



## Department of Energy

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APR 29 2002

Mr. James A. Saric, Remedial Project Manager  
 U.S. Environmental Protection Agency  
 Region V-SRF-5J  
 77 West Jackson Boulevard  
 Chicago, Illinois 60604-3590

DOE-0446-02

Mr. Tom Schneider, Project Manager  
 Ohio Environmental Protection Agency  
 401 East 5<sup>th</sup> Street  
 Dayton, Ohio 45402-2911

Dear Mr. Saric and Mr. Schneider:

**CONTRACT NUMBER DE-AC24-01OH20115, TRANSMITTAL OF THE FIRST INTEGRATED ENVIRONMENTAL MONITORING PLAN DATA QUARTERLY SUMMARY FOR 2002 (APRIL 2002), RESPONSES TO THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY AND OHIO ENVIRONMENTAL PROTECTION AGENCY COMMENTS ON THE FOURTH INTEGRATED ENVIRONMENTAL MONITORING PLAN DATA QUARTERLY SUMMARY FOR 2001 (JANUARY 2002), AND FOLLOW UP TO THE INTEGRATED ENVIRONMENTAL MONITORING PLAN 2001 ANNUAL REVIEW (OCTOBER 2001)**

This letter transmits the subject documents to the Department of Energy (DOE), the United States Environmental Protection Agency (USEPA) and Ohio Environmental Protection Agency (OEPA). The First Integrated Environmental Monitoring Plan (IEMP) Data Quarterly Summary for 2002 was prepared to meet the quarterly reporting obligation defined in Revision 2 of the IEMP. This document summarizes IEMP data that became available for posting to the IEMP Data Information Site during the first Calendar Quarter of 2002 and not covered under the previous quarterly summary. All of this data and other supporting information are available to the USEPA and OEPA on the IEMP Data Information Site, at <http://iempdata.fernald.gov>. According to agreements with the USEPA and OEPA, responses to comments on the previous IEMP quarterly summary have been addressed through the enclosed comment response document, rather than through revision of the report. These documents are being provided for your review.

Additionally, in December 2001, the USEPA and OEPA approved the IEMP 2001 Annual Review, including an updated IEMP Table 4-3 showing the location specific surface water Constituent of Concern (COC) lists. These lists were revised per data evaluation criteria

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Mr. James A. Saric  
Mr. Tom Schneider

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identified in Section 4.6.1 of the IEMP. This evaluation was based on data collected through June 2001; however, the review also committed that data collected through December 2001 would also be considered by adding any COC with an Final Remediation Level (FRL) or Benchmark Toxicity Value (BTV) exceedance back into Table 4-3, in accordance with the evaluation criteria. This letter also transmits this follow up to the IEMP 2001 Annual Review, and includes updates to the Annual Review Tables B.1 and 4-3 for your information.

If you have any questions concerning the enclosed documents or the IEMP Data Information Site, please contact Kathleen Nickel at (513) 648-3166. Questions on the IEMP Data Information Site can also be addressed by clicking on the "Data Questions" e-mail link found at the top of the IEMP Data Information Site screen.

Sincerely,



Johnny W. Reising  
Fernald Remedial Action  
Project Manager

FEMP:Nickel

Enclosures: As Stated

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Mr. James A. Saric  
Mr. Tom Schneider

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## cc w/enclosures:

R. J. Janke, OH/FEMP  
K. Nickel, OH/FEMP  
T. Schneider, OEPA-Dayton (three copies of enclosure)  
G. Jablonowski, USEPA-V, SRF-5J  
F. Bell, ATSDR  
M. C. Wojciechowski, Tetra Tech  
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M. Frank, Fluor Fernald, Inc./MS90  
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**RESPONSES TO U.S. EPA AND OHIO EPA TECHNICAL  
REVIEW COMMENTS ON FOURTH IEMP DATA  
QUARTERLY SUMMARY FOR 2001**

**FERNALD ENVIRONMENTAL MANAGEMENT PROJECT  
FERNALD, OHIO**

**APRIL 2002**

**U.S. DEPARTMENT OF ENERGY**





**Follow up to Attachment B of the IEMP 2001 Annual Review**

The Integrated Environmental Monitoring Plan (IEMP) 2001 Annual Review was submitted to the U.S. Environmental Protection Agency (EPA) and the Ohio EPA (OEPA) in October 2001, and approved by the EPA and OEPA in December 2001. Attachment B of the annual review included a revision to the location-specific surface water constituent of concern (COC) lists (IEMP Table 4-3) based on an evaluation of data collected through June 2001. At the time of the review, the third and fourth quarter 2001 data were in the process of collection/analysis. Therefore, the Department of Energy committed to evaluate these data with respect to final remediation level/benchmark toxicity value (FRL/BTV) exceedances to determine if any COCs should be retained in the IEMP Characterization Monitoring Program. This attachment fulfills this commitment and includes an updated Table B-1, along with a final IEMP Table 4-3.

Based on a review of the third and fourth quarter 2001 surface water monitoring data, there is no need to make any modifications to the location-specific COC lists. The only exceedances of interest that occurred during this time period were three BTV exceedances for cadmium at the Great Miami River based on Parshall Flume (PF 4001) data. This constituent is currently monitored under NPDES three times a week and will continue to be monitored and evaluated. Therefore, the only change to Table 4-3 is to reflect that there were sporadic exceedances for cadmium at the PF 4001 location. This is identified in the IEMP Characterization column with an "S". Also of note, The FRL for cadmium is based on background (0.0098 mg/L) and the BTV is 0.003 mg/L, which is lower than the FRL. The cadmium BTV exceedances in the Great Miami River occurred after using the mixing equation (from PF 4001 data); however, this is because the mixing equation utilizes the background number which is higher than the associated BTV.

As identified in the IEMP 2001 Annual Review, sampling per Table 4-3 was initiated in January 2002. This sampling will continue as identified since there were no changes based on the evaluation of the data collected through December 2001.

**TABLE B.1**  
**Evaluation of Constituents Selected for IEMP Characterization Surface Water Monitoring Due to Sporadic FRL/BTV Exceedances or Insufficient Historical Data**

Location	Currently Monitored COCs	Basis for Selection of Constituent Code <sup>a,b</sup>	No. of Analyses <sup>c</sup>	No. of FRL Exceedances <sup>c</sup>	Date of Last FRL Exceedance (No. of samples since exceedance) <sup>c</sup>	No. of BTV Exceedances <sup>c</sup>	Date of Last BTV Exceedance (No. of samples since exceedance) <sup>c</sup>
SWP-02 (Paddys Run)	<b>Inorganics:</b>						
	Beryllium	S	24	1	10/28/1997 (21)	-	-
	Cadmium	S	24	1	10/28/1997 (21)	2	02/12/1998 (18)
	Chromium, Total	S	24	2	12/15/1998 (11)	-	-
	Copper	S	24	2	05/11/1998 (15)	-	-
	Manganese	S	24	1	10/28/1997 (21)	-	-
	Mercury	S	24	1	10/28/1997 (21)	-	-
	<b>Radionuclides:</b>						
	Technetium-99	M, S	24	0	-	-	-
	Total Uranium <sup>d</sup>	S <sup>d</sup>	24	0	-	-	-
SWP-03 (Paddys Run at Downstream Property Boundary)	<b>Inorganics:</b>						
	Mercury	M, S	21	1	04/13/1998 (14)	-	-
	Silver	M, S	22	0	-	1	10/28/1997 (20)
	Chromium, Total	S	22	3	10/05/2000 (4)	-	-
	Copper	S	22	1	09/25/2000 (5)	-	-
	Barium	S	22	0	-	0	-
	Beryllium	S	22	0	-	-	-
	Cadmium	S	22	0	-	0	-
	Lead	S	22	0	-	-	-
	Manganese	S	22	0	-	-	-
	Selenium	S	22	0	-	-	-
	<b>Radionuclides:</b>						
	Total Uranium <sup>d</sup>	M, S <sup>d</sup>	22	0	-	-	-
	Technetium-99 <sup>c</sup>	M, S	22	0	-	-	-
	Lead-210	I	15	0	-	-	-
	<b>Semi-Volatiles:</b>						
	bis(2-Ethylhexyl)phthalate <sup>f</sup>	S	22	1	-	-	-
	3,3'-Dichlorobenzidine	I	14	0	-	-	-
	Benzo(a)anthracene	I	15	0	-	-	-
	Benzo(a)pyrene	I	15	0	-	-	-
Dibenzo(a,h)anthracene	I	15	0	-	-	-	
Di-n-octyl phthalate	S	22	0	-	-	-	
<b>Volatiles:</b>							
Tetrachloroethene	S	23	0	-	-	-	
1,1,1-Trichloroethane	S	23	0	-	-	-	
SWD-01 (Northeast Drainage)	<b>Inorganics:</b>						
	Cyanide	M, S	25	0	-	-	-
	Beryllium	S	26	0	-	-	-
	Lead	S	26	0	-	-	-
	Manganese	S	26	0	-	-	-
	Zinc	S	26	4	11/12/1998 (12)	-	-

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TABLE B.1  
(Continued)

Location	Currently Monitored COCs	Basis for Selection of Constituent Code <sup>a,b</sup>	No. of Analyses <sup>c</sup>	No. of FRL Exceedances <sup>c</sup>	Date of Last FRL Exceedance (No. of samples since exceedance) <sup>c</sup>	No. of BTV Exceedances <sup>c</sup>	Date of Last BTV Exceedance (No. of samples since exceedance) <sup>c</sup>
SWD-02 (Storm Sewer Outfall Ditch)	Inorganics:						
	Cadmium	S	28	0	-	0	-
	Manganese	S	28	0	-	-	-
	Radionuclides:						
	Total Uranium <sup>d</sup>	M, S <sup>d</sup>	53	0	-	-	-
	Semi-Volatiles:						
SWD-03 (Waste Storage Area)	bis(2-Ethylhexyl)phthalate	S	28	0	-	-	-
	Inorganics:						
	Copper	S	27	2	04/20/2001 (2)	-	-
	Barium	S	27	0	-	0	-
	Chromium, Total	S	27	0	-	-	-
	Lead	S	27	0	-	-	-
	Manganese	S	27	0	-	-	-
	Radionuclides:						
	Total Uranium <sup>d</sup>	S <sup>d</sup>	50	0	-	-	-
	Semi-Volatiles:						
	bis(2-Ethylhexyl)phthalate	S	27	0	-	-	-
Volatiles:							
Tetrachloroethene	S	27	0	-	-	-	
1,1,1-Trichloroethane	S	27	0	-	-	-	
PF 4001 (Parshall Flume - Treated Effluent)	Inorganics:						
	Cyanide	M, S	290	0	-	-	-
	Mercury	M, S	50	0	-	-	-
	Beryllium	S	52	0	-	-	-
	Cadmium <sup>h</sup>	S	313	0	-	3 <sup>g</sup>	12/19/2001 (4)
	Chromium, Total <sup>h</sup>	S	313	0	-	-	-
	Copper <sup>h</sup>	S	386	0	-	-	-
	Manganese <sup>h</sup>	S	226	0	-	-	-
	Radionuclides:						
	Technetium-99	M, S	54	0	-	-	-
	Total Uranium <sup>d</sup>	M, S <sup>d</sup>	1604	0	-	-	-
	Lead-210	I	18	0	-	-	-
	Radium-228 <sup>h</sup>	S	53	0	-	-	-
	Semi-Volatiles:						
	Benzo(a)anthracene	S	18	0	-	-	-
	Benzo(a)pyrene	S	18	0	-	-	-
	Dibenzo(a,h)anthracene	S	18	0	-	-	-
Di-n-octyl phthalate	S	18	0	-	-	-	
3,3'-Dichlorobenzidine	S	17	0	-	-	-	

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TABLE B.1  
(Continued)

Location	Currently Monitored COCs	Basis for Selection of Constituent Code <sup>a,b</sup>	No. of Analyses <sup>c</sup>	No. of FRL Exceedances <sup>c</sup>	Date of Last FRL Exceedance (No. of samples since exceedance) <sup>c</sup>	No. of BTV Exceedances <sup>c</sup>	Date of Last BTV Exceedance (No. of samples since exceedance) <sup>c</sup>
SWRB 4002O	Inorganics:						
(Storm Water Retention Basin)	Cyanide	M, S <sup>i</sup>	2	0	-	-	-
	Manganese	S <sup>i</sup>	2	0	-	-	-
	Mercury	M, S <sup>i</sup>	2	0	-	-	-
	Radionuclides:						
	Radium-228	S <sup>i</sup>	2	0	-	-	-
	Technetium-99	M, S <sup>i</sup>	2	0	-	-	-
STRM 4003 <sup>j</sup>	Radionuclides:						
(Drainage to Paddys Run)	Total Uranium <sup>d</sup>	M <sup>d</sup> , S <sup>d</sup>	14	0	-	-	-
STRM 4004 <sup>j</sup>	Radionuclides:						
(Drainage to Paddys Run)	Total Uranium <sup>d</sup>	M <sup>d</sup> , S <sup>d</sup>	9	0	-	-	-
STRM 4005 <sup>j</sup>	Radionuclides:						
(Drainage to Paddys Run)	Total Uranium <sup>d</sup>	M <sup>d</sup> , S <sup>d</sup>	30	0	-	-	-
STRM 4006 <sup>j</sup>	Radionuclides:						
(Drainage to Paddys Run)	Total Uranium <sup>d</sup>	M <sup>d</sup> , S <sup>d</sup>	12	0	-	-	-

<sup>k</sup> Shading indicates location-specific COCs will be removed from monitoring based on evaluation or removal of a monitoring criteria (e.g., S).

<sup>a</sup> M = Based on Modeling; S = Sporadic Exceedances; I = Insufficient Number of Historical Analyses

<sup>b</sup> Those constituents monitored based on Modeling (M) will continue to be monitored even if there has been no FRL/BTV exceedance; therefore, these constituents are not shaded.

<sup>c</sup> Based on analytical data from August 1997 through December 2001.

<sup>d</sup> Total uranium will continue to be monitored quarterly whether there is a basis or not (i.e., M, S, I) and the monitoring criteria will be identified as a Primary COC (PC).

<sup>e</sup> Based on historical information, technetium-99 should also have been identified for monitoring due to modeling criteria from an upgradient area in addition to sporadic FRL/BTV exceedances. Therefore, the revised Table 4-3 will reflect modeling as a monitoring criterion.

<sup>f</sup> On October 10, 2000, there was a result of 70.3 at this location (FRL is 8.4 ug/L); however, the laboratory identified laboratory contamination issues. The constituent was sampled quarterly and there have been no other exceedances.

<sup>g</sup> The FRL for cadmium is based on background (0.0098 mg/L) and the BTV is 0.003 mg/L, which is lower than the FRL. During 2001, there were some BTV exceedances in the Great Miami River when using the mixing equation; however, this is because the mixing equation utilizes the background number which is higher than the associated BTV. The constituent is monitored under NPDES three times a week and will continue to be evaluated.

<sup>h</sup> These constituents will continue to be monitored under NPDES or FFCA requirements.

<sup>i</sup> There was insufficient data from which to make an evaluation.

<sup>j</sup> The basis for the selection criteria for these locations have been changed from "M,S" to "PC" for the purpose of accurately reflecting the basis for monitoring.

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TABLE 4-3

**SUMMARY OF SURFACE WATER AND TREATED EFFLUENT SAMPLING  
REQUIREMENTS BY LOCATION**

Location	Constituent <sup>a</sup>	IEMP Characterization Requirements (reason for selection) <sup>b,c</sup>	NPDES Requirements <sup>c</sup>	FFCA Requirements <sup>c</sup>
SWP-01 and SWR-01 (SWR-4801) (Paddys Run and Great Miami River Background)	<b>General Chemistry:</b>			
	Ammonia	-	Quarterly <sup>a</sup>	-
	Fluoride	Quarterly (B)	-	-
	Nitrate/Nitrite	Quarterly (B)	-	-
	Total hardness	-	-	-
	<b>Inorganics:</b>			
	Antimony	Quarterly (B)	-	-
	Arsenic	Quarterly (B)	-	-
	Barium	Quarterly (B)	-	-
	Beryllium	Quarterly (B)	-	-
	Cadmium	Quarterly (B)	Quarterly <sup>a</sup>	-
	Chromium, Total	Quarterly (B)	Quarterly <sup>a</sup>	-
	Cobalt	-	Quarterly <sup>a</sup>	-
	Copper	Quarterly (B)	Quarterly <sup>a</sup>	-
	Cyanide	Quarterly (B)	-	-
	Lead	Quarterly (B)	Quarterly <sup>a</sup>	-
	Manganese	Quarterly (B)	Quarterly <sup>a</sup>	-
	Mercury	Quarterly (B)	Quarterly <sup>a</sup>	-
	Molybdenum	Quarterly (B)	-	-
	Nickel	Quarterly (B)	Quarterly <sup>a</sup>	-
	Selenium	Quarterly (B)	-	-
	Silver	Quarterly (B)	Quarterly <sup>a</sup>	-
	Vanadium	Quarterly (B)	-	-
	Zinc	Quarterly (B)	Quarterly <sup>a</sup>	-
	<b>Radionuclides:</b>			
	Cesium-137	Quarterly (B)	-	-
	Lead-210	Quarterly (B)	-	-
	Neptunium-237	Quarterly (B)	-	-
	Plutonium-238	Quarterly (B)	-	-
	Plutonium-239/240	Quarterly (B)	-	-
	Radium-226	Quarterly (B)	-	-
	Radium-228	Quarterly (B)	-	-
	Strontium-90	Quarterly (B)	-	-
	Technetium-99	Quarterly (B)	-	-
	Thorium-228	Quarterly (B)	-	-
	Thorium-230	Quarterly (B)	-	-
	Thorium-232	Quarterly (B)	-	-
	Uranium, Total	Quarterly (B)	-	-
	<b>Pesticides/PCBs:</b>			
	alpha-Chlordane	Quarterly (B)	-	-
	Aroclor-1254	Quarterly (B)	-	-
	Aroclor-1260	Quarterly (B)	-	-
	Dieldrin	Quarterly (B)	-	-
	<b>Semi-Volatiles:</b>			
	Benzo(a)anthracene	Quarterly (B)	-	-
	Benzo(a)pyrene	Quarterly (B)	-	-
	bis(2-Chloroisopropyl)ether	Quarterly (B)	-	-
	bis(2-Ethylhexyl)phthalate	Quarterly (B)	-	-
	Dibenzo(a,h)anthracene	Quarterly (B)	-	-
	3,3'-Dichlorbenzidine	Quarterly (B)	-	-
	Di-n-butylphthalate	Quarterly (B)	-	-
	Di-n-octylphthalate	Quarterly (B)	-	-
	p-Methylphenol	Quarterly (B)	-	-
	4-Nitrophenol	Quarterly (B)	-	-

Table 4-3  
(Continued)

Location	Constituent <sup>a</sup>	IEMP Characterization Requirements (reason for selection) <sup>b,c</sup>	NPDES Requirements <sup>c</sup>	FFCA Requirements <sup>c</sup>	
SWP-01 and SWR-01 (SWR-4801) Paddys Run and Great Miami River Background) Contd.	<b>Volatiles:</b>				
	Benzene	Quarterly (B)	-	-	
	Bromodichloromethane	Quarterly (B)	-	-	
	Bromomethane	Quarterly (B)	-	-	
	Chloroform	Quarterly (B)	-	-	
	1,1-Dichloroethene	Quarterly (B)	-	-	
	Methylene chloride	Quarterly (B)	-	-	
	Tetrachloroethene	Quarterly (B)	-	-	
	1,1,1-Trichloroethane	Quarterly (B)	-	-	
1,1,2-Trichloroethane	Quarterly (B)	-	-		
SWP-02 (Paddys Run)	<b>Radionuclides:</b>				
	Technetium-99	Quarterly (M)	-	-	
	Thorium-228	Quarterly (WP)	-	-	
	Thorium-230	Quarterly (WP)	-	-	
	Thorium 232	Quarterly (WP)	-	-	
	Uranium, Total	Quarterly (PC)	-	-	
SWP-03 (Paddys Run at Downstream Property Boundary)	<b>Inorganics:</b>				
	Chromium, Total	Quarterly (S)	-	-	
	Copper	Quarterly (S)	-	-	
	Cyanide	Quarterly (M)	-	-	
	Mercury	Quarterly (M)	-	-	
	Silver	Quarterly (M)	-	-	
	Zinc	Quarterly (M)	-	-	
	<b>Radionuclides:</b>				
	Radium-226	Quarterly (M)	-	-	
	Strontium-90	Quarterly (M)	-	-	
	Technetium-99	Quarterly (M) <sup>e</sup>	-	-	
	Thorium-228	Quarterly (WP)	-	-	
	Thorium-230	Quarterly (WP)	-	-	
	Thorium-232	Quarterly (WP)	-	-	
	Uranium, Total	Quarterly (PC, M)	-	-	
	SWD-01 (Northeast Drainage)	<b>Inorganics:</b>			
		Mercury	Quarterly (M)	-	-
		Cyanide	Quarterly (M)	-	-
<b>Radionuclides:</b>					
Uranium, Total	Quarterly (PC, M)	-	-		
SWD-02 (Storm Sewer Outfall Ditch)	<b>Radionuclides:</b>				
	Strontium-90	Quarterly (M)	-	-	
	Technetium-99	Quarterly (M)	-	-	
Uranium, Total	Quarterly (PC, M)	-	-		
SWD-03 (Waste Storage Area)	<b>Inorganics:</b>				
	Cyanide	Quarterly (M)	-	-	
	Mercury	Quarterly (M)	-	-	
	Silver	Quarterly (M)	-	-	
	Zinc	Quarterly (M)	-	-	
	<b>Radionuclides:</b>				
	Technetium-99	Quarterly (M)	-	-	
	Thorium-228	Quarterly (WP)	-	-	
	Thorium-230	Quarterly (WP)	-	-	
	Thorium-232	Quarterly (WP)	-	-	
	Uranium, Total	Quarterly (PC)	-	-	
	PF 4001 (Parshall Flume - Treated Effluent)	<b>General Chemistry:</b>			
Ammonia		-	3/Week <sup>f</sup>	-	
Carbonaceous biochemical oxygen demand		-	2/Week	-	
Total residual chlorine		-	3/Week	-	
Oil and grease		-	2/Week	-	
Total suspended solids		-	Daily	-	
<b>Inorganics:</b>					
Cadmium		Quarterly (S)	3/Week	-	
Chromium, Total		-	3/Week	-	
Cobalt		-	2/Week	-	
Copper		-	3/Week	-	
Cyanide		Quarterly (M)	3/Week	-	

Table 4-3  
(Continued)

Location	Constituent <sup>a</sup>	IEMP Characterization Requirements (reason for selection) <sup>b,c</sup>	NPDES Requirements <sup>c</sup>	FFCA Requirements <sup>c</sup>		
PF 4001 (Parshall Flume - Treated Effluent) Contd.	Lead	-	3/Week	-		
	Manganese	-	2/Week	-		
	Mercury	Quarterly (M)	Monthly	-		
	Nickel	-	3/Week	-		
	Silver	Quarterly (M)	3/Week	-		
	Zinc	-	3/Week	-		
	<b>Radionuclides:</b>					
	Thorium-226	Quarterly (M)	-	-		
	Thorium-228	-	-	Monthly		
	Strontium-90	Quarterly (M)	-	-		
	Technetium-99	Quarterly (M)	-	Monthly		
	Uranium, Total	Quarterly (PC, M)	-	Daily		
	<b>Pesticides/PCBs:</b>					
	Toxaphene	-	Monthly	-		
	<b>Semi-Volatiles:</b>					
	Benzidene	-	Monthly	-		
	Pentachlorophenol	-	Monthly	-		
	<b>Volatiles:</b>					
	Trichloroethene	-	Monthly	-		
	<b>Other:</b>					
2,3,7,8-Tetrachlorodibenzo-p-dioxin	-	Quarterly	-			
Flow Rate	-	Daily	-			
SWRB 4002O <sup>8</sup> (Storm Water Retention Basin)	<b>General Chemistry:</b>					
	Total residual chlorine	-	Daily	-		
	Total suspended solids	-	Daily	-		
	<b>Inorganics:</b>					
	Beryllium	Quarterly (S)	-	-		
	Cadmium	Quarterly (S)	-	-		
	Copper	-	Monthly	-		
	Cyanide	Quarterly (M, S)	-	-		
	Manganese	Quarterly (S)	-	-		
	Mercury	Quarterly (M, S)	Monthly	-		
	<b>Radionuclides:</b>					
	Radium-226	Quarterly (M)	-	-		
	Radium-228	Quarterly (S)	-	-		
	Strontium-90	Quarterly (M)	-	-		
	Technetium-99	Quarterly (M, S)	-	-		
	Uranium, Total	Quarterly (PC, M)	-	Daily		
	<b>Other:</b>					
	Flow rate	-	Daily	-		
	SWRB 4002B (Treatment Bypass)	<b>Radionuclide:</b>				
		Uranium, Total	-	-	Daily during bypass	
STRM 4003, STRM 4004 <sup>b</sup> STRM 4005, STRM 4006 (Drainages to Paddys Run)	<b>General Chemistry:</b>					
	Total suspended solids	-	Semiannually	-		
	Total residual chlorine (4003, 4005, 4006)	-	Semiannually	-		
	<b>Inorganics:</b>					
	Copper (4003, 4004, 4006)	-	Semiannually	-		
	Lead (4004, 4005, 4006)	-	Semiannually	-		
	Mercury	-	Semiannually	-		
	Silver	-	Semiannually	-		
	<b>Radionuclides:</b>					
	Uranium, Total	Quarterly (PC, M, S)	-	-		
	<b>Other:</b>					
	Fecal coliform	-	Semiannually	-		
	Flow Rate	-	Semiannually	-		
	STP 4601 (Sewage Treatment Plant Effluent)	<b>General Chemistry:</b>				
Carbonaceous biochemical oxygen demand		-	2/Week	-		
Ammonia		-	Every two weeks	-		
Total suspended solids		-	2/Week	-		
<b>Other:</b>						
Fecal coliform		-	Weekly (May-Oct)	-		
Flow Rate	-	Daily	-			

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Table 4-3  
(Continued)

Location	Constituent <sup>a</sup>	IEMP Characterization Requirements (reason for selection) <sup>b,c</sup>	NPDES Requirements <sup>e</sup>	FFCA Requirements <sup>f</sup>
SWR-4902 (Downstream of FEMP Effluent)	<b>General Chemistry:</b>			
	Ammonia	-	Quarterly	-
	Total Hardness	-	Quarterly	-
	<b>Inorganics</b>			
	Cadmium	-	Quarterly	-
	Chromium	-	Quarterly	-
	Cobalt	-	Quarterly	-
	Copper	-	Quarterly	-
	Lead	-	Quarterly	-
	Manganese	-	Quarterly	-
	Mercury	-	Quarterly	-
	Nickel	-	Quarterly	-
	Silver	-	Quarterly	-
	Zinc	-	Quarterly	-

<sup>a</sup>Field parameter readings, taken at each location, include temperature, specific conductance, pH, and dissolved oxygen.

<sup>b</sup>B = Background Evaluation; M = Based on Modeling; PC = Primary COC; S = Sporadic Exceedances; WP = Waste Pits Excavation Monitoring

<sup>c</sup>"-" indicates the constituent is not included in the sample program.

<sup>d</sup>Refers only to location SWR-1 (NPDES location SWR-4801); constituents sampled quarterly.

<sup>e</sup>The basis for the "M" designation is because of the contribution from an upgradient location (i.e., SWP-02).

<sup>f</sup>Sampled twice a week in winter (November 1 through April 30).

<sup>g</sup>Constituents will be analyzed at each overflow event.

<sup>h</sup>New location STRM 4004A has been identified as an alternative sample location for STRM 4004. STRM 4004A will be sampled for the constituents if no flow is observed at STRM 4004 or is otherwise not accessible.

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