazardous Materials Storage Area Shed was located in the perimeter area north of the Main Production Building, just west of the railroad tracks (Figure 2).

Previous Investigation History: A previous investigation of lead in the perimeter area did not indicate lead impacts to concrete (Figure 4).

Haley & Aldrich 2005 Investigation Results: Five borings (DP0007, DP0130, DP0131, DP0132, and DP0149) were advanced to 15 feet bgs (Figure 3). Soil and soil gas samples were collected at the five locations.

Summary of Soil Sampling

- Soil samples were collected at multiple near-surface depths of less than 5 feet bgs and analyzed for lead, VOCs, and SVOCs (Table 1-3).
- Lead was analyzed in 15 samples and detected above the delineation criteria in five samples. The maximum detected lead concentration was 2,560 mg/kg in DP0131 at 0.3 feet bgs (Table 5, Figure 6).
- Benzene was the only VOC reported above the laboratory detection limits in the six samples analyzed. Benzene was reported at a concentration of 2.2J $\mu\text{g}/\text{kg}$ in sample DP0007-SS-001-01 (Table 4, Figure 7).
- SVOCs were not detected above laboratory detection limits in the three soil samples collected and analyzed (Table 4, Figure 7).

Summary of Soil Gas Sampling

- Soil gas was sampled at 5 and 15 feet bgs in five borings (Table 1-5).

- Nineteen VOCs were detected. These VOCs and their maximum concentrations are listed below and in Table 3 (Figure 8). One sample exceeded the delineation criteria for benzene.

VOC Soil Gas Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration ($\mu\text{g}/\text{m}^3$)
1,1,1-TCA	DP0131	15	49.4
1,1-DCA	DP0131	5	4.7
1,1-DCE	DP0131	5	64
1,2,4-Trimethylbenzene	DP0132	5	104
1,3,5-Trimethylbenzene	DP0132	5	49.9
2-Butanone (MEK)	DP0132	5	44.1
2-Hexanone	DP0131	15	39.7
4-Ethyltoluene	DP0131	15	39.7
4-Methyl-2-pentanone	DP0132	5	23.1
Acetone	DP0131	15	376
Benzene	DP0007	5	340* (122)
Chloroform	DP0132	5	21.8
Ethylbenzene	DP0007	5	560
m,p-Xylene	DP0007	5	3,100
o-Xylene	DP0007	5	790
Styrene	DP0132	5	48.8
PCE	DP0131	5	11.8
Toluene	DP0007	5	2,600
CFC-11	DP0007	5	130

* Exceeded the delineation criterion indicated in parentheses.

Characterization Complete: The analytical data indicates that chemical concentrations are delineated with the exception of lead in soil. Step-down and step-out soil gas data was sufficient to delineate VOCs in soil gas. Lead concentrations are delineated vertically and laterally with the exception to the northwest of DP0131. The data also suggests that elevated lead concentrations are limited. Therefore, it is recommended that additional soil samples be collected during remedial activities if warranted (what does "if warranted" mean?).

6.5.10 Patched Area South of NE Corner of Warehouse No. 3 – AOI 37

AOI Description: The Patched Area South of the NE Corner of Warehouse No. 3 was located in the perimeter area east of the north end of Warehouse No. 3 and northwest of AOI 40 (Figure 2). This was suspected to potentially have been a former UST location.

Previous Investigation History: A previous investigation of lead in the perimeter area did not indicate lead impacts to concrete in this area (Figure 4).

Haley & Aldrich 2005 Investigation Results: Four borings were advanced to multiple depths: one boring (DP0187) to 10 feet bgs, one boring (DP0060) to 15 feet bgs, and two borings (DP0215 and DP0220) to 25 feet bgs (Figure 3). Both soil and soil gas samples were collected from this location.

Summary of Soil Sampling

- Soil samples were collected at multiple depths of less than 25 feet bgs and analyzed for lead, CAM-17 metals, VOCs, SVOCs, and TPH (Table 1-3).
- Lead was analyzed in four samples from 0.3 to 10 feet bgs. The maximum concentration of lead detected was 88 mg/kg in DP0187 at 0.3 feet (Table 5, Figure 6).
- Metals were analyzed in four samples. The detected Site-related metals and their maximum concentrations are listed below and in Table 4 (Figure 7).

Metal Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration (mg/kg)
Arsenic	DP0187	0.3	4.95J
Chromium	DP0187	5	14.4
Zinc	DP0187	5	438

- Four VOCs were detected in the 19 samples analyzed. These VOCs and their maximum concentrations are listed below and in Table 4 (Figure 7).

VOC Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration (µg/kg)
1,1,1-TCA	DP0215	10	22.8
1,1-DCA	DP0215	25	14.2* (14)
1,1-DCE	DP0215	25	84.1* (16.8)
PCE	DP0060	5	8.8J

* Exceeded the delineation criterion indicated in parentheses.

- SVOCs and TPH were not reported above detection limits or the delineation criteria in the two soil samples collected and analyzed (Table 4, Figure 7).

Summary of Soil Gas Sampling

- Soil gas was collected at 5, 15, and 22 feet bgs in this location (Table 1-3).
- Fifteen VOCs were detected and are listed with maximum detected concentrations below and in Table 3.

VOC Soil Gas Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration (µg/m ³)
1,1,1-TCA	DP0060	15	140,000
1,1,2-TCA	DP0215	22	59.5
1,1-DCA	DP0187	15	36,500* (2,200)
1,1-DCE	DP0215	22	605,000* (88,000)
1,2,4-Trimethylbenzene	DP0215	22	39.1
Benzene	DP0215	22	132* (122)
Chloroform	DP0215	22	3,100
Ethylbenzene	DP0215	22	40.7

m,p-Xylenes	DP0215	22	155
o-Xylene	DP0215	22	46.9
Styrene	DP0215	22	37.6
PCE	DP0187	15	5,040* (603)
Toluene	DP0215	5	1,890
TCE	DP0215	22	1180
Vinyl Chloride	DP0215	22	131

* Exceeded the delineation criterion indicated in parentheses.

Characterization Complete: Analytical data indicates that chemical concentrations are delineated with the exception of multiple VOCs concentrations in soil and soil gas. Considering soil and soil gas VOC data from adjacent AOIs 25, 26, 31 and 40, delineation is complete with the exception to the west of DP0215. Therefore, additional soil gas and soil sampling is recommended as part of the additional investigation activities associated with AOIs 25 and 26.

6.5.11 Storm Water Oil/Water Separator – AOI 38

AOI Description: The Storm Water Oil/Water Separator was located in the northwest corner of the perimeter area adjacent and west of AOI 32 (Figure 2).

Previous Investigation History: Previous investigations in this area did not indicate lead impacts to concrete. During the Haley & Aldrich (September 2005) Site walk through, staining was observed on adjacent paved areas (Figure 4). Based on these observations and the historical operational use at this AOI, the following field investigation was initiated.

Haley & Aldrich 2005 Investigation Results: One boring (DP0013) was advanced to 5 feet bgs (Figure 3). Soil samples were collected at the boring location. Soil gas was not collected at this location the area was not a process area and VOCs were not considered likely chemicals of concern.

Summary of Soil Sampling

- Soil samples were collected at multiple near-surface depths of less than 1 foot and analyzed for lead, CAM-17 metals, VOCs, and TPH (Table 1-3).
- Lead was detected in both samples collected and analyzed at 0.3-feet and at 1-foot bgs. The maximum concentration of lead detected was 140 mg/kg (Table 5, Figure 6).
- Metals were analyzed in two samples. The detected Site-related metals and their maximum concentrations are listed below and in Table 4. The delineation criterion was exceeded for arsenic in one sample.

Metal Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration (mg/kg)
Antimony	DP0013	0.3	4.75J
Arsenic	DP0013	0.3	25.6* (11.3)
Chromium	DP0013	1	13.6
Zinc	DP0013	1	48.8

* Exceeded the delineation criterion indicated in parentheses.

- TPH and VOCs were reported not detection in the sample collected and analyzed at 1 foot bgs (Table 4, Figure 7).

Characterization Complete: The analytical data indicates that chemical concentrations are less than the delineation criteria with the exception of arsenic. The apparent elevated arsenic concentration (25.6 mg/kg) was detected directly beneath the sump. Because the feature is small, confirmation sampling can be perform during remedial action. Therefore, no further soil sampling is recommended.

6.5.12 Storm Water Retention Basin (12' deep) & Treatment Area - AOI 39

AOI Description: The Storm Water Retention Basin (12' deep) was located in the northwestern portion of the site adjacent and north of AOI 38 (Figure 2). Storm water was collected in the basin prior to it being discharged in to the storm drain leaving the site.

Previous Investigation History: Previous investigations of lead in the perimeter areas of the facility did not focus on this AOI (Figure 4).

Haley & Aldrich 2005 Investigation Results: Two borings (DP0004 and DP0008) were advanced to a total depth of 20 feet bgs (Figure 3). Both soil and soil gas samples were collected at both locations.

Summary of Soil Sampling

- A total of eight soil samples were collected at multiple depths to 15 feet bgs and analyzed for lead, CAM-17 metals, VOCs, and SVOCs in the two borings (Table 1-3).
- Lead was analyzed in three samples from 0.3 feet to 15 feet bgs. The maximum concentration of lead detected was 101 mg/kg in DP0004 at ground surface (Table 5, Figure 6)..
- Metals were analyzed in three samples. The detected Site-related metals and their maximum concentrations are listed below and in Table 4 (Figure 7)

Metal Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration (mg/kg)
Arsenic	DP0004	0.3	4.70J
Chromium	DP0004	0.3	18.2
Zinc	DP0004	0.3	150

- Analysis of five samples for VOCs and three samples for SVOCs did not detect these compounds above laboratory detection or delineation criteria (Table 4, Figure 7).

Summary of Soil Gas Sampling

- Soil gas was collected at depths of 10 and 20 feet bgs in boring DP004 and at 10 feet bgs in boring DP008 (Table 1-5). Five VOCs were detected and their maximums are listed below and in Table 3 (Figure 8).

VOC Soil Gas Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration ($\mu\text{g}/\text{m}^3$)
Benzene	DP0004/DP0008	10/20 & 10	250* (122)
Ethylbenzene	DP0004	10	270
m,p-Xylenes	DP0004	10	1,600
Toluene	DP0004	10	1,400
CFC-11	DP0004	10	150

*Exceeded the delineation criterion indicated in parentheses.

Characterization Complete: The analytical data indicates that the concentrations of the detected chemicals are below the delineation criteria with the exception of benzene in soil gas. Therefore, additional soil gas sampling is recommended in proximity to DP0004 and DP0008 to further assess vertical and lateral extent of apparent soil gas impacts.

6.5.13 Red Lead Delivery and HW Storage Shed – AOI 40

AOI Description: The Red Lead Delivery and HW Storage Shed with Potential UST Pit on South End was located in the perimeter area between the north end of Warehouse No. 3 and the Main Production Building (Figure 2). This area was used for the storage of red lead and may have been the location of a former UST.

Previous Investigation History: Previous investigations in this area indicated lead concentrations up to 8,620 mg/kg in concrete chip samples in this area (Figure 4).

Haley & Aldrich 2005 Investigation Results: Four borings were advanced in this location: three to a total depth of 5 feet bgs (DP0106, DP0107, and DP0108) and one to 15 feet bgs (DP0105). Additionally, one grab sample (GS0002) was collected at multiple depths following the removal of the concrete floor during demolition (Figure 3). Soil samples were collected at the boring and grab sample locations, and soil gas was collected at two locations.

Summary of Soil Sampling

- Soil samples were collected at multiple depths up to 10 feet bgs and analyzed for lead, CAM-17 metals, TPH, PCBs, VOCs, SVOCs, and PAHs (Table 1-3).
- Lead analysis was performed on nine samples from 0.3 feet to 10 feet bgs. The maximum concentration of lead was 74 mg/kg in GS0002 at 2 feet bgs (Table 5, Figure 6)
- Metals were analyzed in two samples. The detected Site-related metals and their maximum concentrations are listed below and in Table 4. Metals were below the delineation criteria.

Metal Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration (mg/kg)
Arsenic	DP0105	10	4.60J
Chromium	GS0002	2	12.1
Zinc	GS0002	2	44.5

- Total TPH carbon chain analysis was performed in one grab sample and concentrations were below the laboratory detection limit.
- PCBs were analyzed in one sample. Aroclor-1248 was detected at 0.040J mg/kg in GS0002 at 2 feet bgs).
- VOCs had concentrations reported below the laboratory detection limits in all five samples analyzed (Table 4, Figure 7).
- SVOCs and PAHs were reported below the laboratory detection limits for the one grab sample analyzed (Table 4, Figure 7)

Summary of Soil Gas Sampling

- Soil gas was collected at two locations: DP0105 at 15 feet bgs and DP0106 at 5 feet bgs (Table 1-5).
- Five VOCs were detected below the delineation criteria. Maximum concentrations are listed below (Table 3, Figure 8).

VOC Soil Gas Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration ($\mu\text{g}/\text{m}^3$)
1,1,1-TCA	DP0106	5	1,500
1,1-DCA	DP0106	5	370
1,1-DCE	DP0106	5	11,000
Chloroform	DP0106	5	350
Toluene	DP0105	15	130

Characterization Complete: The analytical data indicates that chemical concentrations are less than the delineation criteria. Therefore, no further soil sampling is recommended.

6.5.14 Oil Pump House - AOI 41

AOI Description: The Oil Pump House was located in the perimeter area east of the mid-point of Warehouse No. 3 and west of the Main Production Building (Figure 2).

Previous Investigation History: Previous investigations in this area did not indicate lead impacts to concrete; however, toluene was detected in a soil sample from boring SB-24 during a previous site investigation (Figure 4). This AOI has been defined as SWMU No. 10.

Haley & Aldrich 2005 Investigation Results: Six borings were advanced in this location: two to a total depth of 5 feet bgs (DP0002 and DP0102), two to a total depth of 10 feet bgs (DP0003 and DP0101), and two to 15 feet bgs (DP0143 and DP0144) (Figure 3). Soil and soil gas samples were collected at the six locations.

Summary of Soil Sampling

- Soil samples were collected at multiple near-surface depths of less than 5 feet bgs and analyzed for lead, CAM-17 metals, VOCs, SVOCs, and TPH (Table 1-3).
- Lead was analyzed in twelve samples from 0.3 feet to 1.5 feet bgs. The maximum concentration of lead was 1,590 mg/kg in DP0101 at ground surface (Table 5, Figure 6-1). Two samples were over the delineation criteria (350 mg/kg).

- Metals were analyzed in four samples. The detected Site-related metals and their maximum concentrations are listed below and in Table 4. Arsenic exceeded the delineation criteria in one sample.

Metal Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration (mg/kg)
Arsenic	DP0143	0.3	33.6* (11.3)
Chromium	DP0143	1.5	14.8
Zinc	DP0143	1.5	49.4

* Exceeded the delineation criterion indicated in parentheses.

- Total TPH carbon chain analysis was performed in one sample (DP0002 at 1 foot bgs) and reported above laboratory detection limits at a concentration of 24,100 mg/kg. The majority of hydrocarbons in the sample were oil range (C23-C40).
- VOCs were analyzed in five samples at 1 foot bgs. Benzene and naphthalene were detected below laboratory reporting limits (J-flagged) at concentrations of 2.2J $\mu\text{g}/\text{kg}$ and 8.0J $\mu\text{g}/\text{kg}$ respectively (Table 4, Figure 7).
- SVOCs were not reported above laboratory detection limits or the delineation criteria for the samples collected and analyzed (Table 4, Figure 7).

Summary of Soil Gas Sampling

- Soil gas samples were collected at six locations at 5 feet, 10 feet, or 15 feet bgs (Table 1-5).
- Fourteen VOCs were detected and their maximum concentrations are listed below and in Table 3 (Figure 8).
- Benzene was reported above the delineation criteria in four samples and bromodichloromethane in one sample.

VOC Soil Gas Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration ($\mu\text{g}/\text{m}^3$)
1,1,1-TCA	DP0102	5	180
1,1,1-DCA	DP0101	5	9.4
1,1-DCE	DP0143	15	35
1,2,4-Trimethylbenzene	DP0101	5	65.3
1,3,5-Trimethylbenzene	DP0101	5	17.3
2-Butanone	DP0101	5	28.6
4-Ethyltoluene	DP0101	5	24.5
4-Methyl-2-pentanone	DP0101	5	9.9
Acetone	DP0101	5	334
Benzene	DP0003	10	410* (122)
Bromodichloromethane	DP0143	5	110* (100)
Carbon disulfide	DP0101	5	79.3
Chloroform	DP0101	5	24.4
Dibromochloromethane	DP0101	5	5
CFC-12	DP0143	5	310
Ethylbenzene	DP0003	10	640
m,p-Xylenes	DP0003	10	3,200

o-Xylene	DP0003	10	850
Styrene	DP0101	5	59.9
PCE	DP0143	5	63
Toluene	DP0003	10	3,500
TCE	DP0143	5	38
CFC-11	DP0003	10	140
Total Xylenes	DP0143	5	940

* Exceeded the delineation criterion indicated in parentheses.

Characterization Complete: The analytical data indicates that concentrations of detected chemicals are generally decreasing vertically with the exception of benzene concentrations in soil gas at DP0002. Additionally, data indicates that chemical concentrations are not delineated laterally for:

- VOCs in soil gas and lead in soil south of location DP0002; and
- VOCs in soil gas VOCs and arsenic in soil south of DP0143.

Therefore, additional soil and soil gas sampling is recommended to further assess Site-related metals in soil and VOCs in soil gas south of DP0002 and DP0143.

6.5.15 Used Oil AST (5,000 gallon) with Above Ground Containment – AOI 42

AOI Description: The 5K gallon Used Oil AST with Above Ground Containment was located in the perimeter area between the Oil Pump House (AOI 41) and The Main Production Building (Figure 2).

Previous Investigation History: Previous investigations of the perimeter did not focus on this area; however, toluene was detected in a previous soil sample collected nearby.

Haley & Aldrich 2005 Investigation Results: Six borings (DP0109, DP0110, DP0145, DP0146, DP0147, and DP0148) were advanced to a total depth of 15 feet bgs in this location (Figure 3). Soil and soil gas samples were collected at the six locations.

Summary of Soil Sampling

- Twenty-five soil samples were collected at multiple near-surface depths of less than 5 feet bgs and analyzed for lead, CAM-17 metals, and VOCs (Table 1-3).
- Lead analysis was performed on 20 samples collected at depths ranging from 0.3 feet to 4 feet bgs. The maximum concentration detected was 48 mg/kg in DP0147 at five feet bgs (Table 5, Figure 6).
- Metals analyses were performed on 18 samples. The detected Site-related metals and their maximum concentrations are listed below and in Table 4. Arsenic exceeded the delineation criteria in one sample.

Metal Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration (mg/kg)
Antimony	DP0146	5	2.60J
Arsenic	DP0110	0.3	20.8* (11.3)
Chromium	DP0147	5	75.5
Zinc	DP0147	5	60.5

* Exceeded the delineation criterion indicated in parentheses.

- VOCs were analyzed in seven samples at 1 foot and 10 feet bgs. Benzene was detected below the laboratory reporting limit (J-flagged) at a concentration of 2.0J $\mu\text{g}/\text{kg}$ (Table 4, Figure 7).

Summary of Soil Gas Sampling

- Soil gas samples were collected at six locations at 5 feet and 15 feet bgs (Table 1-5).
- Eleven VOCs were detected at the maximum concentrations listed below and in Table 3 (Figure 8). Benzene and vinyl chloride exceeded the delineation criteria.

VOC Soil Gas Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration ($\mu\text{g}/\text{m}^3$)
1,1,1-TCA	DP0110	5	276
1,1-DCA	DP0145	15	180
1,1-DCE	DP0110	5	132
1,2,4-Trimethylbenzene	DP0147	5	237
1,3,5-Trimethylbenzene	DP00147	5	115
2-Butanone (MEK)	DP0110	5	36.8
4-Ethyltoluene	DP0147	5	53.6
4-Methyl-2-pentanone (MIBK)	DP0110	5	9.7
Acetone	DP0110	5	385
Benzene	DP0109	5	210* (122)
Carbon disulfide	DP0147	5	40.8
Chloroform	DP0110	5	3.4
Ethylbenzene	DP0109	5	660
m,p-Xylenes	DP0109	5	2,000
o-Xylene	DP0109	5	530
Styrene	DP0147	5	79
PCE	DP0110	5	56.7
Toluene	DP0109	5	17,000
Vinyl Chloride	DP0109	5	140* (44.8)
Total Xylenes	DP0145/46/48	5/15/5	270

* Exceeded the delineation criterion indicated in parentheses.

Characterization Complete: The analytical data indicates that concentrations in the deepest and most lateral samples are less than the delineation criteria. Therefore, no further soil sampling is recommended.

6.5.16 Cooling Tower & Basin for Plastic Molding Former Process Pit - AOI 43

AOI Description: The Cooling Tower & Basin for Plastic Moulding on the west side was located in the perimeter area just west and near the midpoint of the Main Production Building (Figure 2).

Previous Investigation History: Previous investigations of the perimeter did not indicate lead impacts to concrete (Figure 4). This AOI has been associated with the former Process Pit - SWMU No. 11.

Haley & Aldrich 2005 Investigation Results: Two borings (DP0001 and DP0100) were advanced to a total depth of 15 feet bgs. Additionally, one grab sample (GS0025) was collected following the removal of the concrete floor during demolition (Figure 3). Soil samples were collected from boring and grab sample locations and soil gas was collected at one boring location.

Summary of Soil Sampling

- Seven soil samples were collected at multiple near-surface depths of less than 5 feet bgs and analyzed for lead, CAM-17 metals, inorganic chromium (VI) TPH, PCBs, VOCs, SVOCs, and PAHs (Table 1-3).
- Lead analysis was performed on seven samples collected between 0.3 feet to 5 feet bgs. The maximum concentration of lead detected was 670 mg/kg in GS0025 at 1 foot bgs (Table 5, Figure 6). One sample had lead over the delineation criterion of 350 mg/kg.
- Metals analyses were performed on seven samples. The detected site related metals and their maximum detected concentrations are listed below and in Table 4. The delineation criteria was exceeded for antimony in one sample and for arsenic in two samples.

Metal Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration (mg/kg)
Antimony	GS0025	1	12.1* (6)
Arsenic	DP0001	0.3	28.6* (11.3)
Chromium	DP0001	5	25
Zinc	GS0025	1	68

* Exceeded the delineation criterion indicated in parentheses.

- Chromium VI was not detected above laboratory detection limits in the one sample (DP0100 at 5 feet bgs) collected and analyzed at this location.
- Total TPH carbon chain analysis was performed on one grab sample and the reported concentration was 34.4 mg/kg in sample GS0025 at 1 foot bgs. The majority of hydrocarbons in the sample were in the range of diesel (C13-C22).
- PCBs were analyzed in one sample and reported above the laboratory detection limit. Aroclor-1248 was detected at a maximum concentration of 186 mg/kg in grab sample GS0025 at 1 foot bgs (Figure 7-2).
- VOCs were not detected above laboratory detection limits in grab sample GS0025 at 1 foot bgs (Table 4, Figure 7).
- Three SVOCs were detected in the two samples analyzed. These SVOCs and their maximum detected concentrations are listed below and in Table 4 and shown in Figure 7.

SVOC Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration (mg/kg)
Benzo(a)pyrene	GS0025	1	0.25J* (0.13)
Benzo(b)fluoranthene	GS0025	1	0.318J
Phenanthrene	GS0025	1	0.318J

* Exceeded the delineation criterion indicated in parentheses.

- Two PAHs were detected in the one sample analyzed. These PAHs and their maximum detected concentrations are listed below and in Table 4.

PAH Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration (mg/kg)
Fluoranthene	GS0025	1	0.027
Pyrene	GS0025	1	0.043

Summary of Soil Gas Sampling

- Soil gas was collected at DP0100 at 5 feet and 15 feet bgs (Table 1-5).
- Five VOCs were detected in the two samples analyzed. These VOCs and their maximum detected concentrations are listed below and in Table 3 (Figure 8).

VOC Soil Gas Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration ($\mu\text{g}/\text{m}^3$)
Benzene	DP0100	15	250* (122)
Ethylbenzene	DP0100	5/15	200
m,p-Xylenes	DP0100	15	1,100
Toluene	DP0100	15	1,000
CFC-11	DP0100	15	160

* Exceeded the delineation criterion number indicated in parentheses.

Characterization Complete: The analytical data indicates that delineation is not complete for metals, PCBs and SVOCs in soil in proximity to GS0025, and that benzene in soil gas is not delineated vertically west and south of DP0100. Therefore, additional soil and soil gas sampling is recommended.

6.5.17 Acid and Caustic Storage Area – AOI 44

AOI Description: The Acid and Caustic Storage Area in the Southeast is located in the perimeter area just outside the northeast corner of the South Building (Figure 2). Acids and caustic chemicals are stored in a protected area outside the building.

Previous Investigation History: Previous investigations of the perimeter did not indicate lead impacts to concrete (Figure 4).

Haley & Aldrich 2005 Investigation Results: Seven borings were advanced in this location, six borings to 2 feet bgs (DP0088, DP0089, DP0090, DP0091, DP0093, and DP0094) and one boring to 3 feet bgs (DP0095) (Figure 3). An eighth boring was attempted, but was not completed due to refusal. Based on historical facility records, VOCs in soil gas were not considered likely chemicals of concern at this AOI and so were not collected. Soil samples were collected from each of the borings and submitted for laboratory analyses.

Summary of Soil Sampling

- Soil samples were collected at multiple near-surface depths of less than 3 feet bgs and analyzed for lead, CAM-17 metals, and pH (Table 1-3).
- Lead was analyzed in 14 samples from 0.3 feet to 1.5 feet bgs. The maximum concentration of lead detected was 457 mg/kg in DP0095 at 3 feet bgs (Table 5, Figure 6). Two samples had lead concentrations over the delineation criteria of 350 mg/kg.

- Analytical results for pH in the samples ranged from 4.54 in DP0095 at 3 feet bgs to 8.99 in DP0094 at 1 foot bgs (Table 4).
- Metals analysis was performed on one sample (DP0095 at 3 feet bgs). The detected site related metals and their maximum concentrations are listed below and in Table 4.

Metal Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration (mg/kg)
Antimony	DP0095	3	5.65
Arsenic	DP0095	3	10.8
Chromium	DP0095	3	4.95J
Zinc	DP0095	3	9.1

Characterization Complete: The analytical data indicates that lead concentrations are decreasing vertically and the lead concentration indicates that concentrations above the delineation criterion are confined to within 1 foot bgs. Lead concentrations are also delineated laterally, with the exception of the northwestern corner of this AOI. As the highest lead concentrations in this area is less than the industrial PRG concentration, no further soil sampling is recommended

6.5.18 Air Washers – AOI 45

AOI Description: The Air Washers and Associated Collection Trenches were located in the perimeter area between the Main Production Building and the South Building (Figure 2).

Previous Investigation History: Previous investigations of the perimeter did not indicate lead impacts to concrete except for a small area (Figure 4).

Haley & Aldrich 2005 Investigation Results: Four borings were advanced at this location: three borings to 2 feet bgs (DP0084, DP0085, and DP0086) and one boring to 5 feet bgs (DP0083). Additionally, one grab sample (GS0038) was collected following the removal of the concrete floor during demolition (Figure 3). Soil samples were collected from the five boring and grab sample locations, and soil gas samples were collected at one boring location.

Summary of Soil Sampling

- Soil samples were collected at multiple near-surface depths of less than 2 feet bgs and analyzed for lead, CAM-17 metals, and pH (Table 1-3).
- Lead was analyzed in 14 samples from 0.3 feet to 2 feet bgs. The maximum lead concentration was 12,680 mg/kg in DP0085 at 1 foot bgs (Table 5, Figure 6). Two samples were above the delineation criteria for lead of 350 mg/kg.
- Analytical results for pH in the samples ranged from 4.12 in GS0038 at 0.3 foot bgs to 8.37 in DP0083 at 1 foot bgs (Table 4).
- Metals analysis was performed on one sample (DP0086 at 0.3 foot bgs). The Site-related metals and their maximum detected concentrations are listed below and in Table 4.

Metal Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration (mg/kg)
Chromium	DP0086	0.3	6.45
Zinc	DP0086	0.3	31.4

Summary of Soil Gas Sampling

- Soil gas was sampled at 5 feet in boring DP0083 (Table 1-5).
- Seventeen VOCs were detected. These VOCs and their maximum detected concentrations are listed below and in Table 3 (Figure 8). The VOCs detected in soil gas samples were below delineation criteria,

VOC Soil Gas Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration ($\mu\text{g}/\text{m}^3$)
1,1,1-TCA	DP0083	5	3,330
1,1-DCA	DP0083	5	1,100
1,1-DCE	DP0083	5	11,900
1,2,4-Trimethylbenzene	DP0083	5	40.2
4-Methyl-2-pentanone (MIBK)	DP0083	5	52.8
Acetone	DP0083	5	325
Benzene	DP0083	5	42.9
Carbon disulfide	DP0083	5	62.2
Chloroethane	DP0083	5	48.6
Chloroform	DP0083	5	173
Ethylbenzene	DP0083	5	27.5
m,p-Xylenes	DP0083	5	102
o-Xylene	DP0083	5	29.4
Styrene	DP0083	5	23.2
PCE	DP0083	5	36.3
Toluene	DP0083	5	1,290
TCE	DP0083	5	19.9

- Characterization Complete:** Analytical data indicated that concentrations above the delineation criteria are generally confined within the upper 2 feet of soil and that delineation is completed laterally; with the exception of lead in northeastern portion of this AOI. Based on the former operations at this AOI, it is anticipated that elevated lead concentrations in this portion of the AOI are limited. It is proposed that additional soil sampling be conducted in the northwest (northeast? (is it northwest or northeast?)) portion of this AOI during remedial activities as opposed to during a facility investigation.

6.5.19 End of Trench on SE Corner Main Production Building - AOI 46/ South End of East Grass Area - AOI 51

AOI Description: AOI 46 is located at the end of the trench on the southeast corner of the Main Production Building. AOI 51 is located directly adjacent to AOI 46 in the grass area east of the southern end of the Main Production Building (Figure 2).

Previous Investigation History: Previous investigations of the perimeter included collection of a few soil samples and analysis for lead in the grass area but not near the end of the trench.

Haley & Aldrich 2005 Investigation Results: At AOI 46 one boring (DP0092) was scheduled to be advanced to 18 inches bgs. A review of the sample results for AOI 51 indicates that sufficient data had been collected to assess potential impacts at both of these AOIs. At AOI 51, thirty soil samples were collected at 12 locations and analyzed for lead by XRF and lead by 6010B (Table 5, Figure 6). Lead exceeded delineation criteria (350 mg/kg) in nineteen samples. Information regarding the range of lead concentrations detected at each sample depth is presented below.

- Analytical results (XRF and 6010B) indicate lead concentrations ranged from 97.8 mg/kg to 2,459.2 mg/kg for the entire AOI.
- Eighteen soil samples were collected just below the surface (0.3 feet bgs) and analyzed. Lead concentrations ranged from 234 mg/kg (XR0055) to 2,459.2 mg/kg (XR0052) (Figure 6-1). Thirteen samples were over the delineation criterion for lead.
- Two samples were collected at 0.5 feet bgs and analyzed. Lead concentrations were 1120 mg/kg (XR0049) and 1,300 mg/kg (XR0052), both over the delineation criterion (Figure 6-2).
- Ten samples were collected at 1 foot bgs and analyzed. Lead concentrations ranged from 97.8 mg/kg (XR0047) to 954.4 mg/kg (XR0052) (Figure 6-3). Four samples were over the delineation criterion.

Characterization Complete: The analytical data indicates that lead concentrations are decreasing vertically and that concentrations above the delineation criteria are confined within the upper two feet of soil. Lead concentrations are also delineated laterally; with the exception of the southwestern corner of this AOI which is bounded by concrete pavement. Lead impacted soil in this portion of this AOI is constrained by concrete paved surfaces located within approximately 10 to 25 feet from the most lateral sample location. Therefore, no further soil sampling is recommended.

6.5.20 Waste Water Treatment Pit – AOI 47

AOI Description: The Waste Water Treatment Pit in the Southeast Corner was located in the perimeter area directly east of the South Building (Figure 2). This area is associated with SWMU No. 1 and former SWMU No. 3. The waste water treatment facility treated acid- and lead-contaminated water generated during battery production.

Previous Investigation History: Previous investigations of the perimeter did not identify significant lead-contaminated concrete in this area (Figure 4).

Haley & Aldrich 2005 Investigation Results: Two borings were advanced in this location to 25 feet bgs (DP0096 and DP0097) (Figure 3). Soil and soil gas samples were collected from both locations.

Summary of Soil Sampling

- Soil samples were collected at multiple depths of up to 25 feet bgs and analyzed for lead (Table 1-3).

- Lead was analyzed in five samples from 0.3 foot to 25 feet bgs. Lead concentrations ranged from 4.25J mg/kg to 7.95 mg/kg (Table 5, Figure 6). None of the samples exceeded the delineation criteria.

Summary of Soil Gas Sampling

- Soil gas was sampled at 10 feet and 18 feet bgs in boring location DP0096 and at 10 feet and 20 feet bgs at boring DP0097 (Table 1-5).
- Seventeen VOCs were detected in soil gas samples. These VOCs and their maximum concentrations are listed below and in Table 3 (Figure 8).

VOC Soil Gas Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration ($\mu\text{g}/\text{m}^3$)
1,1,1-TCA	DP0097	20	146
1,1-DCE	DP0097	20	17.5
1,2,3-Trichlorobenzene	DP0096	10	190
1,2,4-Trimethylbenzene	DP0097	20	55
Freon 114	DP0097	20	651
1,3,5-Trimethylbenzene	DP0097	20	17.9
4-Ethyltoluene	DP0097	20	21.5
4-Methyl-2-pentanone (MIBK)	DP0097	20	17.3
Benzene	DP0097	20	19
Chloroform	DP0097	20	240
Ethylbenzene	DP0096	10	150
m,p-Xylenes	DP0097	20	375
o-Xylene	DP0097	20	90.2
Styrene	DP0097	20	98.6
PCE	DP0097	20	26.5
Toluene	DP0097	20	343
CFC-11	DP0097	10	12,700

Characterization Complete: Lead and soil gas VOC concentrations were less than the delineation criteria. Therefore, no further soil sampling is recommended.

6.5.21 Railroad Tracks - AOI 48

AOI Description: The Railroad Tracks Area was located in the perimeter area that runs north to south in the western portion of the Site (Figure 2).

Previous Investigation History: Previous investigations of the perimeter did not focus on this area (Figure 4).

Haley & Aldrich 2005 Investigation Results: One hundred and twenty-two borings were advanced to multiple depths with maximum of 5 feet bgs (Table 1-3). Soil gas was not collected at this location.

Summary of Soil Sampling

- Soil samples were collected at multiple near-surface depths to 5 feet bgs and analyzed for lead, CAM-17 metals, TPH, PCBs, VOCs, SVOCs, and PAHs (Table 1-3).
- Fifteen samples were analyzed for metals. The detected Site-related metals and their maximum concentrations are listed below and in Table 4.

Metal Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration (mg/kg)
Antimony	XR0182	5	2,720* (6)
Arsenic	XR0182	5	1,220* (11.3)
Chromium	XR0182	5	28.3
Mercury	XR0182	5	1.04
Molybdenum	XR0182	5	11.1
Zinc	XR0182	5	585

* Exceeded the delineation criterion indicated in parentheses.

- Total TPH carbon chain analysis was performed in twelve samples and none were reported above laboratory detection limits. The highest concentration was 4,280 mg/kg in sample XR0181 at 1 foot bgs. The majority of hydrocarbons in the sample were oil range (C23-C40).
- PCBs analyses were performed on 54 samples and 16 samples had concentrations above laboratory detection limits. Aroclor-1248 was detected at a maximum concentration of 139 mg/kg in sample XR0182 at 5 feet bgs. Fourteen samples were above the delineation criteria for PCBs.
- VOCs were not detected above the laboratory reporting limits in the 12 soil samples collected and analyzed (Table 4, Figure 7).
- Fourteen PAHs were detected in the 12 samples analyzed and maximum concentrations are listed below and in Table 4. Six of the PAHs were above the delineation criteria at four locations.

PAH Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration (mg/kg)
Acenaphthene	XR0181	1	13
Anthracene	XR0181	1	24.3
Benzo(a)anthracene	XR0181	1	21.5* (1.3)
Benzo(a)pyrene	XR0181	1	24.1* (0.13)
Benzo(b)fluoranthene	XR0181	1	29.8* (1.3)
Benzo(g,h,i)perylene	XR0181	1	36.6
Benzo(k)fluoranthene	XR0181	1	15.3* (1.3)
Chrysene	XR0181	1	49.7* (13)
Fluoranthene	XR0181	1	151
Fluorene	XR0181	1	12.6
Indeno(1,2,3-cd) pyrene	XR0181	1	26.3* (1.3)
Naphthalene	XR0181	1	2.85
Phenanthrene	XR0181	1	128
Pyrene	XR0181	1	95.1

* Exceeded the delineation criterion indicated in parentheses.

- Five SVOCs were detected in the 12 samples analyzed and maximum concentrations are listed below and in Table 4.

SVOC Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration (mg/kg)
2-Methylnaphthalene	XR0182	5	0.289
Acenaphthylene	XR0181	1	3.78
Bis(2-ethylhexyl) phthalate	XR0182	5	0.33J
Dibenzofuran	XR0181	1	3.25
Di-n-butyl phthalate	XR0182	5	0.32J

- Two hundred and ninety-three (211 XRF samples + 82 6010B confirmation samples) soil samples were collected at 122 locations and analyzed for lead by XRF and by 6010B (Table 5, Figure 6). Lead exceeded delineation criteria (350 mg/kg) in 139 samples. Information regarding the range of lead concentrations detected at each sample depth is presented below for both XRF and 6010B data.
- Analytical results (XRF and 6010B) indicate that, within the AOI, lead concentrations ranged from 2.6J mg/kg to 1,729,534 mg/kg.
- One hundred and forty-three soil samples were collected and analyzed from just below the surface (0 - feet bgs). Lead concentrations ranged from 12.8 mg/kg (DP0203) to 1,729,534 mg/kg (XR0180) (Figure 6-1). Sixty-nine samples were over the delineation criteria.
- Twenty-seven samples were collected and analyzed at 0.5 feet bgs. Lead concentrations ranged from 26.9 mg/kg (XR0156) to 296,960 mg/kg (XR0098) (Figure 6-2). Fifteen samples were over the delineation criteria.
- Fifty samples were collected and analyzed at 1 foot bgs. Lead concentrations ranged from 2.6 mg/kg (DP0207) to 43,980.8 mg/kg (XR0100) (Figure 6-3). Fifteen samples were over the delineation criteria.
- Seventeen samples were collected and analyzed at 1.5 feet bgs. Lead concentrations ranged from 11.4 mg/kg (XR0180) to 10,694.4 mg/kg (XR0075) (Figure 6-4). Nine samples were over the delineation criteria.
- Sixteen samples were collected and analyzed at 2 feet bgs. Lead concentrations ranged from 3.55 mg/kg (DP0204) to 767 mg/kg (XR0093) (Figure 6-4). Three samples were over the delineation criteria.
- Twenty-five samples were collected and analyzed at 2.5 feet bgs. Lead concentrations ranged from 54.4 mg/kg (XR0113) to 190,976 mg/kg (XR0110) (Figure 6-5). Eighteen samples were over the delineation criteria.
- Thirteen samples were collected and analyzed at 3 feet bgs to 7 feet bgs. Lead concentrations ranged from 5.85 mg/kg (XR0180 at 3 feet bgs) to 62,000 mg/kg (XR0182 at 5 feet bgs) (Figure 6-5). Four samples were over the delineation criteria.

Characterization Complete: The analytical data indicates that concentrations of PAHs, PCBs, arsenic, and antimony are decreasing vertically and that concentrations above the delineation criteria are generally confined within the upper two feet of soil. Impacted soil appears to be laterally constrained by concrete paved surfaces adjacent to the railroad tracks where these samples were collected. However, further soil

sampling for lead delineation is recommended based on sample results along the railroad tracks to the north of the main building must be completed in a few areas to the east and in the notches west of the main building along the loading docks.

6.5.22 Grass Area North of North Driveway – AOI 49

AOI Description: The Grass Area north of the North Driveway is located in the perimeter area north of the north roadway and the former Main Production Building (Figure 2).

Previous Investigation History: Previous investigations of the perimeter did not focus on this area (Figure 4).

Haley & Aldrich 2005 Investigation Results: Forty-four soil samples were collected at 17 locations and analyzed for lead by XRF and by 6010B (Table 5, Figure 6). Lead exceeded delineation criteria (350 mg/kg) in 32 samples. Information regarding the range of lead concentrations detected at each sample depth is presented below.

- Analytical results (XRF and 6010B) indicate lead concentrations ranged from 15.7 mg/kg to 26,393.6 mg/kg for this AOI.
- Twenty-three soil samples were collected and analyzed just below the surface (0 - feet bgs). Lead concentrations ranged from 1,050 mg/kg (XR0018) to 26,393.6 mg/kg (XR0004) (Figure 6-1). All soil samples were over the delineation criteria.
- Seven samples were collected and analyzed at 0.5 feet bgs. Lead concentrations ranged from 240.2 mg/kg (XR0008) to 5,907.2 mg/kg (XR0010) (Figure 6-2). Four samples were over the delineation criteria.
- Ten samples were collected and analyzed at 1 foot bgs. Lead concentrations ranged from 15.7 mg/kg (XR0008) to 590.8 mg/kg (XR0005) (Figure 6-3). Five samples were over the delineation criteria.

Characterization Complete: Review of the analytical data indicates that lead concentrations are decreasing vertically. Based on the lead concentration trends, it appears that concentrations above the delineation criterion are confined within the upper 2 feet of soil. Lead concentrations are also delineated laterally, with the exception of the northwest and south-central portions of this AOI. However, lead impacted soil in these portions of this AOI is constrained by concrete-paved surfaces located within approximately 1 to 15 feet from the most lateral sample locations. Therefore, no further soil sampling is recommended.

6.5.23 North End of East Grass Area Along Driveway – AOI 50

AOI Description: The North End of East Grass Area Along Driveway is located in the perimeter area east of the northern end of the former Main Production Building (Figure 2).

Previous Investigation History: Previous investigations of the perimeter did not focus on this area (Figure 4).

Haley & Aldrich 2005 Investigation Results: Sixty-one soil samples were collected at 22 locations and analyzed for lead by XRF and by 6010B (Table 5, Figure 6). Lead exceeded delineation criteria (350 mg/kg) in 36 samples. Information regarding the range of lead concentrations detected at each sample depth is presented below.

- Analytical results (XRF and 6010B) lead concentrations ranged from 5.5 mg/kg to 4,419.2 mg/kg for this AOI.
- Thirty-two soil samples were collected and analyzed just below the surface (0 - feet bgs). Lead concentrations ranged from 120.6 mg/kg (XR0030) to 4,419.2 mg/kg (XR0039) (Figure 6-1). Twenty samples were over the delineation criteria.
- Ten samples were collected and analyzed at 0.5 feet bgs. Lead concentrations ranged from 64 mg/kg (XR0024) to 2720 mg/kg (XR0039) (Figure 6-2). Seven samples were over the delineation criteria.
- Nineteen samples were collected and analyzed at 1 foot bgs. Lead concentrations ranged from 5.5 mg/kg (XR0037) to 1,069.6 mg/kg (XR0039) (Figure 6-3). Nine samples were over the delineation criteria.

Characterization Complete: Review of the analytical data indicates that lead concentrations are decreasing vertically. Based on the lead concentration trends, it appears that concentrations above the delineation criterion are confined within the upper 2 feet of soil. Lead concentrations are also delineated laterally, with the exception of the eastern edge and southwestern corner of this AOI. Therefore, in areas to the east and south, further soil sampling is recommended.

6.5.24 South End of East Grass Area - AOI 51

This AOI is discussed with AOI 46 in Section 6.4.19.

6.5.25 Grass in SE Corner - AOI 52

AOI Description: The Grass in SE Corner was located in the perimeter area east of the South Building (Figure 2).

Previous Investigation History: Previous investigations of the perimeter did not focus on this area (Figure 4).

Haley & Aldrich 2005 Investigation Results: Forty-five soil samples were collected at 17 locations and analyzed for lead by XRF and by 6010B (Table 5, Figure 6). Lead exceeded delineation criteria (350 mg/kg) in 36 samples. Information regarding the range of lead concentrations detected at each sample depth is presented below.

- Analytical results (XRF and 6010B) indicate lead concentrations range from 49.1 mg/kg to 6,268.8 mg/kg for this AOI.
- Seventeen soil samples were collected and analyzed just below the surface (0 - feet bgs). Lead concentrations ranged from 49.1 mg/kg (XR0061) to 3,530 mg/kg (XR0068) (Figure 6-1). Twenty samples were over the delineation criteria.

- Eight samples were collected and analyzed at 0.5 feet bgs. Lead concentrations ranged from 198 mg/kg (XR0059) to 5,417.6 mg/kg (XR0068) (Figure 6-2). Seven samples were over the delineation criteria.
- Twelve samples were collected and analyzed at 1 foot bgs. Lead concentrations ranged from 218 mg/kg (XR0058) to 3,169.6 mg/kg (XR0063) (Figure 6-3). Eight samples were over the delineation criteria.
- Two samples were collected and analyzed at 1.5 feet bgs. Lead concentrations were 1,720 mg/kg (XR0068) and 6,268.8 mg/kg (XR0063) (Figure 6-4). Both No samples were overexceeded the delineation criteria.
- Two samples were collected and analyzed at 2 feet bgs. Lead concentrations ranged from 92.7 mg/kg (XR0063) to 207 mg/kg (XR0068) (Figure 6-4).
- Two samples were collected and analyzed at 2.5 feet bgs. Lead concentrations ranged from below 68 mg/kg (XR0068) to below 75 mg/kg (XR0063) (Figure 6-5).

Characterization Complete: Review of the analytical data indicates that lead concentrations are decreasing vertically. Lead concentrations detected at a depth of 2 feet bgs are less than the delineation criteria. Lead concentrations are not delineated laterally; however, lead-impacted soil is constrained by concrete-paved surfaces located within 5 to 20 feet from the most lateral sample locations. Therefore, no further soil sampling is recommended.

6.5.26 Groundwater - AOI 53

AOI Description: The Site Groundwater Evaluation considered the entire Site area and included four permanent groundwater monitoring wells (MW001, MW0002, MW0003 and MW0004) as well as temporary grab sample Hydropunch™ locations (DP0153, DP0191, DP0195, and DP0198) (Figure 10).

Previous Investigation History: Previous investigations focused on specific areas at the Site (e.g., the former UST locations) and not on the overall groundwater quality beneath the Site. A brief summary of these investigations is provided in Section 3 of this report.

Haley & Aldrich 2005 Investigation Results: Groundwater was collected during two sampling events that occurred during this investigation (Tables 7-1 and 7-2). The first event occurred on 16 August 2005 and included samples collected from each of the four installed monitoring wells located on Site (Figure 10). A second sampling event occurred on 18 October 2005 and included four temporary Hydropunch™ locations. These temporary sampling locations were chosen to supplement the existing monitoring well network along the west side of Warehouse No. 3 to provide direct downgradient water quality data in an area suspected of potential groundwater impacts associated with relatively high soil and soil gas VOC impacts. Table 7-1 and Figure 10 summarize the groundwater analytical results.

- **Groundwater Flow** - Groundwater elevation contours have been drawn on Figure 10 indicating the direction and gradient of groundwater flow based on data derived from LFR temporary wells measured during summer 2005. Groundwater elevation data collected during the August sampling event by Haley & Aldrich was inconclusive, due to inconsistent depth to water elevation measurements observed from Monitoring Well No. 1. It is surmised that pumping of the near-surface water-bearing zone may be

occurring to the northeast of the Site causing a drop in the water table at MW-1 and thereby affecting the direction of groundwater flow in that area. Based on the data from the LFR, it appears that the groundwater gradient is to the west-northwest at 0.00286 feet/feet. This is consistent with the reported direction of groundwater flow for this area.

- **CAM Metals** – Metals were analyzed in samples collected during the 16 August 2005 and 18 October 2005 sampling events. Six metals were detected above the laboratory reporting limits during the two sampling events. Maximum concentrations of reported metals are summarized in the table below. Maximum metal concentrations did not exceed the MCLs during either of the two sampling events.

Metal Compounds	Boring Number	Date (m/d/y)	Sample Depth (feet bgs)	Maximum Concentration (mg/L)
Barium	MW0003	8/16/05	30	0.102
Molybdenum	MW0001	8/15/05	30	.0702
Nickel	DP0195	10/18/05	30	0.0232
Selenium	MW0004	8/16/05	30	.0232
Vanadium	MW0001	8/16/05	30	0.00555
Zinc	DP0198	10/18/05	30	0.141

- **PCBs** – PCBs were analyzed for in the four samples collected during the 18 October 2005 sampling event. PCBs were not detected above the laboratory detection limits in the samples analyzed.
- **SVOCs** –SVOC were analyzed for in one sample collected during the 18 October 2005 sampling event. SVOCs were not detected above the laboratory detection limits in the sample analyzed.
- **VOCs** – VOCs were analyzed for in the eight samples collected during the two sampling events. The maximum concentrations of the ten reported VOCs are summarized in the table below.

VOC Compounds	Boring Number	Date (m/d/y)	Sample Depth (feet bgs)	Maximum Concentration (µg/L)
1,1,1-TCA	DP0195	10/18/05	30	23.5
1,1,2-TCA	DP0195	10/18/05	30	37.1* (5)
1,1-DCA	DP0195	10/18/05	30	337* (5)
1,1-DCE	DP0195	10/18/05	30	694* (6)
1,2-Dichloroethane	DP0195	10/18/05	30	16.1* (0.50)
Bromodichloromethane	MW0001	8/16/05	30	1.8
Chloroform	MW0001	8/16/05	30	2.5
Dibromochloromethane	MW0001	8/16/05	30	1.6
PCE	DP0195	10/18/05	30	22.3* (5)
TCE	DP0195	10/18/05	30	2.8

* Exceeded MCLs.

- Maximum concentrations exceeded the MCL in seven of the ten VOCs reported, as indicated above. MCLs were exceeded in the six Hydropunch™ sample locations collected during the 2005 investigation, and in two permanent wells during the 16 August 2005 sampling event (Figure 10).

Characterization Complete: MCLs were exceeded for seven VOC compounds down gradient of AOIs 25, 26, 30, 31, and 37 where VOCs in soil and soil gas were previously noted. Further delineation of groundwater to the east and west of the apparent source area within AOIs 25, 26, 30, 31, and 37 is recommended as well as research of regulatory agency records for information regarding possible off-site releases of VOCs on adjacent properties (Appendix A).

7. DATA VALIDATION

Analytical results for environmental samples analyzed by American Environmental Testing Laboratory, Inc (AETL), Jones Environmental (Jones), H&P Mobile Geochemistry, Centrum Environmental Laboratories (CEL), and Calscience Environmental Laboratory (CAL), collected at the Site from August 2005 through October 2005, were reviewed to determine the data usability (Appendix I). Each laboratory data package was reviewed with guidance provided by the United States Environmental Protection Agency (USEPA) "National Functional Guidelines for Organic Data Review" (EPA 540/R-99/008), and/or "National Functional Guidelines for Inorganic Data Review" (EPA 540-R-04-004).

Laboratory method-specific criteria as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996 were used, where applicable, if the analytical anomaly identified was not addressed by the guidelines referenced above. During the data validation process, the following quality control/quality assurance (QA/QC) criteria were reviewed where applicable:

- Preservation and Holding Time Compliance
- Blank Sample Analysis
- System Monitoring/Surrogate Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Use of Laboratory Data Qualifiers

Each section below provides a brief description of the procedure used in the evaluation and an example corrective action implemented as a result of the assessment. The intent of this summary is to assist the data user with an understanding of the data qualification procedures implemented during the reduction of the investigation results and their use in the evaluation of the current Site conditions.

7.1 Preservation and Holding Time Compliance

Maximum allowable holding times for each parameter were measured from the time of sample collection to the time of sample preparation or analysis for each project sample. All project samples were found to be properly preserved or analyzed within the USEPA recommended maximum holding time without exception.

7.2 Blank Sample Analyses

The presence of target compounds in associated trip, field, equipment, preparation and/or method blank samples prepared and analyzed concurrently with the project samples, was determined as part of each laboratory sample data package. If target compounds were reported in blank at a concentration above the method detection limit (MDL) for organic parameter analyses or the instrument detection limit (IDL) for inorganic parameter analyses, the associated sample results were qualified as described below.

In the case of organic method blank sample analyses, if the target compound detected was identified as a "common laboratory contaminant" by the USEPA Functional Guidelines, an

action level of 10 times (10X Rule) the blank contamination level was calculated. For all other organic parameters that are not defined as common laboratory contaminants, an action level of 5 times (5X Rule) the blank contamination level was calculated. In the case of inorganic parameter blank sample analyses, an action level of 10 times (10X Rule) the blank contamination level was calculated.

Then, in accordance with USEPA guidance, if the detection of the blank contaminant in the associated project samples was reported at a concentration between the MDL or IDL and the action level, the result was qualified as non-detect (U). This data qualification indicates that the parameter was due to sampling and/or analysis contamination and is not representative of the site conditions.

Target compounds were not identified in associated blank samples at a concentration above the method detection limit (MDL) for organic parameter analyses or the instrument detection limit (IDL) for inorganic parameter analyses, except for the following:

Blank	Target Analyte(s)	Concentration.	Affected Sample(s)	Flag sample results with a "U" if < to this value
Trip Blank (H&P)	Toluene	5 µg/L	DP3-SG-010-01 DP6-SG-005-01 DP9-SG-005-01 DP10-SG-005-01	25 µg/L
EB83005A (SDG 34478)	Lead	0.087 ppm	DP0035-SS-000-01 DP0039-SS-000-01 DP0034-SS-000-01 DP0034-SS-000-02 DP0038-SS-000-01 DP0037-SS-000-01 DP0036-SS-000-01 DP0035-SS-001-01 DP0039-SS-001-01 DP0037-SS-001-01 DP0060-SS-010-01	0.87 ppm
EB83005B (SDG 34478)	Lead Zinc	0.071 ppm 0.023 ppm	DP0060-SS-010-01	0.71 ppm 0.23 ppm
EB083105A (SDG 34488)	Lead	0.051 ppm	DP0048-SS-000-01 DP0048-SS-000-02 DP0049-SS-000-01 DP0049-SS-005-01 DP0066-SS-000-01 DP0082-SS-000-01 DP0082-SS-000-02 DP0080-SS-000-01 DP0081-SS-000-01 DP0081-SS-000-02 DP0067-SS-000-01 DP0088-SS-000-01 DP0066-SS-001-01 DP0082-SS-001-01 DP0080-SS-001-01	0.51 ppm

EB083105B (SDG 34488)	Zinc	0.017 ppm	DP0066-SS-004-01 DP0080-SS-000-01	0.17 ppm
EB090105B (SDG 34498)	Zinc	0.031 ppm	DP0109-SS-000-01 DP0110-SS-000-01 DP0098-SS-000-01 DP0105-SS-000-01 DP0111-SS-000-01 DP0111-SS-001-01	0.31 ppm
EB090205B (SDG 34509)	Zinc	0.029 ppm	DP0116-SS-000-01 DP0116-SS-005-01 DP0116-SS-015-01 DP0117-SS-000-01 DP0117-SS-005-01 DP0117-SS-010-01 DP0118-SS-000-01 DP0118-SS-005-01 DP0118-SS-010-01 DP0086-SS-000-01	0.29 ppm
EB090705B (SDG 34527)	Copper Zinc	0.011 ppm 0.018 ppm	DP0113-SS-005-01 DP0113-SS-000-01 DP0113-SS-010-01 DP0113-SS-015-01	0.11 ppm 0.18 ppm
EB091605 (SDG 34634)	Copper Lead Zinc	0.027 ppm 0.243 ppm 0.029 ppm	GS0001-SS-0000-01 GS0001-SS-0003-01 GS0001-SS-0002-01	0.27 ppm 2.43 ppm 0.29 ppm
EB092205 (SDG 34699)	Copper Lead Zinc	0.01 ppm 0.297 ppm 0.029 ppm	GS0024-SS-000-01 GS0022-SS-002-01 GS0023-SS-000-01 GS0023-SS-001-01 GS0021-SS-000-01 GS0024-SS-002-01 GS0021-SS-002-01 GS0022-SS-000-01	0.1 ppm 2.97 ppm 0.29 ppm
EB100705 (SDG 34858)	Zinc	0.024 ppm	GS0028-SS-003-01 GS0028-SS-001-01 GS0029-SS-003-01 GS0029-SS-001-01 GS0028-SS-003-02	0.24 ppm

7.3 System Monitoring/Surrogate Compound Recoveries

System monitoring/surrogate compounds were added to each sample prior to analysis of organic parameters by USEPA Methods TO-15, 8015, 8260B, 8270C, and 8082 to confirm the efficiency of the sample preparation procedures. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. In general, if the calculated recovery of these compounds was greater than the laboratory specific upper acceptance limit (UL), associated detected target compounds were qualified as estimated (J) and non-detects were not qualified. If the calculated recovery of these compounds was less than the laboratory-specific lower acceptance limit (LL), associated detected target compounds were qualified as estimated (J) and non-detects were qualified as having an estimated quantitation limit (UJ).

If two or more surrogates in either semivolatile fraction (base/neutral or acid fraction), for analyses by USEPA Method 8270C, have percent recoveries greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If two or more surrogates in either semivolatile fraction (base/neutral or acid fraction) have percent recoveries greater than 10 percent but less than the lower acceptance limit, associated target analyte positive results are qualified "J" and non-detects are qualified "UJ". In the case where two or more surrogates are out in either fraction (one with a recovery greater than the upper acceptance limit and one with a recovery greater than 10 percent but less than the lower acceptance limit), associated target analyte positive results are qualified "J" and non-detects are qualified "UJ". If any surrogate in either semivolatile fraction (base/neutral or acid fraction) shows less than 10 percent recovery, associated target analyte positive results, within that fraction, are qualified "J" and non-detects are qualified "R."

The calculated recovery of system monitoring/surrogate compounds was within method specific criteria for the analysis of the project samples with the following exceptions:

Surrogate		Criteria (%)
Dibromofluoromethane	S01	NR
1,2-Dichloroethane-d4	S02	NR
Toluene-d8	S03	NR
4-Bromofluorobenzene	S04	70 - 130

Project Sample ID	S01	S02	S03	S04	Positive	Non Detect (ND)
	%R	%R	%R	%R	Results	
DP0195-SG-005-02				< 70	J	UJ

Qualify all VOC target analytes according to the above table.

Surrogate		Criteria (%)	Semivolatile Fraction
Phenol-d5	S01	21 - 113	Acid
2-Fluorophenol	S02	25 - 121	Acid
2,4,6-Tribromophenol	S03	19 - 122	Acid
Nitrobenzene-d5	S04	23 - 130	Base/Neutral
2-Fluorobiphenyl	S05	30 - 125	Base/Neutral
Terphenyl-d14	S06	18 - 137	Base/Neutral

Project Sample ID	S01 %R	S02 %R	S03 %R	S04 %R	S05 %R	S06 %R	Acid		Base/Neutral	
							Positive Results	Non Detect (ND)	Positive Results	Non Detect (ND)
GS0026-SS-000-01	0	0	0	126	121	44	J	R		
CS0018-CC-000-01	< 21	0	0	62	93	78	J	R		
CS0017-CC-000-01	< 21	0	0	68	96	72	J	R		

Qualify the following acid fraction target analytes according to the above table: 2,4,5-Trichlorophenol, 2,4,6-Trichlorophenol, 2,4-Dichlorophenol, 2,4-Dimethylphenol, 2,4-

Dinitrophenol, 2-Chlorophenol, 2-Methylphenol, 2-Nitrophenol, 4,6-Dinitro-2-methylphenol, 4-Chloro-3-methylphenol, 4-Methylphenol, 4-Nitrophenol, Pentachlorophenol, and Phenol.

During the data review it was also noted that for 8082 analyses (i.e., PCBs) only percent recoveries for the surrogate tetrachloro-*m*-xylene were reported even though the laboratory had confirmed, via telephone/email, that the other surrogate decachlorobiphenyl was also added to all project samples. It is recommended that, in the future, AETL report the percent recoveries for all added surrogates.

7.4 Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy were evaluated based on the laboratory control (LCS) and matrix spike (MS) sample analyses performed concurrently with the project samples. For LCS analyses, after the addition of a known amount of each target analyte into a sample of laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. For MS samples, after the addition of a known amount of each target analyte to the sample matrix of a site sample designated for MS analysis, the sample was analyzed to confirm the ability of the analytical system to identify these compounds within the sample matrix.

The percent recovery calculated for each target analyte fell within method specific criteria for each project sample analytical batch and no qualification of the data is recommended.

7.5 Use of Laboratory Data Qualifiers

Sample data was qualified by the laboratory in accordance with laboratory specific standard operating procedures (SOPs). Data qualification included the reporting of estimated concentrations of target compounds/analytes quantified either (a) below the project reporting limit (RL) but above the method or instrument detection limit, or (b) at concentrations greater than the instrument calibration. The presence of target compounds in corresponding method blank samples, and non-compliant results of associated QA/QC sample analyses (i.e., MS/MSD) were also qualified by the laboratory.

8. HASP IMPLEMENTATION

Haley & Aldrich prepared a site-specific HASP pursuant to California Code of Regulations Title 8 and Code of Federal Regulations Title 29, Section 1910.120. The plan addressed the following:

- Identification and description of potentially hazardous substances that may be encountered during field operations;
- Engineering controls and procedures to minimize and/or eliminate potential exposures;
- Personal protective equipment (PPE) and clothing for Site activities; and
- Measures that need to be implemented in the event of an emergency.

Haley & Aldrich field personnel reviewed the HASP prior to commencing fieldwork. Prior to initiation of field activities each day, a Site safety briefing was conducted to identify potential physical and chemical hazards and measures to be taken in event of an emergency. All on-site personnel were required to sign the site safety briefing form.

During field activities, personnel within the exclusion zone wore appropriate level D PPE and upgraded to level C PPE, as deemed warranted or required by the HASP. HASP revisions were made as additional information regarding potential Site hazards were identified or additional field tasks were added. No incidents or emergency actions related to Site sampling occurred during the field program. A copy of the most recent project-specific HASP is contained in Appendix D.

9. RECOMMENDATIONS

Results of the CCR indicated that 28 of the 53 AOIs were deemed fully delineated and no further investigation will be required. It is recommended that additional soil, soil gas, and groundwater samples be collected and analyzed at specific AOIs to complete delineation activities at the Site. It is proposed that the recommended soil sampling for delineation purposes be conducted during the facility investigation activities or, in a few particular cases, during the remedial activities. It is proposed that the recommended soil gas and groundwater sampling for delineation purposes be conducted during the facility investigation activities. Specific sampling locations and analyses will be identified in the FI Work Plan to be provided under separate cover.

A summary of the recommended sampling activities is presented in Table 11. A review of Table 11 indicates that:

- Additional soil sampling is recommended during facility investigation activities at AOIs 1, 10, 25, 26, 27, 28, 29, 30, 33, 34, 37, 38, 39, 41, 43, 45, 48, 50 and 53.
- Additional soil sampling is recommended during remedial activities at AOIs 11, 18, 28, and 36.
- Additional soil gas sampling is recommended during facility investigation activities at AOIs 1, 22, 25, 27, 30, 31, 32, 34, 37, 39, 41, and 43. AOIs in proximity to the northern portion of Warehouse No. 3 (AOIs 25, 26, 30, 31 and 37 will be investigated as one unit).
- Additional groundwater sampling is recommended during facility investigation activities at the AOI 53 area impacted in proximity to the northern portion of Warehouse No. 3 (AOIs 25, 26, 30, 31, and 37).

10. REFERENCES

1. CDWR, 1967, Progress Report of Ground Water Geology of the Coastal Plain of Orange county, 100p.
2. California Department of Health Services (DHS), 1989, GMC Delco-Remy Inspection Report for March 20, 1989, Inspected by Richard Hubbell, May 25, 1989
3. California-Environmental Protection Agency (Cal-EPA), 2005. Use of California Human Health Screening Levels (CHHSLs) in Evaluation of Contaminated Properties. January.
4. California Regional Water Quality Control Board, Los Angeles and Ventura Counties, Region 4 (RWQCB), 1996. Interim Site Assessment & Cleanup Guidebook. May.
5. Conestoga-Rovers & Associates (CRA), 2004. Phase I Environmental Site Assessment, Delco-Remy, Anaheim, California, November 2004.
6. Conestoga-Rovers & Associates (CRA), 2005. Phase II Environmental Site Assessment, Delco-Remy, Anaheim, California, March 2005.
7. Dames & Moore, 1985. Work Plan: Underground Tank Leak Detection and Monitoring Program, Delco-Remy, Anaheim, California, 23 January 1985.
8. Dames & Moore, 1986. Site Characterization and Remedial Action Plan, Delco-Remy, Anaheim, California, 4 November 1986.
9. Dames & Moore, 1989. Tank Closure Report, Delco-Remy, Anaheim, California, 22 December 1989.
10. Dames & Moore, 1989. Revised Report. Evaluation of Remedial Action Alternatives and Selection of an Appropriate Alternative, Delco-Remy, Northwest Field Area, Anaheim, California, 12 October 1989.
11. Dames & Moore, 1990. Second Quarterly Ground-Water Monitoring, Delco-Remy, Anaheim, California, 25 October 1990.
12. Dames & Moore, 1991. Work Plan: Site Assessment for Tank Abandonment, Delco-Remy, Anaheim, California, 4 February 1991.
13. Department of Toxic Substances Control (DTSC) Preliminary Environmental Assessment (PEA) Guidance Manual (DTSC, 1999).
14. Ecology and Environmental, Inc. (E&E), 1990. Environmental Priorities Initiative: Preliminary Assessment, Delco-Remy, Anaheim, California, 10 August 1990.
15. ENV America, Inc., 1999. Soil Remediation Closure Report. Northwest Field, Delco-Remy, Anaheim, California, 25 February 1999.

16. PRC Environmental Management, Inc. (PRC), 1992. Visual Site Inspection/Sampling Visit (VSI), Delco-Remy, Anaheim, California, 15 July 1992.
17. Cal-EPA, 1992, Background Levels of Trace Elements in Southern California, Draft Annual Report, Contract No. 89-T0081, University of California, Riverside, California, June 1992.
18. Environmental Protection Agency Region 9, 2004. Preliminary Remediation Goals. October
19. Office of Environmental Health Hazard Assessment (OEHHA), 2005. Human-Exposure-Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil. November 2004, January 2005 Revision
20. RWQCB, Central Valley Region, 1986. Staff Report - The Designated Level Methodology (DLM) for Waste Classification and Cleanup Level Determination. October 1986, Updated June 1989
21. Western Regional Climate Center. 2004. Historical Climate Information at <http://www.wrcc.dri.edu/>.
22. Yerkes et al., 1965, Geology of the Los Angeles Basin, California - an introduction, United States Geological Survey Professional Paper 420-A, 57p.