SWMU 21 – Former Transformer Storage Area

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5.5.21 SWMU 21 –Transformer Storage Area

The location of the former Transformer Storage Area, Solid Waste Management Unit (SWMU) 21, is shown on Figure 5.5.21-1a and SWMU 21 sample locations are shown on Figure 5.5.21-1b. The SWMU is located approximately 200 feet northeast of the main maintenance shop building, just east of the railroad tracks. The nearest groundwater monitoring well is MW-06-18, which is upgradient from the SWMU. The size of the SWMU is approximately 90 feet long by 50 feet wide. Polychlorinated biphenyl (PCB)-contaminated oil was identified in transformers and other electrical equipment at the Silver Bow Plant. The transformers and equipment were placed in a designated storage area prior to management at an offsite disposal facility. PCB-contaminated equipment that remained at the Plant was disposed of at an offsite facility during plant demolition activities in the late 1990's.

5.5.21.1 Previous Investigation/Evaluation Information

Special Resources Management, Inc. (SRM) was retained by Rhône-Poulenc Basic Chemicals to perform a site investigation at the former transformer storage area at the Silver Bow Plant in 1993. The objective of this investigation was to evaluate if PCB contamination, above the U.S. EPA action level of 25 mg/kg (*see* 40 CFR § 761.61(a)(4)(i)(B)), was present in the soils surrounding the transformer storage area.

The Transformer Site Investigation Project included collection of surface soil samples (10 cm x 10 cm x 1 cm), and field screening using PCB immunoassay analyses. SRM used the field screening results on 35 samples to select five locations for analytical sample collection. These five samples were analyzed for PCBs at an independent laboratory. The laboratory report for these samples is included as Appendix 5.5.21-A. The immunoassay analyses did not correlate well with laboratory results, so the field screening results are viewed as general indicators, rather than surrogates for laboratory analysis.

PCBs were not detected in 4 of the laboratory samples. In the fifth sample, only aroclor 1260 was reported at a concentration of 8.7 mg/kg. An additional soil sample was collected in 1994 from beneath the dismantled and removed PCB transformer storage shed and aroclor 1260 was reported at a concentration of 8.6 mg/kg.

5.5.21.2 RFI Investigation

The objectives of the RFI work for SWMU 21 were to confirm previous analytical results for PCB sample analysis, to evaluate the lateral and vertical extent of PCB impacts, if present, and sample for

metals using X-ray fluorescence (XRF). Elemental phosphorus was not managed in this SWMU so no samples were analyzed for elemental phosphorus.

Soil samples were collected from the former transformer storage area in 2009 to confirm the previous analytical results. Most of the area had been top-dressed with 2- to 4-inches of gravel and slag since the last sampling event, which occurred after the transformer storage shed was removed in 1994. Sample locations were at the approximate center of each grid of a 3 meter by 20 meter grid oriented in the cardinal directions across the former transformer storage area as shown on Figure 5.5.21-1b. Where present, the loose top-dressing was scraped away using a shovel and soil samples were collected from 0- to 2-inches below the top of the darker more compact soil and gravel using a stainless-steel hand auger. A total of 21 discrete samples were collected from the grid area. Each discrete sample was analyzed for PCBs, and metals according to the XRF screening and confirmatory analytical protocols.

Additional soil sampling in SWMU 21 was conducted in 2010 to further evaluate the extent of PCB in soil. As further discussed in the following section, aroclor 1260 was reported at a concentration of 130 mg/kg in sample FTS-21 0-2 inch (collected during 2009 sampling activities). One sample was collected by hand auger at 2- to 12-inches at the location of FTS-21 to evaluate the vertical extent of impacts. Seven additional shallow samples (0-to 2-inches bgs), FTS-22 through FTS-28, were collected along the sample grid to the east and south of sample FTS-21 to further evaluate the horizontal extent of PCB in soil. Approximately three-inches of loose top-dressing was scraped away using a shovel at locations FTS-27 and FTS-28 and discrete soil samples were collected from 0- to 2-inches below the top of the darker more compact soil and gravel using a stainless-steel hand auger. Locations FTS-23, FTS-24 and FTS-25 were moved 2-feet, 3 feet and 4 feet north respectively, off the edge of an existing concrete pad. Sample locations are shown on Figure 5.5.21-1b. A total of 8 discrete samples were collected and analyzed for PCBs in 2010.

5.5.21.3 RFI Results

Figures 5.5.21-2 through 5.5.21-4 present the locations, concentrations and depth intervals for the PCB and metals. The locations of three conceptual cross sections through the former transformer storage area are shown on Figure 5.5.21-5. The conceptual cross sections are depicted on Figures 5.5.21-6 through 5.5.21-8 and are based on the soil descriptions for the sampling stations collected during the 2009 and 2010 sampling events in the SWMU.

5.5.21.3.1 PCBs

PCBs are generally not naturally found in soil. For the purposes of this SWMU evaluation, PCB background concentrations are considered below detection limits. Accordingly, the PCBs detected in the SWMU samples are considered above background. The PCB data are summarized in Table 5.5.21-1.

Aroclor 1254 and aroclor 1260 were detected in the soil samples submitted for laboratory analysis. No other aroclors were detected in the soil samples. Soil concentrations of aroclor 1254 ranged from not detected at 0.0061 mg/kg to 0.75 mg/kg. The soil concentrations of aroclor 1260 ranged from not detected at 0.0061 mg/kg to 130 mg/kg in the 0- to 2- inch interval sample at FTS-21. The 2- to 12-inch interval sample at FTS-21 reported 0.90 mg/kg for aroclor 1260. The aroclor 1260 concentration decreases by three orders of magnitude over the 12-inch depth interval at FTS-21. The other 0- to 2-inch interval soil sample concentrations reported for aroclor 1260 ranged from not detected at 0.0061 mg/kg to 17 mg/kg.

The aroclor 1254 and aroclor 1260 data are presented on Figure 5.5.21-2, which shows the locations, concentrations and depth intervals for the data reported on the figures. Figure 5.5.21-2 also shows the extent of aroclor 1260 above 1 mg/kg. Aroclor 1254 was not detected above 1 mg/kg.

Diagrams showing the general trend across the SWMU are shown on Figures 5.5.21-9 through 5.5.21-14 and respectively depict the aroclor 1254 and aloclor 1260 concentration profiles across the conceptual cross sections. As shown on the distribution figures and the diagrams, samples collected from the north half of the SWMU tend to have lower concentrations than the south half. The diagrams show a three order of magnitude decrease between the 0- to 2-inch interval (130 mg/kg) and the 2- to 12-inch interval (0.90 mg/kg) at FTS-21.

5.5.21.3.2 Metals

Soil samples were evaluated for metal constituents even though metals are not typically associated with PCBs. Several metals were found at concentrations above background/reference area concentrations as detailed in this section.

Soil data from SWMU 21 were compared to the background/reference area concentrations. Concentrations above the 95% upper confidence limit of the mean background/reference area concentrations are highlighted on the constituent delineation figures presented in this section. Where a 95% upper limit could not be calculated, the maximum detected concentration or the maximum detection limit was selected.

Constituent concentrations are described in this report as above background/reference area concentrations if the mean and maximum concentrations of the SWMU data exceed both of the mean and maximum background/reference area values. All data will be retained for evaluation in the human health and ecological risk assessments. The definitive background comparison will be conducted in the risk assessment using a statistical approach consistent with EPA guidance (U.S. EPA 2002).

The analytical laboratory and correlated XRF data were combined to assist the delineation of the hazardous constituents. Hazardous constituent concentrations based on the XRF data were estimated using the linear equations presented in Section 5.4.2 for the respective hazardous constituents. The correlation coefficient (R^2) is greater than 0.7 for these hazardous constituents. The metals data are presented in Table 5.5.21-2. The 2009 XRF evaluation provided data for arsenic, cadmium, chromium, lead, manganese, selenium, silver, uranium, vanadium and zinc. To assist in data presentation, the metals were divided into Group A and Group B.

5.5.21.3.2.1 Metals - Group A

The metals included in Group A are arsenic, cadmium, chromium, lead, copper and manganese. The distribution of these metal constituents in the 0 to 2-inch interval is shown on Figure 5.5.21-3. Group A metals are naturally present in native soils across the United States.

Arsenic, lead, copper and manganese are present at concentrations consistent with background concentrations. Cadmium and chromium are present at concentrations above background concentrations (*see* Table 5.5.21-2). There is no apparent trend in the concentrations above background. Metals are not typically associated with PCB contamination so their presence may be attributed to the slag cover that was placed in the area.

5.5.21.3.2.2 Metals - Group B

The metals included in Group B are selenium, silver, uranium, vanadium and zinc. The distribution of these metal constituents in the 0 to 2-inch interval is shown on Figure 5.5.21-4.

Group B metals are naturally present the native soils across the United States. Group B metals are present at concentrations above background concentrations (*see* Table 5.5.21-2). Group B metals concentration are consistent across the data set (i.e., no hot spots were identified). As with cadmium and chromium, the group B metals show no apparent trend in the concentrations above background. Their presence is more likely related to the slag cover that was placed in the area.

5.5.21.4 Conclusions

The following conclusions were developed based on review of the information presented in this section:

- PCB compounds aroclor 1254 and/or aroclor 1260 are present in the 0-2 inch soil samples from SWMU 21. The 2-12 inch sample collected from location FTS-21 was three orders of magnitude lower than the 0- to 2-inch sample. Therefore, the PCB release is limited in depth to the shallow subsurface (i.e., about 1 foot).

- The following metals are considered above background because the mean and maximum concentrations are above the mean and maximum of the background/reference area concentrations: cadmium, chromium, selenium, silver, uranium, vanadium, and zinc. These metals are likely elevated due to the slag cover that was placed in the area.

PCB cleanup levels for low occupancy areas are specified in 40 CFR § 761.61(a)(4)(i)(B). The cleanup level for bulk PCB remediation waste in low occupancy areas is≤25 ppm unless otherwise specified in this paragraph.

There is sufficient information to conduct the risk assessment for this SWMU. The risk assessment will identify which parameters, if any, are present at concentrations that may 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.

5.5.21.5 References

U.S. EPA. 2002. Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites. U.S. Environmental Protection Agency. EPA 540-R-01-003. OSWER 9285.7-41. September 2002

Tables

Table 5.5.21-1
Soil Data - PCBs
SWMU 21
Rhodia Silver Bow Plant
[concentration in mg/kg]

			Chemical Name	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Aroclor 1262	Aroclor 1268
Location ID	Sample Date	Depth	Sample Type									
FTS-1	05/21/2009	0 - 2 in	N	< 0.0061	< 0.0061	< 0.0061	< 0.0061	< 0.0061	**0.24**	< 0.0061	< 0.0061	< 0.0061
FTS-2	05/21/2009	0 - 2 in	N	< 0.0061	< 0.0061	< 0.0061	< 0.0061	< 0.0061	< 0.0061	**0.17**	< 0.0061	< 0.0061
FTS-3	05/21/2009	0 - 2 in	N	< 0.0061	< 0.0061	< 0.0061	< 0.0061	< 0.0061	< 0.0061	**0.018 J**	< 0.0061	< 0.0061
FTS-4	05/21/2009	0 - 2 in	N	< 0.0061	< 0.0061	< 0.0061	< 0.0061	< 0.0061	< 0.0061	**0.15**	< 0.0061	< 0.0061
FTS-5	05/21/2009	0 - 2 in	N	< 0.0061	< 0.0061	< 0.0061	< 0.0061	< 0.0061	< 0.0061	**0.18**	< 0.0061	< 0.0061
FTS-6	05/21/2009	0 - 2 in	N	< 0.0061	< 0.0061	< 0.0061	< 0.0061	< 0.0061	< 0.0061	**0.19**	< 0.0061	< 0.0061
FTS-7	05/21/2009	0 - 2 in	N	< 0.0061	< 0.0061	< 0.0061	< 0.0061	< 0.0061	< 0.0061	**0.41**	< 0.0061	< 0.0061
FTS-8	05/21/2009	0 - 2 in	N	< 0.0061	< 0.0061	< 0.0061	< 0.0061	< 0.0061	**0.16**	**0.61**	< 0.0061	< 0.0061
FTS-9	05/21/2009	0 - 2 in	N	< 0.0061	< 0.0061	< 0.0061	< 0.0061	< 0.0061	**0.17**	**0.13**	< 0.0061	< 0.0061
FTS-10	05/21/2009	0 - 2 in	N	< 0.0061	< 0.0061	< 0.0061	< 0.0061	< 0.0061	< 0.0061	**0.12**	< 0.0061	< 0.0061
FTS-11	05/21/2009	0 - 2 in	N	< 0.0061	< 0.0061	< 0.0061	< 0.0061	< 0.0061	< 0.0061	**0.066 J**	< 0.0061	< 0.0061
FTS-12	05/21/2009	0 - 2 in	N	< 0.0061	< 0.0061	< 0.0061	< 0.0061	< 0.0061	**0.039 J**	**0.054 J**	< 0.0061	< 0.0061
FTS-13	05/21/2009	0 - 2 in	N	< 0.0061	< 0.0061	< 0.0061	< 0.0061	< 0.0061	**0.75**	**3.2**	< 0.0061	< 0.0061
FTS-14	05/21/2009	0 - 2 in	N	< 0.0061	< 0.0061	< 0.0061	< 0.0061	< 0.0061	**0.51**	**2.8**	< 0.0061	< 0.0061
FTS-15	05/21/2009	0 - 2 in	N	< 0.0061	< 0.0061	< 0.0061	< 0.0061	< 0.0061	**0.20**	**0.12**	< 0.0061	< 0.0061
FTS-16	05/21/2009	0 - 2 in	N	< 0.0061	< 0.0061	< 0.0061	< 0.0061	< 0.0061	< 0.0061	**0.046 J**	< 0.0061	< 0.0061
FTS-17	05/21/2009	0 - 2 in	N	< 0.0061	< 0.0061	< 0.0061	< 0.0061	< 0.0061	< 0.0061	**0.022 J**	< 0.0061	< 0.0061
FTS-18	05/21/2009	0 - 2 in	N	< 0.0061	< 0.0061	< 0.0061	< 0.0061	< 0.0061	< 0.0061	**0.018 J**	< 0.0061	< 0.0061
			FD	< 0.0061	< 0.0061	< 0.0061	< 0.0061	< 0.0061	< 0.0061	**0.021 J**	< 0.0061	< 0.0061
FTS-19	05/21/2009	0 - 2 in	N	< 0.0061	< 0.0061	< 0.0061	< 0.0061	< 0.0061	< 0.0061	**0.28**	< 0.0061	< 0.0061
FTS-20	05/21/2009	0 - 2 in	N	< 0.031	< 0.031	< 0.031	< 0.031	< 0.031	< 0.031	**8.1**	< 0.031	< 0.031
FTS-21	05/21/2009	0 - 2 in	N	< 0.61	< 0.61	< 0.61	< 0.61	< 0.61	< 0.61	**130**	< 0.61	< 0.61
FTS-21	06/30/2010	2 - 12 in	N	< 0.019	< 0.019	< 0.019	< 0.019	< 0.019	< 0.019	**0.90**	< 0.019	< 0.019
FTS-22	06/30/2010	0 - 2 in	N	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	**8.1**	< 0.19	< 0.19
FTS-23	06/30/2010	0 - 2 in	N	< 0.019	< 0.019	< 0.019	< 0.019	< 0.019	< 0.019	**0.33**	< 0.019	< 0.019
FTS-24	06/30/2010	0 - 2 in	N	< 0.095	< 0.095	< 0.095	< 0.095	< 0.095	< 0.095	**3.6**	< 0.095	< 0.095
FTS-25	06/30/2010	0 - 2 in	N	< 0.019	< 0.019	< 0.019	< 0.019	< 0.019	< 0.019	**0.44**	< 0.019	< 0.019
FTS-26	06/30/2010	0 - 2 in	N	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	**14**	< 0.19	< 0.19
			FD	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	**15**	< 0.19	< 0.19
FTS-27	06/30/2010	0 - 2 in	N	< 0.019	< 0.019	< 0.019	< 0.019	< 0.019	< 0.019	**0.20**	< 0.019	< 0.019
FTS-28	06/30/2010	0 - 2 in	N	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	**17**	< 0.19	< 0.19

Table 5.5.21-2
Soil Data - Metals
SWMU 21
Rhodia Silver Bow Plant
[concentration in mg/kg]

Chemical Name / Analysis Location				Arsenic Field	Cadmium Field	Chromium Field	Copper Lab	Lead Lab	Lead Field	Manganese Field	Selenium Field	Silver Field	Uranium Field	Vanadium Field	Zinc Field
Background Mean, Exceedances **Bold**				23	**1.6**	**11**	**35**	**17**	**17**	540	**0.41**	**0.73 (1)**	**1.8**	**41**	**59**
Background Maximum, Exceedances Underline				120	8.9	48	300	190	190	1100	0.70	1.7 (1)	4.1	83	380
Background 95% UCL, Exceedances *Italic*				40	*1.057*	*12.46*	*63.87*	*34.98*	*34.98*	573.4	*0.47*	*0.346 (1)*	*2.0*	*43.3*	*98.46*
Location ID	**Sample Date**	**Depth**	**Sample Type**												
FTS-1	5/21/2009	0 - 2 in	N	15 J	***20 J***	***311***	--	--	***61***	173 J	***3 J***	***8 J***	***64***	***360***	***959***
FTS-2	5/21/2009	0 - 2 in	N	< 13	< 0.2	***122***	--	--	15 J	218 J	< 4	***2 J***	***45 J***	***105***	***236***
FTS-3	5/21/2009	0 - 2 in	N	< 13	***2 J***	***163***	--	--	11 J	218 J	< 0.7	***3 J***	***56***	***120***	***243***
FTS-4	5/21/2009	0 - 2 in	N	< 15	***3 J***	***221***	--	--	***36***	173 J	< 4	***6 J***	***57***	***180***	***601***
FTS-5	5/21/2009	0 - 2 in	N	15 J	***10 J***	***212***	--	--	**26 J**	165 J	***5 J***	***8 J***	***51***	***195***	***487***
FTS-6	5/21/2009	0 - 2 in	N	< 14	***4 J***	***221***	--	--	**18 J**	90 J	< 4	***3 J***	***59***	***210***	***487***
FTS-7	5/21/2009	0 - 2 in	N	< 12	1 J	***212***	--	--	8 J	143 J	***1 J***	< 3	***51 J***	***135***	***294***
FTS-8	5/21/2009	0 - 2 in	N	13 J	***18 J***	***245***	--	--	**33**	165 J	***1 J***	***6 J***	***73***	***210***	***593***
FTS-9	5/21/2009	0 - 2 in	N	< 16	***2 J***	***253***	--	--	***37***	173 J	< 0.7	***2 J***	***58***	***240***	***724***
FTS-10	5/21/2009	0 - 2 in	N	< 12	***9 J***	***188***	--	--	7 J	143 J	***5 J***	***1 J***	***49 J***	***165***	***593***
FTS-11	5/21/2009	0 - 2 in	N	< 12	***2 J***	***139***	--	--	9 J	98 J	***7 J***	***7 J***	***54***	***75***	***338***
FTS-12	5/21/2009	0 - 2 in	N	< 12	***2 J***	***65***	--	--	8 J	113 J	< 4	***2 J***	***50***	30 J	***157***
FTS-13	5/21/2009	0 - 2 in	N	< 15	***11 J***	***204***	--	--	**28 J**	113 J	***3 J***	***4 J***	***67***	***210***	***640***
FTS-14	5/21/2009	0 - 2 in	N	10 J	***2 J***	***81***	--	--	**24 J**	398	< 3	< 1	***22 J***	***90 J***	***360***
FTS-15	5/21/2009	0 - 2 in	N	11 J	< 0.2	***27 J***	--	--	**22 J**	458	< 1	< 1	***17 J***	***60 J***	***265***
FTS-16	5/21/2009	0 - 2 in	N	< 13	***4 J***	***163***	--	--	12 J	173 J	***4 J***	***6 J***	***53***	***120***	***404***
FTS-17	5/21/2009	0 - 2 in	N	10 J	***5 J***	***106***	--	--	4 J	128 J	< 4	***4 J***	***61***	29 J	***316***
FTS-18	5/21/2009	0 - 2 in	N	< 17	***11 J***	***147***	--	--	***46***	150 J	***9 J***	***10 J***	***63***	***75***	***616***
			FD	< 16	***6 J***	***171***	--	--	***36***	83 J	***5 J***	***11 J***	***58***	***75***	***609***
FTS-19	5/21/2009	0 - 2 in	N	12 J	< 0.2	***65***	***158***	--	**22 J**	420	< 3	< 2	***24 J***	***90 J***	***360***
FTS-20	5/21/2009	0 - 2 in	N	21 J	***51***	***360***	--	--	***68***	195 J	***5 J***	***9 J***	***66***	***405***	***1359***
FTS-21	5/21/2009	0 - 2 in	N	18 J	***38***	***376***	--	***105***	***103***	173 J	***1 J***	***8 J***	***65***	***465***	***1440***

Figures

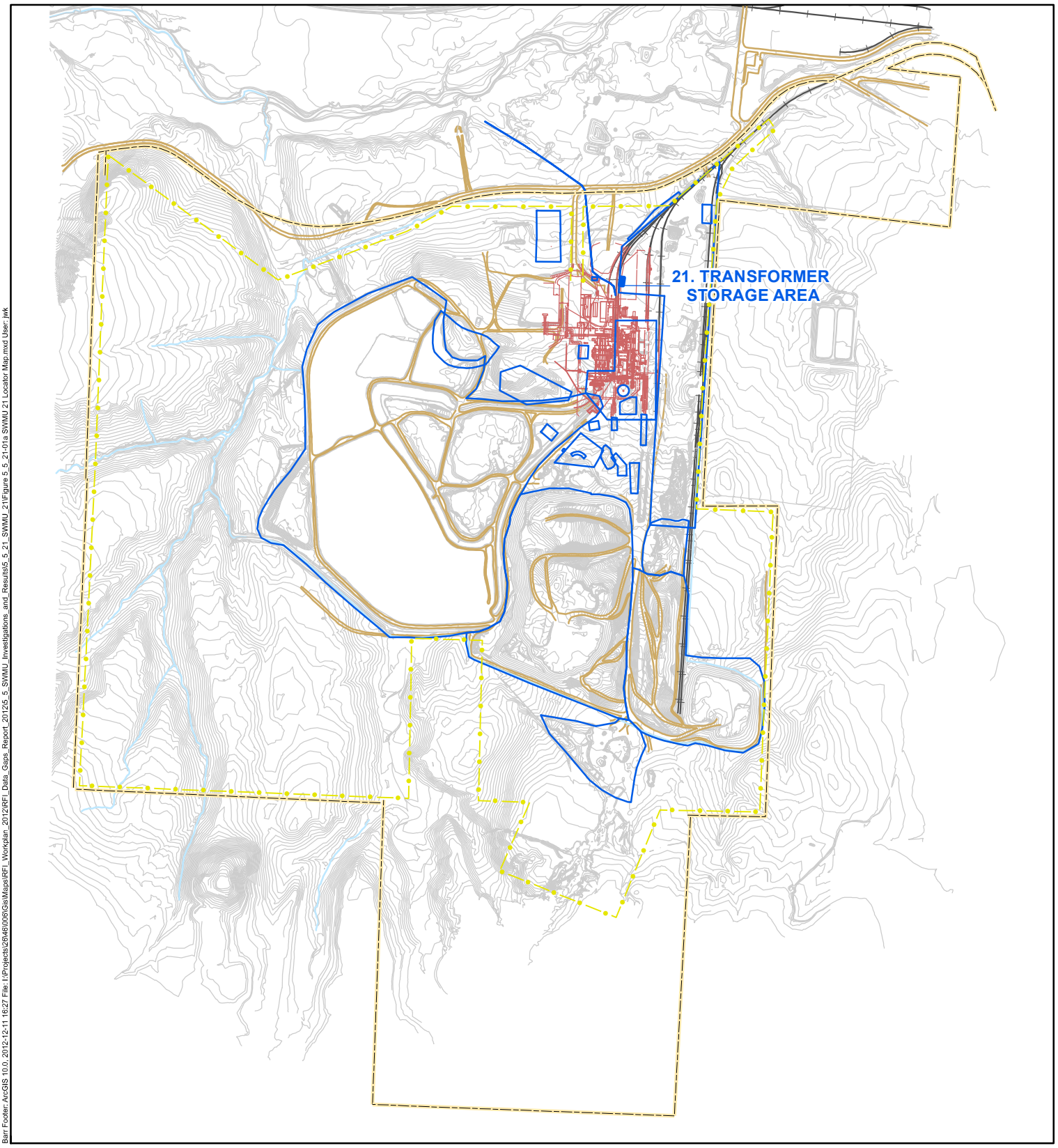

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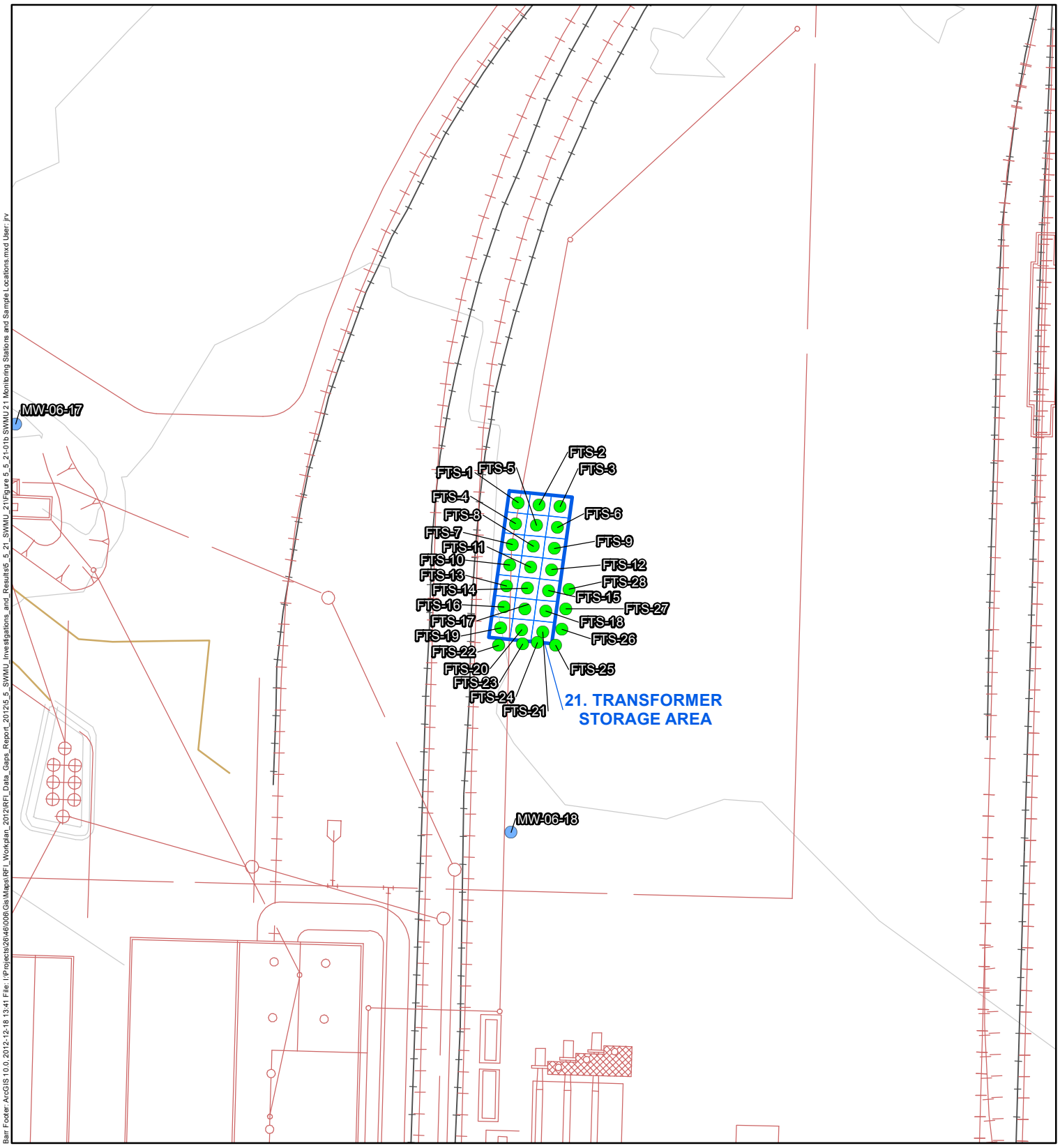
Figure 5.5.21-1a

SWMU 21 LOCATION
Rhodia Silver Bow Plant
Montana



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- Monitoring Well
- Soil Sample
- SWMU 21
- Elevation Contour
- Drainage
- Railroad
- Road
- Former Plant Structures

Bold font indicates that sample concentration is greater than the 95% UCL of mean Reference Area Concentration.

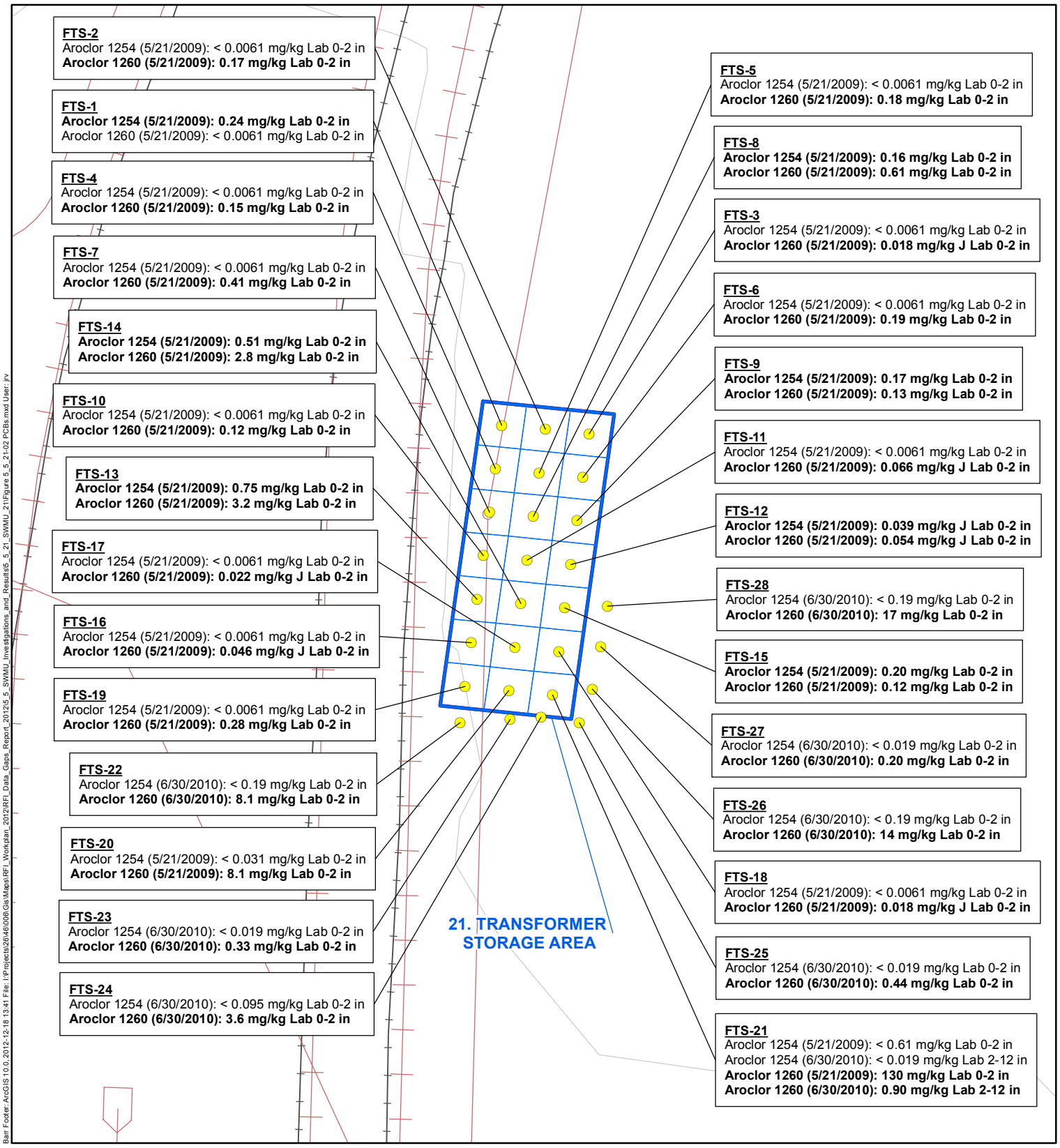
N

Feet

60 0 60

Figure 5.5.21-1b

SWMU 21
MONITORING STATIONS
AND SAMPLE LOCATIONS
Rhodia Silver Bow Plant
Montana



Sample Location

SWMU 21

Former Plant Structures

Elevation Contour

Drainage

Railroad

Road

Extent of Aroclor 1260 > 1mg/kg (dashed where inferred)

Bold font indicates that sample concentration is greater than the 95% UCL of mean Reference Area Concentration.

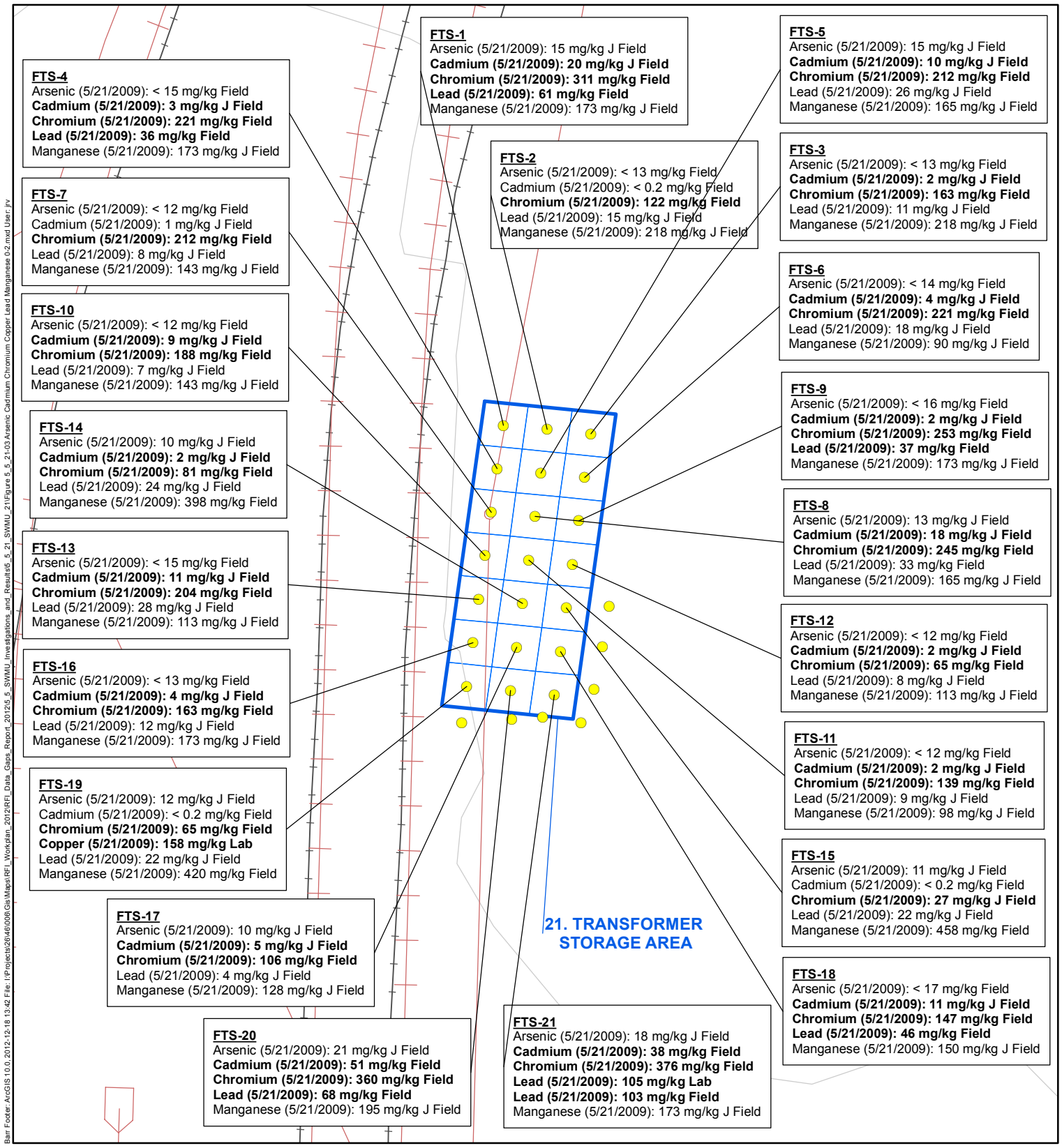
N

Feet

30 0 30

Figure 5.5.21-2

SWMU 21
AROCLOR 1254 AND
AROCLOR 1260
Rhodia Silver Bow Plant
Montana



Sample Location

SWMU 21

Elevation Contour

Drainage

Railroad

Road

Former Plant Structures

Bold font indicates that sample concentration is greater than the 95% UCL of mean Reference Area Concentration.

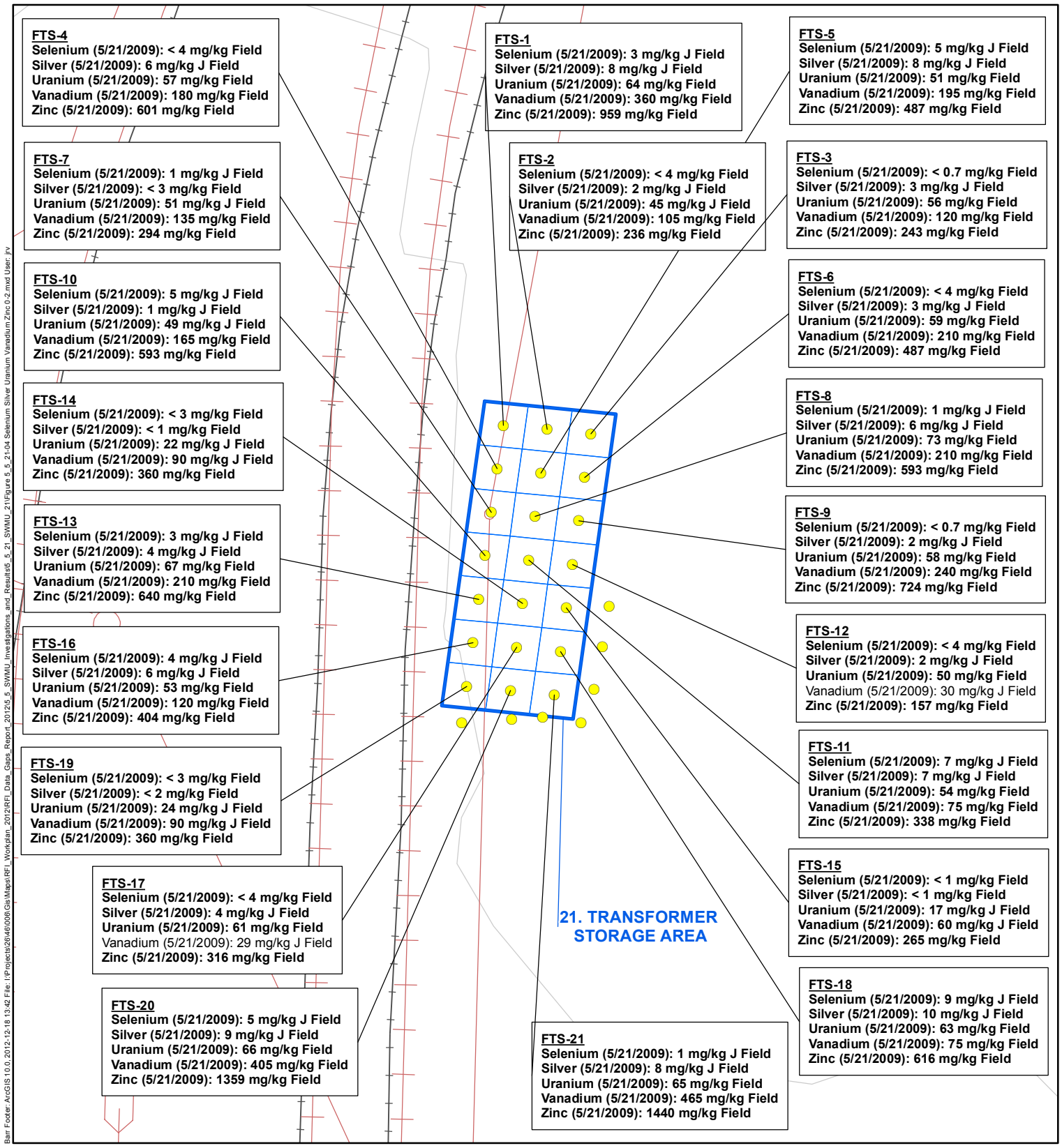
N

Feet

30 0 30

Figure 5.5.21-3

SWMU 21
ARSENIC, CADMIUM, CHROMIUM, COPPER, LEAD, AND MANGANESE, 0-2 INCHES
Rhodia Silver Bow Plant
Montana



Sample Location

SWMU 21

Elevation Contour

Drainage

Railroad

Road

Former Plant Structures

Bold font indicates that sample concentration is greater than the 95% UCL of mean Reference Area Concentration.

N

Feet

30 0 30

Figure 5.5.21-4

SWMU 21
SELENIUM, SILVER, URANIUM, VANADIUM, AND ZINC
0-2 INCHES
Rhodia Silver Bow Plant
Montana

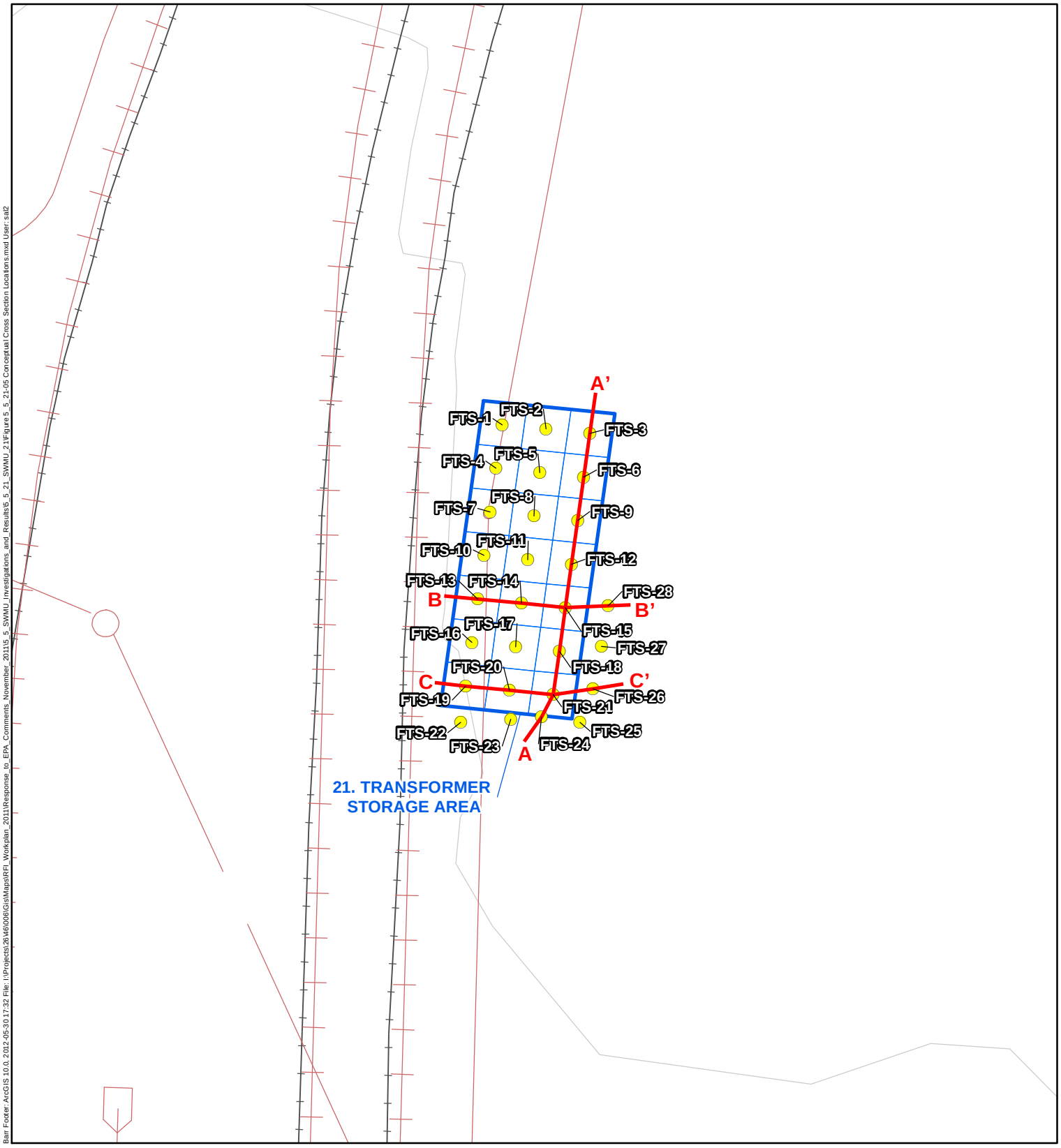
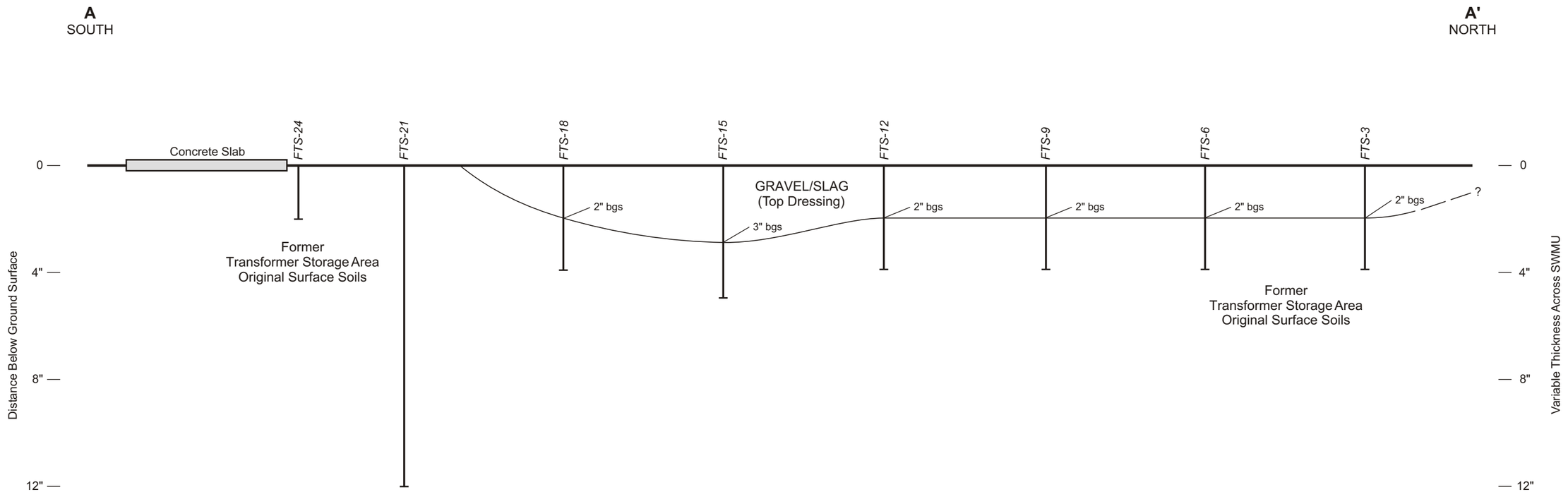


Figure 5.5.21-5

SWMU 21
CONCEPTUAL CROSS SECTION LOCATIONS
Rhodia Silver Bow Plant
Montana

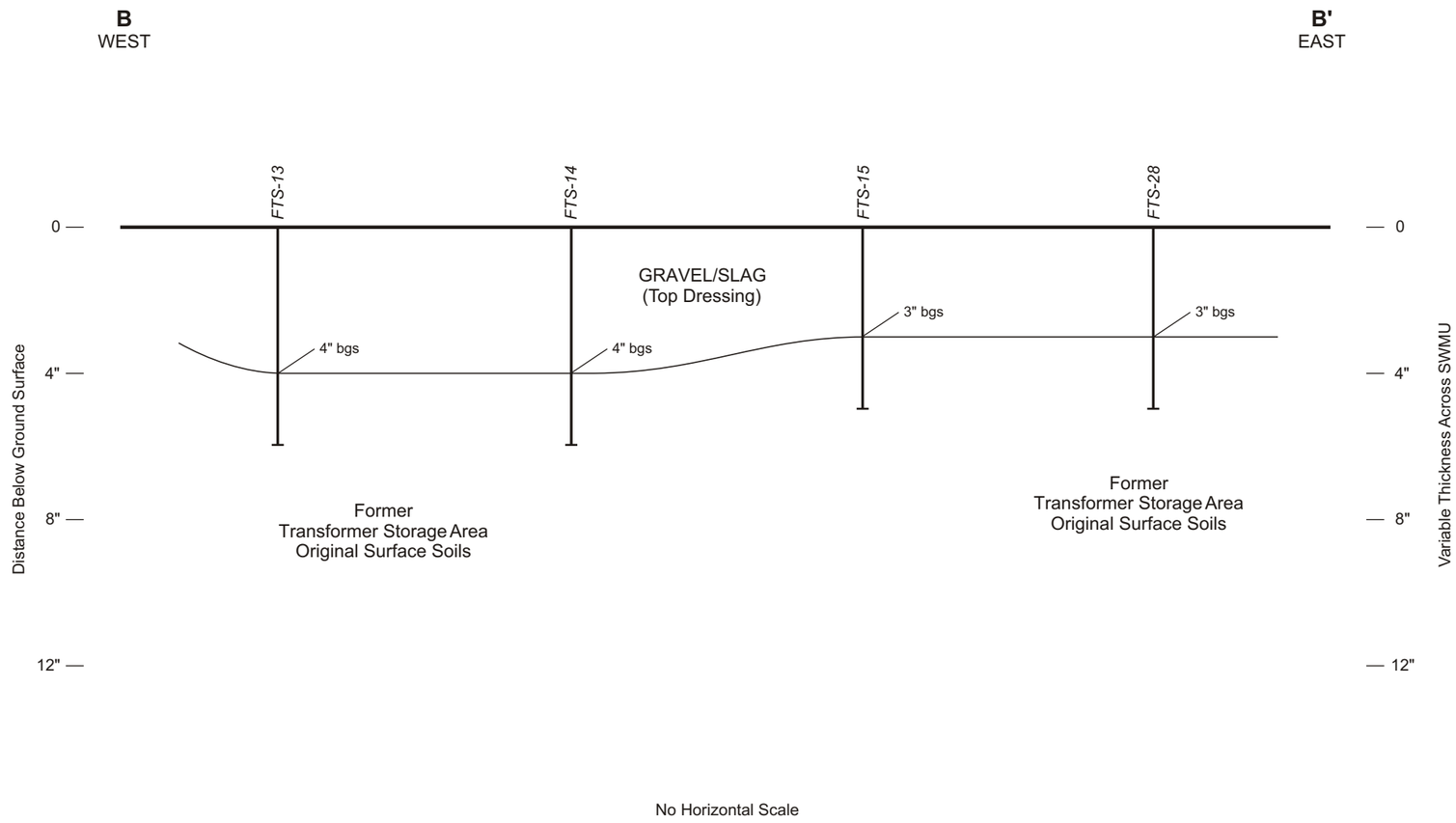


No Horizontal Scale

Figure 5.5.21-6

CONCEPTUAL CROSS SECTION A-A'
THROUGH SWMU 21
Rhodia Silver Bow Plant
Montana

P:\Mpls\26 MT\46\2646006\WorkFiles\Figures_Graphics\2012 Cross Sections\Conceptual Cross Section A-A' Thru SWMU 21.CDR RLG 012-18-12

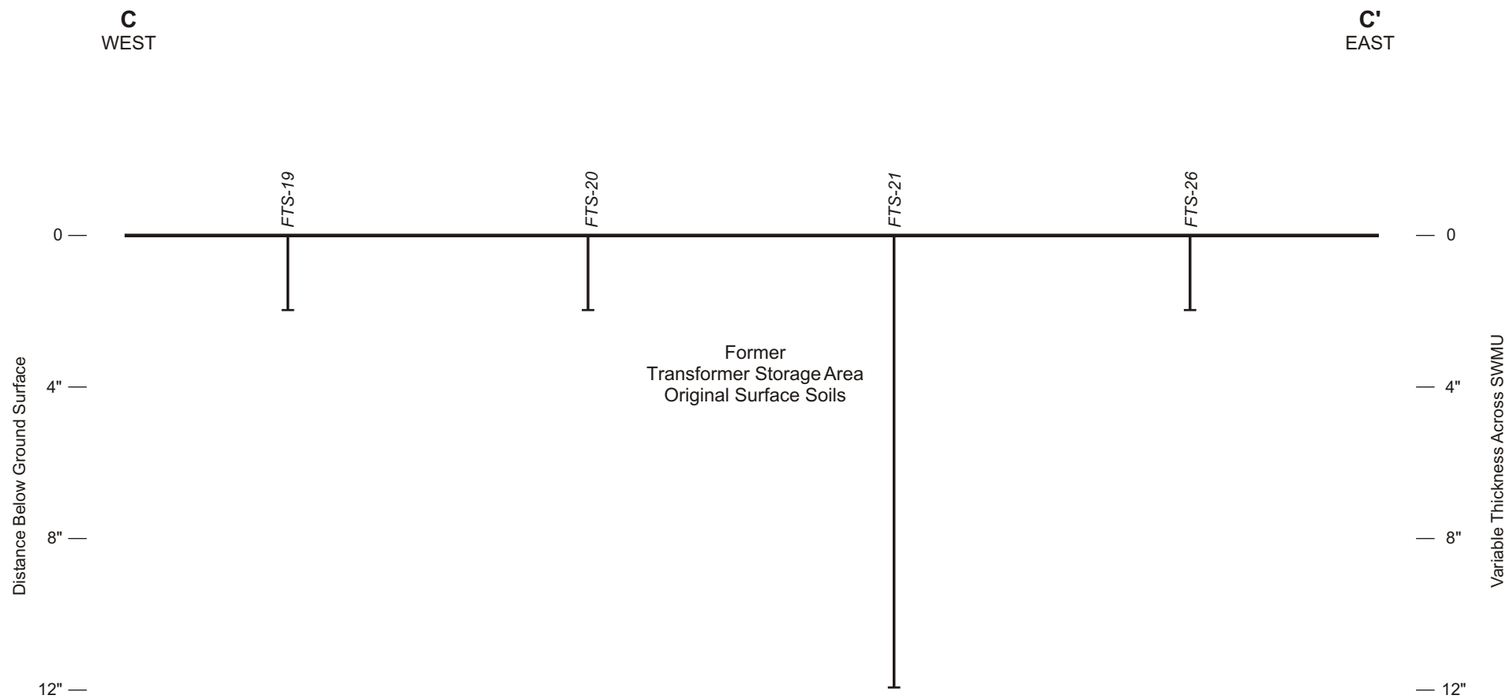


No Horizontal Scale

Figure 5.5.21-7

CONCEPTUAL CROSS SECTION B-B'
THROUGH SWMU 21
Rhodia Silver Bow Plant
Montana

P:\Mpls\26 MT\46\2646006\WorkFiles\Figures_Graphics\2012 Cross Sections\Conceptual Cross Section B-B' Thru SWMU 21.CDR RLG 12-18-12

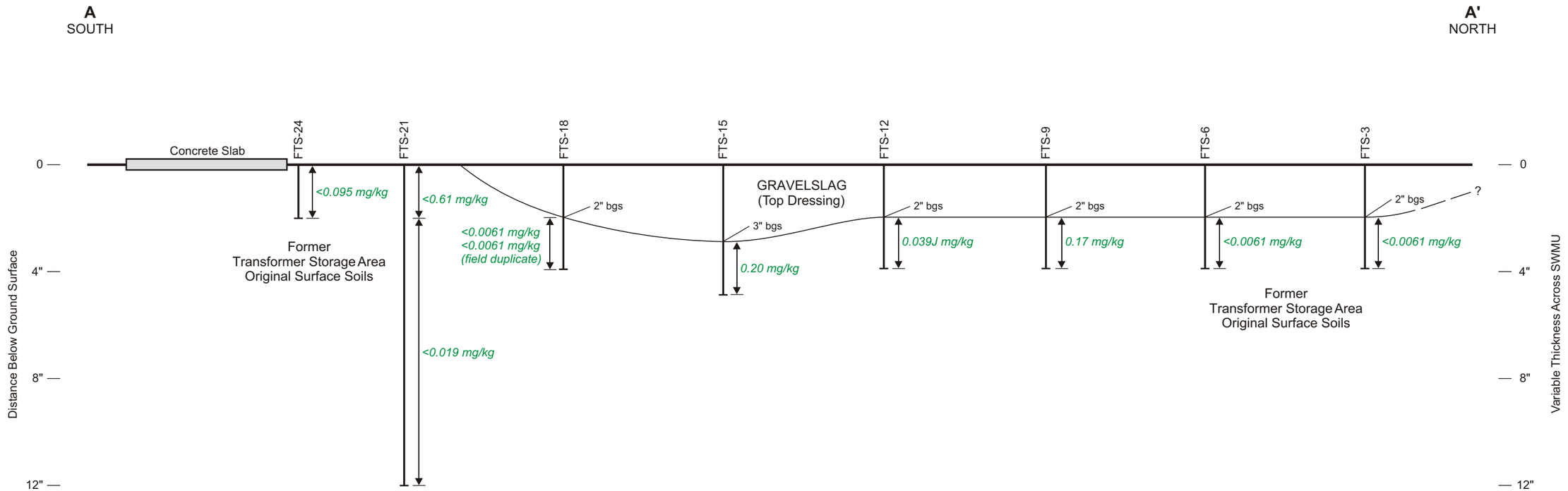


No Horizontal Scale

Figure 5.5.21-8

CONCEPTUAL CROSS SECTION C-C'
THROUGH SWMU 21
Rhodia Silver Bow Plant
Montana

P:\Mpls\26 MT\46\2646006\WorkFiles\Figures_Graphics\2012 Cross Sections\Conceptual Cross Section C-C' Thru SWMU 21.CDR RLG 12-18-12



No Horizontal Scale

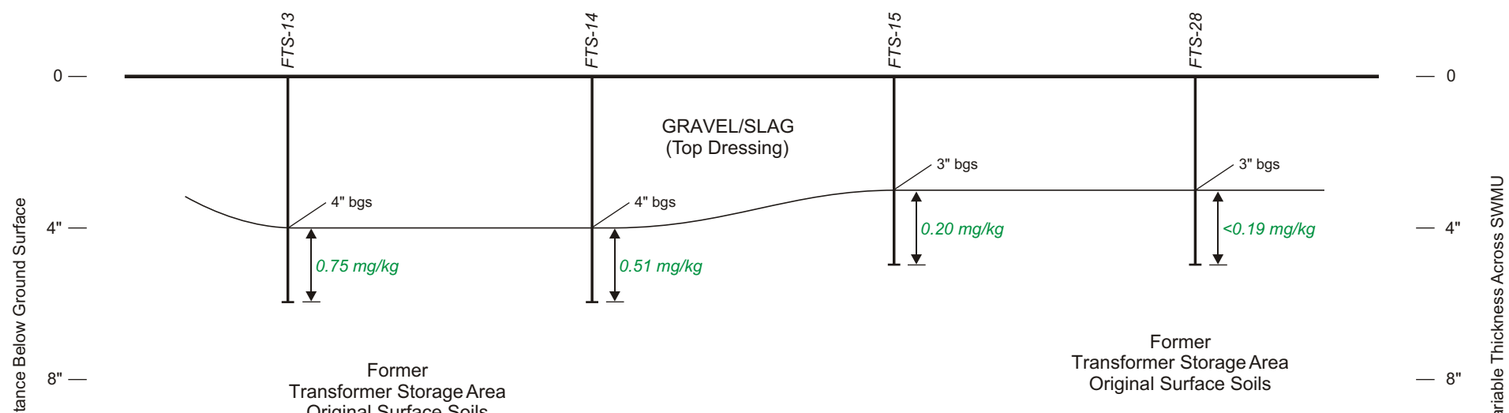
Figure 5.5.21-9

SWMU 21
CONCEPTUAL CROSS SECTION A-A'
AROCLOR 1254 DIAGRAM
Rhodia Silver Bow Plant
Montana

P:\Mpls\26 MT146\2646006\WorkFiles\Figures_Graphics\2012 Cross Sections\SWMU 21 Conceptual Cross Section A-A' Aroclor 1254 Diagram.CDR RLG 12-31-12

B
WEST

B'
EAST

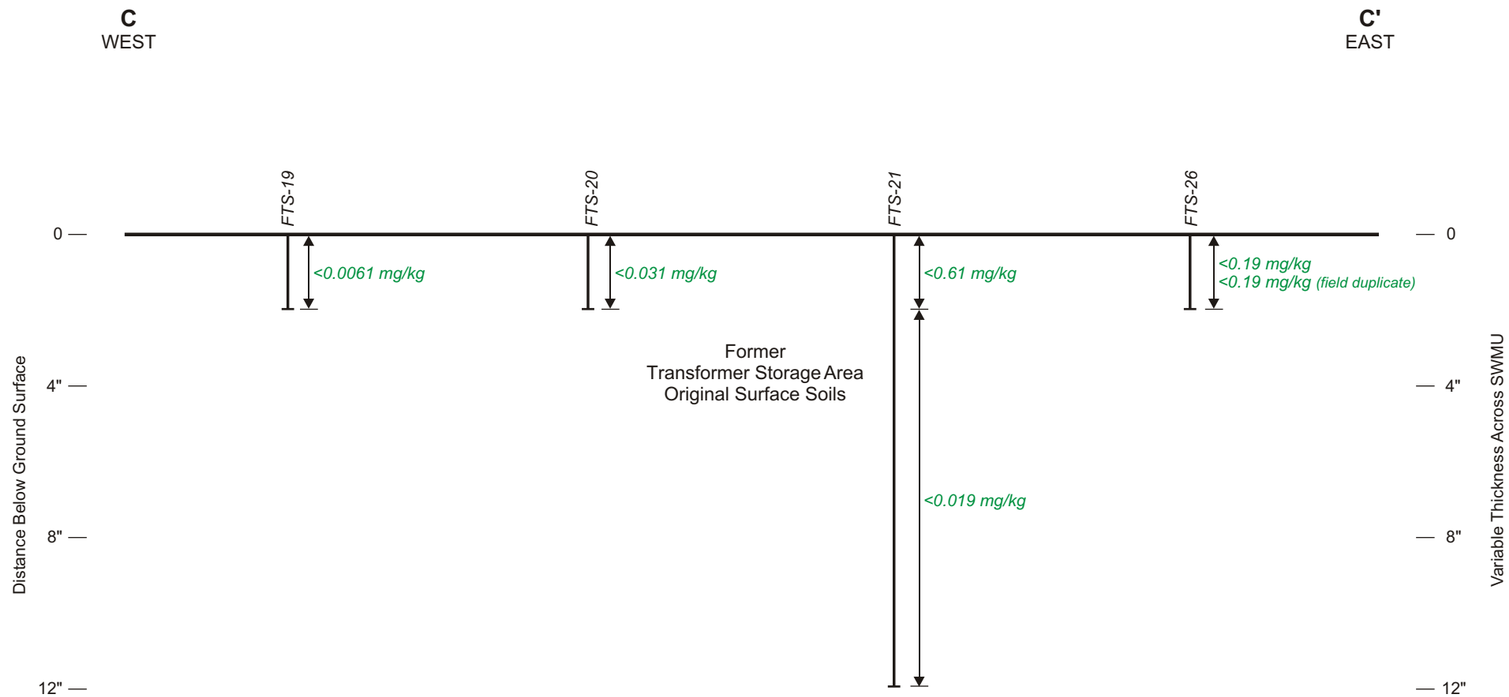


No Horizontal Scale

Figure 5.5.21-10

SWMU 21
CONCEPTUAL CROSS SECTION B-B'
AROCLOR 1254 DIAGRAM
Rhodia Silver Bow Plant
Montana

P:\Mpls\26 MT\46\2646006\WorkFiles\Figures_Graphics\2012 Cross Sections\SWMU 21 Conceptual Cross Section B-B' Aroclor 1254 Diagram.CDR RLG 12-18-12

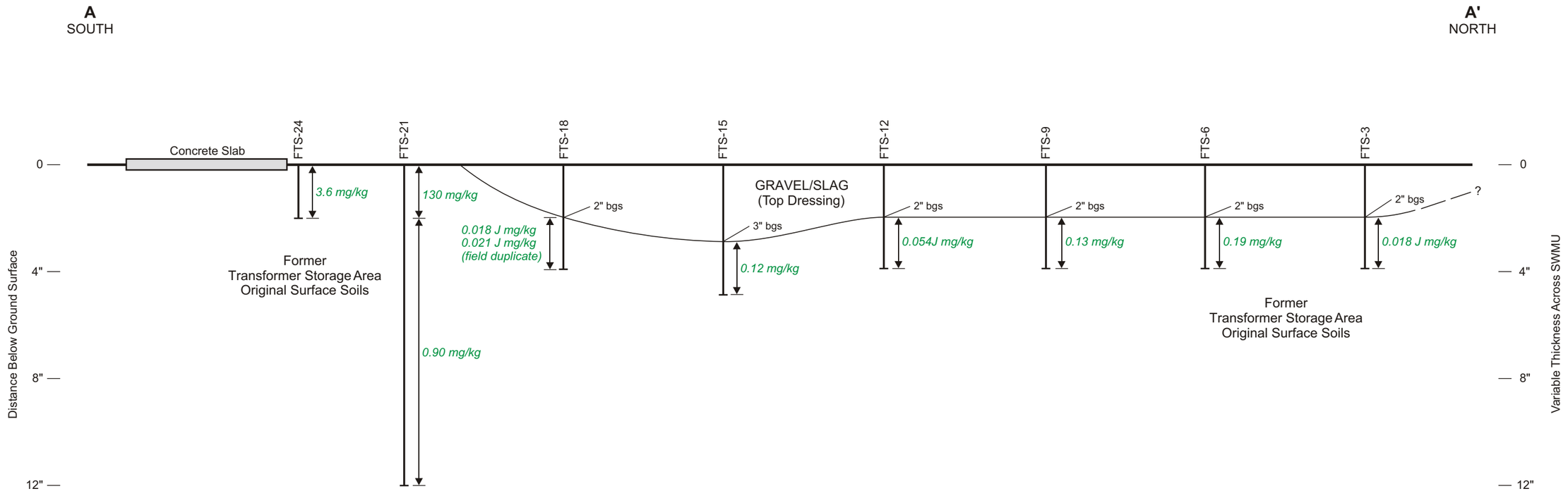


No Horizontal Scale

Figure 5.5.21-11

SWMU 21
CONCEPTUAL CROSS SECTION C-C'
AROCLOR 1254 DIAGRAM
Rhodia Silver Bow Plant
Montana

P:\Mpls\26 MT\46\2646006\WorkFiles\Figures_Graphics\2012 Cross Sections\SWMU 21 Conceptual Cross Section C-C' Aroclor 1254 Diagram.CDR RLG 12-31-12

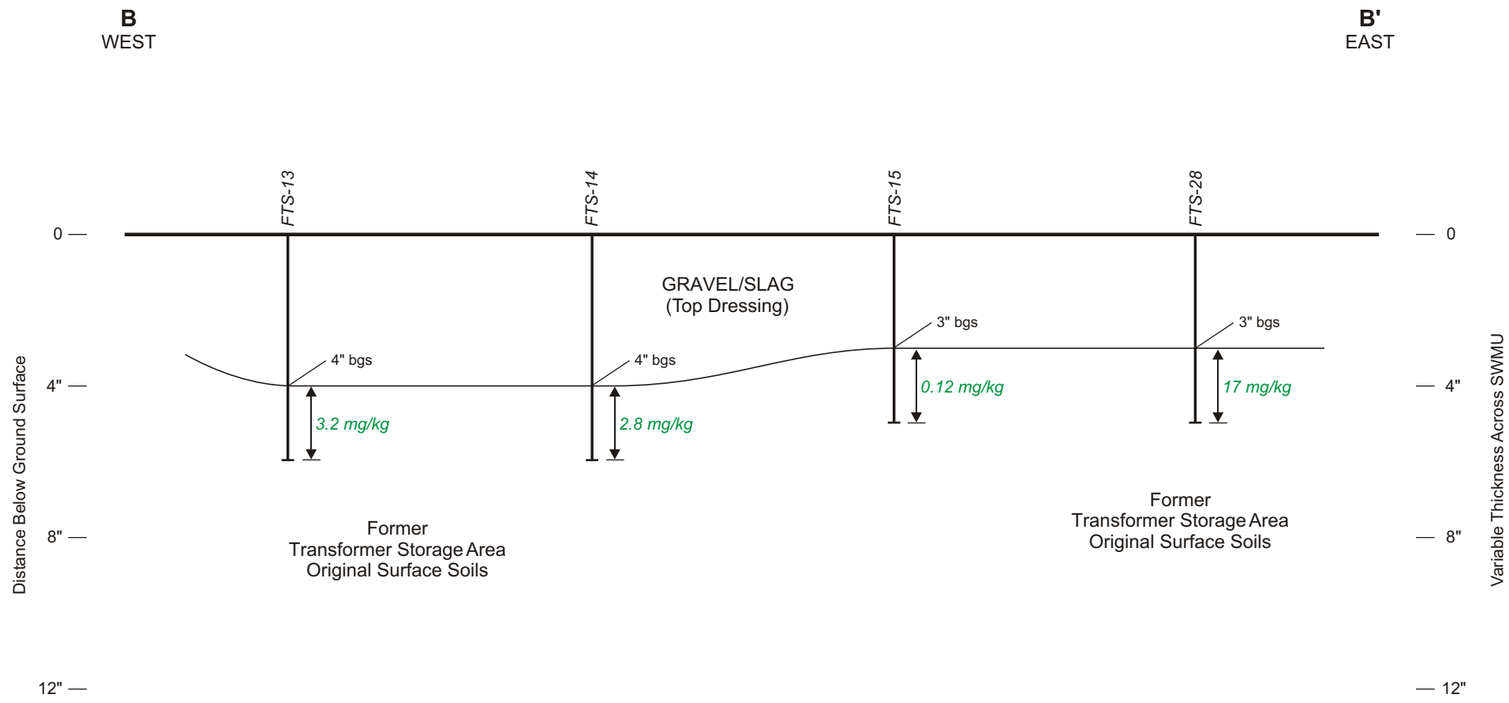


No Horizontal Scale

Figure 5.5.21-12

SWMU 21
CONCEPTUAL CROSS SECTION A-A'
AROCLOR 1260 DIAGRAM
Rhodia Silver Bow Plant
Montana

P:\Mpls\26 MT146\2646006\WorkFiles\Figures_Graphics\2012 Cross Sections\SWMU 21 Conceptual Cross Section A-A' Aroclor 1260 Diagram.CDR RLG 12-31-12

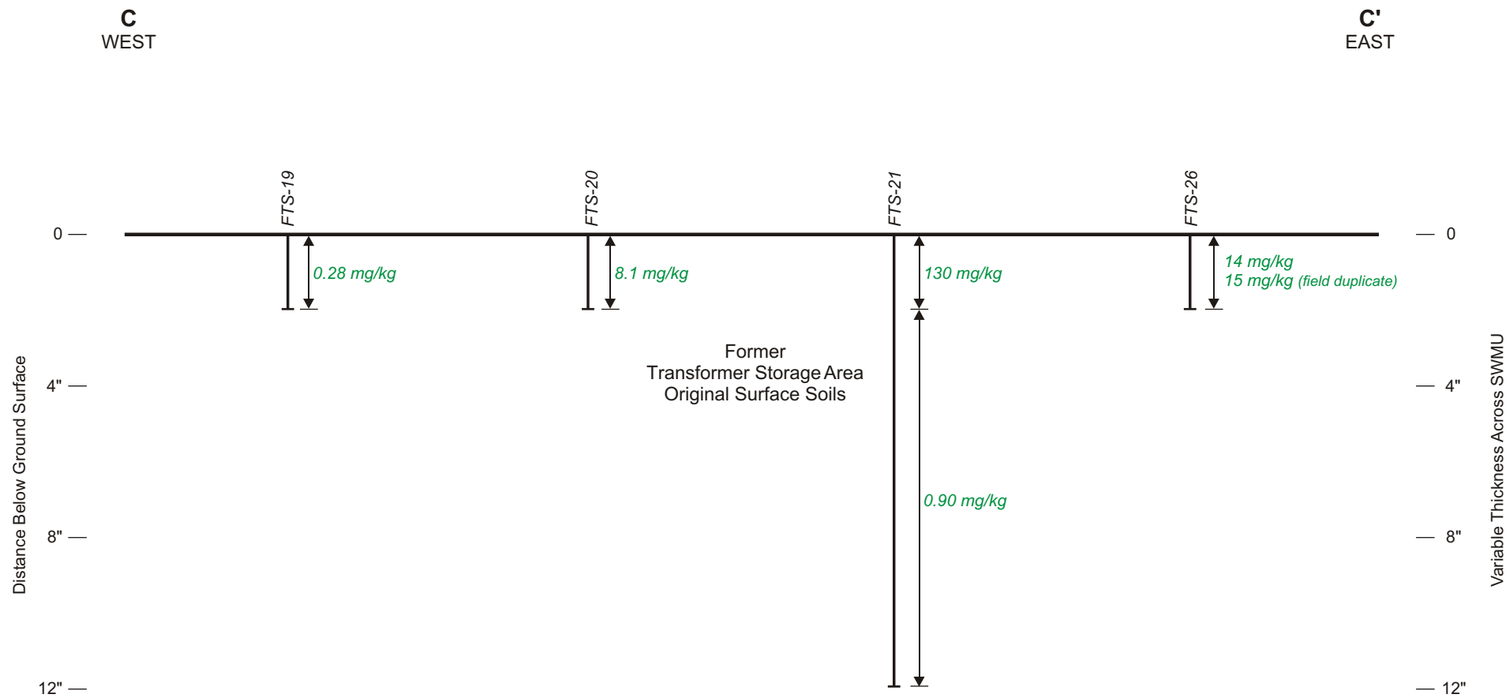


No Horizontal Scale

Figure 5.5.21-13

SWMU 21
CONCEPTUAL CROSS SECTION B-B'
AROCLOR 1260 DIAGRAM
Rhodia Silver Bow Plant
Montana

P:\Mpls\26 MT\46264006\WorkFiles\Figures_Graphics\2012 Cross Sections\Conceptual Cross Section B-B' Aroclor 1260 Diagram.CDR RLG 06-29-12



No Horizontal Scale

Figure 5.5.21-14

SWMU 21
CONCEPTUAL CROSS SECTION C-C'
AROCLOR 1260 DIAGRAM
Rhodia Silver Bow Plant
Montana

P:\Mpls\26 MT\46\2646006\WorkFiles\Figures_Graphics\2012 Cross Sections\SWMU 21 Conceptual Cross Section C-C' Aroclor 1260 Diagram.CDR RLG 12-31-12

Appendices

Appendix 5.5.21-A

Transformer Site Investigation Report –1993
Rhodia Silver Bow Plant

CHAIN OF CUSTODY RECORD

DATE 11/12/93 PAGE: 1 OF: 1

Resource Management, Inc.

1-90 & Rocker Interchange
P.O. Box 4168
Butte, MT 59702
(406) 782-4201

LABORATORY: California Laboratory Services
ADDRESS: 3249 Fitzgerald Road
Rancho Cordova, CA 95742
ATTENTION:
PROJECT NAME: Rhone Poulenc
JOB P.O. NUMBER: 31.2816.05
SAMPLE MANAGER (SIGNATURE): TMM

SAMPLE NO.	DATE	TIME	SAMPLER	LOCATION	PCB in Soil Method 8080	# CONTAINERS	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
9A	11/12/93	-	TMM	Surface	X	1	Soil
9B	11/12/93	-	TMM	10"	X	1	Soil
2A	11/12/93	-	TMM	Surface	X	1	Soil
2B	11/12/93	-	TMM	10"	X	1	Soil
6A	11/12/93	-	TMM	Surface	X	1	Soil

TOTAL # CONTAINERS: 5

SHIPMENT METHOD: UPS

RELINQUISHED BY:	RECEIVED BY:	DATE:
COMPANY: SRM	COMPANY:	TIME:
RELINQUISHED BY:	RECEIVED BY:	DATE:
COMPANY:	COMPANY:	TIME:
RELINQUISHED BY:	RECEIVED BY: Lee Heathcote	DATE: 11-18-93
COMPANY:	COMPANY: CLS	TIME: 1030

REMARKS:
Please return Cooler.
Fax Results to Scott. 406-782-9460.

Special Shipment, Handling or Storage Requirements:
Shipped and Stored on Ice.

WHITE - RETURN TO SAMPLER OR ADDRESS GIVEN ABOVE • YELLOW - LAB COPY • PINK - SAMPLER

California Laboratory Services

Special Resource Management
121000 Browns Gulch Road
Butte, MT 59701

11/29/93

Attention: Scott

Reference: Analytical Results

Project Name: Rhone Poulenc
Project No.: 31.2816.05
Date Received: 11/18/93
Chain Of Custody: NO NUMBER

CLS ID No.: M2991
CLS Job No.: 792991

The following analyses were performed on the above referenced project:

No. of Samples	*Turnaround Time*	*Analysis Description*
5	10 Days	PCB's in Soil, Sludge or Other Oil

These samples were received by California Laboratory Services in a chilled, intact state and accompanied by a valid chain of custody document.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

George Hampton
Laboratory Director

Analysis Report: **Polychlorinated Biphenyls, EPA Method 8080**

Client: **Special Resource Management**
121000 Browns Gulch Road
Butte, MT 59701

Project: **Rhone Poulenc**

Date Sampled: **11/12/93**
Date Received: **11/18/93**
Date Extracted: **11/23/93**
Date Analyzed: **11/23/93**
Date Reported: **11/29/93**
Client ID No.: **9A**

Project No.: **31.2816.05**
Contact: **Scott**
Phone: **(406)782-4201**

CLS Contact: **George Hampton**
Job No.: **792991**
COC Log No.: **NO NUMBER**
CLS ID No.: **M2991-1A**
Batch No.: **12595**
Matrix: **SOIL**

***Sample:* 9A**

Analyte	CAS No.	Results (mg/kg)	Rep. Limit (mg/kg)
Aroclor 1016	12674-11-2	ND	1.0
Aroclor 1221	1104-28-2	ND	1.0
Aroclor 1232	11141-16-5	ND	1.0
Aroclor 1242	53469-21-9	ND	1.0
Aroclor 1248	12672-29-6	ND	1.0
Aroclor 1254	11097-69-1	ND	1.0
Aroclor 1260	11096-82-5	8.7	1.0

ND = Not detected at or above indicated Reporting Limit
Rep. Limit = Reporting Limit unless otherwise indicated in parentheses.

California Laboratory Services

Analysis Report: **Polychlorinated Biphenyls, EPA Method 8080**

Client: **Special Resource Management**
121000 Browns Gulch Road
Butte, MT 59701

Project: **Rhone Poulenc**

Date Sampled: **11/12/93**
Date Received: **11/18/93**
Date Extracted: **11/23/93**
Date Analyzed: **11/23/93**
Date Reported: **11/29/93**
Client ID No.: **9B**

Project No.: **31.2816.05**
Contact: **Scott**
Phone: **(406)782-4201**

CLS Contact: **George Hampton**
Job No.: **792991**
COC Log No.: **NO NUMBER**
CLS ID No.: **M2991-2A**
Batch No.: **12595**
Matrix: **SOIL**

***Sample:* 9B**

Analyte	CAS No.	Results (mg/kg)	Rep. Limit (mg/kg)
Aroclor 1016	12674-11-2	ND	1.0
Aroclor 1221	1104-28-2	ND	1.0
Aroclor 1232	11141-16-5	ND	1.0
Aroclor 1242	53469-21-9	ND	1.0
Aroclor 1248	12672-29-6	ND	1.0
Aroclor 1254	11097-69-1	ND	1.0
Aroclor 1260	11096-82-5	ND	1.0

ND = Not detected at or above indicated Reporting Limit
Rep. Limit = Reporting Limit unless otherwise indicated in parentheses.

Analysis Report: **Polychlorinated Biphenyls, EPA Method 8080**

Client: **Special Resource Management**
121000 Browns Gulch Road
Butte, MT 59701

Project: **Rhone Poulenc**

Date Sampled: **11/12/93**
Date Received: **11/18/93**
Date Extracted: **11/23/93**
Date Analyzed: **11/23/93**
Date Reported: **11/29/93**
Client ID No.: **2A**

Project No.: **31.2816.05**
Contact: **Scott**
Phone: **(406)782-4201**

CLS Contact: **George Hampton**
Job No.: **792991**
COC Log No.: **NO NUMBER**
CLS ID No.: **M2991-3A**
Batch No.: **12595**
Matrix: **SOIL**

***Sample:* 2A**

Analyte	CAS No.	Results (mg/kg)	Rep. Limit (mg/kg)
Aroclor 1016	12674-11-2	ND	1.0
Aroclor 1221	1104-28-2	ND	1.0
Aroclor 1232	11141-16-5	ND	1.0
Aroclor 1242	53469-21-9	ND	1.0
Aroclor 1248	12672-29-6	ND	1.0
Aroclor 1254	11097-69-1	ND	1.0
Aroclor 1260	11096-82-5	ND	1.0

, = Not detected at or above indicated Reporting Limit
Rep. Limit = Reporting Limit unless otherwise indicated in parentheses.

California Laboratory Services

Analysis Report: **Polychlorinated Biphenyls, EPA Method 8080**

Client: **Special Resource Management**
121000 Browns Gulch Road
Butte, MT 59701

Project: **Rhone Poulenc**

Date Sampled: **11/12/93**
Date Received: **11/18/93**
Date Extracted: **11/23/93**
Date Analyzed: **11/23/93**
Date Reported: **11/29/93**
Client ID No.: **2B**

Project No.: **31.2816.05**
Contact: **Scott**
Phone: **(406)782-4201**

CLS Contact: **George Hampton**
Job No.: **792991**
COC Log No.: **NO NUMBER**
CLS ID No.: **M2991-4A**
Batch No.: **12595**
Matrix: **SOIL**

***Sample:* 2B**

Analyte	CAS No.	Results (mg/kg)	Rep. Limit (mg/kg)
Aroclor 1016	12674-11-2	ND	1.0
Aroclor 1221	1104-28-2	ND	1.0
Aroclor 1232	11141-16-5	ND	1.0
Aroclor 1242	53469-21-9	ND	1.0
Aroclor 1248	12672-29-6	ND	1.0
Aroclor 1254	11097-69-1	ND	1.0
Aroclor 1260	11096-82-5	ND	1.0

ND = Not detected at or above indicated Reporting Limit
Rep. Limit = Reporting Limit unless otherwise indicated in parentheses.

Analysis Report: **Polychlorinated Biphenyls, EPA Method 8080**

Client: **Special Resource Management**
121000 Browns Gulch Road
Butte, MT 59701

Project: **Rhone Poulenc**

Date Sampled: **11/12/93**
Date Received: **11/18/93**
Date Extracted: **11/23/93**
Date Analyzed: **11/23/93**
Date Reported: **11/29/93**
Client ID No.: **6A**

Project No.: **31.2816.05**
Contact: **Scott**
Phone: **(406)782-4201**

CLS Contact: **George Hampton**
Job No.: **792991**
COC Log No.: **NO NUMBER**
CLS ID No.: **M2991-5A**
Batch No.: **12595**
Matrix: **SOIL**

***Sample:* 6A**

Analyte	CAS No.	Results (mg/kg)	Rep. Limit (mg/kg)
Aroclor 1016	12674-11-2	ND	1.0
Aroclor 1221	1104-28-2	ND	1.0
Aroclor 1232	11141-16-5	ND	1.0
Aroclor 1242	53469-21-9	ND	1.0
Aroclor 1248	12672-29-6	ND	1.0
Aroclor 1254	11097-69-1	ND	1.0
Aroclor 1260	11096-82-5	ND	1.0

) = Not detected at or above indicated Reporting Limit
Rep. Limit = Reporting Limit unless otherwise indicated in parentheses.

California Laboratory Services

Analysis Report: **Polychlorinated Biphenyls, EPA Method 8080**

Client: **Special Resource Management**
121000 Browns Gulch Road
Butte, MT 59701

Project: **Rhone Poulenc**

Date Extracted: **11/23/93**
Date Analyzed: **11/23/93**
Date Reported: **11/29/93**

Project No.: **31.2816.05**
Contact: **Scott**
Phone: **(406)782-4201**

CLS Contact: **George Hampton**
Job No.: **792991**
COC Log No.: **NO NUMBER**
CLS ID No.: **M2991**
Batch No.: **12595**
Matrix: **SOIL**

METHOD BLANK

Analyte	CAS No.	Results (mg/kg)	Rep. Limic (mg/kg)
Aroclor 1016	12674-11-2	ND	1.0
Aroclor 1221	1104-28-2	ND	1.0
Aroclor 1232	11141-16-5	ND	1.0
Aroclor 1242	53469-21-9	ND	1.0
Aroclor 1248	12672-29-6	ND	1.0
Aroclor 1254	11097-69-1	ND	1.0
Aroclor 1260	11096-82-5	ND	1.0

ND = Not detected at or above indicated Reporting Limit
Rep. Limit = Reporting Limit unless otherwise indicated in parentheses.

California Laboratory Services

Analysis Report: **Polychlorinated Biphenyls, EPA Method 8080**

Client: **Special Resource Management**
121000 Browns Gulch Road
Butte, MT 59701

Project: **Rhone Poulenc**

Date Extracted: **11/23/93**
Date Analyzed: **11/23/93**
Date Reported: **11/29/93**

Project No.: **31.2816.05**
Contact: **Scott**
Phone: **(406)782-4201**

CLS Contact: **George Hampton**
Job No.: **792991**
COC Log No.: **NO NUMBER**
CLS ID No.: **M2991**
Batch No.: **12595**
Matrix: **SOIL**

LAB CONTROL SAMPLE

Analyte	CAS No.	LCS Conc. (mg/kg)	LCS Recovery (percent)
Aroclor 1260	11096-82-5	5.0	94

LAB CONTROL SAMPLE DUPLICATE

Analyte	CAS No.	LCS Conc. (mg/kg)	LCSD Recovery (percent)
Aroclor 1260	11096-82-5	5.0	104

LCS RPD

Analyte	CAS No.	LCS Relative Percent Difference (percent)
Aroclor 1260	11096-82-5	10