

**PROJECT SPECIFIC PLAN
FOR NPDES PERMIT RENEWAL APPLICATION
SAMPLING AND ANALYSIS**

Project Number 52700-PSP-0001

Revision 0, Final

**Prepared by
Fluor Fernald**

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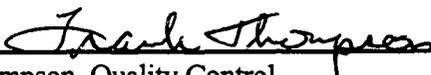
APPROVAL:



11/30/2001

Frank Johnston, Project Lead
Aquifer Restoration Project

Date



11/30/01

Frank Thompson, Quality Control
Aquifer Restoration Project

Date



11/30/01

Everett Henry, Team Coach
Aquifer Restoration Project/AWWT Operations

Date

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1.0 INTRODUCTION

The purpose of the sampling is to provide and maintain data of sufficient quality to complete the application requirements for National Pollutant Discharge Elimination System (NPDES) Permit renewal purposes. Application requirements are identified in EPA Forms (3510-2C and 3510-2F) and site agreements with the agency. This renewal application will be the foundation on which the next NPDES Permit will be issued. The NPDES Permit will govern and regulate wastewater discharges to the Great Miami River and Paddys Run for a period of five years from date of issuance. The timely completion and submission of this renewal application is required to continue wastewater discharges at the Fernald Environmental Management Project (FEMP).

Sampling and analysis activities will be consistent with the Sitewide Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Quality Assurance Project Plan (SCQ) specifically Section 6.2.4.1 and Appendix K.4.4.1 and Data Quality Objectives (DQO) SW-006 (Appendix A).

Samples will be collected from six locations as identified in Figure 1. Samples will be collected at the Parshall Flume (NPDES Outfall 4001) and near the Storm Water Retention Basin (SWRB) Overflow (NPDES Outfall 4002). Water flowing from the SWRB Overflow will ultimately flow into Paddys Run and the water that passes through the Parshall Flume is discharged into the Great Miami River. The other four locations are on the western side of the FEMP site where storm water runoff enters Paddys Run (NPDES Outfalls 4003 through 4006).

Project Specific Plan personnel contacts are listed below:

KEY PROJECT PERSONNEL

Contact	Primary	Secondary
Project Lead	Frank Johnston	Brian Harootyan
Project Coordinator	Tim Sparks	
Field Sampling Lead	Tim Sparks	
Laboratory	Brenda Collier	
Quality Assurance	Scott Wheeler	
Health and Safety	Keith Lanning	Andy Cleeter

2.0 SAMPLING PROGRAM

As identified in Figure 1, six locations will be monitored for the NPDES Permit renewal application. Different constituents are to be monitored at the six locations. The constituents to be analyzed were chosen based on EPA Forms 3510-2C and 3510-2F requirements. Tables 1, 2, and 3 summarize the analytical requirements for the NPDES Permit renewal application.

Table 4 summarizes NPDES Permit renewal application sampling criteria. Samples will be collected from four (NPDES Outfalls 4003 through 4006) of the six locations during an acceptable rainfall event. An acceptable rainfall event must be greater than 0.1 inches and at least 72 hours from the previously acceptable (greater than 0.1 inches) rainfall event. The SWRB Overflow (NPDES Outfall 4002) will be collected during a significant rainfall event (the rainfall event will have to provide sufficient rain for the water level in the basin to rise). Sampling, during this time period, will represent as close as possible to a simulated overflow condition. The Parshall Flume (NPDES Outfall 4001) will not have to be sampled during a rainfall event.

Different types of samples are required at the locations. Sample type in this case refers to grab or composite. Table 4 identifies whether grab or composite samples are required at each sample location. Simplistically, a grab sample requires no homogenization, whereas a composite sample is a homogenization of several grab samples (aliquots) that have been collected over a period of time. Grab samples will be collected at all of the NPDES sample locations. For this project, two types of composite samples will be prepared, time-weighted and flow-weighted. Time-weighted composite samples are prepared by collecting equivalent water volumes for a specific time interval (e.g., every hour) and then combining (homogenizing) the equivalent water volumes. Flow-weighted composite samples are prepared by collecting water volumes for a specific time interval. The volume of water from each time interval to be homogenized is based on flow rate information. A time-weighted composite sample will be collected at the SWRB Overflow (NPDES Outfall 4002) and flow-weighted composite samples will be collected at the remaining five locations.

Samples from NPDES Outfalls 4002 through 4006 will be collected manually using a clean sample container (only the grab sample will be collected manually at NPDES Outfall 4001 – the composite sample from this location will be collected using an automatic sampler). The sample container used to collect the grab sample will be of an acceptable material (e.g., glass or Teflon). The sample container will be attached to a rod long enough for the sampling technician to maintain a minimum 5-foot distance from the edge of the water. The sample collection method will be dependent upon field conditions. The

sample container will be completely filled by placing the sample container directly under the water until the container is full. Surface debris (e.g., leaves, twigs, etc.) will not be collected.

Detailed field logs will be kept identifying when the sample event started, the time at which the initial grab sample was collected, the time at which each grab aliquot was collected for the composite, numerous rain gauge measurements, and other pertinent information, such as the approximate time when the rainfall event started and the weather conditions at the time of sampling.

All analyses will be conducted by the on-site and contract laboratories using the procedures which meet the 40 CFR 136 standards and the SCQ standards for the Analytical Support Level (ASL) identified in Tables 1, 2, and 3. Water samples shall be shipped or delivered as per established Procedure EP-GWM-202, Groundwater Sample Shipment.

2.1 PARSHALL FLUME (NPDES OUTFALL 4001)

A portable automatic sampler, American Sigma, Model 900, will be used to obtain three flow-weighted composite samples each over a 24 hour period for all of the constituents listed in Table 1, with exception of those constituents collected for the grab sample. After the automatic sampler is installed and verified to be operating properly, a grab sample will be collected manually for cyanide, total residual chlorine, oil & grease, total phenols, and fecal coliform (pH and temperature will be measured in the field). The automatic sampler will be temperature controlled at 4°C using artificial icing material and will hold approximately 15 liters of water (32 liters will be needed; and therefore, will require that the composite container be switched-out with a clean container[s]). Samples collected at this point are representative of the combined effluent (wastewater, storm water, and groundwater) discharged to the Great Miami River.

Care will be taken to coordinate with Aquifer Restoration Project personnel to ensure the sampling is representative of normal operation. Normal operation means that all processes that normally contribute to the effluent are on-line and all treatment systems are operating properly. Sampling is targeted for Monday, Wednesday, and Friday provided a state of normal operation exists.

Immediately after the conclusion of each sampling event, the data logger, integral with the automatic sampler, will be accessed to recover the flow and aliquot information.

A rinsate sample will be collected from the automatic sampler prior to one of the sampling events. One trip blank (for volatile organics) will be taken from this location for each of the three grab/composite samples. Therefore, a total of three trip blanks will be collected.

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2.2 SWRB OVERFLOW (NPDES OUTFALL 4002)

Prior to collecting grab aliquots for the composite sample, a grab sample will be collected manually for cyanide, total residual chlorine, oil and grease, total phenols, and fecal coliform (pH and temperature will be measured in the field). A time-weighted composite sample will be collected from the SWRB by combining grab aliquots taken at four discrete times (30 minutes apart) at a single location in close proximity to the overflow channel at the SWRB western chamber. Upon notification of a significant rainfall event, the sampling technicians will collect the grab aliquots at the four discrete time intervals. The composite sample will be analyzed for all of the constituents listed in Table 2, with exception to those constituents collected for the grab sample.

The volume of each individual grab aliquot container will be equally divided between the total of four clean one gallon glass or polyethylene containers. A total of 14 liters is needed for the final homogenized (composite) sample container. Therefore, the minimum amount of each grab aliquot to be collected is approximately 3.5 liters per time interval. The grab aliquot within the one gallon glass or polyethylene containers will be mixed by capping the container and gently inverting and rotating it. The measured amount (3.5 liters) will then be poured into the final composite container, which is then transferred to the appropriate sample container and analyzed for the constituents identified in Table 2. The Rainfall Event Monitoring Form included in Attachment 2 will be filled out for this location.

A duplicate sample (for both the grab and composite) will be taken at this location for all the constituents identified in Table 2.

2.3 NPDES OUTFALLS 4003, 4004A, 4005, AND 4006

Note: It is very likely that only one location will be able to be sampled per acceptable rainfall event. An attempt may be made to sample two locations per event. It should also be noted that it is possible that the rainfall event may be less than 0.1 inches. If this is the case, then the samples will not be analyzed.

Once 72 hours have passed since the end of an acceptable rainfall event (greater than 0.1 inches), the sampling team will begin observing the outfall(s) immediately upon the initiation of rainfall. Once flow is observed, a 24 liter grab sample and the first 27 liter grab aliquot will be collected either within the first 30 minutes of the rainfall event or within the first 30 minutes of discharge (or as soon as practicable). In order to do this, sampling technicians must be able to mobilize and setup sample materials including the rain gauge quickly. The rain gauge should be level and unobstructed by over hanging material in order to take accurate rain levels. The aliquots for the flow-weighted composite sample must be taken for the entire rainfall event or for the first three hours of the rainfall event. The composite sample will be

analyzed for all those constituents identified in Table 3, with the exception of cyanide, total residual chlorine, oil & grease, and fecal coliform (pH and temperature will be measured in the field). All samples and aliquots will be collected as close to the center of the channel, as possible, where turbulence is at a maximum. The total composite sample should be at least 27 liters.

The Rainfall Event Monitoring Rain Gauge Technique Form included in Attachment 3 will be used at NPDES Outfalls 4003 through 4006. The rain gauge reading will be recorded in the rain gauge column on the form. The grab sample and the first grab aliquot for the composite sample will be collected at the same time. The rain level reading for the grab sample and the first grab aliquot will be the same as the rain gauge reading (do not record rain level for the grab sample, only record for the first grab aliquot). For the second rain level reading, and hence forth, the reading will be the increased increment identified on the rain gauge from the last collection time. The total rain level and the final rain gauge reading should be equal. The respective Percent of Event values are obtained by dividing each rain level by the total rain level (round to the nearest whole number). The entire rain gauge form should be filled out including – storm beginning time, storm ending time, grab sample pH, grab sample temperature, and the date and time of the last acceptable rainfall event. Attachment 3 also includes a completed sample form for reference.

Twenty-four liters will be collected for each initial grab sample. An attempt will be made to collect 27 liters for each grab aliquot. An attempt will also be made to fill four volatile organic vials during each grab aliquot interval. The volatile organic vials will be composited at the laboratory. The remaining 27 liter aliquots will be composited at an appropriate sample preparation area using a five gallon polyethylene container.

A rinsate sample will be collected from the five gallon polyethylene sample containers used to collect grab aliquots. At most, four trip blanks will be collected – this is assuming that only one location per day is sampled.

3.0 QUALITY ASSURANCE/QUALITY CONTROL REQUIREMENTS

3.1 PROJECT REQUIREMENTS FOR SELF-ASSESSMENTS, SURVEILLANCES

Self-assessment of work processes and operations may be undertaken to assure quality of performance. Self-assessment may be performed by the ARWWP Aquifer Restoration Project, and will encompass technical and procedural requirements. Such self-assessment may be conducted at any point in the project.

Independent assessment may be performed by the FEMP Quality Assurance organization by conducting a surveillance. At a minimum the surveillance will consist of monitoring/observing ongoing project activities and work areas to verify conformance to specified requirements. Surveillances shall be planned and documented in accordance with Section 12.3 of the SCQ.

3.2 CHANGES TO THE PROJECT SPECIFIC PLAN

Prior to the implementation of changes, the AWWT Team Coach and/or Technical Lead shall be informed of the proposed field changes. Once approval has been obtained from the AWWT Team Coach and/or Technical Lead and Quality Assurance representative for the changes to the Project Specific Plan, the field changes may be implemented. Variances shall be processed per Section 15.3 of the SCQ.

3.3 QUALITY CONTROL SAMPLES

Field quality control samples will be collected at the following frequency:

Duplicates: 1 per sample round at Outfall 4002

Trip blanks: 1 per day per team (if samples collected that day will be analyzed for volatile organic compounds)

Rinsates: 2 (one on the 5 gallon polyethylene sample containers used for Outfalls 4003 through 4006 and one on the automatic sampler used for Outfall 4001) (Extra rinsates for mercury will also be collected as indicated in Attachments 1, 2, and 3.)

4.0 EQUIPMENT DECONTAMINATION

The sample containers will be decontaminated prior to transport to the sampling site and after all sampling is completed to limit the introduction of contaminants from equipment to sampled media and to protect worker safety and health. The sample containers will be decontaminated per Level II requirements as specified in Appendix K of the SCQ.

5.0 HEALTH & SAFETY

Concurrence to applicable safety permits (indicated by the signature of each sampling technician assigned to this project) is expected by sampling technicians in the performance of their assigned duties.

Safety issues for the project-specific sampling activities described in the Project Specific Plan are outlined and addressed below; however, field conditions may vary based upon the amount of rainfall or changes in overland flow. Safety issues will be discussed at daily safety meetings conducted prior to the start of sampling activities.

Sampling activities may take place during periods of heavy rainfall and/or thunderstorms when area runoff is likely to occur; therefore, some of the existing safety hazards are those associated with working in wet field conditions and the possibility of lightening strikes. A wet ground surface increases the probability of a slip, trip, or fall. Ensure that secure footing on terrain that is sloping or graded is maintained. If lightening is sighted within 10 miles of the FEMP, stop work, put equipment in a safe configuration, and go to a permanent structure or an enclosed vehicle. Do not restart work until 30 minutes after the last lightening flash and lightening is no longer reported within 10 miles of the FEMP.

A sample container attached to a rod consisting of threaded sections will be used to collect samples. The following precautions should be taken when using the tool:

- Quick movement of sampling rod may result in inadvertent contact to a co-worker(s). Care should be taken when maneuvering the sampling rod.
- Overextension or maneuvering the sampling rod at a sharp angle may cause imbalance or unsure footing that could result in a slip, trip, or fall. The length of the rod will be limited to ensure safe maneuvering while maintaining a 5-foot distance from the edge of the water.

In the event that sampling technicians must perform sampling activities within five feet of a pond or pit containing water, a life jacket must be worn.

Due to the strict requirements concerning the timing of a sampling event, it may be necessary to sample at night. If sampling occurs at night, then working auxiliary lighting and/or working flashlights must be carried.

6.0 DISPOSITION OF WASTES

During completion of sampling activities, technicians may generate contact and sample wastes. Following completion of sampling, technicians will place contact wastes into properly labeled bags and dispose of in accordance with appropriate FEMP waste management policies. Excess sample material will be returned to the basin at the sampling location after the completion of all sampling.

7.0 DATA MANAGEMENT

As specified in Section 5.1 of the SCQ, sampling teams will describe daily activities on the Field Activity Log with sufficient detail for the sampling team to reconstruct a particular situation without reliance on memory. Sample Collection Logs will be completed according to instructions specified in Appendix B of the SCQ.

Field documentation such as the Field Activity Log and Sample Collection Logs will undergo an internal Quality Assurance review by the sampling technicians. The field document will be submitted to data entry personnel for entry into the Sitewide Environmental Database.

TABLE 1
NPDES PERMIT RENEWAL ANALYTICAL REQUIREMENTS
AT PARSHALL FLUME SAMPLE LOCATION (OUTFALL 4001)

Constituent ^a	ASL	Holding Time	Preservative	Container
Bacterial Tests:				
Fecal Coliform	B	6 hours	Cool 4°C	plastic or glass
Total Metals:				
Aluminum	B	28 days	HNO ₃ , pH < 2	plastic or glass
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Selenium				
Silver				
Thallium				
Tin				
Titanium				
Zinc				
Mercury	B	28 days	Cool 4°C	plastic or glass ^b
General Chemistry:				
Biochemical Oxygen Demand (BOD)-5 day	B	48 hours	Cool 4°C	plastic or glass
Chemical Oxygen Demand (COD)	B	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	plastic or glass
Cyanide, Total	B	14 days	Cool 4°C; NaOH, pH > 12	plastic or glass
Total Organic Carbon (TOC)	B	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	glass (amber) with Teflon lined cap
Total Suspended Solids (TSS)	B	7 days	Cool 4°C	plastic or glass
Ammonia (as N)	B	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	plastic or glass
Flow	A	none	none	none
Temperature	A	analyze immediately	none	plastic or glass
pH	A	analyze immediately	none	plastic or glass
Bromide	B	28 days	none	plastic or glass
Total Residual Chlorine	B	analyze immediately	none	plastic or glass
Color	B	48 hours	Cool 4°C	plastic or glass
Fluoride	B	28 days	none	plastic
Nitrate/nitrite (as N)	B	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	plastic or glass
Total Organic Nitrogen (TON) (as N)	B	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	plastic or glass
Oil & Grease	B	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	glass with Teflon lined cap
Phenols, Total	B	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	glass (amber) with Teflon lined cap
Phosphorus, Total	B	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	plastic or glass
Sulfate (as SO ₄)	B	28 days	Cool 4°C	plastic or glass
Sulfide (as S)	B	7 days	Cool 4°C; zinc acetate + NaOH, pH > 9	plastic or glass
Sulfite (as SO ₃)	B	analyze immediately	none	plastic or glass
Radionuclides:				
Alpha, Total	B	6 months	HNO ₃ , pH < 2	plastic or glass
Beta, Total				
Radium-226				
Radium-228				

TABLE 1
(Continued)

Constituent ^a	ASL	Holding Time	Preservative	Container
Pesticides/Polychlorinated Biphenyls:				
Aldrin	B	7 days to extraction	Cool 4°C; store in dark	glass (amber) with Teflon lined cap
Alpha-BHC				
Beta-BHC		40 days from		
Gamma-BHC		extraction to analysis		
Delta-BHC				
Alpha chlordane				
Chlordane				
4,4'-DDT				
4,4'-DDE				
4,4'-DDD				
Dieldrin				
Alpha-Endosulfan				
Beta-Endosulfan				
Endosulfan sulfate				
Endrin				
Endrin aldehyde				
Heptachlor				
Heptachlor epoxide				
PCB-1242				
PCB-1254				
PCB-1221				
PCB-1232				
PCB-1248				
PCB-1260				
PCB-1016				
Toxaphene				
Volatile Organics:	B	7 days	Cool 4°C; H ₂ SO ₄ or NaOH to pH 4-5	glass vial with Teflon lined septum cap
Acrolein				
Acrylonitrile				
Benzene				
Bromoform				
Carbon tetrachloride				
Chlorobenzene				
Chlorodibromomethane				
Chloroethane				
2-Chloroethylvinyl ether				
Chloroform				
Dichlorobromomethane				
Dichlorodifluoromethane				
1,1-Dichloroethane				
1,2-Dichloroethane				
1,1-Dichloroethylene				
1,2-Dichloropropane				
1,3-Dichloropropylene				
Ethylbenzene				
Methyl bromide				
Methyl chloride				
Methylene chloride				
1,1,2,2-Tetrachloroethane				
Tetrachloroethylene				
Toluene				
1,2-trans-dichloroethylene				
1,2-Dichloroethylene				
1,1,1-Trichloroethane				
1,1,2-Trichloroethane				
Trichloroethylene				
Trichlorofluoromethane				
Vinyl chloride				
Semi-Volatile Organics:	B	7 days to extraction	Cool 4°C; H ₂ SO ₄ or NaOH to pH 7-9; store in dark	glass (amber) with Teflon lined cap
Acenaphthene				
Acenaphthylene		analyzed		
Anthracene		immediately after		
Benzo(a)anthracene		extraction		
Benzo(a)pyrene				
3,4-Benzofluoranthene				
Benzo(ghi)perylene				

TABLE 1
(Continued)

Constituent ^a	ASL	Holding Time	Preservative	Container
Semi-Volatile Organics (Cont'd.):	B	7 days to extraction	Cool 4°C; H ₂ SO ₄ or NaOH to pH 7-9; store in dark	glass (amber) with Teflon lined cap
Benzo(k)fluoranthene				
Bis(2-chloroethoxy) methane				
Bis(2-chloroethyl) ether				
Bis (2-chloroisopropyl) ether				
Bis(2-ethylhexyl) phthalate				
Butyl benzyl phthalate				
4 bromophenyl phenyl ether				
Chrysene				
2-Chloronaphthalene				
2-Chlorophenol				
4-Chlorophenyl phenyl ether				
Dibenzo(a,h)anthracene				
1,2-Dichlorobenzene				
1,3-Dichlorobenzene				
1,4-Dichlorobenzene				
2,4-Dichlorophenol				
2,4-Dimethylphenol				
2,4-Dinitrophenol				
3,3'-Dichlorobenzidine				
4,6-Dinitro-o-cresol				
Diethyl phthalate				
Dimethyl phthalate				
Di-N-butyl phthalate				
2,4-Dinitrotoluene				
2,6-Dinitrotoluene				
Di-N-octyl phthalate				
1,2-Diphenylhydrazine				
Fluoranthene				
Fluorene				
Hexachlorobenzene				
Hexachlorobutadiene				
Hexachlorocyclopentadiene				
Hexachloroethane				
Indeno(1,2,3-cd) pyrene				
Isophorone				
Naphthalene				
Nitrobenzene				
N-nitrosodimethylamine				
N-nitrosodi-N-propylamine				
N-nitrosodiphenylamine				
2-Nitrophenol				
4-Nitrophenol				
P-chloro-m-cresol				
Pentachlorophenol				
Phenanthrene				
Phenol				
Pyrene				
2,4,6-Trichlorophenol				
1,2,4-Trichlorobenzene				
Benzidine	B	7 days to extraction analyzed immediately after extraction ^d	Cool 4°C	glass (amber) with Teflon lined cap
Dioxins:	B	7 days to extraction	Cool 4°C	glass (amber) with Teflon lined cap
2,3,7,8-Tetrachlorodibenzo-p-dioxin		40 days from extraction to analysis		

^aAnalytical methods conducted per 40 CFR 136.3 requirements^bSample containers are provided by the contract laboratory performing the analysis.^cUpon receipt by the laboratory, the pH must be adjusted to 5-9 unless extracted within 72 hours of collection.^dExtracts may be stored up to seven days before analysis if storage is conducted in an inert (oxidant-free) atmosphere.

TABLE 2

NPDES PERMIT RENEWAL ANALYTICAL REQUIREMENTS AT
STORM WATER RETENTION BASIN OVERFLOW SAMPLE LOCATION (OUTFALL 4002)

Constituent ^a	ASL	Holding Time	Preservative	Container
Bacterial Tests:				
Fecal Coliform	B	6 hours	Cool 4°C	plastic or glass
Total Metals:				
Aluminum	B	28 days	HNO ₃ , pH < 2	plastic or glass
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Selenium				
Silver				
Thallium				
Tin				
Titanium				
Zinc				
Mercury	B	28 days	Cool 4°C	plastic or glass ^b
General Chemistry:				
Biochemical Oxygen Demand (BOD)-5 day	B	48 hours	Cool 4°C	plastic or glass
Chemical Oxygen Demand (COD)	B	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	plastic or glass
Cyanide, Total	B	14 days	Cool 4°C; NaOH, pH > 12	plastic or glass
Total Organic Carbon (TOC)	B	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	glass (amber) with Teflon lined cap
Total Suspended Solids (TSS)	B	7 days	Cool 4°C	plastic or glass
Ammonia (as N)	B	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	plastic or glass
Flow	A	none	none	none
Temperature	A	analyze immediately	none	plastic or glass
pH	A	analyze immediately	none	plastic or glass
Bromide	B	28 days	none	plastic or glass
Total Residual Chlorine	B	analyze immediately	none	plastic or glass
Color	B	48 hours	Cool 4°C	plastic or glass
Fluoride	B	28 days	none	plastic
Nitrate/nitrite (as N)	B	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	plastic or glass
Total Organic Nitrogen (TON) (as N)	B	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	plastic or glass
Oil & Grease	B	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	glass with Teflon lined cap
Phenols, Total	B	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	glass (amber) with Teflon lined cap
Phosphorus, Total	B	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	plastic or glass
Sulfate (as SO ₄)	B	28 days	Cool 4°C	plastic or glass
Sulfide (as S)	B	7 days	Cool 4°C; zinc acetate + NaOH, pH > 9	plastic or glass
Sulfite (as SO ₃)	B	analyze immediately	none	plastic or glass
Radionuclides:				
Alpha, Total	B	6 months	HNO ₃ , pH < 2	plastic or glass
Beta, Total				
Radium-226				
Radium-228				

^aAnalytical methods conducted per 40 CFR 136.3 requirements^bSample containers are provided by the contract laboratory performing the analysis.

TABLE 3

**NPDES PERMIT RENEWAL ANALYTICAL REQUIREMENTS
AT STORM WATER DISCHARGE SAMPLE LOCATIONS
(OUTFALLS 4003, 4004A, 4005, AND 4006)**

Constituent ^a	ASL	Holding Time	Preservative	Container
Bacterial Tests:				
Fecal Coliform	B	6 hours	Cool 4°C	plastic or glass
Total Metals:				
Aluminum	B	28 days	HNO ₃ , pH < 2	plastic or glass
Barium				
Boron				
Cadmium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Nickel				
Silver				
Zinc				
Mercury	B	28 days	Cool 4°C	plastic or glass ^b
General Chemistry:				
Biochemical Oxygen Demand (BOD)-5 day	B	48 hours	Cool 4°C	plastic or glass
Carbonaceous Biological Oxygen Demand-5 day	B	48 hours	Cool 4°C	plastic or glass
Chemical Oxygen Demand (COD)	B	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	plastic or glass
Cyanide, Free	B	14 days	Cool 4°C; NaOH, pH > 12 (0.6 grams ascorbic acid) ^c	plastic or glass
Total Suspended Solids (TSS)	B	7 days	Cool 4°C	plastic or glass
Ammonia (as N)	B	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	plastic or glass
Flow	A	none	none	none
Temperature	A	analyze immediately	none	plastic or glass
pH	A	analyze immediately	none	plastic or glass
Total Residual Chlorine	B	analyze immediately	none	plastic or glass
Fluoride	B	28 days	none	plastic
Nitrate/nitrite (as N)	B	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	plastic or glass
Total Kjeldahl Nitrogen (TKN)	B	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	plastic or glass
Oil & Grease	B	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	glass with Teflon lined cap
Phosphorus, Total	B	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	plastic or glass
Sulfate (as SO ₄)	B	28 days	Cool 4°C	plastic or glass
Radionuclides:				
Uranium, Total	B	6 months	HNO ₃ , pH < 2	plastic or glass
Pesticides/Polychlorinated Biphenyls:				
Toxaphene	B	7 days to extraction 40 days from extraction to analysis	Cool 4°C ^d	glass (amber) with Teflon lined cap
Volatile Organics:				
Trichloroethene	B	14 days	Cool 4°C	glass vial with Teflon lined septum cap

**TABLE 3
(Continued)**

Constituent ^a	ASL	Holding Time	Preservative	Container
Semi-Volatile Organics:				
Benzidine	B	7 days to extraction analyzed immediately after extraction ^c	Cool 4°C	glass (amber) with Teflon lined cap
Pentachlorophenol	B	7 days to extraction 40 days from extraction to analysis	Cool 4°C	glass (amber) with Teflon lined cap
Dioxins:	B	7 days to extraction 40 days from extraction to analysis	Cool 4°C	glass (amber) with Teflon lined cap
2,3,7,8-Tetrachlorodibenzo-p-dioxin				

^aAnalytical methods conducted per 40 CFR 136.3 requirements

^bSample containers are provided by contract laboratory performing the analysis.

^cIn the presence of residual chlorine

^dUpon receipt by the laboratory, the pH must be adjusted to 5-9 unless extracted within 72 hours of collection.

^eExtracts may be stored up to seven days before analysis if storage is conducted under an inert (oxidant-free) atmosphere.

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TABLE 4

NPDES APPLICATION RENEWAL SAMPLING CRITERIA

NPDES Outfall Location	Rainfall Event Required	Type of Sample Required	Sample Collection Method
4001	No	Grab ^a and flow-weighted composite ^b	Manual (grab) and automatic sampler (composite)
4002	Yes - significant ^c	Grab ^a and time-weighted composite ^d	Manual
4003	Yes -- acceptable ^e	Grab ^f and flow-weighted composite ^g	Manual
4004A	Yes - acceptable ^e	Grab ^f and flow-weighted composite ^g	Manual
4005	Yes - acceptable ^e	Grab ^f and flow-weighted composite ^g	Manual
4006	Yes - acceptable ^e	Grab ^f and flow-weighted composite ^g	Manual

^aA grab sample will be collected for cyanide, total residual chlorine, oil & grease, total phenols, and fecal coliform. pH and temperature will be measured in the field.

^bA composite sample will be prepared for those constituents listed in Table 1 with the exception of those listed in footnote a.

^cSignificant indicates that the storm event will have to be of a sufficient amount in order for the water level in the Storm Water Retention Basin to rise.

^dA composite sample will be prepared for those constituents listed in Table 2 with the exception of those listed in footnote a.

^eAcceptable indicates that the storm event must be greater than 0.1 inches and at least 72 hours from the previously acceptable (greater than 0.1 inches) storm event.

^fA grab sample will be prepared for those constituents identified in Table 3. pH and temperature will be measured in the field.

^gA composite sample will be prepared for those constituents identified in Table 3 with the exception of cyanide, total residual chlorine, oil & grease, total phenols, and fecal coliform. An attempt will be made to fill four volatile organic vials for each time interval. These vials will be sent to the laboratory for compositing.

ATTACHMENT 1

OUTFALL 4001

The following sections will cover the NPDES Permit Renewal sampling at Outfall 4001 (Parshall Flume):

- Sampling Criteria
- Equipment List
- Sampling Components
- Quality Control Samples.

Sampling Criteria:

As part of the NPDES Permit Renewal, it is necessary to sample Outfall 4001 three times and have both grab and flow weighted composite samples taken for each of the three sample events. The following field conditions will be met prior to and during each sampling event:

- Care will be taken to coordinate with Aquifer Restoration Project personnel to ensure the sampling is representative of normal operation. Normal operation means that all processes that normally contribute to the effluent are on-line and all treatment systems are operating properly.
- For each of the three sampling events, a grab sample will be collected manually after the automatic sampler is installed and verified to be operating properly for those constituents designated for grab sampling.
- VOC composite increment samples will be taken manually by collecting a grab sample at the beginning of every 6-hour increment over a 24-hour period. The grab increments will be composited by the off-site analytical laboratory.
- Care should be taken to prevent the freezing of the VOC vials.
- A portable automatic sampler will be used to obtain three flow-weighted composite samples each over a separate 24-hour period of time for those constituents designated for composite sampling (except for the VOCs).

Equipment List:

The list of equipment necessary to complete the sampling effort at Outfall 4001 is also included within this attachment. Specific equipment will be discussed within the sample components section below.

Sampling Components:

Sampling at Outfall 4001 consists of the following components (sample completion location):

1. Field measurements (field)
2. Grab samples are poured directly into individual sample bottles (field)
3. Composite samples are poured directly into individual sample containers – VOCs (field)
4. Composite samples are collected via the automatic sampler (sample preparation area)

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Each sampling component will be discussed in a separate subsection below.

Sample Interval	Sampling Component ^a	Corresponding Sample Table	Bottles Filled in Field	Sample Completion Location
1	Field measurements (1)	Not applicable	Beaker (temporary)	Field
	Grab samples (2)	Table A.1-1	Individual sample bottles	Field
	Composite samples (VOCs) (3)	Table A.1-2	VOC vials	Field
	Composite samples (4)	Table A.1-2	15 liter polyethylene – automatic sampler	Sample preparation area
2 to 4	Composite samples (VOCs) (3)	Table A.1-2	VOC vials	Field
	Composite samples (4)	Table A.1-2	15 liter polyethylene – automatic sampler	Sample preparation area

^a(1) refers to sampling component descriptions below

1) Field measurements (first sample interval):

At the beginning of the first 6-hour interval, the Teflon dipper is used to gather water to put in a sample beaker. The pH and the temperature are measured using the Horiba and then recorded on the "Sample Collection Logs."

2) Grab samples are poured directly into individual sample bottles (first sample interval):

Table A.1-1 identifies those samples in which individual sample bottles must be filled directly in the field. The Teflon dipper is used to fill all sample bottles that are collected directly in the field. The bottles will be checked for pH (as necessary) using pH strips and pH will be corrected as necessary using pipettes and preservatives (refer to Table A.1-1 for pH requirements).

3) Composite samples are poured directly into individual sample containers (VOCs) (all four sample intervals):

VOCs are collected at the beginning of each of the four intervals (once every six hours) and are filled using the Teflon dipper. There should be four vials collected at the beginning of each interval. A fifth vial will be used to measure pH. Do not overfill the vials and ensure zero head space in the vials. Immediately after collection, the vials are rubber banded and put into a plastic ziploc bag along with a piece of paper to identify from which of the four intervals they were collected (or use a sharpie to identify on the ziploc bag).

4) Composite samples are collected via the automatic sampler (all four sample intervals):

The automatic sampler is programmed to take individual grab increments over a 24 hour period. The 15-liter container is brought back to the sample preparation area and the composite sample is mixed. After the composite sample is mixed, the sample containers are filled as identified in Table A.1-2, with the exception of the VOCs.

Quality Control Samples:

A rinsate sample is collected from the automatic sampler upon completion of one decontamination process. Although three composite samples will be taken at this location, only one rinsate sample needs to be collected; however, a rinsate for mercury will be collected in association with each of the composite samples. One VOC trip blank will be collected per sample event.

NPDES Outfall 4001 (Parshall Flume) Equipment Checklist

Equipment	Location Needed ^a	X
Automatic sampler ^b		
4 - 15 liter polyethylene containers ^b	Field then SPA	
1 - 10 gallon polyethylene container with a spigot ^b	SPA	
2 - 1 liter teflon dippers with extension rods ^b	SPA	
Trip blank sample vials for VOCs	Field	
Vinyl or nitrile gloves	Field/SPA	
DI water in container with spigot	SPA	
Horiba Water Quality Meter ^c	Field	
Sample beaker(s) ^c	Field	
Sample containers	Field/SPA	
Preservatives	Field/SPA	
Disposable pipettes	Field/SPA	
pH strips	Field/SPA	
Chain of custody tape	Field/SPA	
Clear tape	Field/SPA	
FACTS sample labels and pickup worksheet	Field/SPA	
Sample collection logs	Field/SPA	
Chain of custody records	Field/SPA	
Sample coolers	Field/SPA	
Cooler full of ice	Field/SPA	
Ziplock plastic bags	Field/SPA	
Custody seals	Field	
Sharpies	Field/SPA	
PSP/procedures	Field/SPA	
Automatic sampler replacement batteries (charged)	Field	
Disposable towels for wrapping VOC vials	Field	
Eye wash station	Field/SPA	
Liquinox	SPA	

^aSPA = Sample Preparation Area

^bIndicates equipment that must be decontaminated with liquinox prior to sample collection

^cIndicates equipment that must be decontaminated with deionized water prior to sample collection

Completed by: _____

Date: _____

**TABLE A.1-1
NPDES PERMIT RENEWAL – CONSTITUENTS
AT PARSHALL FLUME SAMPLE LOCATION
(OUTFALL 4001 FIELD)
(ON-SITE AND OFF-SITE GRAB SAMPLES)**

Constituent	Holding Time	Chemical Preservative	Container (s) Required	ASL	Analyzed On Site or Off Site (sample delivery location)	Collected ^a
Phenols, total	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	2 – 1 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Cyanide, total	14 days	Cool 4°C; NaOH, pH > 12	2 – 1 liter plastic	B	Off Site (SPL)	
Total residual chlorine	Analyze immediately	None	1 – 250 ml plastic	B	On Site (AWWT lab)	
Fecal coliform	6 hours	Cool 4°C	2 – 100 ml or 1 – 250 ml sterile plastic bag	B	On Site (AWWT lab)	
Oil & grease	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	2 - 1 liter glass with Teflon lined cap	B	On Site/ALS (SPL)	

^aPlease check off that the sample was collected.

- Notes:
- 1) These constituents are poured directly into the individual sample bottles in the field.
 - 2) Place the on-site constituents into a plastic bag and place the off-site constituents into the VOC cooler.
 - 3) Transfer the on-site constituents (they should be in the plastic bag per item #2) into a cooler and deliver them to the on-site laboratory because many of the constituents have short holding times.

**TABLE A.1-2
NPDES PERMIT RENEWAL – CONSTITUENTS
AT PARSHALL FLUME SAMPLE LOCATION
(OUTFALL 4001 FIELD AND SAMPLE PREPARATION AREA)
(ON-SITE AND OFF-SITE COMPOSITE SAMPLES)**

Constituent	Holding Time	Chemical Preservative	Container (s) Required	ASL	Analyzed On Site or Off Site (sample delivery location)	Collected ^a
VOC (4 vials plus 1 verification vial per 6 hour increment)	7 days	Cool 4°C; H ₂ SO ₄ or NaOH to pH 4-5	5 – 40 ml glass vials with Teflon lined septum cap (zero head space)	B	Off Site (SPL)	
Total Organic Carbon (TOC)	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 250 ml amber glass with Teflon lined cap	B	Off Site (SPL)	
Semi-Volatile Organics (excluding benzidine)	7 days	Cool 4°C; H ₂ SO ₄ or NaOH to pH 7-9 (store in dark)	2 – 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Benzidine	7 days	Cool 4°C	2 – 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Pesticides/PCBs	7 days	Cool 4°C (store in dark)	3 – 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
2,3,7,8-Tetrachloro-dibenzo-p-dioxin	7 days	Cool 4°C	2 – 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Total metals (excluding mercury)	28 days	HNO ₃ , pH < 2	1 – 1000 ml plastic	B	On Site/ALS (SPL)	
Mercury	28 days	Cool 4°C	1 – 500 ml glass (provided by contract lab)	B	Off Site (SPL)	
Sulfide (as S)	7 days	Cool 4°C; 20 drops of 2N zinc acetate; NaOH, pH > 9	3 – 500 ml plastic	B	Off Site (SPL)	
Sulfite (as SO ₃); color	Analyze immediately	Cool 4°C	1 – 1000 ml plastic	B	On Site (AWWT lab)	
BOD – 5 day	48 hours	Cool 4°C	1 – 1000 ml plastic	B	On Site (AWWT lab)	
TSS	7 days	Cool 4°C	1 – 1000 ml plastic	B	On Site (AWWT lab)	
Bromide	28 days	None	1 – 500 ml plastic	B	Off Site (SPL)	
Fluoride	28 days	None	1 – 500 ml plastic	B	On Site/ALS (SPL)	
Sulfate (as SO ₄)	28 days	Cool 4°C	1 – 500 ml plastic	B	On Site (AWWT lab)	
Phosphorus, total	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 500 ml plastic	B	On Site (AWWT lab)	
Ammonia (as N)	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 500 ml plastic	B	On Site/ALS (SPL)	
Nitrate/nitrite (as N); Total Organic Nitrogen (TON) (as N); COD	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 1000 ml plastic	B	Off Site (SPL)	
Alpha, total; Beta, total; Radium-228; Radium-226	6 months	HNO ₃ , pH < 2	1 – 4 liter plastic	B	On Site/ALS (SPL)	

^aPlease check off that the sample was collected.

- Notes: 1) Make sure that all of the VOC composite increment vials are placed into the VOC cooler.
2) After placing them in a cooler, deliver the on-site constituents to the on-site laboratory because many of the constituents have short holding times.

**TABLE A.1-1
NPDES PERMIT RENEWAL – CONSTITUENTS
AT PARSHALL FLUME SAMPLE LOCATION
(OUTFALL 4001 FIELD)
(ON-SITE AND OFF-SITE GRAB SAMPLES)**

Constituent	Holding Time	Chemical Preservative	Container (s) Required	ASL	Analyzed On Site or Off Site (sample delivery location)	Collected ^a
Phenols, total	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	2 – 1 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Cyanide, total	14 days	Cool 4°C; NaOH, pH > 12	2 – 1 liter plastic	B	Off Site (SPL)	
Total residual chlorine	Analyze immediately	None	1 – 250 ml plastic	B	On Site (AWWT lab)	
Fecal coliform	6 hours	Cool 4°C	2 – 100 ml or 1 – 250 ml sterile plastic bag	B	On Site (AWWT lab)	
Oil & grease	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	2 - 1 liter glass with Teflon lined cap	B	On Site/ALS (SPL)	

^aPlease check off that the sample was collected.

- Notes:
- 1) These constituents are poured directly into the individual sample bottles in the field.
 - 2) Place the on-site constituents into a plastic bag and place the off-site constituents into the VOC cooler.
 - 3) Transfer the on-site constituents (they should be in the plastic bag per item #2) into a cooler and deliver them to the on-site laboratory because many of the constituents have short holding times.

**TABLE A.1-2
NPDES PERMIT RENEWAL – CONSTITUENTS
AT PARSHALL FLUME SAMPLE LOCATION
(OUTFALL 4001 FIELD AND SAMPLE PREPARATION AREA)
(ON-SITE AND OFF-SITE COMPOSITE SAMPLES)**

Constituent	Holding Time	Chemical Preservative	Container (s) Required	ASL	Analyzed On Site or Off Site (sample delivery location)	Collected ^a
VOC (4 vials plus 1 verification vial per 6 hour increment)	7 days	Cool 4°C; H ₂ SO ₄ or NaOH to pH 4-5	5 – 40 ml glass vials with Teflon lined septum cap (zero head space)	B	Off Site (SPL)	
Total Organic Carbon (TOC)	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 250 ml amber glass with Teflon lined cap	B	Off Site (SPL)	
Semi-Volatile Organics (excluding benzidine)	7 days	Cool 4°C; H ₂ SO ₄ or NaOH to pH 7-9 (store in dark)	2 – 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Benzidine	7 days	Cool 4°C	2 – 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Pesticides/PCBs	7 days	Cool 4°C (store in dark)	3 – 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
2,3,7,8-Tetrachloro-dibenzo-p-dioxin	7 days	Cool 4°C	2 – 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Total metals (excluding mercury)	28 days	HNO ₃ , pH < 2	1 – 1000 ml plastic	B	On Site/ALS (SPL)	
Mercury	28 days	Cool 4°C	1 – 500 ml glass (provided by contract lab)	B	Off Site (SPL)	
Sulfide (as S)	7 days	Cool 4°C; 20 drops of 2N zinc acetate; NaOH, pH > 9	3 – 500 ml plastic	B	Off Site (SPL)	
Sulfite (as SO ₃); color	Analyze immediately	Cool 4°C	1 – 1000 ml plastic	B	On Site (AWWT lab)	
BOD – 5 day	48 hours	Cool 4°C	1 – 1000 ml plastic	B	On Site (AWWT lab)	
TSS	7 days	Cool 4°C	1 – 1000 ml plastic	B	On Site (AWWT lab)	
Bromide	28 days	None	1 – 500 ml plastic	B	Off Site (SPL)	
Fluoride	28 days	None	1 – 500 ml plastic	B	On Site/ALS (SPL)	
Sulfate (as SO ₄)	28 days	Cool 4°C	1 – 500 ml plastic	B	On Site (AWWT lab)	
Phosphorus, total	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 500 ml plastic	B	On Site (AWWT lab)	
Ammonia (as N)	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 500 ml plastic	B	On Site/ALS (SPL)	
Nitrate/nitrite (as N); Total Organic Nitrogen (TON) (as N); COD	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 1000 ml plastic	B	Off Site (SPL)	
Alpha, total; Beta, total; Radium-228; Radium-226	6 months	HNO ₃ , pH < 2	1 – 4 liter plastic	B	On Site/ALS (SPL)	

^aPlease check off that the sample was collected.

- Notes: 1) Make sure that all of the VOC composite increment vials are placed into the VOC cooler.
2) After placing them in a cooler, deliver the on-site constituents to the on-site laboratory because many of the constituents have short holding times.

**TABLE A.1-1
NPDES PERMIT RENEWAL – CONSTITUENTS
AT PARSHALL FLUME SAMPLE LOCATION
(OUTFALL 4001 FIELD)
(ON-SITE AND OFF-SITE GRAB SAMPLES)**

Constituent	Holding Time	Chemical Preservative	Container (s) Required	ASL	Analyzed On Site or Off Site (sample delivery location)	Collected ^a
Phenols, total	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	2 – 1 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Cyanide, total	14 days	Cool 4°C; NaOH, pH > 12	2 – 1 liter plastic	B	Off Site (SPL)	
Total residual chlorine	Analyze immediately	None	1 – 250 ml plastic	B	On Site (AWWT lab)	
Fecal coliform	6 hours	Cool 4°C	2 – 100 ml or 1 – 250 ml sterile plastic bag	B	On Site (AWWT lab)	
Oil & grease	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	2 - 1 liter glass with Teflon lined cap	B	On Site/ALS (SPL)	

^aPlease check off that the sample was collected.

- Notes:
- 1) These constituents are poured directly into the individual sample bottles in the field.
 - 2) Place the on-site constituents into a plastic bag and place the off-site constituents into the VOC cooler.
 - 3) Transfer the on-site constituents (they should be in the plastic bag per item #2) into a cooler and deliver them to the on-site laboratory because many of the constituents have short holding times.

**TABLE A.1-2
NPDES PERMIT RENEWAL - CONSTITUENTS
AT PARSHALL FLUME SAMPLE LOCATION
(OUTFALL 4001 FIELD AND SAMPLE PREPARATION AREA)
(ON-SITE AND OFF-SITE COMPOSITE SAMPLES)**

Constituent	Holding Time	Chemical Preservative	Container (s) Required	ASL	Analyzed On Site or Off Site (sample delivery location)	Collected ^a
VOC (4 vials plus 1 verification vial per 6 hour increment)	7 days	Cool 4°C; H ₂ SO ₄ or NaOH to pH 4-5	5 - 40 ml glass vials with Teflon lined septum cap (zero head space)	B	Off Site (SPL)	
Total Organic Carbon (TOC)	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 - 250 ml amber glass with Teflon lined cap	B	Off Site (SPL)	
Semi-Volatile Organics (excluding benzidine)	7 days	Cool 4°C; H ₂ SO ₄ or NaOH to pH 7-9 (store in dark)	2 - 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Benzidine	7 days	Cool 4°C	2 - 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Pesticides/PCBs	7 days	Cool 4°C (store in dark)	3 - 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
2,3,7,8-Tetrachloro-dibenzo-p-dioxin	7 days	Cool 4°C	2 - 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Total metals (excluding mercury)	28 days	HNO ₃ , pH < 2	1 - 1000 ml plastic	B	On Site/ALS (SPL)	
Mercury	28 days	Cool 4°C	1 - 500 ml glass (provided by contract lab)	B	Off Site (SPL)	
Sulfide (as S)	7 days	Cool 4°C; 20 drops of 2N zinc acetate; NaOH, pH > 9	3 - 500 ml plastic	B	Off Site (SPL)	
Sulfite (as SO ₃); color	Analyze immediately	Cool 4°C	1 - 1000 ml plastic	B	On Site (AWWT lab)	
BOD - 5 day	48 hours	Cool 4°C	1 - 1000 ml plastic	B	On Site (AWWT lab)	
TSS	7 days	Cool 4°C	1 - 1000 ml plastic	B	On Site (AWWT lab)	
Bromide	28 days	None	1 - 500 ml plastic	B	Off Site (SPL)	
Fluoride	28 days	None	1 - 500 ml plastic	B	On Site/ALS (SPL)	
Sulfate (as SO ₄)	28 days	Cool 4°C	1 - 500 ml plastic	B	On Site (AWWT lab)	
Phosphorus, total	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 - 500 ml plastic	B	On Site (AWWT lab)	
Ammonia (as N)	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 - 500 ml plastic	B	On Site/ALS (SPL)	
Nitrate/nitrite (as N); Total Organic Nitrogen (TON) (as N); COD	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 - 1000 ml plastic	B	Off Site (SPL)	
Alpha, total; Beta, total; Radium-228; Radium-226	6 months	HNO ₃ , pH < 2	1 - 4 liter plastic	B	On Site/ALS (SPL)	

^aPlease check off that the sample was collected.

- Notes: 1) Make sure that all of the VOC composite increment vials are placed into the VOC cooler.
2) After placing them in a cooler, deliver the on-site constituents to the on-site laboratory because many of the constituents have short holding times.

**TABLE A.1-2
NPDES PERMIT RENEWAL – CONSTITUENTS
AT PARSHALL FLUME SAMPLE LOCATION
(OUTFALL 4001 FIELD AND SAMPLE PREPARATION AREA)
(ON-SITE AND OFF-SITE COMPOSITE RINSATE SAMPLES)**

Constituent	Holding Time	Chemical Preservative	Container (s) Required	ASL	Analyzed On Site or Off Site (sample delivery location)	Collected ^a
Total Organic Carbon (TOC)	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 250 ml amber glass with Teflon lined cap	B	Off Site (SPL)	
Semi-Volatile Organics (excluding benzidine)	7 days	Cool 4°C; H ₂ SO ₄ or NaOH to pH 7-9 (store in dark)	2 – 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Benzidine	7 days	Cool 4°C	2 – 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Pesticides/PCBs	7 days	Cool 4°C (store in dark)	3 – 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
2,3,7,8-Tetrachloro-dibenzo-p-dioxin	7 days	Cool 4°C	2 – 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Total metals (excluding mercury)	28 days	HNO ₃ , pH < 2	1 – 1000 ml plastic	B	On Site/ALS (SPL)	
Mercury	28 days	Cool 4°C	1 – 500 ml glass (provided by contract lab)	B	Off Site (SPL)	
Sulfide (as S)	7 days	Cool 4°C; 20 drops of 2N zinc acetate; NaOH, pH > 9	3 – 500 ml plastic	B	Off Site (SPL)	
Sulfite (as SO ₃); color	Analyze immediately	Cool 4°C	1 – 1000 ml plastic	B	On Site (AWWT lab)	
BOD – 5 day	48 hours	Cool 4°C	1 – 1000 ml plastic	B	On Site (AWWT lab)	
TSS	7 days	Cool 4°C	1 – 1000 ml plastic	B	On Site (AWWT lab)	
Bromide	28 days	None	1 – 500 ml plastic	B	Off Site (SPL)	
Fluoride	28 days	None	1 – 500 ml plastic	B	On Site/ALS (SPL)	
Sulfate (as SO ₄)	28 days	Cool 4°C	1 – 500 ml plastic	B	On Site (AWWT lab)	
Phosphorus, total	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 500 ml plastic	B	On Site (AWWT lab)	
Ammonia (as N)	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 500 ml plastic	B	On Site/ALS (SPL)	
Nitrate/nitrite (as N); Total Organic Nitrogen (TON) (as N); COD	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 1000 ml plastic	B	Off Site (SPL)	
Alpha, total; Beta, total; Radium-228; Radium-226	6 months	HNO ₃ , pH < 2	1 – 4 liter plastic	B	On Site/ALS (SPL)	

^aPlease check off that the rinsate sample was collected.

Notes: 1) After placing them in a cooler, deliver the on-site constituents to the on-site laboratory because many of the constituents have short holding times.

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**TABLE A.1-2
NPDES PERMIT RENEWAL – CONSTITUENTS
AT PARSHALL FLUME SAMPLE LOCATION
(OUTFALL 4001 SAMPLE PREPARATION AREA)
(MERCURY RINSATE COMPOSITE SAMPLE)**

Constituent	Holding Time	Chemical Preservative	Container (s) Required	ASL	Analyzed On Site or Off Site (sample delivery location)	Collected ^a
Mercury	28 days	Cool 4°C	1 – 500 ml glass (provided by contract lab)	B	Off Site (SPL)	

^aPlease check off that the mercury rinsate sample was collected from the automatic sampler upon completion of one decontamination process.

TABLE A.1-2
NPDES PERMIT RENEWAL - CONSTITUENTS
AT PARSHALL FLUME SAMPLE LOCATION
(OUTFALL 4001 SAMPLE PREPARATION AREA)
(MERCURY RINSATE COMPOSITE SAMPLE)

Constituent	Holding Time	Chemical Preservative	Container (s) Required	ASL	Analyzed On Site or Off Site (sample delivery location)	Collected ^a
Mercury	28 days	Cool 4°C	1 - 500 ml glass (provided by contract lab)	B	Off Site (SPL)	

^aPlease check off that the mercury rinsate sample was collected from the automatic sampler upon completion of one decontamination process.

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**TABLE A.1-2
NPDES PERMIT RENEWAL – CONSTITUENTS
AT PARSHALL FLUME SAMPLE LOCATION
(OUTFALL 4001 FIELD)
(VOC TRIP BLANK SAMPLE)**

Constituent	Holding Time	Chemical Preservative	Container (s) Required	ASL	Analyzed On Site or Off Site (sample delivery location)	Collected ^a
VOC (4 vials plus 1 verification vial)	7 days	Cool 4°C; H ₂ SO ₄ or NaOH to pH 4-5	5 – 40 ml glass vials with Teflon lined septum cap (zero head space)	B	Off Site (SPL)	

^aPlease check off that the VOC trip blank sample was collected.

Notes: 1) Make sure that the VOC trip blank vials are placed into the VOC cooler.

TABLE A.1-2 NPDES PERMIT RENEWAL – CONSTITUENTS AT PARSHALL FLUME SAMPLE LOCATION (OUTFALL 4001 FIELD) (VOC TRIP BLANK SAMPLE)						
Constituent	Holding Time	Chemical Preservative	Container (s) Required	ASL	Analyzed On Site or Off Site (sample delivery location)	Collected [√] ^a
VOC (4 vials plus 1 verification vial)	7 days	Cool 4°C; H ₂ SO ₄ or NaOH to pH 4-5	5 – 40 ml glass vials with Teflon lined septum cap (zero head space)	B	Off Site (SPL)	

^aPlease check off that the VOC trip blank sample was collected.

Notes: 1) Make sure that the VOC trip blank vials are placed into the VOC cooler.

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**TABLE A.1-2
NPDES PERMIT RENEWAL – CONSTITUENTS
AT PARSHALL FLUME SAMPLE LOCATION
(OUTFALL 4001 FIELD)
(VOC TRIP BLANK SAMPLE)**

Constituent	Holding Time	Chemical Preservative	Container (s) Required	ASL	Analyzed On Site or Off Site (sample delivery location)	Collected ^a
VOC (4 vials plus 1 verification vial)	7 days	Cool 4°C; H ₂ SO ₄ or NaOH to pH 4-5	5 – 40 ml glass vials with Teflon lined septum cap (zero head space)	B	Off Site (SPL)	

^aPlease check off that the VOC trip blank sample was collected.

Notes: 1) Make sure that the VOC trip blank vials are placed into the VOC cooler.

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ATTACHMENT 2
OUTFALL 4002

000039

The following sections will cover the NPDES Permit Renewal sampling at Outfall 4002 (Storm Water Retention Basin Overflow):

- Sampling Criteria
- Equipment List and Field Form
- Sampling Components
- Quality Control Samples.

Sampling Criteria:

As part of the NPDES Permit Renewal, it is necessary to sample Outfall 4002 once and have the following field conditions met during the sampling event:

- The outfall will be sampled during an acceptable rainfall event. The rainfall event will have to provide sufficient rainfall for the water level in the basin to rise.
- The grab sample, field measurements, and first time-weighted composite sample (grab increment sample) will be collected as soon as the water level in the basin begins to rise.
- The next three grab increment samples will be taken every 30 minutes (for a total of four samples).

Equipment List and Field Form:

The equipment necessary to complete the sampling effort is also included within this attachment. Specific equipment will be discussed within the sample components section below.

The form that will be filled out is the "Rainfall Event Monitoring Form". A blank form is included within this attachment. The grab sample and first grab increment sample along with field measurements are recorded and collected at the same time. These samples should be collected as soon as the water level in the basin begins to rise. The subsequent intervals collected (for a total of four) will be collected approximately every 30 minutes. Relevant information will be recorded on the "Rainfall Event Monitoring Form." It will be necessary to calculate the required sample volume from each grab increment sample for the composite sample.

Sampling Components:

Sampling at Outfall 4002 consists of the following components (sample completion location):

1. Field measurements (field)
2. Grab samples are poured directly into individual sample bottles (field)
3. Grab samples are poured directly into bulk grab increment sample container (1 - 5 gallon polyethylene container for each increment) – (field)
4. Measured composite samples are poured directly into bulk sample container (1 - 10 gallon polyethylene container with a spigot) – (sample preparation area)
5. Compositated samples are poured directly into individual sample bottles (sample preparation area)

Each sampling component will be discussed in a separate subsection below.

Sample Interval	Sampling Component ^a	Corresponding Sample Table	Bottles Filled in Field	Sample Completion Location
1	Field measurements (1)	Rainfall Event Monitoring Form	Beaker (temporary)	Field
	Grab samples (2)	Table A.2-1	Individual sample bottles	Field
	Composite samples (3)	Table A.2-2	5 gallon polyethylene	Field
2	Composite samples (3)	Table A.2-2	5 gallon polyethylene	Field
3	Composite samples (3)	Table A.2-2	5 gallon polyethylene	Field
4	Composite samples (3)	Table A.2-2	5 gallon polyethylene	Field

^a(1) refers to sampling component descriptions below

1) Field measurements (first sample interval):

During the first interval, the sample collection container is used to gather water to put in a sample beaker. The pH and temperature are measured using the Horiba and then recorded on the "Rainfall Event Monitoring Form."

2) Grab samples are poured directly into individual sample bottles (first sample interval):

Table A.2-1 identifies those samples in which individual sample bottles must be filled directly in the field. The sample collection container is used to fill all sample bottles that are collected directly in the field. The bottles will be checked for pH (as necessary) using pH strips and pH will be corrected as necessary using pipettes and preservatives (refer to Table A.2-1 for pH requirements).

3) Composite samples are poured directly into bulk sample container (first time interval):

At each interval a 5 gallon polyethylene container is filled using a sample collection container (with at least 3.5 liters of water). The four containers are then brought back to the sample preparation area and the composite sample is made. A graduated cylinder is used to measure the volume (3.5 liters) and the measured water is placed in the 10 gallon polyethylene container with a spigot. After the composite is made, the water from the 10 gallon polyethylene container with a spigot is used to fill the sample bottles as identified in Table A.2-2.

Quality Control Samples:

One duplicate sample is collected for all of the constituents and a rinsate sample for mercury from the composite collection device equipment will also be collected.

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NPDES Outfall 4002 (SWRB Overflow) Equipment Checklist

Equipment	Location Needed ^a	X
4 - 5 gallon polyethylene containers ^b	Field then SPA	
1 - 10 gallon polyethylene container with a spigot ^b	SPA	
1 graduated cylinder ^b	SPA	
Vinyl or nitrile gloves	Field/SPA	
DI water in container with spigot	SPA	
Horiba Water Quality Meter ^c	Field	
Sample beaker(s) ^c	Field	
Sample containers	Field/SPA	
Preservatives (H ₂ SO ₄ , HNO ₃ , and NaOH vials)	Field/SPA	
Disposable pipettes	Field/SPA	
pH strips	Field/SPA	
Chain of custody tape	Field/SPA	
Clear tape	Field/SPA	
FACTS sample labels and pickup worksheets	Field/SPA	
Sample collection logs	Field/SPA	
Chain of custody records	Field/SPA	
Sample coolers	Field/SPA	
Ice	Field/SPA	
Sharpies	Field/SPA	
PSP/procedures	Field/SPA	
Required PPE, life jacket and rainwear	Field	
Eye wash station	Field/SPA	
Liquinox	SPA	

^aSPA = Sample Preparation Area

^bIndicates equipment that must be decontaminated with liquinox prior to sample collection

^cIndicates equipment that must be decontaminated with deionized water prior to sample collection

Completed by: _____

Date: _____

RAINFALL EVENT MONITORING FORM

Name (s)/Badge # _____

Date of Rainfall Event _____

NPDES Outfall Number 4002

Composite Volume Needed: 14 liters

Sample Interval	Time	Volume	Duplicate Volume
Grab ^a	_____	_____	_____
1	_____	_____	_____
2	_____	_____	_____
3	_____	_____	_____
4	_____	_____	_____
	TOTALS	_____	_____

^aA 3.5 liter sample volume is required for cyanide, total residual chlorine, oil & grease, total phenols, and fecal coliform. pH and temperature will be measured from the grab sample.

Time

Storm End _____

Storm Begin _____

Storm Duration _____ hours

Grab Sample Temperature: _____

Grab Sample pH: _____

**TABLE A.2-1
NPDES PERMIT RENEWAL – CONSTITUENTS
AT STORM WATER RETENTION BASIN OVERFLOW SAMPLE LOCATION
(OUTFALL 4002 FIELD)
(ON-SITE AND OFF-SITE GRAB SAMPLES)**

Constituent	Holding Time	Chemical Preservative	Container (s) Required	ASL	Analyzed On Site or Off Site (sample delivery location)	Collected ^a
Phenols, total	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	2 – 1 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Cyanide, total	14 days	Cool 4°C; NaOH, pH > 12	2 – 1 liter plastic	B	Off Site (SPL)	
Total residual chlorine	Analyze immediately	None	1 – 250 ml plastic	B	On Site (AWWT lab)	
Fecal coliform	6 hours	Cool 4°C	2 – 100 ml or 1 – 250 ml sterile plastic bag	B	On Site (AWWT lab)	
Oil & grease	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	2 - 1 liter glass with Teflon lined cap	B	On Site/ALS (SPL)	

^aPlease check off that the sample was collected.

- Notes: 1) These constituents are poured directly into the individual sample bottles in the field.
2) Place the on-site constituents into a plastic bag and then into a cooler and deliver them to the on-site laboratory because many of the constituents have short holding times.

TABLE A.2-1
NPDES PERMIT RENEWAL – CONSTITUENTS
AT STORM WATER RETENTION BASIN OVERFLOW SAMPLE LOCATION
(OUTFALL 4002 FIELD)
(ON-SITE AND OFF-SITE GRAB DUPLICATE SAMPLES)

Constituent	Holding Time	Chemical Preservative	Container (s) Required	ASL	Analyzed On Site or Off Site (sample delivery location)	Collected ^a
Phenols, total	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	2 – 1 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Cyanide, total	14 days	Cool 4°C; NaOH, pH > 12	2 – 1 liter plastic	B	Off Site (SPL)	
Total residual chlorine	Analyze immediately	None	1 – 250 ml plastic	B	On Site (AWWT lab)	
Fecal coliform	6 hours	Cool 4°C	2 – 100 ml or 1 – 250 ml sterile plastic bag	B	On Site (AWWT lab)	
Oil & grease	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	2 - 1 liter glass with Teflon lined cap	B	On Site/ALS (SPL)	

^aPlease check off that the duplicate sample was collected.

- Notes: 1) These constituents are poured directly into the individual sample bottles in the field.
2) Place the on-site constituents into a plastic bag and then into a cooler and deliver them to the on-site laboratory because many of the constituents have short holding times.

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**TABLE A.2-2
NPDES PERMIT RENEWAL – CONSTITUENTS
AT STORM WATER RETENTION BASIN OVERFLOW SAMPLE LOCATION
(OUTFALL 4002 SAMPLE PREPARATION AREA)
(ON-SITE AND OFF-SITE COMPOSITE SAMPLES)**

Constituent	Holding Time	Chemical Preservative	Container (s) Required	ASL	Analyzed On Site or Off Site (sample delivery location)	Collected ^a
Total Organic Carbon (TOC)	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 250 ml amber glass with Teflon lined cap	B	Off Site (SPL)	
Total metals (excluding mercury)	28 days	HNO ₃ , pH < 2	1 – 1000 ml plastic	B	On Site/ALS (SPL)	
Mercury	28 days	Cool 4°C	1 – 500 ml glass (provided by contract lab)	B	Off Site (SPL)	
Sulfide (as S)	7 days	Cool 4°C; 20 drops of 2N zinc acetate; NaOH, pH > 9	3 – 500 ml plastic	B	Off Site (SPL)	
Sulfite (as SO ₃); color	Analyze immediately	Cool 4°C	1 – 1000 ml plastic	B	On Site (AWWT lab)	
BOD – 5 day	48 hours	Cool 4°C	1 – 1000 ml plastic	B	On Site (AWWT lab)	
TSS	7 days	Cool 4°C	1 – 1000 ml plastic	B	On Site (AWWT lab)	
Bromide	28 days	None	1 – 500 ml plastic	B	Off Site (SPL)	
Fluoride	28 days	None	1 – 500 ml plastic	B	On Site/ALS (SPL)	
Sulfate (as SO ₄)	28 days	Cool 4°C	1 – 500 ml plastic	B	On Site (AWWT lab)	
Phosphorus, total	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 500 ml plastic	B	On Site (AWWT lab)	
Ammonia (as N)	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 500 ml plastic	B	On Site/ALS (SPL)	
Nitrate/nitrite (as N); Total Organic Nitrogen (TON) (as N); COD	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 1000 ml plastic	B	Off Site (SPL)	
Alpha, total; Beta, total; Radium-228; Radium-226	6 months	HNO ₃ , pH < 2	1 – 4 liter plastic	B	On Site/ALS (SPL)	

^aPlease check off that the sample was collected.

Note: 1) After placing them in a cooler, deliver the on-site constituents to the on-site laboratory because many of the constituents have short holding times.

**TABLE A.2-2
NPDES PERMIT RENEWAL – CONSTITUENTS
AT STORM WATER RETENTION BASIN OVERFLOW SAMPLE LOCATION
(OUTFALL 4002 SAMPLE PREPARATION AREA)
(ON-SITE AND OFF-SITE COMPOSITE DUPLICATE SAMPLES)**

Constituent	Holding Time	Chemical Preservative	Container (s) Required	ASL	Analyzed On Site or Off Site (sample delivery location)	Collected ^a
Total Organic Carbon (TOC)	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 250 ml amber glass with Teflon lined cap	B	Off Site (SPL)	
Total metals (excluding mercury)	28 days	HNO ₃ , pH < 2	1 – 1000 ml plastic	B	On Site/ALS (SPL)	
Mercury	28 days	Cool 4°C	1 – 500 ml glass (provided by contract lab)	B	Off Site (SPL)	
Sulfide (as S)	7 days	Cool 4°C; 20 drops of 2N zinc acetate; NaOH, pH > 9	3 – 500 ml plastic	B	Off Site (SPL)	
Sulfite (as SO ₃); color	Analyze immediately	Cool 4°C	1 – 1000 ml plastic	B	On Site (AWWT lab)	
BOD – 5 day	48 hours	Cool 4°C	1 – 1000 ml plastic	B	On Site (AWWT lab)	
TSS	7 days	Cool 4°C	1 – 1000 ml plastic	B	On Site (AWWT lab)	
Bromide	28 days	None	1 – 500 ml plastic	B	Off Site (SPL)	
Fluoride	28 days	None	1 – 500 ml plastic	B	On Site/ALS (SPL)	
Sulfate (as SO ₄)	28 days	Cool 4°C	1 – 500 ml plastic	B	On Site (AWWT lab)	
Phosphorus, total	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 500 ml plastic	B	On Site (AWWT lab)	
Ammonia (as N)	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 500 ml plastic	B	On Site/ALS (SPL)	
Nitrate/nitrite (as N); Total Organic Nitrogen (TON) (as N); COD	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 1000 ml plastic	B	Off Site (SPL)	
Alpha, total; Beta, total; Radium-228; Radium-226	6 months	HNO ₃ , pH < 2	1 – 4 liter plastic	B	On Site/ALS (SPL)	

^aPlease check off that the duplicate sample was collected.

Note: 1) After placing them in a cooler, deliver the on-site constituents to the on-site laboratory because many of the constituents have short holding times.

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**TABLE A.2-2
 NPDES PERMIT RENEWAL – CONSTITUENTS
 AT PARSHALL FLUME SAMPLE LOCATION
 (OUTFALL 4002 SAMPLE PREPARATION AREA)
 (MERCURY RINSATE COMPOSITE SAMPLE)**

Constituent	Holding Time	Chemical Preservative	Container (s) Required	ASL	Analyzed On Site or Off Site (sample delivery location)	Collected ^a
Mercury	28 days	Cool 4°C	1 – 500 ml glass (provided by contract lab)	B	Off Site (SPL)	

^aPlease check off that the mercury rinsate sample was collected from the sample collection container after the decontamination process.

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ATTACHMENT 3
OUTFALLS 4003, 4004A, 4005, AND 4006

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The following sections will cover the NPDES Permit Renewal sampling at Outfalls 4003, 4004A, 4005, and 4006:

- Sampling Criteria
- Equipment List and Field Form
- Sampling Components
- Quality Control Samples.

Sampling Criteria:

As part of the NPDES Permit Renewal, it is necessary to sample Outfalls 4003, 4004A, 4005, and 4006 and have the following field conditions met prior to and during each outfall sampling event:

- The outfall will be sampled during an acceptable rainfall event. Acceptable rainfall event must be greater than 0.1 inches and at least 72 hours from the previously measurable (greater than 0.1 inches) rainfall event.
- The first grab samples will be collected within the first 30 minutes of the rainfall event or within the first 30 minutes of the discharge (or as soon as practicable).
- The flow-weighted composite sample will be taken for the entire rainfall event or for the first three hours of the rainfall event (sample collection interval is approximately every 20 minutes).
- Samples should be collected as close as possible to the center of the drainage ditch.
- Surface debris (e.g., leaves, twigs) will not be collected.
- All required samples will be collected at each outfall location. If samples are missed, then the outfall must be resampled and the criteria and protocol must be followed in the case of resampling.

Note: If the rainfall event is less than 0.1 inches, then any samples that were collected will not be analyzed.

Equipment List and Field Form:

The equipment necessary to complete the sampling effort at each of the outfall locations is also included within this attachment. For field set-up, it is necessary to get the rain gauge in place (on level ground and unobstructed by over hanging material) as soon as possible to take accurate rain levels. Specific equipment will be discussed within the sample components section below.

The form that will be filled out at each outfall location is the "Rainfall Event Monitoring Rain Gauge Technique Form". A blank form and an example of a filled out form are included within this attachment. The grab and first interval information and samples along with field measurements are recorded and collected at the same time. These samples should also be collected within the first 30 minutes of the rainfall event or within the first 30 minutes of the discharge. The subsequent intervals collected (2 up to 9) will be collected approximately every 20 minutes. The number of intervals will vary based on the acceptable rainfall event; however, no more than nine time intervals (three hours) will be sampled. Relevant information will be recorded on the "Rainfall Event Monitoring Rain Gauge Technique Form". It will be necessary to calculate information in order to accurately parse out a sample volume from each interval for the composite sample.

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Sampling Components:

Sampling at each of the outfall locations (4003 through 4006) consist of the following components (sample completion location):

1. Field measurements (field)
2. Grab samples are poured directly into individual sample bottles (field)
3. Grab samples are poured directly into bulk grab container (5 gallon polyethylene containers) (sample preparation area)
4. Composite samples are poured directly into individual sample containers – VOCs (field)
5. Composite samples are poured directly into bulk container (5 gallon polyethylene containers) (sample preparation area)

Each sampling component will be discussed in a separate subsection below.

Sample Interval	Sampling Component ^a	Corresponding Sample Table	Bottles Filled in Field	Sample Completion Location
1	Field measurements (1)	Rain Gauge Technique Form	Beaker (temporary)	Field
	Grab samples (2) (which will also include VOCs)	Table A.3-1	Individual sample bottles	Field
	Grab samples (3)	Table A.3-2	5 gallon polyethylene	Sample preparation area
	Composite samples (VOCs) – (4)	Table A.3-3	VOC vials	Field
	Composite samples (5)	Table A.3-3	5 gallon polyethylene	Sample preparation area
2 up to 9	Composite samples (VOCs) – (4)	Table A.3-3	VOC vials	Field
	Composite samples (5)	Table A.3-3	5 gallon polyethylene	Sample preparation area

^a(1) refers to sampling component descriptions below

1) Field measurements (first sample interval):

During the first interval, the Teflon dipper is used to gather water to put in a sample beaker. The pH and temperature are measured using the Horiba and then recorded on the “Rainfall Event Monitoring Rain Gauge Technique Form”.

2) Grab samples are poured directly into individual sample bottles (first sample interval):

Table A.3-1 identifies those samples in which individual sample bottles must be filled directly in the field. The Teflon dipper is used to fill all sample bottles that are collected directly in the field. The bottles will be checked for pH (as necessary) using pH strips and pH will be corrected as necessary using pipettes and preservatives (refer to Table A.3-1 for pH requirements).

3) Grab samples are poured directly into bulk grab container (first sample interval):

It is possible to fill some of the individual grab sample bottles at the sample preparation area (refer to Table A.3-2). In order to do this, first two 5 gallon polyethylene containers will be filled in the field using the Teflon dipper during the first sample interval (for a total of at least 24 liters of sample volume). The 5 gallon containers will then be brought back to the sample preparation area and individual sample bottles identified in Table A.3-2 will be filled.

4) Composite samples are poured directly into individual sample containers (VOCs) (all sample intervals):

VOCs are collected at each interval including the grab sample (2) and the sample vials are filled using the Teflon dipper. There should be four vials collected at each interval and then the vials are rubber banded and put into a plastic ziploc bag along with a piece of paper to identify from which interval they were collected (or use a sharpie to identify on the ziploc bag). The vials should also be wrapped in paper to prevent breakage.

A copy of the "Rainfall Event Monitoring Rain Gauge Technique Form" is attached to the chain of custody that is sent to the laboratory in order for them to prepare the VOC composite.

5) Composite samples are poured directly into bulk sample container (all sample intervals):

At each interval, two 5 gallon polyethylene containers will be filled using the Teflon dipper (for a total of at least 27 liters of sample volume) and labeled with respect to associated interval. The containers are brought back to the sample preparation area and the composite sample is made. The information filled out and calculated on the "Rainfall Event Monitoring Rain Gauge Technique Form" is used to determine the amount of volume to be used from each container (refer to last column of the "Rainfall Event Monitoring Rain Gauge Technique Form"). A graduated cylinder is used to measure the volume and the measured water is placed in the 10 gallon polyethylene container with a spigot. After the composite is made, the spigot is used to fill the sample bottles as identified in Table A.3-3.

Quality Control Samples:

Prior to sampling one of these locations, and at least after one location has already been sampled, one rinsate sample is collected from the 5 gallon polyethylene containers upon completion of one decontamination process. Additionally, a separate rinsate sample for mercury will be collected after three of the four locations are sampled. One VOC trip blank will also be collected for each location.

NPDES Outfalls 4003, 4004A, 4005, and 4006 Equipment Checklist

Equipment (for each outfall location)	Location Needed ^a	X
20 – 5 gallon polyethylene containers ^b 2 for grab and 18 for composite.	Field then SPA	
1 – 10 gallon polyethylene container with a spigot ^b	SPA	
2 – 1 liter teflon dippers with extension rods ^b	Field	
2 graduated cylinders ^b	SPA	
Vinyl or nitrile gloves	Field/SPA	
DI water in container with spigot	SPA	
Horiba Water Quality Meter ^c	Field	
Sample beaker(s) ^c	Field/SPA	
Sample containers	Field/SPA	
Preservatives (H ₂ SO ₄ , HNO ₃ , and NaOH vials)	Field/SPA	
Disposable pipettes	Field/SPA	
pH strips	Field/SPA	
Chain of custody tape	Field/SPA	
Clear tape	Field/SPA	
FACTS sample labels and pickup worksheets	Field/SPA	
Sample collection logs	Field/SPA	
Chain of custody records	Field/SPA	
Sample coolers	Field/SPA	
Ice	Field/SPA	
Ziplock plastic bags for VOCs	Field/SPA	
Large plastic bags	Field	
Sharpies	Field/SPA	
PSP/procedures	Field/SPA	
Eye wash station	Field/SPA	
3 lanterns	Field/SPA	
2 – 5 gallon buckets (for carrying equipment, etc.)	Field	
Liquinox	SPA	
Rain gauge and level	Field	
Rubberbands	Field	
Required PPE and rainwear	Field	

^aSPA = Sample Preparation Area

^bIndicates equipment that must be decontaminated with liquinox prior to sample collection.

^cIndicates equipment that must be decontaminated with deionized water prior to sample collection.

Location: _____ Completed by: _____ Date: _____

4025

**RAINFALL EVENT MONITORING
RAIN GAUGE TECHNIQUE FORM**

Name (s)/Badge # _____

Date of Rainfall Event _____

NPDES Outfall Number _____

Composite Volume Needed: 27 liters (27000 milliliters)

Sample Interval	Time	Rain Gauge Reading	Rain Level	Percent of Event	Volume to Composite
Grab ^a	_____	_____	_____	_____	_____
1 ^b	_____	_____	_____	_____	_____
2 ^c	_____	_____	_____	_____	_____
3	_____	_____	_____	_____	_____
4	_____	_____	_____	_____	_____
5	_____	_____	_____	_____	_____
6	_____	_____	_____	_____	_____
7	_____	_____	_____	_____	_____
8	_____	_____	_____	_____	_____
9	_____	_____	_____	_____	_____
FINAL READING	_____	_____	_____	_____	_____
TOTALS	_____	_____	_____	_____	_____

^aA 24 liter sample volume is required for Table A.3-3 constituents, within the first 30 minutes of discharge.

^bThe grab sample and first grab aliquot should be taken at the same time period. An attempt will be made to collect 27 liters at every time interval (approximately every 20 minutes).

^cGrab aliquots 2 through 9 will be taken approximately every 20 minutes.

	<u>Time</u>	<u>Rain Gauge Reading</u>	<u>Previous Acceptable Rainfall Event</u>	
			<u>Date</u>	<u>Time</u>
Storm End	_____	_____	_____	_____
Storm Begin	_____	_____	_____	_____
Storm Duration	_____ hours	_____	_____	_____

Grab Sample Temperature: _____

Grab Sample pH: _____

SAMPLE
RAINFALL EVENT MONITORING
RAIN GAUGE TECHNIQUE FORM

Name (s)/Badge # John Doe (1111), Jan Doe (2222)

Date of Rainfall Event 11/28/01
NPDES Outfall Number 4003

Composite Volume Needed: 27 liters (27000 milliliters)

Sample Interval	Time	Rain Gauge Reading	Rain Level	Percent of Event	Volume to Composite
Grab ^a	<u>1145</u>	<u>.22</u>	<u>—</u>	<u>NA</u>	<u>NA</u>
1 ^b	<u>1145</u>	<u>.22</u>	<u>.22</u>	<u>67</u>	<u>18090 ML</u>
2 ^c	<u>1205</u>	<u>.23</u>	<u>.01</u>	<u>3</u>	<u>810 ML</u>
3	<u>1225</u>	<u>.27</u>	<u>.04</u>	<u>12</u>	<u>3240 ML</u>
4	<u>1245</u>	<u>.28</u>	<u>.01</u>	<u>3</u>	<u>810 ML</u>
5	<u>1305</u>	<u>.29</u>	<u>.01</u>	<u>3</u>	<u>810 ML</u>
6	<u>1325</u>	<u>.30</u>	<u>.01</u>	<u>3</u>	<u>810 ML</u>
7	<u>1345</u>	<u>.31</u>	<u>.01</u>	<u>3</u>	<u>810 ML</u>
8	<u>1405</u>	<u>.32</u>	<u>.01</u>	<u>3</u>	<u>810 ML</u>
9	<u>1425</u>	<u>.33</u>	<u>.01</u>	<u>3</u>	<u>810 ML</u>
	FINAL READING	<u>.33</u>			
	TOTALS		<u>.33</u>	<u>100</u>	<u>27000 ML</u>

^aA 24 liter sample volume is required for Table A.3-3 constituents, within the first 30 minutes of discharge.

^bThe grab sample and first grab aliquot should be taken at the same time period. An attempt will be made to collect 27 liters at every time interval (approximately every 20 minutes).

^cGrab aliquots 2 through 9 will be taken approximately every 20 minutes.

	<u>Time</u>	<u>Rain Gauge Reading</u>	<u>Previous Acceptable Rainfall Event</u>	
Storm End	<u>1445</u>	<u>.33</u>	Date	Time
Storm Begin	<u>1125</u>		<u>11/15/01</u>	<u>1000</u>
Storm Duration	<u>3.3</u> hours			

Grab Sample Temperature: 15 °C

Grab Sample pH: 7.0

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OUTFALL 4003

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**TABLE A.3-1
NPDES PERMIT RENEWAL – CONSTITUENTS
AT STORMWATER DISCHARGE SAMPLE LOCATION
(OUTFALL 4003 FIELD)
(ON-SITE AND OFF-SITE GRAB SAMPLES)**

Constituent	Holding Time	Chemical Preservative	Container (s) Required	ASL	Analyzed On Site or Off Site (sample delivery location)	Collected ^a
VOC	14 days	Cool 4°C	4 – 40 ml glass vials with Teflon lined septum cap (zero head space)	B	Off Site (SPL)	
Cyanide, free	14 days	Cool 4°C; NaOH, pH > 12 (0.6 grams ascorbic acid) ^b	1 – 500 ml plastic & 1 – 1000 ml plastic	B	Off Site (SPL)	
Total residual chlorine	Analyze immediately	None	1 – 250 ml plastic	B	On Site (AWWT lab)	
Mercury	28 days	Cool 4°C	1 – 500 ml glass (provided by contract lab)	B	Off Site (SPL)	
BOD – 5 day	48 hours	Cool 4°C	1 – 1 liter plastic	B	On Site (AWWT lab)	
TSS	7 days	Cool 4°C	1 – 1 liter plastic	B	On Site (AWWT lab)	
CBOD – 5 day	48 hours	Cool 4°C	1 – 1 liter plastic	B	On Site (AWWT lab)	
Fecal coliform	6 hours	Cool 4°C	2 – 100 ml or 1 – 250 ml sterile plastic bag	B	On Site (AWWT lab)	
Oil & grease	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	2 – 1 liter glass with Teflon lined cap	B	On Site/ALS (SPL)	

^aPlease check off that the sample was collected.

^bIn the presence of residual chlorine

- Notes:
- 1) These constituents are poured directly into the individual sample bottles in the field.
 - 2) Make sure the VOC vials are placed into the VOC cooler.
 - 3) Place the on-site constituents into a plastic bag and place the off-site constituents into the VOC cooler.
 - 4) Transfer the on-site constituents (they should be in the plastic bag per item #3) into a cooler and deliver them to the on-site laboratory because many of the constituents have short holding times. Remind the on-site laboratory that the BOD and TSS composite samples will be delivered later.

**TABLE A.3-2
NPDES PERMIT RENEWAL – CONSTITUENTS
AT STORMWATER DISCHARGE SAMPLE LOCATION
(OUTFALL 4003 SAMPLE PREPARATION AREA)
(ON-SITE AND OFF-SITE GRAB SAMPLES)**

Constituent	Holding Time	Chemical Preservative	Container (s) Required	ASL	Analyzed On Site or Off Site (sample delivery location)	Collected ^a
Semi-Volatile Organics (pentachlorophenol)	7 days	Cool 4°C	2 – 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Semi-Volatile Organics (benzidine)	7 days	Cool 4°C	2 – 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Pesticides/PCBs	7 days	Cool 4°C	3 – 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Dioxins (2,3,7,8-TCDD)	7 days	Cool 4°C	2 – 2 liter glass with Teflon lined cap	B	Off Site (SPL)	
Total metals (excluding mercury)	28 days	HNO ₃ , pH < 2	1 – 1000 ml plastic	B	On Site (ALS lab)	
Fluoride	28 days	None	1 – 500 ml plastic	B	On Site/ALS (SPL)	
Sulfate (as SO ₄)	28 days	Cool 4°C	1 – 500 ml plastic	B	On Site (AWWT lab)	
Ammonia (as N)	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 500 ml plastic	B	On Site/ALS (SPL)	
Total Kjeldahl Nitrogen (TKN)	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 1000 ml plastic	B	Off Site (SPL)	
Phosphorus, total	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 500 ml plastic	B	On Site (AWWT lab)	
COD; nitrate/nitrite (as N)	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 1000 ml plastic	B	Off Site (SPL)	
Uranium, total	6 months	HNO ₃ , pH < 2	1 – 250 ml plastic	B	On Site (AWWT lab)	

^aPlease check off that the sample was collected.

Note: 1) The total volume represented by these constituents is poured directly into 5 gallon polyethylene containers in the field and is later poured into the specified sample containers in the sample preparation area.

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**TABLE A.3-3
NPDES PERMIT RENEWAL – CONSTITUENTS
AT STORMWATER DISCHARGE SAMPLE LOCATION
(OUTFALL 4003 SAMPLE PREPARATION AREA)
(ON-SITE AND OFF-SITE COMPOSITE SAMPLES)**

Constituent	Holding Time	Chemical Preservative	Container (s) Required	ASL	Analyzed On Site or Off Site (sample delivery location)	Collected ^a
VOC (4 vials per sample interval)	14 days	Cool 4°C	4 – 40 ml glass vials with Teflon lined septum cap (zero head space)	B	Off Site (SPL)	
Semi-Volatile Organics (pentachlorophenol)	7 days	Cool 4°C	2 – 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Semi-Volatile Organics (benzidine)	7 days	Cool 4°C	2 – 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Dioxins (2,3,7,8-TCDD)	7 days	Cool 4°C	2 – 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Pesticides/PCBs	7 days	Cool 4°C	3 – 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Total metals (excluding mercury)	28 days	HNO ₃ , pH < 2	1 – 1000 ml plastic	B	On Site/ALS (SPL)	
Mercury	28 days	Cool 4°C	1 – 500 ml glass (provided by contract lab)	B	Off Site (SPL)	
BOD – 5 day	48 hours	Cool 4°C	1 – 1 liter plastic	B	On Site (AWWT lab)	
TSS	7 days	Cool 4°C	1 – 1 liter plastic	B	On Site (AWWT lab)	
CBOD – 5 day	48 hours	Cool 4°C	1 – 1 liter plastic	B	On Site (AWWT lab)	
Fluoride	28 days	None	1 – 500 ml plastic	B	On Site (AWWT lab)	
Sulfate (as SO ₄)	28 days	Cool 4°C	1 – 500 ml plastic	B	On Site (AWWT lab)	
Ammonia (as N)	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 500 ml plastic	B	On Site/ALS (SPL)	
Total Kjeldahl Nitrogen (TKN);	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 1000 ml plastic	B	Off Site (SPL)	
Phosphorus, total	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 500 ml plastic	B	On Site (AWWT lab)	
COD; nitrate/nitrite (as N)	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 1000 ml plastic	B	Off Site (SPL)	
Uranium, total	6 months	HNO ₃ , pH < 2	1 – 250 ml plastic	B	On Site (AWWT lab)	

^aPlease check off that the sample was collected.

- Notes: 1) Make sure that all of the VOC composite increment vials are placed into the VOC cooler.
2) Deliver the BOD, CBOD, and sulfite composite samples to the on-site laboratory as soon as possible.

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TABLE A.3-1 NPDES PERMIT RENEWAL – CONSTITUENTS AT STORM WATER DISCHARGE SAMPLE LOCATION (OUTFALL 4003 FIELD) (VOC TRIP BLANK SAMPLE)						
Constituent	Holding Time	Chemical Preservative	Container (s) Required	ASL	Analyzed On Site or Off Site (sample delivery location)	Collected ^a
VOC	14 days	Cool 4°C	4 – 40 ml glass vials with Teflon lined septum cap (zero head space)	B	Off Site (SPL)	

^aPlease check off that the VOC trip blank sample was collected.

Notes: 1) Make sure that the VOC trip blank vials are placed into the VOC cooler.

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OUTFALL 4004A

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**TABLE A.3-1
 NPDES PERMIT RENEWAL – CONSTITUENTS
 AT STORMWATER DISCHARGE SAMPLE LOCATIONS
 (OUTFALL 4004A FIELD)
 (ON-SITE AND OFF-SITE GRAB SAMPLES)**

Constituent	Holding Time	Chemical Preservative	Container (s) Required	ASL	Analyzed On Site or Off Site (sample delivery location)	Collected ^a
VOC	14 days	Cool 4°C	4 – 40 ml glass vials with Teflon lined septum cap (zero head space)	B	Off Site (SPL)	
Cyanide, free	14 days	Cool 4°C; NaOH, pH > 12 (0.6 grams ascorbic acid) ^b	1 – 500 ml plastic & 1 – 1000 ml plastic	B	Off Site (SPL)	
Total residual chlorine	Analyze immediately	None	1 – 250 ml plastic	B	On Site (AWWT lab)	
Mercury	28 days	Cool 4°C	1 – 500 ml glass (provided by contract lab)	B	Off Site (SPL)	
BOD – 5 day	48 hours	Cool 4°C	1 – 1 liter plastic	B	On Site (AWWT lab)	
TSS	7 days	Cool 4°C	1 – 1 liter plastic	B	On Site (AWWT lab)	
CBOD – 5 day	48 hours	Cool 4°C	1 – 1 liter plastic	B	On Site (AWWT lab)	
Fecal coliform	6 hours	Cool 4°C	2 – 100 ml or 1 – 250 ml sterile plastic bag	B	On Site (AWWT lab)	
Oil & grease	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	2 – 1 liter glass with Teflon lined cap	B	On Site/ALS (SPL)	

^aPlease check off that the sample was collected.

^bIn the presence of residual chlorine

- Notes:
- 1) These constituents are poured directly into the individual sample bottles in the field.
 - 2) Make sure the VOC vials are placed into the VOC cooler.
 - 3) Place the on-site constituents into a plastic bag and place the off-site constituents into the VOC cooler.
 - 4) Transfer the on-site constituents (they should be in the plastic bag per item #3) into a cooler and deliver them to the on-site laboratory because many of the constituents have short holding times. Remind the on-site laboratory that the BOD and TSS composite samples will be delivered later.

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**TABLE A.3-2
NPDES PERMIT RENEWAL – CONSTITUENTS
AT STORMWATER DISCHARGE SAMPLE LOCATIONS
(OUTFALL 4004A SAMPLE PREPARATION AREA)
(ON-SITE AND OFF-SITE GRAB SAMPLES)**

Constituent	Holding Time	Chemical Preservative	Container (s) Required	ASL	Analyzed On Site or Off Site (sample delivery location)	Collected ^a
Semi-Volatile Organics (pentachloro-phenol)	7 days	Cool 4°C	2 – 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Semi-Volatile Organics (benzidine)	7 days	Cool 4°C	2 – 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Pesticides/PCBs	7 days	Cool 4°C	3 – 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Dioxins (2,3,7,8-TCDD)	7 days	Cool 4°C	2 – 2 liter glass with Teflon lined cap	B	Off Site (SPL)	
Total metals (excluding mercury)	28 days	HNO ₃ , pH < 2	1 – 1000 ml plastic	B	On Site (ALS lab)	
Fluoride	28 days	None	1 – 500 ml plastic	B	On Site/ALS (SPL)	
Sulfate (as SO ₄)	28 days	Cool 4°C	1 – 500 ml plastic	B	On Site (AWWT lab)	
Ammonia (as N)	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 500 ml plastic	B	On Site/ALS (SPL)	
Total Kjeldahl Nitrogen (TKN)	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 1000 ml plastic	B	Off Site (SPL)	
Phosphorus, total	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 500 ml plastic	B	On Site (AWWT lab)	
COD; nitrate/nitrite (as N)	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 1000 ml plastic	B	Off Site (SPL)	
Uranium, total	6 months	HNO ₃ , pH < 2	1 – 250 ml plastic	B	On Site (AWWT lab)	

^aPlease check off that the sample was collected.

Note: 1) The total volume represented by these constituents is poured directly into 5 gallon polyethylene containers in the field and is later poured into the specified sample containers in the sample preparation area.

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**TABLE A.3-3
NPDES PERMIT RENEWAL – CONSTITUENTS
AT STORMWATER DISCHARGE SAMPLE LOCATIONS
(OUTFALL 4004A SAMPLE PREPARATION AREA)
(ON-SITE AND OFF-SITE COMPOSITE SAMPLES)**

Constituent	Holding Time	Chemical Preservative	Container (s) Required	ASL	Analyzed On Site or Off Site (sample delivery location)	Collected ^a
VOC (4 vials per sample interval)	14 days	Cool 4°C	4 – 40 ml glass vials with Teflon lined septum cap (zero head space)	B	Off Site (SPL)	
Semi-Volatile Organics (pentachlorophenol)	7 days	Cool 4°C	2 – 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Semi-Volatile Organics (benzidine)	7 days	Cool 4°C	2 – 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Dioxins (2,3,7,8-TCDD)	7 days	Cool 4°C	2 – 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Pesticides/PCBs	7 days	Cool 4°C	3 – 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Total metals (excluding mercury)	28 days	HNO ₃ , pH < 2	1 – 1000 ml plastic	B	On Site/ALS (SPL)	
Mercury	28 days	Cool 4°C	1 – 500 ml glass (provided by contract lab)	B	Off Site (SPL)	
BOD – 5 day	48 hours	Cool 4°C	1 – 1 liter plastic	B	On Site (AWWT lab)	
TSS	7 days	Cool 4°C	1 – 1 liter plastic	B	On Site (AWWT lab)	
CBOD – 5 day	48 hours	Cool 4°C	1 – 1 liter plastic	B	On Site (AWWT lab)	
Fluoride	28 days	None	1 – 500 ml plastic	B	On Site (AWWT lab)	
Sulfate (as SO ₄)	28 days	Cool 4°C	1 – 500 ml plastic	B	On Site (AWWT lab)	
Ammonia (as N)	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 500 ml plastic	B	On Site/ASL (SPL)	
Total Kjeldahl Nitrogen (TKN)	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 1000 ml plastic	B	Off Site (SPL)	
Phosphorus, total	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 500 ml plastic	B	On Site (AWWT lab)	
COD; nitrate/nitrite (as N)	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 1000 ml plastic	B	Off Site (SPL)	
Uranium, total	6 months	HNO ₃ , pH < 2	1 – 250 ml plastic	B	On Site (AWWT lab)	

^aPlease check off that the sample was collected.

- Notes: 1) Make sure that all of the VOC composite increment vials are placed into the VOC cooler.
2) Deliver the BOD, CBOD, and sulfite composite samples to the on-site laboratory as soon as possible.

**TABLE A.3-1
NPDES PERMIT RENEWAL – CONSTITUENTS
AT STORM WATER DISCHARGE SAMPLE LOCATION
(OUTFALL 4004A FIELD)
(VOC TRIP BLANK SAMPLE)**

Constituent	Holding Time	Chemical Preservative	Container (s) Required	ASL	Analyzed On Site or Off Site (sample delivery location)	Collected ^v a
VOC	14 days	Cool 4°C	4 – 40 ml glass vials with Teflon lined septum cap (zero head space)	B	Off Site (SPL)	

^aPlease check off that the VOC trip blank sample was collected.

Notes: 1) Make sure that the VOC trip blank vials are placed into the VOC cooler.

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OUTFALL 4005

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**TABLE A.3-1
NPDES PERMIT RENEWAL – CONSTITUENTS
AT STORMWATER DISCHARGE SAMPLE LOCATIONS
(OUTFALL 4005 FIELD)
(ON-SITE AND OFF-SITE GRAB SAMPLES)**

Constituent	Holding Time	Chemical Preservative	Container (s) Required	ASL	Analyzed On Site or Off Site (sample delivery location)	Collected ^a
VOC	14 days	Cool 4°C	4 – 40 ml glass vials with Teflon lined septum cap (zero head space)	B	Off Site (SPL)	
Cyanide, free	14 days	Cool 4°C; NaOH, pH > 12 (0.6 grams ascorbic acid) ^b	1 – 500 ml plastic & 1 – 1000 ml plastic	B	Off Site (SPL)	
Total residual chlorine	Analyze immediately	None	1 – 250 ml plastic	B	On Site (AWWT lab)	
Mercury	28 days	Cool 4°C	1 – 500 ml glass (provided by contract lab)	B	Off Site (SPL)	
BOD – 5 day	48 hours	Cool 4°C	1 – 1 liter plastic	B	On Site (AWWT lab)	
TSS	7 days	Cool 4°C	1 – 1 liter plastic	B	On Site (AWWT lab)	
CBOD – 5 day	48 hours	Cool 4°C	1 – 1 liter plastic	B	On Site (AWWT lab)	
Fecal coliform	6 hours	Cool 4°C	2 – 100 ml or 1 – 250 ml sterile plastic bag	B	On Site (AWWT lab)	
Oil & grease	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	2 – 1 liter glass with Teflon lined cap	B	On Site/ALS (SPL)	

^aPlease check off that the sample was collected.

^bIn the presence of residual chlorine

- Notes:
- 1) These constituents are poured directly into the individual sample bottles in the field.
 - 2) Make sure the VOC vials are placed into the VOC cooler.
 - 3) Place the on-site constituents into a plastic bag and place the off-site constituents into the VOC cooler.
 - 4) Transfer the on-site constituents (they should be in the plastic bag per item #3) into a cooler and deliver them to the on-site laboratory because many of the constituents have short holding times. Remind the on-site laboratory that the BOD and TSS composite samples will be delivered later.

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**TABLE A.3-2
NPDES PERMIT RENEWAL – CONSTITUENTS
AT STORMWATER DISCHARGE SAMPLE LOCATIONS
(OUTFALL 4005 SAMPLE PREPARATION AREA)
(ON-SITE AND OFF-SITE GRAB SAMPLES)**

Constituent	Holding Time	Chemical Preservative	Container (s) Required	ASL	Analyzed On Site or Off Site (sample delivery location)	Collected ^a
Semi-Volatile Organics (pentachlorophenol)	7 days	Cool 4°C	2 – 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Semi-Volatile Organics (benzidine)	7 days	Cool 4°C	2 – 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Pesticides/PCBs	7 days	Cool 4°C	3 – 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Dioxins (2,3,7,8-TCDD)	7 days	Cool 4°C	2 – 2 liter glass with Teflon lined cap	B	Off Site (SPL)	
Total metals (excluding mercury)	28 days	HNO ₃ , pH < 2	1 – 1000 ml plastic	B	On Site (ALS lab)	
Fluoride	28 days	None	1 – 500 ml plastic	B	On Site/ALS (SPL)	
Sulfate (as SO ₄)	28 days	Cool 4°C	1 – 500 ml plastic	B	On Site (AWWT lab)	
Ammonia (as N)	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 500 ml plastic	B	On Site/ALS (SPL)	
Total Kjeldahl Nitrogen (TKN)	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 1000 ml plastic	B	Off Site (SPL)	
Phosphorus, total	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 500 ml plastic	B	On Site (AWWT lab)	
COD; nitrate/nitrite (as N)	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 1000 ml plastic	B	Off Site (SPL)	
Uranium, total	6 months	HNO ₃ , pH < 2	1 – 250 ml plastic	B	On Site (AWWT lab)	

^aPlease check off that the sample was collected.

Note: 1) The total volume represented by these constituents is poured directly into 5 gallon polyethylene containers in the field and is later poured into the specified sample containers in the sample preparation area.

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**TABLE A.3-3
NPDES PERMIT RENEWAL – CONSTITUENTS
AT STORMWATER DISCHARGE SAMPLE LOCATIONS
(OUTFALL 4005 SAMPLE PREPARATION AREA)
(ON-SITE AND OFF-SITE COMPOSITE SAMPLES)**

Constituent	Holding Time	Chemical Preservative	Container (s) Required	ASL	Analyzed On Site or Off Site (sample delivery location)	Collected ^a
VOC (4 vials per sample interval)	14 days	Cool 4°C	4 – 40 ml glass vials with Teflon lined septum cap (zero head space)	B	Off Site (SPL)	
Semi-Volatile Organics (pentachlorophenol)	7 days	Cool 4°C	2 – 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Semi-Volatile Organics (benzidine)	7 days	Cool 4°C	2 – 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Dioxins (2,3,7,8-TCDD)	7 days	Cool 4°C	2 – 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Pesticides/PCBs	7 days	Cool 4°C	3 – 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Total metals (excluding mercury)	28 days	HNO ₃ , pH < 2	1 – 1000 ml plastic	B	On Site/ALS (SPL)	
Mercury	28 days	Cool 4°C	1 – 500 ml glass (provided by contract lab)	B	Off Site (SPL)	
BOD – 5 day	48 hours	Cool 4°C	1 – 1 liter plastic	B	On Site (AWWT lab)	
TSS	7 days	Cool 4°C	1 – 1 liter plastic	B	On Site (AWWT lab)	
CBOD – 5 day	48 hours	Cool 4°C	1 – 1 liter plastic	B	On Site (AWWT lab)	
Fluoride	28 days	None	1 – 500 ml plastic	B	On Site (AWWT lab)	
Sulfate (as SO ₄)	28 days	Cool 4°C	1 – 500 ml plastic	B	On Site (AWWT lab)	
Ammonia (as N)	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 500 ml plastic	B	On Site/ALS (SPL)	
Total Kjeldahl Nitrogen (TKN)	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 1000 ml plastic	B	Off Site (SPL)	
Phosphorus, total	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 500 ml plastic	B	On Site (AWWT lab)	
COD; nitrate/nitrite (as N)	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 1000 ml plastic	B	Off Site (SPL)	
Uranium, total	6 months	HNO ₃ , pH < 2	1 – 250 ml plastic	B	On Site (AWWT lab)	

^aPlease check off that the sample was collected.

- Notes: 1) Make sure that all of the VOC composite increment vials are placed into the VOC cooler.
2) Deliver the BOD, CBOD, and sulfite composite samples to the on-site laboratory as soon as possible.

**TABLE A.3-1
 NPDES PERMIT RENEWAL – CONSTITUENTS
 AT STORM WATER DISCHARGE SAMPLE LOCATION
 (OUTFALL 4005 FIELD)
 (VOC TRIP BLANK SAMPLE)**

Constituent	Holding Time	Chemical Preservative	Container (s) Required	ASL	Analyzed On Site or Off Site (sample delivery location)	Collected ^v a
VOC	14 days	Cool 4°C	4 – 40 ml glass vials with Teflon lined septum cap (zero head space)	B	Off Site (SPL)	

^aPlease check off that the VOC trip blank sample was collected.

Notes: 1) Make sure that the VOC trip blank vials are placed into the VOC cooler.

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OUTFALL 4006

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**TABLE A.3-1
NPDES PERMIT RENEWAL – CONSTITUENTS
AT STORMWATER DISCHARGE SAMPLE LOCATIONS
(OUTFALL 4006 FIELD)
(ON-SITE AND OFF-SITE GRAB SAMPLES)**

Constituent	Holding Time	Chemical Preservative	Container (s) Required	ASL	Analyzed On Site or Off Site (sample delivery location)	Collected ^a
VOC	14 days	Cool 4°C	4 – 40 ml glass vials with Teflon lined septum cap (zero head space)	B	Off Site (SPL)	
Cyanide, free	14 days	Cool 4°C; NaOH, pH > 12 (0.6 grams ascorbic acid) ^b	1 – 500 ml plastic & 1 – 1000 ml plastic	B	Off Site (SPL)	
Total residual chlorine	Analyze immediately	None	1 – 250 ml plastic	B	On Site (AWWT lab)	
Mercury	28 days	Cool 4°C	1 – 500 ml glass (provided by contract lab)	B	Off Site (SPL)	
BOD – 5 day	48 hours	Cool 4°C	1 – 1 liter plastic	B	On Site (AWWT lab)	
TSS	7 days	Cool 4°C	1 – 1 liter plastic	B	On Site (AWWT lab)	
CBOD – 5 day	48 hours	Cool 4°C	1 – 1 liter plastic	B	On Site (AWWT lab)	
Fecal coliform	6 hours	Cool 4°C	2 – 100 ml or 1 – 250 ml sterile plastic bag	B	On Site (AWWT lab)	
Oil & grease	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	2 – 1 liter glass with Teflon lined cap	B	On Site/ALS (SPL)	

^aPlease check off that the sample was collected.

^bIn the presence of residual chlorine

- Notes:
- 1) These constituents are poured directly into the individual sample bottles in the field.
 - 2) Make sure the VOC vials are placed into the VOC cooler.
 - 3) Place the on-site constituents into a plastic bag and place the off-site constituents into the VOC cooler.
 - 4) Transfer the on-site constituents (they should be in the plastic bag per item #3) into a cooler and deliver them to the on-site laboratory because many of the constituents have short holding times. Remind the on-site laboratory that the BOD and TSS composite samples will be delivered later.

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**TABLE A.3-2
NPDES PERMIT RENEWAL – CONSTITUENTS
AT STORMWATER DISCHARGE SAMPLE LOCATIONS
(OUTFALL 4006 SAMPLE PREPARATION AREA)
(ON-SITE AND OFF-SITE GRAB SAMPLES)**

Constituent	Holding Time	Chemical Preservative	Container (s) Required	ASL	Analyzed On Site or Off Site (sample delivery location)	Collected ^a
Semi-Volatile Organics (pentachloro-phenol)	7 days	Cool 4°C	2 – 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Semi-Volatile Organics (benzidine)	7 days	Cool 4°C	2 – 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Pesticides/PCBs	7 days	Cool 4°C	3 – 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Dioxins (2,3,7,8-TCDD)	7 days	Cool 4°C	2 – 2 liter glass with Teflon lined cap	B	Off Site (SPL)	
Total metals (excluding mercury)	28 days	HNO ₃ , pH < 2	1 – 1000 ml plastic	B	On Site (ALS lab)	
Fluoride	28 days	None	1 – 500 ml plastic	B	On Site/ALS (SPL)	
Sulfate (as SO ₄)	28 days	Cool 4°C	1 – 500 ml plastic	B	On Site (AWWT lab)	
Ammonia (as N)	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 500 ml plastic	B	On Site/ALS (SPL)	
Total Kjeldahl Nitrogen (TKN)	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 1000 ml plastic	B	Off Site (SPL)	
Phosphorus, total	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 500 ml plastic	B	On Site (AWWT lab)	
COD; nitrate/nitrite (as N)	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 1000 ml plastic	B	Off Site (SPL)	
Uranium, total	6 months	HNO ₃ , pH < 2	1 – 250 ml plastic	B	On Site (AWWT lab)	

^aPlease check off that the sample was collected.

Note: 1) The total volume represented by these constituents is poured directly into 5 gallon polyethylene containers in the field and is later poured into the specified sample containers in the sample preparation area.

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**TABLE A.3-3
NPDES PERMIT RENEWAL - CONSTITUENTS
AT STORMWATER DISCHARGE SAMPLE LOCATIONS
(OUTFALL 4006 SAMPLE PREPARATION AREA)
(ON-SITE AND OFF-SITE COMPOSITE SAMPLES)**

Constituent	Holding Time	Chemical Preservative	Container (s) Required	ASL	Analyzed On Site or Off Site (sample delivery location)	Collected ^a
VOC (4 vials per sample interval)	14 days	Cool 4°C	4 - 40 ml glass vials with Teflon lined septum cap (zero head space)	B	Off Site (SPL)	
Semi-Volatile Organics (pentachlorophenol)	7 days	Cool 4°C	2 - 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Semi-Volatile Organics (benzidine)	7 days	Cool 4°C	2 - 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Dioxins (2,3,7,8-TCDD)	7 days	Cool 4°C	2 - 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Pesticides/PCBs	7 days	Cool 4°C	3 - 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Total metals (excluding mercury)	28 days	HNO ₃ , pH < 2	1 - 1000 ml plastic	B	On Site/ALS (SPL)	
Mercury	28 days	Cool 4°C	1 - 500 ml glass (provided by contract lab)	B	Off Site (SPL)	
BOD - 5 day	48 hours	Cool 4°C	1 - 1 liter plastic	B	On Site (AWWT lab)	
TSS	7 days	Cool 4°C	1 - 1 liter plastic	B	On Site (AWWT lab)	
CBOD - 5 day	48 hours	Cool 4°C	1 - 1 liter plastic	B	On Site (AWWT lab)	
Fluoride	28 days	None	1 - 500 ml plastic	B	On Site (AWWT lab)	
Sulfate (as SO ₄)	28 days	Cool 4°C	1 - 500 ml plastic	B	On Site (AWWT lab)	
Ammonia (as N)	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 - 500 ml plastic	B	On Site/ASL (SPL)	
Total Kjeldahl Nitrogen (TKN)	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 - 1000 ml plastic	B	Off Site (SPL)	
Phosphorus, total	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 - 500 ml plastic	B	On Site (AWWT lab)	
COD; nitrate/nitrite (as N)	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 - 1000 ml plastic	B	Off Site (SPL)	
Uranium, total	6 months	HNO ₃ , pH < 2	1 - 250 ml plastic	B	On Site (AWWT lab)	

^aPlease check off that the sample was collected.

Notes: 1) Make sure that all of the VOC composite increment vials are placed into the VOC cooler.
2) Deliver the BOD, CBOD, and sulfate composite samples to the on-site laboratory as soon as possible.

TABLE A.3-1
NPDES PERMIT RENEWAL – CONSTITUENTS
AT STORM WATER DISCHARGE SAMPLE LOCATION
(OUTFALL 4006 FIELD)
(VOC TRIP BLANK SAMPLE)

Constituent	Holding Time	Chemical Preservative	Container (s) Required	ASL	Analyzed On Site or Off Site (sample delivery location)	Collected ^a
VOC	14 days	Cool 4°C	4 – 40 ml glass vials with Teflon lined septum cap (zero head space)	B	Off Site (SPL)	

^aPlease check off that the VOC trip blank sample was collected.

Notes: 1) Make sure that the VOC trip blank vials are placed into the VOC cooler.

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RINSATE SAMPLES

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**TABLE A.3-3
NPDES PERMIT RENEWAL – CONSTITUENTS
AT STORM WATER DISCHARGE SAMPLE LOCATION
(SAMPLE PREPARATION AREA)
(MERCURY RINSATE COMPOSITE SAMPLE)**

Constituent	Holding Time	Chemical Preservative	Container (s) Required	ASL	Analyzed On Site or Off Site (sample delivery location)	Collected ^a
Mercury	28 days	Cool 4°C	1 – 500 ml glass (provided by contract lab)	B	Off Site (SPL)	

^aPlease check off that the mercury rinsate sample was collected from the 5 gallon polyethylene container upon completion of one decontamination process.

Outfall Location: _____

**TABLE A.3-3
NPDES PERMIT RENEWAL – CONSTITUENTS
AT STORM WATER DISCHARGE SAMPLE LOCATION
(SAMPLE PREPARATION AREA)
(MERCURY RINSATE COMPOSITE SAMPLE)**

Constituent	Holding Time	Chemical Preservative	Container (s) Required	ASL	Analyzed On Site or Off Site (sample delivery location)	Collected ^{1/2}
Mercury	28 days	Cool 4°C	1 – 500 ml glass (provided by contract lab)	B	Off Site (SPL)	

^{1/2}Please check off that the mercury rinsate sample was collected from the 5 gallon polyethylene container upon completion of one decontamination process.

Outfall Location: _____

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**TABLE A.3-3
NPDES PERMIT RENEWAL – CONSTITUENTS
AT STORM WATER DISCHARGE SAMPLE LOCATION
(SAMPLE PREPARATION AREA)
(MERCURY RINSATE COMPOSITE SAMPLE)**

Constituent	Holding Time	Chemical Preservative	Container (s) Required	ASL	Analyzed On Site or Off Site (sample delivery location)	Collected ^a
Mercury	28 days	Cool 4°C	1 – 500 ml glass (provided by contract lab)	B	Off Site (SPL)	

^aPlease check off that the mercury rinsate sample was collected from the 5 gallon polyethylene container upon completion of one decontamination process.

Outfall Location: _____

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**TABLE A.3-3
NPDES PERMIT RENEWAL – CONSTITUENTS
AT STORMWATER DISCHARGE SAMPLE LOCATIONS
(SAMPLE PREPARATION AREA)
(ON-SITE AND OFF-SITE COMPOSITE RINSATE SAMPLES)**

Constituent	Holding Time	Chemical Preservative	Container (s) Required	ASL	Analyzed On Site or Off Site (sample delivery location)	Collected ^a
Semi-Volatile Organics (pentachlorophenol)	7 days	Cool 4°C	2 – 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Semi-Volatile Organics (benzidine)	7 days	Cool 4°C	2 – 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Dioxins (2,3,7,8-TCDD)	7 days	Cool 4°C	2 – 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Pesticides/PCBs	7 days	Cool 4°C	3 – 2 liter amber glass with Teflon lined cap	B	Off Site (SPL)	
Total metals (excluding mercury)	28 days	HNO ₃ , pH < 2	1 – 1000 ml plastic	B	On Site/ALS (SPL)	
Mercury	28 days	Cool 4°C	1 – 500 ml glass (provided by contract lab)	B	Off Site (SPL)	
BOD – 5 day	48 hours	Cool 4°C	1 – 1 liter plastic	B	On Site (AWWT lab)	
TSS	7 days	Cool 4°C	1 – 1 liter plastic	B	On Site (AWWT lab)	
CBOD – 5 day	48 hours	Cool 4°C	1 – 1 liter plastic	B	On Site (AWWT lab)	
Fluoride	28 days	None	1 – 500 ml plastic	B	On Site (AWWT lab)	
Sulfate (as SO ₄)	28 days	Cool 4°C	1 – 500 ml plastic	B	On Site (AWWT lab)	
Ammonia (as N)	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 500 ml plastic	B	On Site/ALS (SPL)	
Total Kjeldahl Nitrogen (TKN)	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 1000 ml plastic	B	Off Site (SPL)	
Phosphorus, total	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 500 ml plastic	B	On Site (AWWT lab)	
COD; nitrate/nitrite (as N)	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	1 – 1000 ml plastic	B	Off Site (SPL)	
Uranium, total	6 months	HNO ₃ , pH < 2	1 – 250 ml plastic	B	On Site (AWWT lab)	

^aPlease check off that the rinsate sample was collected.

Notes: 1) Deliver the BOD, CBOD, and sulfite composite samples to the on-site laboratory as soon as possible.

Outfall Location: _____

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Fernald Environmental Management Project

Appendix A
Data Quality Objectives

Title: NPDES Permit Renewal Application
Sampling and Analysis

Number: SW-006

Revision: 2

Effective Date: December 1, 2001

Contact Name: Brian Harootyan

Approval: 
James Chambers
DQO Coordinator

Date: 11/29/01

Approval: 
Frank Johnston
Environmental Compliance

Date: 11/30/2001

Rev. #	0	1	2	3	4	5
Effective Date:	4/18/97	5/14/97	12/1/01			

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DATA QUALITY OBJECTIVES
NPDES Permit Renewal Application Sampling and Analysis

Members of the Data Quality Objective (DQO) Team

The members of the DQO team include the manager of Environmental Compliance, individuals with experience in analytical methodology, quality assurance, and a manager of sampling activities.

1.0 Statement of Problem

The Fernald Environmental Management Project (FEMP) is discharging wastewater to the Great Miami River and is required to have a National Pollutant Discharge Elimination System (NPDES) Permit. Data are needed to demonstrate what levels are present for constituents specified for the NPDES Permit Renewal.

2.0 Identify the Decision

The decision that must be determined is the collected data sufficient for the NPDES Permit Renewal process.

3.0 Inputs That Affect the Decision

Data are needed before the existing NPDES Permit expires. Parameters required include compounds identified at the FEMP (Tables 1 through 3). The methods used to collect the samples are described on EPA Forms 3510-2C and 3510-2F. Specific locations have specific parameters based on location and type of discharge of the sampling point. All samples must comply with 40 CFR 136 for preservation, holding times, containers, and analytical methods.

4.0 Define the Boundaries of the Study

This DQO is applicable to sampling at the points specified by the requirements of the NPDES as outlined in the FEMP NPDES Permit. The time frame for this DQO is the period during which the NPDES Permit Renewal application needs to be filed.

5.0 Decision Rule

The NPDES Permit Renewal process sets forth requirements for the constituents and number of data points required for the permit renewal process. The test will be considered successful if appropriate and complete data are collected to meet the needs of the Ohio Environmental Protection Agency (OEPA) NPDES Permit Renewal process.

6.0 Limits on Uncertainty

A false positive error would indicate that constituent concentrations are present in effluent when in fact they are not. A false positive data error may result in more constituents to be monitored under a future permit than necessary.

A false negative error would indicate that constituent concentrations were determined to be lower than actually present in the effluent. A false negative data error may result in the exclusion of constituents from future permits resulting in a permit not being protective of human health and the environment.

A false negative error would be the more severe error. Collecting field duplicate samples to obtain a more accurate measurement of the constituents will minimize the chances of this error occurring. Additionally, false negatives will be minimized through adherence to Sitewide CERCLA Quality Assurance Plan (SCQ) quality control criteria at the laboratory and in the sample collection process.

7.0 Optimize Design

For the Parshall Flume (NPDES Outfall 4001), flow-weighted composite or grab samples will be collected for each constituent (Table 1) listed in EPA Form 3510-2C. Composite samples will represent the average constituent concentration over the specified period while grab samples for pH, temperature, cyanide, phenols, total residual chlorine, oil and grease, and fecal coliform will be collected where the permit specifies. Samples collected at this point will be representative of the combined effluent (wastewater, storm water, and groundwater) discharged to the Great Miami River. Water temperature and pH, which must be taken in the field, will be collected at Analytical Support Level (ASL) A in accordance with the requirements of the SCQ.

Time-weighted composite or grab samples will be collected near the Storm Water Retention Basin (SWRB) Overflow (NPDES Outfall 4002) during an overflow simulation to provide an indication of the potential contamination if an overflow event occurred. Composite samples are required to be collected as per EPA Form 3510-2C instructions for all constituents with the exception of pH, temperature, cyanide, phenols, total residual chloride, oil and grease, and fecal coliform. Constituents selected are listed in Table 2 and reflect the storm water monitoring requirements specified in Form 3510-2C.

Grab and flow-weighted composite samples will be collected for each constituent (Table 3) on the western side of the FEMP site where runoff enters Paddys Run (NPDES Outfalls 4003, 4004A, 4005, and 4006). Composite samples, excluding pH, temperature, cyanide, total residual chlorine, oil and grease, and fecal coliform, will represent the average constituent concentration over the specified period while grab samples will provide a snapshot reference against the composite. Samples collected at these points will be representative of the surface water runoff that flows into Paddys Run.

DQO #: SW-006, Rev. 2

Effective Date: December 1, 2001

All storm water samples, collected at NPDES Outfalls 4003 through 4006 must be collected from the discharge resulting from a rainfall event that is greater than 0.1 inches of rain and at least 72 hours from the previously measurable (greater than 0.1 inches of rain) rainfall event. All grab samples and aliquots must be collected as close to the center of the channel as possible where turbulence is at a maximum.

Data Quality Objectives Summary Form

1A. Task Description: NPDES Permit Renewal Application Sampling and Analysis

1B. Project Phase: (Put an X in the appropriate selection.)

RI FS RD RA RvA Other (specify) NPDES Permit Renewal

1C. DQO No.: SW-006 DQO Reference No.: NA

2. Media Characterization: (Put an X in the appropriate selection.)

Air Biological Groundwater Sediment Soil
Waste Wastewater Surface Water Other (specify)

3. Data Use with Analytical Support Level (A-E): (Put an X in the appropriate Analytical Support Level selection(s) beside each applicable data use.)

Site Characterization	Risk Assessment
A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E <input type="checkbox"/>	A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E <input type="checkbox"/>
Evaluation of Alternatives	Engineering Design
A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E <input type="checkbox"/>	A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E <input type="checkbox"/>
Monitoring During Remediation	Other:
A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E <input type="checkbox"/>	A <input checked="" type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E <input type="checkbox"/>

4A. Drivers: NPDES in 40 CFR 136

4B. Objective: Provide data required for the NPDES Permit renewal

5. Site Information (Description):

The NPDES Permit for the site requires samples to be collected from the following locations: Parshall Flume (NPDES Outfall 4001), Storm Water Retention Basin Overflow (NPDES Outfall 4002), and storm water discharges into Paddys Run (NPDES Outfalls 4003, 4004A, 4005, and 4006).

6A. Data Types with appropriate Analytical Support Level Equipment Selection and SCQ Reference: (Place an "X" to the right of the appropriate box or boxes selecting the type of analysis or analyses required. Then select the type of equipment to perform the analysis if appropriate. Please include a reference to the SCQ Section.)

- | | | | | | |
|----------------------|-------------------------------------|--------------|-------------------------------------|---------------------------------|-------------------------------------|
| 1. pH | <input checked="" type="checkbox"/> | 2. Uranium | <input checked="" type="checkbox"/> | 3. BTX | <input type="checkbox"/> |
| Temperature | <input checked="" type="checkbox"/> | Radiological | <input checked="" type="checkbox"/> | TPH | <input type="checkbox"/> |
| Specific Conductance | <input checked="" type="checkbox"/> | Metals | <input checked="" type="checkbox"/> | Oil/Grease | <input checked="" type="checkbox"/> |
| Dissolved Oxygen | <input type="checkbox"/> | Cyanide | <input checked="" type="checkbox"/> | | |
| | | Silica | <input type="checkbox"/> | | |
| 4. Cations | <input checked="" type="checkbox"/> | 5. VOA | <input checked="" type="checkbox"/> | 6. Other (specify) ^a | |
| Anions | <input checked="" type="checkbox"/> | BNA | <input checked="" type="checkbox"/> | | |
| TOC | <input checked="" type="checkbox"/> | Pesticides | <input checked="" type="checkbox"/> | | |
| TCLP | <input type="checkbox"/> | PCB | <input checked="" type="checkbox"/> | | |
| CEC | <input type="checkbox"/> | | | | |
| COD | <input checked="" type="checkbox"/> | | | | |

^aRefer to attached tables

6B. Equipment Selection and SCQ Reference:

Equipment Selection	Refer to SCQ Section
ASL A <u>Combination water quality meter</u>	SCQ Section <u>Appendix K, Sect. K.4</u>
ASL B <u>Equipment per 40 CFR 136</u>	SCQ Section <u>Appendix G, Table G-1</u>
ASL C _____	SCQ Section _____
ASL D _____	SCQ Section _____
ASL E _____	SCQ Section _____

7A. Sampling Methods: (Put an X in the appropriate selection.)

- Biased Composite Grab Environmental Grid
 Intrusive Non-Intrusive Phased Source Random

7B. Sample Work Plan Reference: The Project Specific Plan will detail the sampling program and methodology.

Background samples: None required

7C. Sample Collection Reference: A Project Specific Plan will detail sampling methodology. Sampling will conform to the requirements of the SCQ, Appendix K, Section K.4.3, Surface Water Sampling.

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8A. Quality Control Samples: (Put an X in the appropriate selection.)

8B. Field Quality Control Samples:

- | | | | |
|---------------------------|-------------------------------------|--------------------------------|-------------------------------------|
| Trip Blanks | <input checked="" type="checkbox"/> | Container Blanks | <input type="checkbox"/> |
| Field Blanks | <input type="checkbox"/> | Duplicate Samples | <input checked="" type="checkbox"/> |
| Equipment Rinsate Samples | <input checked="" type="checkbox"/> | Split Samples | <input type="checkbox"/> |
| Preservative Blanks | <input type="checkbox"/> | Performance Evaluation Samples | <input type="checkbox"/> |

Other (specify) _____

8C. Laboratory Quality Control Samples:

- | | | | |
|--------------|-------------------------------------|----------------------------|-------------------------------------|
| Method Blank | <input type="checkbox"/> | Matrix Duplicate/Replicate | <input checked="" type="checkbox"/> |
| Matrix Spike | <input checked="" type="checkbox"/> | Surrogate Spikes | <input type="checkbox"/> |

Other (specify) Per method

9. Other: Provide any other germane information that may impact the data quality or gathering of this particular objective, task, or data use

Sampling will be performed at NPDES Outfalls 4003 through 4006 from the discharge resulting from a rainfall event that is greater than 0.1 inches of rain and at least 72 hours from the previously measured rainfall event (greater than 0.1 inches of rain).

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TABLE 1

NPDES PERMIT RENEWAL ANALYTICAL REQUIREMENTS
 AT PARSHALL FLUME SAMPLE LOCATION (OUTFALL 4001)

Constituent ^a	ASL	Holding Time	Preservative	Container
Bacterial Tests:				
Fecal Coliform	B	6 hours	Cool 4°C	plastic or glass
Total Metals:				
Aluminum	B	28 days	HNO ₃ , pH < 2	plastic or glass
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Selenium				
Silver				
Thallium				
Tin				
Titanium				
Zinc				
Mercury	B	28 days	Cool 4°C	plastic or glass ^b
General Chemistry:				
Biochemical Oxygen Demand (BOD)-5 day	B	48 hours	Cool 4°C	plastic or glass
Chemical Oxygen Demand (COD)	B	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	plastic or glass
Cyanide, Total	B	14 days	Cool 4°C; NaOH, pH > 12	plastic or glass
Total Organic Carbon (TOC)	B	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	glass (amber) with Teflon lined cap
Total Suspended Solids (TSS)	B	7 days	Cool 4°C	plastic or glass
Ammonia (as N)	B	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	plastic or glass
Flow	A	none	none	none
Temperature	A	analyze immediately	none	plastic or glass
pH	A	analyze immediately	none	plastic or glass
Bromide	B	28 days	none	plastic or glass
Total Residual Chlorine	B	analyze immediately	none	plastic or glass
Color	B	48 hours	Cool 4°C	plastic or glass
Fluoride	B	28 days	none	plastic
Nitrate-nitrite (as N)	B	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	plastic or glass
Total Organic Nitrogen (TON) (as N)	B	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	plastic or glass
Oil & Grease	B	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	glass with Teflon lined cap
Phenols, Total	B	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	glass (amber) with Teflon lined cap
Phosphorus, Total	B	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	plastic or glass
Sulfate (as SO ₄)	B	28 days	Cool 4°C	plastic or glass
Sulfide (as S)	B	7 days	Cool 4°C; zinc acetate + NaOH, pH > 9	plastic or glass
Sulfite (as SO ₃)	B	analyze immediately	none	plastic or glass

TABLE 1
(Continued)

Constituent*	ASL	Holding Time	Preservative	Container
Radionuclides:				
Alpha, Total	B	6 months	HNO ₃ , pH < 2	plastic or glass
Beta, Total				
Radium-226				
Radium-228				
Pesticides/Polychlorinated Biphenyls:	B	7 days to extraction	Cool 4°C; store in dark	glass (amber) with Teflon lined cap
Aldrin				
Alpha-BHC		40 days from extraction to analysis		
Beta-BHC				
Gamma-BHC				
Delta-BHC				
Alpha chlordane				
Chlordane				
4,4'-DDT				
4,4'-DDE				
4,4'-DDD				
Dieldrin				
Alpha-Endosulfan				
Beta-Endosulfan				
Endosulfan sulfate				
Endrin				
Endrin aldehyde				
Heptachlor				
Heptachlor epoxide				
PCB-1242				
PCB-1254				
PCB-1221				
PCB-1232				
PCB-1248				
PCB-1260				
PCB-1016				
Toxaphene				
Volatile Organics:	B	7 days	Cool 4°C; H ₂ SO ₄ or NaOH to pH 4-5	glass vial with Teflon lined septum cap
Acrolein				
Acrylonitrile				
Benzene				
Bromoform				
Carbon tetrachloride				
Chlorobenzene				
Chlorodibromomethane				
Chloroethane				
2-Chloroethylvinyl ether				
Chloroform				
Dichlorobromomethane				
Dichlorodifluoromethane				
1,1-Dichloroethane				
1,2-Dichloroethane				
1,1-Dichloroethylene				
1,2-Dichloropropane				
1,3-Dichloropropylene				
Ethylbenzene				

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TABLE 1
 (Continued)

Constituent*	ASL	Holding Time	Preservative	Container
Volatile Organics (Cont'd.)	B	7 days	Cool 4°C; H ₂ SO ₄ or NaOH to pH 4-5	glass vial with Teflon lined septum cap
Methyl bromide				
Methyl chloride				
Methylene chloride				
1,1,2,2-Tetrachloroethane				
Tetrachloroethylene				
Toluene				
1,2-trans-dichloroethylene				
1,2-Dichloroethylene (total)				
1,1,1-Trichloroethane				
1,1,2-Trichloroethane				
Trichloroethylene				
Trichlorofluoromethane				
Vinyl chloride				
Semi-Volatile Organics:	B	7 days to extraction	Cool 4°C; H ₂ SO ₄ or NaOH to pH 7-9; store in dark	glass (amber) with Teflon lined cap
Acenaphthene				
Acenaphthylene		analyzed		
Anthracene		immediately		
Benzo(a)anthracene		after		
Benzo(a)pyrene		extraction		
3,4-Benzofluoranthene				
Benzo(ghi)perylene				
Benzo(k)fluoranthene				
Bis(2-chloroethoxy) methane				
Bis(2-chloroethyl) ether				
Bis (2-chloroisopropyl) ether				
Bis(2-ethylhexyl) phthalate				
Butyl benzyl phthalate				
4 bromophenyl phenyl ether				
Chrysene				
2-Chloronaphthalene				
2-Chlorophenol				
4-Chlorophenyl phenyl ether				
Dibenzo(a,h)anthracene				
1,2-Dichlorobenzene				
1,3-Dichlorobenzene				
1,4-Dichlorobenzene				
2,4-Dichlorophenol				
2,4-Dimethylphenol				
2,4-Dinitrophenol				
3,3'-Dichlorobenzidine				
4,6-Dinitro-o-cresol				
Diethyl phthalate				
Dimethyl phthalate				
Di-N-butyl phthalate				
2,4-Dinitrotoluene				
2,6-Dinitrotoluene				
Di-N-octyl phthalate				
1,2-Diphenylhydrazine				
Fluoranthene				
Fluorene				
Hexachlorobenzene				
Hexachlorobutadiene				

TABLE 1
(Continued)

Constituent ^a	ASL	Holding Time	Preservative	Container
Semi-Volatile Organics: (Cont'd.)	B	7 days to extraction	Cool 4°C; H ₂ SO ₄ or NaOH to pH 7-9; store in dark	glass (amber) with Teflon lined cap
Hexachlorocyclopentadiene				
Hexachloroethane Indeno(1,2,3-cd) pyrene				
Isophorone				
Naphthalene				
Nitrobenzene				
N-nitrosodimethylamine				
N-nitrosodi-N-propylamine				
N-nitrosodiphenylamine				
2-Nitrophenol				
4-Nitrophenol				
P-chloro-m-cresol				
Pentachlorophenol				
Phenanthrene				
Phenol				
Pyrene				
2,4,6-Trichlorophenol				
1,2,4-Trichlorobenzene				
Benzidine	B	7 days to extraction analyzed immediately after extraction ^d	Cool 4°C	glass (amber) with Teflon lined cap
Dioxins:	B	7 days to extraction	Cool 4°C	glass (amber) with Teflon lined cap
2,3,7,8-Tetrachlorodibenzo-p-dioxin		40 days from extraction to analysis		

^aAnalytical methods conducted per 40 CFR 136.3 requirements

^bSample containers are provided by the contract laboratory performing the analysis.

^cUpon receipt by the laboratory, the pH must be adjusted to 5-9 unless extracted within 72 hours of collection.

^dExtracts may be stored up to seven days before analysis if storage is conducted in an inert (oxidant-free) atmosphere.

TABLE 2

NPDES PERMIT RENEWAL ANALYTICAL REQUIREMENTS AT
 STORM WATER RETENTION BASIN OVERFLOW SAMPLE LOCATION (OUTFALL 4002)

Constituent*	ASL	Holding Time	Preservative	Container
Bacterial Tests:				
Fecal Coliform	B	6 hours	Cool 4°C	plastic or glass
Total Metals:				
Aluminum	B	28 days	HNO ₃ , pH < 2	plastic or glass
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Selenium				
Silver				
Thallium				
Tin				
Titanium				
Zinc				
Mercury	B	28 days	Cool 4°C	plastic or glass ^b
General Chemistry:				
Biochemical Oxygen Demand (BOD)-5 day	B	48 hours	Cool 4°C	plastic or glass
Chemical Oxygen Demand (COD)	B	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	plastic or glass
Cyanide, Total	B	14 days	Cool 4°C; NaOH, pH > 12	plastic or glass
Total Organic Carbon (TOC)	B	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	glass (amber) with Teflon lined cap
Total Suspended Solids (TSS)	B	7 days	Cool 4°C	plastic or glass
Ammonia (as N)	B	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	plastic or glass
Flow	A	none	none	none
Temperature	A	analyze immediately	none	plastic or glass
pH	A	analyze immediately	none	plastic or glass
Bromide	B	28 days	none	plastic or glass
Total Residual Chlorine	B	analyze immediately	none	plastic or glass
Color	B	48 hours	Cool 4°C	plastic or glass
Fluoride	B	28 days	none	plastic
Nitrate-Nitrite (as N)	B	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	plastic or glass
Total Organic Nitrogen (TON) (as N)	B	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	plastic or glass
Oil & Grease	B	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	glass with Teflon lined cap
Phenols, Total	B	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	glass (amber) with Teflon lined cap
Phosphorus, Total	B	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	plastic or glass
Sulfate (as SO ₄)	B	28 days	Cool 4°C	plastic or glass
Sulfide (as S)	B	7 days	Cool 4°C; zinc acetate + NaOH, pH > 9	plastic or glass
Sulfite (as SO ₃)	B	analyze immediately	none	plastic or glass

TABLE 2
(Continued)

Constituent*	ASL	Holding Time	Preservative	Container
Radionuclides: Alpha, Total Beta, Total Radium-226 Radium-228	B	6 months	HNO ₃ , pH < 2	plastic or glass

*Analytical methods conducted per 40 CFR 136.3 requirements

*Sample containers are provided by the contract laboratory performing the analysis.

TABLE 3
NPDES PERMIT RENEWAL ANALYTICAL REQUIREMENTS
AT STORMWATER DISCHARGE SAMPLE LOCATIONS
(OUTFALLS 4003, 4004, 4005, AND 4006)

Constituent*	ASL	Holding Time	Preservative	Container
Bacterial Tests:				
Fecal Coliform	B	6 hours	Cool 4°C	plastic or glass
Total Metals:				
Aluminum	B	28 days	HNO ₃ , pH < 2	plastic or glass
Barium				
Boron				
Cadmium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Nickel				
Silver				
Zinc				
Mercury	B	28 days	Cool 4°C	plastic or glass ^b
General Chemistry:				
Biochemical Oxygen Demand (BOD)-5 day	B	48 hours	Cool 4°C	plastic or glass
Carbonaceous Biological Oxygen Demand-5 day	B	48 hours	Cool 4°C	plastic or glass
Chemical Oxygen Demand (COD)	B	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	plastic or glass
Cyanide, Free	B	14 days	Cool 4°C; NaOH, pH > 12 (0.6 grams ascorbic acid) ^f	plastic or glass
Total Suspended Solids (TSS)	B	7 days	Cool 4°C	plastic or glass
Ammonia (as N)	B	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	plastic or glass
Flow	A	none	none	none
Temperature	A	analyze immediately	none	plastic or glass
pH	A	analyze immediately	none	plastic or glass
Total Residual Chlorine	B	analyze immediately	none	plastic or glass
Color	B	48 hours	Cool 4°C	plastic or glass
Fluoride	B	28 days	none	plastic
Nitrate-nitrite (as N)	B	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	plastic or glass
Total Kjeldahl Nitrogen (TKN)	B	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	plastic or glass
Oil & Grease	B	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	glass with Teflon lined cap
Phosphorus, Total	B	28 days	Cool 4°C; H ₂ SO ₄ , pH < 2	plastic or glass
Sulfate (as SO ₄)	B	28 days	Cool 4°C	plastic or glass
Radionuclides:				
Uranium, Total	B	6 months	HNO ₃ , pH < 2	plastic or glass
Pesticides/Polychlorinated Biphenyls:				
Toxaphene	B	7 days to extraction 40 days from extraction to analysis	Cool 4°C ^d	glass (amber) with Teflon lined cap

**TABLE 3
 (Continued)**

Constituent ^a	ASL	Holding Time	Preservative	Container
Volatile Organics: Trichloroethene	B	14 days	Cool 4°C	glass vial with Teflon lined septum cap
Semi-Volatile Organics: Benzidine	B	7 days to extraction analyzed immediately after extraction ^e	Cool 4°C	glass (amber) with Teflon lined cap
Pentachlorophenol	B	7 days to extraction 40 days from extraction to analysis	Cool 4°C	glass (amber) with Teflon lined cap
Dioxins: 2,3,7,8-Tetrachlorodibenzo-p-dioxin	B	7 days to extraction 40 days from extraction to analysis	Cool 4°C	glass (amber) with Teflon lined cap

^aAnalytical methods conducted per 40 CFR 136.3 requirements

^bSample containers are provided by contract laboratory performing the analysis.

^cIn the presence of residual chlorine

^dUpon receipt by the laboratory, the pH must be adjusted to 5-9 unless extracted within 72 hours of collection.

^eExtracts may be stored up to seven days before analysis if storage is conducted under an inert (oxidant-free) atmosphere.

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