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NEW NPDES PERMIT EVALUATION DECEMBER, 1990

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WMCO/DOE-FSO
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EVALUATION

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NEW NPDES PERMIT EVALUATION

DECEMBER, 1990

PREPARED FOR
DEPARTMENT OF ENERGY
FEED MATERIALS PRODUCTION CENTER
SITE OFFICE

PREPARED BY
WESTINGHOUSE MATERIALS COMPANY OF OHIO

2074

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December 17, 1990

Gerald W. Westerbeck
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P.O. Box 398705
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NEW NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT EVALUATION

REFERENCE: Letter WMCO:R:90-232, W. A. Weinreich, WMCO to R. J. Hansen, DOE, "New NPDES Permit Evaluation," dated March 19, 1990.

Dear Mr. Westerbeck:

Please find attached the "New NPDES Permit Evaluation" to meet the referenced letter commitment. The purpose of this document is to provide information on an evaluation of the new National Pollutant Discharge Elimination System (NPDES) permit. This information includes: the compliance status on the current operating conditions and on the full scale operation; the efforts, planned and ongoing, to allow the facility to meet its NPDES permit limits; and impacts on the NPDES permit compliance due to CERCLA removal and remediation activities.

The document summarizes the numerous projects and activities (ongoing or planned prior to issuance of the new permit) to enhance NPDES compliance at each location where exceedences have been experienced and additional proposed projects and activities resulting from this evaluation. The scope includes all FMPC wastewater discharges.

The information presented in this evaluation was used as a basis for the WASTEWATER SYSTEM OVERVIEW presentation made on September 25, 1990, to the U.S. and Ohio Environmental Protection Agencies. A copy of the September 25th presentation is included as attachment of the document. The presentation provides a more detailed evaluation of the potential impacts due to CERCLA activities.

If there are any questions regarding this evaluation, our point of contact is David Brettschneider (ext. 6101) of my staff.

Very truly yours,

W. H. Britton
President

Attachment

PJD/slk

c: DOE/FMPC

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NEW NPDES PERMIT EVALUATION

DECEMBER, 1990

PREPARED FOR
DEPARTMENT OF ENERGY
FEED MATERIALS PRODUCTION CENTER
SITE OFFICE

PREPARED BY
WESTINGHOUSE MATERIALS COMPANY OF OHIO

1.0 PURPOSE

The purpose of this document is to provide the Feed Materials Production Center (FMPC) Department of Energy (DOE) Site Office with the following requested information on the National Pollutant Discharge Elimination System (NPDES) permit:

A. The compliance status on the current operating conditions;

B. The compliance status on the full scale operation;

C. The effort required to bring the facility into compliance, if there is a potential of an exceedence at any time for any monitored parameter during the facility operation;

D. Any possible impact on the NPDES permit due to CERCLA removal and remediation activities.

The information requests listed above are answered briefly below:

A. The FMPC is presently achieving better than a 95% compliance level on all NPDES parameters. However, a great deal of effort is required to maintain and achieve 100% compliance.

B. The FMPC will not be able to operate at the full restored uranium production capability and meet the NPDES permit limitations issued by Ohio EPA on February 12, 1990.

C. There are many projects and activities on-going and planned that are being done for enhanced compliance. A large effort is needed for this compliance work. Descriptions of the work are presented by designated NPDES outfalls in Section 5.0.

D. There will be impacts on the FMPC wastewater treatment system from the CERCLA clean up actions. In Section 5.0 these are discussed as they affect NPDES compliance by outfall.

Detailed answers to the information requests can be found in Sections 3.0 through 5.0. Section 2.0 provides basic information on the NPDES program. Section 6.0 provides administrative actions being implemented to enhance NPDES compliance.

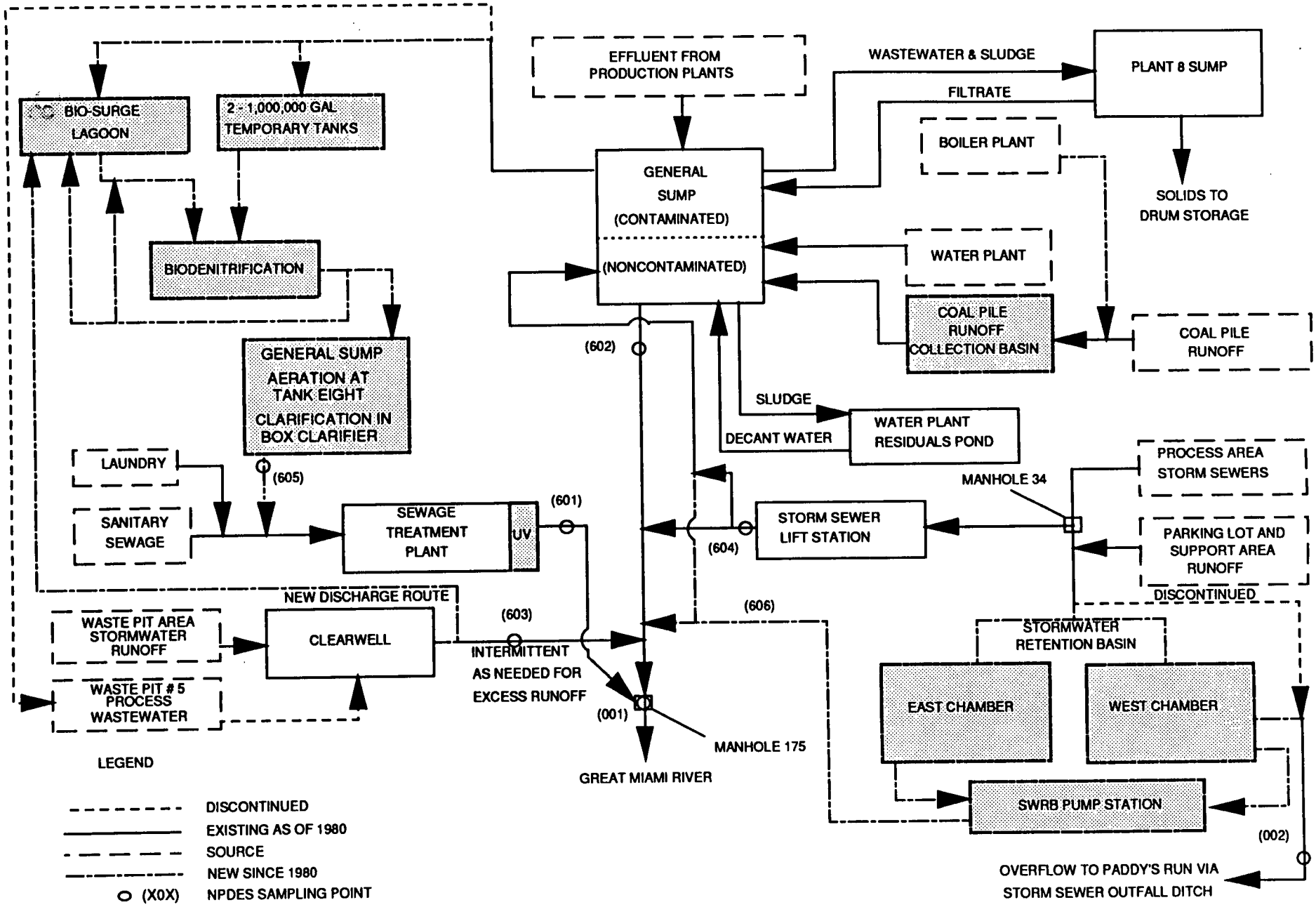
2.0 NPDES PERMIT BACKGROUND

A NPDES permit is issued by the U.S. Environmental Protection Agency (USEPA), or a state authorized to administer its NPDES program. A permit specifies monitoring and sampling locations, type and frequency of sampling, discharge limitations, and other restrictions on discharges to navigable waters of the United States. Figure 1 shows the 1989 FMPC Wastewater Flow Diagram and indicates the location of the eight NPDES monitoring points. Analytical results obtained from the NPDES samples are transmitted in a monthly Discharge Monitoring Report (DMR) to the USEPA or authorized state. A Noncompliance Report (NR) is sent, if necessary, in addition to the DMR to provide a description of each exceedence, where it occurred, what caused it, and what measures are being taken to prevent a future reoccurrence.

In Attachment 1 is a brief summary of the FMPC NPDES permit history. Key dates in the FMPC NPDES permit history are: January 14, 1983, when the Ohio Environmental Protection Agency (OEPA) received primacy of the NPDES program for federal facilities in the State of Ohio; August 23, 1985 when new pollutant discharge guidelines for uranium refining and manufacturing industry were promulgated under 40 CFR 421 Uranium Forming Subcategory and 40 CFR 471 Uranium Fabrication and issued in the Federal Register; August 1, 1988, when the FMPC submitted a NPDES renewal application; and February 12, 1990, when the OEPA issued DOE an NPDES permit renewal for the FMPC.

Attachment 2 presents a flow balance, Drawing 20X-5500-F-00373, for the FMPC water/wastewater system based on 1987 flow data. This drawing was submitted as part of the August 1, 1988 NPDES Permit Application. It showed 1987 average daily, rainfall corrected average daily and maximum daily flows. The rainfall corrected flows were adjusted to compensate for the difference between the 1987 total rainfall, of 25 inches, and the average annual rainfall of 41 inches.

The new FMPC NPDES permit wastewater discharge limitations issued by OEPA are presented by renewal outfall on Tables 1-1 through 1-6. The limitations under the previous permit issued by USEPA on October 2, 1980 are also presented so that a direct comparison can be made. The changes from the 1980 permit to the 1990 permit are discussed in Section 5.0 and noted in the referenced tables.



1989 WASTEWATER FLOW DIAGRAM

Figure 1

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3.0 COMPLIANCE STATUS ON THE CURRENT OPERATING CONDITIONS

FMPC NPDES compliance status on the current operating conditions has been divided into two categories: compliance under the previous 1980 permit, and initial compliance data under the new 1990 permit.

1980 NPDES Permit

Table 2 presents a summary of the 1980 NPDES permit compliance data for calendar year 1989. The last column of this table provides the number of Permit Exceedences for each item monitored. Table 3-1 provides a detailed listing of these NPDES permit exceedences. Table 3-1 is extended to also include exceedences for January and February 1990, as the FMPC continued to operate under the 1980 NPDES permit during this period.

Figure 2 presents a plot of the FMPC NPDES exceedences and displays information on the types of exceedences experienced during each month. Mote that the 1980 permit information is to the left of the bold line drawn between February and March of 1990. A discussion of the exceedences for a given month can be found in the respective monthly environmental monitoring report and in Sections 5.0 through 5.6 below. Overlaid on the graph are events that have significantly effected NPDES compliance.

1990 NPDES Permit

On March 1, 1990, the FMPC, with OEPA verbal concurrence, began implementation of the new NPDES permit issued on February 12, 1990. Under the 1990 permit, the OEPA required the FMPC to monitor more parameters and changed the monitoring and discharge limitations on many of the previous 1980 permit limitations as discussed below in Section 5.0. Table 3-2 provides a listing of the 1990 NPDES permit exceedences for March through September (There were no exceedences in September). Figure 2 presents a plot of the FMPC NPDES exceedences and displays information on the types of exceedences experienced during each month. Note that the 1990 permit information is to the right of the bold line drawn between February and March of 1990.

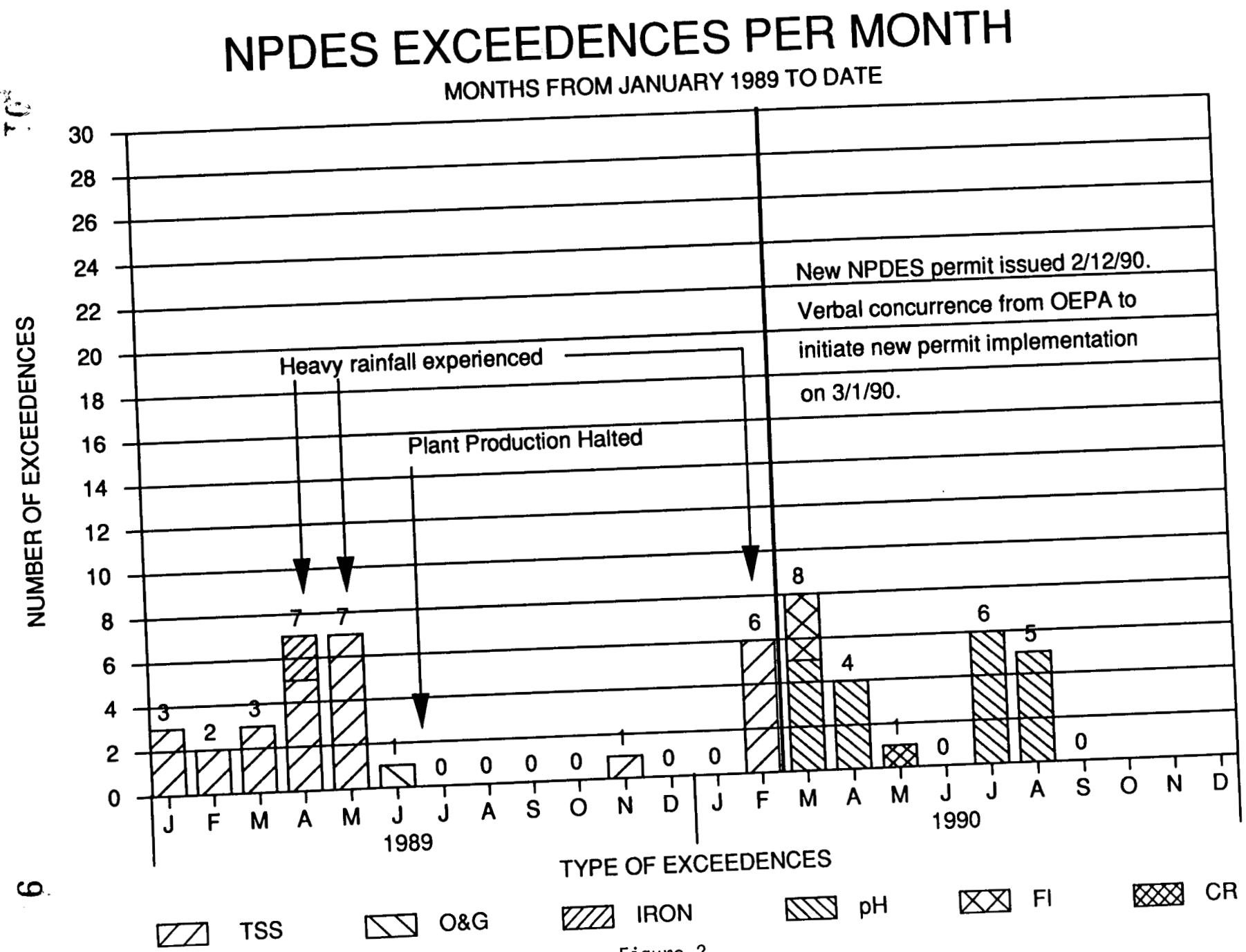

NPDES EXCEEDENCES PER MONTH
MONTHS FROM JANUARY 1989 TO DATE
NUMBER OF EXCEEDENCES
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
Heavy rainfall experienced
Plant Production Halted
New NPDES permit issued 2/12/90.
Verbal concurrence from OEPA to
initiate new permit implementation
on 3/1/90.
3
2
3
7
7
1
0
0
0
0
1
0
0
6
8
4
1
0
6
5
0
J F M A M J J A S O N D
1989
J F M A M J J A S O N D
1990
TYPE OF EXCEEDENCES
TSS
O&G
IRON
pH
FI
CR

Figure 2

4.0 COMPLIANCE STATUS UNDER FULL SCALE OPERATION

The FMPC does not have the wastewater treatment capability to meet the February 12, 1990 NPDES permit limitations in the unlikely event that the facility were operated at its fully restored uranium production capability (i.e. producing 1880 metric tons of uranium metal (MTU) annually for the Refinery). The Biodenitrification (BDN) treatment facility for nitrate removal has a projected 300 MTU design treatment capability with the recently completely expansion (September, 1990). However, the limits in the 1990 permit do not allow for operation at this 300 MTU level.

The 1985 promulgated NPDES technology-based regulated pollutant limitations in the Code of Federal Regulations (40 CFR 421.323 and 471.72) were based primarily on production loads. These limits are reflected in the new 1990 NPDES permit but are based essentially on an annual production load in the Refinery of 150 MTU. Therefore, if the FMPC is to operate at 300 MTU based on the BDN facility design, either an NPDES permit modification or a new permit would be required to allow for the increase in pollutant loadings.

During the new permit drafting process, the FMPC requested that the permit be tiered for the 150 and 300 MTU production levels. However, the OEPA issued the new permit with the technology-based pollutant limitations at the 150 MTU level. To modify the February permit would have required an appeal. OEPA stated during the comment resolution tele-conference, that if the FMPC production level changed, a permit modification to the existing permit or new permit could be requested.

5.0 NPDES COMPLIANCE EFFORTS

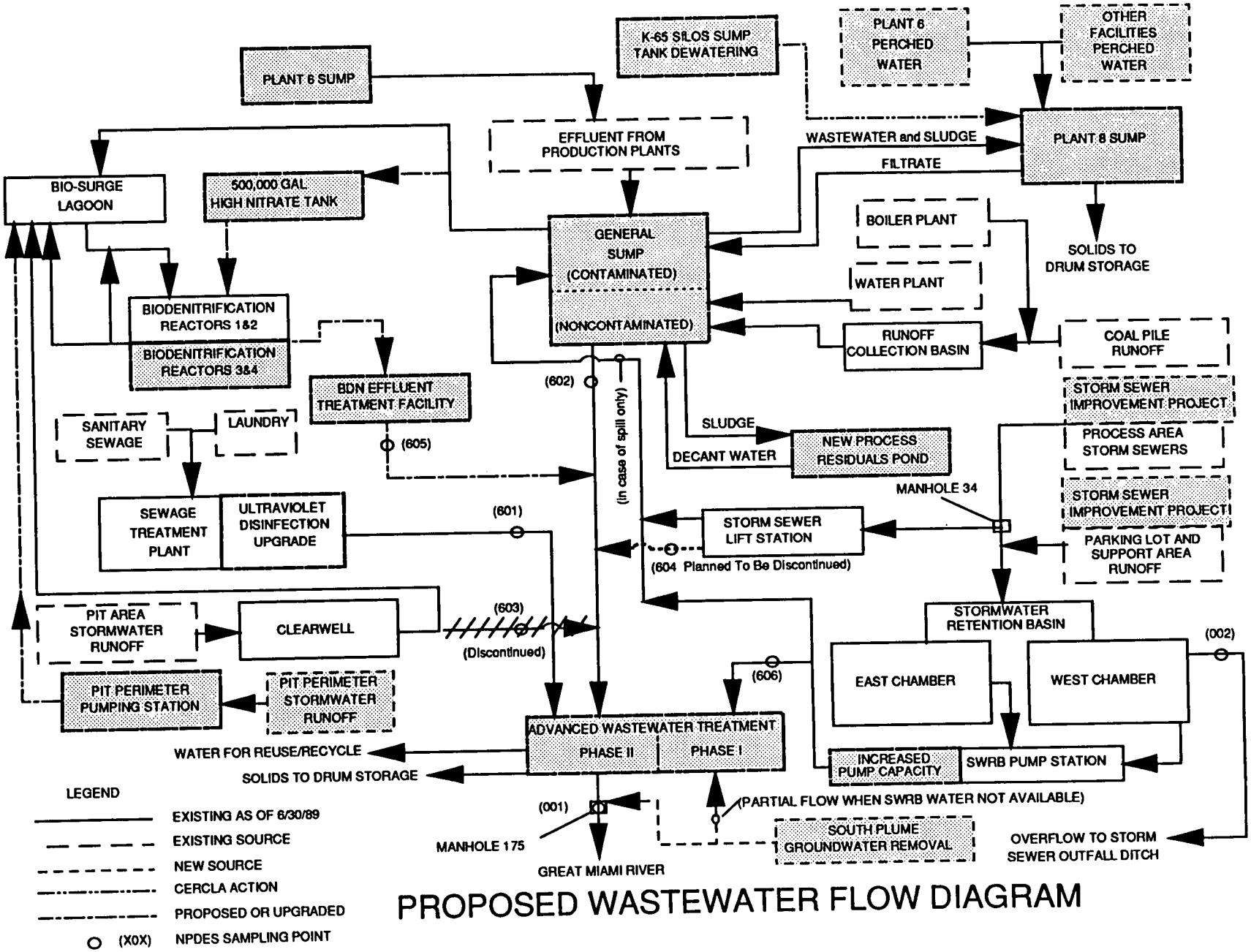
This section presents information concerning the FMPC's efforts in complying with the NPDES permit limitations. The compliance information will be presented by the designated NPDES outfalls in the following format:

A. 1980 NPDES permit exceedences with their attributed causes for period from January 1989 to February 1990;
B. Ongoing or currently mitigating efforts planned prior to the issuance of the new permit to enhance compliance;
C. Monitoring and discharge limitation changes under the new 1990 NPDES permit;
D. 1990 NPDES permit exceedences experienced from March through September;
E. Any proposed corrective actions resulting from either the exceedences of, new monitoring parameters to, or the potential exceedence for any monitored parameter to the 1990 NPDES permit;
F. Effects of known CERCLA removal actions.

Figure 3 presents a Proposed Wastewater Flow Diagram which delineates the ongoing and currently planned wastewater flow stream changes and upgrades to the FMPC Wastewater Treatment System. While changes and upgrades are indicated, a comparison of Figure 3 to the Figure 1 1989 Wastewater Flow Diagram gives one an overview of the projected changes to the FMPC wastewater treatment system. Figure 3 also shows the known CERCLA removal actions.

Attachment 3 presents preliminary Drawing 20X-5500-F-00377, which displays the ongoing and currently planned upgrades and their projected effects on the wastewater treatment system. The flow data presented are based on the 1987 rainfall corrected flows. Also shown are the known CERCLA removal actions and any projected remedial actions which will create flows.

Attachment 4 is a copy of the view graphs from the FMPC Wastewater Overview presentation made September 25, 1990, to U.S. and Ohio EPAs. This presentation was based on the information in this document. However, the presentation was expanded to incorporate the current conceptual remedial action alternatives for the CERCLA Operable Units. The information on the Remediation Actions is only covered in Attachment 4 and is not discussed below because of the preliminary nature of this material. More exact CERCLA remedial action flow and contaminant effects will need to be evaluated when more information becomes available.



PROPOSED WASTEWATER FLOW DIAGRAM

Figure 3

5.1 Sewage Treatment Plant - NPDES Outfall 601

The Total Suspended Solids (TSS) mass loading limits (flow x concentration) from the 1980 NPDES Permit for the Sewage Treatment Plant (STP) were exceeded eight times in 1989 and once in February, 1990. These limits are shown on Table 1-1. The TSS exceedences at the STP have been attributed to the combined treatment of both sanitary wastewater and BDN effluent wastewater. The 1980 NPDES Permit TSS mass loading limits were set based on a plant population of approximately 560 people and were only for the sanitary wastewater discharge. The wastewater treatment system configuration during the 1989-90 time period for the STP included a plant population of approximately 1000 people (not including subcontractors) and the process wastewater stream from the BDN. Also, in the first half of 1989, the FMPC received an extremely heavy amount of rainfall (25.13 inches). This rainfall approximately equaled the maximum experienced at the FMPC from previous years. Rainfall is significant in that numerous process area controlled storage pad areas discharge via the BDN, and subsequently to the STP.

In order to minimize the loading on the existing STP, the BDN Upgrade Project provided a dedicated Effluent Treatment System (ETS) for the BDN effluent. This facility aerates, clarifies, filters, and disinfects the BDN effluent. The effluent from the BDN ETS therefore did not have to be routed through the STP but can be directly discharge to Manhole 175. This will substantially reduce the TSS and Biochemical Oxygen Demand (BOD) loadings to the STP, and should subsequently minimize exceedences. The BDN Upgrade and the BDN ETS project were the work delineated in the FMPC 1987 NPDES Compliance Strategy for Process Wastewaters.

From an analysis of Table 1-1, it can be seen that the STP has Interim and Final discharge limitations for before and after the BDN ETS became operational. The 1990 NPDES permit revised the TSS, BOD, and pH limitations and added technology-based pollutant (chromium, copper, fluoride, and nickel) limitations. The Interim TSS and Biochemical Oxygen Demand (BOD) for the STP were increased to secondary treatment effluent limits of 30 mg/l 30-day average and 45 mg/l daily maximum to allow for the added loading from the BDN. The Final limits for TSS and BOD are returned to the previous 1980 level after the BDN flow is removed. The final TSS and BOD mass loading limitations were, however, increased to account for the higher FMPC plant population, and for the interim flow of the BDN to the STP. In addition, the pH monitoring was revised from a once per week grab sample to continuous monitoring.

The 40 CFR technology-based regulated pollutants require Best Available Technology economically achievable (BAT) monitoring requirements. The BAT limitations for the Interim operation were added to address the presence of the BDN and laundry discharges to

the STP. The Final BAT limitations only account for the Laundry Sump discharge remaining in the Sanitary Sewer System. The BAT limitations include both concentration and mass loadings.

Ammonia, measured as nitrogen, was also added to the 1990 NPDES Permit at the STP. The FMPC is only required to monitor for ammonia as there are no discharge limitations for this parameter.

The new fluoride limitations at the STP in the 1990 NPDES permit were exceeded in March, 1990. This is assumed to have resulted from increased processing of wastewaters from the eight million gallon tripled-lined BDN Surge Lagoon (BSL) in preparation for the BDN Upgrade shutdown. Per agreement with OEPA, wastewater was allowed to be stored in the BSL rather than discharged during the construction period.

The BAT limits to account for the laundry wastewaters may be a possible source of future exceedences. One course of future action is to evaluate discharging the Laundry Sump to the General Sump after the BDN flow is removed from the STP. This would consolidate the BAT regulated discharges and would also allow for treatment of this waste stream if it is deemed necessary. This would require a change to the NPDES permit. The need for this change will be evaluated in the upcoming year.

There are no current CERCLA removal actions being planned at this time that will directly effect the Sewage Treatment Plant. Indirectly, future exceedences could also occur at the STP if there is a large plant population increase for remediation work. This would result in a greater load to laundry and sanitary wastewater streams.

5.2 General Sump (NPDES Outfall 602)
and Clearwell (NPDES Outfall 603)

The 1980 NPDES permit limited the combination of the discharges from the General Sump and the Clearwell. Prior to February 1987, both process uranium contaminated and noncomtaminated wastewaters could be discharged from either the General Sump or the Clearwell via the wet chemical Waste Pit 5. By order of the OEPA, all process discharges to Pit 5 were discontinued.

Two iron and two TSS exceedences were reported in 1989 for exceeding maximum daily and monthly average discharge limits respectively. The 1989 exceedences resulted from discharges in the Clearwell (Outfall 603). The iron and TSS exceedences occurred in April 1989 in conjunction with heavy stormwater runoff. A discharge exceedence for iron is unusual and has not occurred since prior to 1985. Also with Pit 5 no longer in service as of February 1987, the discharge from the Clearwell had been changed from a daily discharge as permitted in 1980, to an intermittent discharge. Therefore, the single daily discharge exceedences for iron and TSS

which occurred on April 5, 1989, also resulted in monthly exceedences for these parameters.

The Clearwell exceedences were addressed by the elimination of the direct discharge of this wastewater to Manhole 175. The Clearwell discharge has been rerouted to the BSL for settling as addressed in the Permit-To-Install (PTI) for the BSL Facility. The combination of increased settling time and high pH of the BSL is expected to solve this problem.

The General Sump is a tank farm and acts as a collection point for both process and nonprocess wastewater streams. These wastewater streams are segregated for further treatment as required. Process wastewater streams are collected, tested, and routed to the proper treatment facilities (i.e. nitrate at BDN, filtration at Plant 8, or discharged to Manhole 175 if below discharge limitations). Nonprocess streams are treated at the General Sump and discharged to Manhole 175.

General Sump compliance efforts include projects and facilities that effect upstream treatment facilities as well as the General Sump itself. Upstream upgrade efforts include work on the non-uranium contaminated streams from the Water Plant, Water Plant Residuals Storage Facility, Cooling Tower, and the uranium contaminated streams from Plant 6 and Plant 8. The General Sump Upgrade will renovate old process equipment and add additional tankage to enhance the treatment capability for wastewaters to meet the NPDES discharge limits at the General Sump.

Table 1-2 presents the 1990 and 1980 NPDES permit limitations for Outfalls 602 and 603. As mentioned above, the 1980 permit regulated the combined discharges from the Clearwell and the General Sump. With the Clearwell discharge being redirected into the BSL, it is no longer an internal outfall to Manhole 175 and therefore limitations were dropped from the 1990 permit. The General Sump discharge to MH 175 has historically produced a wastewater that contained very low total suspended solids and iron levels, therefore these limits were also dropped in the 1990 NPDES permit. pH limitations were, however, added at the General Sump.

Chromium, copper, nickel, and hexavalent chromium concentration limitations were lowered and mass limitations added for the General Sump discharge. These pollutants are not regulated under 40 CFR 421 for the General Sump. However, these parameters are present in the Coal Pile runoff and were added to the 1990 permit by OEPA based on Best Professional Judgement.

The General Sump discharge has had one exceedence to the 1990 NPDES permit limits. This exceedence occurred in May and was for total chromium. This exceedence was investigated but the cause was not identified.

Several CERCLA remedial actions being planned will affect the Clearwell. There are no NPDES compliance limitations at the Clearwell. However, these actions will subsequently also effect the BDN Surge Lagoon, BDN Bioreactor Towers and BDN Effluent Treatment System with increased flow requirements and potential regulated pollutant control requirements.

The General Sump wastewater discharge NPDES compliance can be affected to a minor extent by the extracted contaminated perched groundwater and the Remedial Investigation/Feasibility Study (RI/FS) monitoring well purge water. The perched groundwater under or adjacent to Plants 2/3, 6, 8, and 9 will be extracted, and treated for radionuclide and for other hazardous constituents. Appropriate treatment for the other hazardous constituents in the perched groundwater are being determined and implemented as required by the various environmental regulations and agreements with USEPA. Regular analysis of the monitoring well is and will continue to be done to evaluate and determine pollutant migration. Each time the wells are analyzed, purge water is discharged to the General Sump. Other actions involving additional flows and contaminants include remediation of Waste Pit Perimeter Area and K-65 Silos (see Section 5.4). The data from the water analysis will be used to determine necessary wastewater treatment required. It is felt at this time that the water quantity extracted will not significantly effect the General Sump.

5.3 Storm Sewer Lift Station (NPDES Outfall 604) and Stormwater Retention Basin Pump Station (NPDES Outfall 606)

Under the 1980 permit, the Storm Sewer Lift Station (SSLS) incurred seven exceedences during 1989 and 1990, one for Oil & Grease (O&G) and six for TSS. The exceedences for O&G was investigated, but the source for this exceedence was not identified. The TSS exceedences at the SSLS were attributed essentially to erosion around the numerous ongoing construction projects at the FMPC site.

The discharge from the Stormwater Retention Basin pump station (SWRB) to Manhole 175 under the 1980 NPDES permit did not exist and therefore, was not required to be monitored. The original 6.3 million gallon SWRB was built in 1986, well after the 1980 permit was written. The stormwater collected in the SWRB previously discharged to Paddy's Run via the Storm Sewer Outfall Ditch.

There are several ongoing projects and activities that will effect NPDES compliance at these locations. These actions, in addition to several proposed prior to issuance of the new permit, include enforcement of erosion control methods on construction sites, collection of additional process area runoff, repair or replacement of damaged storm sewer lines, improved effluent monitoring, discontinuing of SSLS discharged to Manhole 175, operation of the

recently completed SWRB expansion, and increasing the SWRB pump capacity. Brief descriptions of these actions follow:

Erosion control measures are being enforced at construction areas to reduce the amount of suspended solids entering the Storm Sewer System. Erosion around construction areas has been determined to be a source of TSS exceedences. This effort includes placement of straw bales in drainage ditches and around storm sewer inlets, placement of gravel at storm sewer inlets to act as a sediment filter, and seeding and straw mulching.

Storm Sewer Improvements Project (a proposed project) has a two fold mission. First, to collect all remaining uncontrolled stormwater runoff from the process area and direct it into the storm sewer system. Currently several perimeter spaces of the production area are draining to the Waste Pit area, Paddy's Run, and other nonprocess areas. Secondly, to repair/replace broken storm sewer lines, and clear partially clogged lines.

Improved Effluent Monitoring Equipment has recently been installed at the SSLS and SWRB, as well as at the STP and Manhole 175. This equipment will provide continuous monitoring with alarms to notify operators of high TSS concentrations which in turn will allow for better control of the SSLS and SWRB discharges. If the TSS level at the SSLS is too high, the SSLS pumps will be shut down and the runoff will be allowed to flow by gravity to the SWRB for settling. Likewise, if SWRB discharge TSS levels are too high, the pump can be stopped to allow for increased settling time before the pumps are restarted.

Discontinuing the SSLS direct discharge to Manhole 175 is a future modification being made to enhance TSS and spill control compliance. For enhanced TSS compliance, the stormwater flow will not be collected and discharged from the SSLS as currently done but will be allowed to flow to the SWRB, settle, and then be discharged. For spill control compliance, a new control value in the storm sewer line will be activated to divert the flow to the SSLS from MH 34. From the SSLS, the spill will be sent to the General Sump for treatment through a new dedicated line.

The SWRB Expansion, completed December 28, 1988, allows the influent water to be directed by half height control sluice gates to one of two SWRB chambers. As one SWRB chamber is filling, the second chamber remains quiescent to allow suspended solids to settle before being discharged to Manhole 175. Laboratory settling tests performed on SWRB influent samples showed that approximately 24 hours of quiescent settling achieved a TSS discharge of 20 ppm or less. After settling, if the TSS level measured in the SWRB discharge remains too high, the SWRB Pump Station can be shut down for additional settling time. Planned improvements of the SWRB include automation of the current manual sluice gates.

Additional SWRB pumping capacity is being installed at the SWRB to compensate for the increased volume of runoff resulting from the shut down of the SSLS (noted above); to allow increased downtime for more than 24 hours of quiescent settling, if required; and to reduce the occurrence of SWRB overflows to Paddys Run. Procurement of a larger rated pump, larger flow meter elements, and installation of an increased electrical power supply were required to accomplish this. Two new six inch flow meter element sensors were installed to replace the existing three inch sensors which were undersized for the increased flow. The existing 100 amp circuit breaker for the SWRB was removed and a 200 amp disconnect switch with 175 amp fuses was installed. Two 5 kilowatt buck-boost transformers were installed to facilitate the increased power requirements to the SWRB without installing larger electrical cables. A new 550 gallon per minute pump was purchased and installed. It is planned that after testing this pump, another one (increased to 700 GPM if ongoing power study determines it is feasible) will be purchased.

Table 1-3 presents the 1990 and 1980 NPDES permit limitations for the SSLS (Outfall 604) and the SWRB (Outfall 606). Under the 1980 permit, the SSLS was regulated for TSS, O&G, and required monitoring for daily flow volume. Under the 1990 permit, the TSS parameter was changed from a grab sample to a once per week 24-hour composite. The O&G parameter was left as a weekly grab sample but a monthly limitation, which is the same as the maximum daily limit, was added. Nitrate and fluoride monitoring and pH limitations were added along with a requirement for continuous monitoring. The flow parameters for the SSLS remained the same from the 1980 permit to the 1990 permit.

The 1980 permit did not regulate the discharges from the SWRB (Outfall 606). However, new NPDES monitoring parameters were required of the FMPC in the 1990 permit. In the new permit, OEPA required that the SWRB discharges to Manhole 175 be monitored for TSS, pH, O&G, and flow.

At both the SSLS and SWRB, as well as at all other outfalls, OEPA required for the pH parameter: continuous monitoring; discharge limitations for a pH not less than 6.5 nor greater than 9.0 S.U.; and a 60 minute time limit allowance for individual pH excursions but not to exceed a total monthly allowance of 7 hours 26 minutes.

From March through September, the SSLS has achieved 100% compliance to the 1990 NPDES permit and the SWRB has incurred 3 pH exceedences. In March 1990, the FMPC experienced a process upset in the raw water treatment process when a pump float switch malfunctioned. This pump, located in the Chemical Feed Sump, normally discharges the spent lime from the water softener to the General Sump. The Chemical Feed Sump subsequently filled and

overflowed into the storm sewer system and was captured in the Stormwater Retention Basin, preventing it from discharging directly to Manhole 175.

The pH continuous monitoring equipment for the discharges from the SWRB and Manhole 175 were not fully operational. Grab samples were being taken every four hours and reported. If a grab sample pH result was greater than allowable discharge limitations, it was conservatively reported to have been high for the entire four hour period, thereby incurring an exceedence. The FMPC incurred five pH exceedences in March (two at Manhole 175 and three at the SWRB) as the high pH water was being neutralized and released from the SWRB. In April 1990, work continued on the pH continuous monitoring equipment as the high pH water was being treated and discharged from the SWRB. The FMPC incurred four more pH exceedences in April.

Several corrective actions were taken to address this pH concern. The overflow discharge at the Chemical Feed Sump was raised so that any future pump failure of this type would be more apparent. Secondly, the equipment recently installed for continuous monitoring of the pH on the discharges from the SWRB.

No known CERCLA removal actions are expected to effect the SWRB. However, the Storm Sewer Improvement project will add additional process area runoff to the SWRB. This water was accounted for in the sizing of the SWRB expansion and will not require changes other than those discussed above.

5.4 Biodenitrification Effluent Treatment System (NPDES Outfall 605)

The discharge from the BDN was in compliance with the 1980 NPDES permit nitrate and ammonia limitations during the 1989 and January and February 1990 time period. This is assumed to be largely due to no Refinery production, since the Refinery produces approximately 45% of the nitrates the BDN treats. Another factor in achieving compliance was the production halt in June 1989 of all pickling operations.

The recently completed expansion of the BDN, the construction of the high nitrate storage tank (HNT) and the BDN Effluent Treatment System is projected to provide adequate treatment during future operation of the Refinery. The expansion of the BDN from two-towers to four-towers will allow for treatment of a higher nitrate load.

The BDN Towers are fluidized bed (coal/biomass) reactors and operate on a biological process which responds slowly to rapid or broad fluctuations of the nitrate feed concentrations in the incoming wastewaters streams. Process performance is optimized when the influent feed nitrate concentration is controlled.

Accordingly, the new HNT is designed to hold the wastewater with a high nitrate concentration for controlled blending into the lower nitrate feed stream from the BSL to regulate the overall nitrate loading to the BDN. The BDN ETS facility is planned to aerate, clarify, filter, and disinfect the BDN effluent and discharge the effluent directly to Manhole 175, and reduce BOD and TSS loadings at the STP.

The new 1990 NPDES permit did provide additional monitoring requirements as can be seen on Table 1-4. Limitations for BOD, TSS, fluoride, chromium (both total and hexavalent), copper, nickel, and pH were added to Outfall 605. OEPA used secondary treatment standards for aeration and clarification to set the BOD and TSS limitations at the BDN due to the similarity of treatment employed. Fluoride, total chromium, copper, nickel, and pH constituents of the process wastewaters were added due to the regulations promulgated in 40 CFR 421.

The regulated wastewater streams are collected and segregated in the General Sump and sent to Plant 8, the HNT, or the BSL for further treatment. Eventually, all the process wastewater streams come together again at the BDN Towers. During the permit negotiations between OEPA and FMPC personnel, the concern was raised about the batch operation nature (known as production campaigns) of the FMPC. The environmental benefits of flow and contaminant equalization provided by the BSL and HNT were expressed by FMPC personnel, where wastewater would be stored and blended slowly into the wastewater treatment to optimize the process. The result was OEPA set Outfall 605 with the 40 CFR 421 limits at the BDN ETS, rather than at Plant 8 and Plant 6 as originally proposed.

In addition, hexavalent chromium is regulated by the State of Ohio Stream Water Quality Standards (SWQS). As applicable, mass limitations have also been placed on the BDN wastewater discharge. Ammonia and chromium, due to historical low levels, are only specified as monitoring requirements for the FMPC.

Of these pollutants, the new fluoride limitations were exceeded twice (once for mass, once for concentration) in March at the BDN. It was assumed that processing a large volume of unsegregated wastewater in preparation for the BDN Upgrade shutdown caused these exceedences. The new fluoride 30-day limitation (1.3 mg/l) was set to verify that BAT treatment is being used. However, the discharge limitation for fluoride is below the Safe Drinking Water secondary standards of 2.0 mg/l. Further analysis of the fluoride discharge and the possible need for increased future treatment requirements is being evaluated. Possible treatment may be incorporated into the planned upgrade of the Plant 8 Sump, changes to process operating procedure limits, or by future utilization of the flow segregation and flow equalization by the BSL/HNT as discussed previously.

Projects and CERCLA removal actions that effect NPDES compliance are the Clearwell discharge, the Waste Pit Perimeter Area Stormwater Runoff Control project, the K-65 Silos Sump Tank Dewatering, Perched groundwater from or adjacent to Plants 2/3, 6, 8, and 9, and the RI/FS monitoring well sampling flush water.

Clearwell discharge, as previously described, has been redirected into the BSL and will result in additional stormwater being treated and discharged.

Waste Pit Perimeter Area Stormwater Runoff Control Facility is a CERCLA Removal project planned to collect additional contaminated stormwater runoff in the Waste Pit Area and pump it to the BSL for flow equalization, settling and treatment. The estimated average flow of stormwater contributed to the BSL from this project is 23 gallons per minute. The combined peak flow from pumping during storm events is estimated to be approximately 2000 gallons per minute. This flow will be delivered by three pumps with a fourth pump used as standby. This project was incorporated in the 1990 NPDES flow figures and was described in the BSL PTI, Section 5.1.

The flows from the Clearwell and the Waste Pit Perimeter Area Stormwater Runoff Control project has been accounted for in the upgrade design of the BDN and ETS facilities. The BDN Towers' ability to adjust the blended feed stream flows from the BSL and HNT, discussed previously, will allow for the storm flows to be treated and discharged without upsetting the operation of the BDN facility. For example, as flow from the BSL needs to be increased due to a high level of stormwater runoff (low nitrate), the flow from the HNT will be adjusted to keep nitrate loadings at an optimum treatment level.

Sump Tank Dewatering is a CERCLA removal project which involves pumping water from an underground decant sump located between the K-65 silos.

Contaminated Perched Groundwater Extraction from under Plants 2/3, 6, 8, and 9 being planned as a CERCLA removal action and RI/FS Monitoring Well Sampling Flush Water may affect the BDN NPDES compliance. The extracted perched groundwater will be treated in upstream facilities (i.e., Plants 6, 8, or others as appropriate) for their radionuclide constituents. Treatment for other hazardous constituents is being evaluated at the present time. Appropriate treatments for those constituents of the perched groundwater will have to be determined and implemented upstream of the BSL as required by governing environmental regulations and/or agreements with USEPA.

5.5 Manhole 175 (NPDES Outfall 001)

Five TSS exceedences to the 1980 NPDES permit were experienced at Manhole 175 in 1989 and three additional exceedences in February 1990. These TSS exceedences can be primarily attributed to three factors:

1) an increase in the amount of stormwater discharged to Manhole 175,
2) solids being eroded from ongoing construction projects,
3) changes in process wastewater treatment system.

Prior to construction of the SWRB when the stormwater volume exceeded the SSLS pumping capacity; the excess stormwater was discharged through the NPDES Outfall 002 monitoring point to Paddy's Run via the Storm Sewer Outfall Ditch (SSOD). With the SWRB becoming operational in late October 1986, the Outfall 002 monitoring point moved to the basin overflow spillway. The stormwater from the process area is now collected and settled in the basin and discharged to Manhole 175. Manhole 175 has therefore experienced an increase in flow of a higher TSS level water because of this added stormwater volume. The TSS exceedences can, therefore, be partially attributed to this increase in stormwater discharged to Manhole 175.

Erosion from construction projects involving disturbance of earth contributes suspended solids to stormwater runoff. Erosion control measures are being enforced at construction areas in an attempt to minimize the amounts of TSS reaching the storm sewers. The control measures included placement of straw bales in drainage ditches and around storm sewer inlets, placement of gravel at storm sewer inlets to act as a sediment filter, plus seeding and straw mulching.

The FMPC process wastewater treatment operation has changed. Settling of process effluent decreased when Pit 5, and later the BSL (for Liner Upgrade), were removed from service. Settling in these facilities in the past lowered the TSS discharged to downstream treatment facilities and eventually to Manhole 175. Placing the BSL back on-line in June, 1989, and the future operation of the BDN ETS will enhance TSS removal capability, thereby decreasing the load sent on to Manhole 175.

The NPDES permit limitations at Manhole 175 for the 1990 permit have changed significantly from the 1980 limits as can be observed in Table 1-5. Manhole 175 is also limited under State of Ohio Stream Water Quality Standards (SWQS). The monitoring and discharge limitations at Manhole 175 include BAT pollutants (chromium, copper, fluoride, and nickel), SWQS pollutants (cyanide, silver, lead), and the conventional parameters (carbaceous Biochemical Oxygen Demand, ammonia, nitrates, oil & grease, TSS,

pH, and Dissolved Oxygen). This increase in the number of limitations will also increase the potential for exceedence. The TSS concentration limit at Manhole 175 has been raised to account for the BDN ETS and to reflect the rerouting of stormwater from Outfall 002 to Outfall 001 with continued operation of the SWRB.

Under the 1990 permit, Manhole 175 has incurred seventeen pH exceedences. A total of six pH exceedences occurred in March and April as described in Section 5.3. These exceedences may have resulted from the Chemical Feed Sump Pump Float Switch malfunction. Other explanations include: construction activities involving mortar near wastewater treatment facilities, or the interruption of services affecting acid addition for neutralization of the wastestream during work performed at or near the General Sump. The remaining eleven pH exceedences occurred in July and August. These were reported due to the pH continuous monitoring equipment being out of calibration. Grab samples obtained during each period of exceedence showed the pH was actually within the acceptable pH limit.

The TSS concentration limitations in the 1990 permit at MH 175 were increased to better reflect actual conditions and should help to alleviate exceedences which have been experienced since beginning operation of the SWRB. However, there is insufficient information on the new parameters monitored to enable speculation on future compliance with the values given.

The FMPC is currently involved in the design of an Advanced Waste Water Treatment (AWWT) Facility for reducing uranium discharges. Based on the conceptual design studies and preliminary testing of several technologies, the facility is conceived to consist of two major systems. One system (Phase I) is being designed to process 700 gpm of water from the Storm Water Retention Basin (SWRB) and the Storm Sewer Lift Station (SSLS). This system is expected to include sand filtration and ion exchange. The flow rate is based on minimizing overflow events from sequential rainfall events and allowing for the shutdown of the SSLS as discussed previously. Phase II (see Figure 3) is being designed to treat 400 gpm of process wastewater, including anticipated flows from Remediation of CERCLA Operable Units 1 through 4. As currently conceived, this system will include sand filtration, pH Adjustment, Organic Removal, ion exchange, reverse osmosis, and other treatment units as required to protect these unit processes.

The capacity of the AWWT is not adequate to treat the anticipated flow from the South Plume CERCLA removal action or future groundwater Remediation flows from CERCLA Operable Unit 5. However, when the SWRB is low enough to not require processing of stormwater (approximate 50% of the time), a portion of the flow from the South Plume removal action (700 gpm) will be routed to and treated in the SWRB portion of the AWWT.

5.6 Stormwater Retention Basin Spillway (NPDES Outfall 002)

During 1989, two TSS exceedances were measured at the SWRB Overflow Spillway (Outfall 002 under the 1980 permit). The exceedences cited were for exceeding the TSS monthly average. The 1980 TSS limits were set prior to construction of the SWRB when the SSLS overflow discharge point was to the SSOD. At that time, stormwater was discharged regularly to the SSOD when the runoff volume exceeded the SSLS pumping capability. The frequency of the discharge at Outfall 002, which was reported to have ranged from two to fifteen days per month, decreased with the SWRB operation to once or twice per year. The single daily peak discharge which occurred on March 31, 1989, was above the monthly average for TSS and therefore, as it was the only discharge recorded during the month, also resulted in a monthly exceedence. It is assumed that the SWRB did not have enough settling time to meet average 30 day TSS discharge levels when the excess stormwater overflowed the basin in March and April 1989. It should be noted that the rainfall level for the first half of 1989 was equal to the maximum rainfall level during this time frame experienced at the FMPC during its history.

The corrective actions are: to increase the SWRB pump capacity to reduce the potential of overflow; and as can be seen from Table 1-6, successfully negotiating removal of the 30-day average discharge limitations for the SWRB Overflow Spillway in the new NPDES permit as it is no longer valid for the present operating mode.

Table 1-6 presents the discharge limitation for the 1980 and 1990 NPDES permits. Like Manhole 175, the SWRB overflow discharge is also regulated under the State of Ohio Stream Water Quality Standards. Discharge limitations were revised to concentration limits only on single day events. Mass limits were not set due to the intermittency and variability of overflow volume.

Outfall 002 at the SWRB Overflow Spillway has achieved 100% compliance to the 1990 permit. No overflow events occurred in March through August 1990 time frame.

Future compliance effort that effect Outfall 002 are the additional pumping, as described in Section 5.4, which will reduce a future possibility of an overflow event.

One project which will adversely affect this outfall is the Storm Sewer Improvement Project. This project will result in additional process areas draining to the SWRB and, therefore, increase the volume of water sent to the SWRB. The design of the facilities has already taken this project into account. No other CERCLA removal actions are expected to affect this outfall.

6.0 ADMINISTRATIVE ACTIONS

The FMPC is providing for current and future NPDES compliance through many actions. These actions include wastewater facility construction projects, daily wastewater treatment operations, and miscellaneous ongoing engineering activities. Construction projects for new or upgraded wastewater facilities were discussed in preceding sections. Ongoing engineering activities provide for future FMPC NPDES compliance. Discussed below are additional administrative and operational functions needed for daily compliance.

6.1 Plans

WMCO Utility Operations, Air/Water Permitting, and Environmental Engineering are the primary groups that have been working together to achieve NPDES compliance. Representatives from these three groups and the WMCO manager of the Clean Water program meet monthly to provide a medium for discussion, technical guidance, and solutions to NPDES exceedence problems. Other groups are invited to this monthly meeting as required to provide technical input on the pertinent issues (i.e. removal/remediation activities etc.). The recommended corrective actions for reduction of NPDES permit exceedences be consistent with regulatory requirements and overall FMPC programmatic priorities.

The following items are discussed at monthly meetings:

- Review any monthly reported exceedences to the FMPC NPDES permit;
- Discuss unfavorable NPDES monitoring data trends;
- Discuss process and project start ups and their effects on the FMPC wastewater treatment system and NPDES compliance;
- Discuss required corrective actions to resolve NPDES compliance issues;
- Coordinate the development of recommended projects, programs and process changes; and monitor progress of these changes;
- Assure effective and timely communications with DOE and Ohio EPA, relative to FMPC NPDES compliance and any unusual occurrences (i.e. overflows of the Stormwater Retention Basin, etc.); and
- Track and follow-up on issues and recommendations; and CERCLA actions that may impact compliance.

6.2 Goals and Other Activities

To administratively achieve NPDES compliance, daily goals and other activities are needed by several groups. Utility Operations is involved in the daily operation of the FMPC wastewater treatment system. Air/Water Permitting is involved in compliance reporting

and tracking. Informational feedback from Operations and Regulatory Compliance to Environmental Engineering is used to decide areas where corrective actions are needed. These actions can be determined whether they are process or procedural changes, field activities of erosion control, or training. NPDES goals and activity items include:

Goals

- Promoting site-wide NPDES awareness.
- Striving daily to eliminate NPDES exceedences;
- Enforcing employment of erosion control methods on active construction projects;

Activities

- Reviewing project designs for incorporation of erosion control methods;
- Informing and advising construction project managers of NPDES exceedences;
- Increase accessibility to NPDES information stored on the computer for evaluation;
- Evaluate NPDES monitoring data to determine trends, and identify specific areas warranting efforts toward further reduction;
- Communicate this information so that it can be acted on immediately or reported in the monthly meetings when unfavorable trends are determined. This information is to be communicated to responsible line management for corrective actions;
- Track changes to volumes of the Stormwater Retention Basin, High Nitrate Storage Tank and Biodenitrification Surge Lagoon; particularly resulting from stormwater runoff; and
- Serve as a liaison with Ohio EPA, United States EPA, and other Westinghouse and DOE facilities concerning possible means for reducing reportable exceedence discharges.

Evaluation and implementation of the new NPDES permit limitations and overseeing corrective actions for compliance have been one of the ongoing actions initiated by this group.

TABLE 1-1
1980/1990 NPDES PERMIT LIMITS BY OUTFALL
Outfall 601 Sewage Treatment Plant

1990 Permit
Interim (until BDN Effluent Treatment System becomes operational)

Status	Parameter	Discharge Limitations Concentration Units	30 Day	Daily	Loadings Units	30 Day	Daily	Monitoring Requirements Frequency and Type	
C	Biochemical Oxygen Demand, 5 Day	mg/l	30	45	kg/day	40	60	1/week	24 hr. comp.
C	Residue, Total Nonfilterable	mg/l	30	45	kg/day	40	60	1/week	24 hr. comp.
N	Nitrogen, Ammonia (NH3)	mg/l	--	--	kg/day	--	--	1/week	24 hr. comp.
N	Fluoride, Total (F)	mg/l	1.7	4.8	kg/day	2.2	6.3	1/week	24 hr. comp.
N	Chromium, Total (Cr)	ug/l	12	29	kg/day	0.0162	0.0378	1/week	24 hr. comp.
N	Copper, Total (Cu)	ug/l	48	98	kg/day	0.0637	0.1295	1/week	24 hr. comp.
N	Nickel, Total (Ni)	ug/l	30	44	kg/day	0.0403	0.0586	1/week	24 hr. comp.
S	Fecal Coliform (summer only)	#/100ml	1000	2000	kg/day	--	--	1/week	24 hr. comp.
S	Flow Rate, Daily	MGD	--	--		--	--	continuous	24 hr. total
C	pH	S.U.	(6.5 TO 9.0)					continuous	

Final (after BDN Effluent Treatment System becomes operational)

C	Biochemical Oxygen Demand, 5 Day	mg/l	20	40	kg/day	9.5	19	1/week	24 hr. comp.
C	Residue, Total Nonfilterable	mg/l	20	40	kg/day	9.5	19	1/week	24 hr. comp.
N	Nitrogen, Ammonia (NH3)	mg/l	--	--	kg/day	--	--	1/week	24 hr. comp.
N	Fluoride, Total (F)	mg/l	2.3	5.1	kg/day	1.08	2.43	1/week	24 hr. comp.
N	Chromium, Total (Cr)	ug/l	13	32	kg/day	0.006	0.015	1/week	24 hr. comp.
N	Copper, Total (Cu)	ug/l	53	112	kg/day	0.025	0.053	1/week	24 hr. comp.
N	Nickel, Total (Ni)	ug/l	32	49	kg/day	0.015	0.023	1/week	24 hr. comp.
S	Fecal Coliform (summer only)	#/100ml	1000	2000	kg/day	--	--	1/week	24 hr. comp.
S	Flow Rate, Daily	MGD	--	--		--	--	continuous	24 hr. total
C	pH	S.U.	(6.5 TO 9.0)					continuous	

1980 permit

	Biochemical Oxygen Demand, 5 Day	mg/l	20	40	kg/day	5	10	1/week	grab
	Residue, Total Nonfilterable	mg/l	20	40	kg/day	5	10	1/week	24 hr. comp.
	Fecal Coliform (summer only)	#/100ml	1000	2000	kg/day	--	--	1/week	grab
	Flow Rate, Daily	MGD	--	--		--	--	continuous	24 hr. total
	pH	S.U.	(6.5 TO 9.0)					1/week	grab

NOTES
1 Daily Average is the maximum allowable average for a 30 day period.
2 Daily Maximum is the maximum allowable discharge level on any given day.
3 -- Monitoring requirement only.
4 Status: N-new, C-changed, S-same

TABLE 1-2
1980/1990 NPDES PERMIT LIMITS BY OUTFALL
Outfall 602 General Sump

1990 Permit

Status	Parameter	Discharge Limitations Concentration Units	Concentration 30 Day	Concentration Daily	Loadings Units	Loadings 30 Day	Loadings Daily	Monitoring Requirements Frequency	and Type
C	Chromium, Total (Cr)	ug/l	41	54	kg/day	0.01	0.013	1/week	24 hr. comp.
C	Copper, Total (Cu)	ug/l	66	111	kg/day	0.016	0.027	1/week	24 hr. comp.
C	Nickel, Total (Ni)	ug/l	91	165	kg/day	0.022	0.04	1/week	24 hr. comp.
C	Chromium, Dissolved Hexavalent	ug/l	12	17	kg/day	0.003	0.004	1/week	24 hr. comp.
S	Flow Rate, Daily	MGD	--	--		--	--	continuous	24 hr. total
N	pH	S.U.	(6.5 TO 9.0)					1/week	Grab

Outfall 603 Clearwell

During the period in which all four of the biodenitrification towers will be temporarily out of operation (due to the construction of the Biodenitrification facility) and lasting a maximum of 16 weeks, the permittee will be permitted to discharge excess stormwater from the Clearwell via internal monitoring station 11000004603 to manhole 175.
Once the Biodenitrification Towers are back in operation, sometime within the above permitted time frame, stormwater from the Clearwell shall then be pumped only to the Biosurge Lagoon without further exception.

1980 Permit for the Combined Effluent from the General Sump and Clearwell

D	Residue, Total Nonfilterable	mg/l	--	--	kg/day	6.2	12.8	1/week	24 hr. comp.
	Chromium, Total (Cr)	ug/l	--	--	kg/day	0.05	0.102	1/week	24 hr. comp.
	Copper, Total (Cu)	ug/l	--	--	kg/day	0.025	0.051	1/week	24 hr. comp.
	Nickel, Total (Ni)	ug/l	--	--	kg/day	0.124	0.256	1/week	24 hr. comp.
	Chromium, Dissolved Hexavalent	ug/l	--	--	kg/day	0.004	0.008	1/week	24 hr. comp.
D	Iron, Total (Fe)	ug/l	--	--	kg/day	0.41	0.85	1/week	24 hr. comp.
	Flow Rate, Daily	MGD	--	--		--	--	continuous	24 hr. total

NOTES
1 Daily Average is the maximum allowable average for a 30 day period.
2 Daily Maximum is the maximum allowable discharge level on any given day.
3 -- Monitoring requirement only.
4 Status: N-new, C-changed, S-same, D-deleted from 1990 permit.

TABLE 1-3
1980/1990 NPDES PERMIT LIMITS BY OUTFALL
Outfall 604 Storm Sewer Lift Station

1990 Permit

Status	Parameter	Discharge Limitations Concentration Units	30 Day	Daily	Loadings Units	30 Day	Daily	Monitoring Requirements Frequency and Type	
S	Residue, Total Nonfilterable	mg/l	30	100	kg/day	--	--	1/week	24 hr. comp.
C	Oil & Grease, Total	mg/l	15	15	kg/day	--	--	1/week	grab
N	Nitrate as Nitrogen	mg/l	--	--	kg/day	--	--	1/week	24 hr. comp.
N	Fluoride, Total (F)	mg/l	--	--	kg/day	--	--	1/week	24 hr. comp.
S	Flow Rate, Daily	MGD	--	--		--	--	continuous	24 hr. total
C	pH	S.U.	(6.5 TO 9.0)					continuous	

1980 Permit

	Residue, Total Nonfilterable	mg/l	30	100	kg/day	--	--	1/week	grab
	Oil & Grease, Total	mg/l	--	15	kg/day	--	--	1/week	grab
	Flow Rate, Daily	MGD	--	--		--	--	continuous	24 hr. total

Outfall 606 Stormwater Retention Basin Pump Station

1990 Permit

Status	Parameter	Discharge Limitations Concentration Units	30 Day	Daily	Loadings Units	30 Day	Daily	Monitoring Requirements Frequency and Type	
N	Residue, Total Nonfilterable	mg/l	--	--	kg/day	--	--	**	24 hr. comp.
N	Oil & Grease, Total	mg/l	--	--	kg/day	--	--	**	grab
N	Flow Rate, Daily	MGD	--	--		--	--	**	24 hr. total
N	pH		(6.5 TO 9.0)						continuous

1980 Permit

The Stormwater Retention Basin was built in 1986. There were no limitations set up in the 1980 permit.

NOTES
1 Daily Average is the maximum allowable average for a 30 day period.
2 Daily Maximum is the maximum allowable discharge level on any given day.
3 -- Monitoring requirement only.
4 Status: N-new, C-changed, S-same

TABLE 1-4
1980/1990 NPDES PERMIT LIMITS BY OUTFALL
Outfall 605 Biodenitrification Effluent Treatment System

1990 Permit

Status	Parameter	Discharge Limitations Concentration Units	Concentration 30 Day	Concentration Daily	Loadings Units	Loadings 30 Day	Loadings Daily	Monitoring Requirements Frequency and Type	
N	Biochemical Oxygen Demand, 5 Day	mg/l	30	45	kg/day	26	38	1/week	24 hr. comp.
N	Residue, Total Nonfilterable	mg/l	30	45	kg/day	26	38	1/week	24 hr. comp.
C	Nitrogen, Ammonia (NH3)	mg/l	--	--	kg/day	--	--	1/week	24 hr. comp.
C	Nitrate as Nitrogen	mg/l	72.7	145	kg/day	62	124	1/week	24 hr. comp.
N	Fluoride, Total (F)	mg/l	1.3	4.5	kg/day	1.1187	3.8247	1/week	24 hr. comp.
N	Chromium, Total (Cr)	ug/l	12	27	kg/day	0.0101	0.0226	1/week	24 hr. comp.
N	Copper, Total (Cu)	ug/l	45	90	kg/day	0.0387	0.077	1/week	24 hr. comp.
N	Nickel, Total (Ni)	ug/l	29	42	kg/day	0.0251	0.0361	1/week	24 hr. comp.
N	Chromium, Dissolved Hexavalent	ug/l	--	--	kg/day	--	--	1/week	24 hr. comp.
S	Flow Rate, Daily	MGD	--	--		--	--	continuous	24 hr. total
N	pH		(6.5 TO 9.0)					continuous	

1980 Permit

	Nitrogen, Ammonia (NH3)	mg/l	--	--	kg/day	12	18	1/week	24 hr. comp.
	Nitrate as Nitrogen	mg/l	--	--	kg/day	62	124	1/week	24 hr. comp.
	Flow Rate, Daily	MGD	--	--		--	--	continuous	24 hr. total

NOTES
1 Daily Average is the maximum allowable average for a 30 day period.
2 Daily Maximum is the maximum allowable discharge level on any given day.
3 -- Monitoring requirement only.
4 Status: N-new, C-changed, S-same

TABLE 1-5
1980/1990 NPDES PERMIT LIMITS BY OUTFALL
Outfall 001 Manhole 175

1990 Permit

Status	Parameter	Discharge Limitations Concentration Units	30 Day	Daily	Loadings Units	30 Day	Daily	Monitoring Requirements Frequency and Type	
N	Dissolved oxygen	mg/l	--	(5.0 MIN)	kg/day	--	--	1/week	grab
C	Residue, Total Nonfilterable	mg/l	30	45	kg/day	99	149	1/week	24 hr. comp.
C	Oil & Grease, Total	mg/l	15	15	kg/day	50	50	1/week	grab
N	Nitrogen, Ammonia (NH3)	mg/l	--	--	kg/day	--	--	1/week	24 hr. comp.
N	Nitrate as Nitrogen	mg/l	--	--	kg/day	--	--	1/week	24 hr. comp.
N	Cyanide, Total	mg/l	0.036	0.076	kg/day	0.12	0.251	1/week	grab
N	Fluoride, Total (F)	mg/l	--	--	kg/day	--	--	1/week	24 hr. comp.
N	Chromium, Total (Cr)	ug/l	--	--	kg/day	--	--	1/week	24 hr. comp.
N	Copper, Total (Cu)	ug/l	23	94	kg/day	0.077	0.031	1/week	24 hr. comp.
N	Lead, Total (Pb)	ug/l	60	776	kg/day	0.199	2.562	1/week	24 hr. comp.
N	Nickel, Total (Ni)	ug/l	--	--	kg/day	--	--	1/week	24 hr. comp.
N	Silver, Total (Ag)	ug/l	12	26	kg/day	0.04	0.086	1/week	24 hr. comp.
N	Chromium, Dissolved Hexavalent	ug/l	--	--	kg/day	--	--	1/week	24 hr. comp.
S	Flow Rate, Daily	MGD	--	--		--	--	continuous	24 hr. total
N	Biochemical Oxygen Demand, Carb.	mg/l	20	30	kg/day	66	99	1/week	24 hr. comp.
C	pH		(6.5 TO 9.0)					continuous	

1980 permit for July 1, 1984 to expiration

	Residue, Total Nonfilterable	mg/l	20	40	kg/day	--	--	1/week	24 hr. comp.
	Oil & Grease, Total	mg/l	--	15	kg/day	--	--	1/week	grab
	Total Residual Chlorine	mg/l	--	0.1	kg/day	--	--	1/week	grab
	Un-ionized, Ammonia (NH3)	mg/l	--	0.05	kg/day	--	--	1/week	24 hr. comp.
	Flow Rate, Daily	MGD	--	--		--	--	continuous	24 hr. total
	pH		(6.5 TO 9.0)					1/week	grab

NOTES
1 Daily Average is the maximum allowable average for a 30 day period.
2 Daily Maximum is the maximum allowable discharge level on any given day.
3 -- Monitoring requirement only.
4 Status: N-new, C-changed, S-same

TABLE 1-6
1980/1990 NPDES PERMIT LIMITS BY OUTFALL
Outfall 002 Stormwater Retention Basin Spillway

1990 Permit

Status	Parameter	Discharge Limitations Concentration Units	Concentration 30 Day	Concentration Daily	Loadings Units	Loadings 30 Day	Loadings Daily	Monitoring Requirements Frequency and Type	
C	Residue, Total Nonfilterable	mg/l	--	100	kg/day	--	--	**	24 hr. comp.
C	Oil & Grease, Total	mg/l	--	15	kg/day	--	--	**	grab
N	Nitrogen, Ammonia (NH3)	mg/l	--	--	kg/day	--	--	**	24 hr. comp.
N	Nitrate as Nitrogen	mg/l	--	--	kg/day	--	--	**	24 hr. comp.
N	Fluoride, Total (F)	mg/l	--	--	kg/day	--	--	**	24 hr. comp.
N	Chromium, Total (Cr)	ug/l	--	3986	kg/day	--	--	**	24 hr. comp.
N	Copper, Total (Cu)	ug/l	--	45	kg/day	--	--	**	24 hr. comp.
N	Nickel, Total (Ni)	ug/l	--	3137	kg/day	--	--	**	24 hr. comp.
N	Silver, Total (Ag)	ug/l	--	11.6	kg/day	--	--	**	24 hr. comp.
N	Chromium, Dissolved Hexavalent	ug/l	--	19	kg/day	--	--	**	24 hr. comp.
S	Flow Rate, Daily	MGD	--	--		--	--	**	24 hr. total
C	pH		(6.5 TO 9.0)						continuous

1980 permit

	Residue, Total Nonfilterable	mg/l	30	100	kg/day	--	--	**	grab
	Oil & Grease, Total	mg/l	--	15	kg/day	--	--	**	grab
	Flow Rate, Daily	MGD	--	--		--	--	**	24 hr. total
	pH		(6.5 TO 9.0)					**	grab

NOTES
1 Daily Average is the maximum allowable average for a 30 day period.
2 Daily Maximum is the maximum allowable discharge level on any given day.
3 -- Monitoring requirement only.
4 ** During overflow into the Storm Sewer Outfall Ditch
5 Status: N-new, C-changed, S-same

TABLE 2 NPDES DISCHARGE PERMIT COMPLIANCE DATA for 1989

ameter	Units	Monitoring Requirements	Daily Minimum	Daily Maximum	Daily Average[4]	NPDES Permit Limits Daily Maximum	NPDES Permit Limits Monthly Average	Percent Compliance	Number of Permit Exceedences
:fall 001 Manhole 175									
ow Rate	MGD	Continuous	0.090	1.529	0.680	NA	NA	NA	NA
	S.U.	Daily/Grab	7.4	9.3	NA	Range = 6.5 to 9.0		100.0	0
ispended Solids[1]	mg/l	Wk/24hr Comp	< 2	127	17.0	40	20	92.2	5
l & Grease	mg/l	Weekly/Grab	< 5	11.4	< 5.1	15	NA	100.0	0
:sidual Chlorine	mg/l	Weekly/Grab	< 0.02	0.10	0.04	0.1	NA	100.0	0
:fall 002 Storm Water Retention Basin Outfall[3]									
ow Rate	MG/Event	Continuous	0.016	0.582	NA	NA	NA	NA	NA
	S.U.	Event/Grab	7.9	8.1	NA	Range = 6.5 to 9.0		100.0	0
ispended Solids[1]	mg/l	Event/Grab	50	78	NA	100	30	100.0[3]	2[3]
l & Grease	mg/l	Event/Grab	< 5.0	11.2	NA	15	NA	100.0	0
:fall 001A Sewage Treatment Plant									
ow Rate	MGD	Continuous	0.056	0.366	0.218	NA	NA	NA	NA
	S.U.	Daily/Grab	7.5	8.6	NA	Range = 6.5 to 9.0		100.0	0
)D5	mg/l	Weekly/Grab	0	12	3	40	20	100.0	0
ispended Solids[1]	mg/l	Wk/24hr Comp	1	13	4	40	20	100.0	0
ecal Coliform[2]	#/100ml	Weekly/Grab	0	1000	69	2000	1000	100.0	0
)D5[1]	kg/day	Weekly/Grab	0.0	9.9	2.6	10	5	100.0	0
ispended Solids	kg/day	Wk/24hr Comp	0.5	13.6	3.6	10	5	87.5	8
tfall 001B & C General Sump & Clearwell									
low Rate	MGD	Continuous	0.019	0.527	0.055	NA	NA	NA	NA
ispended Solids	kg/day	Wk/24hr Comp	< 0.1	23.3	1.2	12.8	6.2	96.8	2
ıromium (+6)	kg/day	Wk/24hr Comp	< 0.0001	0.003	< 0.0003	0.008	0.004	100.0	0
ıromium (total)	kg/day	Wk/24hr Comp	< 0.0001	0.010	< 0.0006	0.102	0.050	100.0	0
ron	kg/day	Wk/24hr Comp	0.0006	1.750	0.0610	0.85	0.41	96.8	2
ickel	kg/day	Wk/24hr Comp	< 0.0002	0.049	0.0029	0.256	0.124	100.0	0
opper	kg/day	Wk/24hr Comp	0.0001	0.010	0.0014	0.051	0.025	100.0	0
tfall 001D Lift Station									
low Rate	MGD	Continuous	0.003	1.08	0.230	NA	NA	NA	NA
ispended Solids[1]	mg/l	Weekly/Grab	< 2.0	172	24.1	100	30	93.7	4
il & Grease	mg/l	Weekly/Grab	< 5.0	15.5	< 5.5	15	NA	98.1	1
tfall 001E Bioreactors									
low Rate	MGD	Continuous	0.014	0.187	0.109	NA	NA	NA	NA
itrate-Nitrogen	kg/day	Wk/24hr Comp	0.02	81.3	4.9	124	62	100.0	0
mmonia-Nitrogen	kg/day	Wk/24hr Comp	0.03	2.56	0.30	18	12	100.0	0

tes:
Flow-weighted averages.
Geometric mean.
Two single day overflow events: March 31 and April 4. TSS concentration in the discharge achieved compliance with Daily Maximum but not the 30-Day monthly average.
Daily Average is shown as <, if more than half the values were less than the detection limit.
References: 1989 Environmental Monitoring Report and Discharge Monthly Reports for 1989

TABLE 3-1 RECORD OF NPDES EXCEEDENCES

MONTH, YEAR DENOTES EXCEEDENCE TO 30-DAY LIMITATIONS FOR A PARAMETER
DAY-MONTH-YEAR DENOTES EXCEEDENCE TO DAILY MAXIMUM LIMITATIONS FOR A PARAMETER

SAMPLE DATE	REPORT NUMBER	NPDES AND	LOCATION DESCRIPTION	PARAMETER	PERMIT VALUE	ACTUAL VALUE	UNITS
13-Jan-89	89- 1	001	MH 175	TSS/MAX	40	127	MG/L
JANUARY, 1989	89- 2	001	MH 175	TSS/AVG	20	40	MG/L
16-Jan-89	89- 3	001D	SSLS	TSS/MAX	100	110	MG/L
22-Feb-89	89- 4	001A	STP	TSS/MAX	10	13.1	KG/DAY
FEBRUARY, 1989	89- 5	001A	STP	TSS/AVG	5	5.8	KG/DAY
22-Mar-89	89- 6	001A	STP	TSS/MAX	10	13.6	KG/DAY
MARCH, 1989	89- 7	001A	STP	TSS/MAX	5	6.1	KG/DAY
MARCH, 1989	89- 8	002	SWRB	TSS/AVG	30	50	MG/L
26-Apr-89	89- 9	001A	STP	TSS/MAX	10	10.6	KG/DAY
APRIL, 1989	89- 10	001A	STP	TSS/AVG	5	7.4	KG/DAY
5-Apr-89	89- 11	001B/C	GS/CW	TSS/MAX	12.8	23.3	KG/DAY
APRIL, 1989	89- 12	001B/C	GS/CW	TSS/AVG	6.2	17.3	KG/DAY
5-Apr-89	89- 13	001B/C	GS/CW	FE/MAX	0.85	1.75	KG/DAY
APRIL, 1989	89- 14	001B/C	GS/CW	FE/AVG	0.41	1.15	KG/DAY
APRIL, 1989	89- 15	002	SWRB	TSS/AVG	30	78	MG/L
26-MAY-89	89- 16	001	MH 175	TSS/MAX	40	55	MG/L
MAY, 1989	89- 17	001	MH 175	TSS/AVG	20	26	MG/L
10-MAY-89	89- 18	001A	STP	TSS/MAX	10	12.3	KG/DAY
MAY, 1989	89- 19	001A	STP	TSS/AVG	5	6.9	KG/DAY
2-MAY-89	89- 20	001D	SSLS	TSS/MAX	100	155	MG/L
26-MAY-89	89- 21	001D	SSLS	TSS/MAX	100	172	MG/L
MAY, 1989	89- 22	001D	SSLS	TSS/AVG	30	67	MG/L
23-JUN-89	89- 23	001D	SSLS	O&G/MAX	15	15.5	MG/L
24-NOV-89	89- 24	001	MH 175	TSS/MAX	40	52	MG/L
16-Feb-90	90- 1	001	MH 175	TSS/MAX	40	62	MG/L
20-Feb-90	90- 2	001	MH 175	TSS/MAX	40	48	MG/L
FEBRUARY, 1990	90- 3	001	MH 175	TSS/MAX	20	35	MG/L
FEBRUARY, 1990	90- 4	001A	STP	TSS/AVG	5	7.6	KG/DAY
28-Feb-90	90- 5	001D	SSLS	TSS/MAX	100	141	MG/L
FEBRUARY, 1990	90- 6	001D	SSLS	TSS/AVG	30	43	MG/L

BEGAN IMPLEMENTATION OF NEW NPDES PERMIT ON MARCH 1, 1990

ATTACHMENT 1

NPDES Permit History

ATTACHMENT 1

A brief NPDES Permit History

The initial NPDES permit No. OH0009580 for the FMPC was issued by USEPA on June 30, 1975. A renewed NPDES permit was issued by USEPA on October 2, 1980 and expired on February 1, 1985. On January 14, 1983, the Ohio Environmental Protection Agency (OEPA) received primacy for NPDES permits for federal facilities in the State of Ohio.

The 1980 permit contained a construction schedule (NPDES Permit Part I.B.) for a Biodenitrification (BDN) Facility and tiered discharge limits based on the BDN Facility becoming operational in 1984. The BDN Facility was not operational, however, until June of 1987. Although a new NPDES permit was applied for in 1984, the State of Ohio did not process the application because the BDN facility was not operational. During the period between 1984 and June 1987, it was necessary for the FMPC to reduce Refinery production to meet the reduced nitrate discharge limits (the refinery accounted for approximately 45% of nitrate discharges). Flow equalization in Pit 5/Clearwell was also used in an effort to comply with the nitrate limits.

On February 28, 1987, the FMPC, in compliance with the preliminary State of Ohio Environmental Protection Agency Director's Findings and Orders, ceased discharge of process wastewaters to Waste Pit 5 (Ref. 1). The water which previously was sent to Pit 5 was re-routed to the recently completed Biodenitrification Surge Lagoon (BSL). The water accumulated in the BSL until the BDN became operational in June.

On June 27, 1984, USEPA issued proposed effluent limitations and standards for nonferrous metals manufacturing facilities in the Federal Register. The proposed rules governed discharges to waters of the United States and the introduction of pollutants into publicly owned treatment works. After a comment period these proposed rules were promulgated and issued in the Federal Register on August 23, 1985. The rules affecting the FMPC were 40 CFR 421.323, BAT limitations for the Secondary Uranium Subcategory, and 40 CFR 471.72, Nonferrous Metal forming and Metal Powders Point Source Category for Uranium Forming Subcategory. The rules limit the amount of a pollutant discharge based on a facility's production rate.

In August 1987, the FMPC prepared and issued to the OEPA an FMPC NPDES Compliance Strategy for Process Wastewaters to achieve nitrate compliance (Ref. 2). In a December 1987 letter to DOE, OEPA acknowledged significant compliance achievements with the 1980 permit (Ref. 3). The FMPC continued to operate under the 1980

permit with modifications delineated under a Consent Decree (signed December 12, 1988) between the Department of Energy and the State of Ohio.

Section 4.4 of the Consent Decree stated: "Until OEPA issues a new NPDES permit for FMPC, DOE shall make every effort to manage its wastewater in such a way as to comply with the BOD (biochemical oxygen demand), TSS (total suspended solids), and fecal coliform limitations of its present NPDES permit. Until OEPA issues a new NPDES permit for the FMPC, DOE shall comply with all other terms (excluding part I.B), conditions and effluent limitations of its present NPDES permit".

OEPA recognized in the Consent Decree that in order for the FMPC to meet the specified nitrate limits, increases in mass and concentration loads for BOD and TSS, and concentration loads for fecal coliform were expected. The FMPC agreed in return to make every effort to minimize the exceedences and maintain compliance.

As required by the Consent Decree, a new application for NPDES permit renewal was submitted to OEPA on August 1, 1988 (Ref. 4). On July 24, 1989, the OEPA issued a draft permit for a 30-day public review and comment period. FMPC supplied substantial comments to the OEPA on August 23, 1989 (Ref. 5) and further information in a January 5, 1990 telefax (Ref. 6). The permit renewal was issued by OEPA to DOE on February 12, 1990 (Ref. 7).

References:

1) LETTER Maan Osman, OEPA to James A. Reafsynder, DOE, "Final Findings and Orders", dated June 26, 1987
2) FMPC NPDES Compliance Strategy for Process Wastewater, Revision 1, August 31, 1987, Westinghouse Materials Company of Ohio for the U.S. Department of Energy.
3) LETTER Martyn Burt, OEPA to J.A. Reafsnyder, DOE, "FMPC National Pollution Discharge Elimination System Permit Application," dated December 14, 1987
4) LETTER DOE-1244-88, James A. Reafsnyder, DOE to Thomas A. Winston, OEPA, FMPC NPDES PERMIT APPLICATION," dated August 1, 1988.
5) LETTER DOE-1512-89, James A. Reafsnyder, DOE to John Sadzewicz, OEPA, OEPA PERMIT NO. 1IO00004*BD - PUBLIC NOTICE NO. 89-07-049, dated August 23, 1989.
6) TELEFAXED, Jack Craig, DOE to Mark Hamm, OEPA, DRAFT NPDES PERMIT COMMENT SUPPORT DATA (Preliminary Draft), date January 5, 1990. (Final WMCO:R:90-025).
7) LETTER John J. Sadzewicz, OEPA to James A. Reafsnyder, DOE " OEPA (NPDES) Permit No. 1IO0004*BD, U.S. Department of Energy Feed Materials Production Center," date February 12, 1990.

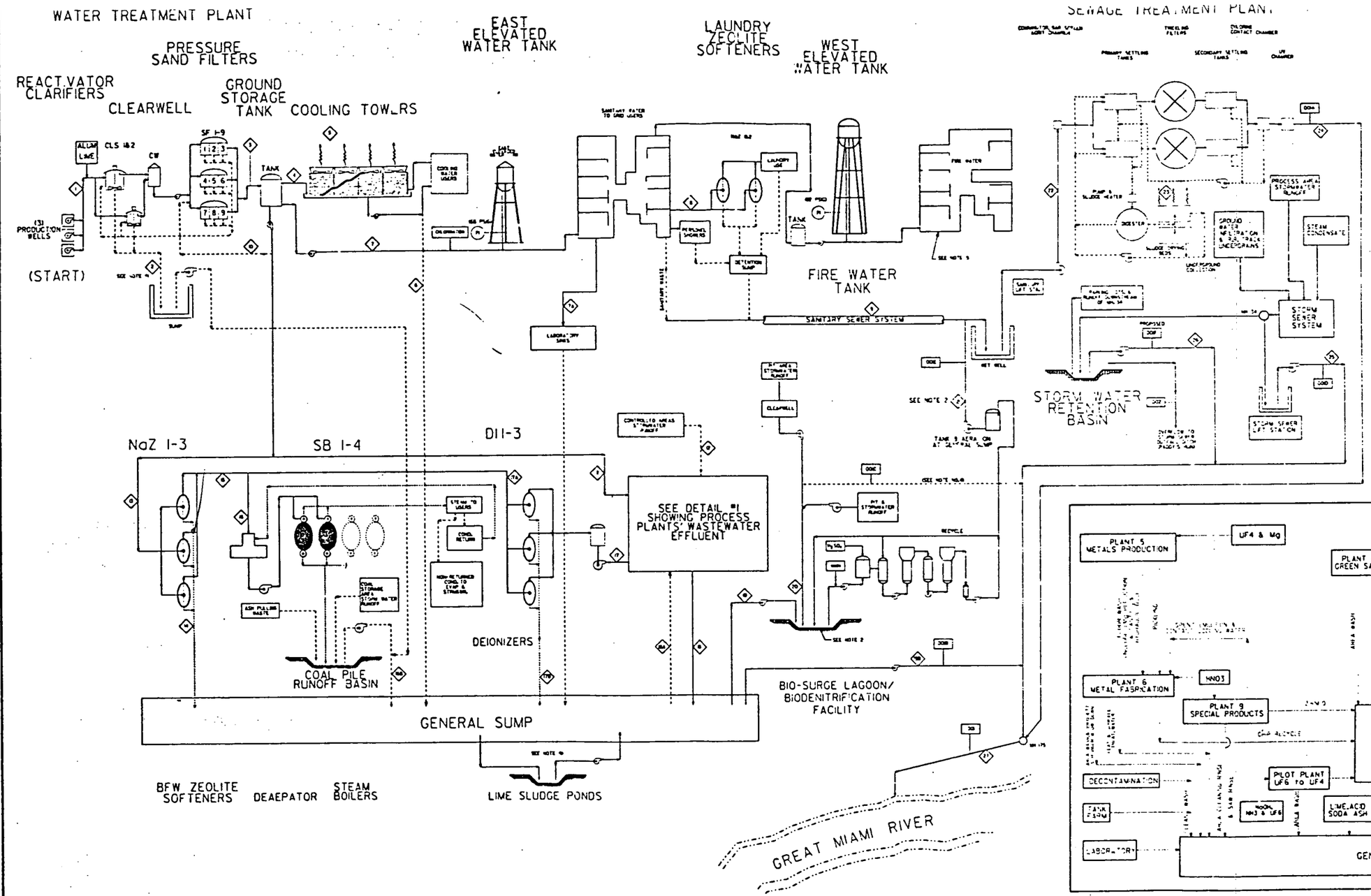
ATTACHMENT 2

Drawing 20X-5500-F-00373
WATER BALANCE TABULATION NPDES APPLICATION - JULY 1988

TABLE 3-2 RECORD OF NPDES EXCEEDENCES

MONTH, YEAR DENOTES EXCEEDENCE TO 30-DAY LIMITATIONS FOR A PARAMETER
DAY-MONTH-YEAR DENOTES EXCEEDENCE TO DAILY MAXIMUM LIMITATIONS FOR A PARAMETER

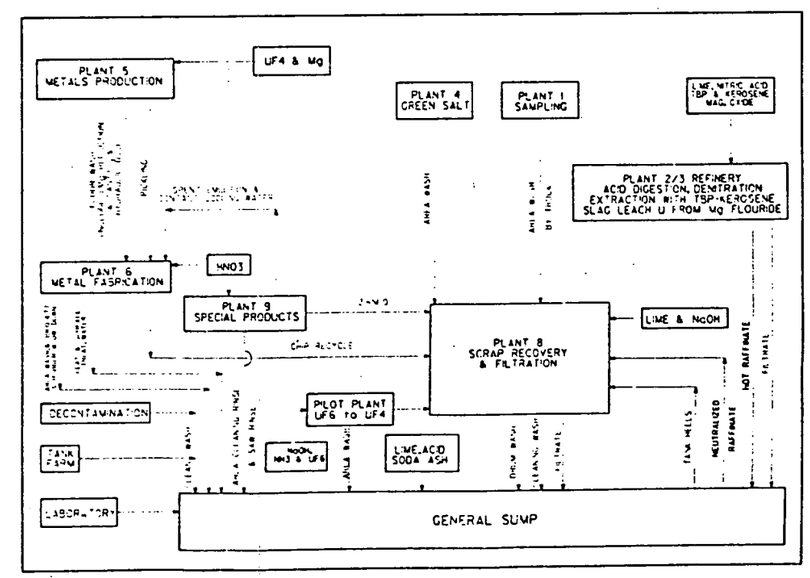
SAMPLE DATE	REPORT NUMBER	NPDES AND	LOCATION DESCRIPTION	PARAMETER	PERMIT VALUE	ACTUAL VALUE	UNITS
BEGAN IMPLEMENTATION OF NEW NPDES PERMIT ON MARCH 1, 1990							
18-Mar-90	90- 7	001	MH 175	pH/MAX	9.0 1 hr	9.2 4 hrs	
26-Mar-90	90- 8	001	MH 175	pH/MAX	9.0 1 hr	9.2 3 hrs	
MARCH, 1990	90- 9	601	STP	Fl/AVG	1.7	1.9	MG/L
MARCH, 1990	90- 10	605	BDN	Fl/AVG	1.3	2.9	MG/L
MARCH, 1990	90- 11	605	BDN	Fl/AVG	1.1187	1.6832	KG/DAY
18-Mar-90	90- 12	606	SWRB	pH/MAX	9.0 1 hr	10.5 4 hrs	
26-Mar-90	90- 13	606	SWRB	pH/MAX	9.0 1 hr	9.4 4 hrs	
MARCH, 1990	90- 14	606	SWRB	pH/MAX	7 hrs	8 hrs > 9.0	
14-Apr-90	90- 15	001	MH 175	pH/MAX	9.0 1 hr	9.4 4 hrs	
15-Apr-90	90- 16	001	MH 175	pH/MAX	9.0 1 hr	9.5 4 hrs	
15-Apr-90	90- 17	001	MH 175	pH/MAX	9.0 1 hr	9.2 4 hrs	
APRIL, 1990	90- 18	001	MH 175	pH/MAX	7:26>9pH	12:00>9pH	
7-May-90	90- 19	602	GS	Chromium	27	103	UG/L
13-Jul-90	90- 20	001	MH 175	pH/MAX	9.0 1 hr	9.4 6.5 hrs	
16-Jul-90	90- 21	001	MH 175	pH/MAX	9.0 1 hr	9.3 1.5 hrs	
27-Jul-90	90- 22	001	MH 175	pH/MAX	9.0 1 hr	9.3 2 hrs	
28-Jul-90	90- 23	001	MH 175	pH/MAX	9.0 1 hr	9.2 2 hrs	
30-Jul-90	90- 24	001	MH 175	pH/MAX	9.0 1 hr	9.5 3.5 hrs	
JULY, 1990	90- 25	001	MH 175	pH/MAX	7:26>9pH	17:16>9pH	
1-Aug-90	90- 26	001	MH 175	pH/MAX	9.0 1 hr	9.6 1.5 hrs	
1-Aug-90	90- 27	001	MH 175	pH/MAX	9.0 1 hr	9.6 1.07 hrs	
6-Aug-90	90- 28	001	MH 175	pH/MAX	9.0 1 hr	9.2 3.2 hrs	
7-Aug-90	90- 29	001	MH 175	pH/MAX	9.0 1 hr	9.2 4 hrs	
AUGUST, 1990	90- 30	001	MH 175	pH/MAX	7:26>9pH	12:21>9pH	



2074

GENERAL NOTES:

1. CLARIFIER BLOWDOWN STREAM (27) IS ROUTED TO GENERAL SUMP FOR DECANTING. SLUDGE SOLIDS ARE PUMPED TO POLYPOND AND SUPERNATANT IS PUMPED TO GENERAL SUMP.
2. DURING 1987 WHEN THE FLOW BALANCE WAS ANALYZED (CASE A), APPROXIMATELY 1/3 OF SANITARY WASTEWATER WAS ACCUMULATED IN THE BIO-SURGE LAGOON (STATION 0.0). FACILITY DATA IS ACCOUNTED FOR IN ADJUSTED CASE B IN FLOWS DOWNSTREAM OF THE SUMP.
3. DURING 1987, APPROXIMATELY 25 INCHES OF RAINFALL WAS THE TYPICAL ANNUAL AVERAGE RAINFALL FOR THE AREA & 15 INCHES WERE ACCOUNTED FOR CALCULATED RAINFALL SEPARATELY.
4. DURING 1987, AFTER SHUTDOWN OF CLEARWELL (PT 5 OPERATIONS), THE CLEARWELL WAS PUMPED TO MH-175, WITH PERMISSION FROM DEPARTMENT OF ENERGY, JULY 23, 1987.
5. 24,892 GALS/DAY OF SANITARY/FIRE WATER WAS USED IN NON-NORMAL OPERATIONS (7 TO 8 MILLION GALS FOR TESTING THE BIO-SURGE LAGOON, CONSTRUCTION & ENGINEERING, CLEAN UP, ARE OTHER NON-RECORDED USERS (LAWN WATERING ETC.)
6. CASE (C) SHOWS THE EFFECTS OF A 1 INCH RAINFALL ON THE PLANT'S SYSTEM (JULY, 1987) WAS USED AS A BASIS FOR THE FLOWS SHOWN.



DETAIL #1

CASE *	(1) PRODUCTION WELLS	(2) CLARIFIER BLOWDOWN	(3) COOLING STG.TR.JM	(4) COOL.TWR. MAKE UP	(5) COOL.TWR. EVAPTN	(6) COOL.TWR. BLOWDOWN	(7) SANITARY WATER	(7A) LAB SINKS	(8) LAUNDRY SUPPLY	(9) SANITARY WASTE	(10) FILTER BACKWASH	(11) PROCESS PLANTS	(12) PROC. STM. WATER RUNOFF	(13) WATER SOFTENER	(14) NaZ REGEN.	(15) SOFT. WATER	(16) BFW MAKEUP	(16A) WATER PLANT TO G.S.	(17) DEMINERD WATER	(17A) D.I. MAKEUP	(17B) D.I. TO G.S.	(18) PROCESS WASTE	(18A) FILTRATE & TANK HEELS	(19) GENSUMP BSL	(19B) G.S. TO MH-175	(20) PH STM. WATER RUNOFF	(21) BDW EFFL.	(22) SANITARY LIFT STA.	(23) SLUDGE NO. EVAPORATION	(24) STP TO MH-175	(25) LIFT STA. TO MH-175	(26) SWPD TO MH-175	(27) OUTFALL	REMARKS
A	462,505	34,143	434,962	96,218	77,025	19,256	172,885	13,760	15,757	134,233	7,000	48,681	8,234	10,115	2,700	107,195	88,328	44,320	17,570	19,287	1,517	84,340	7,455	10,038	57,901	27,725	90,292	224,325	1,025	223,400	228,000	127,000	631,401	AVERFLOW 11.8GPM
B	462,505	34,143	434,962	96,218	77,025	19,256	172,885	13,760	15,757	134,233	7,000	48,681	18,513	10,115	2,700	107,195	88,328	46,075	17,570	19,287	1,517	92,279	7,455	108,167	59,656	15,689	64,105	288,318	1,328	287,000	292,304	201,054	840,009	[illegible]
C	524,651	38,896	486,465	122,400	97,320	24,480	188,484	17,016	9,677	157,468	7,829	88,548	42,035	79,204	1,942	77,262	65,321	146,642	10,440	1,348	901	57,488	6,455	231,500	116,000	1,016,857	9,000	286,168	1,587[illegible]	287,000	665,000	300,000	1,368,000	MAX.FLOW 8.8GPM

* IN GALS./DAY.

40

NO.	REVISIONS	DATE	DWN.	BY	APPD.
1	GENERAL REVISION & ISSUE FOR NPDES PERMIT.				

REF. DWG. NO.

SPECIAL NOTES:

APPROVAL

WESTINGHOUSE MAT'LS. CO. OF OHIO
FERNALD, OHIO
FEED MATERIALS PRODUCTION CENTER
U.S. DEPARTMENT OF ENERGY

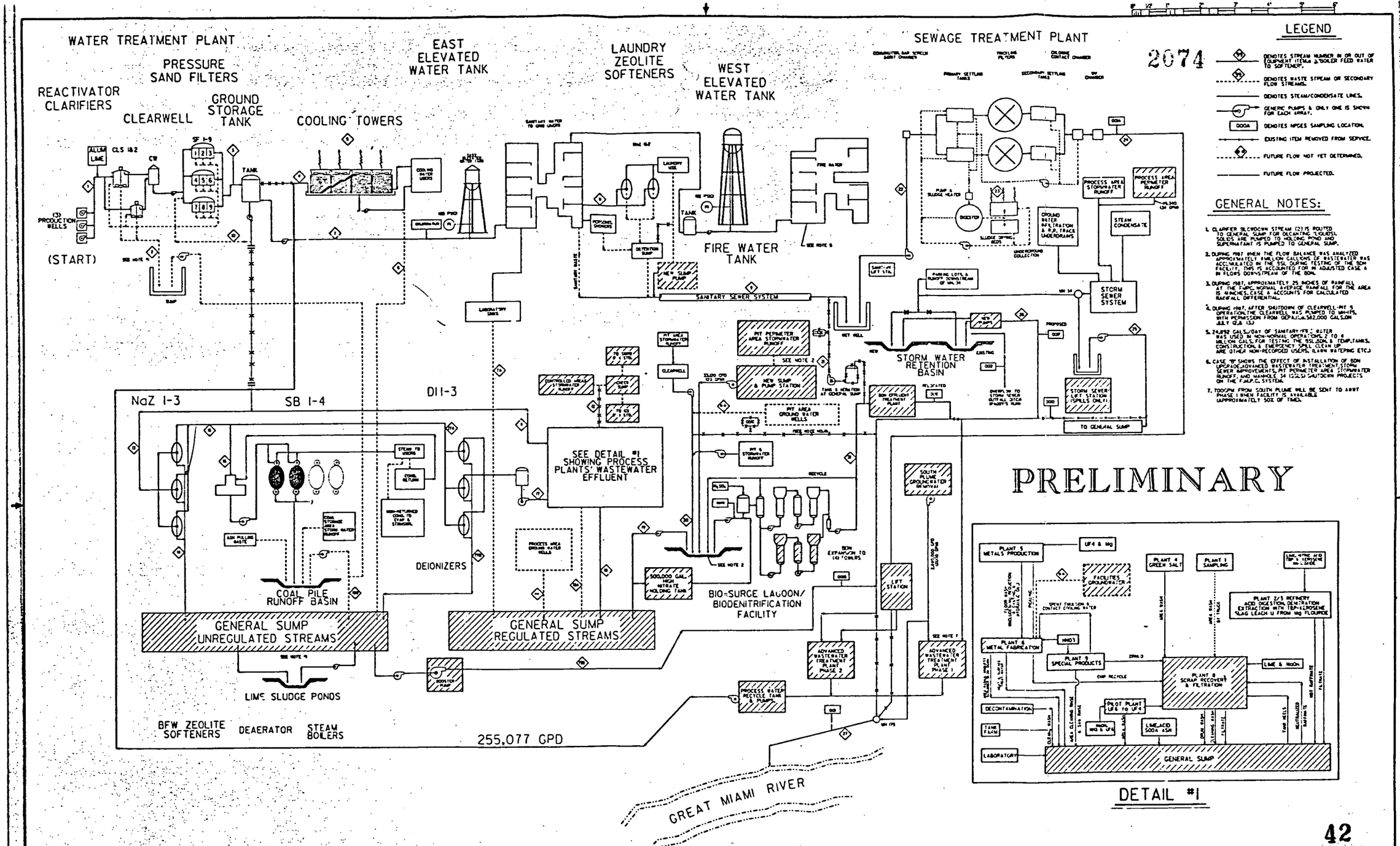
WATER BALANCE TABULATION
NPDES APPLICATION-JULY 1988

20X-5500-F-00373 | 1

FILE NAME: ZFA1:(100.4120)XF20373.500

ATTACHMENT 3

Drawing 20X-5500-F-00377
PROJECTED WATER BALANCE TABULATION WITH FUTURE MODIFICATIONS



42

CASE (A) IS 1987 ADJUSTED DAILY FLOWS.
CASE (B) IS PROJECTED FUTURE DAILY FLOWS.

CASE *	(1) PRODUCTION WELLS	(2) CLARIFIER BLOWDOWN	(3) GROUND STG./TR.M	(4) COOL.TWR. MAKE UP	(5) COOL.TWR. EVAP'N	(6) COOL.TWR. BLOWDOWN	(7) SANITARY WATER	(7A) LAB SINKS BLAUNDRY	(8) LAUNDRY SUPPLY	(9) SANITARY WASTE	(10) FILTER BACKWASH	(11) PROCESS PLANTS	(12) PROC. STM. WATER RUNOFF	(13) WATER SOFTENER	(14) NaZ REGEN.	(15) SOFT. WATER	(16) BFW MAKEUP	(16A) WATER PLANT TO C.S.	(17) DEIONIZED WATER	(17A) D.I. MAKEUP	(17B) D.I. TO C.S.	(18) PROCESS WASTE	(18A) FILTRATE & TANK WELLS	(19) GEN.SUMP DSL	(19B) G.S. TO MH-175	(20) PIT STM. WATER RUNOFF	(21) BDM EFFL.	(22) SANITARY LIFT STA.	(23) SLUDGE DED. EVAPORATION	(24) STP TO MH-175	(25)(26) LIFT STA. TO MH-175	(26) SBWR TO MH-175	(27) OUTFALL	REMARKS
A	462,005	34,443	434,962	98,218	77,025	18,296	172,885	13,760	15,757	134,233	7,010	48,68	18,93	10,95	2,700	107,495	88,328	46,075	17,570	19,087	1,517	92,279	7,955	108,407	59,654	45,689	154,105	294,338	1,338	287,000	292,308	201,054	840,009	ADJUSTED (INCLUDES SEE NOTES 2 & 3
B	558,808	8,737	449,337	98,218	77,025	18,296	149,337	28,800	15,757	120,00	2,146	48,68	18,93	10,95	2,700	107,495	88,328	23,649	17,570	19,087	1,517	92,279	7,955	18,567	47,242	45,689	150,376	120,000	557	195,443	0 (SHUTDOWN	1,008000 1700 GPM INTERMITTENT	3,389,684	SEE NOTES 2 & 3 SEE NOTE 6

* IN GALS./DAY.
** FUTURE FLOW NOT YET DETERMINED.
SEE GENERAL NOTES & REMARKS

NO.	REVISIONS	DATE	DWN. BY	APPD.	NO.	REVISIONS	DATE	DWN. BY	APPD.	REF. DWG. NO.
					B	REVISED PER RES #1408	7-8-8	SJS		
					A	REVISED PER RES #283	1-8-8	[illegible]		

NOTE: PMCO CAD DRAWING NOT TO BE REVISED MANUALLY.

APPROVALS: CHEMICAL, CIVIL & STR., ELECTRICAL, ENGINEER, INSTRUMENT, MECHANICAL, D.O.E., CHECKED, APPROVED; E.S. & H., MAINTENANCE, NU. SAFETY, Q.A., PRODUCTION, PROD. TECH., WASTE MANAGE., OPERATIONS

WESTINGHOUSE MAT'LS. CO. OF OHIO
FERNALD, OHIO
FEED MATERIALS PRODUCTION CENTER
U.S. DEPARTMENT OF ENERGY

PROJECTED WATER BALANCE TABULATION WITH FUTURE MODIFICATIONS

20X-5500-F-00377 B

FILE NAME: ZFA1:[100.4120]F00377.DGN

ATTACHMENT 4

FMPC WASTEWATER OVERVIEW

FMPC WASTEWATER OVERVIEW

Clean Water Act Program
September, 1990

FMPC WASTEWATER OVERVIEW

The presentation prepared and presented to U.S. & Ohio EPAs on September 25, 1990 was intended to address the following questions:

1) How is the FMPC wastewater treatment system configured and what projects are currently underway to meet present needs?

2) What CERCLA interim and/or conceptual changes are planned and how will they affect the wastewater treatment system?

3) Informal Dispute Resolution for South Plume Phase II Removal Action

2074

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FMPC Wastewater Overview

CURRENT TREATMENT NEEDS

Flow Diagram Changes

1989 Flow Diagram

Proposed Wastewater Flow Diagram

Changes Identifed by Outfall

INTERNAL OUTFALLS TO MANHOLE 175

Outfall 601 - Sewage Treatment Plant
Outfall 602 - General Sump
Outfall 603 - Clearwell
Outfall 604 - Storm Sewer Lift Station
Outfall 605 - Biodenitrification System
Outfall 606 - Stormwater Retention Basin

OUTFALLS TO THE GREAT MIAMI RIVER

Outfall 001 - Manhole 175
Outfall 002 - Stormwater Retention Basin Spillway

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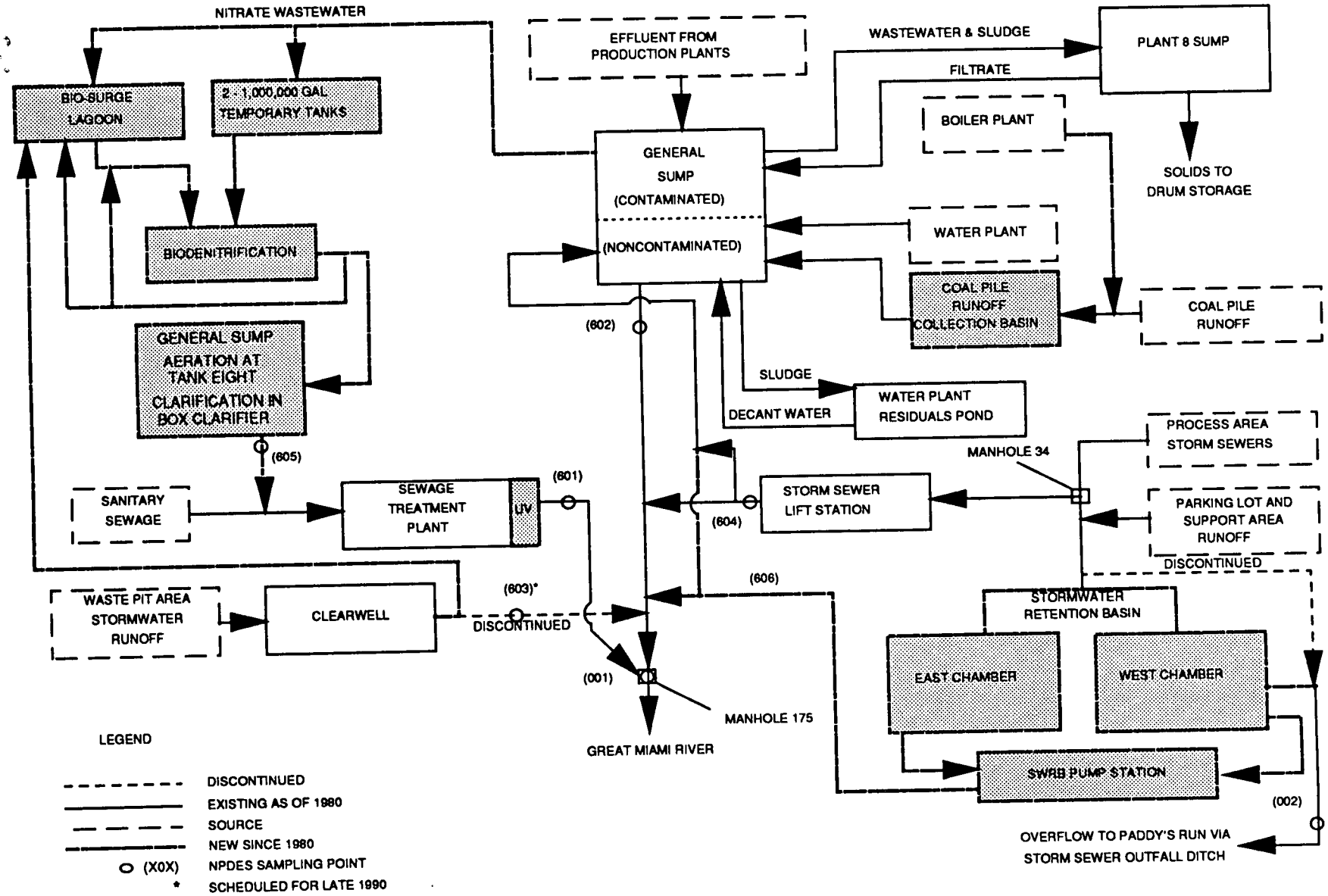
48

2074



1989 WASTEWATER FLOW DIAGRAM

Page 5

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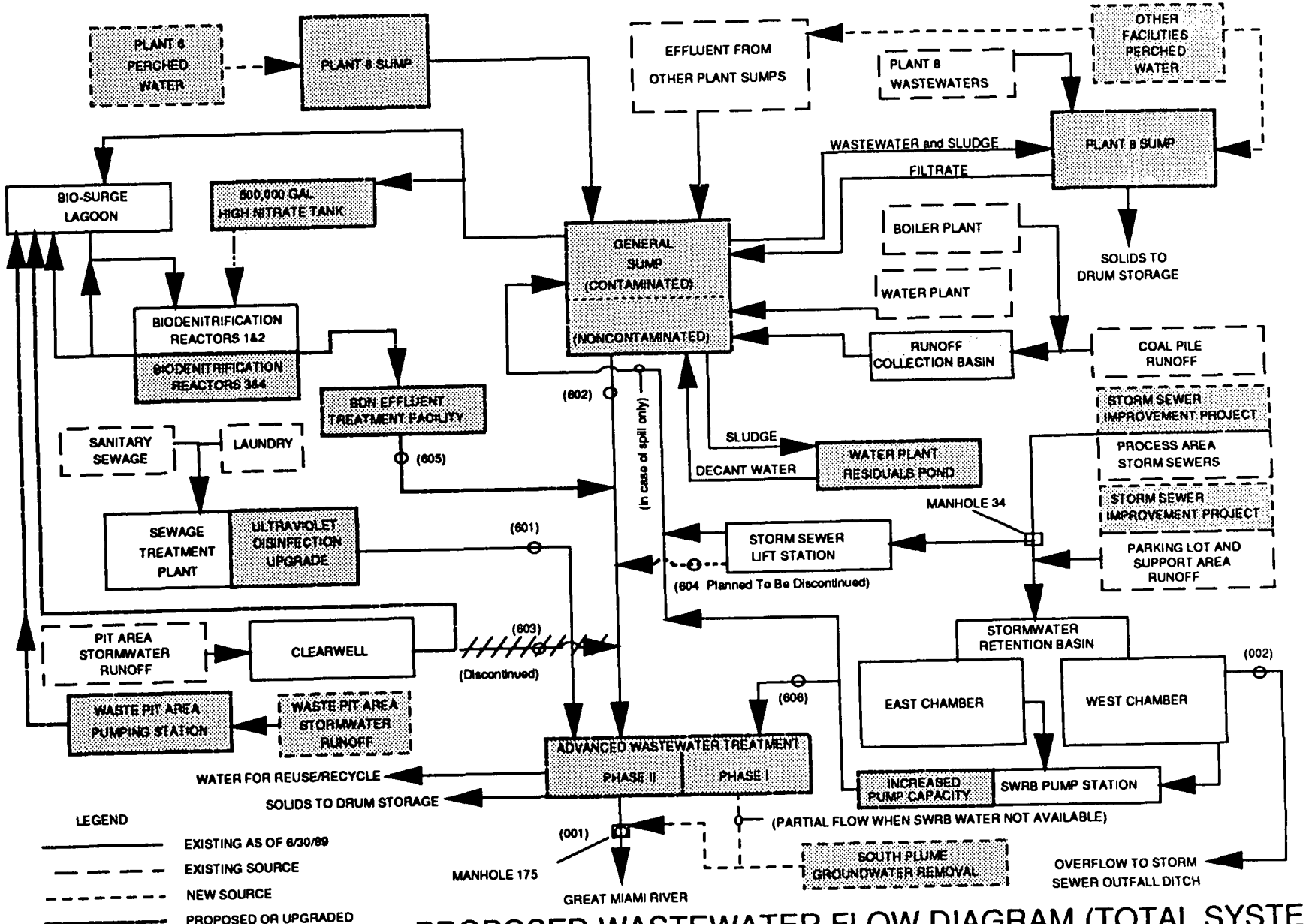
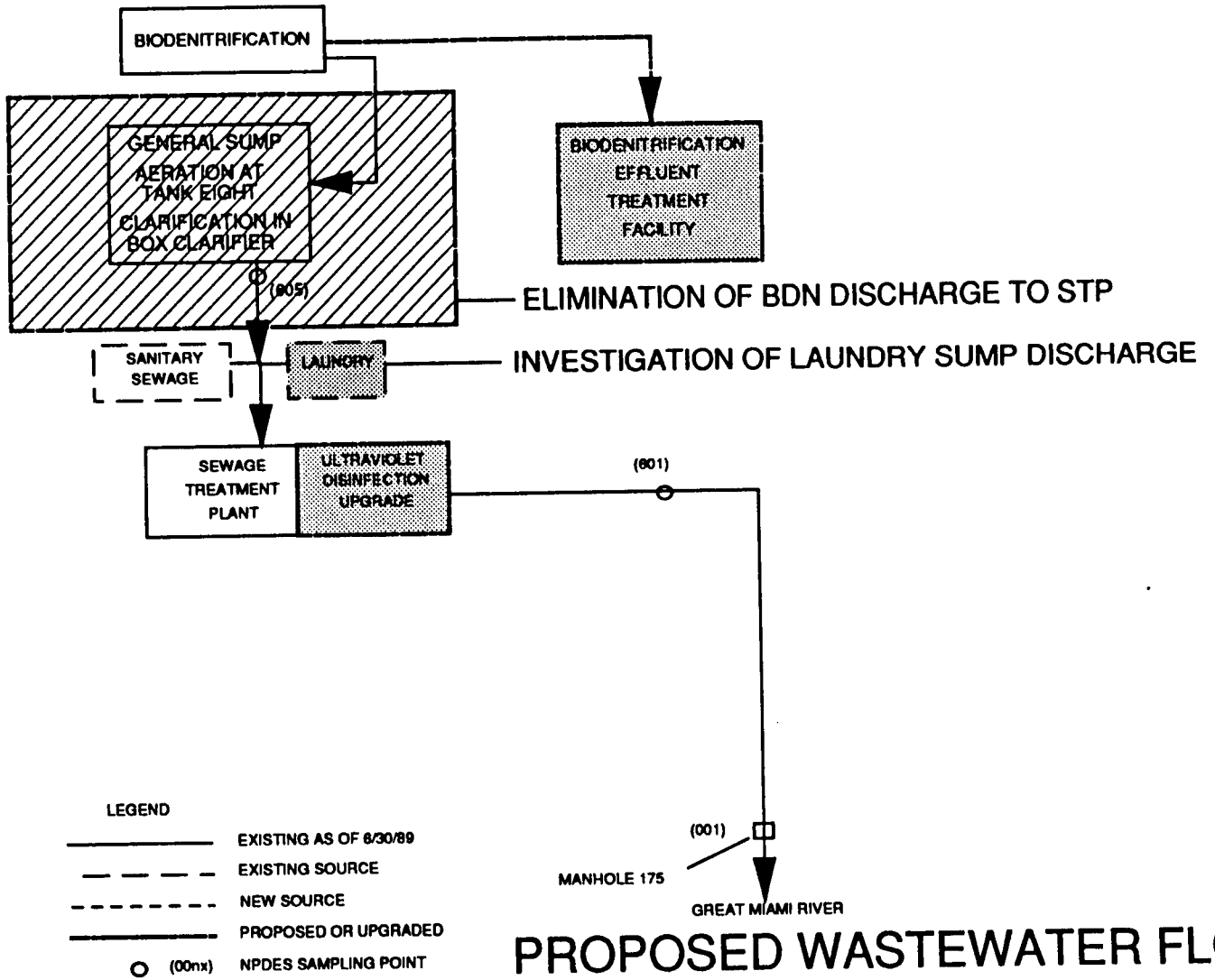


PROPOSED WASTEWATER FLOW DIAGRAM (TOTAL SYSTEM)



PROPOSED WASTEWATER FLOW DIAGRAM OUTFALL 601 SEWAGE TREATMENT PLANT

CLEAN WATER ACT COMPLIANCE PROGRAM

SEWAGE TREATMENT PLANT - OUTFALL 601

Current plans

- Eliminination of BDN discharge to STP
- Investigation of Laundry Sump Discharge

53

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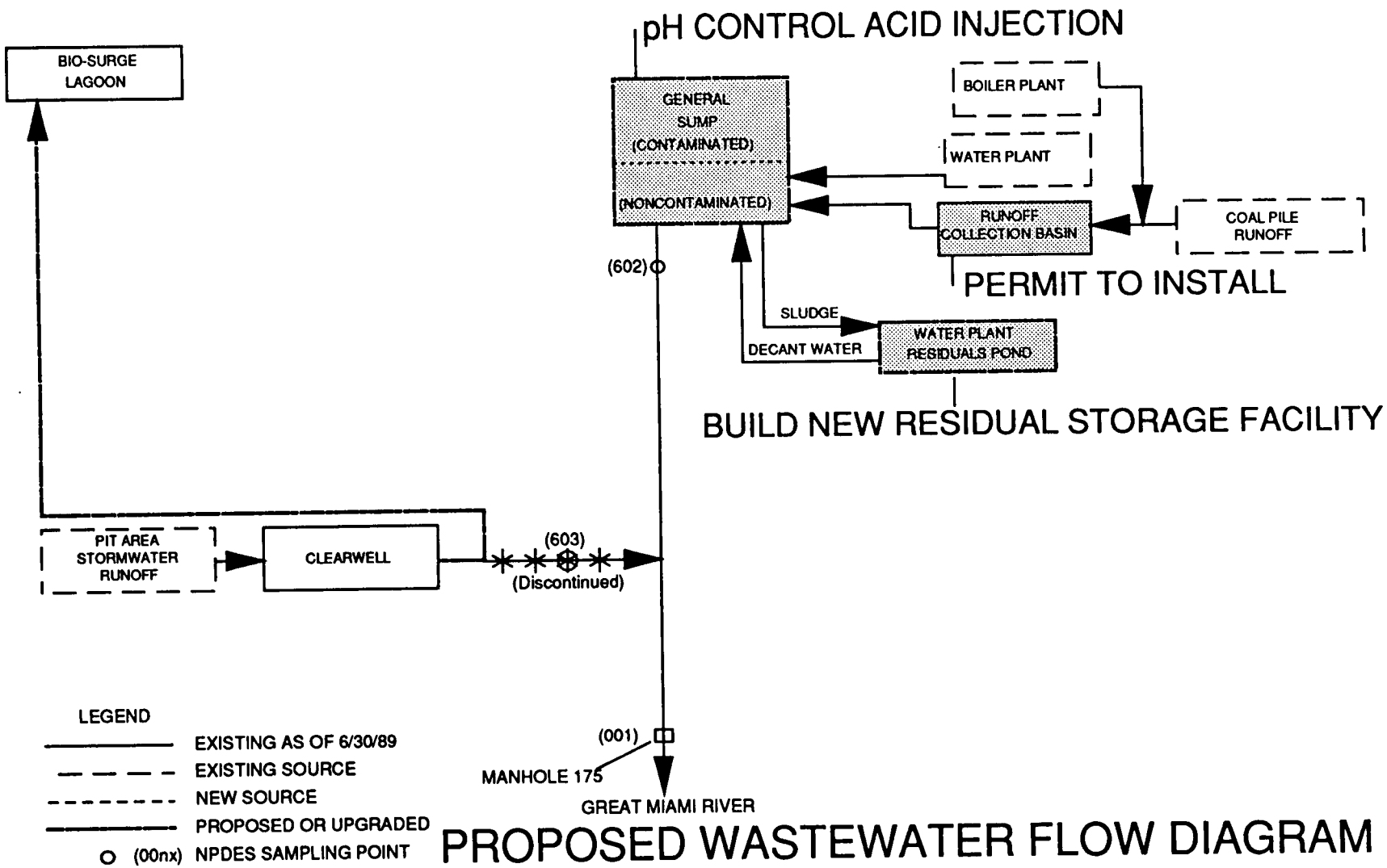


PROPOSED WASTEWATER FLOW DIAGRAM OUTFALL 602 GENERAL SUMP and OUTFALL 603 CLEARWELL

CLEAN WATER ACT COMPLIANCE PROGRAM

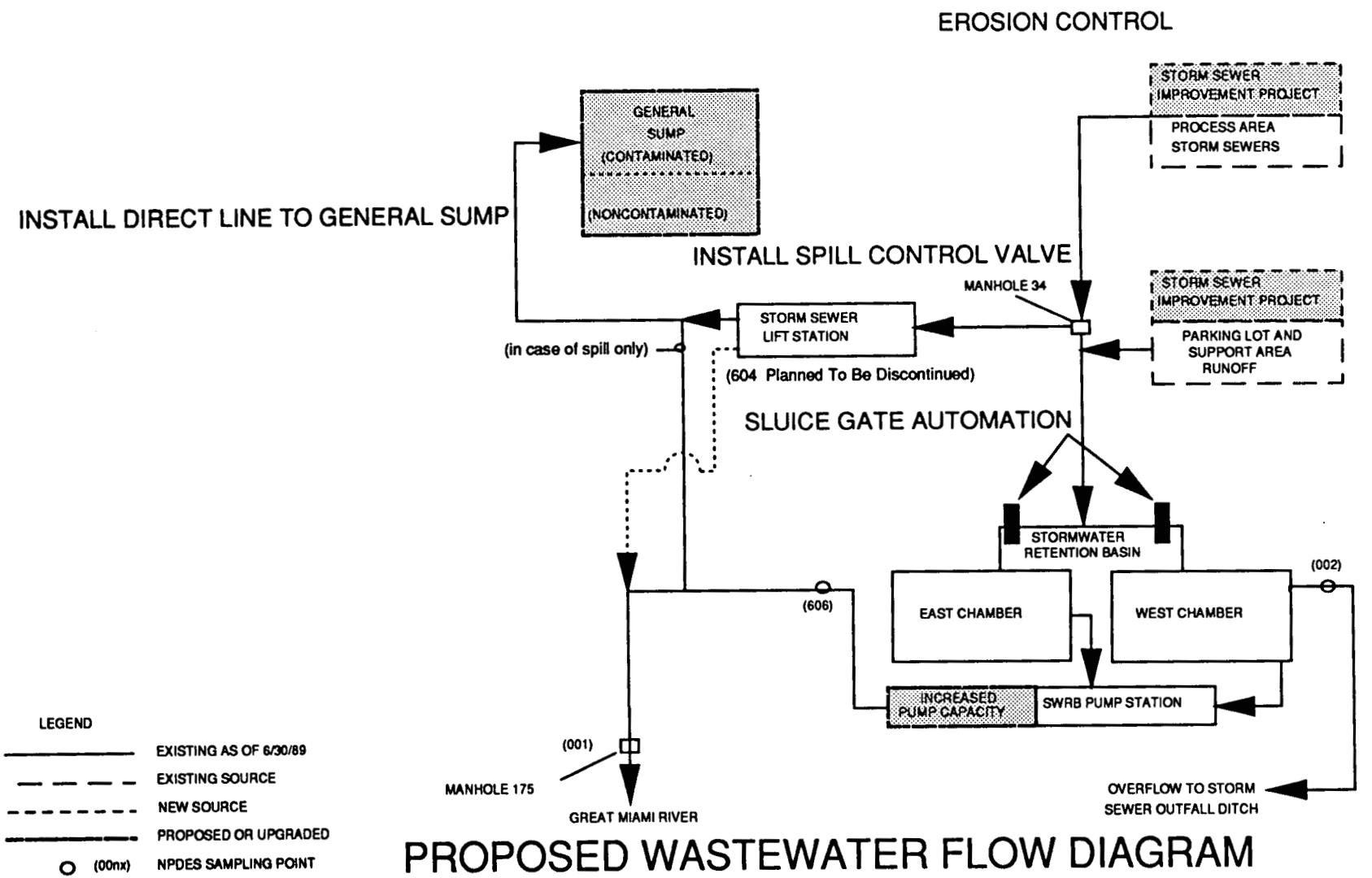
GENERAL SUMP/CLEARWELL OUTFALLS 602/603

Current plans

- Discontinued Clearwell discharge to Manhole 175
- Coal Pile Runoff Collection Sump PTI
- Water Plant Residuals Storage Pond
- General Sump Upgrade

Future Plans

- Health & Safety pH Control Acid Injection at General Sump.



PROPOSED WASTEWATER FLOW DIAGRAM
OUTFALL 604 STORM SEWER LIFT STATION
OUTFALL 606 STORMWATER RETENTION BASIN

2074

CLEAN WATER ACT COMPLIANCE PROGRAM

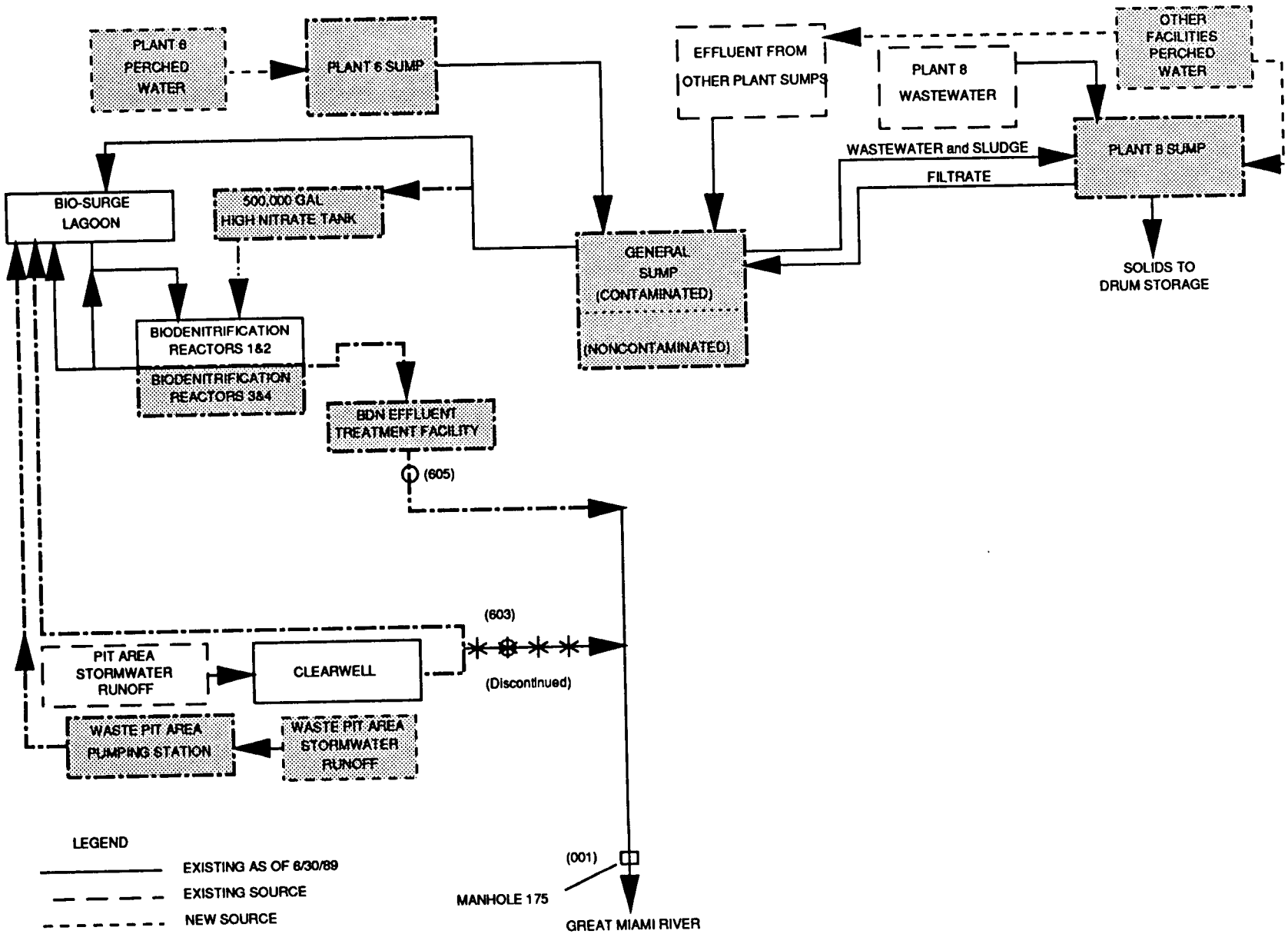
STORM SEWER LIFT STATION - OUTFALL 604
STORMWATER RETENTION BASIN - OUTFALL 606

Current plans

- Erosion Control
- Environmental Monitoring Equipment Upgrades

Future Plans

- Storm Sewer Improvements Project
- Install Spill Control Valve at SSLS and discontinue normal discharge to Manhole 175
- Install direct line to General Sump
- Additional Pumping Capacity at SWRB
- SWRB Sluice Gate Automation



PROPOSED WASTEWATER FLOW DIAGRAM OUTFALL 605 BIODENITRIFICATION ETS

CLEAN WATER ACT COMPLIANCE PROGRAM

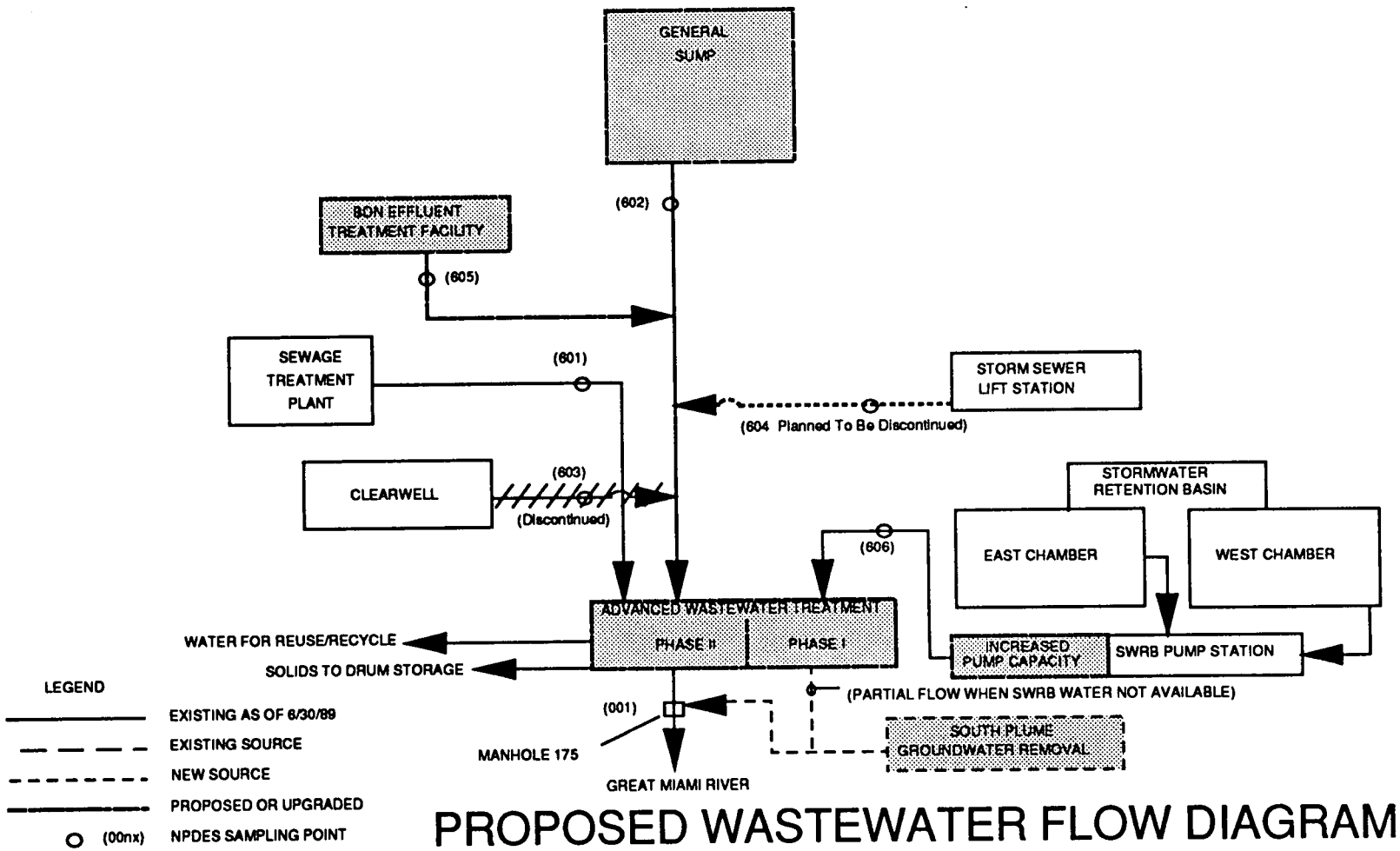
BIODENITRIFICATION EFFLUENT TREATMENT SYSTEM OUTFALL 605

Current plans

- Biodenitification System Upgrade Project
- High Nitrate Storage Tank Installation
- Clearwell discharge rerouting
- General Sump Upgrade
- Plant 8 Sump Upgrade
- Plant 6 Sump Upgrade
- CERCLA Removal Actions
  - Extracted Perched Groundwater
  - Waste Pit Area Stormwater Runoff Control Project

59

20174



PROPOSED WASTEWATER FLOW DIAGRAM
OUTFALL 001 MANHOLE 175

Page 16

CLEAN WATER ACT COMPLIANCE PROGRAM

MANHOLE 175 OUTFALL 001
(FMPC Primary Wastewater Discharge Point)

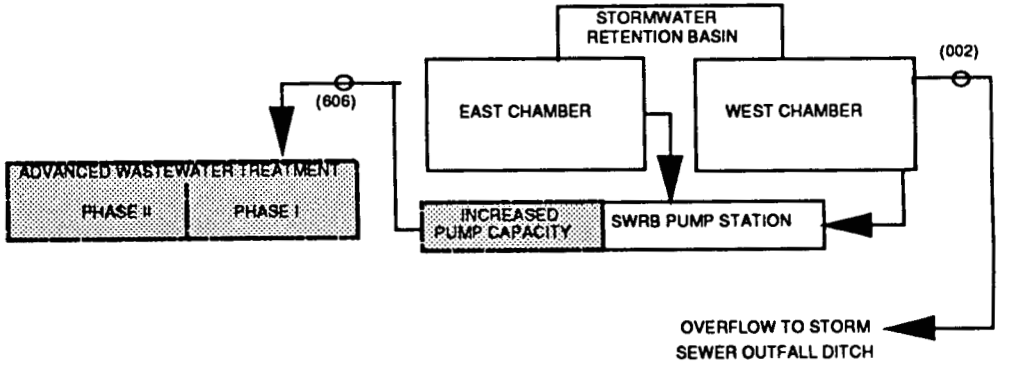
Outfalls 601 through 606 discharge to Manhole 175

Current Plans

- Effluent Monitoring Equipment @ Manhole 175
- Repair Outfall line between Manhole 179 and Manhole 180

Future Plans

- Advanced Wastewater Treatment Facility - Phases I & II
- South Plume Removal Action



LEGEND

- EXISTING AS OF 6/30/89
- EXISTING SOURCE
- NEW SOURCE
- PROPOSED OR UPGRADED
- o (00nx) NPDES SAMPLING POINT

PROPOSED WASTEWATER FLOW DIAGRAM
OUTFALL 002 SWRB SPILLWAY

12
62
2074

CLEAN WATER ACT COMPLIANCE PROGRAM

STORMWATER RETENTION BASIN SPILLWAY OUTFALL 002
(FMPC Secondary Wastewater Discharge Point)

Current Plans

- Effluent Monitoring Equipment

Future Plans

- Increase Pump Discharge Capacity of SWRB

63

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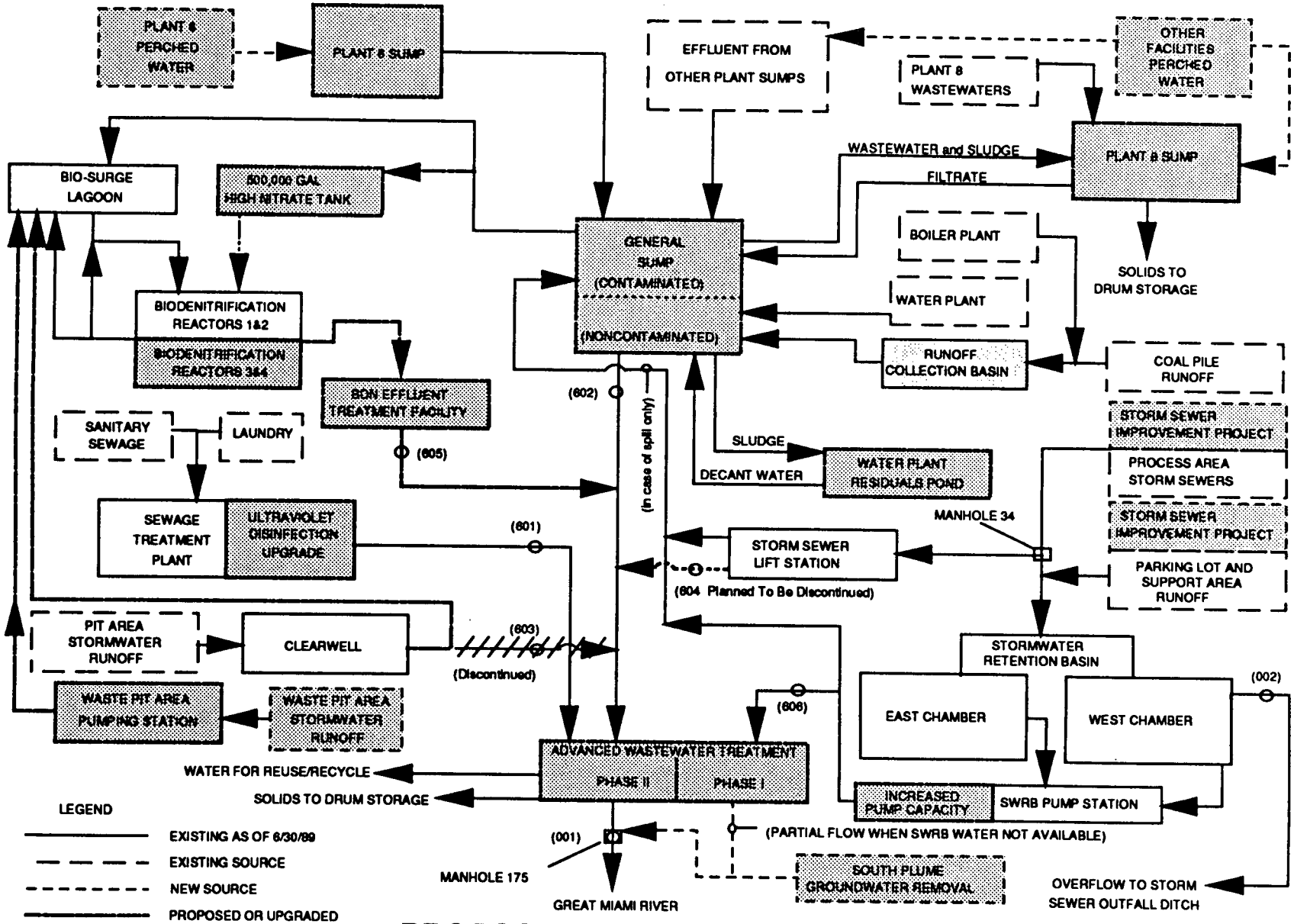


PROPOSED WASTEWATER FLOW DIAGRAM (TOTAL SYSTEM)

CLEAN WATER ACT COMPLIANCE PROGRAM

ADVANCED WASTEWATER TREATMENT FACILITY

Primary purpose is removal of radionuclides, mainly Uranium

- Ion exchange for Uranium

Secondary benefit is removal of NPDES contaminants

- Reverse osmosis as general polishing unit

Stormwater flow (Phase I) is for 700 gpm facility

General process flow (Phase II) is for 400 gpm facility

House in Building 51

Scheduled for startup November 1993

Anticipated cost $25-30 million

CLEAN WATER ACT COMPLIANCE PROGRAM

ADVANCED WASTEWATER TREATMENT FACILITY (Continued)

TESTING

Bench-scale testing (Phase A) completed by DURATEK

- Pretreatment with alum and polymer
- Pressurized sand filtration
- DOWEX 21K had best resin performance
- Recommend three stages of reverse osmosis

Field Demonstration Testing (Phase B)

- Notice to Proceed with Phase B sent August 20, 1990
- Unit on-site by September 21, 1990
- FMPC preparation activites ongoing

Demonstration unit will provide flexibility in testing

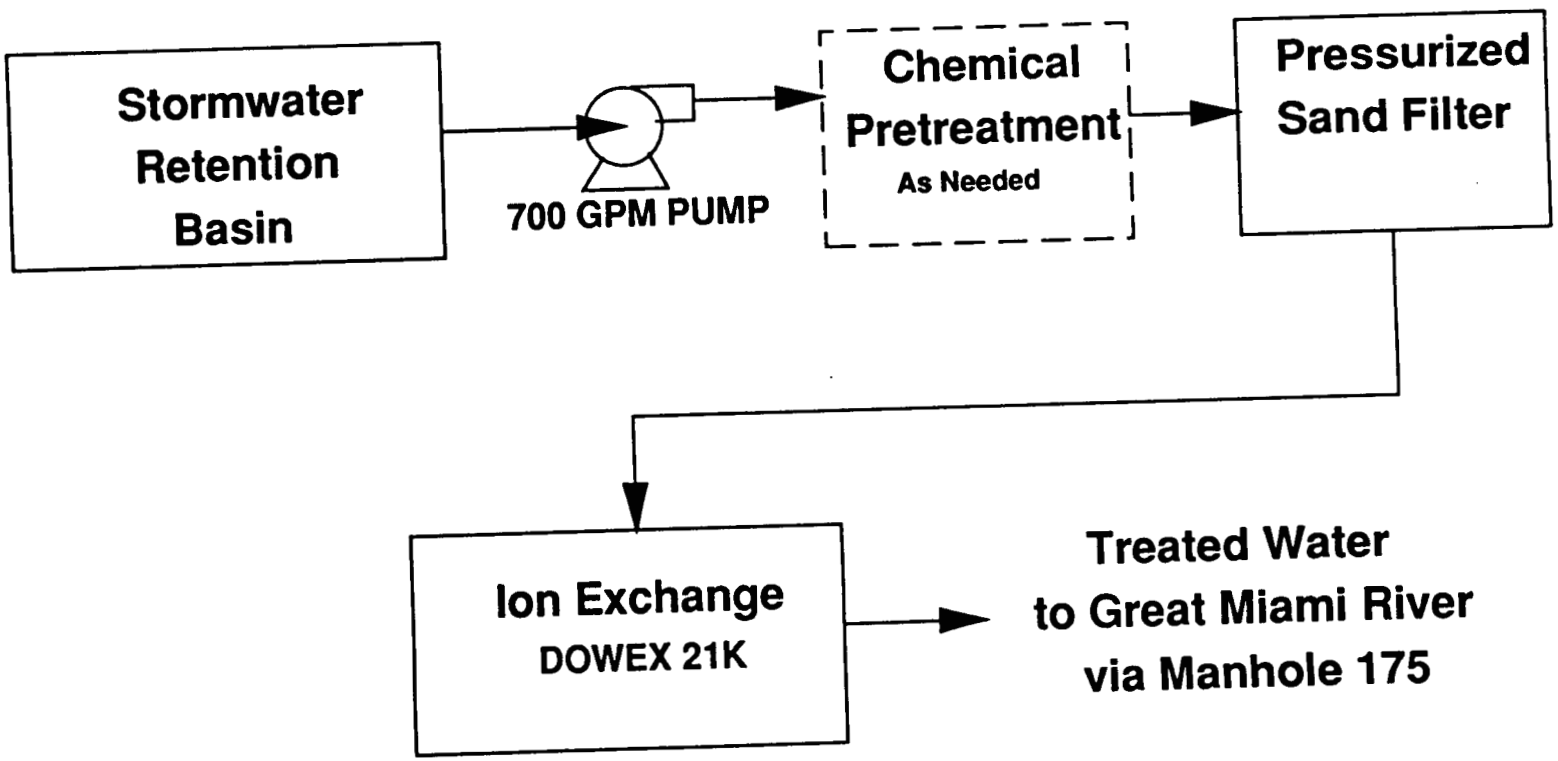
- Preliminary testing to establish final configuration
- Testing on SWRB and general process wastewater

67

2074

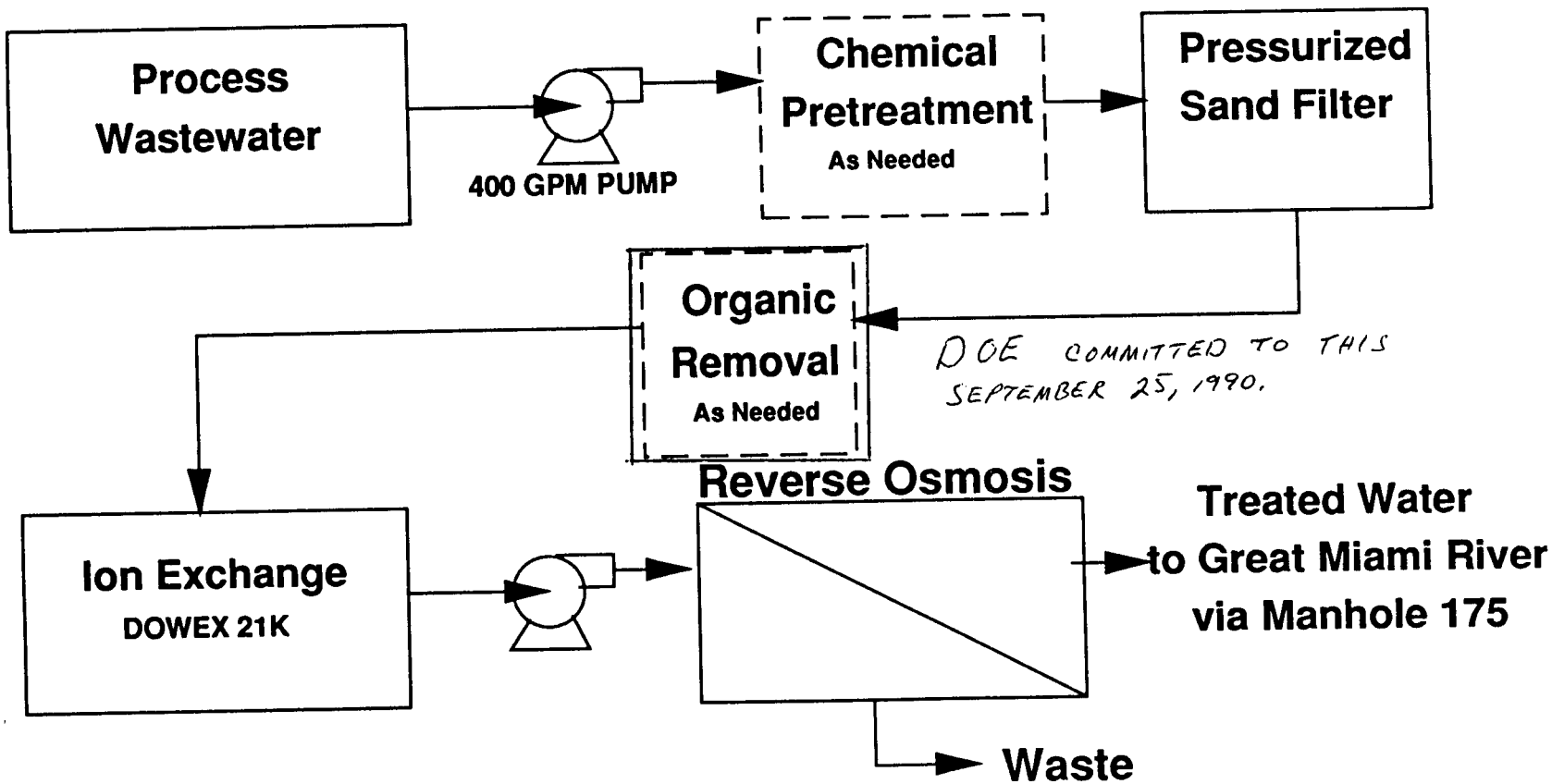
CLEAN WATER ACT COMPLIANCE PROGRAM

ADVANCED WASTEWATER TREATMENT
PHASE I



CLEAN WATER ACT COMPLIANCE PROGRAM

ADVANCED WASTEWATER TREATMENT
PHASE II



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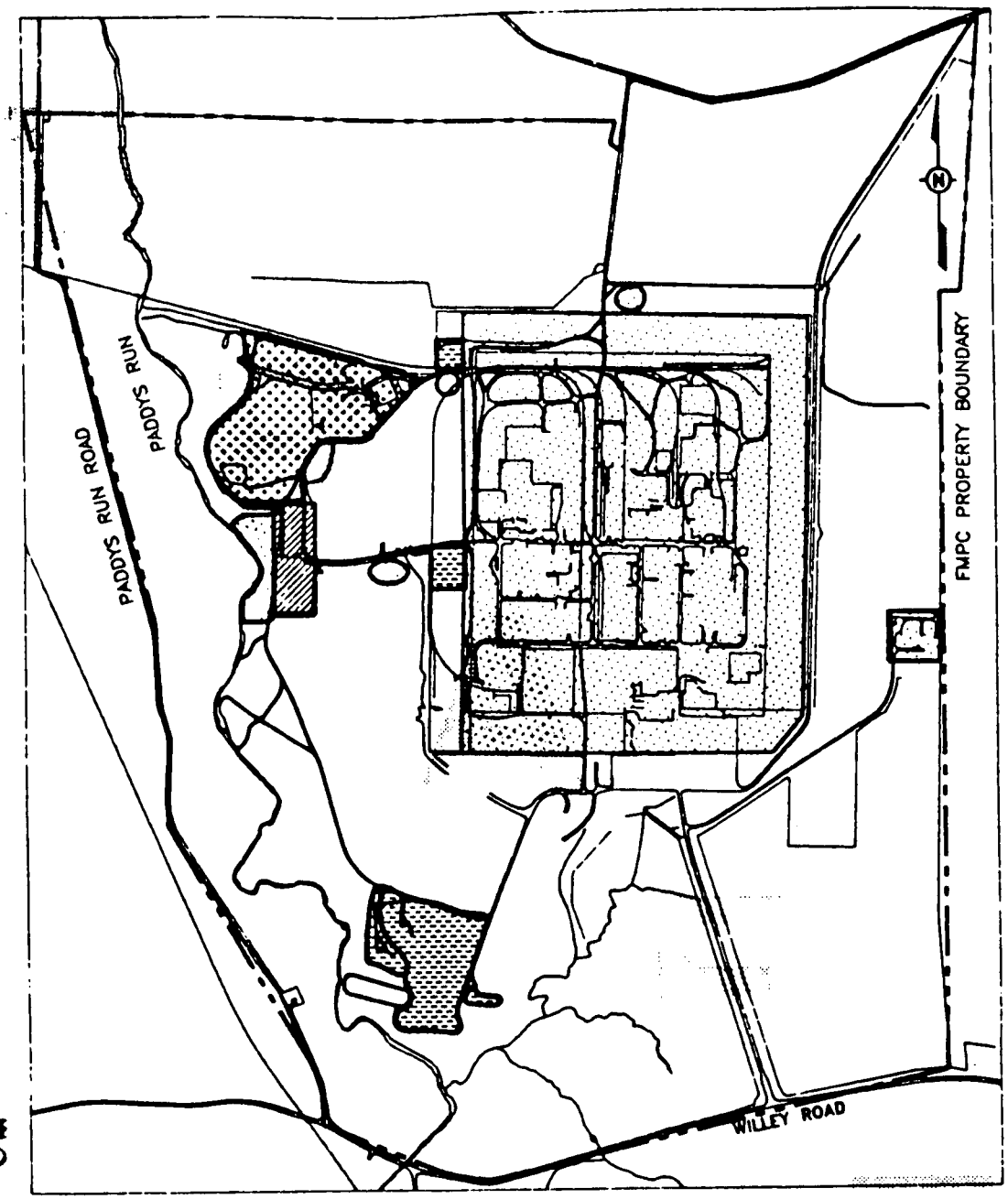
FMPC WASTEWATER OVERVIEW

DISCUSSION OF CERCLA PROGRAM INTEGRATION

Discussion of interim and/or conceptual changes planned and how they will affect the wastewater treatment system.



SOURCE OPERABLE UNITS

LEGEND:

- OPERABLE UNIT 1
- OPERABLE UNIT 2
- OPERABLE UNIT 3
- OPERABLE UNIT 4

NOTE:

OPERABLE UNIT 5 INCLUDES REGIONAL GROUNDWATER, SURFACE WATER, SOILS, FLORA AND FAUNA.

SCALE

0 600 1200 FEET

FMPC Wastewater Overview

INTERIM AND CONCEPTUAL CHANGES RESULTING FROM CERCLA OPERABLE UNIT (OU) REMOVAL AND REMEDIAL ACTION IMPLEMENTATION

Currently, the FMPC is divided into the following five operable units:

OU #1 - Waste Pits 1-6, Clearwell, & Burn Pit
OU #2 - Other Waste Units
OU #3 - Production Area and Suspect Areas Outside the Production Area
OU #4 - Silos 1,2,3 and 4
OU #5 - All Environmental Media

FMPC Wastewater Overview

Operable Unit 1 - Waste Pits 1-6, Burn Pit, and Clearwell

REMOVAL ACTIONS

- WASTE PIT AREA STORMWATER RUNOFF CONTROL

A) FLOW

1) Estimated average flow is 23 gpm

2) Runoff volume estimates from storm events:

25 year/24 hour - 1.17 million gallons

100 year/24 hour - 1.54 million gallons

B) Contaminants

1) Uranium and other radionuclides

2) Clean Water Act contaminants in FMPC NPDES Permit

C) Affected Treatment Systems

Biodenitrification (BDN) Facilities
(consisting of Bio-Surge Lagoon (BSL), High Nitrate Tank (HNT), BDN Reactors, Effluent Treatment System (ETS))

FMPC Wastewater Overview

Operable Unit 1 - (Continued)

REMOVAL ACTIONS

- WASTE PIT AREA STORMWATER RUNOFF CONTROL (Continued)

D) EFFECTS ON TREATMENT SYSTEMS

1) HNT, recently installed, allows for separate nitrate and flow control
2) BDN and ETS are sized to handle increased flow (BDN Reactors require 150 gpm to fluidize).
3) Nitrates are treated in the BDN Reactor
4) TSS is removed in the BSL and ETS
5) Some uranium (est 10%) removed in BSL by settling. Unquantified amount removed in BDN and ETS.
6) 8.2 Million gallons BSL will be maintained at level to provide storage volume for 100 year storm event plus 3 foot of freeboard (see graph on following sheet)

E) KEY CONCERN is the addition of an estimated 135 #/year of uranium to existing discharge (see interim solution later).

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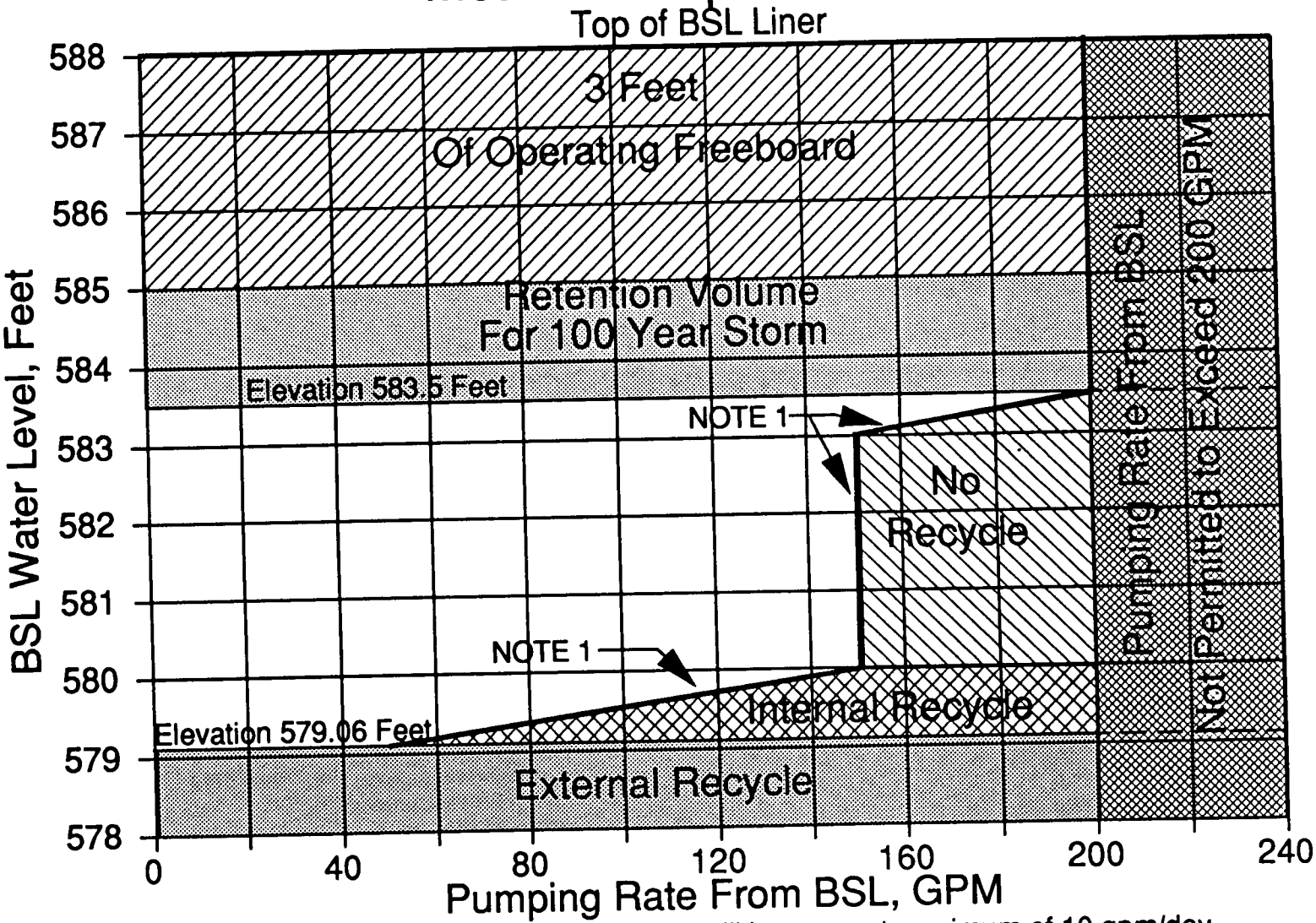
Biodenitrification Surge Lagoon (BSL)
Method of Operation



NOTE 1 - Flow rate to BDN from BSL will increase at maximum of 10 gpm/day

77
2074

FMPC Wastewater Overview

Operable Unit 1 - (Continued)

REMEDIAL ACTION

A) FLOW

ALTERNATIVES.....PROJECTED ADDITIONAL FLOWS

0) No Action.....NONE (a)

1) Nonremoval, Slurry Wall, and Cap.....NONE (b)

2) Nonremoval, Physical Stabilization, Slurry Wall, and Cap.....NONE (c)

3) Nonremoval, Vitrification, and Cap.....NONE

4) Removal, Slurry Treatment, and On-site.....NONE (d)

5) Removal, Slurry Treatment, and Off-site.....NONE (d)

NOTES:

a) OU #1 Runoff Control Removal Action flow will continue indefinately.

b) OU #1 Runoff Control Removal Action flow will continue through remediation. A small flow from subsurface drains for dewatering the Pits and Slurry Walls will continue indefinately.

c) Same as Alternative 1 with some temporary additional water from surcharging/consolidation of the Pits.

d) Slurry system of contents removal will produce a significant flow of wastewater with a high level of solids

FMPC Wastewater Overview

Operable Unit 1 - (Continued)

REMEDIAL ACTION - (Continued)

B) CONTAMINANTS

1) Uranium & other radionuclides

2) Barium, vanadium, arsenic, lead, fluorides, nitrates & heavy metals

C) AFFECTED TREATMENT SYSTEMS

A dewatering system will need to be provided to remove solids from slurry stream. Decanted water will be recycled back for reuse. After the removal is completed, a finite quantity of recycle water will need proper disposal. Discharge of the recycle water will affect Plant 8, General Sump, BDN Facility and AWWT treatments.

D) EFFECTS ON TREATMENT SYSTEMS

Flow rate from the final discharged recycle water can be controlled so as to not overload the existing treatment systems.

E) KEY CONCERNS

Final discharge of recycle water must address RCRA issues.

79

20774

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FMPC Wastewater Overview

Operable Unit 2 - Other Waste Units

REMOVAL ACTIONS (Interim changes)

No action identified at this time which produces a wastewater.

81

20174

FMPC Wastewater Overview

Operable Unit 2 - (Continued)

REMEDIAL ACTION

A) FLOW

ALTERNATIVES.....PROJECTED ADDITIONAL FLOW

- Lime Sludge Ponds
  1) No Action.....NONE (a)
  2) Nonremoval, Slurry Wall & Cap.....NONE (b)
  3) Remove Via Slurry.....250 gpm (c)
- Fly Ash Pile
  1) No Action.....NONE
  2) Nonremoval, Slurry Wall & Cap.....NONE (b)
- Sanitary Landfill
  1) No Action.....NONE
  2) Nonremoval, Slurry Wall & Cap.....NONE (b)

NOTES: a) Runoff flow will need to continue.

b) Small flow from perched water wells will result after remediation is completed.

c) Slurry system for content removal will produce a significant flow of wastewater with a high level of solids.

82

2074

FMPC Wastewater Overview

Operable Unit 2 - (Continued)

REMEDIAL ACTION - (Continued)

B) CONTAMINANTS

- TSS

C) AFFECTED TREATMENT SYSTEMS
A dewatering system will need to be provided to remove solids from slurry stream - decanted water will be recycled back to the Lime Pond for reuse. After removal is completed, a finite quantity of recycle water will need proper disposal. Discharge of recycle water will affect General Sump treatment.

D) EFFECT ON TREATMENT SYSTEM
Flow rate from the final discharged recycle water can be controlled so as to not overload the General Sump or downstream facilities.

E) KEY CONCERNS
NONE

83

2074

FMPC Wastewater Overview

Operable Unit 3 - Production Area and Suspect Areas Outside the Production Area

REMOVAL ACTIONS

- Contaminated Perched Water Removal

A) FLOW*

1) Plant 6 Flow.....experience (4 pumps) = 75 gpd
2) Plant 9 (boring 1124).....est = 20 gpd
3) Plant 2/3 East End.....est = 1440 gpd
4) Plant 2/3 West End.....est = 1440 gpd
5) Plant 8 West Side.....est = 720 gpd

Total (2.6 gpm) 3695 gpd

*Based on Best Professional Judgement

B) Contaminants

1) Uranium and other radionuclides
2) Nitrates
3) HSLs (VOCs)

84

2074

FMPC Wastewater Overview

Operable Unit 3 - (Continued)

REMOVAL ACTIONS

- Contaminated Perched Water Removal (Continued)

C) AFFECTED TREATMENT SYSTEMS

Plant 8, General Sump, and BDN Facility

D) EFFECTS ON TREATMENT SYSTEMS

Flow of 2.6 gpm is insignificant to overall wastewater flow

E) KEY CONCERNS

1) VOCs are presently being investigated and treatments are being developed

2) Addition of est. 15 #/yr of Uranium to existing discharge (see interim solution later)

FMPC Wastewater Overview

Operable Unit 3 - (Continued)

REMEDIAL ACTIONS

A) FLOW

1) Perched water flows are being defined at this time by work under the RI/FS
2) Perched Water Actions not expected to produce significant increase in flow.
3) Assume much of the perched water is presently being collected in the storm sewer and therefore any remediation action will only relocate flow from AWWT Phase I to Phase II
4) Soil washing option could generate a large quantity of water. Treatment needed for this water will have to be determined

B) CONTAMINANTS

Same as Removal Actions

FMPC Wastewater Overview

Operable Unit 3 - (Continued)

REMEDIAL ACTIONS

C) AFFECTED SYSTEMS
Plant 8, General Sump, BDN Facility, and AWWT Phase II

D) EFFECTS ON TREATMENT SYSTEMS

1) Perched water flow is not expected to be significant
AWWT will remove uranium to <20 ppb

2) The quantity of water resulting from soil washing
would have to be investigated.

E) KEY CONCERNS

VOC removal would be incorporated into AWWT Phase II if needed.

87

2074

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FMPC Wastewater Overview

Operable Unit 4 - Silos 1, 2, 3, & 4

REMOVAL ACTIONS

- INTERIM COVER PROPOSED FOR SILOS

  This alternative will not result in a wastewater discharge

- K-65 SUMP TANK DEWATERING

  A) FLOW

  Tank volume is estimated at 1000 gallons

  B) CONTAMINANTS

  1) Uranium, radium, and other radionuclides

  C) AFFECTED TREATMENT SYSTEMS

  1) Plant 8
  2) General Sump
  3) BDN Facility

  D) EFFECTS ON TREATMENT SYSTEMS

  Quantity of water is insignificant to overall wastewater flow.

  E) KEY CONCERNS

  Must hold liquid in temporary storage until a RCRA determination is made.

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FMPC Wastewater Overview

Operable Unit 4 - (Continued)

REMEDIAL ACTIONS

A) FLOWS

Slurry system of contents removal will produce a significant flow of wastewater (est. 300 gpm) with a high level of solids

B) CONTAMINANTS

1) Uranium & other radionuclides including a significant level of radium
2) Fluorides, nitrates & heavy metals

C) AFFECTED TREATMENT SYSTEMS

A dewatering system will need to be provided to remove solids from slurry stream. Decanted water will be recycled back to silos for reuse. After the removal is completed, a finite quantity of recycle water will need proper disposal. Disposal of the recycle water will affect Plant 8, General Sump, BDN Facility and AWWT treatments.

D) EFFECTS ON TREATMENT SYSTEMS

Flow rate from the discharge recycle can be controlled so as to not overload the existing treatment systems.

E) KEY CONCERNS

A RCRA determination will need to be made on the recycled liquid. AWWT may require HSL(VOC) treatment capabilities.

91

2074

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FMPC Wastewater Overview

Operable Unit 5 - All Environmental Media

REMOVAL ACTIONS

- SOUTH PLUME (Hydraulic Barrier installed to stop further contaminated groundwater forward migration)

  A) FLOW

     - Estimated flow is 2000 gpm (4 wells)

  B) CONTAMINANTS

     - Uranium

  C) AFFECTED TREATMENT SYSTEMS - NONE

     - Current plan is to discharge flow to GMR without treatment.

  D) EFFECTS ON TREATMENT SYSTEMS

     - 2000 GPM flow will be routed back to FMPC so that future treatment (under Remedial Action) can be provided if needed.

  E) KEY CONCERNS

     - Addition of uranium to existing discharge (see interim solution later).

93

20174

FMPC Wastewater Overview

Operable Unit 5 - All Environmental Media

REMEDIAL ACTION

A) FLOW

ALTERNATIVES*.....PROJECTED ADDITIONAL FLOWS

* These projected flows are in addition to the Removal Action 2000 gpm

GROUNDWATER

0) No Action.....Existing Flows
1) Extract/Discharge Untreated.....2000 gpm
2) Extraction/Ion-exchange/Discharge.....2000 gpm
3) Pumping/treatment/injection.....2000 gpm
4) Pave Paddy's Run and SSOD (concrete or bitumen liner).....NONE

SOIL/SEDIMENT

1) Soil/sediment washing.....To Be Determined

B) CONTAMINANTS

- Uranium
- Possible HSL(VOC)

FMPC Wastewater Overview

Operable Unit 5 - (Continued)

REMEDIAL ACTION

C) AFFECTED TREATMENT SYSTEMS

1) A new effluent line from the FMPC to the GMR will be needed to handle the additional 2000 gpm flow for Remedial Action Alternatives 1 and 2.

2) OU #5 ROD will determine need for expanded treatment.

D) EFFECTED TREATMENT SYSTEMS

If required, an expansion of the AWWT system will be provided for this 2000 gpm flow plus removal action flow of 2000 gpm (totaling 4000 gpm)

E) KEY CONCERNS

AWWT facility will be designed so that both the Phase I and Phase II systems can be expanded.

ADDRESING OF URANIUM DISCHARGE RESULTING FROM IMPLEMENTATION OF REMOVAL ACTIONS

	FMPC PLAN OF ACTION	EPA PLAN OF ACTION
DESCRIPTION	TREATMENT OF A PORTION OF THE EXISTING FMPC WASTEWATER DISCHARGE	TREAT SOUTH PLUME EXTRACTED GROUNDWATER (SP) AND WASTE PIT AREA RUNOFF (WPA)
TYPE OF FACILITY	TEMPORARY FIXED BED IX TREATMENT FACILITY TO OPERATE UNTIL AWWT ON LINE (3 YEAR LIFE)	PERMANENT INDOOR IX FACILITY (25+ YEAR LIFE)
TREATMENT VOLUME	NOMINAL 150 GPM	(1) 2000 GPM TREATMENT UNIT FOR SP (2) 23 GPM TREATMENT UNIT FOR BSL (EQUIVIALENT TO THE ANNUAL AVERAGE CALCULATED STORMWATER RUNOFF FROM WPA)
URANIUM REMOVAL PROJECTED	> 500 #U/YEAR	170 (SP) + 135 (WPA) = 305 #U/YEAR
NET #U TO GMR	1666 #U/YEAR (1862 + 305 - 500)	1862 #U/YEAR
APPROXIMATE COST	< $2 MILLION	$40 - 60 MILLION
TIME TO IMPLEMENT	JUNE 1992 On line at Time So Plume Begins Operations	DECEMBER 1994

WASTEWATER/CONTAMINATED RUNOFF/CONTAMINATED GROUNDWATER COLLECTION AND TREATMENT PHASING

PHASE	DESCRIPTION	STATUS	COMPLETION DATE PROJECTED
A	BENCH SCALE ION EXCHANGE (IX) AND REVERSE OSMOSIS (RO) TESTING	COMPLETE	APRIL 1990
B	DEMONSTRATION TESTING OF 10 GPM IX AND RO UNITS	ONGOING	MAY 1991
C	REMOVAL ACTION IMPLEMENTATION		
	1) INSTALL/OPERATE APPROX. 150 GPM TEMPORARY WASTEWATER TREATMENT SYSTEM ON EXISTING DISCHARGE	1) CONCEPTUAL	JUNE 1992
	2) INSTALL/OPERATE SOUTH PLUME CONTAMINATED GROUNDWATER PROJECT A) 4-500 gpm WELLS AT SOUTH END OF SOUTH PLUME B) FORCE MAIN TO MANHOLE 175 (OR 177) C) BOOSTER PUMP STATION	2) DESIGN INITIATED	JUNE 1992
	3) INSTALL/OPERATE WASTE PIT STORM-WATER RUNOFF CONTROL PROJECT	3) DESIGN APPROXIMATELY 90% COMPLETE	DECEMBER 1991

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WASTEWATER/CONTAMINATED RUNOFF/CONTAMINATED GROUNDWATER COLLECTION AND TREATMENT PHASING

PHASE	DESCRIPTION	STATUS	COMPLETION DATE PROJECTED
D	1) INSTALL/OPERATE AWWT PHASE I (SWRB/SSLS TREATMENT SYSTEM - 700 gpm)	1) TITLE I DESIGN INITIATED	NOVEMBER 1993
	2) INSTALL/OPERATE AWWT PHASE II (PROCESS TREATMENT SYSTEM - 400 gpm)	2) TITLE I DESIGN INITIATED	TBD
E	1) EXPAND SCOPE OF CONTAMINATED GROUNDWATER REMOVAL A) INSTALL/OPERATE WELL FIELD AT CENTER OF SOUTH PLUME B) INSTALL/OPERATE WELL FIELD AT EAST END OF EAST PLUME C) INCREASE CAPACITY OF SOUTH PLUME BOOSTER PUMP STATION D) OTHER WELLS AS REQUIRED BY THE ROD FOR OPERABLE UNIT #5	1) CONSIDERING IN PHASE D DESIGN	TBD
	2) INSTALL/OPERATE AWWT PHASE IB (2500 gpm) AND PHASE IIB (1500 gpm) EXPANSIONS	2) SPECIFIED IN THE RD/RA WORK PLAN PER THE ROD FOR OPERABLE UNIT #5	TBD

98

2074