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Department of Energy

Ohio Field Office
Fernald Area Office
P. O. Box 538705
Cincinnati, Ohio 45253-8705
(513) 648-3155

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APR 23 1999

Mr. Thomas A. Winston, District Chief
Ohio Environmental Protection Agency
Southwest District Office
401 East Fifth Street
Dayton, Ohio 45402

DOE-0613-99

Dear Mr. Winston:

OPERABLE UNIT 1 - STORM WATER MANAGEMENT POND ANALYTICAL DATA TO SUPPORT THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT RENEWAL APPLICATION - DEPARTMENT OF ENERGY, FERNALD ENVIRONMENTAL MANAGEMENT PROJECT - NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT NUMBER 1IO00004

Enclosed is a data table with the analytical results of Operable Unit 1 (OU1) Storm Water Management (SWM) Pond sampling on January 27, 1999. This data is being submitted to reconcile the SWM Pond data previously submitted in the "Addendum to the September 22, 1997, National Pollution Discharge Elimination System Permit Renewal Application," dated August 28, 1998 (addendum). The data in the addendum was not actual analytical data, but instead was estimated data derived from Ohio Administrative Code standards for surface water. It became evident through numerous discussions between Fluor Daniel Fernald, Inc. (FDF), Department of Energy (DOE), and Ohio Environmental Protection Agency (OEPA) that the previously submitted data was not representative of the expected SWM Pond water.

The SWM Pond was sampled on January 27, 1999, for the same constituents, with the exception of sulfites, surfactants, and vanadium that had been previously submitted to OEPA in the above referenced addendum. Surfactants and sulfites could not be analyzed because FDF lacks the capability to perform these analyses at Fernald Environmental Management Project (FEMP) and, the hold time (48 hours) is too restrictive to allow for shipment to an external laboratory. Vanadium was inadvertently omitted by the laboratory performing the analyses. Based upon process knowledge and storm water sampling at other locations of FEMP, these constituents do not appear to be of concern for the SWM Pond water.

The enclosed analytical results present a much more realistic characterization of the expected OU1 SWM Pond water. The only additional sources of water that will flow to the SWM Pond when Waste Pit Remedial Action Project (WPRAP) full scale operations

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begin will be water from the roof drains from IT Corporation facilities (Material Handling Building, Railcar Loadout Building, Railcar Preparation and Liner Storage Building, and the Gas Cleaning System/Water Treatment System Building). Since this water is segregated by direct collection from the roof drains, it is not expected to be contaminated or vary significantly from the water that currently drains to the SWM Pond.

As you know, FDF, DOE, and IT Corporation desire the ability to pump storm water collected in the OU1 SWM Pond directly to Paddys Run beginning July 1, 1999. Eliminating "clean" waste streams from treatment enhances FDF's ability to ensure sufficient hydraulic capacity at the Advanced Wastewater Treatment (AWWT) Facility for those waste streams requiring treatment.

Mr. Frank Johnston of FDF and Mr. Joe Bartoszek of OEPA (Dayton, Southwest) began negotiations on the selection of indicator parameters and thresholds under which discharge to Paddys Run would be acceptable. Much of the discussion centered on the discharge of the SWM Pond during dry weather when there is low flow in Paddys Run. OEPA indicated their concern during dry weather was the protection of the Sloans Crayfish, which have established populations upstream and down stream of the eventual discharge point of this storm water (Outfall 4006). The following summarizes the issues discussed, agreements reached, and outstanding issues with DOE and FDF counter proposals:

1. Mr. Bartoszek and Mr. Johnston agreed that a short list of indicator parameters was needed to support real time process control decisions. Agreement was reached that these parameters would include total uranium, total suspended solids, and turbidity.

2. Mr. Bartoszek and Mr. Johnston discussed the possibility of applying the 20 ppb uranium threshold at the 4006 monitoring point, thus allowing a higher uranium concentration at the SWM discharge. However, under this scenario, OEPA believed confirmatory sampling would be required at 4006. Subsequent to this meeting, DOE and FDF met internally and believed that confirmatory sampling becomes too difficult and therefore, will apply the 20 ppb threshold at the SWM pond discharge negating the need for further confirmatory sampling.

3. Mr. Bartoszek and Mr. Johnston discussed the merits of the OEPA proposed Total Suspended Solids (TSS) threshold of 12 ppm and the DOE and FDF proposed threshold of 50 ppm, the National Pollutant Discharge Elimination System (NPDES) limit at the Stormwater Retention Basin (SWRB) overflow (outfall 4002). While no agreement was reached, DOE and FDF are proposing that a 30 ppm threshold be established. This is less than the effluent limit typically established for primary settling basins and is the TSS limit currently established in the FEMP NPDES Permit at the Great Miami River based on Q7-10 conditions (statistical low flow conditions). Given the thriving populations of Sloans Crayfish and the sediment laden water observed in Paddys Run, DOE and FDF believe this threshold will not adversely impact the Sloans Crayfish. FDF's continuing observation of these populations should provide assurance these populations are not being adversely impacted.

4. Mr. Bartoszek and Mr. Johnston discussed the threshold for turbidity. OEPA indicated their concern is that the SWM pond discharge not be more turbid than in-stream conditions in Paddys Run at the time of discharge. Further discussion centered on a "matching philosophy" whereby, prior to a planned discharge a turbidity analysis would be performed in-stream and compared to the turbidity in the SWM pond. If the SWM pond was at or below the in-stream turbidity the discharge would be allowed.

   Subsequent to the meeting, Mr. Johnston had discussions with a representative of the Ohio State University familiar with the Sloans Crayfish who indicated turbidity not to be of great concern to the Sloans Crayfish. The concern with the Sloans Crayfish is highly silty water that adversely affects their gills. Turbidity becomes an issue, according to this representative, when it precludes sunlight penetration in shallow pools and thus inhibits the growth of algae on which the Sloans Crayfish feed (in addition to other plants and insects).

   Additionally, DOE and FDF met internally and agreed that implementing a "matching philosophy" for the turbidity would be too difficult to administer and are therefore requesting that should OEPA still feel the need to establish a turbidity threshold that it be established to encompass all discharge scenarios (wet weather and dry weather).

In establishing the turbidity and/or the TSS thresholds it is important to realize that the lower the thresholds are defined, the more likely that the SWM Pond water will have to be treated by AWWT. This will increase the loading of the Biodenitrification Surge Lagoon (BSL) resulting in a greater likelihood of having to shut down sources of water to the BSL as the limiting freeboard in the BSL is reached. Because the SWM Pond will be one of the first flows to be shutdown as BSL capacity is reached (because it is one of the cleanest), the SWM Pond is more likely to overflow to Paddys Run. Whereas if the BSL was maintained at a lower level (i.e., if the SWM Pond was normally pumped to Paddys Run) and there ever was a problem with abnormally high uranium, TSS, or turbidity, the capacity would be more likely to be available in the AWWT for treatment.

Mr. Bartoszek and Mr. Johnston agreed that some amount of routine confirmatory sampling of the SWM Pond would be appropriate, but because future NPDES required sampling, if any, was unknown this issue was delayed pending the issuance of the proposed permit. However, as OEPA is aware, IT Corporation has, as a part of their facilities design, provided a means to segregate contact storm water (storm water in contact with excavation areas, processing equipment, contamination areas) from non contact storm water (general site drainage, roof drains). These engineered features are intended to provide a consistent, relatively clean storm water acceptable for direct discharge. FDF respectively requests that any proposed limitations or confirmatory monitoring for the SWM pond discharge be based on the data set included with this letter as it is intended to replace the SWM Pond data submitted in the addendum.

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APR 2 3 1999

Please contact Mr. John Kappa of my staff at (513) 648-3149 if you have any questions regarding this information or wish to arrange for a meeting or telephone conference to further discuss these issues.

Sincerely,

Johnny Reising

FEMP:Kappa

Johnny W. Reising
Fernald Remedial Action
Project Manager

Enclosure

cc w/enclosure:
J. Hall, OH/FEMP
J. Kappa, OH/FEMP
D. Lojek, OH/FEMP
J. Bartoszek, OEPA-SWDO
T. Schneider, OEPA-SWDO
D. Brettschneider, FDF, MS52-5
R. Fellman, FDF, MS52-1
T. Hagen, FDF, MS65-2
F. Johnston, FDF, MS52-2
D. Smith, FDF, MS52-1
T. Walsh, FDF, MS65-2
M. Ware, OEPA-SWDO
AR Coordinator, FDF/78

cc w/o enclosure:
A. Tanner, OH/FEMP

PARAMETER	UNITS	SAMPLE	DUPLICATE	DETECTION LIMIT	FRL
OTHER HAZARDOUS/TOXIC					
Thorium-230	(pCi/L)	0.39	0.49		3500
Thorium-232	(pCi/L)	0.1	0.51		270
Uranium	(ug/L)	35.2	33.8		530
GROUP A					
Temp	(oF)	42	42		
pH	(s.u.)	7.03	7.03		
Ammonia	(mg/L)	0.13	0.14		
BOD	(mg/L)	3.29	3.24		
COD	(mg/L)	U	U	10	
TOC	(mg/L)	2.2	1.6		
TSS	(mg/L)	8.8	9.2		
Turbidity	(NTU)	188	188		
GROUP B					
Aluminum	(ug/L)	182	136		
Barium	(ug/L)	68.9	71.7		100
Boron	(ug/L)	25.9	27.2		
Cobalt	(ug/L)	0.9	0.52		
Iron	(ug/L)	191	148		
Magnesium	(ug/L)	22200	23700		
Molybdenum	(ug/L)	4.4	4.4		1500
Manganese	(ug/L)	142	155		1500
Tin	(ug/L)	U	U	2.3	
Titanium	(ug/L)	4.9	3.1		
Bromide	(mg/L)	0.19	0.87		
Total Residual Chlorine	(mg/L)	0.08	0.09		
Color	UNITS	62	66		
Fecal Coliform	(per 100 ml)	U	U	20	
Fluoride	(mg/L)	0.34	0.34		2.0
Nitrate/Nitrite (as N)	(mg/L)	0.7	0.7		2400
Oil & Grease	(ug/L)	14	15		
Total Phosphorus (as P)	(ug/L)	U	U	100	
Radioactivity					
total alpha	(pCi/L)	U	1.1	0.4	
total beta	(pCi/L)	10	12		
total Radium-228	(pCi/L)	0	2.8		47
total Radium-226	(pCi/L)	0.17	0.14		38
Sulfate (as SO4)	(mg/L)	134.2	137.2		
Sulfide (as S)	(ug/L)	U	U	1.0	
GROUP B-SECTION 1					
Antimony	(ug/L)	U	U	1.3	190
Arsenic	(ug/L)	U	U	1.4	49
Beryllium	(ug/L)	0.17	0.13		1.2
Cadmium	(ug/L)	U	0.16	0.15	9.8
Chromium	(ug/L)	3.0	2.7		10
Copper	(ug/L)	1.2	1.1		12
Cyanide	(ug/L)	U	U	2	12
Lead	(ug/L)	U	U	0.75	10
Mercury	(ug/L)	U	U	0.1	0.2
Nickel	(ug/L)	1.7	1.7		170
Selenium	(ug/L)	U	U	1.5	5
Silver	(ug/L)	U	U	0.7	5
Thalium	(ug/L)	U	U	1.5	
Zinc	(ug/L)	8	6.3		110
Total Phenols	(ug/L)	U	U	0.05	
GROUP B-SECTION 2					
2,3,7,8-TCDB-P-Dioxin	(ug/L)	U	U	0.05	
GROUP B-SECTION 3					
GC/MS-VOCs					
Acrolein (2-propenal)	(ug/L)	U	U	50	

PARAMETER	UNITS	SAMPLE	DUPLICATE	DETECTION LIMIT	FRL
Acrylonitrile	(ug/L)	U	U	50	
Benzene	(ug/L)	U	U	5	280
Bromodichloromethane	(ug/L)	U	U	5	240
Bromoform	(ug/L)	U	U	5	
Bromomethane	(ug/L)	U	U	5	1300
Carbon Tetrachloride	(ug/L)	U	U	5	
Chlorobenzene	(ug/L)	U	U	5	
Chloroethane	(ug/L)	U	U	5	
Chloromethane	(ug/L)	U	U	5	
Chloroform	(ug/L)	U	U	5	79
2-Chloroethylvinyl Ether	(ug/L)	U	U	5	
Dichlorobromoethane	(ug/L)	U	U	5	
1,1-Dichloroethane	(ug/L)	U	U	5	
1,1-Dichloroethene	(ug/L)	U	U	5	15
1,2-Dichloroethane	(ug/L)	U	U	5	
1,2-Dichloroethylene	(ug/L)	U	U	5	
1,2-Dichloropropane	(ug/L)	U	U	5	
1,3-Dichloropropylene	(ug/L)	U	U	5	
Ethylbenzene	(ug/L)	U	U	5	
Methylene Chloride	(ug/L)	U	U	5	430
1,1,2,2-Tetrachloroethane	(ug/L)	U	U	5	
Tetrachloroethylene	(ug/L)	U	U	5	45
1,1,1-Trichloroethane	(ug/L)	U	U	5	1
1,1,2-Trichloroethane	(ug/L)	U	U	5	230
Trichloroethylene	(ug/L)	U	U	5	
Trichlorofluoromethane	(ug/L)	U	U	5	
Toluene	(ug/L)	U	U	5	
Vinyl Chloride	(ug/L)	U	U	5	
GC/MS-Acid Compounds					
2-Chlorophenol	(ug/L)	U	U	10	
4-Chloro-3-methylphenol	(ug/L)	U	U	10	
2,4-Dichlorophenol	(ug/L)	U	U	10	
2,4-Dimethylphenol	(ug/L)	U	U	10	
4,6-Dinitro-2-methylphenol	(ug/L)	U	U	10	
2,4-Dinitrophenol	(ug/L)	U	U	10	
2-Methylphenol	(ug/L)	U	U	10	
2-Nitrophenol	(ug/L)	U	U	10	
4-Nitrophenol	(ug/L)	U	U	10	7400000
Pentachlorophenol	(ug/L)	U	U	10	
Phenol	(ug/L)	U	5	10	
2,4,6-Trichlorophenol	(ug/L)	U	U	10	
GC/MS-Base/Neutral Compounds					
Acenaphthane	(ug/L)	U	U	10	
Acenaphthylene	(ug/L)	U	U	10	
Anthracene	(ug/L)	U	U	10	
Azobenzene	(ug/L)	U	U	10	
Benzidine	(ug/L)	U	U	50	
Benzo (a) Anthracene	(ug/L)	U	U	10	1
Benzo (a) Pyrene	(ug/L)	U	U	10	1
Benzo (ghi) Perylene	(ug/L)	U	U	10	
Benzo (b) Fluoranthene	(ug/L)	U	U	10	
Benzo (k) Fluoranthene	(ug/L)	U	U	10	
Benzyl Alcohol	(ug/L)	U	U	10	
Bis (2-Chloroethoxy) Methane	(ug/L)	U	U	10	
Bis (2-Chlorethyl) Ether	(ug/L)	U	U	10	
Bis (2-Chloroisopropyl) Ether	(ug/L)	U	U	10	280
Bis (2-Ethylhexyl) Phthalate	(ug/L)	1 (3)[1]	2		8.4
4-Bromophenyl Phenyl Ether	(ug/L)	U	U	10	
Butyl Benzyl Phthalate	(ug/L)	U	U	10	
4-Chloroaniline	(ug/L)	U	U	10	

PARAMETER	UNITS	SAMPLE	DUPLICATE	DETECTION LIMIT	FRL
2-Chloronaphthalene	(ug/L)	U	U	10	
4-Chlorophenyl Phenyl Ether	(ug/L)	U	U	10	
Chrysene	(ug/L)	U	U	10	
Dibenzo (a,h) Anthracene	(ug/L)	U	U	10	1
Dibenzofuran	(ug/L)	U	U	10	
1,2-Dichlorobenzene	(ug/L)	U	U	10	
1,3-Dichlorobenzene	(ug/L)	U	U	10	
1,4-Dichlorobenzene	(ug/L)	U	U	10	
3,3-Dichlorobenzidine	(ug/L)	U	U	10	
Diethyl Phthalate	(ug/L)	U	U	10	
Dimethyl Phthalate	(ug/L)	U	U	10	
Di-N-Butyl Phthalate	(ug/L)	U(29)[1]	U	10	6000
2,4-Dinitrotoluene	(ug/L)	U	U	10	
2,6-Dinitrotoluene	(ug/L)	U	U	10	
Di-N-Octyl Phthalate	(ug/L)	U	U	10	5
Fluoranthene	(ug/L)	U	U	10	
Fluorene	(ug/L)	U	U	10	
Hexachlorobenzene	(ug/L)	U	U	10	
Hexachlorbutadiene	(ug/L)	U	U	10	
Hexachlorcyclopentadiene	(ug/L)	U	U	10	
Hexachloroethane	(ug/L)	U	U	10	
Indeno (1,2,3-cd) Pyrene	(ug/L)	U	U	10	
Isophorone	(ug/L)	U	U	10	
Napthalene	(ug/L)	U	U	10	
2-Nitroaniline	(ug/L)	U	U	10	
3-Nitroaniline	(ug/L)	U	U	10	
4-Nitroaniline	(ug/L)	U	U	10	
Nitrobenzene	(ug/L)	U	U	10	
N-Nitrosodimethylamine	(ug/L)	U	U	10	
N-Nitrosodi-N-Propylamine	(ug/L)	U	U	10	
N-Nitrosodiphenylamine	(ug/L)	U	U	10	
Phenanthrene	(ug/L)	U	U	10	
Pyrene	(ug/L)	U	U	10	
1,2,4-Trichlorobenzene	(ug/L)	U	U	10	
GC/MS Pesticides					
Aldrin	(ug/L)	U	U	0.025	
Gamma-BHC	(ug/L)	U	U	0.025	
Alpha-BHC	(ug/L)	U	U	0.025	
Delta-BHC	(ug/L)	U	U	0.025	
Beta-BHC	(ug/L)	U	U	0.025	
Chlordane	(ug/L)	U	U	0.05	
4,4'-DDT	(ug/L)	U(0.028)[2]	U(0.054)[2]	0.05	
4,4'-DDE	(ug/L)	U	U	0.05	
4,4'-DDD	(ug/L)	U	U	0.05	
Dieldrin	(ug/L)	U	U	0.05	0.02
Alpha-Endosulfan	(ug/L)	U(0.018)[2]	0.016[2] (0.016)[2]	0.025	
Beta-Endosulfan	(ug/L)	U	U	0.05	
Endosulfan Sulfate	(ug/L)	U	U	0.05	
Endrin	(ug/L)	U	U	0.05	
Endrin Aldehyde	(ug/L)	U(0.057)[2]	0.047[2] (0.049)[2]	0.05	
Heptachlor	(ug/L)	U	U	0.025	
Heptachlor Epoxide	(ug/L)	U	U	0.025	
PCB-1242	(ug/L)	U	U	0.05	

Operable Unit 1
Storm Water Management Pond Composition

NPDES Permit Renewal
NPDES Permit No. 1IO00004*ED

PARAMETER	UNITS	SAMPLE	DUPLICATE	DETECTION LIMIT	FRL
PCB-1254	(ug/L)	U	U(0.43)[2]	0.05	0.2
PCB-1221	(ug/L)	U	U	0.05	
PCB-1232	(ug/L)	U	U	0.05	
PCB-1248	(ug/L)	U	U(0.39)[2]	0.05	
PCB-1260	(ug/L)	U	U	0.05	0.2
PCB-1016	(ug/L)	U	U	0.05	
Toxaphene	(ug/L)	U	U	2.5	

Notes:
1-These samples have more than one value reported because they were reanalyzed due to surrogate failure. The values in parentheses were analyzed outside of the 7 day hold time.
2-The pesticide/PCB samples were split again by the laboratory. That is the reason for more than one value being reported. If only a "U" appears, then both of the splits were "U". The individual points where pesticides/PCBs were reported were believed to be due to contamination in the laboratory. The analytical laboratory reported this information and based this conclusion on the striking similarity of the hits to a different client's samples and the fact that had pestcides/PCBs truly been present, then they should have been detected in both samples and their associated splits.