N61165.AR.004354
CNC CHARLESTON
5090.3a

RESPONSE TO SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL COMMENTS RCRA FACILITY INVESTIGATION REPORT ADDENDUM AREA OF CONCERN 528 (AOC 528) ZONE E CNC CHARLESTON SC

11/1/2002

CH2M HILL

AOC 528 Zone E

Response to Comments RFI Report Addendum

CH2MHILL TRANSMITTAL

To: Jerry Stamps
South Carolina Department of Health
and Environmental Control
Bureau of Land and Waste
Management
2600 Bull Street
Columbia, SC 29201

From: Dean Williamson/CH2M-Jones

Date: November 1, 2002

Re: CH2M-Jones' Responses to Comments by SCDHEC regarding the *RFI Report Addendum, Area of Concern 528, Zone E, Charleston Naval Complex* (Revision 0)

Quantity	Description
4	CH2M-Jones' Responses to Comments by SCDHEC regarding the *RFI Report Addendum, Area of Concern 528, Zone E, Charleston Naval Complex* (Revision 0) – Originally Submitted on July 30, 2002

If material received is not as listed, please notify us at once

Remarks:

Copy To:

Jo Cherie Overcash/SCDHEC, w/att
Susan Byrd/SCDHEC, w/att
Rob Harrell/Navy, w/att
Gary Foster/CH2M-Jones, w/att

Engineering Comments Prepared by Jerry Stamps

SCDHEC General Comment

According to the RFI, AOC 528 consists of a small building (Building 1453) located to the west of Building 59. Soil samples were collected such that the sampling locations encompassed this building. However, according to Figure 5-22 of the RFA, AOC 528 consists of the western portion of the Building 59. No samples appear to have been collected in this vicinity. The Navy must verify which area the cleaning operations occurred which led to the designation of AOC 528 to ensure the investigation addressed the proper area.

CH2M-Jones Response:

We recognize that the SCDHEC reviewer was not part of the team that developed, reviewed, and approved the Zone E RFI work plan seven years ago, and thus is not aware of the basis for discussions made at that time. We also recognize that the reasons for not sampling beneath Building 59 could have been more explicitly stated in the RFI work plan. The comment above, however, requests that the Navy/CH2M-Jones justify the sampling basis in the Zone E RFI work plan, which was approved by SCDHEC seven years ago, and demonstrate that SCDHEC's approval of this work plan was appropriate. Such a request is considered very unreasonable for several significant reasons.

The CNC BCT developed the proposed RFI sampling locations for Zone E sites, including AOC 528, based on information presented in the RFA report as well as site visits, discussions with personnel and staff working in the buildings at which the SWMUs and AOCs are located, and after a thorough discussion among BCT members regarding where the optimal locations for sampling were. An initial draft RFI work plan was developed and commented on by the BCT and SCDHEC and a final work plan was then developed and approved by the BCT and SCDHEC. The approval of work plans by the CNC BCT and SCDHEC was an exacting process and was given only after significant review, commenting, responding to comments and consideration of the relevant information.

The level of planning, research, review, and labor that went into developing the Zone E RFI work plan was significant; it was not a haphazard, uncoordinated, or careless operation. The BCT staff that prepared the Zone E RFI work plan had a significant advantage in their ability to learn about the most likely areas of contamination at AOCs and SWMUs, as compared to the current BCT staff, because at the time the RFI work plan was developed (1994 to 1995 timeframe) the CNC was still operational and the BCT staff were able to and did discuss site operations with Navy staff that had many years of experience working at these facilities. Adequate time and effort were expended to ensure that sampling strategies and locations were appropriate and based on the best available information. Thus, there is no reason to believe that the RFI work plan or the sampling locations approved were deficient or failed to properly consider or address areas of potential contamination.

At the time of approval of the Zone E RFI work plan the BCT was fully knowledgeable about the contents of the RFA and references to Building 59 in the AOC 528 discussion. It is clear that the team made a conscious and informed decision to place the sampling locations as indicated in the work plan around Building 1453 rather than at Building 59 based on their knowledge about site operations, and that they deliberately chose to not require sampling at

Building 59. There is no indication that this was an accidental oversight or error in judgement.

SCDHEC has not provided any new information that suggests that the previous team failed to exercise appropriate and adequate professional judgement in their selection of sampling locations or in the approval of the Zone E RFI work plan. SCDHEC appears to be now doubting or retroactively "second guessing" whether it made an appropriate decision in 1995 to approve the RFI work plan and is asking the Navy to justify why SCDHEC approved this work plan seven years ago.

The Navy and CH2M-Jones do not think that it is reasonable for the regulated party to have to provide explanations or justifications to the regulatory agency as to why the regulatory agency originally approved a work plan. The regulatory agency should know why it approved a work plan. It should have confidence that its approval was based on competent and adequate review of the issues. Based on the level of inquiry, review, and planning that is known to have occurred during preparation, review, and approval of the Zone E RFI work plan, there is no reason for SCDHEC to require the Navy to retroactively justify the originally selected RFI sampling locations that were approved by SCDHEC or, in the event the Navy is unable to do so, have to sample those locations. All necessary justifications for sampling locations were adequately provided and considered seven years ago. The work plan approval was made by a competent team that had access to relevant historic data regarding site operations as well as access to individuals that worked at the facility. Thus, the previous approval of the RFI work plan should stand and requirements for the Navy to now justify the appropriateness of approved sampling locations are not reasonable or necessary.

It will never be possible to recreate discussions that occurred seven years ago regarding why certain potential sampling locations were selected and all other potential locations were not. One factor that makes this a particularly impossible request is that many people who worked at the facilities seven years ago that were able to provide detailed information about site operations to the CNC BCT at that time are no longer working at these facilities.

The Navy and CH2M-Jones are confident that the BCT team members that approved the original Zone E RFI work plan adequately and thoroughly discussed the issue of where cleaning operations were most likely to have resulted in contamination at AOC 528, and that those locations were reflected in the Zone RFI work plan. The sample results for those locations do not indicate the presence of contamination. Thus, no additional sampling is warranted at this site.

SCDHEC Specific Comment

1. Section 5.1.1
   The Navy must present the calculated BEQ concentration for the subsurface soil. Though the Department has calculated this value (642.11 ppb) and determined it is below the screening value of 1400 ppb, the BEQ concentration for subsurface soil must be presented to complete the administrative record.

   CH2M-Jones Response:
   The requested BEQ calculation will be provided.

Risk Assessment Comments Prepared by Susan Byrd

1. The text states that elevated levels of BEQ (2,280 μg/kg) and copper (134,000 mg/kg) exceed screening values in sediments collected from the storm drain catch basins. Page 2-3 indicates that the RFI investigation for AOC 528 included one sediment sample from the northwest corner of building 1453. However, page 2-4 reports that the RFI included two sediment samples. Figure 2-1 only shows one sediment sample location. Please clarify.

CH2M-Jones Response:

Only one sediment sample appears to have been analyzed at AOC 528. On page 10.20-11 of the Zone E RFI Report, Revision 0, it states that a single sediment sample was collected and that no duplicates were analyzed. Table 10.20.5.1 on the same page also indicates that a single sediment sample was collected and analyzed for VOCs, SVOCs, and pH. This is consistent with the work plan that indicates that one sediment sample would be collected and analyzed for VOCs and SVOCs at AOC 528.

However, in the discussion of results that follows this section, the data tables (tables 10.20.6.1 and 10.20.6.2) provide results for two sediment samples for VOCs and SVOCs, and for one sediment sample for metals and pesticides. A range of detects is provided for VOCs and SVOCs but individual sample ID values are not provided for these two samples. The results for metals and pesticides are unusual since the work plan and RFI report did not indicate that these parameters were to be analyzed.

In order to further assess whether one or two sediment samples were analyzed at this site, Appendix H (the analytical data summary tables for all samples) of the Zone E RFI report was reviewed. Results for only one sediment sample at AOC 528 is listed in the data summary tables, for VOC and SVOC analysis only. The data summary pages for this sample are attached.

The metals and pesticide data as well as the additional VOC and SVOC data reported for a sediment sample in the RFI report for AOC 528 appears to be analytical results for a sediment sample collected at AOC 539. Using the CNC EGIS, a review of sediment data was made, using the unusually high value reported for copper as a guide.

The sediment sample for AOC 528 was noted as not in the current version of the GIS, but will be included in a forthcoming update. Inspection of the data reported for metals for other Zone E sediment samples indicates that the value of copper reported in the sediment sample for the AOC 528 sample (134,000 mg/kg) in Table 10.20.6.2 occurred in a sediment sample collected from AOC 539 (E539M0001). After further inspection of the metals data for this sample, it is evident the reported detections for all metals in Table 10.20.6.2 that are attributed to a sediment sample collected at AOC 528 are identical to the results reported for sediment sample E539M0001 collected at AOC 539. Apparently, these results were inadvertently included in the discussion of results for AOC 528. The attached table provides the metals data for this sample from AOC 539. Comparison with the results reported in Table 10.20.6.2 indicate a match for every metal for the sediment sample E539M0001.

Thus, the answer to the reviewer's comments above appears to be that a single sediment sample was collected at AOC 528 and it was analyzed for VOCs and SVOCs, as stated in the text of the RFI and as proposed in the RFI work plan. The BEQ value for the sediment sample analyzed at AOC 528 was 435 µg/kg, which is well below the sitewide reference concentration of 1,304 µg/kg.

The text of the RFIRA will be clarified to summarize the above discussion.

2. Page 2-4 refers to an IM for AOC 699 conducted by the DET in 1999, and states that sediments in the floor drain at AOC 528 are no longer present. Page 3-1 briefly discusses the IM and states that the sediments in the catch basin are no longer present. Please clarify if the IM included removal of sediments from the floor drain, the catch basin, or both. A brief discussion of any post removal sampling should be included in order to confirm that the BEQ and copper contamination is no longer present.

CH2M-Jones Response:
The text will be clarified regarding cleanup of the catch basin and floor drain. However, as indicated above, the metals data included in the RFI for this site are related to AOC 539, not AOC 528. No analysis of metals was performed for sediment collected at AOC 528. The BEQ value for the sediment sampled collected at AOC 528 was 454 µg/kg. All of the sediment in the catch basins was removed by the DET during its IM; no sediment remained on which post-IM sampling could be conducted. Thus, there are not post-IM confirmatory samples available.

3. Since historical information as well as analytical data suggest that contaminants have been discharged to the sanitary sewer as well as the storm sewer, please provide a more thorough justification for the elimination of these site related closeout issues. For example, page 6-2 states, "no data suggests that impacts to the storm sewers have been caused by the site. Based on these findings, further evaluation of this issue is not warranted." However the Zone E RFI identified COPCs in the sediment sample from the storm sewer catch basin. A discussion of any confirmation samples from the IM of AOC 699 as well as any information regarding sanitary sewer evaluation in the vicinity of AOC 528 may clarify this issue.

CH2M-Jones Response:
As noted above in the response to the comment above, the analytical results for the single sediment sample analyzed at AOC 528 do not indicate contamination. The BCT has agreed that in the absence of data indicating impacts have occurred to the sewers, no further efforts are warranted. The level of discussion is appropriate given the lack of evidence of a release, and is consistent with agreements made in November 2000 regarding the approach to addressing the potential linkages to the sewers.

It should also be noted that the Navy/EnSafe team is currently performing an evaluation of whether there is any contamination discharging from the storm sewers at the CNC. They have conducted wet weather sampling of stormwater and have analyzed the collected stormwater for a wide range of analytes. In the event that this evaluation indicates a discharge of significant contamination that may be related to this site, any potential linkage will be reassessed at that time.

NAVAL BASE CHARLESTON, SOUTH CAROLINA
CHARLESTON ZONE E
AOC 528

PH							
	SAMPLE ID ------->	528-M-0001-01	528-S-B001-01	528-S-B001-02	528-S-B003-01	528-S-B003-02	528-C-B003-02
	ORIGINAL ID ----->	528M000101	528SB00101	528SB00102	528SB00301	528SB00302	528CB00302
	LAB SAMPLE ID --->	27111.01	23798.10	23798.11	23798.12	23798.13	23797.01
	ID FROM REPORT -->	528M000101	528SB00101	528SB00102	528SB00301	528SB00302	528CB00302
	SAMPLE DATE ----->	09/26/96	10/12/95	10/12/95	10/12/95	10/12/95	10/12/95
	DATE ANALYZED --->	10/04/96	10/16/95	10/16/95	10/16/95	10/16/95	10/16/95
	MATRIX ---------->	Sediment	Soil	Soil	Soil	Soil	Soil
	UNITS ---------->	SU	SU	SU	SU	SU	SU
CAS #	Parameter	26978	23720 VAL	23720 VAL	23720 VAL	23720 VAL	23720 VAL
9999900-09-4	pH	7.01 J	10.2	7.37	8.54	7.85	7.94

SW846-SVOA													
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	LAB SAMPLE ID --->	27111.01		23798.10		23798.11		23798.16		23798.17		23798.12	
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	MATRIX ---------->	Sediment		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	26978	VAL	23720	VAL	23720	VAL	23720	VAL	23720	VAL	23720	VAL
108-95-2	Phenol	480.	U	780.	U	700.	U	750.	U	780.	U	690.	U
111-44-4	bis(2-Chloroethyl)ether	480.	U	780.	U	700.	U	750.	U	780.	U	690.	U
95-57-8	2-Chlorophenol	480.	U	780.	U	700.	U	750.	U	780.	U	690.	U
541-73-1	1,3-Dichlorobenzene	480.	U	780.	U	700.	U	750.	U	780.	U	690.	U
106-46-7	1,4-Dichlorobenzene	480.	U	780.	U	700.	U	750.	U	780.	U	690.	U
95-50-1	1,2-Dichlorobenzene	480.	U	780.	U	700.	U	750.	U	780.	U	690.	U
95-48-7	2-Methylphenol (o-Cresol)	480.	U	780.	U	700.	U	750.	U	780.	U	690.	U
108-60-1	2,2'-oxybis(1-Chloropropane)	480.	U	780.	U	700.	U	750.	U	780.	U	690.	U
106-44-5	4-Methylphenol (p-Cresol)	480.	U	780.	U	700.	U	750.	U	780.	U	690.	U
621-64-7	N-Nitroso-di-n-propylamine	480.	U	780.	U	700.	U	750.	U	780.	U	690.	U
67-72-1	Hexachloroethane	480.	U	780.	U	700.	U	750.	U	780.	U	690.	U
98-95-3	Nitrobenzene	480.	U	780.	U	700.	U	750.	U	780.	U	690.	U
78-59-1	Isophorone	480.	U	780.	U	700.	U	750.	U	780.	U	690.	U
88-75-5	2-Nitrophenol	480.	U	780.	U	700.	U	750.	U	780.	U	690.	U
105-67-9	2,4-Dimethylphenol	480.	U	780.	U	700.	U	750.	U	780.	U	690.	U
120-83-2	2,4-Dichlorophenol	480.	U	780.	U	700.	U	750.	U	780.	U	690.	U
120-82-1	1,2,4-Trichlorobenzene	480.	U	780.	U	700.	U	750.	U	780.	U	690.	U
91-20-3	Naphthalene	480.	U	780.	U	700.	U	750.	U	780.	U	690.	U
106-47-8	4-Chloroaniline	480.	U	780.	U	700.	U	750.	U	780.	U	690.	U
111-91-1	bis(2-Chloroethoxy)methane	480.	U	780.	U	700.	U	750.	U	780.	U	690.	U
87-68-3	Hexachlorobutadiene	480.	U	780.	U	700.	U	750.	U	780.	U	690.	U
59-50-7	4-Chloro-3-methylphenol	480.	U	780.	U	700.	U	750.	U	780.	U	690.	U
91-57-6	2-Methylnaphthalene	480.	U	780.	U	700.	U	750.	U	780.	U	690.	U
77-47-4	Hexachlorocyclopentadiene	480.	U	780.	U	700.	U	750.	U	780.	U	690.	U
88-06-2	2,4,6-Trichlorophenol	480.	U	780.	U	700.	U	750.	U	780.	U	690.	U
95-95-4	2,4,5-Trichlorophenol	2400.	U	3800.	U	3400.	U	3600.	U	3800.	U	3400.	U
91-58-7	2-Chl ronaphthalene	480.	U	780.	U	700.	U	750.	U	780.	U	690.	U
88-74-4	2-Nitroaniline	2400.	U	3800.	U	3400.	U	3600.	U	3800.	U	3400.	U
131-11-3	Dimethyl phthalate	480.	U	780.	U	700.	U	750.	U	780.	U	690.	U
208-96-8	Acenaphthylene	480.	U	780.	U	700.	U	750.	U	780.	U	690.	U
606-20-2	2,6-Dinitrotoluene	480.	U	780.	U	700.	U	750.	U	780.	U	690.	U
99-09-2	3-Nitroaniline	2400.	U	3800.	U	3400.	U	3600.	U	3800.	U	3400.	U
83-32-9	Acenaphthene	480.	U	780.	U	700.	U	750.	U	780.	U	690.	U
51-28-5	2,4-Dinitrophenol	2400.	U	3800.	U	3400.	U	3600.	U	3800.	U	3400.	U
100-02-7	4-Nitrophenol	2400.	U	3800.	U	3400.	U	3600.	U	3800.	U	3400.	U
132-64-9	Dibenzofuran	480.	U	780.	U	700.	U	750.	U	780.	U	690.	U

*** Validation Complete ***

NAVAL BASE CHARLESTON, SOUTH CAROLINA
CHARLESTON ZONE E
AOC 528

SW846-SVOA

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	LAB SAMPLE ID --->	27111.01		23798.10		23798.11		23798.16		23798.17		23798.12	
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	MATRIX ---------->	Sediment		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	26978	VAL	23720	VAL	23720	VAL	23720	VAL	23720	VAL	23720	VAL
121-14-2	2,4-Dinitrotoluene	480.	U	780.	U	700.	U	750.	U	780.	U	690.	U
84-66-2	Di thylphthalate	480.	U	780.	U	700.	U	750.	U	780.	U	690.	U
7005-72-3	4-Chlorophenylphenylether	480.	U	780.	U	700.	U	750.	U	780.	U	690.	U
86-73-7	Fluorene	480.	U	780.	U	700.	U	750.	U	780.	U	690.	U
100-01-6	4-Nitroaniline	2400.	U	3800.	U	3400.	U	3600.	U	3800.	U	3400.	U
534-52-1	2-Methyl-4,6-Dinitrophenol	2400.	U	3800.	U	3400.	U	3600.	U	3800.	U	3400.	U
86-30-6	N-Nitrosodiphenylamine	480.	U	780.	U	700.	U	750.	U	780.	U	690.	U
101-55-3	4-Bromophenyl-phenylether	480.	U	780.	U	700.	U	750.	U	780.	U	690.	U
118-74-1	Hexachlorobenzene	480.	U	780.	U	700.	U	750.	U	780.	U	690.	U
87-86-5	Pentachlorophenol	2400.	U	3800.	U	3400.	U	3600.	U	3800.	U	3400.	U
85-01-8	Phenanthrene	140.	J	780.	U	700.	U	90.	J	200.	J	690.	U
120-12-7	Anthracene	480.	U	780.	U	700.	U	750.	U	780.	U	690.	U
84-74-2	Di-n-butylphthalate	480.	U	780.	U	700.	U	750.	U	780.	U	690.	U
206-44-0	Fluoranthene	310.	J	780.	U	700.	U	220.	J	360.	J	690.	U
129-00-0	Pyrene	290.	J	780.	U	700.	U	190.	J	340.	J	690.	U
85-68-7	Butylbenzylphthalate	710.		160.	J	700.	U	750.	U	780.	U	690.	U
91-94-1	3,3'-Dichlorobenzidine	970.	U	1600.	U	1400.	U	1500.	U	1600.	U	1400.	U
56-55-3	Benzo(a)anthracene	190.	J	780.	U	700.	U	110.	J	180.	J	690.	U
218-01-9	Chrysene	320.	J	780.	U	700.	U	120.	J	210.	J	690.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	17000.	D	780.	U	700.	U	750.	U	780.	U	690.	U
117-84-0	Di-n-octyl phthalate	340.	J	780.	U	700.	U	750.	U	780.	U	690.	U
205-99-2	Benzo(b)fluoranthene	480.	U	780.	U	700.	U	750.	U	200.	J	690.	U
207-08-9	Benzo(k)fluoranthene	630.		780.	U	700.	U	190.	J	190.	J	690.	U
50-32-8	Benzo(a)pyrene	260.	J	780.	U	700.	U	110.	J	200.	J	690.	U
193-39-5	Indeno(1,2,3-cd)pyrene	310.	J	780.	U	700.	U	750.	U	120.	J	690.	U
53-70-3	Dibenz(a,h)anthracene	94.	J	780.	U	700.	U	750.	U	780.	U	690.	U
191-24-2	Benzo(g,h,i)perylene	390.	J	780.	U	700.	U	750.	U	150.	J	690.	U
100-51-6	Benzyl alcohol	480.	U	780.	U	700.	U	750.	U	780.	U	690.	U
65-85-0	Benzoic acid	67.	J	3800.	U	3400.	U	3600.	U	3800.	U	3400.	U

*** Validat. Complete ***

NAVAL BASE CHARLESTON, SOUTH CAROLINA
CHARLESTON ZONE E
AOC 528

SW846-VOA													
	SAMPLE ID ------->	528-M-0001-01		528-S-B001-01		528-S-B001-02		528-S-B002-01		528-S-B002-02		528-S-B003-01	
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	MATRIX ---------->	Sediment		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
CAS #	Parameter	26978	VAL	23720	VAL	23720	VAL	23720	VAL	23720	VAL	23720	VAL
74-87-3	Chloromethane	15.	U	12.	U	11.	U	11.	U	20.	U	10.	U
74-83-9	Bromomethane	15.	U	12.	U	11.	U	11.	U	20.	U	10.	U
75-01-4	Vinyl chloride	15.	U	12.	U	11.	U	11.	U	20.	U	10.	U
75-00-3	Chloroethane	15.	U	12.	U	11.	U	11.	U	20.	U	10.	U
75-09-2	Methylene chloride	7.	U	77.	U	59.	U	6.	U	10.	U	69.	U
67-64-1	Acetone	15.	UJ	50.	U	20.	U	160.	U	220.	U	19.	U
75-15-0	Carbon disulfide	7.	U	6.	U	5.	U	6.	U	10.	U	5.	U
75-35-4	1,1-Dichloroethene	7.	U	6.	U	5.	U	6.	U	10.	U	5.	U
75-34-3	1,1-Dichloroethane	7.	U	6.	U	5.	U	6.	U	10.	U	5.	U
540-59-0	1,2-Dichloroethene (total)	7.	U	6.	U	5.	U	6.	U	10.	U	5.	U
67-66-3	Chlor form	7.	U	6.	U	5.	U	6.	U	10.	U	5.	U
107-06-2	1,2-Dichloroethane	7.	U	6.	U	5.	U	6.	U	10.	U	5.	U
78-93-3	2-Butanone (MEK)	15.	UJ	12.	U	3.	J	11.	U	20.	U	10.	U
71-55-6	1,1,1-Trichloroethane	7.	U	6.	U	5.	U	6.	U	10.	U	5.	U
56-23-5	Carbon tetrachloride	7.	U	6.	U	5.	U	6.	U	10.	U	5.	U
108-05-4	Vinyl acetate	15.	UJ	12.	U	11.	U	11.	U	20.	U	10.	U
75-27-4	Bromodichloromethane	7.	U	6.	U	5.	U	6.	U	10.	U	5.	U
78-87-5	1,2-Dichloropropane	7.	U	6.	U	5.	U	6.	U	10.	U	5.	U
10061-01-5	cis-1,3-Dichloropropene	7.	U	6.	U	5.	U	6.	U	10.	U	5.	U
79-01-6	Trichl roethene	7.	U	6.	U	5.	U	6.	U	10.	U	5.	U
124-48-1	Dibromochloromethane	7.	U	6.	U	5.	U	6.	U	10.	U	5.	U
79-00-5	1,1,2-Trichloroethane	7.	U	6.	U	5.	U	6.	U	10.	U	5.	U
71-43-2	Benzene	7.	U	6.	U	5.	U	6.	U	10.	U	5.	U
10061-02-6	trans-1,3-Dichloropropene	7.	U	6.	U	5.	U	6.	U	10.	U	5.	U
75-25-2	Bromof rm	7.	U	6.	U	5.	U	6.	U	10.	U	5.	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	15.	UJ	12.	U	11.	U	11.	U	20.	U	10.	U
591-78-6	2-Hexanone	15.	UJ	12.	U	11.	U	11.	U	20.	U	10.	U
127-18-4	Tetrachloroethene	7.	UJ	6.	U	5.	U	6.	U	10.	U	5.	U
108-88-3	Toluene	7.	UJ	6.	U	5.	U	6.	U	10.	U	5.	U
79-34-5	1,1,2,2-Tetrachloroethane	7.	UJ	6.	U	5.	U	6.	U	10.	U	5.	U
108-90-7	Chlorobenzene	7.	UJ	6.	U	5.	U	6.	U	10.	U	5.	U
100-41-4	Ethylbenzene	7.	UJ	6.	U	5.	U	6.	U	10.	U	5.	U
100-42-5	Styrene	7.	UJ	6.	U	5.	U	6.	U	10.	U	5.	U
1330-20-7	Xylene (Total)	7.	UJ	6.	U	5.	U	6.	U	10.	U	5.	U
110-75-8	2-Chloroethyl vinyl ether	15.	UR	12.	U	11.	U	11.	U	20.	U	10.	U

*** Validation Complete ***

Summary of Metals Data for Sediment Sample Collected at AOC 539

SAMPLE	CHEM_NAME	CHEM_LABEL	RESULT	UNIT	QUALIFIER	STATION	MEDIA	DATE_COL
539M000101	Silver	Ag	26.50000	mg/kg	=	E539M0001	SD	09/07/1995
539M000101	Aluminum	Al	15900.00000	mg/kg	=	E539M0001	SD	09/07/1995
539M000101	Arsenic	As	6.60000	mg/kg	=	E539M0001	SD	09/07/1995
539M000101	Barium	Ba	99.80000	mg/kg	=	E539M0001	SD	09/07/1995
539M000101	Beryllium	Be	0.12000	mg/kg	J	E539M0001	SD	09/07/1995
539M000101	Calcium	Ca	42200.00000	mg/kg	=	E539M0001	SD	09/07/1995
539M000101	Cadmium	Cd	10.70000	mg/kg	=	E539M0001	SD	09/07/1995
539M000101	Cobalt	Co	21.10000	mg/kg	=	E539M0001	SD	09/07/1995
539M000101	Chromium, Total	Cr	107.00000	mg/kg	=	E539M0001	SD	09/07/1995
539M000101	Copper	Cu	134000.00000	mg/kg	=	E539M0001	SD	09/07/1995
539M000101	Iron	Fe	25100.00000	mg/kg	=	E539M0001	SD	09/07/1995
539M000101	Mercury	Hg	0.02000	mg/kg	U	E539M0001	SD	09/07/1995
539M000101	Potassium	K	433.00000	mg/kg	J	E539M0001	SD	09/07/1995
539M000101	Magnesium	Mg	1170.00000	mg/kg	=	E539M0001	SD	09/07/1995
539M000101	Manganese	Mn	3150.00000	mg/kg	=	E539M0001	SD	09/07/1995
539M000101	Sodium	Na	3370.00000	mg/kg	=	E539M0001	SD	09/07/1995
539M000101	Nickel	Ni	6480.00000	mg/kg	=	E539M0001	SD	09/07/1995
539M000101	Lead	Pb	364.00000	mg/kg	=	E539M0001	SD	09/07/1995
539M000101	Antimony	Sb	15.30000	mg/kg	J	E539M0001	SD	09/07/1995
539M000101	Selenium	Se	0.51000	mg/kg	U	E539M0001	SD	09/07/1995
539M000101	Tin (Sn)	Sn	336.00000	mg/kg	=	E539M0001	SD	09/07/1995
539M000101	Thallium	Tl	0.51000	mg/kg	U	E539M0001	SD	09/07/1995
539M000101	Vanadium	V	15.90000	mg/kg	=	E539M0001	SD	09/07/1995
539M000101	Zinc	Zn	17100.00000	mg/kg	=	E539M0001	SD	09/07/1995

Hydrogeology Comments Prepared by Jo Cherie Overcash

SCDHEC General Comment

According to the facility's RCRA Permit modified in April 2002, area of concern (AOC) 528 in Zone E was a Steam Cleaning Shop located at Building 59 for which confirmatory sampling was required. The wastewater generated by the cleaning operations would have included hot water, trisodiumphosphate, caustics and detergents and was discharged to the sewer system. Before installation of the sanitary sewer system, waste was discharged to the Cooper River by way of the combined sewer system. The text does not specifically state whether solvents (volatile/semi-volatile organic compounds) were used in this process nor does the text state disposition of the spent kerosene from the first cleaning bath.

The following concerns were generated during review of the referenced RFI Report Addendum:

<u>Concerns</u>

1. In Section 1.1 of the referenced RFI Addendum, the text describes the cleaning process for boiler tubes received at Building 59. In that discussion the text refers to the "steam-cleaning shop on the western side of Building 59" and to the "boiler shop in Building 59." The process is described in the text such that one can conclude that there were two separate areas at Building 59 where the boiler tubes were cleaned and that the tubes were cleaned in a certain succession. From the text one can reason that the boiler tubes preserved with Cosmoline® grease were received at the "boiler shop" inside Building 59. At that location the Cosmoline® grease was removed by a kerosene bath, which was followed by a bath of hot water, trisodiumphosphate, caustic and detergents. The boiler tubes were then sent to a second location, the Steam Cleaning Shop, for final rinsing.

   Figure 5-22 of the RCRA Facility Assessment identifies area of concern (AOC) 528 as an area located within Building 59. The Figure clearly identifies by cross-hatch an area approximately 114 feet long by 73 feet wide in the northwest corner of Building 59. Figure 5-22 also identifies Building 1453 as a small structure located to the west of Building 59. According to the facility's geographic information system (GIS) database, Building 1453 is entitled Cleaning and Preservation Plant.

   The Navy has conducted this RFI investigation at Building 1453. Of concern is that the Navy has conducted a soils investigation around Building 1453 when the actual AOC 528 is located inside Building 59. Note that the RFA states that "Several cracks were observed on the floor in and around the building". The RFA clearly identified AOC 528 as inside Building 59.

   The Navy must clarify the location(s) of the actual cleaning process station(s) in use during operation of the Naval Base. The Navy must determine whether there was a cleaning station inside Building 59, as the RFA states. The Navy must propose to conduct an appropriate investigation inside Building 59 if one or more of the cleaning stations were located there.

CH2M-Jones Response:

This comment is essentially the same as a comment from the SCDHEC Engineering group, Mr. Jerry Stamps. Please refer to responses to that comment. A few key points from our response to Mr. Stamps' comment are noted or paraphrased below.

The comment above indicates that SCDHEC does not understand why SCDHEC approved the work plan seven years ago without requiring sampling beneath Building 59. It appears that SCDHEC has concluded now that it somehow may have made a mistake to not require sampling beneath that Building 59, and is asking the Navy to explain why SCDHEC approved this work plan seven years ago. The reviewer indicates that unless the Navy can adequately explain SCDHEC's behavior in approving this work plan seven years ago, a new investigation is required in spite of the lack of contamination identified by the Confirmatory Sampling Investigation and despite the decision by previous SCDHEC staff that sampling beneath the building was not warranted. It does not appear that any attempt was made to contact the previous SCDHEC staff that approved the work plan to ask them why it was approved without requiring sampling beneath Building 59. Yet, no new information is provided to justify this request; rather information that was fully known and considered by SCDHEC and the BCT during the development and approval of the work plan is used as the sole basis for the comment.

The BCT team that approved the Zone E RFI work plan did so with full knowledge of the information that the SCDHEC reviewer has included in the above comment. The previous BCT team that approved the RFI work plan with these proposed sampling locations completed a thorough review of potentially contaminated areas and selected proposed sampling locations willfully and with knowledge of the information in the RFA. A draft RFI work plan was developed and commented on and approved only after the team spent considerable time reviewing all proposed sampling locations and agreeing that they were appropriate. It is important to note that because of the development of the Zone E RFI work plan in the 1994 to 1995 timeframe, the previous BCT team members were able to engage in conversations with site personnel who had intimate knowledge of the sites based on many years experience at the CNC. Thus, the previous team had a significant advantage over the current BCT by having access to these individuals and were able to use this information in identifying appropriate sampling locations. The Navy and CH2M-Jones are confident that the previous sampling locations were selected with appropriate professional judgement, knowledge about the site, and with appropriate planning, review, discussion, and other collaborative work efforts by the BCT.

We do not feel that it is reasonable for the regulator to require the regulated party to justify why the regulator previously approved a work plan, particularly one approved by SCDHEC seven years ago when the project had nearly completely different staff. The regulator should know why it approved the work plan. It will never be possible to recreate the extensive dialogue and discussions regarding why every sample location in the RFI work plan was selected and why every other potential location was not selected. The Navy/CH2M-Jones team should not be expected to recreate such discussions seven years later, a clearly impossible task. Nor should the Navy and CH2M-Jones be expected to provide rationalizations that were adequately provided seven years ago. It is impossible to provide justifications today that were provided seven years ago because many staff that were working

at the facilities seven years ago are gone and the detailed information about site operations that they were able to provide to the previous BCT is not retrievable. While it is unfortunate that SCDHEC cannot remember why it approved the work plan, it should not penalize the Navy because of the regulator's inability to remember why it approved the work plan.

There is no evidence that the previous BCT team that approved the RFI work plan was negligent, incompetent, made a mistake, or was otherwise irresponsible in approving the Zone E RFI work plan. In fact, based on the information available, the previous BCT team that developed the Zone E RFI work plan was quite competent and was in many cases much more familiar with the sites and operations than the current team. Instead of second guessing the adequacy of the previous SCDHEC approval of this work plan, SCDHEC should be confident that the sampling locations that were selected were suitable locations for identifying potential contamination at the site. The data do not indicate the need to continue the Confirmatory Sampling Investigation activities at this site.

2. One shallow groundwater monitoring well identified as E528GW001 was installed between Buildings 59 and Building 1453. According to the GIS database, this monitoring well is sidegradient to AOC 528 whether the site is inside Building 59 or is actually Building 1453. This well may not be properly located to monitor a possible release from either of these two locations given the current potentiometric contours.

   Moreover, according to the GIS database, the following four geoprobe sampling locations associated with the Base sanitary sewer system are in the vicinity of Building 59: LE037GP060, LE037GP065, LE037GP071 and LE037GP072. Geoprobe location LE037GP072 is located at the northwest corner of Building 59, in the immediate vicinity of AOC 528 as described by the RFA. The concentrations of chromium and lead at the LE037GP072 location is reported in the GIS database as 190.0 micrograms per liter (µg/L) and 60.9 µg/L respectively. The maximum concentration limit (MCL) for total chromium is 100 µg/L and the action level for lead is 15 µg/L.

   Geoprobe location LE037GP060 is hydraulically downgradient and slightly west of Building 1453. Mercury was reported at 5.2 µg/L at this location. The MCL for mercury is 2.0 µg/L. Geoprobe locations LE037GP065 and LE037GP071 do not report elevated concentrations of metals.

   The Navy must install an appropriate number of downgradient monitoring wells to determine groundwater quality in this area of the Base due to:

   - the process of cleaning equipment preserved with Cosmoline® (grease);
   - the use of caustics during the cleaning process (possibly solvents);
   - the presence of cracks in the floor of Building 59 in the RFA identified AOC 528;
   - the presence of elevated concentrations of metals in the geoprobe sample nearest the unit;
   - the detection of volatile and semi-volatile organic compounds in surface and subsurface soil; and
   - the sidegradient location of monitoring well E528GW001.

Groundwater samples should be analyzed for volatile and semi-volatile organic compounds, metals, and pesticides (see Appendix B), at a minimum. An approval for installation of monitoring wells will be granted upon receipt of an approvable well request.

CH2M-Jones Response:

As stated in the response above, the Zone E RFI work plan identified the most probable locations for contamination to be found at AOC 528 for the Confirmatory Sampling Investigation. Accordingly, those sampling locations were sampled and analyzed. No chemicals of concern (COCs) or significant contamination were found; therefore the objectives of the Confirmatory Sampling Investigation have been met and there is no reason to continue any investigative activities at this site.

The comparison of inorganic groundwater data collected via Geoprobes (as part of the Zone L investigation) to MCLs as a means for identifying groundwater "contamination" is inappropriate due to the presence of significant turbidity in these unfiltered DPT groundwater samples. For example, the turbidity of the DPT samples that the reviewer mentions above are as follows:

Sample	Turbidity (NTU)
LE037GP060	Not available
LE037GP065	659
LE037GP071	117
LE037GP072	999

NTU Nephelometric turbidity units

For the three samples for which turbidity data could be identified, the values are clearly elevated above values that would be measured in a properly developed well and considered to be representative of the aquifer. The turbidity in these samples is representative of the high turbidity levels encountered throughout the Zone L DPT groundwater data.

Because the SCDHEC reviewer was not involved in the Zone L RFI investigation activities and may not be aware of information presented in the draft Zone L RFI report, some summary materials excerpted from the draft Zone L RFI report are provided herewith and described below. Attached to this Response to Comments are the following from the draft Zone L RFI report:

- *A summary table that compares the mean turbidity in the DPT samples versus permanent monitoring wells (Table 10.04.4.1) for Zones E, F, G, H, and I;*
- *Summary tables that provide turbidity data for individual DPT groundwater samples (Zones E through I); and*
- *Summary tables that present the frequency of detections, range of detections and mean detected values for metals in the DPT groundwater samples, for each Zone (A through I).*

In the first attachment (Table 10.0.4.1) the mean turbidity in the groundwater DPT samples for Zones E through I is shown to be 474 NTU. This value is significantly greater than the preferred turbidity levels of 10 NTU or less desired for representative groundwater samples (EPA, 2002). It is also significantly greater than the turbidity measured in samples from the permanent monitoring wells in those zones (10.7 NTU).

The presence of such highly elevated turbidity values in these DPT samples renders them non-representative of actual groundwater conditions for assessing metals concentrations. Because these groundwater samples do not provide metals data representative of actual groundwater quality, they cannot be used to reliably indicate whether metals contamination is present. State of South Carolina regulations (such as R. 61-68) requires that groundwater samples be collected so as to permit a realistic appraisal of quality. Because these groundwater samples do not permit a realistic appraisal of quality for metals, any comparisons of the metals concentrations in these samples to MCLS, RBCs, or other screening values are not meaningful.

The attached tables from the draft Zone L RFI report show the range of metals detected in groundwater DPT samples. These tables illustrate the degree to which the elevated metals concentrations were detected in all zones at the CNC in these turbidity-impacted, unfiltered samples. In most zones, mean concentrations of lead and chromium as well as other metals in these unfiltered samples are above the respective MCLs. These values do not indicate that "contamination" is present; rather they indicate that the naturally occurring particulates which cause turbidity in these samples contain these metals due to background conditions.

SCDHEC has told the Navy/CH2M-Jones team that it will not accept DPT groundwater data for making regulatory decisions. For this reason, it is not appropriate for SCDHEC to now attempt to use these obviously non-representative, turbidity-impacted DPT samples to assert that plumes of metals in groundwater above MCLs are present at these sites.

Collection and analysis of groundwater samples with high turbidity, whether from wells or DPT methods, is not consistent with the current EPA guidance for groundwater sampling at Superfund and RCRA sites (EPA, 2002). Current EPA groundwater guidance recommends the collection of filtered samples where turbidity is a problem. Had such filtering guidance been available at the time the Zone L work plan was developed and approved, unfiltered groundwater samples would likely not have been analyzed for metals; rather, filtered samples would have been collected.

CH2M-Jones' opinion about the usability of the metals data for unfiltered DPT groundwater samples is that those samples with elevated turbidity cannot be used to make regulatory decisions or conclusions that contamination is present. Metals results for these DPT samples with high turbidity should be disregarded.

For the reasons described above, the Navy and CH2M-Jones believe that the issues raised about inorganics in groundwater based on DPT sampling are not relevant since the turbidity in the DPT samples (117 to 999 NTU) renders them unrepresentative of actual groundwater quality. Because the permanent monitoring well installed at AOC 528 as part of the RFI did not indicate the presence of metals (or other) contamination, no additional groundwater sampling is required at this site. None of the metals mentioned by the reviewer in the comment above (lead, chromium, or mercury) are identified as COCs based on site soil and groundwater samples (from the site well) and there is no reason to believe that a release of these metals occurred at AOC 528.

The reviewer also notes above that additional investigation activities are required at the site, in part, due to detection of volatile organic chemicals (VOCs) in surface and subsurface soil. It should be noted that only a single low-level value (3 micrograms per kilogram [µg/kg]) of one VOC (methyl ethyl ketone, a recognized common laboratory contaminant) was detected in only one sample at a concentration less than 1/100th of its soil screening level (SSL) (400 µg/kg), and even more significantly below its residential RBC of 47,000,000 µg/kg. Thus, the suggestion that VOCs are a problem that warrants further delineation at this site is not supported by the data.

The suggestion by the SCDHEC reviewer that solvents were possibly used at AOC 528 based on the reported use of caustics appears to be speculative. Neither the RFA nor the RFI work plan or report indicate that solvents were used at this site. There appears to be no basis for such speculation and the available information does not support this speculation.

Overall, we believe that this site has been adequately investigated as required by the RFI work plan, that the data do not indicate the presence of contamination attributable to AOC 528 and that adequate information is available to make appropriate decisions about the next step of the RCRA Corrective Action process. Such steps could include either a NFA determination with land use controls applied based on its location in Zone E or a determination of No Further Investigation required and application of land use controls restricting the property to non-residential use.

Reference:

Yeskis, Douglas and Bernard Zavala. *Ground-water Sampling Guidelines for Superfund and RCRA Project Managers*. Ground Water Forum Issue Paper. EPA 542-S-02-001. May 2002.

Table 10.0.4.1
Aggregate Turbidity Means
Comparisons

Subzone	DPT Sample Location (ntu)	Monitoring Wells (ntu)
E1	417.5	18.1
E2	477.6	3.4
E3	624.5	16.4
E4	434.0	13.8
E5	301.3	18.5
E6	249.4	29.9
E7	605.3	8.4
F1	576.8	5.5
F2	359.6	None
F3	308.2	52.9
F4	532.6	3.5
F5	631.0	5.7
F6	619.5	9.3
G1	775.5	4.5
G2	582.0	1.4
H1	419.0	3.0
H2	627.0	0.5
H3	137.5	0.8
H4	702.2	1.5
H5	465.7	3.8
I1	123.0	2.4
I2	458.4	31.4
Average	**474.0**	**10.7**
t-Statistic	**12.4**	
t Critical (95%)	**2.1**	

Table 10.1.5
SWMU 37, Zone L, Subzone A
Inorganic Detections for DPT Groundwater

Element	Freq. of Detection	Range of Detected Conc.	Mean of Detected Conc.
Inorganic Elements (μg/L)			
Cyanide (CN)	5/20	5.30-15.1	10.5
Aluminum (Al)	20/20	1280-593000	125585
Antimony (Sb)	11/20	8.20-272	37.8
Arsenic (As)	13/20	10.6-1120	182.8
Barium (Ba)	20/20	51.5-2670	479.3
Beryllium (Be)	10/20	2.20-24.8	9.11
Cadmium (Cd)	5/20	3.80-18.4	8.46
Calcium (Ca)	20/20	2130-1120000	313084
Chromium (Cr)	19/20	7.80-978	230.9
Cobalt (Co)	13/20	5.40-204	37.9
Copper (Cu)	14/20	8.10-704	149.4
Iron (Fe)	20/20	7880-855000	168079
Lead (Pb)	19/20	4.90-3310	355.7
Magnesium (Mg)	20/20	3260-470000	100553
Manganese (Mn)	20/20	165-6050	1183
Mercury (Hg)	9/20	0.200-1.40	0.609
Nickel (Ni)	16/20	8.90-303	73.7
Potassium (K)	20/20	2280-154000	42186
Selenium (Se)	9/20	7.50-33.0	16.5
Silver (Ag)	4/20	6.00-63.3	26.2
Sodium (Na)	20/20	6530-4090000	637607
Thallium (Tl)	3/20	12.9-25.9	55.1
Tin (Sn)	1/20	800	800
Vanadium (V)	18/20	10.7-1760	346.9
Zinc (Zn)	14/20	31.7-1850	530.2

Notes:
μg/L = Micrograms per liter

Metals/Cyanide in DPT Groundwater

As stated in Section 10.0, the inorganic DPT groundwater samples were not compared to RBC or MCL values.

Table 10.2.4
SWMU 37, Zone L, Subzone B
Organic Compounds Detected in DPT Groundwater

Compound	Freq of Detection	Range of Detected Conc.	Mean of Detected Conc.	Tap Water RBC	MCL	Number of Samples Exceeding RBC	Salt Wtr. Surf. Wtr. Chronic	Ground-water Migration Concern	Surface Water Migration Concern
Volatile Compounds (μg/L)									
Acetone	1/10	12.8	12.8	370	NA	0	NA	NO	NO

Notes:
μg/L = Micrograms per liter
RBC = Risk-based concentration
MCL = Maximum contaminant level
NA = Not applicable

Table 10.2.5
SWMU 37, Zone L, Subzone B
Inorganic Detections for DPT Groundwater

Element	Freq. of Detection	Range of Detected Conc.	Mean of Detected Conc.
Inorganic Elements (μg/L)			
Cyanide (CN)	3/10	5.10-8.00	6.77
Aluminum (Al)	10/10	1200-548000	147420
Antimony (Sb)	3/10	8.70-14.8	11.3
Arsenic (As)	10/10	29.9-520	115.9
Barium (Ba)	10/10	20.4-1750	538.9
Beryllium (Be)	8/10	2.20-11.2	5.36
Cadmium (Cd)	2/10	3.80-8.30	6.05
Calcium (Ca)	10/10	34800-1090000	334080
Chromium (Cr)	9/10	38.4-693	248.9
Cobalt (Co)	8/10	7.50-42.4	24.4
Copper (Cu)	9/10	10.9-514	115.1

Table 10.2.5
SWMU 37, Zone L, Subzone B
Inorganic Detections for DPT Groundwater

Element	Freq. of Detection	Range of Detected Conc.	Mean of Detected Conc.
Iron (Fe)	10/10	2040-230000	95074
Lead (Pb)	9/10	36.3-3810	601.7
Magnesium (Mg)	10/10	3960-110000	38460
Manganese (Mn)	10/10	412-1970	936
Mercury (Hg)	8/10	0.290-4.70	1.08
Nickel (Ni)	9/10	13.2-168	66.4
Potassium (K)	10/10	4060-45300	20220
Selenium (Se)	5/10	5.50-19.6	9.60
Sodium (Na)	10/10	10600-388000	103630
Vanadium (V)	9/10	56.9-737	253.2
Zinc (Zn)	9/10	95.3-3430	683.5

Notes:
μg/L = Micrograms per liter

10.2.2 Subzone B, AOC 699

In accordance with the approved work plan, no samples were collected in Subzone B for AOC 699.

10.2.3 Subzone B, AOC 504

AOC 504 sampling in Subzone B consisted of seven upper interval and six lower interval soil borings collected using a hand auger, and 14 soil samples collected using DPT methods. The soil boring samples were analyzed for VOCs, SVOCs, metals, cyanide, chlorinated pesticides, and PCBs. The DPT samples were analyzed for VOCs, metals, and cyanide. The locations of these samples are presented in Figures 10.2.6 through 10.2.8.

Table 10.3.5
SWMU 37, Zone L, Subzone C
Inorganic Detections for DPT Groundwater

Element	Freq. of Detection	Range of Detected Conc.	Mean of Detected Conc.
Inorganic Elements (μg/L)			
Cyanide (CN)	5/40	5.90-12.9	8.04
Aluminum (Al)	40/40	332-1140000	209937
Antimony (Sb)	12/40	8.20-26.2	13.9
Arsenic (As)	34/40	12.1-1220	170.5
Barium (Ba)	40/40	8.00-2530	608
Beryllium (Be)	28/40	2.00-63.4	9.67
Cadmium (Cd)	7/40	3.10-25.8	9.37
Calcium (Ca)	40/40	3580-3820000	311480
Chromium (Cr)	38/40	6.40-2840	386.9
Cobalt (Co)	32/40	6.40-196	35.6
Copper (Cu)	36/40	8.60-3930	217.5
Iron (Fe)	40/40	375-786000	136631
Lead (Pb)	38/40	3.30-2560	343.1
Magnesium (Mg)	39/40	585-123000	22509
Manganese (Mn)	40/40	7.20-2640	641.5
Mercury (Hg)	28/40	0.230-17.9	2.09
Nickel (Ni)	37/40	4.40-483	87.1
Potassium (K)	40/40	330-56900	12337
Selenium (Se)	27/40	5.50-46.5	17.9
Silver (Ag)	3/40	11.2-62.5	28.5
Sodium (Na)	40/40	1770-855000	74925
Thallium (Tl)	11/40	10.5-29.9	16.1
Tin (Sn)	1/40	87.4	87.4
Vanadium (V)	37/40	11.0-1770	338.7
Zinc (Zn)	37/40	23.1-2260	497.7

Notes:
μg/L = Micrograms per liter

Table 10.5.6
SWMU 037, Zone L, Subzone E
Inorganic Detections for DPT Groundwater

Element	Freq. of Detection	Range of Detected Conc.	Mean of Detected Conc.
Calcium (Ca)	105/105	3840-2510000	228467
Chromium (Cr)	102/105	5.10-1120	166.9
Cobalt (Co)	61/105	5.60-271	30.7
Copper (Cu)	90/105	7.10-792	97.2
Iron (Fe)	105/105	1510-909000	76490
Lead (Pb)	96/105	3.20-12800	325.0
Magnesium (Mg)	105/105	1320-718000	70174
Manganese (Mn)	105/105	13.7-9870	813.1
Mercury (Hg)	32/105	0.210-5.20	0.926
Nickel (Ni)	92/105	4.10-410	56.3
Potassium (K)	102/105	1070-214000	29912
Selenium (Se)	33/105	5.10-58.3	14.2
Silver (Ag)	2/105	30.2-37.0	33.6
Sodium (Na)	104/105	5560-5530000	501807
Thallium (Tl)	22/105	10.1-52.2	17.8
Tin (Sn)	1/105	90.0	90.0
Vanadium (V)	100/105	6.20-1260	141.6
Zinc (Zn)	92/105	20.2-109000	1767.1

Notes:
µg/L = Micrograms per liter

10.5.1.3 Nature of Contamination in Subzone E, SWMU 37, Soil Borings

Twelve upper interval and four lower-interval samples were collected using a hand auger and analyzed for VOCs, SVOCs, metals, cyanide, chlorinated pesticides, and PCBs. Surface interval sample results were compared to RBC values, and lower-interval soil samples were compared to

Table 10.5.18
AOC 699, Zone L, Subzone E
Inorganic Detections for DPT Groundwater

Element	Freq. of Detection	Range of Detected Conc.	Mean of Detected Conc.
Antimony (Sb)	8/95	8.20-36.7	15.9
Arsenic (As)	68/95	10.0-572	52.2
Barium (Ba)	95/95	8.80-3470	247.4
Beryllium (Be)	30/95	2.00-19.6	5.69
Cadmium (Cd)	7/95	5.00-25.8	10.6
Calcium (Ca)	95/95	1860-1530000	142768
Chromium (Cr)	92/95	7.50-778	104.4
Cobalt (Co)	49/95	5.30-200	28.7
Copper (Cu)	80/95	7.30-4550	106.9
Iron (Fe)	95/95	487-727000	55473
Lead (Pb)	89/95	3.30-5460	134.7
Magnesium (Mg)	95/95	1040-1010000	101717
Manganese (Mn)	95/95	8.70-6840	638.8
Mercury (Hg)	16/95	0.200-1.30	0.456
Nickel (Ni)	79/95	4.10-435	39.9
Potassium (K)	95/95	1660-214000	38268
Selenium (Se)	31/95	5.00-41.6	10.7
Silver (Ag)	1/95	6.20	6.20
Sodium (Na)	91/95	926-7460000	837936
Thallium (Tl)	9/95	10.4-46.80	23.5
Tin (Sn)	1/95	396	396
Vanadium (V)	89/95	7.00-1030	98.2
Zinc (Zn)	85/95	20.5-8590	395.4

Notes:
μg/L = Micrograms per liter

Metals/Cyanide Detected in DPT Groundwater

Analytical results for metals and cyanide in DPT groundwater samples are presented in Table 10.6.6. As stated in Section 10.0, inorganic results from DPT groundwater samples were not compared to RBCs or MCLs.

Table 10.6.6
SWMU 37,Zone L, Subzone F
Inorganic Detections for DPT Groundwater

Element	Freq. of Detection	Range of Detected Conc.	Mean of Detected Conc.
Inorganic Elements (μg/L)			
Cyanide (CN)	2/63	5.10-91.8	48.5
Aluminum (Al)	63/63	1250-448000	88961
Antimony (Sb)	12/63	8.40-25.8	13.4
Arsenic (As)	59/63	11.5-486	95.6
Barium (Ba)	63/63	39.4-3320	420.9
Beryllium (Be)	43/63	2.00-46.1	9.29
Cadmium (Cd)	16/63	3.50-62.0	13.7
Calcium (Ca)	63/63	45000-2500000	390160
Chromium (Cr)	61/63	6.80-2030	262.7
Cobalt (Co)	58/63	5.70-220	52.4
Copper (Cu)	52/63	7.90-9150	235.6
Iron (Fe)	63/63	2050-700000	106321
Lead (Pb)	60/63	5.80-32600	654.1
Magnesium (Mg)	63/63	5510-1150000	124133
Manganese (Mn)	63/63	116-9950	2201
Mercury (Hg)	34/63	0.250-3.20	0.687
Nickel (Ni)	61/63	4.10-274	73.2
Potassium (K)	63/63	3800-264000	36796
Selenium (Se)	33/63	5.20-55.8	14.9
Silver (Ag)	1/63	8.70	8.70
Sodium (Na)	63/63	14700-8410000	1057448

Table 10.6.6
SWMU 37,Zone L, Subzone F
Inorganic Detections for DPT Groundwater

Element	Freq. of Detection	Range of Detected Conc.	Mean of Detected Conc.
Thallium (Tl)	8/63	10.1-26.4	15.6
Tin (Sn)	1/63	653	653
Vanadium (V)	60/63	6.50-1020	202.7
Zinc (Zn)	57/63	35.7-42000	1069.7

Notes:
µg/L = Micrograms per liter

10.6.2 Subzone F, AOC 699

AOC 699 sampling in Subzone F consisted of 33 DPT soil samples and 49 DPT groundwater samples analyzed for VOCs, metals, and cyanide. Sampling locations are presented in Figures 10.6.8 through 10.6.16.

10.6.2.1 Nature of Contamination in Subzone F, AOC 699, DPT Soil

Organic compound analytical results for soil obtained from DPT are summarized in Table 10.6.7. Inorganic analytical results are summarized in Table 10.6.8. Appendix C contains the complete data report for all samples collected in Zone L.

Volatile Organic Compounds Detected in DPT Soil

Two VOCs were detected in the 33 DPT soil samples. None exceeded the RBC values.

Metals/Cyanide Detected in DPT Soil

Aluminum (10/33), antimony (1/33), arsenic (31/33), chromium (3/33), iron (31/33), manganese (6/33), thallium (5/33), and vanadium (1/33) exceeded RBC values. Chromium (2/33), manganese (1/33), and thallium (5/33) exceeded SSL values. Locations of DPT soil samples that exceeded RBCs and/or SSLs are provided in Table 10.6.9.

Table 10.6.11
AOC 699, Zone L, Subzone F
Inorganic Detections for DPT Groundwater

Element	Freq. of Detection	Range of Detected Conc.	Mean of Detected Conc.
Inorganic Elements (μg/L)			
Cyanide (CN)	3/49	5.40-24.0	12.2
Aluminum (Al)	49/49	766-374000	60380
Antimony (Sb)	6/49	8.50-21.9	13.3
Arsenic (As)	42/49	10.6-194	62.2
Barium (Ba)	49/49	17.9-1950	286.5
Beryllium (Be)	23/49	2.00-23.4	7.71
Cadmium (Cd)	4/49	6.90-135	41.5
Calcium (Ca)	49/49	3540-1060000	192356
Chromium (Cr)	48/49	5.40-1180	157.5
Cobalt (Co)	39/49	5.40-234	43.1
Copper (Cu)	40/49	7.00-156	38.8
Iron (Fe)	49/49	3580-637000	91039
Lead (Pb)	46/49	3.50-511	57.5
Magnesium (Mg)	49/49	2380-539000	110142
Manganese (Mn)	49/49	102-12600	1589.7
Mercury (Hg)	20/49	0.200-0.860	0.393
Nickel (Ni)	46/49	4.60-1320	71.6
Potassium (K)	49/49	1110-167000	36466
Selenium (Se)	12/49	5.00-23.9	10.8
Sodium (Na)	49/49	10700-4930000	1055210
Thallium (Tl)	12/49	10.1-17.1	12.6
Vanadium (V)	48/49	6.90-776	137.4
Zinc (Zn)	46/49	25.0-427000	9479.7

Notes:
μg/L = Micrograms per liter

Table 10.7.4
SWMU 37, Zone L, Subzone G
Organic Compounds Detected in DPT Groundwater

Compound	Freq of Detection	Range of Detected Conc.	Mean of Detected Conc.	Tap Water RBC	MCL	Number of Samples Exceeding RBC	Salt Wtr. Surf. Wtr. Chronic	Ground-water Migration Concern	Surface Water Migration Concern
Volatile Compounds (μg/L)									
Carbon disulfide	1/30	7.04	7.04	100	NA	0	NA	NO	NO

Notes:
μg/L = Micrograms per liter
RBC = Risk-based concentration
MCL = Maximum contaminant level
NA = Not applicable

Table 10.7.5
SWMU 37, Zone L, Subzone G
Inorganic Detections for DPT Groundwater

Element	Freq. of Detection	Range of Detected Conc.	Mean of Detected Conc.
Inorganic Elements (μg/L)			
Cyanide (CN)	7/30	5.20-174	42.7
Aluminum (Al)	30/30	2210-559000	117402
Antimony (Sb)	4/30	8.00-16.5	11.9
Arsenic (As)	28/30	12.1-782	129.1
Barium (Ba)	30/30	31.2-1310	271.4
Beryllium (Be)	21/30	2.00-47.6	12.9
Cadmium (Cd)	8/30	3.00-33.1	9.88
Calcium (Ca)	30/30	64700-607000	281107
Chromium (Cr)	30/30	8.70-1360	255.6
Cobalt (Co)	26/30	5.00-188	42.8
Copper (Cu)	28/30	7.60-1670	126.4
Iron (Fe)	30/30	6060-875000	173335
Lead (Pb)	29/30	9.60-944	192.9

Table 10.7.5
SWMU 37, Zone L, Subzone G
Inorganic Detections for DPT Groundwater

Element	Freq. of Detection	Range of Detected Conc.	Mean of Detected Conc.
Magnesium (Mg)	30/30	21300-1010000	446077
Manganese (Mn)	30/30	127-8260	2054
Mercury (Hg)	13/30	0.210-3.20	0.678
Nickel (Ni)	30/30	4.40-373	75.1
Potassium (K)	30/30	10100-330000	150057
Selenium (Se)	8/30	5.90-14.4	9.61
Sodium (Na)	30/30	87600-8220000	3632087
Thallium (Tl)	9/30	10.8-58.6	24.3
Vanadium (V)	30/30	6.80-1560	254.7
Zinc (Zn)	30/30	21.7-5030	656.5

Notes:
µg/L = Micrograms per liter

Inorganic Elements Detected in DPT Groundwater

Analytical results for inorganic compounds in DPT groundwater samples are shown in Table 10.7.5. As stated in Section 10.0, inorganic results from DPT groundwater samples were not compared to RBC or MCL values.

10.7.1.3 Nature of Contamination in Soil Borings

Fourteen upper-interval and nine lower-interval samples were collected using a hand auger and analyzed for VOCs, SVOCs, metals, cyanide, chlorinated pesticides and PCBs. Upper-interval sample results were compared to RBC values, and lower-interval samples were compared to SSL values. The results are summarized in Tables 10.7.6 (organic) and 10.7.7 (inorganic).

Table 10.8.5
SWMU 37, Zone L, Subzone H
Inorganic Detections for DPT Groundwater

Element	Freq. of Detection	Range of Detected Conc.	Mean of Detected Conc.
Inorganic Elements (μg/L)			
Cyanide (CN)	9/45	5.20-46.8	12.9
Aluminum (Al)	45/45	4600-969000	101466
Antimony (Sb)	15/45	10.0-18.4	12.2
Arsenic (As)	39/45	10.8-242	71.4
Barium (Ba)	45/45	19.8-1240	231.4
Beryllium (Be)	23/45	2.20-20.0	6.99
Cadmium (Cd)	6/45	3.00-5.40	3.77
Calcium (Ca)	45/45	115000-1520000	363600
Chromium (Cr)	45/45	7.50-977	177.5
Cobalt (Co)	30/45	5.20-150	29.5
Copper (Cu)	41/45	7.50-207	61.0
Iron (Fe)	45/45	5130-418000	89992
Lead (Pb)	45/45	3.90-444	106.2
Magnesium (Mg)	45/45	10900-531000	156080
Manganese (Mn)	45/45	106-5420	1184
Mercury (Hg)	22/45	0.200-2.00	0.688
Nickel (Ni)	44/45	6.40-179	52.9
Potassium (K)	45/45	5220-210000	65839
Selenium (Se)	21/45	5.00-27.3	12.9
Silver (Ag)	1/45	10.1	10.1
Sodium (Na)	45/45	10500-4500000	1234947
Thallium (Tl)	4/45	10.7-17.3	13.4
Vanadium (V)	45/45	7.90-779	164.1
Zinc (Zn)	43/45	24.2-838	281.2

Notes:
μg/L = Micrograms per liter

Metals/Cyanide Detected in DPT Groundwater

Analytical results for inorganic compounds in DPT groundwater samples are presented in Table 10.9.3. As stated in Section 10.0, detection values have not been compared to the RBC or MCL values.

Table 10.9.3
SWMU 37, Zone L, Subzone I
Inorganic Detections for DPT Groundwater

Element	Freq. of Detection	Range of Detected Conc.	Mean of Detected Conc.
Inorganic Elements (μg/L)			
Cyanide (CN)	1/12	15.6	15.6
Aluminum (Al)	12/12	2980-157000	25787
Arsenic (As)	8/12	14.2-191	57.8
Barium (Ba)	12/12	31.0-242	83.4
Beryllium (Be)	3/12	4.00-6.70	5.23
Calcium (Ca)	12/12	143000-1030000	348083
Chromium (Cr)	12/12	8.60-228	92.9
Cobalt (Co)	5/12	5.00-24.6	11.9
Copper (Cu)	11/12	7.80-117	33.8
Iron (Fe)	12/12	1700-155000	38418
Lead (Pb)	10/12	3.20-168	51.0
Magnesium (Mg)	12/12	3240-227000	71969
Manganese (Mn)	12/12	37.9-2680	612
Mercury (Hg)	1/12	0.260	0.260
Nickel (Ni)	11/12	8.00-90.7	35.1
Potassium (K)	12/12	6190-105000	34699
Selenium (Se)	4/12	6.50-10.2	8.25
Sodium (Na)	12/12	18200-1940000	505175
Thallium (Tl)	1/12	11.6	11.6

Table 10.9.3
SWMU 37, Zone L, Subzone I
Inorganic Detections for DPT Groundwater

Element	Freq. of Detection	Range of Detected Conc.	Mean of Detected Conc.
Vanadium (V)	12/12	8.90-262	77.3
Zinc (Zn)	11/12	36.2-464	168.5

Notes:
μg/L = Micrograms per liter

10.9.1.3 Nature of Contamination in Subzone I, SWMU 37, Soil Borings

Five surface and 2 lower interval samples were collected using a hand auger and analyzed for VOCs, SVOCs, chlorinated pesticides, metals, and cyanide. Analytical results are summarized in Tables 10.9.4 and 10.9.5.

Volatile Organic Compounds Detected in Soil Borings

Three volatile organic compounds were detected in the five surface interval samples. None exceeded the RBC values.

Semivolatile Organic Compounds Detected in Soil Borings

Ten SVOCs were detected in the five surface interval soil boring samples. One detection of benzo(a)pyrene found at sample location 037SB008 (180 μg/kg) exceeded the RBC value of 88 μg/kg.

Chlorinated Pesticides Detected in Soil Borings

None of the seven chlorinated pesticides detected in the five surface interval samples exceeded the RBC values.

Table 10.0.4.11 details the results of the data in Subzone E-1. Figure 10.0.4.9 identifies the sample locations.

Table 10.0.4.11
Subzone E-1 Data Comparisons

Sample ID	Turbidity (ntu)	Arsenic (μg/L)	Beryllium (μg/L)	Thallium (μg/L)
DPT Locations				
037GP059	242	10.00 U	2.00 U	10.00 U
037GP061	102	14.60	2.00 U	10.00 U
037GP062	70	20.40	2.00 U	10.00 U
037GP063	89	41.30	2.20	10.00 U
037GP064	39	10.00 U	2.00 U	10.00 U
037GP066	999	25.20	2.00 U	10.00 U
037GP067	777	18.60	2.00 U	10.00 U
037GP068	999	17.00	2.00 U	10.00 U
037GP069	Not Taken	10.00 U	2.00 U	10.00 U
037GP070	380	15.70	2.00 U	10.00 U
037GP071	117	10.00 U	2.00 U	10.00 U
037GP072	999	14.30	2.40	10.00 U
037GP073	458	13.60	2.00 U	10.00 U
037GP074	616	216.00	6.60	12.80
037GP075	101	10.00 U	2.00 U	10.00 U
037GP076	261	10.00 U	2.20	10.00 U
037GP077	55	10.00 U	2.00 U	10.00 U
037GP078	826	37.70	3.20	10.00 U
037GP079	515	29.50	2.90	10.00 U
699GP075	176	10.00 U	2.00 U	10.00 U
699GP077	558	11.60	2.00 U	10.00 U
699GP078	227	18.00	2.00 U	10.00 U
699GP079	417	17.20	2.00	10.00 U
699GP080	731	11.10	2.00 U	10.00 U
699GP081	424	20.60	2.00 U	10.00 U

Table 10.0.4.11
Subzone E-1 Data Comparisons

Sample ID	Turbidity (ntu)	Arsenic (μg/L)	Beryllium (μg/L)	Thallium (μg/L)
699GP082	14	10.00 U	2.00 U	10.00 U
699GP083	821	10.00 U	2.00 U	10.00 U
699GP084	236	10.00 U	2.00 U	10.00 U
699GP085	442	13.40	2.00 U	10.00 U
Monitoring Wells				
021GW00101	2	5.00 U	1.00 U	5.00 U
021GW00102	0	2.50 U	0.38 J	4.60 U
021GW00201	0	19.50	1.00 U	5.00 U
021GW00202	81	26.10	0.87 U	2.70 U
021GW00301	1	5.00 U	1.00 U	5.00 U
021GW00302	0	2.60 J	0.43 U	2.70 U
021GW00303	2	2.50 U	0.30 U	3.20 J
021GW00304	1	2.10 UJ	0.20 U	5.00 U
023GW00101	8	5.00 U	1.00 U	5.00 U
023GW00102	88	4.90 U	0.61 U	2.70 U
023GW00103	9	2.50 U	0.30 U	2.70 UJ
023GW00104	25	2.10 U	0.21 J	5.00 U
023GW01D01	0	5.00 U	1.00 U	5.00 U
023GW01D02	0	2.50 U	0.30 U	2.70 U
023GW01D03	0	2.50 U	0.30 U	2.70 UJ
023GW01D04	0	3.20 J	0.20 U	5.00 U
053GW00101	5	9.40 J	1.00 U	5.00 U
053GW00102	4	8.80 U	0.30 U	2.70 U
053GW00103	147	14.30	0.85 U	4.80 J
053GW00104	5	5.90 J	0.23 J	6.00 U
054GW00101	5	5.00 U	1.00 U	5.00 U
054GW00102	6	2.50 U	0.30 U	2.70 U
054GW00201	9	5.00 U	1.00 U	5.00 J
054GW00202	4	3.30 U	0.53 J	4.80 U
054GW00203	7	3.70 J	0.30 U	3.60 J

Subzone E-2

Statistical analysis of the turbidity values in Subzone E-2 indicates that the turbidity values differ significantly between the DPT locations and the monitoring wells. The mean of the DPT sample locations was 477.6 ntu and the mean of the monitoring wells was 3.4 ntu.

Statistical analysis of the arsenic values in Subzone E-2 indicates that the arsenic values differ significantly between the DPT locations and the monitoring wells. The mean of the DPT sample locations was 21.6 μg/L and the mean of the monitoring wells was 6.3 μg/L.

Statistical analysis of the beryllium values in Subzone E-2 indicates that the beryllium values differ significantly between the DPT locations and the monitoring wells. The mean of the DPT sample locations was 1.3 μg/L and the mean of the monitoring wells was 0.3 μg/L.

Statistical analysis of the thallium values in Subzone E-2 indicates that the thallium values differ significantly between the DPT locations and the monitoring wells. The mean of the DPT sample locations was 5.4 μg/L and the mean of the monitoring wells was 2.4 μg/L.

Table 10.0.4.12 details the results of the data in Subzone E-2. Figure 10.0.4.10 identifies the sample locations.

Table 10.0.4.12
Subzone E-2 Data Comparison

Sample ID	Turbidity (ntu)	Arsenic (μg/L)	Beryllium (μg/L)	Thallium (μg/L)
DPT Locations				
037GP055	630	10.00 U	2.00 U	10.00 U
037GP056	667	20.60	2.00 U	10.00 U
037GP057	630	26.70	3.40	10.00 U
037GP058	81	19.80	2.00 U	10.00 U
037GP065	659	10.00 U	2.00 U	10.00 U

Table 10.0.4.12
Subzone E-2 Data Comparison

Sample ID	Turbidity (ntu)	Arsenic (μg/L)	Beryllium (μg/L)	Thallium (μg/L)
037GP080	312	11.60	2.00 U	10.00 U
037GP081	999	10.00 U	2.00 U	10.00 U
037GP082	736	21.30	2.00 U	10.00 U
037GP083	112	24.00	2.00 U	10.00 U
037GP084	48	10.00 U	2.00 U	10.00 U
037GP085	499	26.50	2.00 U	10.00 U
037GP086	999	49.00	4.80	10.00 U
037GP087	520	10.00 U	2.00 U	10.00 U
037GP088	543	32.10	2.00 U	10.00 U
037GP089	26	10.00 U	2.00 U	10.00 U
037GP090	137	13.20	2.00 U	10.00 U
037GP091	999	10.00 U	2.00 U	10.00 U
037GP091	Not Taken	15.90	2.00 U	10.00 U
037GP093	999	20.50	2.00 U	10.00 U
037GP094	903	129.00	4.40	10.00 U
037GP095	355	43.90	3.90	14.00
037GP096	897	27.60	2.00 U	10.00 U
699GP034	999	27.00	2.00 U	10.00 U
699GP067	182	10.00 U	2.00 U	10.00 U
699GP068	43	10.00 U	2.00 U	10.00 U
699GP069	Not Taken	10.00 U	2.00 U	10.00 U
699GP070	999	10.00 U	2.00 U	10.00 U
699GP071	327	19.80	2.00 U	10.00 U
699GP072	330	10.20	2.00 U	10.00 U
699GP073	830	20.80	2.00 U	10.00 U
699GP074	324	10.00 U	2.00 U	10.00 U
699GP076	369	10.00 U	2.00 U	10.00 U
699GP086	11	10.00 U	2.00 U	10.00 U
699GP087	160	47.90	2.00 U	10.00 U
699GP088	168	60.30	2.00 U	10.00 U

Table 10.0.4.12
Subzone E-2 Data Comparison

Sample ID	Turbidity (ntu)	Arsenic (µg/L)	Beryllium (µg/L)	Thallium (µg/L)
699GP089	204	10.00 U	2.00 U	10.00 U
699GP090	Not Taken	19.10	2.00 U	10.00 U
699GP091	87	12.40	2.00 U	10.00 U
699GP092	417	61.50	2.00 U	13.70
699GP093	508	10.00 U	2.00 U	10.00 U
699GP094	440	46.00	2.40	22.10
Monitoring Wells				
025GW00101	6	5.00 U	1.00 U	5.00 U
025GW00102	8	2.50 U	0.40 U	2.80 U
025GW00103	5	2.50 U	0.69 U	2.70 U
025GW00104	8	2.50 U	0.30 U	3.30 J
025GW00301	5	5.00 U	1.00 U	5.00 U
025GW00302	0	3.00 J	0.30 U	2.70 UJ
025GW00303	7	4.10 U	0.56 U	6.00 U
025GW00304	10	3.00 J	0.30 U	3.10 J
025GW00401	7	5.00 U	1.00 U	5.00 U
025GW00402	0	2.50 U	0.30 U	2.70 UJ
025GW00403	9	2.70 U	0.59 U	2.70 U
025GW00404	10	2.80 J	0.30 U	4.50 J
067GW00103	9	14.10	0.30 U	2.70 UJ
067GW00104	8	7.20 J	0.20 U	5.00 U
067GW00203	10	2.50 U	0.30 U	4.00 J
067GW00204	10	2.10 UJ	0.20 U	5.00 U
070GW00101	33	5.00 U	1.00 U	5.00 U
070GW00102	0	4.30 J	0.33 J	3.70 UJ
070GW00103	3	2.50 U	0.30 U	3.20 J
070GW00104	9	2.10 UJ	0.20 U	5.00 U
070GW00201	5	5.70 J	1.00 U	5.00 U
070GW00202	0	3.10 J	0.32 J	2.70 UJ
070GW00203	8	2.50 U	0.32 J	2.70 UJ

Table 10.0.4.13 details the results of the data in Subzone E-3. Figure 10.0.4.11 identifies the sample locations.

Table 10.0.4.13
Subzone E-3 Data Comparisons

Sample ID	Turbidity (ntu)	Arsenic (µg/L)	Beryllium (µg/L)	Thallium (µg/L)
DPT Locations				
037GP045	84	10.00 U	5.00 U	10.00 U
037GP049	905	31.10	2.00 U	10.00 U
037GP050	273	256.00	12.60	21.80
037GP051	106	10.00 U	2.00 U	10.00 U
037GP052	394	268.00	5.20	12.20
037GP053	999	29.50	2.00 U	10.00 U
037GP054	999	194.00	15.30	26.00
037GP097	940	47.80	3.00	10.10
699GP022	320	19.70	5.00 U	10.00 U
699GP023	339	39.70	5.00 U	10.00 U
699GP031	975	86.50	5.70	10.00 U
699GP032	999	19.30	5.00 U	10.00 U
699GP033	999	17.30	2.00 U	10.00 U
699GP095	999	115.00	8.40	37.90
699GP30A	37	10.00 U	2.00 U	10.00 U
037GP001	Not Taken	231.00	12.70	13.00
037GP002	Not Taken	89.80	5.90	10.00 U
037GP003	Not Taken	153.00	19.20	31.20
037GP004	Not Taken	54.20	4.10	10.00 U
037GP005	Not Taken	75.90	5.00 U	10.00 U
037GP006	Not Taken	242.00	23.80	43.60
037GP007	Not Taken	452.00	100.00 U	13.80
037GP008	Not Taken	80.50	20.00	10.00 U
037GP009	Not Taken	37.00	6.80	10.00 U
037GP010	Not Taken	581.00	188.00	52.20
037GP011	Not Taken	28.80	3.50	10.00 U

Table 10.0.4.13
Subzone E-3 Data Comparisons

Sample ID	Turbidity (ntu)	Arsenic (μg/L)	Beryllium (μg/L)	Thallium (μg/L)
037GP012	Not Taken	82.00	5.20	10.00 U
037GP013	Not Taken	14.30	2.00 U	10.00 U
Monitoring Wells				
559GW00101	10	5.00 UJ	1.00 U	5.00 U
559GW00102	0	2.50 U	0.32 J	2.70 UJ
559GW00103	5	2.50 U	0.35 J	2.70 U
559GW00104	0	2.50 U	0.33 J	2.70 UJ
559GW00201	0	2.50 U	0.32 J	4.30 U
559GW00202	0	2.70 J	0.30 J	2.70 UJ
559GW00203	1	4.20 J	0.30 U	3.70 UJ
559GW00204	1	3.10 J	0.34 J	2.70 UJ
559GW00301	4	8.60 J	1.00 U	5.00 U
559GW00302	5	5.50 J	0.30 U	2.70 UJ
559GW00303	3	2.80 J	0.30 U	4.10 U
559GW00304	32	4.80 J	0.30 U	4.40 U
559GW00401	7	11.90 J	1.00 U	5.00 U
559GW00402	1	17.20	0.30 U	2.70 U
559GW00403	1	14.90	0.30 U	4.70 U
559GW00404	4	18.60	0.30 U	6.30 U
559GW00501	59	5.00 UJ	1.00 U	5.00 U
559GW00502	11	2.50 U	0.30 J	3.10 UJ
559GW00503	21	4.10 J	0.30 U	3.10 U
559GW00504	10	4.00 J	0.30 U	4.70 U
559GW02D01	0	2.50 UJ	0.30 U	2.70 UJ
559GW02D02	0	4.00 J	0.34 J	2.70 UJ
559GW02D03	0	2.50 U	0.30 U	2.70 UJ
559GW02D04	1	3.70 J	0.30 U	3.40 U
559GW03D01	0	3.50 J	0.30 U	3.90 J
559GW03D02	3	3.80 J	0.30 U	2.70 UJ
559GW03D03	2	3.70 J	0.30 U	3.30 U

Statistical analysis of the arsenic values in Subzone E-4 indicates that the arsenic values differ significantly between the DPT locations and the monitoring wells. The mean of the DPT sample locations was 44.5 μg/L and the mean of the monitoring wells was 15.8 μg/L.

Statistical analysis of the beryllium values in Subzone E-4 indicates that the beryllium values differ significantly between the DPT locations and the monitoring wells. The mean of the DPT sample locations was 2.8 μg/L and the mean of the monitoring wells was 0.5 μg/L.

Statistical analysis of the thallium values in Subzone E-4 indicates that the thallium values differ significantly between the DPT locations and the monitoring wells. The mean of the DPT sample locations was 6.4 μg/L and the mean of the monitoring wells was 2.3 μg/L.

Table 10.0.4.2.14 details the results of the data in Subzone E-4. Figure 10.0.4.12 identifies the sample locations.

Table 10.0.4.14
Subzone E-4 Data Comparison

Sample ID	Turbidity (ntu)	Arsenic (μg/L)	Beryllium (μg/L)	Thallium (μg/L)
DPT Locations				
037GP022	105	60.60	4.50	12.80
037GP036	437	21.60	2.20	10.00 U
037GP039	351	29.90	2.00 U	10.00 U
037GP040	453	10.00 U	2.00 U	10.00 U
037GP041	321	10.00 U	2.00 U	10.00 U
037GP042	365	10.00 U	2.00 U	10.00 U
037GP043	999	42.10	2.00 U	10.00 U
037GP044	506	10.00 U	2.00 U	10.00 U
037GP046	999	51.20	5.00 U	10.00 U
037GP047	999	29.30	5.00 U	10.00 U

Table 10.0.4.14
Subzone E-4 Data Comparison

Sample ID	Turbidity (ntu)	Arsenic (µg/L)	Beryllium (µg/L)	Thallium (µg/L)
037GP048	271	32.20	4.30	10.00 U
037GP098	106	34.40	2.00 U	10.00 U
037GP103	950	10.00 U	2.00 U	10.00 U
037GP16A	303	58.20	9.80	10.00 U
037GP17A	118	31.40	3.80	10.00 U
037GP18A	119	10.00 U	2.00 U	10.00 U
037GP22A	282	49.70	5.40	10.00 U
037GP23A	100	150.00	3.80	10.00 U
037GP24A	121	10.00 U	2.00 U	10.00 U
699GP016	761	10.00 U	2.00 U	10.00 U
699GP017	168	10.50	2.00 U	10.00 U
699GP018	445	10.00 U	2.00 U	10.00 U
699GP019	117	10.00 U	2.00 U	10.00 U
699GP020	36	10.00 U	2.00 U	10.00 U
699GP021	527	10.00 U	5.00 U	10.00 U
699GP024	282	31.40	5.00 U	10.00 U
699GP025	999	60.90	5.00 U	10.00 U
699GP026	815	13.70	5.00 U	10.00 U
699GP027	359	350.00	14.30	46.80
699GP028	356	14.30	5.00 U	10.00 U
699GP029	140	19.80	2.00 U	10.00 U
699GP035	72	86.00	4.00	10.00 U
699GP036	178	33.00	2.00 U	10.00 U
699GP037	510	10.00 U	2.00 U	10.00 U
699GP039	568	36.70	4.40	10.00 U
699GP042	23	10.00	2.00 U	10.00 U
699GP043	2	88.20	4.00	10.00 U
699GP044	998	23.20	2.70	10.00 U
699GP045	728	20.60	3.00	10.00 U

Table 10.0.4.14
Subzone E-4 Data Comparison

Sample ID	Turbidity (ntu)	Arsenic (µg/L)	Beryllium (µg/L)	Thallium (µg/L)
699GP046	999	14.20	2.00 U	10.00 U
699GP047	508	19.50	2.20	10.00 U
699GP048	630	31.40	2.90	10.00 U
699GP049	283	75.90	2.00 U	10.00 U
699GP053	347	10.00 U	2.60	10.00 U
699GP054	294	10.00 U	2.00 U	10.00 U
699GP055	242	16.00	3.00	10.00 U
699GP056	320	10.00 U	3.00	10.00 U
699GP057	212	10.00 U	2.00 U	10.00 U
699GP058	474	17.70	2.70	10.00 U
699GP059	133	13.90	2.00 U	10.00 U
699GP060	399	15.00	2.00 U	10.00 U
699GP061	999	180.00	5.90	10.00 U
699GP062	316	10.00 U	2.00 U	10.00 U
699GP063	909	49.40	3.00	10.00 U
699GP064	999	75.90	3.50	10.00 U
699GP066	250	572.00	19.60	36.00
037GP017	Not Taken	10.00 U	2.00 U	10.00 U
699GP038	Not Taken	17.70	2.00 U	10.00 U
Monitoring Wells				
083GW00201	10	7.70 J	1.00 U	5.00 U
083GW00202	0	10.50 J	0.47 U	2.70 U
083GW00203	6	12.90 J	0.30 U	2.70 UJ
083GW00204	6	2.90 J	0.30 U	2.70 U
084GW00101	3	5.00 U	1.00 U	5.00 U
084GW00102	3	2.50 U	0.47 U	2.70 U
084GW00103	3	2.50 UJ	0.30 U	2.70 UJ
084GW00104	2	2.50 U	0.34 U	2.70 U
084GW00201	3	35.50	1.00 U	5.00 U
084GW00202	1	44.70	0.32 U	2.70 U

Statistical analysis of the thallium values in Subzone E-5 indicates that the thallium values differ significantly between the DPT locations and the monitoring wells. The mean of the DPT sample locations was 7.9 μg/L and the mean of the monitoring wells was 2.4 μg/L.

Table 10.0.4.15 details the results of the data in Subzone E-5. Figure 10.0.4.13 identifies the sample locations.

10.0.4.15
Subzone E-5 Data Comparison

Sample ID	Turbidity (ntu)	Arsenic (μg/L)	Beryllium (μg/L)	Thallium (μg/L)
DPT Locations				
037GP019	400	29.90	2.60	10.10
037GP020	118	34.80	2.20	10.00 U
037GP022	105	60.60	4.50	12.80
037GP024	160	10.50	2.80	11.40
037GP027	68	10.00 U	2.00 U	10.00 U
037GP028	45	10.00 U	2.00 U	10.00 U
037GP030	999	158.00	2.30	16.10
037GP031	Not Taken	64.40	2.00 U	10.00 U
037GP033	626	237.00	22.10	14.50
037GP034	237	43.90	2.50	10.20
699GP005	999	139.00	13.80	10.00 U
699GP006	233	178.00	8.40	11.40
699GP007	276	70.40	2.00 U	10.00 U
699GP008	18	29.40	2.00 U	10.00 U
699GP009	101	10.60	2.00 U	10.40
699GP010	197	16.50	2.00 U	10.00 U
699GP011	72	25.60	2.00	10.00 U
699GP012	379	10.00 U	2.00 U	10.00 U
699GP013	59	29.00	2.00 U	10.00 U
699GP014	261	10.00 U	2.00 U	10.00 U
699GP015	72	14.70	2.00 U	10.00 U

10.0.4.15
Subzone E-5 Data Comparison

Sample ID	Turbidity (ntu)	Arsenic (µg/L)	Beryllium (µg/L)	Thallium (µg/L)
699GP041	115	25.00	2.00 U	10.00 U
699GP051	390	14.90	11.60	19.20
699GP052	999	19.90	19.00	10.00 U
037GP021	Not Taken	13.30	2.00 U	10.20
699GP040	Not Taken	41.00	2.20	10.00 U
Monitoring Wells				
100GW00101	1	20.60	1.00 U	5.00 UJ
100GW00102	0	22.30	0.63 U	3.60 U
100GW00103	0	12.20	0.30 U	2.70 UJ
100GW00104	0	13.50	0.39 U	2.70 UJ
102GW00101	0	5.10 J	1.00 U	5.00 U
102GW00102	0	5.40 J	0.62 U	2.70 U
102GW00103	1	8.40 J	0.30 U	3.10 J
102GW00104	0	2.50 UJ	0.30 U	2.70 U
586GW00101	1	11.40	1.00 U	5.00 U
586GW00102	0	27.70	0.30 U	2.70 UJ
586GW00103	2	23.80	0.30 U	2.70 UJ
586GW00104	0	10.60 J	0.30 U	2.70 U
590GW00101	0	19.90	1.00 U	5.00 U
590GW00102	0	37.60	0.30 U	2.70 UJ
590GW00103	0	25.40	0.30 U	2.70 UJ
590GW00104	0	28.50	0.30 U	4.50 J
590GW01D01	0	5.00 U	1.30 J	5.00 UJ
590GW01D02	0	2.50 U	0.70 J	2.70 UJ
590GW01D03	0	3.80 J	0.57 J	3.10 J
590GW01D04	0	3.80 J	1.20 U	5.20 J
GDEGW00501	0	5.00 U	1.00 U	5.00 U
GDEGW00502	1	2.50 U	0.45 J	5.80 J
GDEGW00503	3	2.50 U	0.44 J	5.40 J
GDEGW00504	3	2.50 U	0.30 U	3.40 U

Table 10.0.4.16 details the results of the data in Subzone E-6. Figure 10.0.4.14 identifies the sample locations.

Table 10.0.4.16
Subzone E-6 Data Comparison

Sample ID	Turbidity (ntu)	Arsenic (µg/L)	Beryllium (µg/L)	Thallium (µg/L)
DPT Locations				
037GP016	Not Taken	69.80	3.50	13.30
037GP017	Not Taken	10.00 U	2.00 U	10.00 U
037GP018	999	19.00	2.10	11.30
037GP019	400	29.90	2.60	10.10
037GP020	118	34.80	2.20	10.00 U
037GP021	Not Taken	13.30	2.00 U	10.20
037GP023	13	63.80	3.90	13.20
037GP026	271	57.60	3.90	10.00 U
037GP029	13	10.00 U	2.00 U	10.00 U
037GP17A	118	31.40	3.80	10.00 U
699GP004	280	64.00	2.80	14.20
699GP096	Not Taken	59.60	6.50	10.00 U
699GP097	33	95.40	2.80	10.00 U
Monitoring Wells				
596GW00101	6	11.00	1.00 U	5.00 U
596GW00102	10	17.80	0.50 U	3.40 U
596GW00103	8	12.40	0.34 U	4.90 U
596GW00104	8	15.00	0.34 U	2.70 UJ
596GW00201	10	5.00 U	1.00 U	5.00 U
596GW00202	10	16.20	0.50 U	3.40 U
596GW00203	93	3.20 J	0.32 U	5.30 U
596GW00204	93	2.80 J	0.35 U	2.70 UJ
596GW00301	3	7.60 J	1.00 U	5.00 U
596GW00302	0	24.90	0.50 U	3.40 U
596GW00303	3	28.50	0.39 U	6.00 U
596GW00304	3	44.60	0.30 U	6.70 J

Statistical analysis of the beryllium values in Subzone E-7 indicates that the beryllium values differ significantly between the DPT locations and the monitoring wells. The mean of the DPT sample locations was 3.9 μg/L and the mean of the monitoring wells was 0.4 μg/L.

Statistical analysis of the thallium values in Subzone E-7 indicates that the thallium values differ significantly between the DPT locations and the monitoring wells. The mean of the DPT sample locations was 6.5 μg/L and the mean of the monitoring wells was 2.3 μg/L.

Table 10.0.4.17 details the results of the data in Subzone E-7. Figure 10.0.4.15 identifies the sample locations.

Table 10.0.4.17
Subzone E-7 Data Comparison

Sample ID	Turbidity (ntu)	Arsenic (μg/L)	Beryllium (μg/L)	Thallium (μg/L)
DPT Locations				
037GP015	950	26.90	5.20	10.00 U
037GP025	107	128.00	9.90	17.00
037GP045	84	10.00 U	5.00 U	10.00 U
037GP047	999	29.30	5.00 U	10.00 U
699GP001	999	63.10	2.40	10.00 U
699GP003	999	22.20	2.00 U	10.00 U
699GP096	99	59.60	6.50	10.00 U
699GP002	Not Taken	16.70	2.00 U	10.00 U
Monitoring Wells				
018GW00101	1	5.00 U	1.20 U	5.00 U
018GW00102	0	3.40 J	0.50 U	3.40 U
018GW00103	1	2.70 J	0.30 U	2.70 U
018GW00104	1	2.50 U	0.30 U	2.70 U
018GW00201	0	5.00 U	1.00 U	5.00 U
018GW00202	0	3.30 U	0.50 U	3.40 U

Statistical analysis of the beryllium values in Subzone F-1 indicates that the beryllium values differ significantly between the DPT locations and the monitoring wells. The mean of the DPT sample locations was 4.8 μg/L and the mean of the monitoring wells was 0.2 μg/L.

Statistical analysis of the thallium values in Subzone F-1 indicates that the thallium values differ significantly between the DPT locations and the monitoring wells. The mean of the DPT sample locations was 5.0 μg/L and the mean of the monitoring wells was 3.4 μg/L.

Table 10.0.4.18 details the results of the data in Subzone F-1. Figure 10.0.4.16 identifies the sample locations.

Table 10.0.4.18
Subzone F-1 Data Comparison

Sample ID	Turbidity (ntu)	Arsenic (μg/L)	Beryllium (μg/L)	Thallium (μg/L)
DPT Locations				
037GP002	Not Taken	21.20	2.00 U	10.00 U
037GP010	999	124.00	3.10	10.00 U
037GP011	254	10.00 U	2.00 U	10.00 U
037GP058	999	47.20	3.00	10.00 U
037GP059	647	14.10	5.20	10.00 U
037GP060	999	186.00	11.20	10.00 U
037GP061	999	33.20	2.00 U	10.00 U
037GP062	138	196.00	19.00	10.00 U
037GP024	674	84.30	5.40	10.00 U
699GP021	417	77.30	3.70	10.00 U
699GP023	33	49.60	7.40	10.00 U
699GP024	165	32.90	2.00 U	10.00 U
699GP028	597	10.00 U	2.00 U	10.00 U
Monitoring Wells				
109GW00101	0	2.50 U	0.35 U	3.50 J
109GW00102	6	2.10 U	0.37 U	5.00 U

Table 10.0.4.2.20 details the results of the data in Subzone F-3. Figure 10.0.4.18 identifies the sample locations.

Table 10.0.4.20
Subzone F-3 Data Comparison

Sample ID	Turbidity (ntu)	Arsenic (µg/L)	Beryllium (µg/L)	Thallium (µg/L)
DPT Locations				
037GP006	Not Taken	115.00	7.00	10.00 U
037GP007	Not Taken	221.00	33.00	12.10
037GP008	Not Taken	124.00	6.50	10.10
037GP009	Not Taken	137.00	3.20	10.00 U
037GP012	412	82.00	4.60	10.00 U
037GP013	999	332.00	8.50	12.80
037GP014	Not Taken	398.00	31.20	17.40
037GP015	2	40.60	2.50	10.00 U
037GP016	2	11.50	2.00 U	10.00 U
037GP017	Not Taken	11.80	2.00 U	10.00 U
037GP018	Not Taken	99.00	11.90	10.00 U
037GP019	Not Taken	45.80	5.40	10.00 U
037GP020	Not Taken	10.00 U	2.00 U	10.00 U
037GP07A	Not Taken	10.00 U	2.00 U	10.00 U
699GP036	579	46.30	2.00 U	10.00 U
699GP037	25	24.40	2.00 U	11.00
699GP038	75	76.80	5.30	17.10
699GP039	365	18.30	2.00 U	10.00 U
699GP040	99	43.20	2.00 U	10.30
699GP041	524	39.60	2.00 U	10.00 U
Monitoring Wells				
607GW00101	4	2.50 U	0.30 U	2.70 U
607GW00102	7	2.10 U	0.20 U	7.40 J
607GW00103	0	2.10 U	0.20 U	5.00 U
607GW00104	0	2.10 U	0.20 U	5.00 U

Statistical analysis of the thallium values in Subzone F-4 indicates that the thallium values differ significantly between the DPT locations and the monitoring wells; however, thallium was detected in only one of the DPT GW sample locations and one of the monitoring wells. The mean of the DPT GW sample locations was 5.4 μg/L and the mean of the monitoring wells was 3.4 μg/L.

Table 10.0.4.21 details the results of the data in Subzone F-4. Figure 10.0.4.19 identifies the sample locations.

Table 10.0.4.21
Subzone F-4 Data Comparison

Sample ID	Turbidity (ntu)	Arsenic (μg/L)	Beryllium (μg/L)	Thallium (μg/L)
DPT Locations				
037GP021	999	18.80	3.30	10.00 U
037GP023	768	28.10	2.00	10.00 U
037GP025	7	29.50	2.00 U	10.00 U
037GP026	905	46.10	3.40	10.00 U
037GP027	999	71.70	4.30	10.00 U
037GP028	522	131.00	4.60	10.00 U
037GP029	10	19.40	2.00 U	10.00 U
037GP030	73	106.00	2.00 U	10.00 U
037GP031	980	57.20	3.50	10.00 U
037GP032	423	92.50	4.80	10.00 U
037GP033	360	22.60	2.00 U	10.00 U
699GP050	345	44.00	2.50	10.00 U
699GP051	Not Taken	21.90	2.00 U	10.10
Monitoring Wells				
613GW00102	8	2.10 U	2.00 J	9.50 J
613GW00103	10	2.10 U	2.00 J	4.60 U
613GW00104	0	2.10 U	0.20 U	5.00 U
613GW00301	0	5.80 J	0.30 U	6.00 U
613GW00302	2	3.90 J	0.41 U	5.00 U
613GW00303	11	16.20 U	0.20 U	5.00 U
613GW00304	2	2.10 U	1.10 J	5.00 U
613GW02D01	3	4.70 J	0.77 J	4.00 U

Table 10.0.4.22 details the results of the data in Subzone F-5. Figure 10.0.4.20 identifies the sample locations.

Table 10.0.4.22
Subzone F-5 Data Comparison

Sample ID	Turbidity (ntu)	Arsenic (µg/L)	Beryllium (µg/L)	Thallium (µg/L)
DPT Locations				
037GP024	674	84.30	5.40	10.00 U
037GP034	297	91.30	2.00 U	10.00 U
037GP035	137	62.20	2.00 U	10.00 U
037GP036	264	30.60	2.00 U	10.00 U
037GP039	28	38.50	2.00 U	10.00 U
037GP040	999	149.00	10.80	10.00 U
037GP041	87	10.00 U	2.00 U	10.00 U
037GP042	344	45.20	2.00 U	10.00 U
037GP043	999	119.00	9.20	10.00 U
037GP050	924	92.00	3.20	10.00 U
037GP051	906	93.40	7.20	10.00 U
037GP052	999	125.00	3.70	10.00 U
037GP053	999	63.30	18.20	12.40
037GP054	992	190.00	23.20	21.00
037GP055	630	54.00	7.70	10.00 U
037GP056	999	89.40	19.30	10.00 U
037GP057	999	486.00	46.10	26.40
699GP011	724	10.00 U	2.00 U	10.00 U
699GP015	999	116.00	2.00 U	10.00 U
699GP016	926	18.20	20.00	10.00 U
699GP043	602	11.60	2.00 U	10.00 U
699GP044	307	10.00 U	2.00	10.00 U
699GP045	40	10.00 U	2.00 U	10.00 U
699GP046	270	61.70	2.00 U	10.00 U
699GP048	Not Taken	118.00	8.80	14.30

Statistical analysis of the thallium values in Subzone F-6 indicates that the thallium values differ significantly between the DPT locations and the monitoring wells. The mean of the DPT locations was 5.5 μg/L and the mean of the monitoring wells was 3.6 μg/L.

Table 10.0.4.23 details the results of the data in Subzone F-6. Figure 10.0.4.21 identifies the sample locations.

Table 10.0.4.23
Subzone F-6 Data Comparison

Sample ID	Turbidity (ntu)	Arsenic (μg/L)	Beryllium (μg/L)	Thallium (μg/L)
DPT Locations				
037GP004	Not taken	61.90	5.00	10.00 U
037GP029	10	19.40	2.00 U	10.00 U
037GP037	Not taken	62.30	2.00	10.00 U
037GP038	794	71.70	3.90	10.00 U
037GP044	623	56.30	4.20	10.00 U
037GP045	294	90.90	2.20	10.00 U
037GP047	999	69.00	4.80	10.00 U
037GP048	455	47.00	7.40	10.00 U
037GP049	999	230.00	12.40	12.60
037GP065	999	55.80	13.50	10.00 U
037GP066	798	15.10	2.00 U	10.00 U
699GP001	999	131.00	23.00	10.00 U
699GP002	350	46.60	2.00 U	10.00 U
699GP003	351	41.60	4.00	10.00 U
699GP004	999	56.40	4.10	10.00 U
699GP005	248	52.80	2.00 U	10.00 U
699GP006	111	43.90	2.00 U	10.00 U
699GP007	Not taken	135.00	5.80	10.00 U
699GP008	999	194.00	7.30	10.00 U
699GP009	Not taken	32.00	9.80	10.00 U
699GP010	999	164.00	19.40	10.80
699GP012	Not taken	10.00 U	2.00 U	10.00 U
699GP013	29	10.60	2.00 U	10.00 U
699GP014	714	44.00	2.80	10.00 U
699GP049	Not taken	43.40	2.20	10.00 U

Subzone G-1

Statistical analysis of the turbidity values in Subzone G-1 indicates that the turbidity values differ significantly between the DPT locations and the monitoring wells. The mean of the DPT locations was 775.5 ntu and the mean of the monitoring wells was 4.5 ntu.

Statistical analysis of the arsenic values in Subzone G-1 indicates that the arsenic values do not differ significantly between the DPT locations and the monitoring wells. The mean of the DPT locations was 292.3 μg/L and the mean of the monitoring wells was 54.9 μg/L.

Statistical analysis of the beryllium values in Subzone G-1 indicates that the beryllium values do not differ significantly between the DPT locations and the monitoring wells. The mean of the DPT locations was 23.0 μg/L and the mean of the monitoring wells was 0.5 μg/L.

Statistical analysis of the thallium values in Subzone G-1 indicates that the thallium values do not differ significantly between the DPT locations and the monitoring wells. The mean of the DPT locations was 18.8 μg/L and the mean of the monitoring wells was 3.5 μg/L.

Table 10.0.4.24 details the results of the data in Subzone G-1. Figure 10.0.4.22 identifies the sample locations.

Table 10.0.4.24
Subzone G-1 Data Comparison

Sample ID	Turbidity (ntu)	Arsenic (μg/L)	Beryllium (μg/L)	Thallium (μg/L)
DPT Locations				
037GP003	999	77.10	2.70	10.00 U
037GP011	999	102.00	13.40	10.00 U
037GP013	495	208.00	28.30	30.10
037GP014	609	782.00	47.60	35.00
Monitoring Wells				
006GW00101	0	8.50 J	1.40 J	6.80 U

Statistical analysis of the arsenic values in Subzone G-2 indicates that the arsenic values do not differ significantly between the DPT locations and the monitoring wells. The mean of the DPT locations was 161.1 μg/L and the mean of the monitoring wells was 13.6 μg/L.

Statistical analysis of the beryllium values in Subzone G-2 indicates that the beryllium values do not differ significantly between the DPT locations and the monitoring wells. The mean of the DPT locations was 6.0 μg/L and the mean of the monitoring wells was 0.4 μg/L.

Statistical analysis of the thallium values in Subzone G-2 indicates that the thallium values do not differ significantly between the DPT locations and the monitoring wells. The mean of the DPT locations was 15.3 μg/L and the mean of the monitoring wells was 2.7 μg/L.

Table 10.0.4.25 details the results of the data in Subzone G-2. Figure 10.0.4.23 identifies the sample locations.

Table 10.0.4.25
Subzone G-2 Data Comparison

Sample ID	Turbidity (ntu)	Arsenic (μg/L)	Beryllium (μg/L)	Thallium (μg/L)
DPT Locations				
037GP019	999	441.00	11.60	23.50
037GP022	999	159.00	7.50	20.60
037GP023	201	39.50	3.80	12.10
037GP024	129	10.00 U	2.00 U	10.00 U
037GP025	999	15.70	2.30	11.90
Monitoring Wells				
008GW00101	0	6.40 J	1.60 U	2.70 U
008GW00102	0	5.00 J	0.71 J	5.00 UJ
008GW00103	0	5.60 J	1.19 J	5.00 U
008GW00104	0	6.30 U	0.33 J	5.00 U
008GW00201	2	2.50 U	0.69 U	3.90 J
008GW00202	0	2.10 U	0.20 UJ	5.00 UJ
008GW00203	0	2.10 U	0.23 J	5.00 U
008GW00204	0	2.30 U	0.20 U	5.00 U

Subzone H-1

Statistical analysis of the turbidity values in Subzone H-1 indicates that the turbidity values differ significantly between the DPT locations and the monitoring wells. The mean of the DPT locations was 419.0 ntu and the mean of the monitoring wells was 3.00 ntu.

Statistical analysis of the arsenic values in Subzone H-1 indicates that the arsenic values do not differ significantly between the DPT locations and the monitoring wells. The mean of the DPT locations was 37.45 μg/L and the mean of the monitoring wells was 11.62 μg/L.

Statistical analysis of the beryllium values in Subzone H-1 indicates that the beryllium values differ significantly between the DPT locations and the monitoring wells. The mean of the DPT locations was 2.51 μg/L and the mean of the monitoring wells was 0.22 μg/L.

Statistical analysis of the thallium values in Subzone H-1 indicates that the thallium values differ significantly between the DPT locations and the monitoring wells. The mean of the DPT locations was 5.71 μg/L and the mean of the monitoring wells was 2.55 μg/L.

Table 10.0.4.26 details the results of the data in Subzone H-1. Figure 10.0.4.24 identifies the sample locations.

Table 10.0.4.26
Subzone H-1 Data Comparison

Sample ID	Turbidity (ntu)	Arsenic (μg/L)	Beryllium (μg/L)	Thallium (μg/L)
DPT Locations				
037GP001	10.00	11.00	2.00 U	10.00 U
037GP002	121.00	17.70	2.00 U	10.00 U
037GP003	999.00	60.90	3.50	12.10
037GP004	34.00	10.00 U	2.00 U	10.00 U
037GP006	641.00	10.00 U	2.00 U	10.00 U

Table 10.0.4.26
Subzone H-1 Data Comparison

Sample ID	Turbidity (ntu)	Arsenic (µg/L)	Beryllium (µg/L)	Thallium (µg/L)
037GP008	999.00	121.00	5.40	10.00 U
037GP010	177.00	10.00 U	2.00 U	10.00 U
037GP011	997.00	10.00 U	2.00 U	10.00 U
037GP012	86.00	11.90	2.00 U	10.00 U
037GP06A	126.00	132.00	9.90	10.00 U
Monitoring Wells				
013GW00101	0.00	12.10 J	0.30 U	5.80 UJ
013GW00102	0.00	7.40 J	0.20 U	3.70 U
013GW00103	0.00	9.90 J	0.30 U	2.50 UJ
013GW00104	0.00	16.40 J	1.20 U	4.20 J
013GW00701	0.00	3.80 U	0.30 U	5.80 UJ
013GW00702	0.00	2.60 U	0.20 U	3.70 U
013GW00703	0.00	1.80 U	0.30 U	2.50 UJ
013GW00704	0.00	2.50 U	0.36 U	4.40 U
013G130101	0.00	5.10 U	0.30 U	5.80 UJ
013G130102	0.00	4.90 J	0.20 U	3.70 U
013G130103	0.00	2.00 J	0.32 J	2.50 UJ
013G130104	0.00	4.50 J	0.44 U	2.70 U
013G130201	0.00	7.70 U	0.30 U	5.80 UJ
013G130202	0.00	4.10 J	0.20 U	3.70 U
013G130203	0.00	1.80 U	0.30 U	2.50 UJ
013G130204	0.00	4.40 J	0.44 U	3.70 U
653GW00101	0.00	28.40	0.30 U	1.20 J
653GW00102	0.00	38.60	0.30 U	3.30 U
653GW00103	0.00	54.10	0.30 U	2.50 U
653GW00104	0.00	45.00	0.30 U	2.80 J
653GW00201	0.00	14.30	0.30 U	1.00 U
653GW00202	0.00	17.00	0.30 U	3.30 U
653GW00203	0.00	23.40	0.36 U	3.00 U
653GW00204	0.00	10.10	0.30 U	2.70 U
GDHGW00301	8.00	26.60 U	0.30 U	4.00 UJ
GDHGW00302	8.00	24.80	0.20 U	3.70 U

Statistical analysis of the thallium values in Subzone H-2 indicates that the thallium values differ significantly between the DPT locations and the monitoring wells. The mean of the DPT locations was 5.00 μg/L and the mean of the monitoring wells was 1.71 μg/L.

Table 10.0.4.27 details the results of the data in Subzone H-2. Figure 10.0.4.25 identifies the sample locations.

Table 10.0.4.27
Subzone H-2 Data Comparison

Sample ID	Turbidity (ntu)	Arsenic (μg/L)	Beryllium (μg/L)	Thallium (μg/L)
DPT Locations				
037GP014	Not Taken	88.60	5.30	10.00 U
037GP015	Not Taken	36.10	2.50	10.00 U
037GP016	Not Taken	10.00 U	2.00 U	10.00 U
037GP017	450.00	182.00	11.20	10.00 U
037GP018	60.00	146.00	15.50	10.00 U
037GP019	999.00	20.10	2.00 U	10.00 U
037GP020	999.00	12.80	2.00 U	10.00 U
Monitoring Wells				
013GW00201	1.00	5.70 U	0.30 U	5.80 UJ
013GW00202	1.00	2.60 U	0.20 U	3.70 U
013GW00203	1.00	1.80 U	0.30 U	2.50 UJ
013GW00204	1.00	2.50 UJ	1.30 U	2.70 UJ
013GW00301	0.00	5.90 U	0.30 U	5.80 UJ
013GW00302	0.00	2.60 U	0.20 U	3.70 U
013GW00303	0.00	3.30 J	0.32 J	2.50 UJ
013GW00304	0.00	3.50 UJ	1.20 U	2.70 UJ
013GW00401	2.00	7.10 U	0.30 U	5.80 UJ
013GW00402	2.00	2.60 U	0.20 U	3.70 U
013GW00403	2.00	3.90 J	0.30 U	2.50 UJ
013GW00404	2.00	2.60 UJ	0.43 U	2.70 UJ
017GW00101	0.00	2.30 U	0.30 U	3.10 U
017GW00102	0.00	2.60 U	0.20 U	3.70 U
017GW00103	0.00	6.10 J	0.32 J	2.50 UJ

Statistical analysis of the thallium values in Subzone H-4 indicates that the thallium values differ significantly between the DPT locations and the monitoring wells. The mean of the DPT locations was 5.00 μg/L and the mean of the monitoring wells was 2.02 μg/L.

Table 10.0.4.29 details the results of the data in Subzone H-4. Figure 10.0.4.27 identifies the sample locations.

Table 10.0.4.29
Subzone H-4 Data Comparison

Sample ID	Turbidity (ntu)	Arsenic (μg/L)	Beryllium (μg/L)	Thallium (μg/L)
DPT Locations				
037GP029	134.00	21.00	2.00 U	10.00 U
037GP030	380.00	86.20	3.20	10.00 U
037GP031	999.00	92.50	5.70	10.00 U
037GP032	999.00	173.00	11.40	10.00 U
037GP033	999.00	27.30	2.00 U	10.00 U
Monitoring Wells				
666GW00101	1.00	2.10 U	0.30 U	3.10 U
666GW00102	1.00	6.20 U	0.20 U	3.70 UJ
666GW00103	1.00	3.20 J	0.30 UJ	6.40 UJ
666GW00104	1.00	5.70 J	0.30 U	2.70 U
666GW00201	5.00	2.10 U	0.30 U	3.10 U
666GW00202	5.00	2.60 U	0.20 U	3.70 UJ
666GW00203	5.00	1.50 UJ	0.30 UJ	1.60 UJ
666GW00204	5.00	2.50 U	0.30 U	3.10 J
667GW00101	0.00	2.10 U	0.30 U	3.10 U
667GW00102	0.00	2.60 U	0.20 U	3.70 UJ
667GW00103	0.00	1.50 UJ	0.30 UJ	6.40 UJ
667GW00104	0.00	2.60 U	0.30 U	2.70 UJ
667GW00201	0.00	2.60 U	0.30 U	3.10 U
667GW00202	0.00	2.60 U	0.20 U	3.70 UJ
667GW00203	0.00	1.50 UJ	0.30 UJ	6.40 UJ
667GW00204	0.00	3.80 U	0.38 J	5.10 UJ

Subzone H-5

Statistical analysis of the turbidity values in Subzone H-5 indicates that the turbidity values differ significantly between the DPT locations and the monitoring wells. The mean of the DPT locations was 465.7 ntu and the mean of the monitoring wells was 3.8 ntu.

Statistical analysis of the arsenic values in Subzone H-5 indicates that the arsenic values differ significantly between the DPT locations and the monitoring wells. The mean of the DPT locations was 68.7 μg/L and the mean of the monitoring wells was 3.5 μg/L.

Statistical analysis of the beryllium values in Subzone H-5 indicates that the beryllium values differ significantly between the DPT locations and the monitoring wells. The mean of the DPT locations was 4.0 μg/L and the mean of the monitoring wells was 0.2 μg/L.

Statistical analysis of the thallium values in Subzone H-5 indicates that the thallium values differ significantly between the DPT locations and the monitoring wells. The mean of the DPT locations was 6.5 μg/L and the mean of the monitoring wells was 3.0 μg/L.

Table 10.0.4.30 details the results of the data in Subzone H-5. Figure 10.0.4.28 identifies the sample locations.

Table 10.0.4.30
Subzone H-5 Data Comparison

Sample ID	Turbidity (ntu)	Arsenic (μg/L)	Beryllium (μg/L)	Thallium (μg/L)
DPT Locations				
037GP021	68.00	120.00	6.30	10.00 U
037GP022	9.00	242.00	14.10	17.30
037GP023	240.00	84.90	4.50	10.00 U
037GP024	234.00	29.90	2.60	10.00 U
037GP025	999.00	20.00	2.00 U	10.00 U
037GP038	Not Taken	19.90	2.00 U	10.00 U

Table 10.0.4.30
Subzone H-5 Data Comparison

Sample ID	Turbidity (ntu)	Arsenic (µg/L)	Beryllium (µg/L)	Thallium (µg/L)
037GP039	81.00	139.00	6.00	10.00 U
037GP043	999.00	63.20	4.10	10.00 U
037GP044	74.00	45.70	3.90	10.00 U
037GP045	999.00	34.20	2.20	10.00 U
037GP046	573.00	13.20	2.00 U	10.70
037GP047	847.00	11.90	2.00 U	10.00 U
Monitoring Wells				
017GW00401	0.00	4.20 U	0.30 U	3.10 U
017GW00402	0.00	4.90 J	0.20 U	3.70 U
017GW00403	0.00	3.20 J	0.30 U	2.50 UJ
017GW00404	0.00	4.70 J	0.47 U	2.70 U
656GW00101	9.00	20.90 U	0.30 U	5.80 UJ
656GW00102	9.00	3.00 U	0.20 U	3.70 UJ
656GW00103	9.00	10.70	0.30 U	2.50 UJ
656GW00104	9.00	16.60 J	1.20 U	4.20 J
656GW00201	1.00	2.10 U	0.30 U	3.10 U
656GW00202	1.00	2.60 U	0.20 U	3.70 UJ
656GW00203	1.00	4.50 J	0.30 U	2.50 UJ
656GW00204	1.00	4.20 UJ	1.20 U	4.50 J
656GW00301	4.00	4.30 U	0.30 U	3.10 U
656GW00302	4.00	2.60 U	0.20 U	4.10 J
656GW00303	4.00	9.00 U	0.30 U	23.20 J
656GW00304	4.00	5.80 UJ	0.93 U	3.30 J
GDHGW00801	2.00	1.60 U	0.30 U	1.00 U
GDHGW00802	2.00	2.70 U	0.20 U	3.30 U
GDHGW00803	2.00	1.60 J	0.30 U	1.60 UJ
GDHGW00804	2.00	2.50 U	0.37 U	2.70 UJ
GDHGW08D01	7.00	0.80 U	0.30 U	5.60 J
GDHGW08D02	7.00	2.70 U	0.20 U	3.70 UJ
GDHGW08D03	7.00	2.00 J	0.30 U	6.40 UJ
GDHGW08D04	7.00	2.50 U	0.89 U	2.70 UJ

Subzone I-1

Subzone I-1 had only one DPT groundwater location and results for arsenic, beryllium, and thallium were used as a single point comparison.

Table 10.0.4.31 details the results of the data in zone I-1. Figure 10.0.4.29 identifies the sample locations.

Table 10.0.4.31
Subzone I-1 Data Comparison

Sample ID	Turbidity (ntu)	Arsenic (µg/L)	Beryllium (µg/L)	Thallium (µg/L)
DPT Locations				
037GP001	123	191.00	6.70	10.00 U
Monitoring Wells				
671GW00101	0	3.20 U	0.20 U	4.50 U
671GW00102	1	5.00 U	1.00 U	5.00 U
671GW00103	0	10.10	1.00 U	5.00 U
671GW00104	0	7.70 U	0.50 U	5.50 J
671GW00201	10	3.20 U	0.20 U	4.50 U
671GW00202	2	5.00 U	1.00 U	5.00 U
671GW00203	0	5.00 U	1.00 U	5.00 U
671GW00204	0	5.90 U	0.53 U	2.70 U
671GW00301	0	31.40	0.20 U	4.50 U
671GW00302	4	42.00	1.00 U	5.00 U
671GW00303	0	28.80	1.00 U	5.00 U
671GW00304	0	38.90	0.54 U	6.60 J
671GW00401	2	17.20	0.20 U	4.50 U
671GW00402	3	9.90 J	1.00 U	5.00 U
671GW00403	5	9.90 J	1.00 U	5.00 U
671GW00404	7	10.00 U	0.48 J	2.70 UJ
GDIGW01701	0	20.90	0.20 U	4.50 U
GDIGW01702	4	66.30	1.00 U	5.40 J
GDIGW01703	2	33.50	1.00 U	5.00 U
GDIGW01704	2	46.20	0.37 U	2.70 UJ
GDIGW01801	0	3.20 U	0.20 U	4.50 U

Statistical analysis of the thallium values in Subzone I-2 indicates that the thallium values differ significantly between the DPT locations and the monitoring wells. The mean of the DPT locations was 5.0 μg/L and the mean of the monitoring wells was 2.3 μg/L.

Table 10.0.4.32 details the results of the data in Subzone I-2. Figure 10.0.4.30 identifies the sample locations.

Table 10.0.4.32
Subzone I-2 Data Comparison

Sample ID	Turbidity (ntu)	Arsenic (μg/L)	Beryllium (μg/L)	Thallium (μg/L)
DPT GW Sample Location				
037GP005	297	10.00 U	2.00 U	10.00 U
037GP007	999	14.30	2.00 U	10.00 U
037GP008	57	10.00 U	2.00 U	10.00 U
037GP009	379	14.20	2.00 U	10.00 U
037GP010	150	10.00 U	2.00 U	10.00 U
037GP011	999	20.60	2.00 U	10.00 U
037GP012	328	26.20	2.00 U	10.00 U
Monitoring Wells				
675GW00101	0	3.20 U	0.20 U	4.50 U
675GW00102	9	5.00 U	1.00 U	5.00 U
675GW00103	0	5.00 U	1.00 U	5.00 U
675GW00104	0	2.50 U	0.31 J	2.70 U
675GW00201	0	3.20 U	0.20 U	4.50 U
675GW00202	4	5.00 U	1.00 U	5.00 U
675GW00203	0	5.00 U	1.00 U	5.00 U
675GW00204	9	7.10 J	0.36 J	2.70 U
676GW00101	0	3.20 U	0.20 U	4.50 U
676GW00102	2	5.00 U	1.00 U	5.00 U
676GW00103	1	5.00 U	1.00 U	5.00 U
676GW00104	2	2.50 U	0.34 J	4.00 U
677GW00201	0	3.20 U	0.20 U	4.50 U
677GW00202	6	5.00 U	1.00 U	5.00 U
677GW00203	2	6.10 J	1.00 U	5.00 U