SWMU 26 - Ferrophosphorus Area

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5.5.26 SWMU 26 - Ferrophosphorus Area

The location of Solid Waste Management Unit (SWMU) 26, the Ferrophosphorus Area, is shown on Figure 5.5.26-1a and SWMU 26 monitoring stations and sample locations are provided on Figure 5.5.26-1b. The location of this SWMU was taken from the drawing produced by Stauffer in the late 1970s. SWMU 26 is located at the north end of the SWMU 6 and lies within its boundary. SWMU 26 is also east of SWMU 22.

Iron, which is contained in phosphate ore, was reduced to elemental iron as a side reaction in the electric arc furnace. Phosphorus combined with the iron to form a very dense phosphorus-iron compound named ferrophosphorus. This molten material accumulated in the electric arc furnace beneath the molten slag, and was periodically drained from the furnace. The ferrophosphorus was collected in iron molds to form ingots, which were allowed to air cool. The ingots were crushed and stockpiled in the northern portion of Raw Materials Area (*see* Figure 5.5.26-1b) while awaiting transport to market. The MSDS for this material produced at the Silver Bow Plant does not identify any hazardous constituent in the material (*see* Appendix 5.5.26-A).

Two samples of ferrophosphorus from the area were collected in 1979 by the U.S. EPA and analyzed for radionuclides as detailed in Emissions of Naturally Occurring Radioactivity, Stauffer Elemental Phosphorus Plant (U.S. EPA, 1982). The radionuclide data is summarized in Table 5.5.26-5. The radionuclide concentrations in the ferrophosphorus were lower than those found in the phosphate ore and slag. Some residual pieces of this material remain in the former stockpile area mostly mixed in the soil (SWMU 26).

The Ferrophosphorus Area is a relatively small area within the Raw Materials Area (SWMU 6) which was investigated using random sampling strategy (*see* Section 5.5.6). During past investigations, no random sample locations fell within the boundary of SWMU 26, although the ferrophosphorus may have been stockpiled outside the area defined on Figure 5.5.26-1b. SWMU 26 falls mostly within RM-8 of the Raw Materials Area. Soil samples collected from RM-8 have some of the highest concentrations for chromium, copper, iron, nickel, silver and vanadium (*see* Table 5.5.6-2). These higher concentrations are likely associated with ferrophosphorus.

5.5.26.1 RFI Activities and Results

In October 2012 soil samples were collected from test pit sidewalls at three randomly selected locations in SWMU 26 (FP-3, FP-4 and FP-5). The test pit logs are provided in Appendix 5.5.26-B, and the test pit locations are shown on Figure 5.5.26-1b. Soil samples were collected from the 0-2

inch and 2-12 inch depth interval at each location for a total of 6 samples. The soil samples were laboratory analyzed for general and site-specific parameters, metals, VOCs, SVOCs and radionuclides (*see* Tables 5.5.26-1 through 5.5.26-5). Analytical data are presented on Figures 5.5.26-2 through 5.5.26-25.

Soil data from SWMU 26 were compared to both the background/reference area concentrations and to those concentrations measured in the Raw Materials Area (SWMU 6). 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).

5.5.26.1.1 General Chemistry

The general chemistry data are summarized in Table 5.5.26-1 and shown on Figure 5.5.26-2.

Fluoride concentrations do not exceed the maximum background/reference area concentration. Elemental phosphorus was not detected (DL = 0.000015 mg/kg) in the soil samples collected at SWMU 26.

Total phosphorus concentrations in SWMU 26 ranged from 69,500 mg/kg in the 2-12 inch interval at FP-5 to 108,000 mg/kg in the 0-2 inch interval at FP-4. The concentrations are consistent in samples from SWMU 26 and are consistent with samples from the Raw Materials Area (SWMU 6). The total phosphorus concentrations at SWMU 26 above the 880 mg/kg mean total phosphorus concentration measured for Silver Bow County (USGS, 2012).

5.5.26.1.2 Metals

The metals data are presented in Table 5.5.26-2 and the distribution of metal constituents in the 0-2 inch and 2-12 inch interval are shown on Figures 5.5.26-3 through 5.5.26-12.

Group A

The metals included in Group A are arsenic, cadmium, chromium and copper. The distribution of these metal constituents in the 0-2 inch and the 2-12 inch interval are shown on Figures 5.5.26-3 and 5.5.26-4, respectively.

Arsenic concentrations are consistent with background/reference area concentrations and are consistent with concentrations in samples from the Raw Materials Area (SWMU 6).

Cadmium was present in the samples, but the concentrations could not be accurately determined due to matrix interferences that caused the cadmium concentrations to be over estimated. As such, the cadmium data was rejected during the data validation process.

Chromium was detected in 6 of 6 soil samples at concentrations ranging from 403 J to 2,260 J mg/kg. The mean and maximum chromium concentrations exceed the mean and maximum concentrations in the background/reference area data set. Chromium concentrations are consistent with concentrations in samples collected from the Raw Materials Area.

Copper was detected in 6 of 6 soil samples at concentrations ranging from 72.7 J to 375 J mg/kg. The mean and maximum copper concentrations exceed the mean and maximum concentrations in the background/reference area data set but are consistent with other samples collected from the Raw Materials Area.

Group B

The metals included in Group B are iron, lead, manganese and nickel. The distribution of these metal constituents in the 0-2 inch and the 2-12 inch intervals are shown on Figures 5.5.26-5 and 5.5.26-6, respectively.

Iron, lead and manganese concentrations are consistent with other sample locations within the Raw Materials Area and are consistent with background/reference area concentrations.

Nickel was detected in 6 of 6 soil samples, but the concentrations were not reproducible in duplicate samples. As such, the nickel data was rejected during the data validation process.

Group C

The metals included in Group C are selenium, silver, uranium, vanadium and zinc. The distribution of these metal constituents in the 0-2 inch and the 2-12 inch intervals are shown on Figures 5.5.26-7 and 5.5.26-8, respectively.

Selenium was detected in 6 of 6 soil samples at concentrations ranging from 4.8 J to 8.9 J mg/kg. The maximum concentration was reported for the 0-2 inch interval at FP-5. The mean and maximum selenium concentrations exceed the mean and maximum concentrations in the background/reference area data set but are consistent with other samples collected within the Raw Materials Area.

Silver was detected in 6 of 6 soil samples at concentrations ranging from 6.9 J to 24.5 mg/kg. The mean and maximum silver concentrations exceed the mean and maximum concentrations in the background/reference area data set but are consistent with other samples collected within the Raw Materials Area.

Uranium was detected in 6 of 6 soil samples at concentrations ranging from 61.1 to 85.0 mg/kg. The mean and maximum uranium concentrations exceed the mean and maximum concentrations in the background/reference area data set but are consistent with other samples collected within the Raw Materials Area.

Vanadium was detected in 6 of 6 soil samples at concentrations ranging from 590 to 3,770 mg/kg. The mean and maximum vanadium concentrations exceed the mean and maximum concentrations in the background/reference area data set but are consistent with other samples collected within the Raw Materials Area.

Zinc was detected in 6 of 6 soil samples at concentrations ranging from 844 to 1,420 mg/kg. The mean and maximum zinc concentrations exceed the mean and maximum concentrations in the background/reference area data set but are consistent with other samples collected within the Raw Materials Area.

Group D

The metals included in Group D are barium, beryllium, cobalt, mercury and thallium. The distribution of these metal constituents in the 0-2 inch and the 2-12 inch intervals are shown on Figures 5.5.26-9 and 5.5.26-10, respectively.

Barium concentrations are consistent with background/reference area concentrations and with concentrations in other samples collected from the Raw Materials Area.

Beryllium was detected in 6 of 6 soil samples. All of the detections are J qualified and are estimated values. These estimated values are above the mean and maximum background concentrations.

Cobalt was detected in 6 of 6 soil samples. Five of the detections were J qualified and are estimated values. The maximum concentration of 12.37 mg/kg was reported for the 0-2 inch interval at FP-3 and is above the maximum background concentration of 9.5 mg/kg. Cobalt concentrations are consistent with the background/reference area concentrations and are consistent with other samples collected from the Raw Materials Area. Since the mean and maximum do not both exceed mean and maximum background/reference area concentrations, cobalt concentrations are consistent with background.

Mercury was detected in 6 of 6 soil samples at concentrations ranging from 0.119 to 0.310 mg/kg. The mean and maximum mercury concentrations exceed the mean and maximum concentrations in the background data set, but are consistent with other samples collected from the Raw Materials Area.

Thallium was detected in 6 of 6 soil samples at concentrations ranging from 1.950 to 2.710 mg/kg. The mean and maximum thallium concentrations exceed the mean and maximum concentrations in the background data set but are consistent with other samples collected within the Raw Materials Area.

Group E

The metals included in Group E are antimony, calcium, magnesium, potassium and sodium. The distribution of these metal constituents in the 0-2 inch and the 2-12 inch intervals are shown on Figures 5.5.26-11 and 5.5.26-12, respectively. Magnesium does not exceed background concentrations, however the data is R qualified and rejected. The potassium data is generally above background mean concentrations and below maximum background concentrations; however, it is also R qualified and rejected. The mean and maximum antimony, calcium and sodium concentrations exceed their respective mean and maximum concentrations in the background data set but are consistent with other sample locations within the Raw Materials Area.

5.5.26.1.3 VOCs

The VOC data are presented in Table 5.5.26-3 and shown on Figures 5.5.26-13 and 5.5.26-14. Ten VOCs were detected within SWMU 26. All detected concentrations are J-qualified indicating that the concentrations are estimated, and those concentrations are near the method detection limit.

5.5.26.1.4 SVOCs

The SVOC data are presented in Table 5.5.26-4. Six samples were collected and submitted for laboratory analysis from SWMU 26. The majority of SVOCs detected in the SWMU belong to a subgroup of SVOCs known as polynuclear aromatic hydrocarbons (PAHs). EPA has identified seven PAH constituents as potentially carcinogenic to humans. These potential carcinogens are identified as cPAHs. The other 12 PAH compounds below are considered by the EPA as not cancer-causing constituents and are identified as nPAHs. Although PAHs are ubiquitous in the environment (e.g. from forest fires), Montana has not published background concentrations. For the purposes of this SWMU evaluation, the PAHs detected in the SWMU samples are discussed. Six other SVOCs, known as monocyclic aromatic hydrocarbons (MAHs), were detected in SWMU 26.

SVOC concentrations appear consistent with other sample locations from the Raw Materials Area.

cPAHs - Group A

The cPAHs included in Group A are benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluroanthene and benzo(k)fluoranthene. All of these cPAHs were detected in one or more samples from the SWMU and are considered above background. The distribution of these cPAH constituents in the 0 to 2-inch and the 2 to 12-inch intervals are shown on Figures 5.5.26-15 and 5.5.26-16, respectively.

Benzo(a)anthracene was detected at concentrations ranging 0.032 mg/kg for the sample from the 0-2 inch interval collected at location FP-5 to 0.47 mg/kg for the sample collected from the 2-12 inch interval at location FP-4. Benzo(a)pyrene was detected at concentrations ranging from 0.039 mg/kg for the sample from the 0-2 inch interval collected from location FP-5 to 0.54 mg/kg for the sample collected from the 2-12 inch interval at location FP-4. Benzo(b)fluoranthene was detected at concentrations ranging from 0.056 mg/kg for the sample from the 0-2 inch interval collected from location FP-5 to 0.73 mg/kg for the sample collected from the 2-12 inch interval at location FP-4. Benzo(k)fluoranthene was detected at concentrations ranging from 0.019 mg/kg for the sample from the 0-2 inch interval collected from location FP-5 to 0.24 mg/kg for the sample collected from the 2-12 inch interval at location FP-4.

cPAHs - Group B

The cPAHs included in Group B are chrysene, dibenz(a,h)anthracene and indeno(1,2,3-cd)pyrene. The distribution of these cPAH constituents in the 0 to 2-inch and the 2 to 12-inch intervals are shown on Figures 5.5.26-17 and 5.5.26-18, respectively.

Chrysene was detected at concentrations ranging from 0.043 mg/kg for the sample from the 0-2 inch interval collected from location FP-5 to 0.52 mg/kg for the sample collected from the 2-12 inch interval of location FP-4. Dibenz(a,h)anthracene was detected at concentrations ranging from 0.011 mg/kg from the 0-2 inch interval at location FP-5 to 0.14 mg/kg from the 2-12 inch interval at location FP-4. Indeno(1,2,3-cd)pyrene was detected at concentrations ranging from 0.037 mg/kg from the 0-2 inch interval at FP-5 to 0.44 mg/kg for the sample from the 2-12 inch interval collected from location FP-4.

nPAHs - Group A

The nPAHs included in Group A are acenaphthene, acenaphthylene, anthracene, benzo(g,h,i)perylene, dibenzofuran, di-n-butyl phthalate, and fluoranthene. The distribution of these nPAH constituents in the 0 to 2-inch and the 2 to 12-inch are shown on Figures 5.5.26-19 and 5.5.26-20, respectively.

Acenaphthene was reported at concentrations ranging from not detected from the 0-2 and 2-12 inch intervals at location FP-5 to 0.023 mg/kg at the 2-12 inch interval at FP-4. Acenaphthylene was detected from 0.0051 J mg/kg at the 0-2 inch interval at FP-5 to 0.069 J mg/kg at the 2-12 inch interval at FP-4. Anthracene was detected at concentrations ranging from 0.0094 J mg/kg from the 0-2 inch interval at location FP-5 to 0.14 J mg/kg from the 2-12 inch interval at location FP-4. Benzo(g,h,i)perylene was detected at concentrations ranging from 0.035 mg/kg for the 0-2 inch interval collected from location FP-5 to 0.39 mg/kg for the sample collected from the 2-12 inch interval at location FP-4. Fluoranthene was detected at concentrations ranging from 0.059 mg/kg for the sample from the 0-2 inch interval collected from location FP-5 to 0.67 mg/kg for the sample collected from the 2-12 inch interval at location FP-4.

nPAHs - Group B

The nPAHs included in Group B are 2-methylnaphthalene, carbazole, fluorene, naphthalene, phenanthrene, and pyrene. The distribution of these nPAH constituents in the 0 to 2-inch and the 2 to 12-inch intervals are shown on Figures 5.5.26-21 and 5.5.26-22, respectively.

2-Methylnaphthalene was detected at concentrations ranging from 0.015 mg/kg for the sample from the 0-2 inch interval collected from location FP-5 to 0.093 mg/kg for the sample collected from the 2-12 inch interval of location FP-4. Carbazole was detected at concentrations ranging from 0.0054 J mg/kg from the 0-2 inch interval at location FP-5 to 0.068 mg/kg from the 2-12 inch interval at location FP-4. Fluorene was reported at concentrations ranging from not detected from the 0-2 inch interval at location FP-5 to 0.035 mg/kg from the 2-12 inch interval at location FP-4. Naphthalene

was detected at concentrations ranging from 0.015 mg/kg for the 0-2 inch interval collected from location FP-5 to 0.17 mg/kg for the samples collected from the 0-2 and the 2-12 inch interval of location FP-4. Phenanthrene was detected at concentrations ranging from 0.046 J mg/kg for the sample from the 0-2 inch interval collected from location FP-5 to 0.59 J mg/kg for the sample collected from the 2-12 inch interval of location FP-4. Pyrene was detected at concentrations ranging from 0.052 mg/kg for the sample from the 0-2 inch interval collected from location FP-5 to 0.54 mg/kg for the sample collected from the 2-12 inch interval of location FP-4.

Other SVOCs

Six other SVOCs constituents were detected in at least one sample and are shown on Figures 5.5.26-23 and Figures 5.5.26-24 for the 0-2 and 2-12 inch intervals, respectively. Bis(2-ethylhexyl)phthalate is a lab contaminant associated with plastics. Other detections include 2,4-dichlorophenol, 2-methylphenol (o-cresol), 4-methylphenol (p-cresol), dimethyl phthalate and phenol

5.5.26.1.5 Radionuclides

Radionuclides were sampled at the three test pit locations from the 0-2 and 2-12 inch interval. The radionuclide data are presented in Table 5.5.26-5. The distribution of radionuclides in the 0-2 inch and 2-12 inch intervals are show on Figure 5.5.26-25. Mean and maximum concentrations of radium 226, thorium 230, uranium 234 and uranium 238 are above mean and maximum background concentrations but are consistent with other samples collected within the Raw Materials Area. Lead 210 and uranium 235 are not detected in the background/reference area samples, so lead 210 and uranium 235 concentrations are above background concentrations.

5.5.26.2 Conclusions

Samples from three random locations in SWMU 26 revealed concentrations consistent with other sampled locations within the Raw Materials Area. The parameter concentrations are consistent between the 6 six samples collected from the Ferrophosphorus Area and are consistent with samples from the Raw Materials Area (SWMU 6).

The following metals were identified as above background based on comparison to the background/reference area values: antimony, calcium, chromium, copper, mercury, selenium, silver, sodium, thallium, uranium, vanadium and zinc.

Ten VOCs were detected within SWMU 26; however, all detected concentrations are J-qualified indicating that the concentrations are estimated. SVOC concentrations in SWMU 26 are similar to SVOC concentrations identified within the Raw Materials Area.

There is sufficient information to conduct the risk assessment for SWMU 26. The risk assessment will identify which parameters, if any, are present at concentrations that warrant corrective measures. The dataset will 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.

5.5.26.3 References

U.S. EPA, 1982. Emissions of Naturally Occurring Radioactivity, Stauffer Elemental Phosphorus Plant, Office of Radiation Programs – Las Vegas Facility, US EPA, EPA-520/6-82-019, November, 1982.

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.

U.S. Geological Survey, 2012. Average concentrations of elements in Silver Bow County, Montana. Open-File Report 2004-1001. Accessed December 11, 2012, at http://mrdata.usgs.gov/geochem/county.php?place=f30093&el=P&rf=northwestern.

Tables

Table 5.5.26-1
Soil Data - General and Site Specific Parameters
SWMU 26
Rhodia Silver Bow Plant
[concentrations in mg/kg]

			Chemical Name	Fluoride	Phosphorus, elemental (white)	Phosphorus, total
Background Mean, Exceedances **Bold**				**4.1**		
Background Maximum, Exceedances Underline				37		
Background 95% UCL, Exceedances *Italic*				*7.6*		
Location ID	**Sample Date**	**Depth**	**Sample Type**			
FP-3	10/02/2012	0 - 2 in	N	***15.4 J***	< 0.000015 J	71900
FP-3	10/02/2012	2 - 12 in	N	***17.3 J***	< 0.000015	80900
FP-4	10/02/2012	0 - 2 in	N	***15.9 J***	< 0.000015	92400
FP-4	10/02/2012	2 - 12 in	N	***17.6 J***	< 0.000015	108000
			FD	***15.6 J***	< 0.000015	87100
FP-5	10/02/2012	0 - 2 in	N	***12.7 J***	< 0.000015	71400
FP-5	10/02/2012	2 - 12 in	N	***17.8 J***	< 0.000015	69500

Table 5.5.26-2
Soil Data - Metals
SWMU 26
Rhodia Silver Bow Plant
[concentrations in mg/kg]

Chemical Name / Analysis Location				Antimony Lab	Arsenic Lab	Barium Lab	Beryllium Lab	Cadmium Lab	Calcium Lab	Chromium Lab	Chromium, hexavalent Lab	Cobalt Lab	Copper Lab	Iron Lab	Lead Lab	Magnesium Lab	Manganese Lab	Mercury Lab	Nickel Lab	Potassium Lab	Selenium Lab	Silver Lab	Sodium Lab	Thallium Lab	Uranium Lab	Vanadium Lab	Zinc Lab
Background Mean, Exceedances **Bold**				**0.50**	23	**150**	**0.51**	**1.6**	**3900**	**11**		**5.9**	**35**	**19600**	**17**	3500	540	**0.021**	**5.3**	**3000**	**0.41**	**0.73 (1)**	**140**	**0.35**	**1.8**	**41**	**59**
Background Maximum, Exceedances Underline				3.9	120	290	1.3	8.9	14000	48		9.5	301	35300	190	5700	1100	0.20	21	5300	0.70	1.7 (1)	620	1.0	4.1	83	380
Background 95% UCL, Exceedances *Italic*				*1.0*	40	*170*	*0.55*	*1.1*	*4500*	*12*		*6.1*	*64*	*20600*	*35*	3700	570	*0.038*	*6.0*	*3200*	*0.47*	*0.35 (1)*	*220*	*0.46*	*2.0*	*43*	*98*
Location ID	**Sample Date**	**Depth**	**Sample Type**																								
FP-3	10/02/2012	0 - 2 in	N	***8.53 J***	15.2	116 J	***1.02 J***	***37.60 R***	***156000***	***2260 J***	< 0.09 R	***12.37***	***375 J***	***34200 J***	***45.7 J***	2380 R	189 J	***0.119***	***624 R***	2700 R	***8.2 J***	***24.5***	***1030 J***	***1.950***	***61.2***	***3770 J***	***898***
FP-3	10/02/2012	2 - 12 in	N	***8.82 J***	20.0	143 J	***1.19 J***	***51.19 R***	***190000***	***1030 J***	0.22 R	5.06 J	***170 J***	16700 J	***61.5 J***	2300 R	145 J	***0.231***	***252 R***	2920 R	***7.1 J***	***16.6***	***932 J***	***2.530***	***61.1***	***1570 J***	***1120***
FP-4	10/02/2012	0 - 2 in	N	***4.48 J***	8.08	103 J	***1.27 J***	***56.68 R***	***228000***	***403 J***	0.10 R	2.49 J	***85.9 J***	8420 J	***82.9 J***	1960 R	125 J	***0.153***	***75.5 R***	**3020 R**	***4.8 J***	***12.7***	***1520 J***	***2.650***	***82.5***	***595 J***	***1400***
FP-4	10/02/2012	2 - 12 in	N	***11.9 J***	22.0	**152 J**	***1.58 J***	***80.50 R***	***243000***	***595 J***	0.22 R	3.55 J	***88.0 J***	11000 J	***86.5 J***	2050 R	254 J	***0.293***	***923 R***	2820 R	***8.6 J***	***12.9***	***987 J***	***2.700***	***62.0***	***749 J***	***1420***
			FD	***8.71 J***	18.3	120 J	***1.21 J***	***66.58 R***	***198000***	***614 J***	0.23 R	3.17 J	***103 J***	11700 J	***82.4 J***	2490 R	201 J	***0.310***	***129 R***	2520 R	***7.5 J***	***14.0***	***1060 J***	***2.710***	***66.8***	***816 J***	***1390***
FP-5	10/02/2012	0 - 2 in	N	***4.58 J***	12.9	***188 J***	***1.85 J***	***64.76 R***	***249000***	***405 J***	0.17 R	2.74 J	***72.7 J***	8220 J	**28.4 J**	3400 R	185 J	***0.203***	***87.7 R***	***4570 R***	***8.9 J***	***6.9 J***	***1980 J***	***2.360***	***85.0***	***590 J***	***844***
FP-5	10/02/2012	2 - 12 in	N	***5.84 J***	14.6	144 J	***1.54 J***	***59.16 R***	***192000***	***890 J***	0.27 R	5.68 J	***130 J***	15200 J	**30.5 J**	2540 R	198 J	***0.137***	***231 R***	***3700 R***	***8.0 J***	***8.1 J***	***1560 J***	***2.420***	***78.4***	***1560 J***	***984***

Table 5.5.26-3
Soil Data - VOCs
SWMU 26
Rhodia Silver Bow Plant
[concentrations in mg/kg]

			Chemical Name	1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane	1,1-Dichloro-1-propene	1,1-Dichloroethane	1,1-Dichloroethylene	1,2,3-Trichlorobenzene	1,2,3-Trichloropropane	1,2,4-Trichlorobenzene	1,2,4-Trimethylbenzene	1,2-Dibromo-3-chloropropane
Location ID	Sample Date	Depth	Sample Type												
FP-3	10/02/2012	0 - 2 in	N	< 0.011	< 0.0075	< 0.016	< 0.014	< 0.0089	< 0.0077	< 0.0080	< 0.011	< 0.020	< 0.0096	**0.016 J**	< 0.020
FP-3	10/02/2012	2 - 12 in	N	< 0.014	< 0.0091	< 0.020	< 0.017	< 0.011	< 0.0094	< 0.0098	< 0.014	< 0.025	< 0.012	< 0.0084	< 0.025
FP-4	10/02/2012	0 - 2 in	N	< 0.014	< 0.0095	< 0.021	< 0.018	< 0.012	< 0.0098	< 0.011	< 0.014	< 0.026	< 0.013	**0.021 J**	< 0.026
FP-4	10/02/2012	2 - 12 in	N	< 0.015	< 0.0099	< 0.022	< 0.019	< 0.012	< 0.011	< 0.011	< 0.015	< 0.027	< 0.013	**0.032 J**	< 0.027
			FD	< 0.014	< 0.0093	< 0.020	< 0.018	< 0.011	< 0.0095	< 0.0099	< 0.014	< 0.025	< 0.012	**0.037 J**	< 0.025
FP-5	10/02/2012	0 - 2 in	N	< 0.014	< 0.0092	< 0.020	< 0.018	< 0.011	< 0.0094	< 0.0098	< 0.014	< 0.025	< 0.012	**0.0085 J**	< 0.025
FP-5	10/02/2012	2 - 12 in	N	< 0.015	< 0.0098	< 0.021	< 0.019	< 0.012	< 0.010	< 0.011	< 0.015	< 0.026	< 0.013	**0.019 J**	< 0.026

Table 5.5.26-3
Soil Data - VOCs
SWMU 26
Rhodia Silver Bow Plant
[concentrations in mg/kg]

			Chemical Name	1,2-Dibromoethane	1,2-Dichlorobenzene	1,2-Dichloroethane	1,2-Dichloroethylene, cis	1,2-Dichloroethylene, trans	1,2-Dichloropropane	1,3,5-Trimethylbenzene	1,3-Dichloro-1-propene, cis	1,3-Dichloro-1-propene, trans	1,3-Dichlorobenzene	1,3-Dichloropropane	1,4-Dichlorobenzene
Location ID	Sample Date	Depth	Sample Type												
FP-3	10/02/2012	0 - 2 in	N	< 0.010	< 0.012	< 0.0080	< 0.0067	< 0.0072	< 0.0095	< 0.0089	< 0.018	< 0.0068	< 0.010	< 0.014	< 0.012
FP-3	10/02/2012	2 - 12 in	N	< 0.013	< 0.015	< 0.0098	< 0.0082	< 0.0088	< 0.012	< 0.011	< 0.022	< 0.0083	< 0.013	< 0.017	< 0.015
FP-4	10/02/2012	0 - 2 in	N	< 0.013	< 0.016	< 0.011	< 0.0085	< 0.0091	< 0.012	< 0.012	< 0.023	< 0.0086	< 0.013	< 0.018	< 0.016
FP-4	10/02/2012	2 - 12 in	N	< 0.014	< 0.016	< 0.011	< 0.0089	< 0.0095	< 0.013	< 0.012	< 0.024	< 0.0090	< 0.014	< 0.019	< 0.016
			FD	< 0.013	< 0.015	< 0.0099	< 0.0083	< 0.0089	< 0.012	**0.014 J**	< 0.023	< 0.0084	< 0.013	< 0.018	< 0.015
FP-5	10/02/2012	0 - 2 in	N	< 0.013	< 0.015	< 0.0098	< 0.0082	< 0.0088	< 0.012	< 0.011	< 0.022	< 0.0083	< 0.013	< 0.018	< 0.015
FP-5	10/02/2012	2 - 12 in	N	< 0.013	< 0.016	< 0.011	< 0.0087	< 0.0094	< 0.013	< 0.012	< 0.024	< 0.0089	< 0.013	< 0.019	< 0.016

Table 5.5.26-3
Soil Data - VOCs
SWMU 26
Rhodia Silver Bow Plant
[concentrations in mg/kg]

Chemical Name				2,2-Dichloropropane	2-Chloroethyl vinyl ether	2-Hexanone	Acetone	Acrolein	Acrylonitrile	Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane	Butyl benzene	Butylbenzene, sec	Butylbenzene, tert
Location ID	Sample Date	Depth	Sample Type															
FP-3	10/02/2012	0 - 2 in	N	< 0.0060	< 0.016	< 0.27	< 0.33	< 0.12	< 0.028	< 0.0062	< 0.012	< 0.016	< 0.0091	< 0.016 J	< 0.010	< 0.0054	< 0.0062	< 0.0059
FP-3	10/02/2012	2 - 12 in	N	< 0.0073	< 0.020	< 0.33	< 0.41	< 0.15	< 0.034	< 0.0076	< 0.015	< 0.020	< 0.012	< 0.020 J	< 0.013	< 0.0066	< 0.0076	< 0.0072
FP-4	10/02/2012	0 - 2 in	N	< 0.0076	< 0.021	< 0.35	< 0.42	< 0.16	< 0.036	**0.014 J**	< 0.016	< 0.021	< 0.012	< 0.021 J	< 0.013	< 0.0069	< 0.0079	< 0.0075
FP-4	10/02/2012	2 - 12 in	N	< 0.0080	< 0.022	< 0.36	< 0.44	< 0.16	< 0.037	**0.0092 J**	< 0.016	< 0.022	< 0.013	< 0.022 J	< 0.014	< 0.0072	< 0.0082	< 0.0078
			FD	< 0.0074	< 0.020	< 0.34	< 0.41	< 0.15	< 0.035	< 0.0077	< 0.015	< 0.020	< 0.012	< 0.020 J	< 0.013	< 0.0067	< 0.0077	< 0.0073
FP-5	10/02/2012	0 - 2 in	N	< 0.0074	< 0.020	< 0.33	< 0.41	< 0.15	< 0.035	**0.0085 J**	< 0.015	< 0.020	< 0.012	< 0.020 J	< 0.013	< 0.0066	< 0.0076	< 0.0072
FP-5	10/02/2012	2 - 12 in	N	< 0.0078	< 0.021	< 0.36	< 0.43	< 0.16	< 0.037	**0.010 J**	< 0.016	< 0.021	< 0.012	< 0.021 J	< 0.013	< 0.0071	< 0.0081	< 0.0077

Table 5.5.26-3
Soil Data - VOCs
SWMU 26
Rhodia Silver Bow Plant
[concentrations in mg/kg]

			Chemical Name	Carbon disulfide	Carbon tetrachloride	Chlorobenzene	Chlorodibromomethane	Chloroethane	Chloroform	Chloromethane	Chlorotoluene, o	Chlorotoluene, p	Cumene (isopropyl benzene)	Cymene p- (Toluene isopropyl p-)	Dibromomethane (methylene bromide)
Location ID	Sample Date	Depth	Sample Type												
FP-3	10/02/2012	0 - 2 in	N	< 0.0069	< 0.0096	< 0.011	< 0.014	< 0.016	< 0.0072	< 0.0068	< 0.010	< 0.013	< 0.0051	< 0.0060	< 0.015
FP-3	10/02/2012	2 - 12 in	N	< 0.0084	< 0.012	< 0.014	< 0.017	< 0.020	< 0.0088	< 0.0083	< 0.013	< 0.016	< 0.0062	< 0.0073	< 0.019
FP-4	10/02/2012	0 - 2 in	N	< 0.0087	< 0.013	< 0.014	< 0.018	< 0.021	< 0.0091	< 0.0086	< 0.013	< 0.017	< 0.0065	< 0.0076	< 0.019
FP-4	10/02/2012	2 - 12 in	N	< 0.0092	< 0.013	< 0.015	< 0.019	< 0.022	< 0.0095	**0.012 J**	< 0.014	< 0.018	< 0.0068	< 0.0080	< 0.020
			FD	< 0.0085	< 0.012	< 0.014	< 0.018	< 0.020	< 0.0089	**0.0098 J**	< 0.013	< 0.016	< 0.0063	< 0.0074	< 0.019
FP-5	10/02/2012	0 - 2 in	N	< 0.0085	< 0.012	< 0.014	< 0.018	< 0.020	< 0.0088	< 0.0083	< 0.013	< 0.016	< 0.0063	< 0.0074	< 0.019
FP-5	10/02/2012	2 - 12 in	N	< 0.0090	< 0.013	< 0.015	< 0.019	< 0.021	< 0.0094	< 0.0089	< 0.013	< 0.017	< 0.0067	< 0.0078	< 0.020

Table 5.5.26-3
Soil Data - VOCs
SWMU 26
Rhodia Silver Bow Plant
[concentrations in mg/kg]

Chemical Name				Dichlorodifluoromethane (CFC-12)	Ethyl benzene	Hexachlorobutadiene	Iodomethane	Methyl ethyl ketone	Methyl isobutyl ketone	Methyl tertiary butyl ether (MTBE)	Methylene chloride	Naphthalene	Propylbenzene	Styrene	Tetrachloroethylene	Toluene	Trichloroethylene
Location ID	Sample Date	Depth	Sample Type														
FP-3	10/02/2012	0 - 2 in	N	< 0.013	< 0.0050	< 0.011	< 0.012	< 0.19	< 0.26	< 0.011	**0.081 J**	**0.046 J**	< 0.0054	< 0.0089	< 0.0099	**0.021 J**	< 0.010
FP-3	10/02/2012	2 - 12 in	N	< 0.016	< 0.0061	< 0.014	< 0.015	< 0.24	< 0.32	< 0.014	**0.098 J**	**0.019 J**	< 0.0066	< 0.011	< 0.013	**0.012 J**	< 0.013
FP-4	10/02/2012	0 - 2 in	N	< 0.017	**0.0076 J**	< 0.014	< 0.016	< 0.24	< 0.33	< 0.014	**0.10 J**	**0.17 J**	< 0.0069	< 0.012	< 0.013	**0.030 J**	< 0.013
FP-4	10/02/2012	2 - 12 in	N	< 0.018	**0.0092 J**	< 0.015	< 0.016	< 0.26	< 0.35	< 0.015	**0.10 J**	**0.11 J**	< 0.0072	< 0.012	< 0.014	**0.036 J**	< 0.014
			FD	< 0.016	**0.0098 J**	< 0.014	< 0.015	< 0.24	< 0.32	< 0.014	**0.10 J**	**0.12 J**	< 0.0067	< 0.011	< 0.013	**0.034 J**	< 0.013
FP-5	10/02/2012	0 - 2 in	N	< 0.016	< 0.0061	< 0.014	< 0.015	< 0.24	< 0.32	< 0.014	**0.10 J**	**0.016 J**	< 0.0066	< 0.011	< 0.013	**0.022 J**	< 0.013
FP-5	10/02/2012	2 - 12 in	N	< 0.017	< 0.0065	< 0.015	< 0.016	< 0.25	< 0.34	< 0.015	**0.11 J**	**0.026 J**	< 0.0071	< 0.012	< 0.013	**0.036 J**	< 0.013

Table 5.5.26-3
Soil Data - VOCs
SWMU 26
Rhodia Silver Bow Plant
[concentrations in mg/kg]

Chemical Name				Trichlorofluoromethane	Vinyl acetate	Vinyl chloride	Xylene, m & p	Xylene, o
Location ID	Sample Date	Depth	Sample Type					
FP-3	10/02/2012	0 - 2 in	N	< 0.012	< 0.043	< 0.0075	**0.027 J**	**0.015 J**
FP-3	10/02/2012	2 - 12 in	N	< 0.015	< 0.053	< 0.0091	**0.016 J**	< 0.0090
FP-4	10/02/2012	0 - 2 in	N	< 0.016	< 0.055	< 0.0095	**0.037 J**	**0.018 J**
FP-4	10/02/2012	2 - 12 in	N	< 0.016	< 0.057	< 0.0099	**0.055 J**	**0.032 J**
			FD	< 0.015	< 0.053	< 0.0093	**0.049 J**	**0.036 J**
FP-5	10/02/2012	0 - 2 in	N	< 0.015	< 0.053	< 0.0092	**0.016 J**	< 0.0091
FP-5	10/02/2012	2 - 12 in	N	< 0.016	< 0.056	< 0.0098	**0.030 J**	**0.021 J**

Table 5.5.26-4
Soil Data - SVOCs
SWMU 26
Rhodia Silver Bow Plant
[concentrations in mg/kg]

			Chemical Name	1,2,4-Trichlorobenzene	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	2,4,5-Trichlorophenol	2,4,6-Trichlorophenol	2,4-Dichlorophenol	2,4-Dimethylphenol	2,4-Dinitrophenol	2,4-Dinitrotoluene	2,6-Dinitrotoluene	2-Chloronaphthalene	2-Chlorophenol
Location ID	Sample Date	Depth	Sample Type													
FP-3	10/02/2012	0 - 2 in	N	< 0.0026	< 0.0024	< 0.0023	< 0.0025	< 0.0030	< 0.0030 J	**0.01**	< 0.0063	< 0.029 J	< 0.0025 J	< 0.0029 J	< 0.0032	< 0.0030
FP-3	10/02/2012	2 - 12 in	N	< 0.0026	< 0.0024	< 0.0023	< 0.0025	< 0.0030	< 0.0030 J	< 0.0026	< 0.0063	< 0.029 J	< 0.0025 J	< 0.0029 J	< 0.0032	< 0.0030
FP-4	10/02/2012	0 - 2 in	N	< 0.0026	< 0.0024	< 0.0023	< 0.0025	< 0.0030	< 0.0030 J	**0.012**	< 0.0063	< 0.029 J	< 0.0025 J	< 0.0029 J	< 0.0032	< 0.0030
FP-4	10/02/2012	2 - 12 in	N	< 0.0026	< 0.0024	< 0.0023	< 0.0025	< 0.0030	< 0.0030 J	< 0.0026	< 0.0063	< 0.029 J	< 0.0025 J	< 0.0029 J	< 0.0032	< 0.0030
			FD	< 0.0026	< 0.0024	< 0.0023	< 0.0025	< 0.0030	< 0.0030 J	< 0.0026	< 0.0063	< 0.029 J	< 0.0025 J	< 0.0029 J	< 0.0032	< 0.0030
FP-5	10/02/2012	0 - 2 in	N	< 0.0026	< 0.0024	< 0.0023	< 0.0025	< 0.0030	< 0.0030 J	**0.0055 J**	< 0.0063	< 0.029 J	< 0.0025 J	< 0.0029 J	< 0.0032	< 0.0030
FP-5	10/02/2012	2 - 12 in	N	< 0.0026	< 0.0024	< 0.0023	< 0.0025	< 0.0030	< 0.0030 J	< 0.0026 R	< 0.0063	< 0.029 J	< 0.0025 J	< 0.0029 J	< 0.0032	< 0.0030 R

Table 5.5.26-4
Soil Data - SVOCs
SWMU 26
Rhodia Silver Bow Plant
[concentrations in mg/kg]

Chemical Name				2-Methyl-4,6-dinitrophenol	2-Methylnaphthalene	2-Nitroaniline	2-Nitrophenol	3,3`-Dichlorobenzidine	3-Nitroaniline	4-Bromophenyl phenyl ether	4-Chloro-3-methylphenol	4-Chloroaniline	4-Chlorophenyl phenyl ether	4-Nitroaniline	4-Nitrophenol	Acenaphthene	Acenaphthylene	Anthracene
Location ID	Sample Date	Depth	Sample Type															
FP-3	10/02/2012	0 - 2 in	N	< 0.039	**0.032**	< 0.0033	< 0.0040	< 0.0041	< 0.0044	< 0.0031	< 0.0029	< 0.0026	< 0.0032	< 0.0038	< 0.0077	**0.0045 J**	**0.019 J**	**0.035 J**
FP-3	10/02/2012	2 - 12 in	N	< 0.039	**0.058**	< 0.0033	< 0.0040	< 0.0041	< 0.0044	< 0.0031	< 0.0029	< 0.0026	< 0.0032	< 0.0038	< 0.0077	**0.01**	**0.033 J**	**0.074 J**
FP-4	10/02/2012	0 - 2 in	N	< 0.039	**0.09**	< 0.0033	< 0.0040	< 0.0041	< 0.0044	< 0.0031	< 0.0029	< 0.0026	< 0.0032	< 0.0038	< 0.0077	**0.018**	**0.049 J**	**0.11 J**
FP-4	10/02/2012	2 - 12 in	N	< 0.039	**0.093**	< 0.0033	< 0.0040	< 0.0041	< 0.0044	< 0.0031	< 0.0029	< 0.0026	< 0.0032	< 0.0038	< 0.0077	**0.023**	**0.069 J**	**0.14 J**
			FD	< 0.039	**0.072**	< 0.0033	< 0.0040	< 0.0041	< 0.0044	< 0.0031	< 0.0029	< 0.0026	< 0.0032	< 0.0038	< 0.0077	**0.018**	**0.043 J**	**0.09 J**
FP-5	10/02/2012	0 - 2 in	N	< 0.039	**0.015**	< 0.0033	< 0.0040	< 0.0041	< 0.0044	< 0.0031	< 0.0029	< 0.0026	< 0.0032	< 0.0038	< 0.0077	< 0.0032	**0.0051 J**	**0.0094 J**
FP-5	10/02/2012	2 - 12 in	N	< 0.039	**0.021**	< 0.0033	< 0.0040	< 0.0041	< 0.0044	< 0.0031	< 0.0029 R	< 0.0026	< 0.0032	< 0.0038	< 0.0077	< 0.0032	**0.0056 J**	**0.01 J**

Table 5.5.26-4
Soil Data - SVOCs
SWMU 26
Rhodia Silver Bow Plant
[concentrations in mg/kg]

			Chemical Name	Azobenzene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Benzoic acid	Benzyl alcohol	Bis(2-chloroethoxy)methane	Bis(2-chloroethyl)ether	Bis(2-chloroisopropyl)ether	Bis(2-ethylhexyl)phthalate
Location ID	Sample Date	Depth	Sample Type												
FP-3	10/02/2012	0 - 2 in	N	< 0.0035 J	**0.11**	**0.14**	**0.21**	**0.14**	**0.068**	< 0.096 R	< 0.0049	< 0.0028	< 0.0031	< 0.0028	< 0.0089
FP-3	10/02/2012	2 - 12 in	N	< 0.0035 J	**0.2**	**0.24**	**0.39**	**0.24**	**0.12**	< 0.096 R	< 0.0049	< 0.0028	< 0.0031	< 0.0028	**0.0097 J**
FP-4	10/02/2012	0 - 2 in	N	< 0.0035 J	**0.32**	**0.4**	**0.5**	**0.29**	**0.16**	< 0.096 R	< 0.0049	< 0.0028	< 0.0031	< 0.0028	**0.01 J**
FP-4	10/02/2012	2 - 12 in	N	< 0.0035 J	**0.47**	**0.54**	**0.73**	**0.39**	**0.24**	< 0.096 R	< 0.0049	< 0.0028	< 0.0031	< 0.0028	**0.014 J**
			FD	< 0.0035 J	**0.32**	**0.4**	**0.59**	**0.31**	**0.19**	< 0.096 R	< 0.0049	< 0.0028	< 0.0031	< 0.0028	**0.016 J**
FP-5	10/02/2012	0 - 2 in	N	< 0.0035 J	**0.032**	**0.039**	**0.056**	**0.035**	**0.019**	< 0.096 R	< 0.0049	< 0.0028	< 0.0031	< 0.0028	< 0.0089
FP-5	10/02/2012	2 - 12 in	N	< 0.0035 J	**0.041**	**0.05**	**0.081**	**0.045**	**0.027**	< 0.096 R	< 0.0049	< 0.0028	< 0.0031	< 0.0028	< 0.0089

Table 5.5.26-4
Soil Data - SVOCs
SWMU 26
Rhodia Silver Bow Plant
[concentrations in mg/kg]

			Chemical Name	Butyl benzyl phthalate	Carbazole	Chrysene	Dibenz(a,h) anthracene	Dibenzofuran	Diethyl phthalate	Dimethyl phthalate	Di-n-butyl phthalate	Di-n-octyl phthalate	Fluoranthene	Fluorene	Hexachlorobenzene	Hexachlorobutadiene	Hexachlorocyclopentadiene	Hexachloroethane
Location ID	Sample Date	Depth	Sample Type															
FP-3	10/02/2012	0 - 2 in	N	< 0.0037	**0.018**	**0.14**	**0.042**	**0.021**	< 0.0037	< 0.0040	< 0.0048	< 0.0032 J	**0.17**	**0.0060 J**	< 0.0033	< 0.0030	< 0.0040	< 0.0025
FP-3	10/02/2012	2 - 12 in	N	< 0.0037	**0.033**	**0.27**	**0.077**	**0.038**	< 0.0037	< 0.0040	< 0.0048	< 0.0032 J	**0.3**	**0.018**	< 0.0033	< 0.0030	< 0.0040	< 0.0025
FP-4	10/02/2012	0 - 2 in	N	< 0.0037	**0.052**	**0.39**	**0.093**	**0.064**	< 0.0037	**0.0052 J**	< 0.0048	< 0.0032 J	**0.5**	**0.023**	< 0.0033	< 0.0030	< 0.0040	< 0.0025
FP-4	10/02/2012	2 - 12 in	N	< 0.0037	**0.068**	**0.52**	**0.14**	**0.065**	< 0.0037	**0.0051 J**	< 0.0048	< 0.0032 J	**0.67**	**0.035**	< 0.0033	< 0.0030	< 0.0040	< 0.0025
			FD	< 0.0037	**0.044**	**0.39**	**0.11**	**0.046**	< 0.0037	< 0.0040	< 0.0048	< 0.0032 J	**0.46**	**0.024**	< 0.0033	< 0.0030	< 0.0040	< 0.0025
FP-5	10/02/2012	0 - 2 in	N	< 0.0037	**0.0054 J**	**0.043**	**0.011**	**0.0061 J**	< 0.0037	< 0.0040	< 0.0048	< 0.0032 J	**0.059**	< 0.0033	< 0.0033	< 0.0030	< 0.0040	< 0.0025
FP-5	10/02/2012	2 - 12 in	N	< 0.0037	**0.0058 J**	**0.056**	**0.014**	**0.0068 J**	< 0.0037	< 0.0040	< 0.0048	< 0.0032 J	**0.06**	**0.0035 J**	< 0.0033	< 0.0030	< 0.0040	< 0.0025

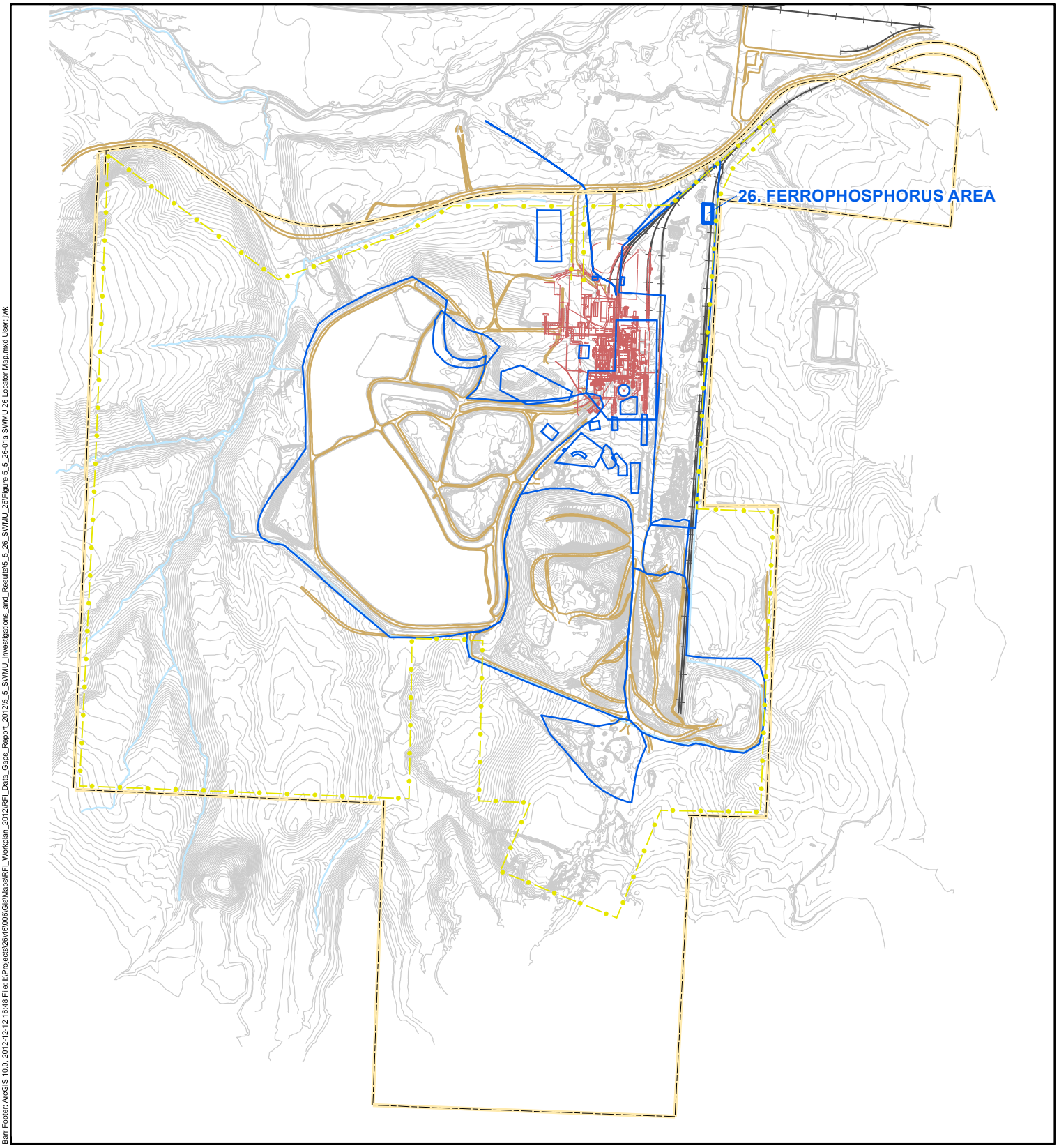
Table 5.5.26-4
Soil Data - SVOCs
SWMU 26
Rhodia Silver Bow Plant
[concentrations in mg/kg]

Chemical Name				Indeno(1,2,3-cd)pyrene	Isophorone	Naphthalene	Nitrobenzene	N-Nitrosodimethylamine	N-Nitrosodi-n-propylamine	N-Nitrosodiphenylamine	o-cresol	p-cresol	Pentachlorophenol	Phenanthrene	Phenol	Pyrene	Pyridine
Location ID	Sample Date	Depth	Sample Type														
FP-3	10/02/2012	0 - 2 in	N	**0.15**	< 0.0028	**0.047**	< 0.0034	< 0.02	< 0.0033	< 0.0032	< 0.0041	< 0.0045	< 0.0053	**0.15 J**	**0.0040 J**	**0.15**	< 0.05 R
FP-3	10/02/2012	2 - 12 in	N	**0.25**	< 0.0028	**0.091**	< 0.0034	< 0.02	< 0.0033	< 0.0032	< 0.0041	**0.0053 J**	< 0.0053	**0.33 J**	**0.0060 J**	**0.25**	< 0.05 R
FP-4	10/02/2012	0 - 2 in	N	**0.29**	< 0.0028	**0.17**	< 0.0034	< 0.02	< 0.0033	< 0.0032	**0.0053 J**	**0.01**	< 0.0053	**0.56 J**	**0.011 J**	**0.41**	< 0.05 R
FP-4	10/02/2012	2 - 12 in	N	**0.44**	< 0.0028	**0.17**	< 0.0034	< 0.02	< 0.0033	< 0.0032	< 0.0041	**0.0087 J**	< 0.0053	**0.59 J**	**0.0089 J**	**0.54**	< 0.05 R
			FD	**0.35**	< 0.0028	**0.14**	< 0.0034	< 0.02	< 0.0033	< 0.0032	< 0.0041	**0.0065 J**	< 0.0053	**0.39 J**	**0.0088 J**	**0.38**	< 0.05 R
FP-5	10/02/2012	0 - 2 in	N	**0.037**	< 0.0028	**0.015**	< 0.0034	< 0.02	< 0.0033	< 0.0032	< 0.0041	< 0.0045	< 0.0053	**0.046 J**	**0.0032 J**	**0.052**	< 0.05 R
FP-5	10/02/2012	2 - 12 in	N	**0.048**	< 0.0028	**0.018**	< 0.0034	< 0.02	< 0.0033	< 0.0032	< 0.0041	< 0.0045	< 0.0053	**0.048 J**	< 0.0031 J	**0.056**	< 0.05 R

Table 5.5.26-5
Soil Data - Radionuclides
SWMU 26
Rhodia Silver Bow Plant
[concentrations in pCi/g]

			Chemical Name	Lead 210	Polonium-210	Radium 226	Thorium-228	Thorium 230	Thorium-232	Uranium 234	Uranium 235	Uranium 238
Background Mean, Exceedances **Bold**						**3.6**		**0.96**		**0.73**		**0.78**
Background Maximum, Exceedances Underline						12		3.4		2.8		2.7
Background 95% UCL, Exceedances *Italic*						*5.0*		*1.7*		*1.6*		*1.6*
Location ID	**Sample Date**	**Depth**	**Sample Type**									
Ferrosphorus-1	10/31/1979		N	0.79 +/- 0.88	-0.9 +/- 2.5	0.35 +/- 0.11	0.08 +/- 0.16	0.56 +/- 0.44	0.08 +/- 0.16	***7.6 +/- 2.1***	--	***11 +/- 3***
Ferrosphorus-2	10/31/1979		N	0.67 +/- 1.7	0.6 +/- 2.9	0.39 +/- 0.12	0.07 +/- 0.15	0.45 +/- 0.38	0.07 +/- 0.15	***9.6 +/- 3.1***	--	***10 +/- 3***
FP-3	10/02/2012	0 - 2 in	N	26 +/- 3.4	--	***15 +/- 1.3***	--	***16 +/- 1.6***	--	***19 +/- 1.5***	0.83 +/- 0.39	***21.3 +/- 1.6***
FP-3	10/02/2012	2 - 12 in	N	31 +/- 3.5	--	***15 +/- 1.2***	--	***16 +/- 1.6***	--	***20 +/- 1.6***	0.79 +/- 0.33	***19.2 +/- 1.6***
FP-4	10/02/2012	0 - 2 in	N	47 +/- 4.2	--	***22 +/- 1.6***	--	***22 +/- 1.9***	--	***25 +/- 1.9***	1.1 +/- 0.42	***25.7 +/- 1.9***
FP-4	10/02/2012	2 - 12 in	N	36 +/- 4	--	***18 +/- 1.3***	--	***18 +/- 1.6***	--	***17 +/- 1.4***	0.42 +/- 0.36	***17.9 +/- 1.4***
			FD	36 +/- 3.8	--	***16 +/- 1.2***	--	***18 +/- 1.7***	--	***18 +/- 1.5***	0.34 +/- 0.31	***19.5 +/- 1.6***
FP-5	10/02/2012	0 - 2 in	N	29 +/- 3.7	--	***25 +/- 1.7***	--	***26 +/- 2.2***	--	***23 +/- 1.6***	0.87 +/- 0.38	***24.5 +/- 1.7***
FP-5	10/02/2012	2 - 12 in	N	36 +/- 3.9	--	***25 +/- 1.7***	--	***23 +/- 1.9***	--	***23 +/- 1.8***	1 +/- 0.41	***23.3 +/- 1.8***

Figures



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SWMU 26
Other SWMUs
Elevation Contour
Drainage
Railroad
Road
Former Plant Structures
Property Boundary
Fence Line

N

Feet
1,000 0 1,000

Figure 5.5.26-1a

SWMU 26 LOCATION
Rhodia Silver Bow Plant
Montana

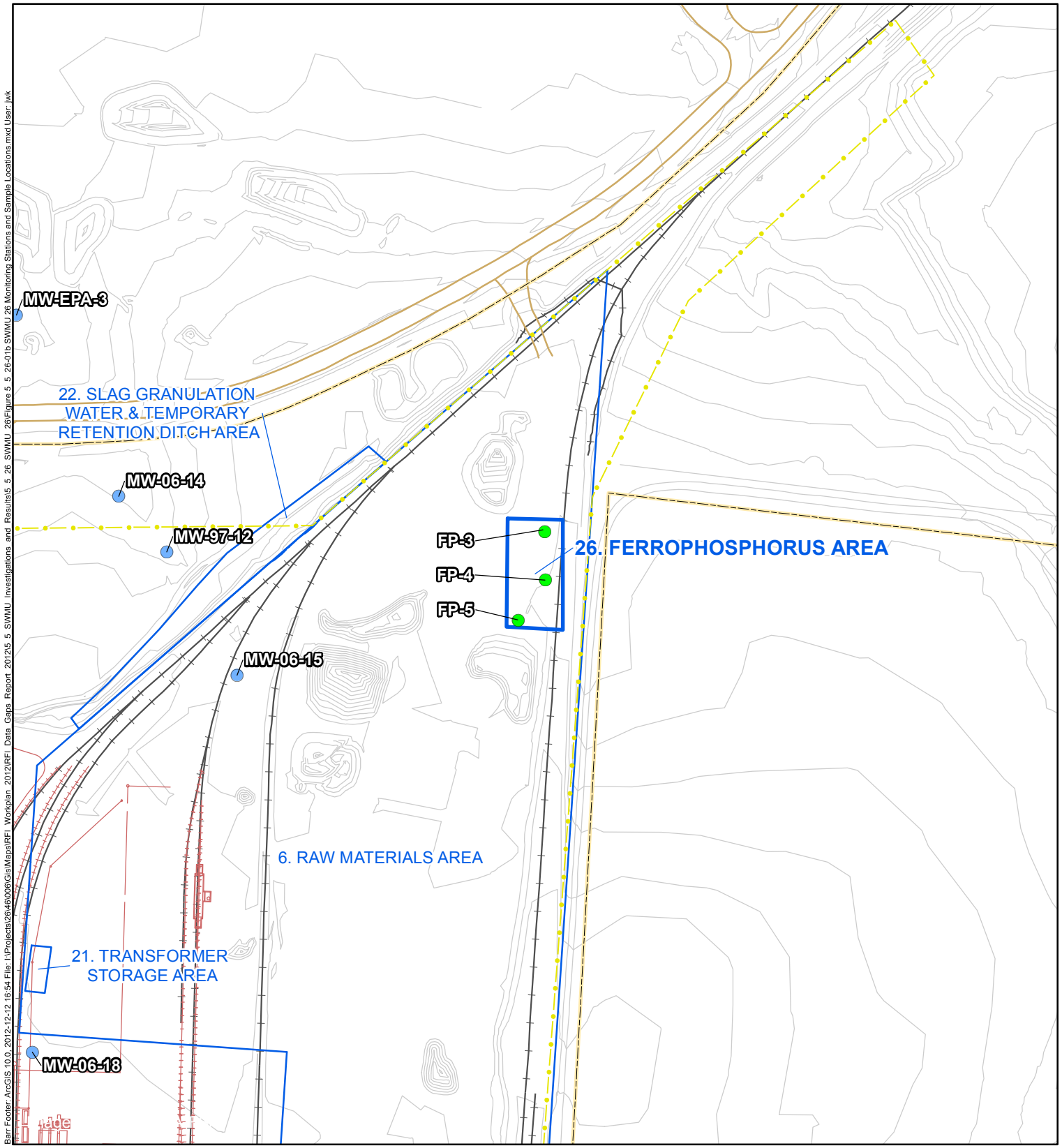
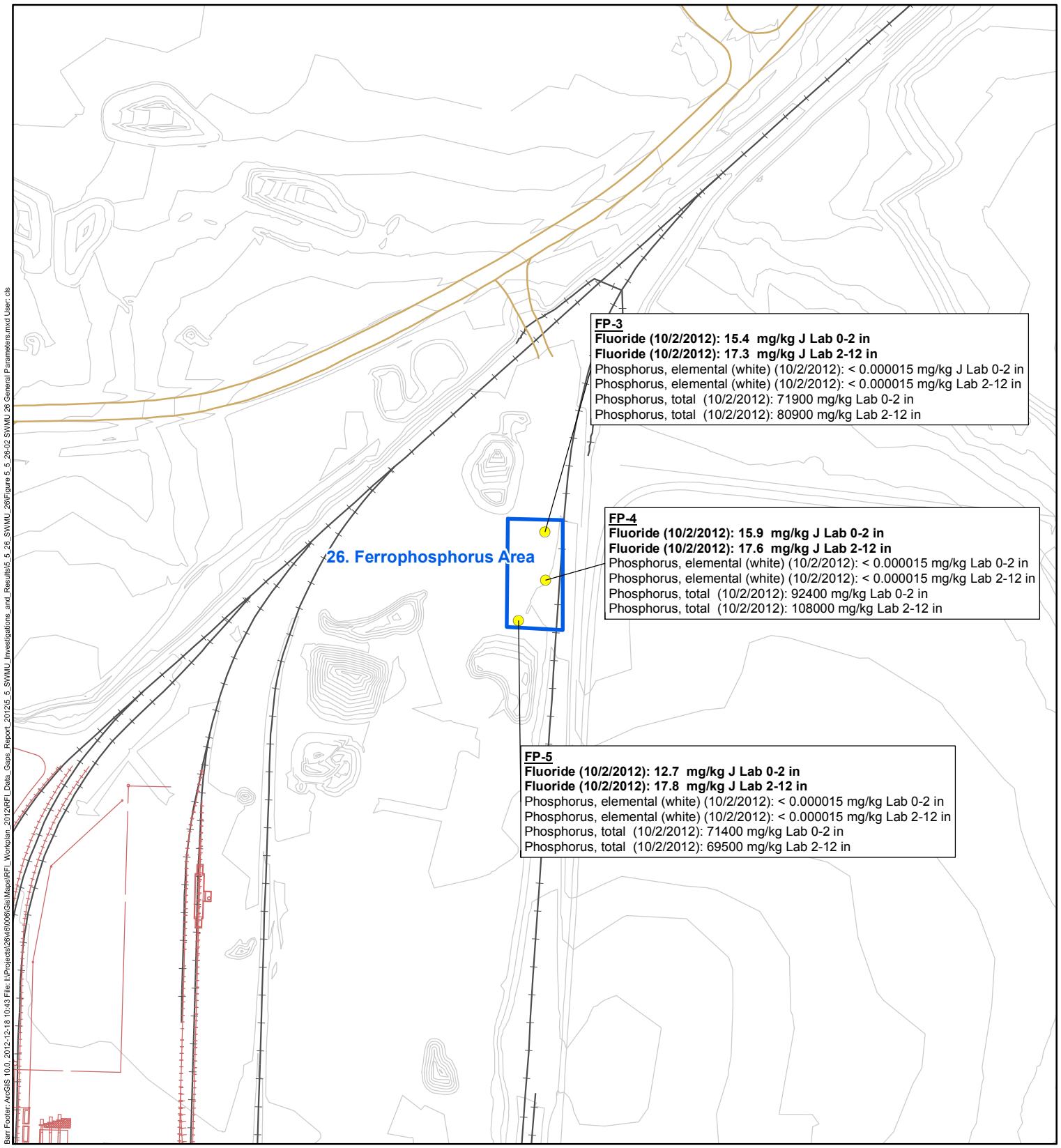


Figure 5.5.26-1b

SWMU 26
MONITORING STATIONS
AND SAMPLE LOCATIONS
Rhodia Silver Bow Plant
Montana



Sample Location

SWMU 26

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.

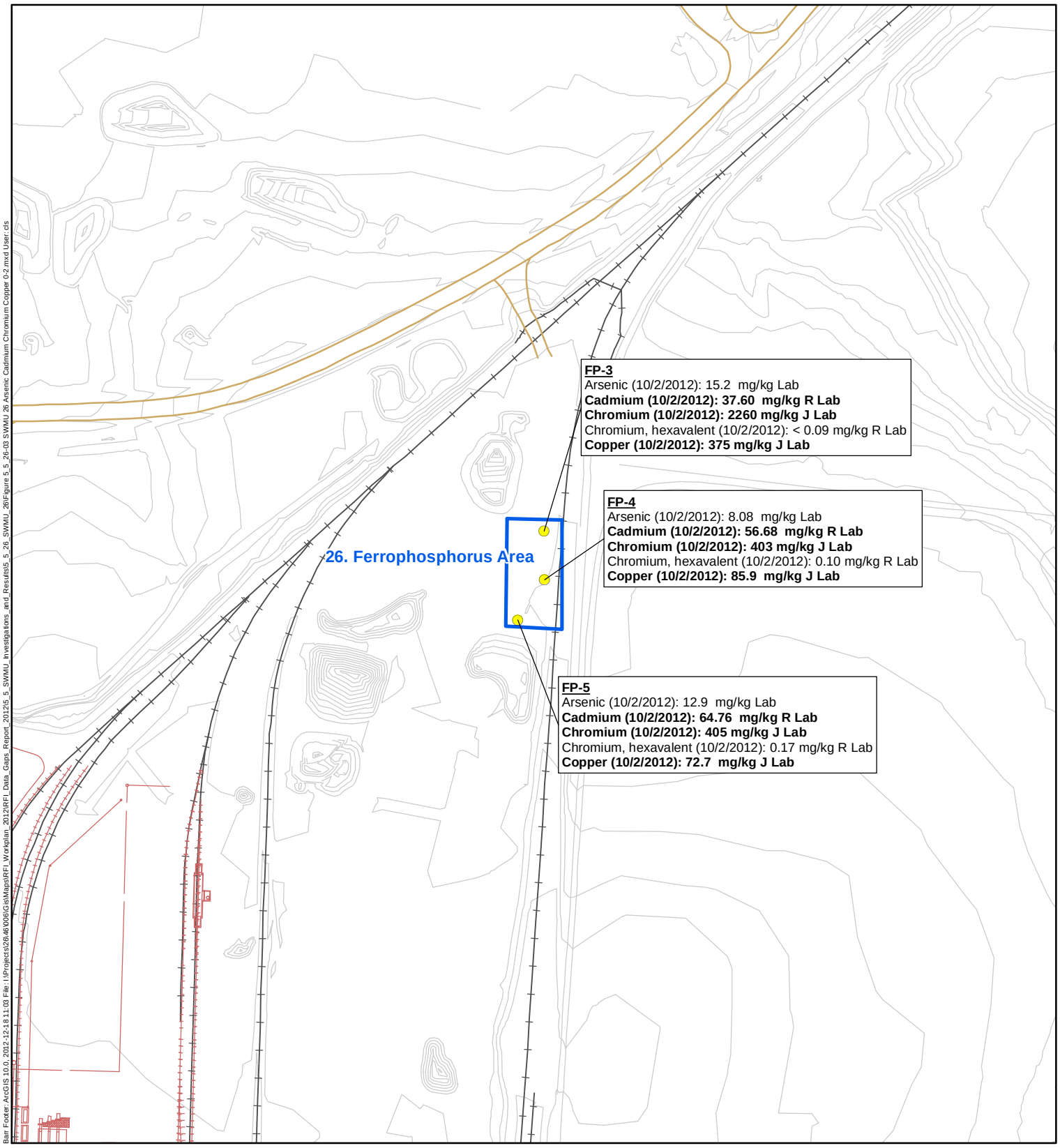
N

Feet

200 0 200

Figure 5.5.26-2

SWMU 26
GENERAL PARAMETERS
Rhodia Silver Bow Plant
Montana



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Sample Location

SWMU 26

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.

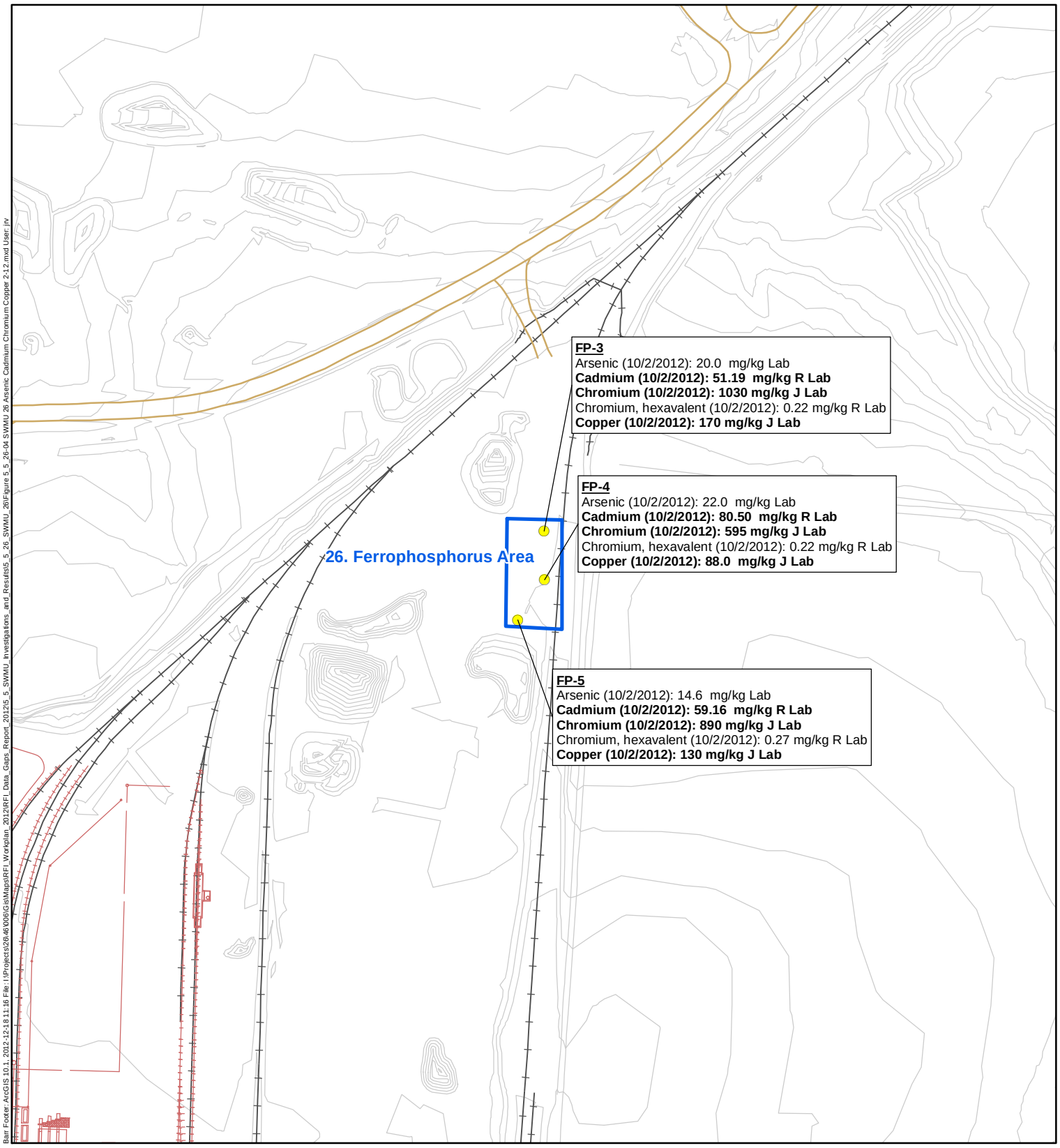
N

Feet

200 0 200

Figure 5.5.26-3

SWMU 26
ARSENIC, CADMIUM, CHROMIUM, AND COPPER, 0-2 INCHES
Rhodia Silver Bow Plant
Montana



Sample Location

SWMU 26

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.

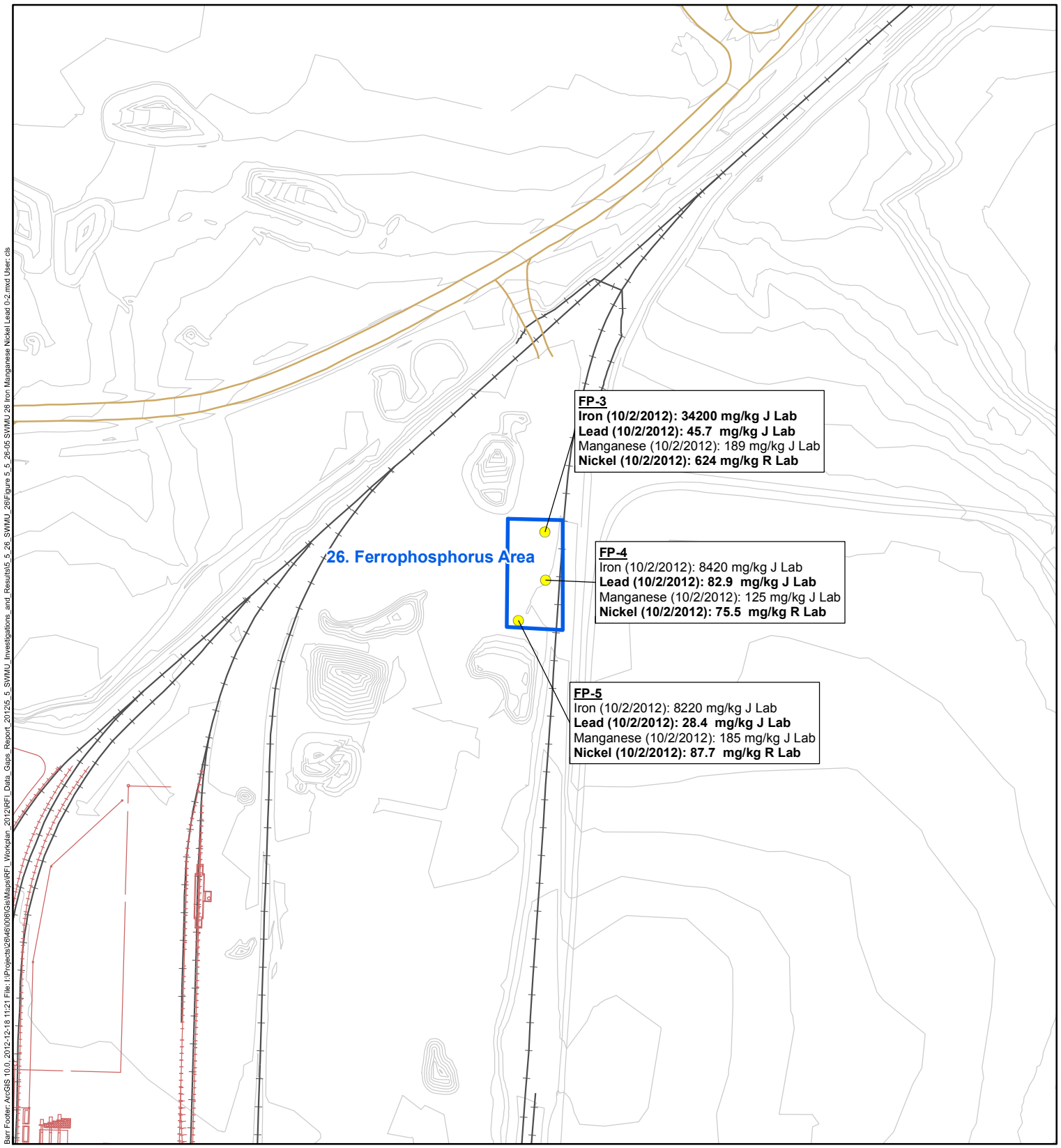
N

Feet

200 0 200

Figure 5.5.26-4

SWMU 26
ARSENIC, CADMIUM, CHROMIUM, AND COPPER, 2-12 INCHES
Rhodia Silver Bow Plant
Montana



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Sample Location

SWMU 26

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.

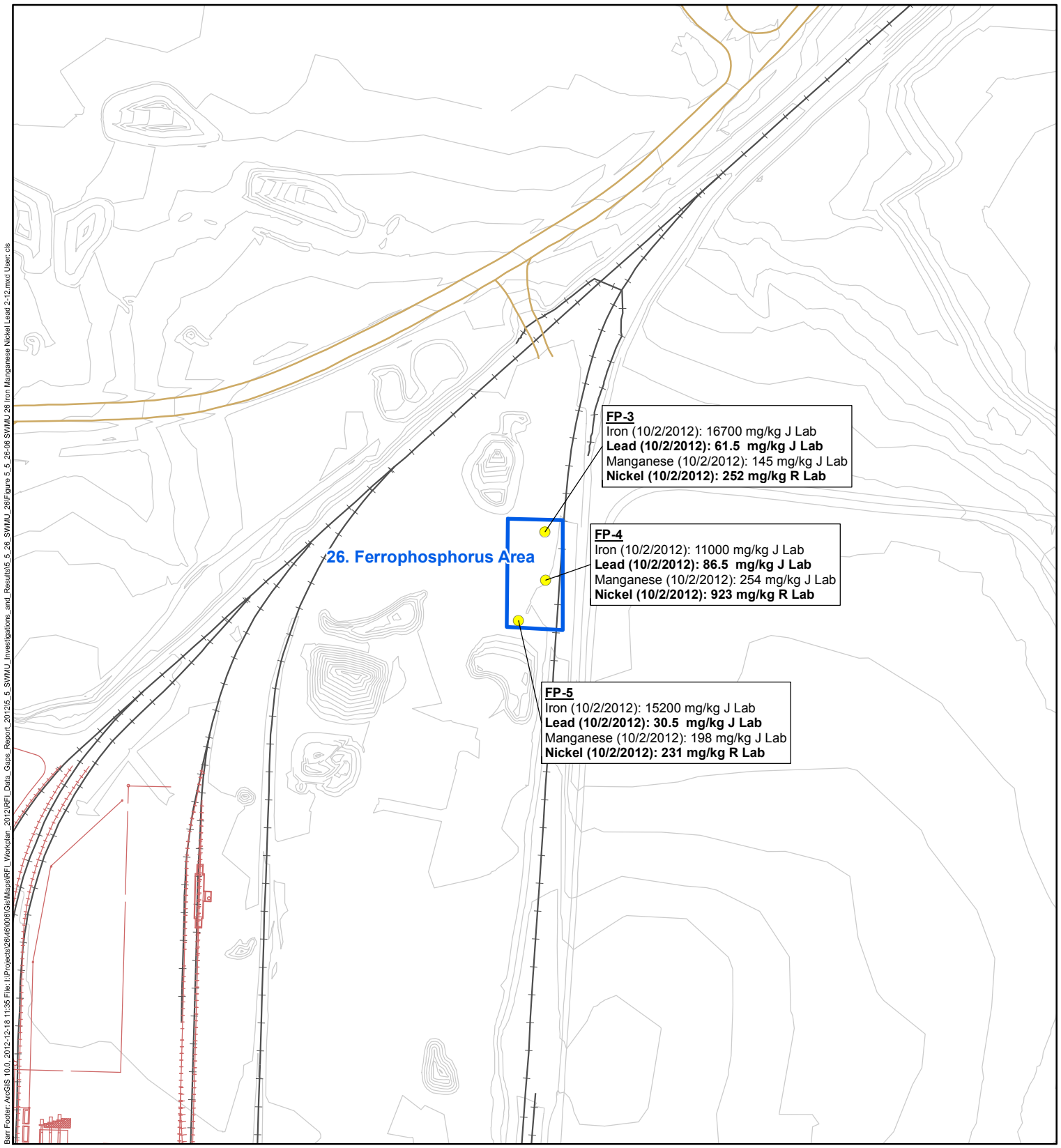
N

Feet

200 0 200

Figure 5.5.26-5

SWMU 26
IRON, MANGANESE, NICKEL, AND LEAD, 0-2 INCHES
Rhodia Silver Bow Plant
Montana



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Sample Location
SWMU 26
Elevation Contour
Drainage
Railroad
Road
Former Plant Structures

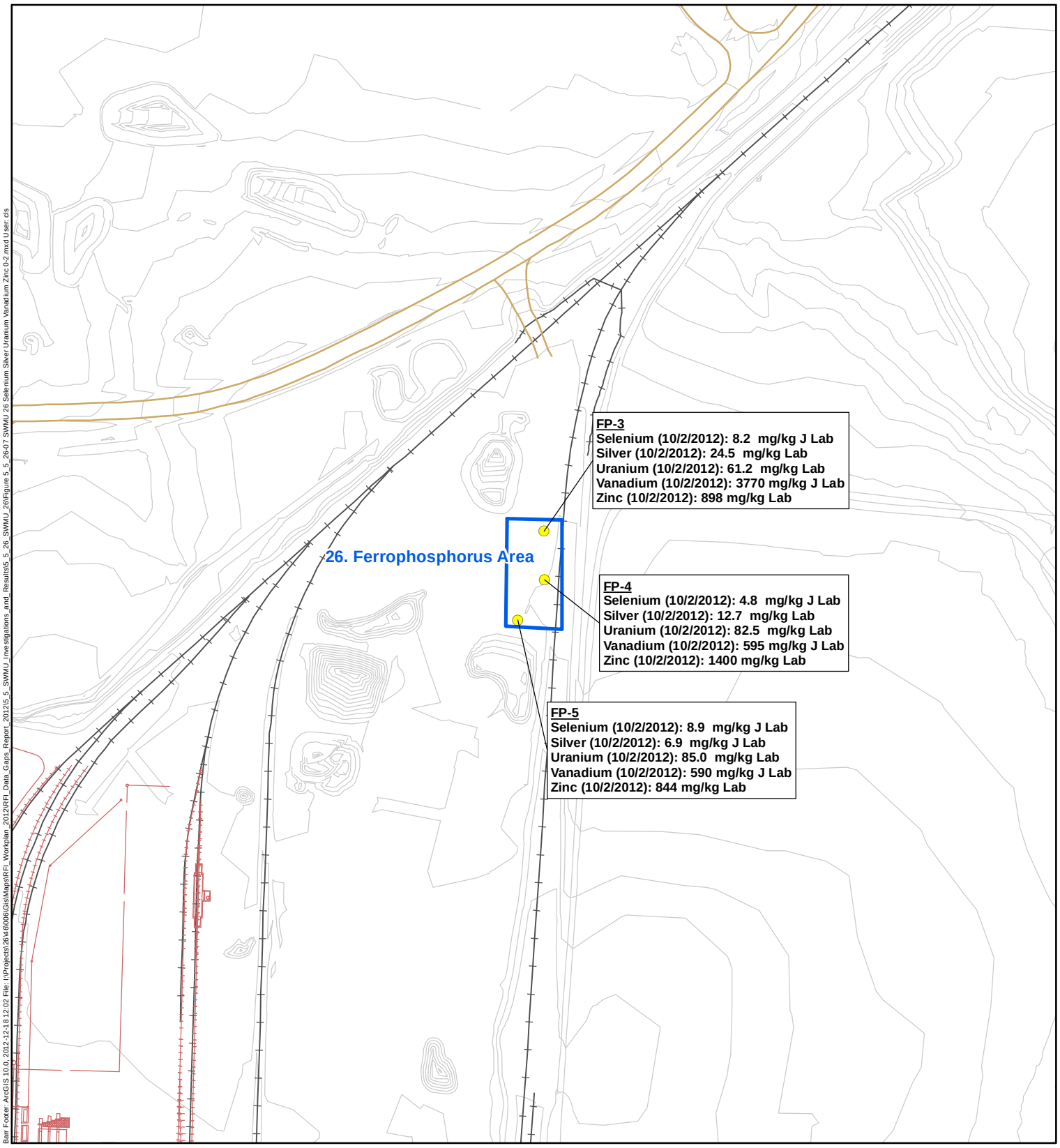
Bold font indicates that sample concentration is greater than the 95% UCL of mean Reference Area Concentration.

N

Feet
200 0 200

Figure 5.5.26-6

SWMU 26
IRON, MANGANESE, NICKEL, AND LEAD, 2-12 INCHES
Rhodia Silver Bow Plant
Montana



Sample Location

SWMU 26

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.

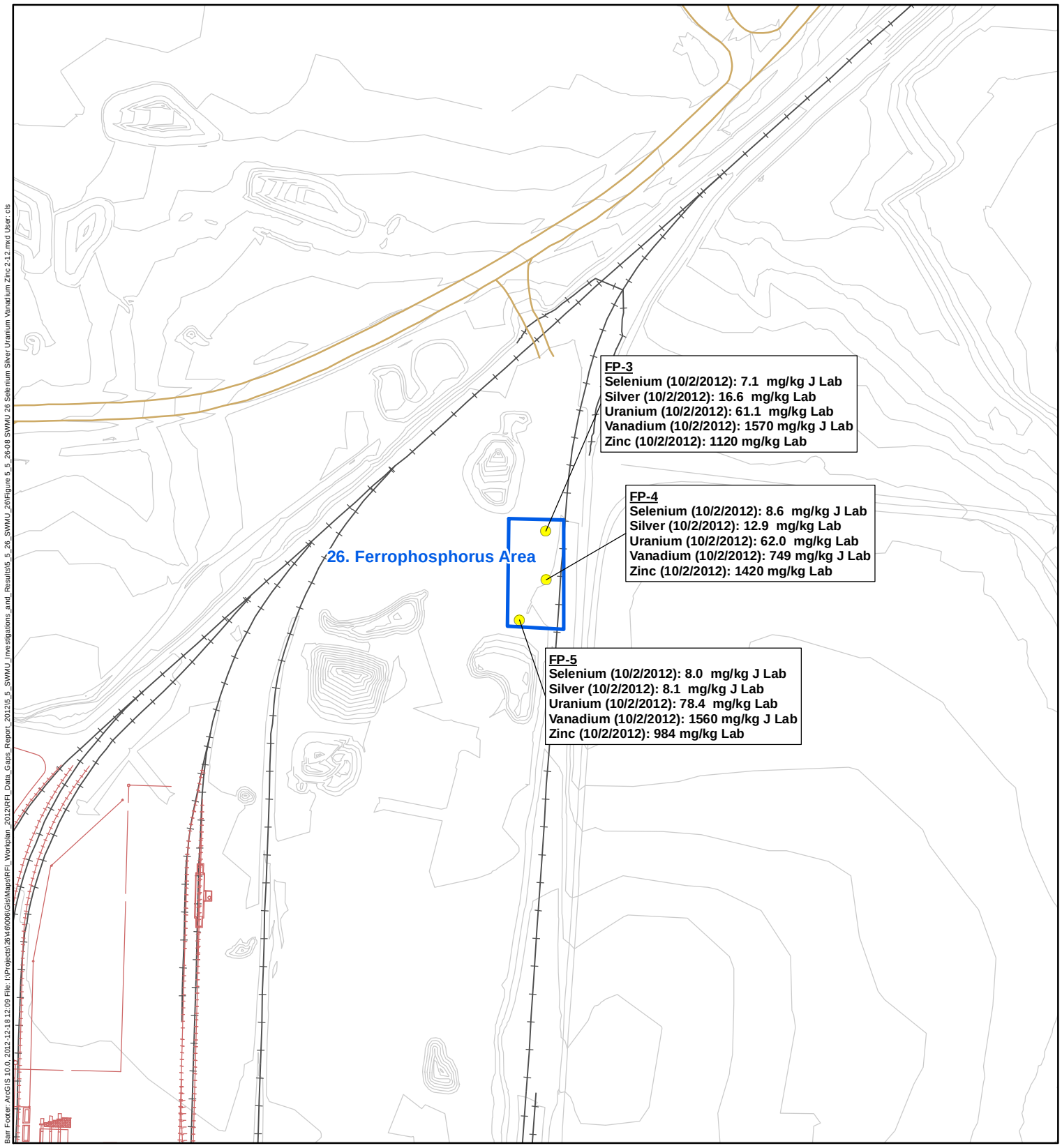
N

Feet

200 0 200

Figure 5.5.26-7

SWMU 26
SELENIUM, SILVER, URANIUM, VANADIUM, AND ZINC, 0-2 INCHES
Rhodia Silver Bow Plant
Montana



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Sample Location

SWMU 26

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.

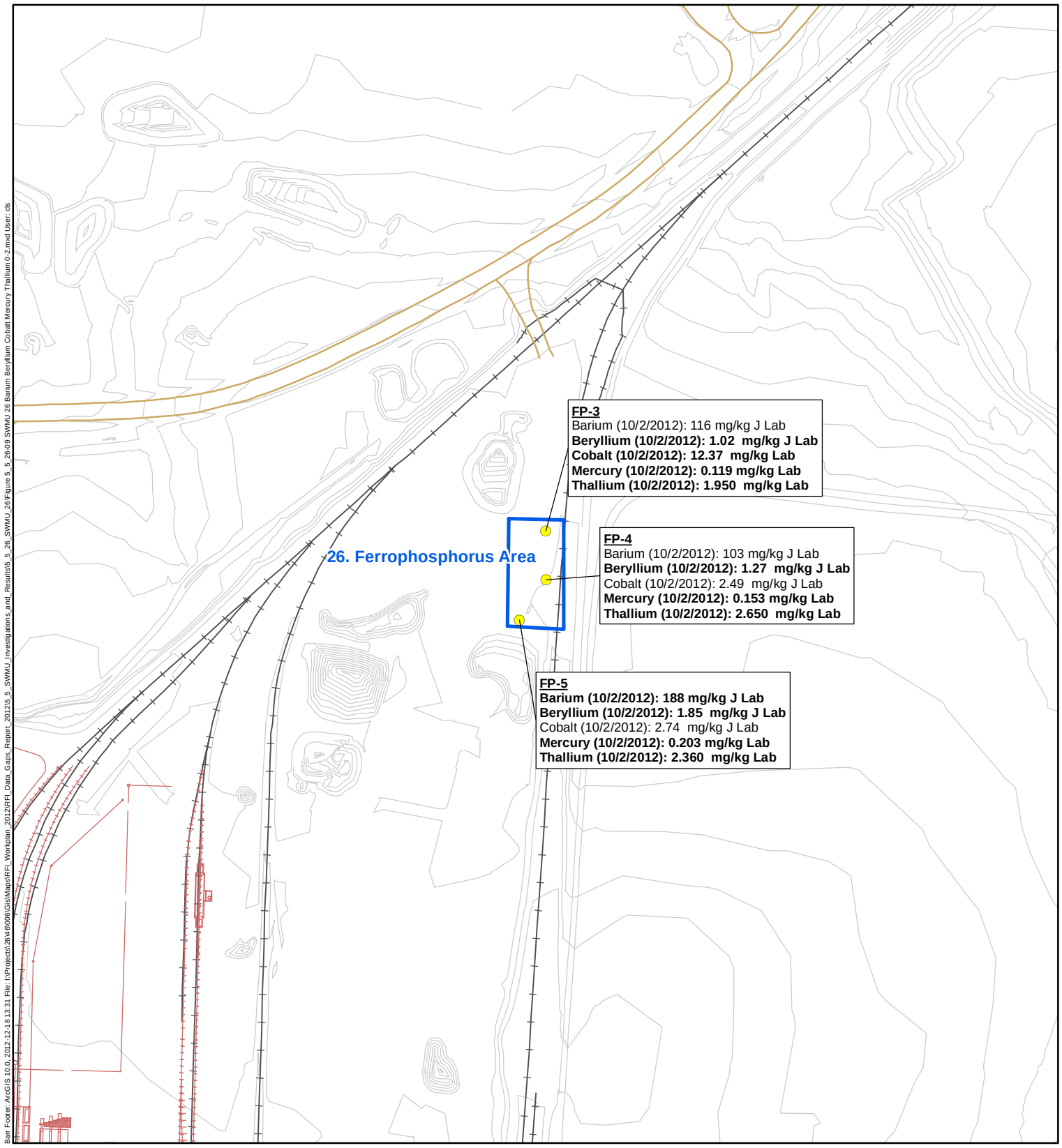
N

Feet

200 0 200

Figure 5.5.26-8

SWMU 26
SELENIUM, SILVER, URANIUM, VANADIUM, AND ZINC, 2-12 INCHES
Rhodia Silver Bow Plant
Montana



Sample Location

SWMU 26

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.

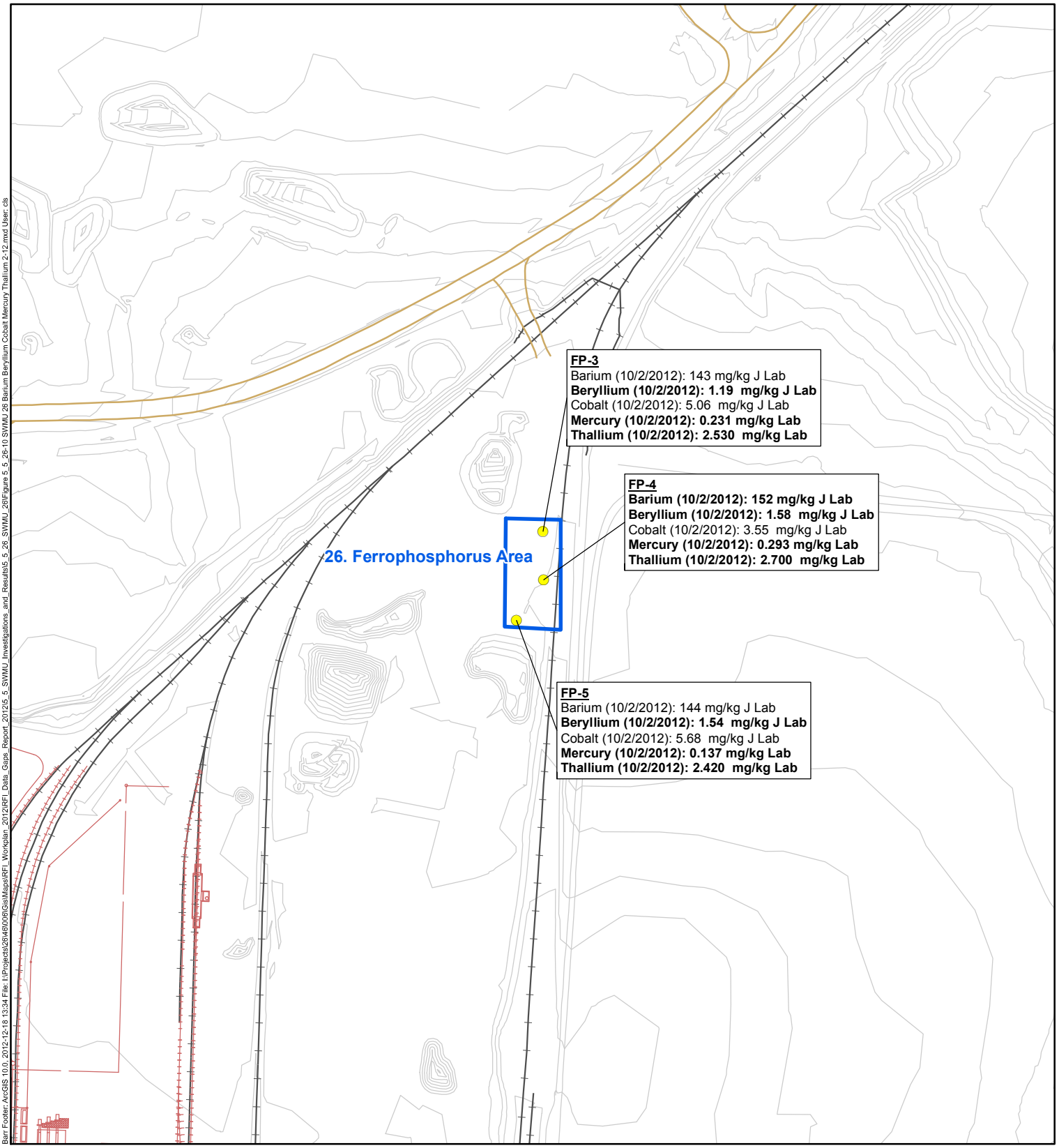
N

Feet

200 0 200

Figure 5.5.26-9

SWMU 26
BARIUM, BERYLLIUM, COBALT, MERCURY, AND THALLIUM, 0-2 INCHES
Rhodia Silver Bow Plant
Montana



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Sample Location

SWMU 26

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.

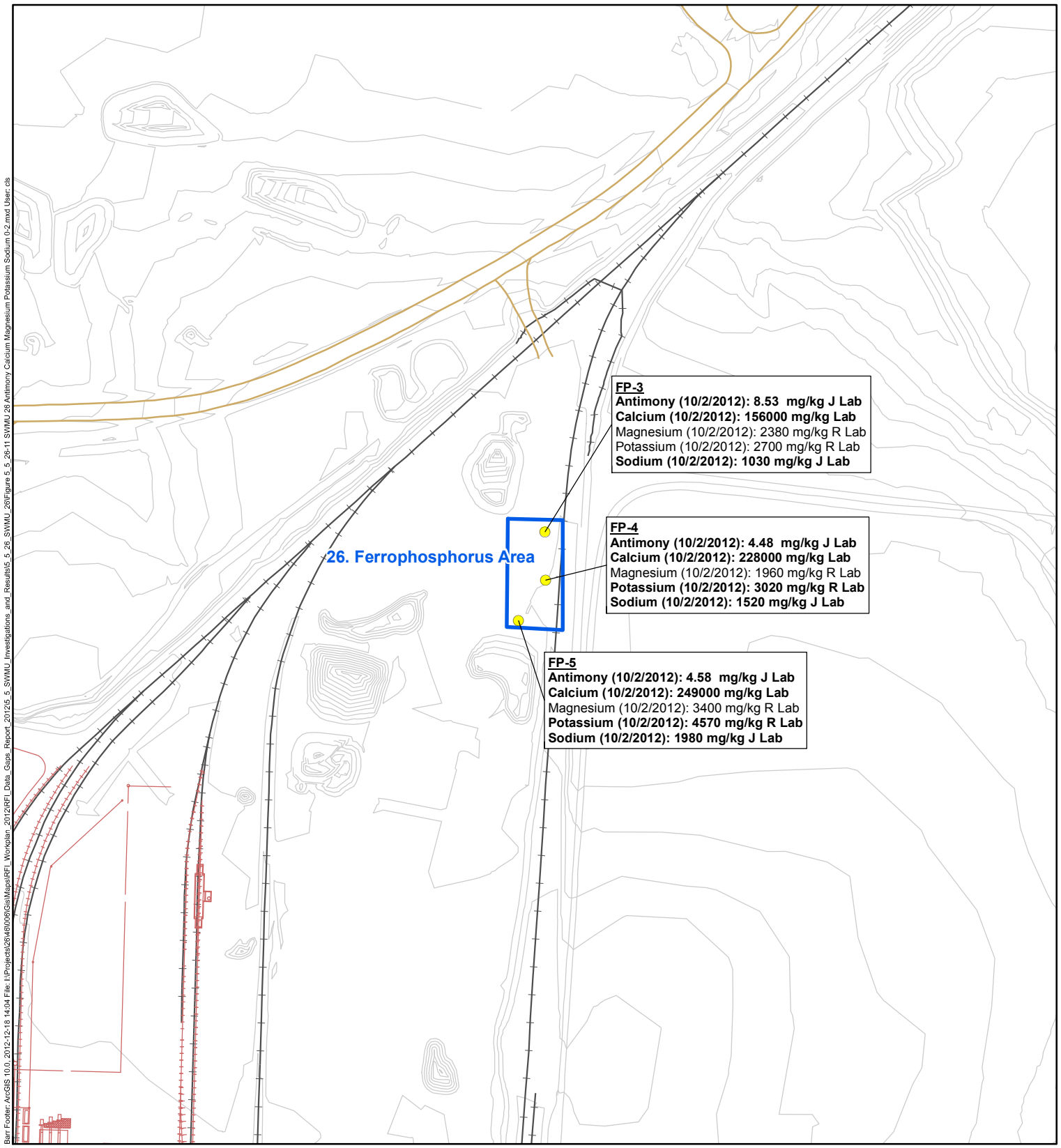
N

Feet

200 0 200

Figure 5.5.26-10

SWMU 26
BARIUM, BERYLLIUM, COBALT, MERCURY, AND THALLIUM, 2-12 INCHES
Rhodia Silver Bow Plant
Montana



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Sample Location

SWMU 26

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.

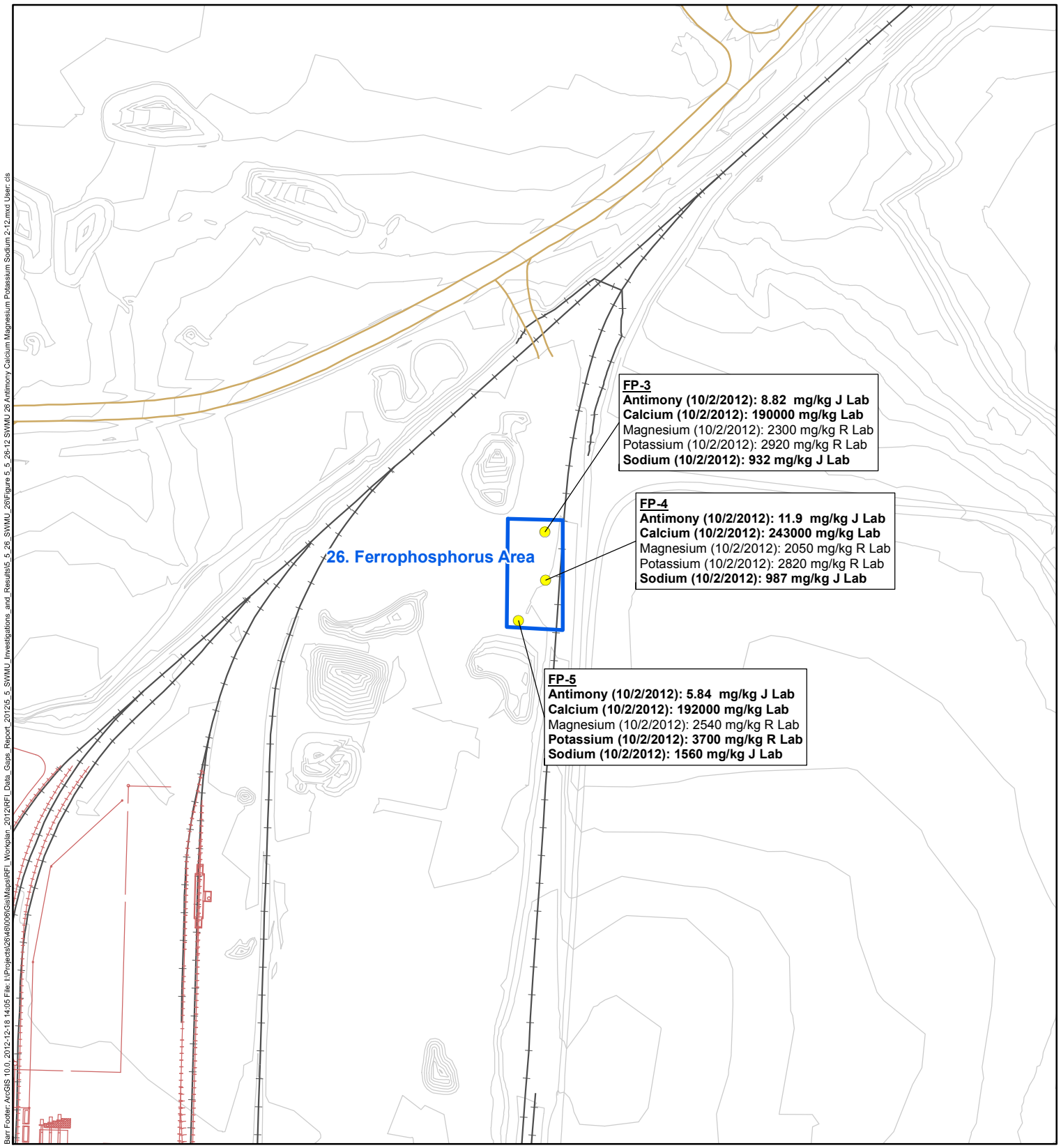
N

Feet

200 0 200

Figure 5.5.26-11

SWMU 26
ANTIMONY, CALCIUM, MAGNESIUM, POTASSIUM, AND SODIUM, 0-2 INCHES
Rhodia Silver Bow Plant
Montana



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Sample Location

SWMU 26

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.

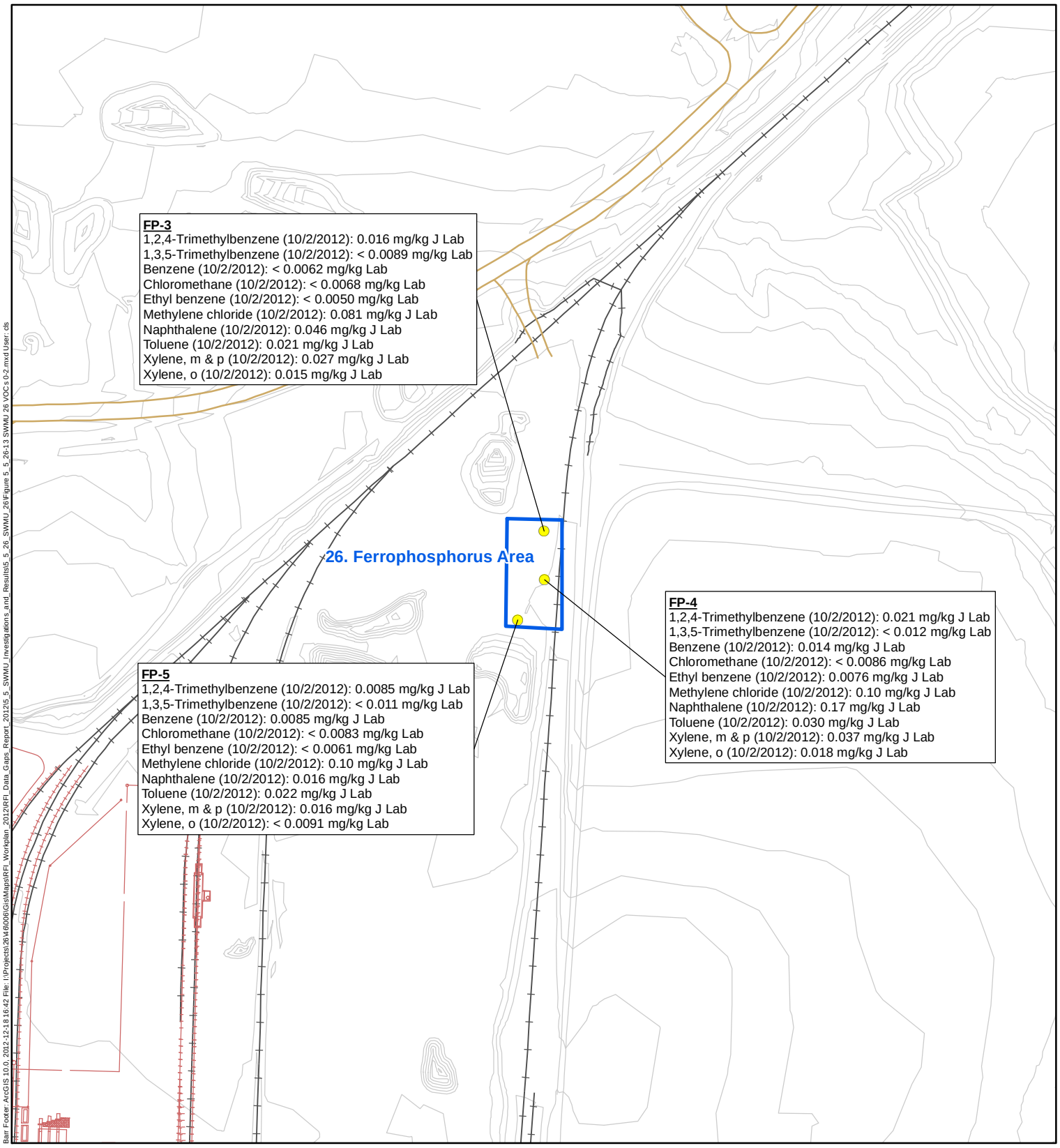
N

Feet

200 0 200

Figure 5.5.26-12

SWMU 26
ANTIMONY, CALCIUM, MAGNESIUM, POTASSIUM, AND SODIUM, 2-12 INCHES
Rhodia Silver Bow Plant
Montana



Sample Location
SWMU 26
Elevation Contour
Drainage
Railroad
Road
Former Plant Structures

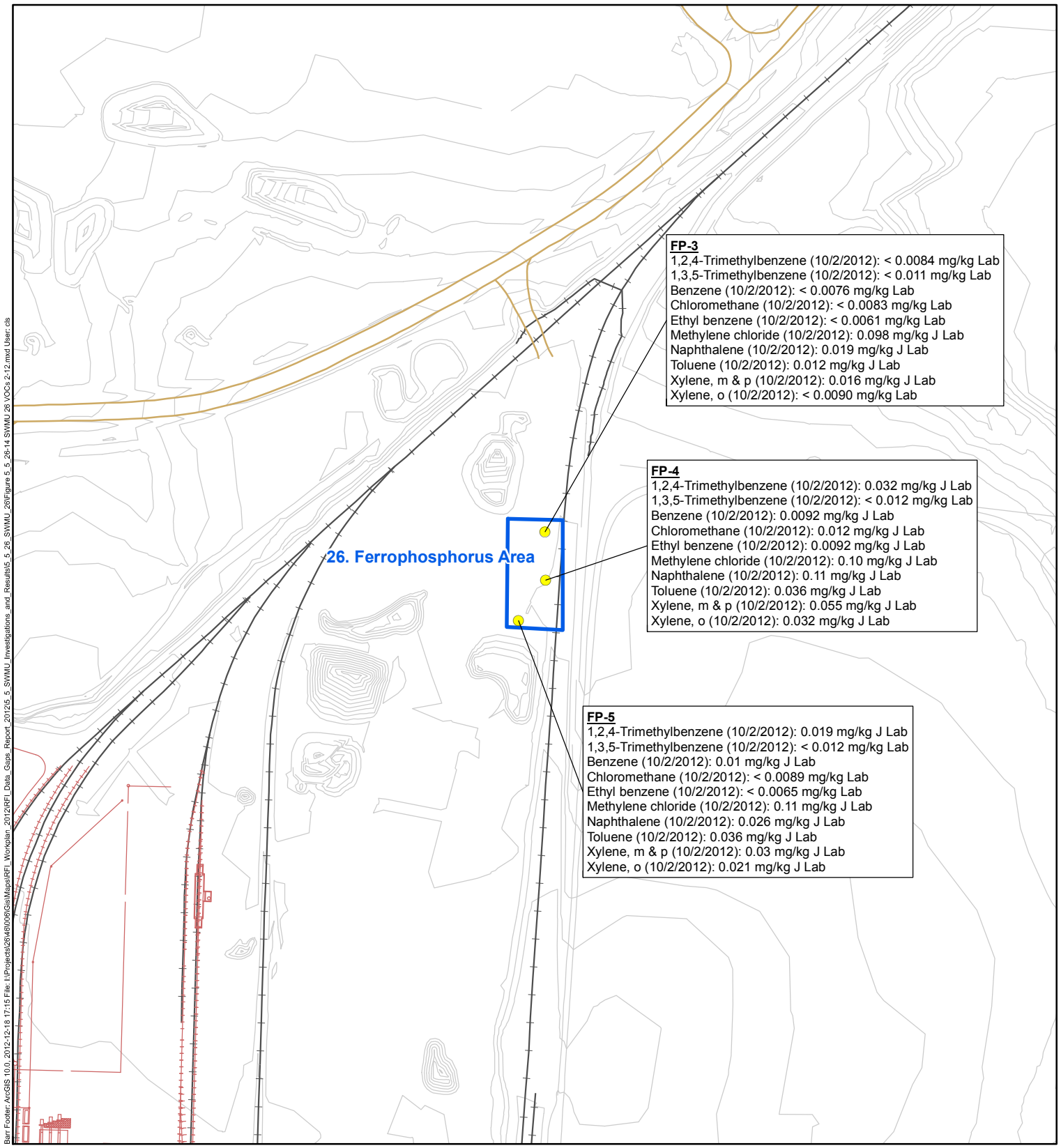
Bold font indicates that sample concentration is greater than the 95% UCL of mean Reference Area Concentration.

N

Feet
200 0 200

Figure 5.5.26-13

SWMU 26
VOCs, 0-2 INCHES
Rhodia Silver Bow Plant
Montana



Sample Location

SWMU 26

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.

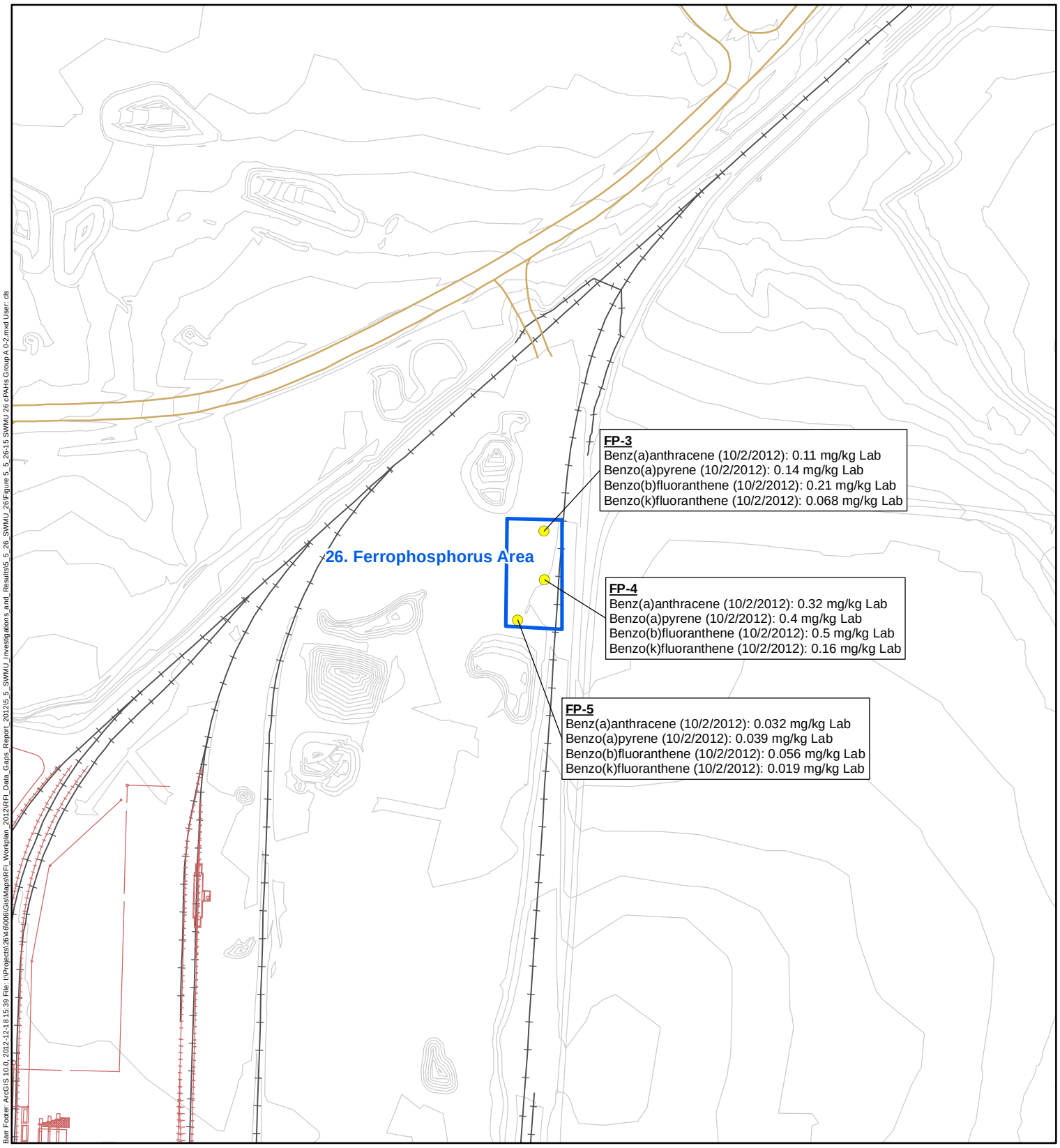
N

Feet

200 0 200

Figure 5.5.26-14

SWMU 26
VOCs, 2-12 INCHES
Rhodia Silver Bow Plant
Montana



Sample Location
SWMU 26
Elevation Contour
Drainage
Railroad
Road
Former Plant Structures

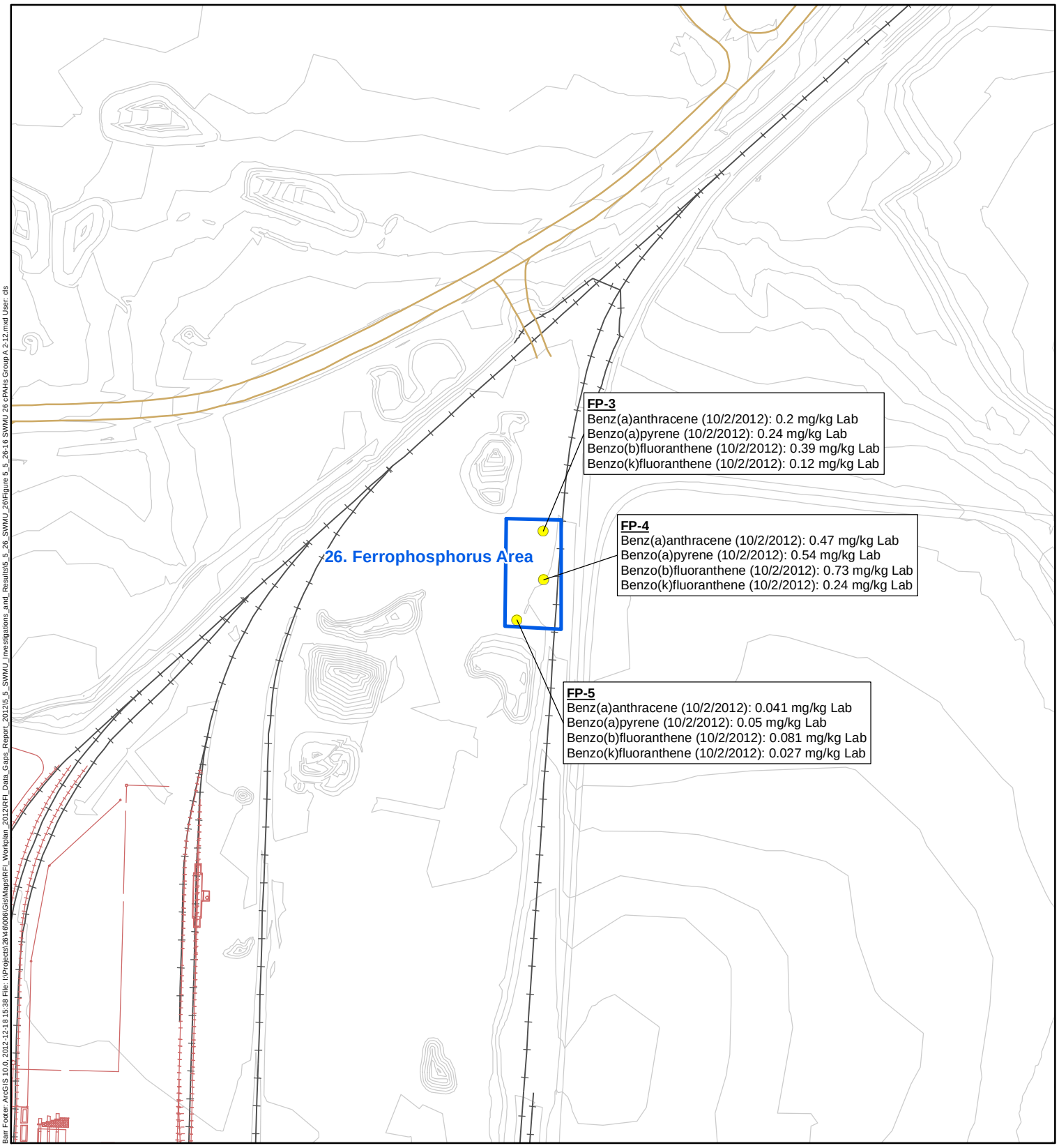
Bold font indicates that sample concentration is greater than the 95% UCL of mean Reference Area Concentration.

N

Feet
200 0 200

Figure 5.5.26-15

SWMU 26
cPAHs GROUP A, 0-2 INCHES
Rhodia Silver Bow Plant
Montana



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Sample Location

SWMU 26

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.

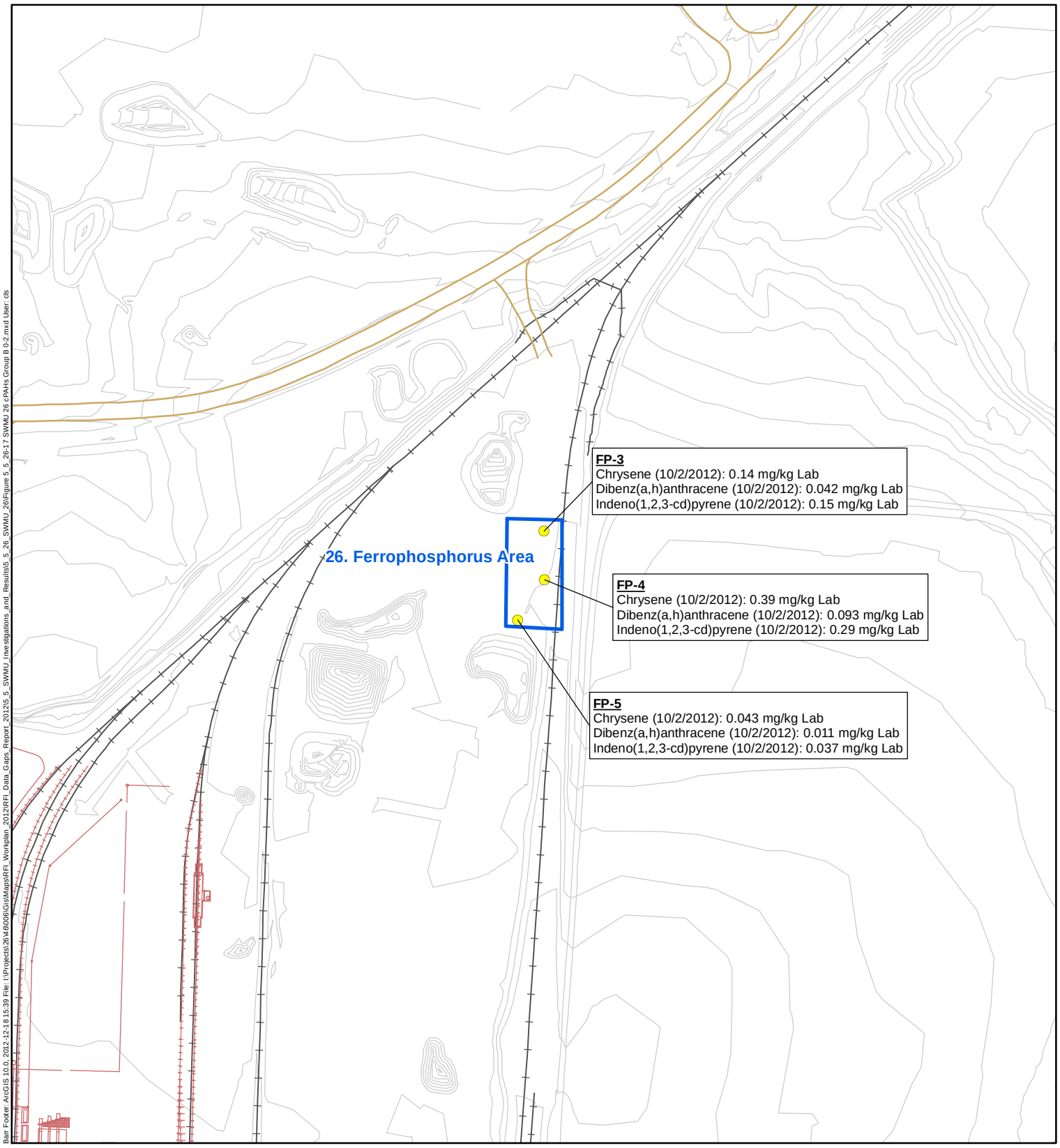
N

Feet

200 0 200

Figure 5.5.26-16

SWMU 26
cPAHs GROUP A, 2-12 INCHES
Rhodia Silver Bow Plant
Montana



- Sample Location
- SWMU 26
- 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.

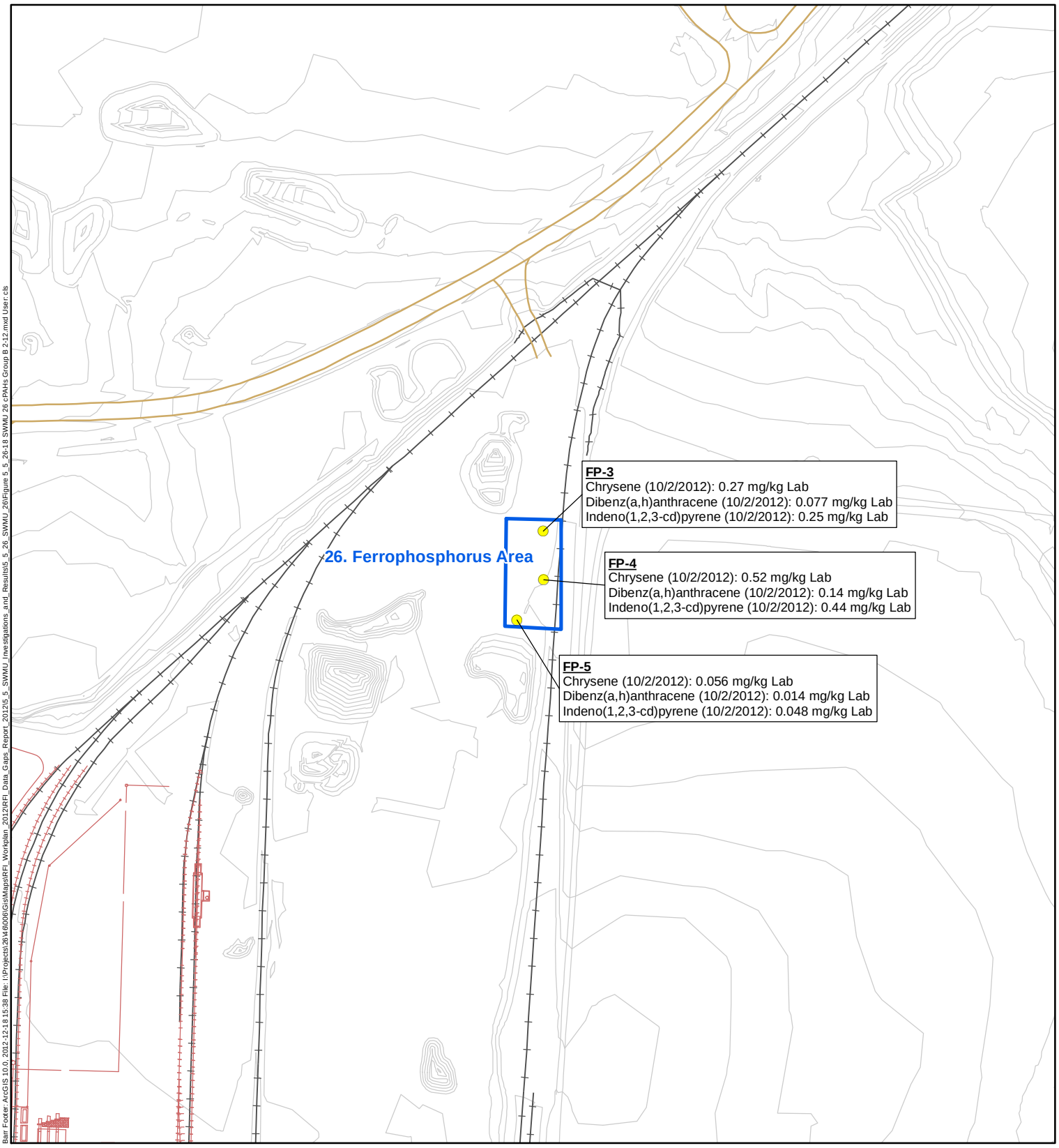
N

Feet

200 0 200

Figure 5.5.26-17

SWMU 26
cPAHs GROUP B, 0-2 INCHES
Rhodia Silver Bow Plant
Montana



Barr Footer: ArcGIS 10.0, 2012-12-18 15:38 File: I:\Projects\2614\6006\GisMaps\RFI_Workplan_2012\RFI_Data_Gaps_Report_201205_5_SWMU_Investigations_and_Results\5_5_26_SWMU_26\Figure 5_5_26-18 SWMU 26 cPAHs Group B 2-12.mxd User: clb

Sample Location

SWMU 26

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.

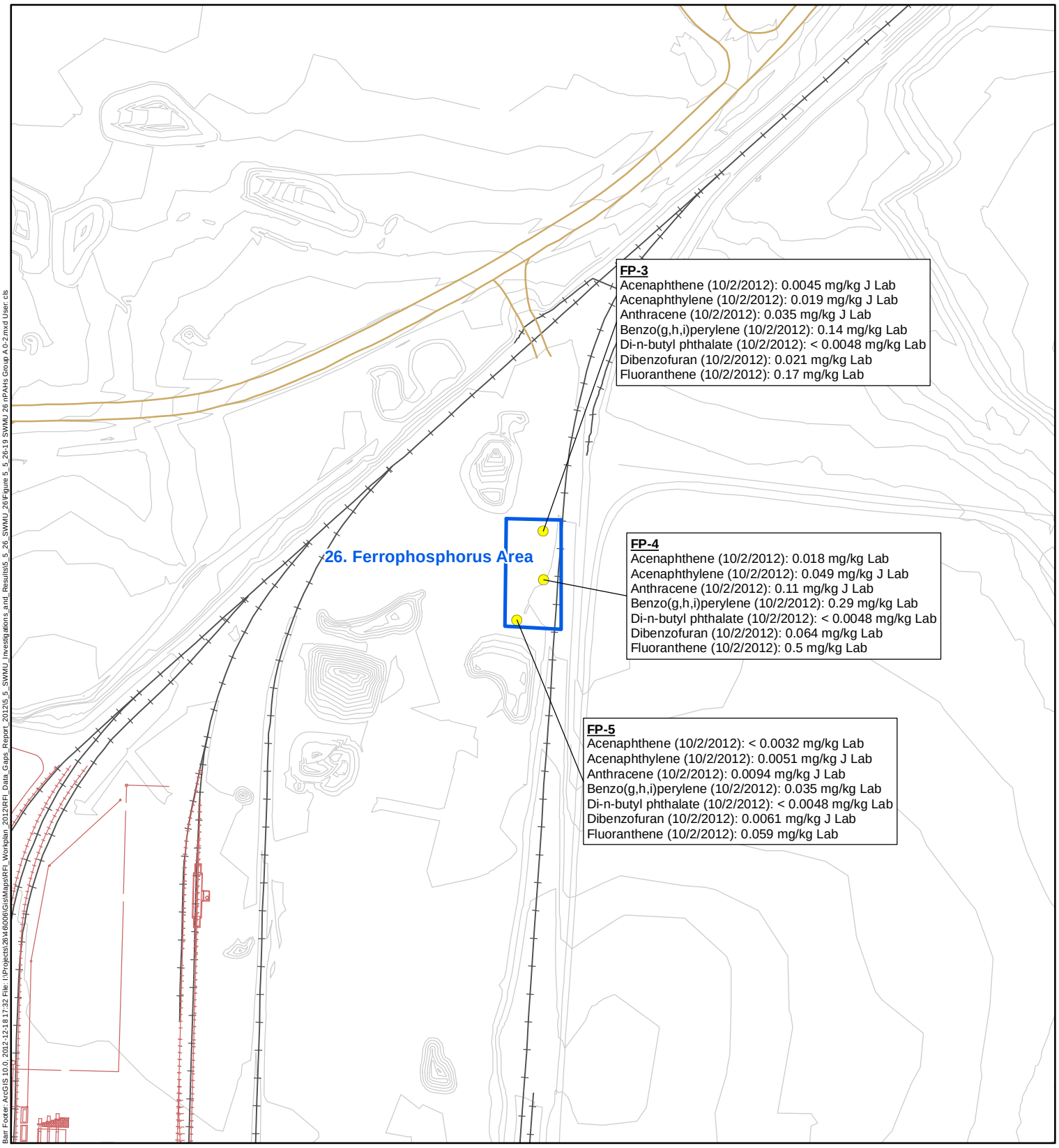
N

Feet

200 0 200

Figure 5.5.26-18

SWMU 26
cPAHs GROUP B, 2-12 INCHES
Rhodia Silver Bow Plant
Montana



Sample Location

SWMU 26

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.

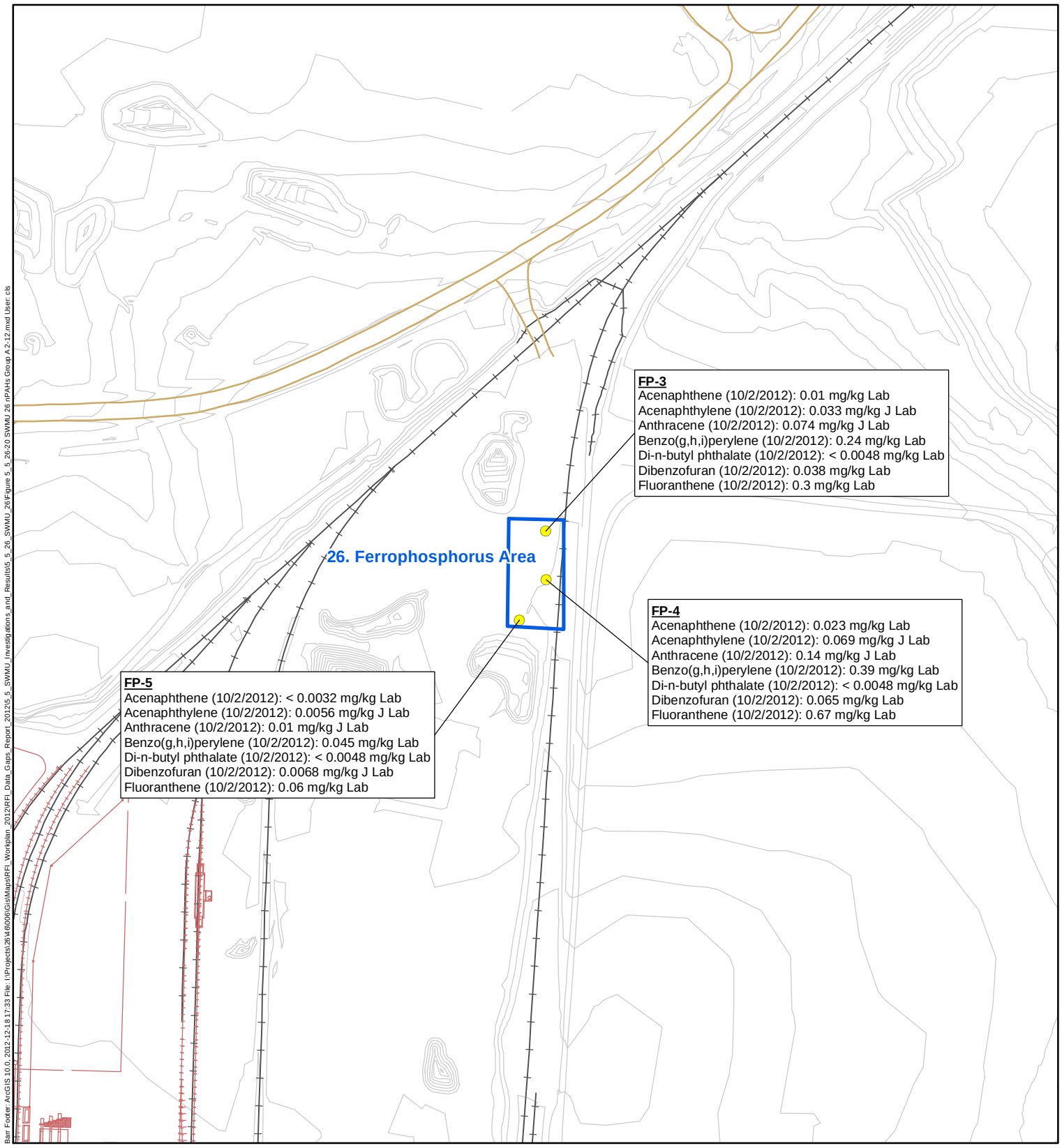
N

Feet

200 0 200

Figure 5.5.26-19

SWMU 26
nPAHs GROUP A, 0-2 INCHES
Rhodia Silver Bow Plant
Montana



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Sample Location

SWMU 26

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.

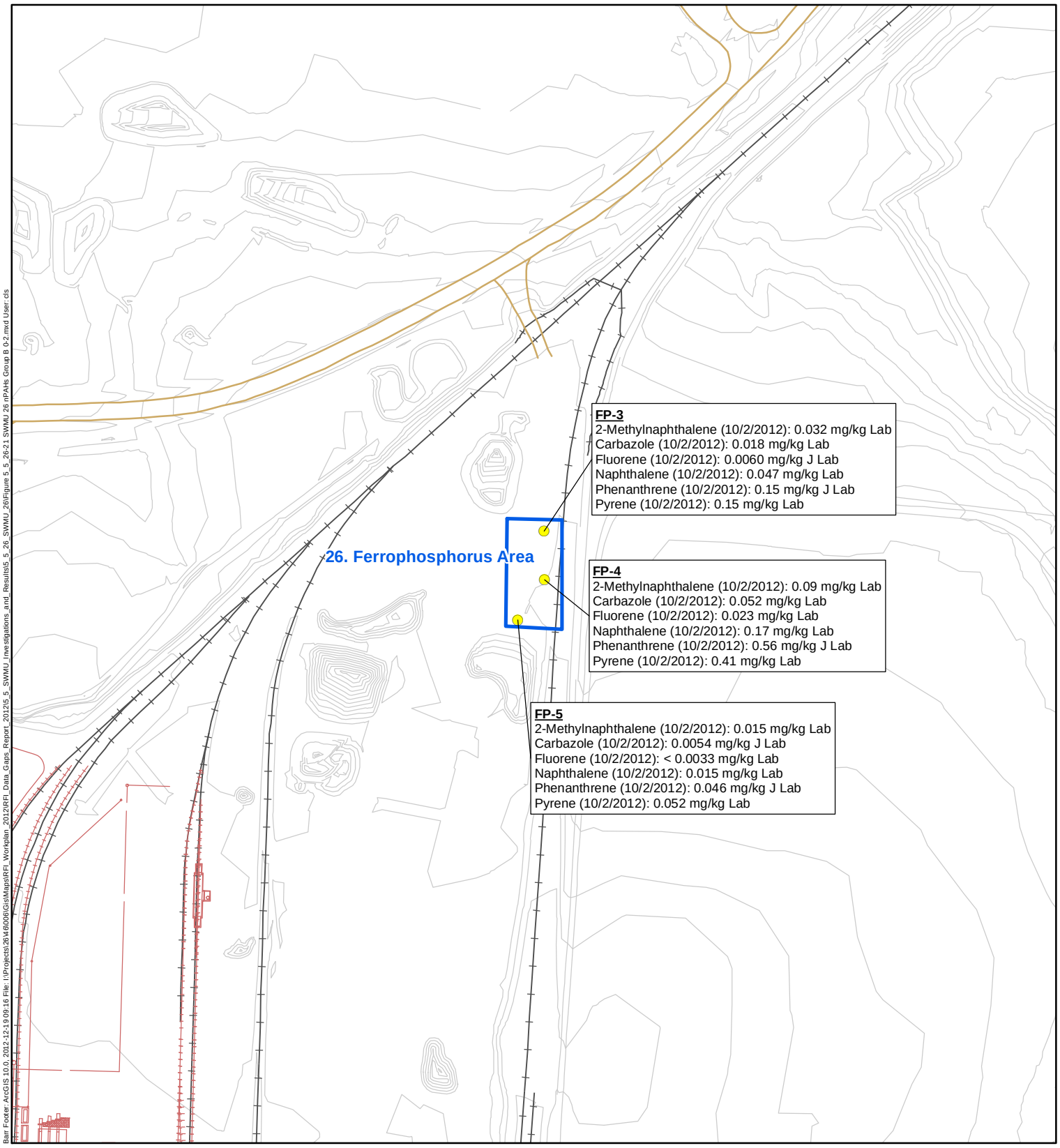
N

Feet

200 0 200

Figure 5.5.26-20

SWMU 26
nPAHs GROUP A, 2-12 INCHES
Rhodia Silver Bow Plant
Montana



Sample Location

SWMU 26

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.

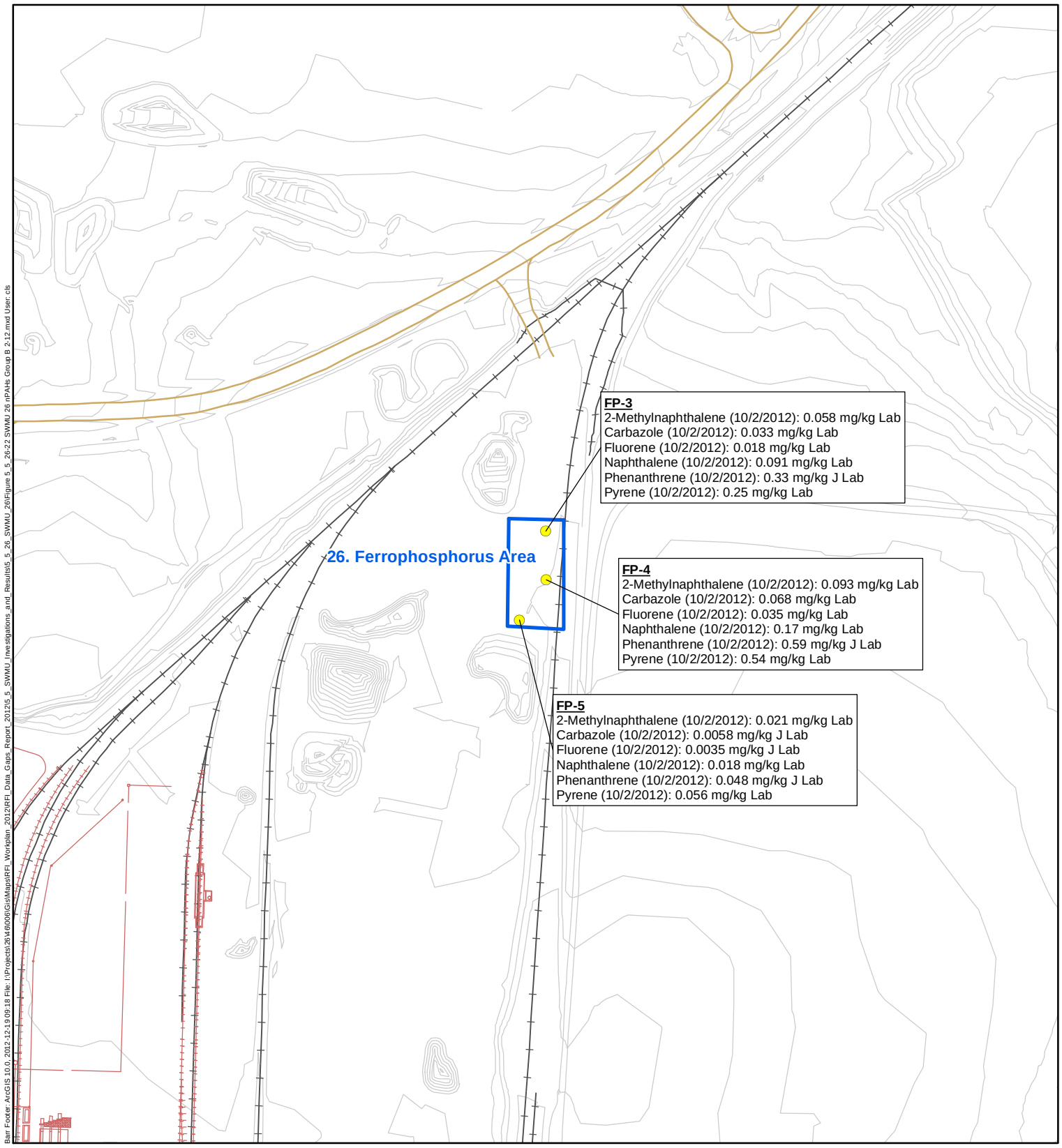
N

Feet

200 0 200

Figure 5.5.26-21

SWMU 26
nPAHs GROUP B, 0-2 INCHES
Rhodia Silver Bow Plant
Montana



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Sample Location

SWMU 26

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.

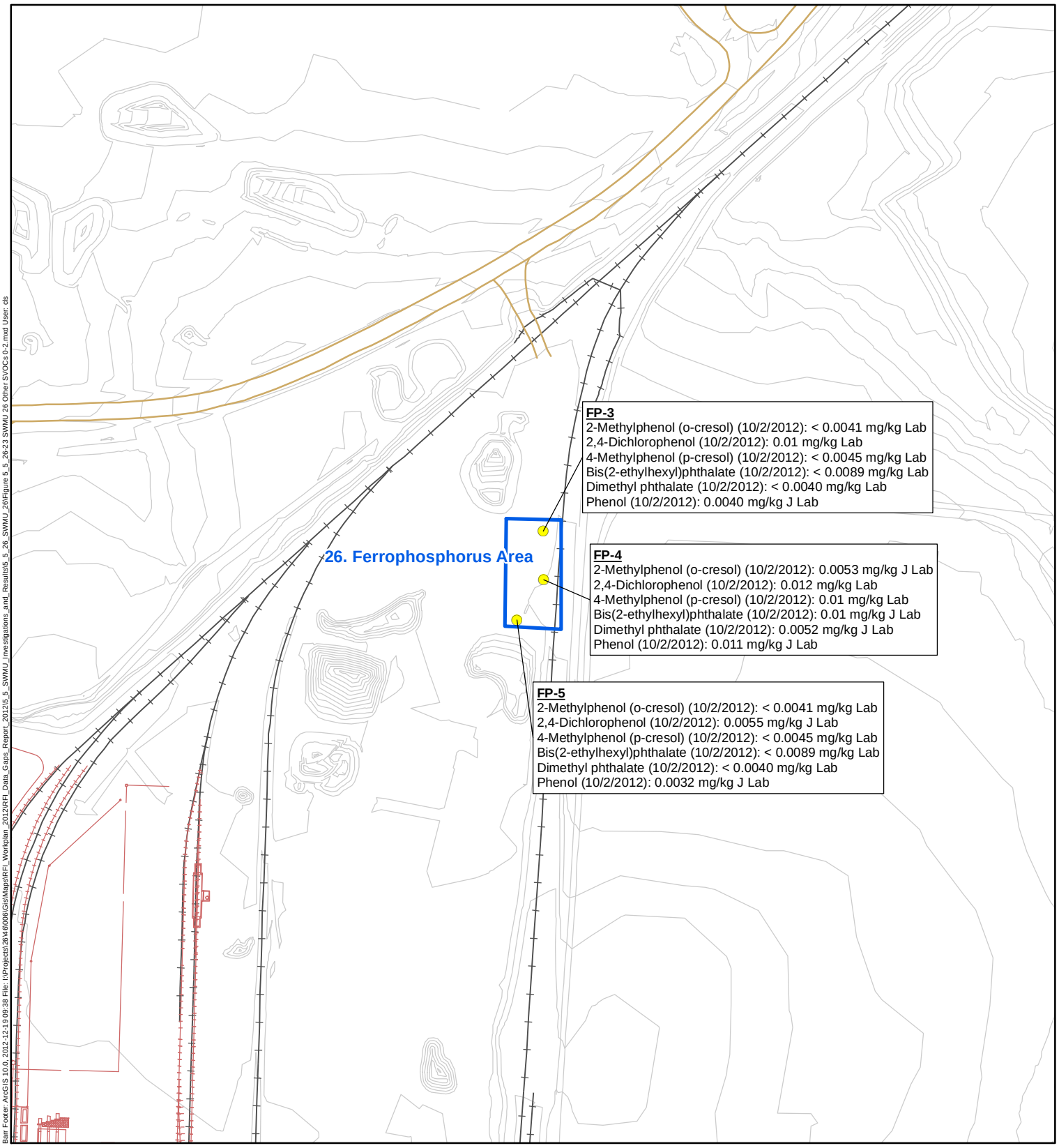
N

Feet

200 0 200

Figure 5.5.26-22

SWMU 26
nPAHs GROUP B, 2-12 INCHES
Rhodia Silver Bow Plant
Montana



Sample Location
SWMU 26
Elevation Contour
Drainage
Railroad
Road
Former Plant Structures

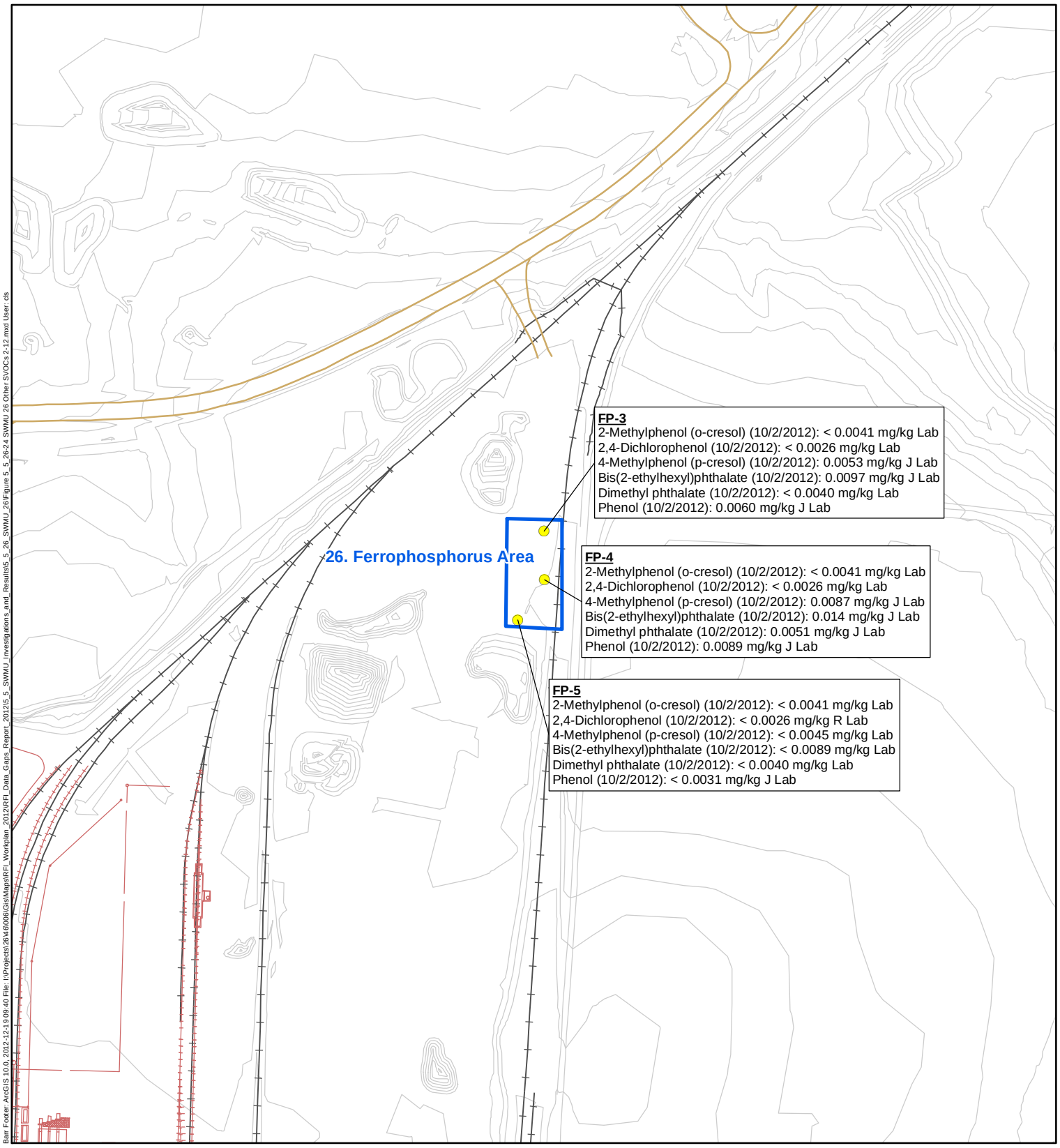
Bold font indicates that sample concentration is greater than the 95% UCL of mean Reference Area Concentration.

N

Feet
200 0 200

Figure 5.5.26-23

SWMU 26
OTHER SVOCs, 0-2 INCHES
Rhodia Silver Bow Plant
Montana



Sample Location
SWMU 26
Elevation Contour
Drainage
Railroad
Road
Former Plant Structures

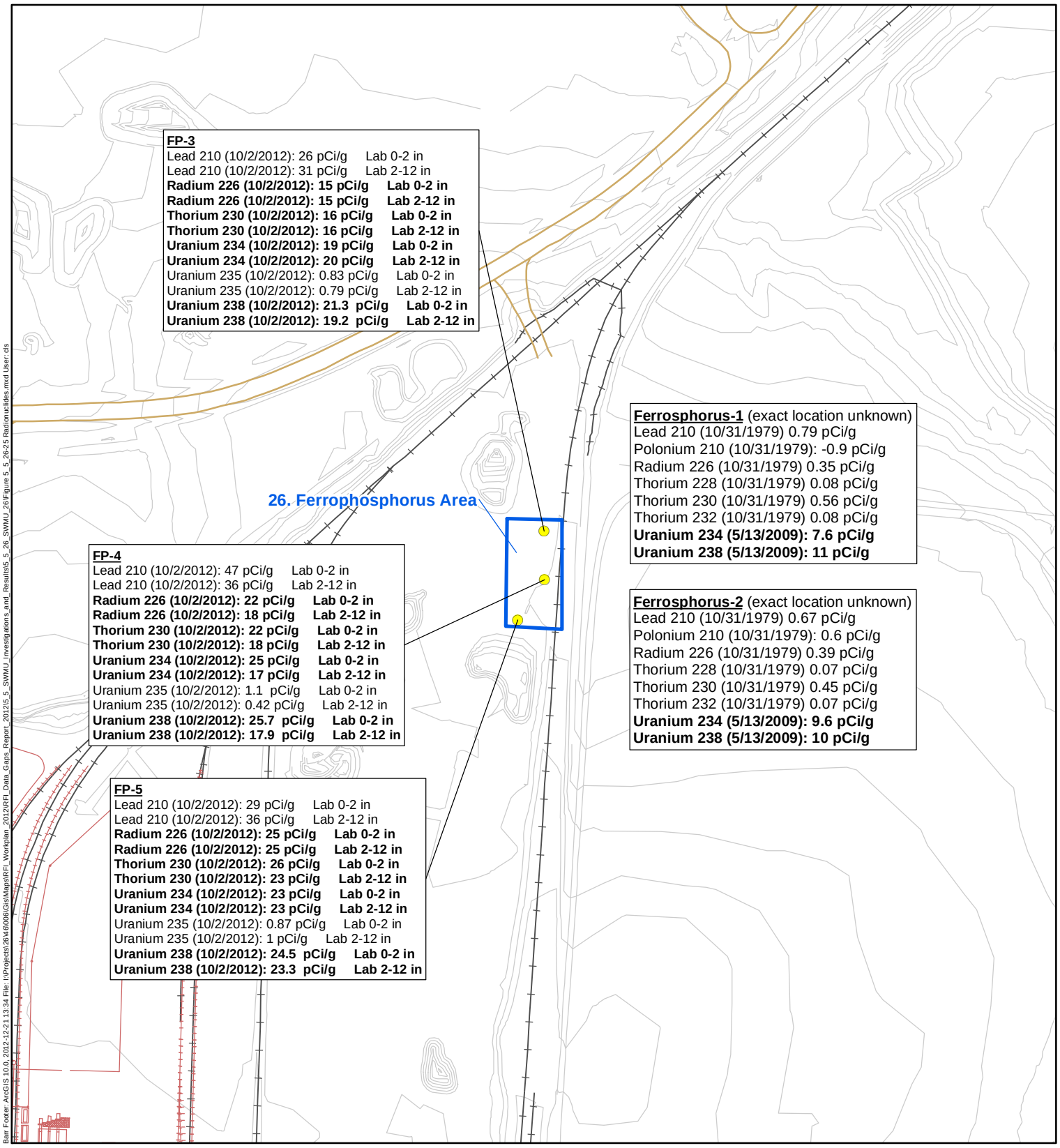
Bold font indicates that sample concentration is greater than the 95% UCL of mean Reference Area Concentration.

N

Feet
200 0 200

Figure 5.5.26-24

SWMU 26
OTHER SVOCs, 2-12 INCHES
Rhodia Silver Bow Plant
Montana



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Sample Location

SWMU 26

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

200 0 200

Figure 5.5.26-25

SWMU 26
RADIONUCLIDES
Rhodia Silver Bow Plant
Montana

Appendices

Appendix 5.5.26-A

Ferrophosphorus MSDS

MATERIAL SAFETY DATA SHEET

RHONE-POULENC BASIC CHEMICALS CO.
1 Corporate Drive Box 881 Shelton, CT. 06484 (203)925-3300
24-HOUR EMERGENCY TELEPHONE CHEMTREC 1-800-424-9300

PRODUCT NAME:

FERROPHOSPHORUS

Effective Date: APRIL 24, 1992
Supercedes: MARCH 1, 1990

I. IDENTIFICATION

CHEMICAL NAME OF PRIMARY COMPONENT(S): Ferrophosphorus
FORMULA: FeP and Fe_2P
SYNONYMS: Ferrophos; Iron alloy base, Fe,P
CAS# & NAME: 8049-19-2 Iron alloy, Fe,P

II. INGREDIENTS/SUMMARY OF HAZARDS

INGREDIENT(S)	CAS NUMBER	OSHA HAZARDOUS (H)/ NON-HAZARDOUS (NH)
Ferrophosphorus	8049-19-2	H

WARNING STATEMENTS:

CAUTION! DUST MAY CAUSE RESPIRATORY IRRITATION.
CONTACT WITH ACID MAY LIBERATE TOXIC AND FLAMMABLE PHOSPHINE GAS.

Avoid contact with skin eyes and clothing · Avoid creating dust · Do not take internally · Wear appropriate protective clothing and devices when handling ·

(See Section VI for complete Health Hazard Data)

NATIONAL FIRE PROTECTION ASSOCIATION RATING
HAZARDOUS MATERIALS IDENTIFICATION SYSTEM

(4=Extreme/Severe 3=High/Serious
2=Moderate 1=Slight 0=Minimum)

	NFPA	HMIS
HEALTH	1	1
FIRE	0	0
REACTIVITY	1	1

SARA TITLE III HAZARD CLASSIFICATION

IMMEDIATE (ACUTE) HEALTH	NO
DELAYED (CHRONIC) HEALTH	NO
FIRE	NO
SUDDEN RELEASE OF PRESSURE	NO
REACTIVE	YES

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RHONE-POULENC BASIC CHEMICALS CO.

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FERROPHOSPHORUS Effective Date: APRIL 24, 1992

III. PHYSICAL DATA

DECOMPOSITION POINT, °C (°F):	>900°C (1652°F)
MELTING POINT, °C (°F):	1050 - 1100 °C (1922 - 2012°F)
SOLUBILITY IN WATER, @ 25°C:	Insoluble
APPEARANCE AND ODOR:	Metallic gray solid; odorless

(For additional technical information call 1-800-642-4200)

IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT [°C (°F)]:	Noncombustible
FLAMMABLE LIMITS IN AIR:	Not applicable
AUTOIGNITION TEMPERATURE [°C (°F)]:	Not applicable

EXTINGUISHING MEDIA: Not combustible. Use appropriate extinguishing media for material that is supplying fuel.

SPECIAL FIRE FIGHTING PROCEDURES:
Wear protective clothing and use self-contained breathing apparatus.
Dike area to prevent runoff and contamination of water sources.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
When heated to decomposition, product can emit very toxic fumes including phosphorus oxides (at temperatures above 900°C (1652°F).

V. REACTIVITY DATA

STABILITY: Stable at ambient temperatures and atmospheric pressures.

CONDITIONS TO AVOID: None known.

MATERIALS TO AVOID:
Reacts with acids to form a corrosive solution with the liberation of phosphine gas.
Reacts with salt air in the holds of ships to liberate phosphine.
When used as a concrete aggregate, product can react with cement at temperatures of approximately 65.6°C (150°F) to generate flammable hydrogen gas.

HAZARDOUS DECOMPOSITION PRODUCTS:
When heated to decomposition, product can emit very toxic fumes including phosphorus oxides.

HAZARDOUS POLYMERIZATION: Will not occur.

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VI. HEALTH HAZARD DATA/FIRST AID PROCEDURES

EXPOSURE LIMITS:

No exposure limits have been established for this specific product. However, the following limits apply:

Chemical Name(s)	OSHA (TWA)	ACGIH (TWA)
Particulate Not Otherwise Classified	15 mg/m^3 (total dust) 5 mg/m^3 (respirable dust)	10 mg/m^3 (total)

GENERAL INFORMATION:
An extensive search of the literature failed to reveal any documented cases of industrial illness from exposure to ferrophosphorus.

TOXICOLOGY DATA:

Oral LD50 (rats):	No information available	
Dermal LD50 (rabbits):	No information available	
Inhalation LC50 (rats):	No information available	
Skin Effects (rabbits):	Non-irritant	(1)
Eye Effects (rabbits):	Non-irritant	(1)

CARCINOGENICITY:
This product does not contain any ingredient designated by IARC, NTP, ACGIH OR OSHA as a probable human carcinogen.

EFFECTS OF SINGLE OVEREXPOSURE:

Ferrophosphorus is usually in the form of solid chunks so that inhalation or ingestion is unlikely unless the material is ground or used in a manner that generates dust or small particles.

Swallowing:	No evidence of adverse effects from available information, however ingestion of large quantities may cause abdominal discomfort.
Skin Absorption:	No information available.
Inhalation:	Dusts may be irritating to the respiratory tract.
Skin Contact:	No significant adverse effects are anticipated based on available information.
Eye Contact:	No significant adverse effects are anticipated based on available information.

EFFECTS OF REPEATED OVEREXPOSURE:
No evidence of additional adverse effects from available information.

OTHER EFFECTS OF OVEREXPOSURE:
No evidence of additional adverse effects from available information.

EXISTING MEDICAL CONDITIONS POSSIBLY AGGRAVATED BY EXPOSURE:
Skin irritation may be aggravated in persons with existing skin lesions. Breathing of dusts may aggravate acute or chronic asthma and other chronic pulmonary disease.

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VI. HEALTH HAZARD DATA/FIRST AID PROCEDURES (Continued)

EMERGENCY AND FIRST AID PROCEDURES:

Swallowing: If patient is conscious and alert, give two or more glasses of cold water or milk to drink. If available, give one tablespoon of Syrup of Ipecac to induce vomiting. If vomiting has not occurred in 20 minutes, the same dose of Syrup of Ipecac may be repeated one additional time. Alternatively, induce vomiting by touching the back of the throat with a finger. Never anything by mouth, or induce vomiting in an unconscious or convulsing person. GET MEDICAL ATTENTION.

Skin: Wash skin with soap and water.

Inhalation: Significant problems are not anticipated unless overexposed to dusty conditions. If overexposure occurs, remove patient to fresh air. GET MEDICAL ATTENTION if respiratory irritation occurs or if breathing becomes difficult.

Eyes: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes using an eyewash fountain, if available. Lift upper and lower lids and rinse well under them. GET MEDICAL ATTENTION, preferably an ophthalmologist if irritation occurs.

NOTE TO PHYSICIAN:

All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

VII. PRECAUTIONS FOR SAFE HANDLING AND USE

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:
No emergency results from a spill, however, spills should be cleaned up promptly.

To the extent possible, clean up spillage using shovels. Carefully scoop up loose material and place it in appropriate containers so as to avoid dust generation. Stand upwind if possible.

Do not flush material to public sewer systems or any waterways. Ensure adequate decontamination of tools and equipment following clean up.

WASTE DISPOSAL METHOD:
Dispose of in accordance with Local, State and Federal regulations.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:
Do not ingest. Avoid exposure by inhalation. Avoid getting in eyes, on skin or on clothing.
No special storage requirements are needed.

MATERIAL SAFETY DATA SHEET

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VIII. SPECIAL PROTECTION INFORMATION

PROTECTIVE EQUIPMENT SHOULD BE USED DURING THE FOLLOWING PROCEDURES:
- Manufacture or formulation of this product
- Repair and maintenance of contaminated equipment
- Clean up of leaks and spills

RESPIRATORY PROTECTION:
None normally required.
If use conditions generate airborne dust, handle material in an open or well-ventilated area. Where adequate ventilation is not available, use NIOSH/MSHA-approved respirator for dust. Use positive pressure supplied air or self-contained breathing apparatus for emergency conditions.

VENTILATION: Use local exhaust ventilation when necessary.
PROTECTIVE CLOTHING: Work clothing
EYE PROTECTION: Safety glasses with side shields

OTHER PROTECTIVE EQUIPMENT:
Maintain a sink, safety shower and eyewash fountain in the work area. Have oxygen readily available.

IX. REGULATORY STATUS

TSCA Inventory: All components of this material are listed in the TSCA inventory.

Transportation Status:

DOT: (Land, Air)	Not regulated
DOT: (Water)	
Proper Shipping Name:	Ferrophosphorus
Hazard Class:	ORM-A
Label:	None, ORM-A marking

Reportable Quantity (RQ) under 49 CFR 172.101 Not listed

SARA TITLE III

Section 302 Extremely Hazardous Substance List:	Not listed
Section 313 Toxic Chemicals:	Not listed

Reportable Quantity (RQ) under US EPA CERCLA: Not listed

RCRA Hazardous Waste: Not listed

State/International Right-to-Know Regulations:

California:	Not listed
Connecticut:	Not listed
Florida:	Not listed
Illinois:	Not listed
Louisiana:	RTK
Massachusetts:	Not listed
New Jersey:	Not listed
New York:	Not listed
Pennsylvania:	Not listed
Rhode Island:	Not listed
Canada:	Not listed

MATERIAL SAFETY DATA SHEET

RHONE-POULENC BASIC CHEMICALS CO.

FERROPHOSPHORUS Effective Date: APRIL 24, 1992

X. REFERENCES

(1) Unpublished Rhone-Poulenc sponsored toxicity study, T-4645

Appendix 5.5.26-B

Test Pit Logs

PROJECT NO. 26460006

TEST PIT NO. SWMU-26 FP-3 SHEET 1 OF 1

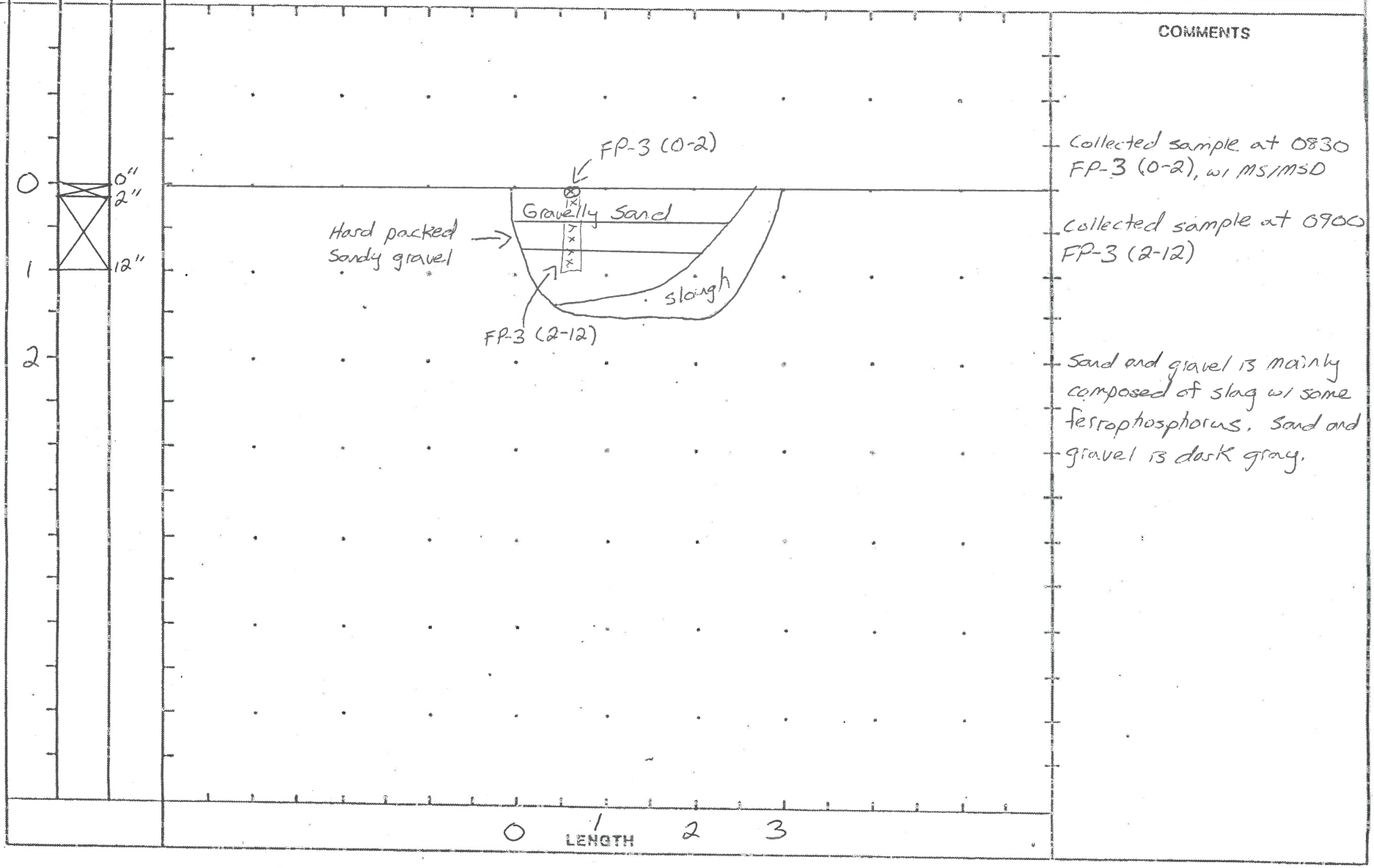
TEST PIT WALL LOG

PROJECT Rhodia RFI LOCATION SWMU-26 Ferrophosphorus Area MAP OF E WALL OF PIT

ELEVATION N/A CONTRACTOR MT Reclamation & Landscaping DATE EXCAVATED 10/2/12

WATER LEVEL AND DATE N/A - Dry EXCAVATION METHOD Backhoe LOGGER LML2

APPROXIMATE DIMENSIONS LENGTH 3' WIDTH 2' DEPTH 1.5' REMARKS



PROJECT NO. 26460006

TEST PIT NO. SWMU-26 FP-4 SHEET 1 OF 1

TEST PIT WALL LOG

PROJECT Rhodia RFI LOCATION SWMU-26 Ferrophosphorus Area MAP OF E WALL OF PIT

ELEVATION N/A CONTRACTOR MT Reclamation & Landscaping DATE EXCAVATED 10/2/12

WATER LEVEL AND DATE N/A - Dry EXCAVATION METHOD Backhoe LOGGER BJL2

APPROXIMATE DIMENSIONS LENGTH 4' WIDTH 2' DEPTH 1' REMARKS

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

0

1

0"
2"
12"

FP-4 (0-2)

Gravelly sand

~2" layers of hard packed gravel w/ pieces of slag.

Gravelly sand

FP-4 (2-12)

0 1 2 3 4 LENGTH

COMMENTS

Gravelly sand
g/s/f = 20/70/10

Sandy gravel
g/s/f = 70/20/10

Collected sample at 0940
FP-4 (0-2)

Collected sample at 1000
FP-4 (2-12). A field duplicate was also taken, FP-100 (2-12).

A large piece of ferrophosphorus was found nearby. Smaller pieces may have been present in the excavation.

PROJECT NO. 26460006

TEST PIT NO. SWMU-26 FP-5 SHEET 1 OF 1

TEST PIT WALL LOG

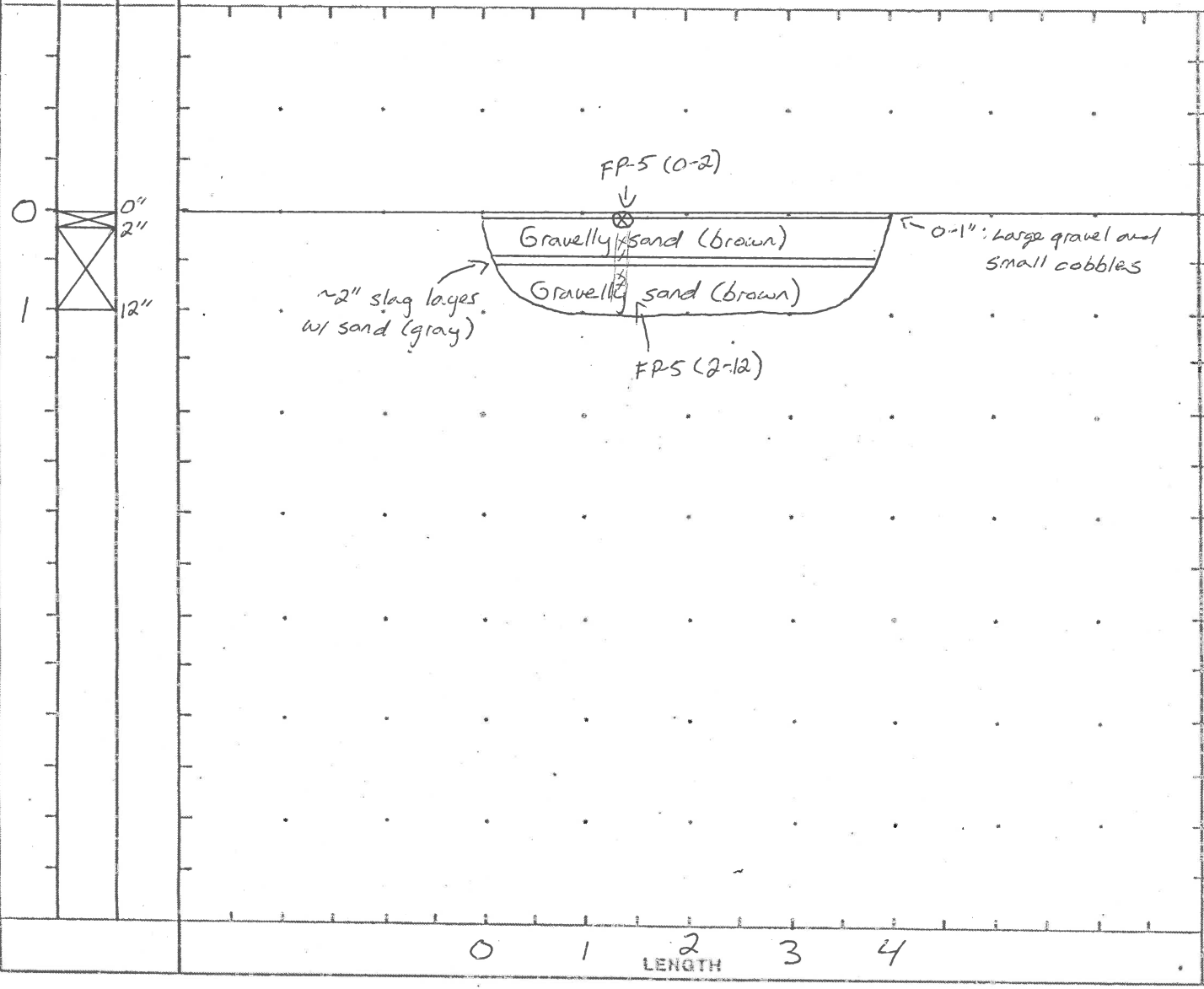
PROJECT Rhodia RFI LOCATION SWMU-26 Ferrophosphorus Area MAP OF S WALL OF PIT

ELEVATION N/A CONTRACTOR MT Reclamation & Landscaping DATE EXCAVATED 10/2/12

WATER LEVEL AND DATE N/A - Dry EXCAVATION METHOD Backhoe LOGGER BJL2

APPROXIMATE DIMENSIONS LENGTH 4' WIDTH 2' DEPTH 1' REMARKS

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



COMMENTS

Gravelly sand
g/s/f = 20/70/10

Slag layer
g/s/f = 70/20/10

Collected sample at 1040 FP-5 (0-2).

Collected sample at 1100 FP-120 (0-2). Field blank

Collected sample at 1145. FP-5 (2-12).