

4831

**ADDENDUM NO. 1 TO THE SOUTH  
GROUNDWATER CONTAMINATION PLUME  
REMOVAL ACTION PARTS 2 AND 3 WORK  
PLAN OCTOBER 1993**

**10/21/93**

**DOE-FN/EPA  
12  
ADDENDUM**

4831

**ADDENDUM NO. 1  
TO THE  
SOUTH GROUNDWATER CONTAMINATION PLUME REMOVAL ACTION  
PARTS 2 AND 3 WORK PLAN**

**October 1993**

**Prepared by:**

**Fernald Environmental Restoration Management Corporation  
(FERMCO)**

**For:**

**The United States Department of Energy  
Fernald Site Office**

**ADDENDUM NUMBER 1 TO THE  
SOUTH GROUNDWATER CONTAMINATION PLUME REMOVAL ACTION  
PARTS 2 AND 3 WORK PLAN**

**CONTENTS**

**SECTIONS**

1.0	INTRODUCTION . . . . .	1
2.0	PROJECT COMPONENT DESCRIPTIONS . . . . .	2
2.1	South Plume Interim Treatment (SPIT) Unit . . . . .	2
2.2	Utilization of Off-Peak AWWT Capacity . . . . .	2
2.3	Elimination of Low Uranium Concentration Streams . . . . .	2
2.4	Extend Operating Life/Increase Capacity of the IAWWT(SWRB) . . . . .	2
3.0	SCHEDULE . . . . .	3
4.0	SAMPLING AND ANALYSIS . . . . .	3
5.0	RELATED WASTEWATER FLOWS AND DISCHARGES . . . . .	3
6.0	HEALTH AND SAFETY . . . . .	4

**TABLES AND FIGURES**

Figure 1	Existing Flow Diagram of Interim FEMP Wastewater System (Through March 1994) . . . . .	5
Figure 2	Planned Flow Diagram of Interim FEMP Wastewater System (March 1994 through January 1995) . . . . .	6
Figure 3	Planned Flow Diagram of FEMP Wastewater System (January 1995 through Approx. 1999) . . . . .	7
Table 1	NPDES Monitoring Parameters . . . . .	8
Table 2	FFCA and PRRS Monitoring Parameters . . . . .	9

## 1.0 INTRODUCTION

In a letter dated February 9, 1993, the United States Environmental Protection Agency (U.S. EPA) disapproved the United States Department of Energy's (U.S. DOE) request for an extension of the Operable Unit 2 (OU2) milestones for submittal of the Remedial Investigation (RI), Feasibility Study (FS), Proposed Plan, and the Record of Decision. Due to the failure to submit a draft Final Remedial Investigation report due on February 8, 1993, the letter also gave notice of the U.S. EPA intent to assess stipulated penalties for late submission of documents. Subsequently, U.S. DOE invoked a formal dispute resolution process with the U.S. EPA, which began on February 16, 1993.

Resulting from the dispute resolution, a supplemental project was agreed to in the DOE/USEPA Agreement Resolving Dispute Concerning Denial of Request for Extension of Time to Submit Operable Unit 2 Documents signed by USEPA on April 9, 1993. The supplemental project will provide treatment of a portion of South Groundwater Contamination Plume (South Plume) groundwater flow with the objective of reducing uranium discharges from the Fernald Environmental Management Project (FEMP) to the Great Miami River. The supplemental project consists of the following components:

- Treatment of a portion of the extracted South Plume flow through the procurement and installation of a South Plume Interim Treatment (SPIT) unit.
- Treatment of a portion of the extracted South Plume flow by utilizing off-peak capacity in Advanced Wastewater Treatment (AWWT) - Phase I facility.
- Treatment of a portion of the extracted South Plume flow by eliminating low uranium wastewater streams from AWWT - Phase II and utilizing the resulting capacity.
- Treatment of a portion of the extracted South Plume flows by extending the planned operational life of the existing IAWWT Stormwater Retention Basin (SWRB) unit and increasing its capacity.

As Part 3 of the FEMP Removal Action No. 3 - South Groundwater Contamination Plume provided for uranium removal to offset additional loading from the South Plume and other scheduled removal actions, this action similarly provides for additional uranium removal. Therefore, this document serves as an addendum to the South Groundwater Contamination Plume Removal Action Work Plan for Parts 2 and 3, to include the actions described above. Areas not specifically addressed in this addendum shall remain consistent with those in the original Part 2 and 3 Work Plan.

2.0 PROJECT COMPONENT DESCRIPTIONS

2.1 South Plume Interim Treatment (SPIT) Unit

The procurement and installation of a 200 gallons per minute (gpm) system dedicated to the treatment of a portion of the extracted South Plume groundwater will be completed under a project entitled the South Plume Interim Treatment (SPIT) System. The system will be installed in a new building to be located adjacent to the existing South Plume Valve House which was provided as part of Part 2. It is intended that the SPIT ion exchange system be similar to the IAWWT(SWRB) trailer mounted ion exchange system provided as part of Part 3. This approach will serve to simplify the efforts of design, procurement, installation, operating procedures, training, and operation.

Additionally, an enhanced filtration system for the existing IAWWT (SWRB) system is being designed and installed in the building as part of the SPIT project (see section 2.4). This addition, in combination with the new SPIT project, will result in several significant flow arrangement modifications (see section 4.0).

2.2 Utilization of Off-Peak AWWT Capacity

AWWT - Phase I is designed to treat 700 gpm of Stormwater Retention Basin (SWRB) discharge. However, during dry weather periods when minimal stormwater is available for treatment, a portion of the South Plume groundwater will be diverted for treatment in AWWT - Phase I. It is anticipated that the AWWT - Phase I will be available to treat a portion of South Plume flows approximately 50% of the time (i.e. annual average treatment of 350 gpm of South Plume flows).

2.3 Elimination of Low Uranium Concentration Streams

Water quality testing has demonstrated that both the Sewage Treatment Plant and the "Clean-Side" General Sump streams contain uranium concentrations that are below the 20 ppb effluent goal of the AWWT. These streams will be routed away from AWWT - Phase II and will make available approximately 200 gpm of treatment capacity for a portion of the South Plume flow.

2.4 Extend Operating Life/Increase Capacity of the IAWWT (SWRB)

The IAWWT (SWRB) treatment unit is currently scheduled to cease operation when AWWT - Phases I and II go on-line in January 1995. This portion of the Supplemental Project will extend the operating life of the IAWWT (SWRB), and allow for the treatment of a portion of the South Plume flow as SWRB flows are diverted to AWWT - Phase I. Piping and pumping modifications will be made and the IAWWT (SWRB) will continue to operate in parallel with AWWT - Phases I and II.

In addition, the IAWWT (SWRB) will be modified to increase the flow rate from the current 300 gpm to approximately 400 gpm. At present, the IAWWT (SWRB) unit is treating stormwater containing a relatively high level of total suspended solids (TSS). A multi-media filtration system, which will prefilter the influent to the existing IAWWT (SWRB), will be designed and installed as part of the SPIT system described in section 2.1. The enhanced filtration system along with the lower TSS concentrations in the South Plume groundwater will permit increasing the flow rate from 300 gpm to 400 gpm.

**3.0 SCHEDULE**

South Plume Interim Treatment (SPIT) Unit.....	March 31, 1994
Utilization of Off-Peak AWWT Capacity.....	January 31, 1995
Elimination of Low Uranium Concentration Streams.....	January 31, 1995
Extend Operating Life/Increase Capacity of the IAWWT (SWRB).....	March 31, 1995

**4.0 RELATED WASTEWATER FLOW AND DISCHARGES**

Addition of an enhanced filtration system (see Section 2.4) was made possible because of planned piping modifications to the Storm Sewer Lift Station (SSLS) as part of the Advanced Wastewater Treatment (AWWT) Plant project. These modifications will provide dedicated piping from the SSLS to the General Sump. This piping, when combined with existing piping from the SWRB to the SSLS will be utilized to direct enhanced filtration backwash flows to the General Sump. The IAWWT(SWRB) effluent, which currently utilizes the existing piping from the SWRB to the SSLS will be re-routed to discharge directly to the 24" South Plume discharge line recently installed in Part 2. These piping modifications are reflected in Figures 1, 2, and 3, which show the existing flows and the planned flows once SPIT and AWWT Phases I & II are implemented. Note that planned changes to Water Plant and Laundry flows are shown but not emphasized as they are not key to this project.

**5.0 TREATMENT SAMPLING AND ANALYSIS**

In order to assess uranium removal and loadings to the Great Miami River, Tables 1 & 2 of the Part 2/3 Work Plan have been revised to reflect a modification of the sampling & analysis plans to reflect the above changes. Data obtained at South Plume Removal Action monitoring points (designated as [SPx]) will be reported in the Consolidated Consent Agreement/Federal Facility Compliance Agreement/Federal Facility Agreement for Control and Abatement of Radon-222 Emissions Monthly Progress Report. Note that Tables 1 & 2 have been revised to reflect the following:

- Recent NPDES Permit modifications approved by OEPA on May 20, 1993
- Relocation of dissolved oxygen (D.O.), iron (Fe), and manganese (Mn) sampling from MH183B to the new Parshall Flume installed under Part 2. Total monitoring capabilities will not be realized at this facility until approximately mid-1994, however, grab sampling for D.O., Fe, and Mn can be obtained at this location.

4831

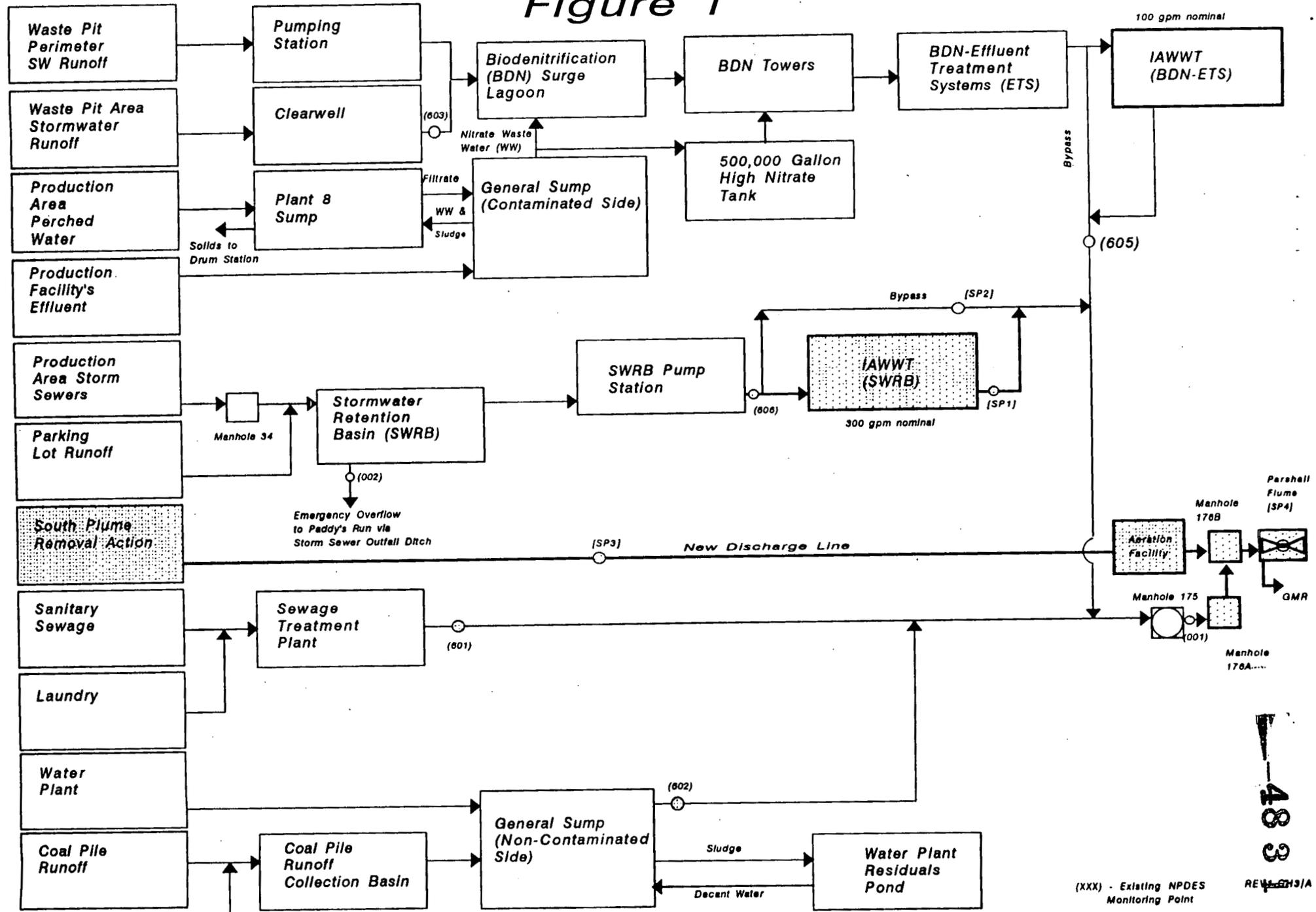
Also, when total monitoring capabilities are realized at the plume, all monitoring specified for SP3 and 001 will be relocated to SP4.

- Revised radiological monitoring. This revision is based on the implementation in May 1993 of PL-1002, Revision 1, Fernald Site Environmental Monitoring Plan. PL-1002 describes the rationale for the revised plan, which is based on historic and current site activities and the associated radiochemistry.

## 6.0 HEALTH AND SAFETY

The work to be performed shall be consistent with the Health and Safety Plan prepared for Parts 2 and 3 of the South Groundwater Contamination Plume Removal Action.

# Figure 1



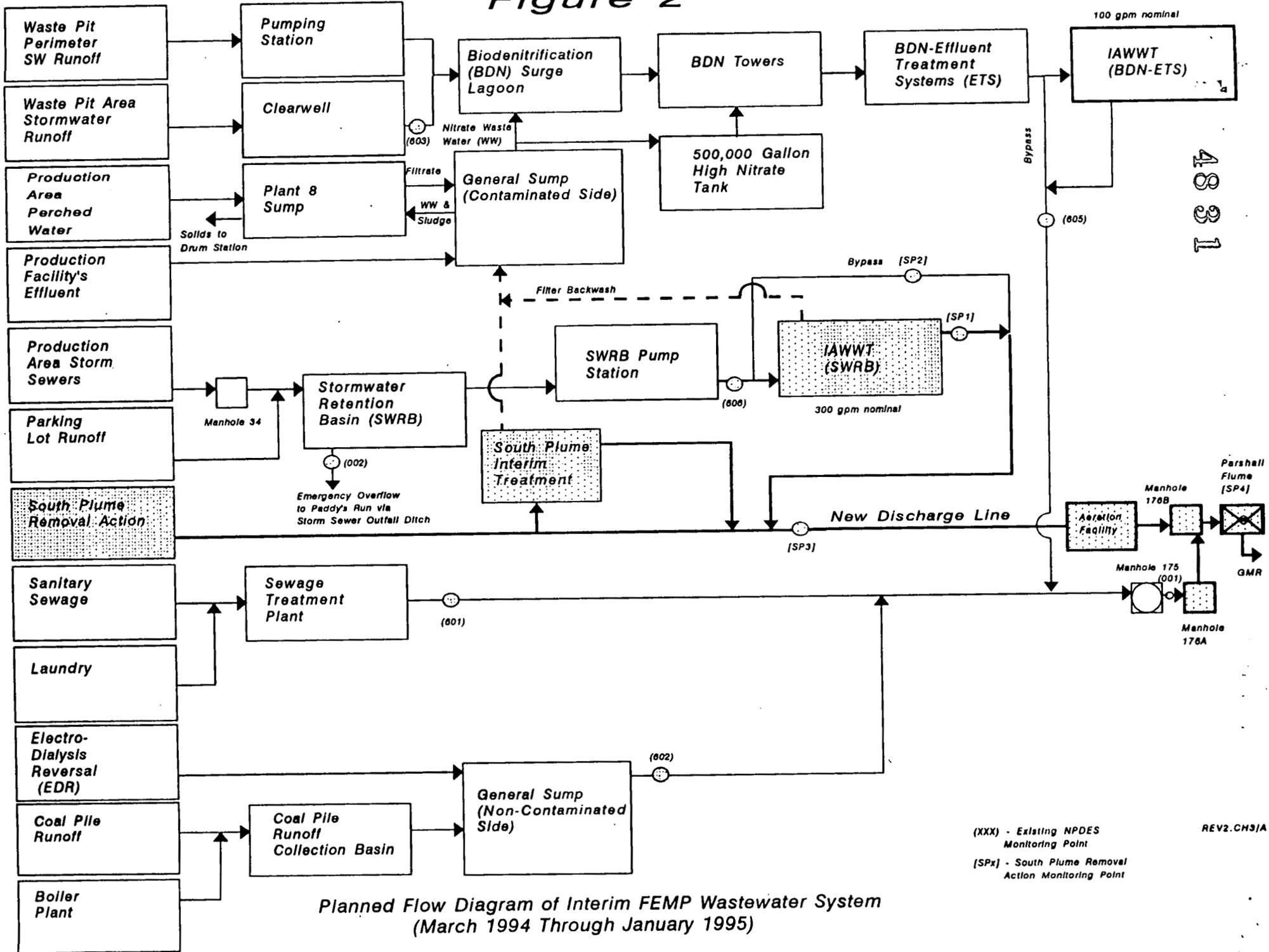
Flow Diagram of Interim FEMP Wastewater System  
(Through March 1994)

(XXX) - Existing NPDES Monitoring Point  
[SPx] - South Plume Removal Action Monitoring Point

483  
REV 5/83/A

007

Figure 2



Planned Flow Diagram of Interim FEMP Wastewater System  
(March 1994 Through January 1995)

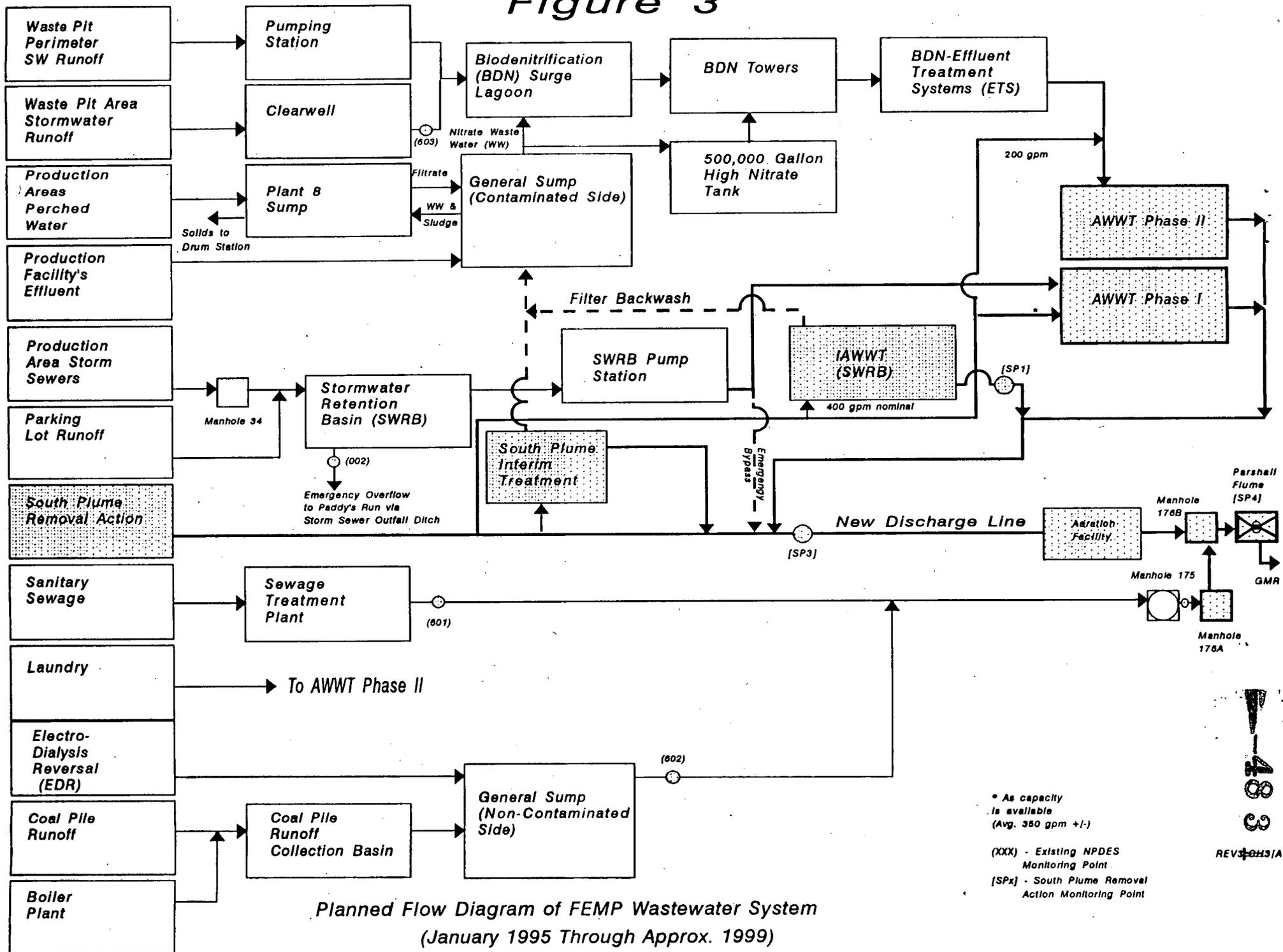
(XXX) - Existing NPDES  
Monitoring Point  
[SPx] - South Plume Removal  
Action Monitoring Point

REV2.CH31A

4831

800

# Figure 3



Planned Flow Diagram of FEMP Wastewater System  
(January 1995 Through Approx. 1999)

\* As capacity is available (Avg. 350 gpm +/-)

(XXX) - Existing NPDES Monitoring Point  
(SPx) - South Plume Removal Action Monitoring Point

REV 3-03/1A

483

609

78481341

Table 1 NPDES Monitoring Parameters

MONITORING PARAMETER	MONITORING POINT							
	(604) <sup>A</sup>	(605)	(606) <sup>B</sup>	[SP1]	[SP2]	[SP4]	[SP3]	(001)
Residue, Total Nonfilterable		(3)		[3]	-	-	[3]	(3)
Flowrate		(1)		[1]	[1]	-	[1]	(1)
pH, SU Continuously Monitored	-	-	-	[1]	-	-	[5]	(1)
Oil and Grease, Total		-		-	-	-	-	(2)
Dissolved Oxygen	-	-	-	-	-	[2]	-	(2)
Carb. BOD <sub>5</sub>	-	(3)	-	-	-	-	-	(3)
NO <sub>3</sub> -N	-	(3)	-	-	-	-	-	(3)
NH <sub>3</sub> -N	-	(3)	-	-	-	-	-	(3)
Total CN	-	-	-	-	-	-	-	(2)
Total Cr, Cu, Ni	-	(3)	-	-	-	-	-	(3)
Total: F	-	-	-	-	-	-	-	(3)
Total: Pb, Ag	-	-	-	-	-	-	-	(3)
Fe, Mn	-	-	-	-	-	[2]	-	-
Cr, Dissolved Hexavalent	-	[2]	-	-	-	-	-	[2]

Notes:

- ( ) indicates Existing NPDES Monitoring Point or Monitoring Parameter analyzed
- [ ] indicates Proposed New Monitoring Point or Monitoring Parameter to be analyzed
- A. The SLS discharge (604) to Manhole 175 was discontinued when Part 2 became operational
- B. Parameters monitored only when discharging

1. Continuously monitored
2. Grab Sample taken 1/Week
3. 24 Hour Composite sampled 1/Week
4. 24 Hour Composite sampled 1/Day
5. Grab Sample taken 1/Day

Monitoring Point	Location
(604)	Storm Sewer Lift Station Discharge (NPDES Monitoring Deleted Per Permit Mod) 5/20/93
(605)	Biodenitrification - Effluent Treatment System Effluent
(606)	SWRB Pump Station Discharge (NPDES Monitoring Deleted Per Permit Mod 5/20/93)
<del>{607}</del> [SP1]	IAWWT (SWRB) Effluent
<del>{608}</del> [SP2]	proposed Emergency Bypass
(001)	Manhole 175
<del>{003}</del> [SP3]	SWRB Valve house
<del>{004}</del> [SP4]	proposed Manhole 1838 Parshall Flume Downstream of MH 1768

Table 2 FFCA and PRRS Monitoring Parameters

4831

MONITORING PARAMETER	MONITORING POINT							
	(604) <sup>A</sup>	(605)	(606) <sup>B</sup>	[SP1]	[SP2]	[SP4]	[SP3]	(001)
Flowrate		(1)	[1]	[1]	[1]	-	[1]	(1)
Alpha & Beta Radiation	-	(2)	[2]	[2]	-	-	[2]	(2)
Uranium-Total		(2)	(2)	[2]	-	-	[2]	(2)
Uranium- <del>234,-234,-235,-236,-238</del>	-	-	-	-	-	-	[3]	(3)
Thorium-228, -230, <del>231,-232,-234</del>	-	-	-	-	-	-	[3]	(3)
<del>Thorium-234</del>	-	-	-	-	-	-	[1]	<del>(1) C</del>
Radium <del>224,-226,-228</del>	-	-	-	-	-	-	[3]	(3)
Actinium-228	-	-	-	-	-	-	[3]	(3)
<del>Lead-210</del>	-	-	-	-	-	-	[3]	<del>(3) C</del>
<del>Neptunium-237</del>	-	-	-	-	-	-	[3]	<del>(3) C</del>
<del>Potassium-40</del>	-	-	-	-	-	-	[3]	<del>(3) C</del>
<del>Plutonium-238,-239/240</del>	-	-	-	-	-	-	[3]	<del>(3) C</del>
<del>Technetium-99</del>	-	-	-	-	-	-	[4]	<del>(4) C</del>
<del>Cesium-137</del>	-	-	-	-	-	-	[4]	<del>(4) C</del>
<del>Ruthenium-106</del>	-	-	-	-	-	-	[4]	<del>(4) C</del>
<del>Strontium-90</del>	-	-	-	-	-	-	[4]	<del>(4) C</del>
<b>PRRS</b>								
Benzene, Ethylbenzene, Toluene, Xylene	-	-	-	-	-	-	[4]	-
1,1,1-trichloroethane	-	-	-	-	-	-	[4]	-
1,1-dichloroethane	-	-	-	-	-	-	[4]	-
1,2-dichloroethane	-	-	-	-	-	-	[4]	-
As, Na, K, Ammonia, Phosphates & Sulfates	-	-	-	-	-	-	[4]	-

Notes:

- ( ) indicates Existing Sampling Point or Monitoring Parameter analyzed
- [ ] indicates Proposed Sampling Point or Monitoring Parameter to be analyzed
- A. The SSLS discharge (604) to Manhole 175 will be discontinued after Part 2 becomes operational
- B. Parameters monitored only when discharging
- C. Parameter no longer routinely monitored at MH 175 (001)
  1. Continuously monitored
  2. ~~Grab Sample taken 1/Week - 24 hour composite, analyzed 1/day~~
  3. ~~24 Hour Composite sampled 1/Week - Daily sample composited and analyzed monthly~~
  4. ~~24 Hour Composite sampled 1/Day~~
  4. ~~Grab Sample taken 1/Quarter~~

Monitoring Point	Location
(604)	Storm Sewer Lift Station Discharge <del>NPDES monitoring deleted per mod 05/20/93</del>
(605)	Biodenitrification - Effluent Treatment System Effluent
(606)	SWRB Pump Station Discharge <del>NPDES monitoring deleted per mod 05/20/93</del>
[SP1]	IAWWT (SWRB) Effluent
[SP2]	Proposed Emergency Bypass
(001)	Manhole 175
[SP3]	SWRB Valve house
[SP4]	<del>Proposed Manhole 183B Parshall Flume downstream of MH 176B</del>

0/1