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ENERGY AND ENVIRONMENT CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
DIVISION OF ENFORCEMENT
300 FAIR OAKS LANE
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April 1, 2009

CERTIFIED MAIL 70031680000107504640
RETURNED RECEIPT REQUESTED

H.J. Schardein, Jr.
Executive Director
Louisville and Jefferson County Metropolitan Sewer District (MSD)
700 West Liberty Street
Louisville, Kentucky 40203

Re: Approval of Jeffersontown Wastewater Treatment Plant Process Control Program, submitted pursuant to the pending Amend Consent Decree

Dear Mr. Schardein:

The Kentucky Department for Environmental Protection (KDEP) and the United States Environmental Protection Agency (EPA) have completed reviewing the latest draft of the Jeffersontown Wastewater Treatment Plant Process Control Program, submitted on February 20, 2009. Based upon the review of this version, KDEP/EPA hereby approve the program which shall be incorporated into, and become an enforceable requirement of, the Amended Consent Decree upon its entry by the Court. MSD is encouraged to continue the current implementation of this program prior to entry of the Amended Consent Decree in order to ensure better operation of the Jeffersontown Wastewater Treatment Plant.

If there are any questions, you may contact Mr. Gary Levy of KDEP at (502) 564-3410, or you may contact Mr. Sean Ireland of EPA at (404) 562-9776.

Sincerely,

Jeff Cummins, Acting Director
Division of Enforcement
KY Department for Environmental Protection

Douglas F. Mundrick, P.E., Chief
Clean Water Enforcement Branch
Water Protection Division
EPA Region 4

MSD

Louisville and Jefferson County Metropolitan Sewer District
700 West Liberty Street
Louisville Kentucky 40203-1911
502-540-6000
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February 27, 2009

Chief, Environmental Enforcement Section
Environmental and Natural Resources Division
U.S. Department of Justice
Post Office Box 7611
Washington DC 20044-7611

Jeff Cummins, Acting Director
Division of Enforcement
Department of Environmental Protection
300 Fair Oaks Lane
Frankfort, KY 40601

Chief, Water Programs Enforcement Branch
Water Management Program
US EPA Region 4
Atlanta Federal Center
61 Forsyth Street SW
Atlanta, GA 30303

Subject: Jeffersontown Wastewater Treatment Plant Process Control Program
Resubmittal
DOJ Case No. 90-5-1-1-08254

Attention Chiefs and Director:

While filing the Jeffersontown Wastewater Treatment Plant Process Control Program package submitted on February 20, 2009, it was noticed that the certification statement was inadvertently removed. This letter serves as the certification for the package referenced and previously submitted.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering such information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

If you have questions or need additional information, please contact me at (502) 649-3850 or Angela Akridge, Project WIN Program Manager, at (502) 648-8391.

Sincerely,

W. Brian Bingham
Regulatory Services Director

cc: H. J. Schardein, Jr. Paula Purifoy Laurence J. Zielke

MSD

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February 20, 2009

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61 Forsyth Street SW
Atlanta, GA 30303

Subject: Jeffersontown Wastewater Treatment Plant Process Control Program Resubmittal
DOJ Case No. 90-5-1-1-08254

Attention Chiefs and Director:

MSD is providing this letter as certification of the resubmittal of the Jeffersontown Wastewater Treatment Plant Process Control Program, in response to comments received from Sean Ireland of EPA Region 4. These comments were verbally discussed at the Integrated Overflow Abatement Plan review meeting held in Louisville on Wednesday, February 11, 2009.

The items revised are as follows:

1. Replaced the chart showing the Morris Forman WWTP capacity calculator that was missing the final field with a chart that shows the actual Jeffersontown WWTP capacity calculator. Also made slight revisions to text before and after the calculator to reflect that we are showing the actual calculator, not an example.

2. Added the Jeffersontown WWTP flow trend chart to Attachment 4

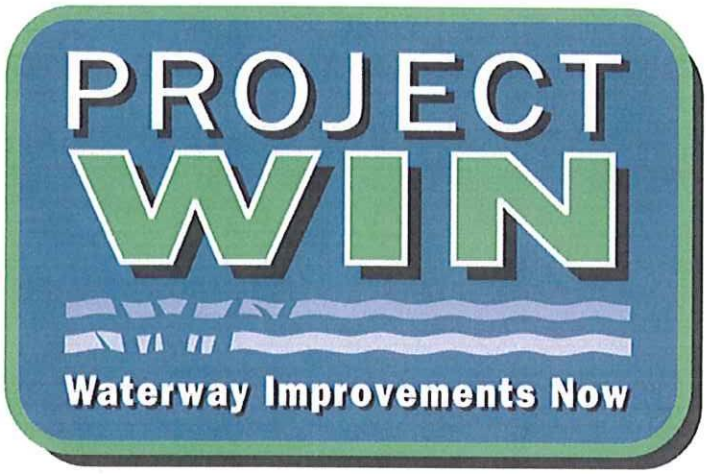
3. Revised the text in the Wet Weather SOP regarding mixing blended flows in the Post-Aeration Tank in accordance with the text in the body of the Process Control Program document.

If you have questions or need additional information, please contact me at (502) 649-3850 or Angela Akridge, Project WIN Program Manager, at (502) 648-8391.

Sincerely,

W. Brian Bingham
Regulatory Services Director

cc: H. J. Schardein, Jr. Paula Purifoy Laurence J. Zielke



JEFFERSONTOWN
WASTEWATER TREATMENT PLANT
Process Control Program

Louisville and Jefferson County
Metropolitan Sewer District

Revised February 20, 2009

TABLE OF CONTENTS

1.0 PURPOSE AND SCOPE

This Process Controls Program (PCP) has been developed for the Jeffersontown WWTP to minimize the frequency, duration, and volume of Bypasses of primary effluent around the secondary treatment process (commonly referred to as "blending") and at the same time improve the performance of the secondary treatment system through proper management, operation, and maintenance controls. The PCP includes a periodic review of performance measures to verify that the objectives are being met. It is expected that this review of performance measures will identify opportunities for further improvement. This PCP will, therefore, be a living document, and operating staff should verify that they are using the most current version the PCP for operating guidance. The PCP includes the following:

A. Activities identified by MSD in a February 19, 2008 letter to EPA, included as Attachment 1 (Addressed in Section 2.2.3 Wet Weather Operation.)

B. Relevant findings from a Comprehensive Performance Evaluation (CPE) performed for the Jeffersontown WWTP as part of the Integrated Overflow Abatement Plan. (Addressed in Section 1.1)

C. Identification of necessary activities to insure that SSOs from any siphon head box or manhole within 2,000 feet of the headworks of the Jeffersontown WWTP are minimized to the greatest extent possible. (Addressed in Section 3.0)

D. Identification of staffing needs to insure that plant operators are present during periods during when the plant is likely to Bypass. (Addressed in Section 4.0)

E. A process for monitoring and recording plant flow, secondary treatment flow, concentration of mixed liquor suspended solids (MLSS), depth of sludge blanket levels, and other appropriate criteria that the operations staff will use to determine the effective treatment capacity of the secondary system, which establishes when a Bypass will commence and will cease. (Addressed in Section 2.2)

F. The use of available laboratory and on-line instrumentation data that will be used before making a decision to change process controls. (Addressed in Section 2.2.2)

G. Identification of the MSD staff positions that will be responsible for implementing the PCP. (Addressed in Section 4.0)

H. Identification of activities which MSD will undertake when conditions indicate a probable need to bypass. Such activities may include monitoring and/or adjusting sludge clarifier blankets, balancing flows to secondary treatment units, etc. (Addressed in Section 2.2.3)

I. A process for evaluating the effectiveness of the controls and for making adjustments as necessary to meet the goals of the PCP. (Addressed in Section 6.1)

J. An operations record-keeping protocol that establishes a system for accurately recording MSD's operation of the Jeffersontown WWTP including Bypass activities. Records include operator logs, activity reports, performance reports, documentation of all Bypass events, and a listing of the criteria that determined when a Bypass commenced and ceased. (Addressed in Section 5.0)

K. Performance measures for ensuring that the controls being implemented are as effective as possible. (Addressed in Section 6.2)

1.1 Comprehensive Performance Evaluation

A Comprehensive Performance Evaluation was conducted for the Jeffersontown WWTP in accordance with the Consent Decree.

1.1.1 Findings

A list of the major findings is summarized below:

Design: The plant is physically limited to process 9.5 mgd through the secondary treatment process. Flows over this value can only be accommodated by a major construction upgrade of the aeration tanks and the secondary clarifiers.

Maximizing Operations: The plant cannot currently sustain flows of 9.5 mgd through the secondary treatment process for more than a few hours, due to process limitations. To maximize the treatment capacity of the existing secondary facilities during peak wet weather events, the CPE recommends changing the activated sludge process from a plug-flow mode of operation to a parallel mode to equally distribute the wastewater flow throughout the aeration basins or to a contact stabilization mode of operation to reduce the solids loading on the secondary clarifiers.

Monitoring Strategy and Record Keeping: Plant Operations staff currently conduct all the necessary processing monitoring tests to control the treatment process, however, process monitoring strategy and the record-keeping needs improvement.

Plant staff coverage: Current staffing levels limit the ability of plant staff to implement effective process control, especially if the mode of operation is changed to parallel flow (a variation on step feed) or to contact stabilization. One full time Process Control Specialist is assigned Monday – Friday on the day shift. When additional staff is available, a second Plant Operator or an Operator-In-Training (OIT) is assigned. During the off-shifts, weekends, and holidays the plant is checked by a regional Plant Operator for only 20 minutes per shift.

O&M Manual: The O&M Manual is outdated and needs to be updated.

Plant Operations Process Training: On-site process training would be beneficial to optimize performance.

Discharge Monitoring Report (DMR) preparation and Training: The CPE found that DMRs have been prepared using incorrect calculation methods for reporting the pounds of BOD5 and TSS discharged, resulting in the inaccurate over-reporting of KPDES permit violations. To prevent this in the future, a DMR SOP and training is recommended to ensure the monthly DMR's are correctly prepared and reported (Attachment 2).

Maintenance: The majority of the maintenance activity at the Jeffersontown WWTP is either corrective or emergency. MSD acquired the Jeffersontown WWTP from the City of Jeffersontown in 1990's. The plant had been constructed in several phases, with several expansions and upgrades. Plant records conveyed with the purchase of the plant were incomplete. As a result, the plant assets listed in MSD's SAP system (MSD's financial system that also is currently used as the computerized maintenance management system (CMMS) for Metro Operations facilities) are not accurate. The information provided is not complete and, therefore, may effect response time for maintenance repairs.

Outdated facilities: Plant facilities, structures, and some equipment date to the early 1970's. Although the structures appear to be sound, much of the equipment appears to have exceeded its useful life. Plant No.1 has two installed blowers, and a portable blower that serves as the backup.

Preventive Maintenance (PM) Program: MSD has a computerized PM program, however, documentation is limited and inconsistent. Reports are not comprehensive and do not report on key equipment. The current PM leaves the plant vulnerable to equipment outages in the main rate-limiting process.

1.1.2 Permit Violations Evaluation

The monthly Discharge Monitoring Reports (DMRs) for the previous three years were reviewed, compared with the KPDES permit effluent limitations, and the cause of any effluent violations was evaluated. Table1 is a summary of this evaluation.

During the evaluation period, there were a total of 28 reported violations for exceedances of fecal coliform, total phosphorus, pH, percent TSS removal, and percent Biochemical oxygen demand (BOD) removal limitations. Upon further review, it was determined that the percent removal for TSS and BOD was not calculated in accordance with the KPDES permit that requires that the percent removal be based upon the monthly average influent concentrations. MSD calculated the percent removal based on influent pounds, which tends to skew the overall performance of the treatment plant for the month.

Upon recalculating the percent removal for TSS and BOD for the months in question in accordance with the KPDES permit, it was determined that the JTWTP was in full compliance with the 85 percent removal requirement. For the month of September 2007, four fecal coliform exceedances were reported. Upon review of the data sheets, there was only one maximum weekly exceedance. As a result of this evaluation, there were a total of 17 permit violations during the last three years compared to the 28 reported violations.

Fecal Coliform: There were four maximum week fecal coliform exceedances, three of which were due to the malfunctioning of the UV disinfection system. MSD has repaired the system. There was one maximum weekly fecal coliform exceedance due to extreme wet weather in March 2008.

Phosphorus: There were nine exceedances of the total phosphorus limitations, seven of which were due to mechanical problems with the chemical feed system. One total phosphorus exceedance was due to unusually high influent total phosphorus concentrations that were corrected by increasing the chemical feed. One total phosphorus exceedance was due to a mechanical problem with the RAS pump at Plant No. 2 which has been repaired.

pH: There was one minimum pH exceedance due to the depressed pH of the influent caused by the influence of three inches of rain in the watershed. The pH and phosphorus exceedances due to rapid changes to the influent concentrations can be mitigated with improved process control procedures.

TABLE 1 JEFFERSONTOWN WASTEWATER TREATMENT PLANT PERMIT VIOLATIONS

Month, Year	Parameter	Test Result		Permit Limit		No. of Actual Violations	No. Reported Violations	Explanation	Action Taken
		Monthly	Weekly	Monthly	Weekly				
May, 2006	Fecal Coliform	48	1488	200	400	1	1	UV system being reviewed.	Between Feb and May 2006, Operations staff had to replace UV bulbs on 4 different occasions.
September, 2006	Fecal Coliform	54	946	200	400	1	1	UV disinfection system not operating properly in early part of month causing high fecal counts.	Corrective action taken to allow proper operation of UV system.
	Phosphorus	1.14 mg/l	1.47 mg/l	1 mg/l	1.5 mg/l	1	1	Mechanical problems w/ chemical feed system caused exceedance of Total P limits. Repairs underway.	Chronic problem with the chemical feed system caused low or no concentration of sodium aluminate to be mixed with clarifier influent; Phosphorus removal hampered with low or no sodium aluminate feed.
		41 lbs/day	56 lbs/day	33 lbs/day	50 lbs/day	2	2		
October, 2006	Phosphorus	37 lbs/day	48 lbs/day	33 lbs/day	50 lbs/day	1	1	Mechanical problems w/ chemical feed system caused exceedance of Total P limits	Repairs made.
	% removal TSS	98%	--	85%	--	0	2	2 violations reported for TSS % Removal. Calculation not according to permit.	Recalculated. No TSS % removal violation.
	% removal BOD	98%	--	85%	--	0	2	2 violations reported for BOD % Removal. Calculation not according to permit.	Recalculated. No BOD % removal violation.
July, 2007	Phosphorus	1.09 mg/l	2.33 mg/l	1 mg/l	1.5 mg/l	2	2	Total P limits exceeded on monthly & wkly conc. & on the max wkly loading due to RAS pumps problems in Plant #2. Operationss took Plant #2 out of service, cleaned tanks.	Ops took Plant #1 out of service, cleaned tanks.
		27 lbs/day	53 lbs/day	33 lbs/day	50 lbs/day	1	1		
August, 2007	Phosphorus	1.33 mg/l	1.57 mg/l	1 mg/l	1.5 mg/l	2	2	Influent P levels were unusually high, causing exception with monthly & wkly conc. Ops increased chemical feed to correct. Reported TSS % Removal violations, but was calculated wrong.	Chronic problem with the chemical feed system caused low or no concentration of sodium aluminate to be mixed with clarifier influent; Phosphorus removal hampered with low or no sodium aluminate feed.
	% removal TSS	95%		85%		0	1	1 violation reported for TSS % removal. Calculation not according to permit.	Recalculated. No TSS % removal violation.
September, 2007	Fecal Coliform	30	406	200	400	1	4	Max week geo-mean was exceeded due to control problems w/ UV.	Staff corrected problem. MR reported 4 violations but there was only 1.
December, 2007	pH	5.5	--	6.0 - 9.0	--	1	1	3" rain in previous 7 days depressed the influent pH.	Because violations due to high wet weather flows, there were no actions to take.
	% TSS Removal	91	--	85%	--	0	1	1 violation reported for TSS % removal. Calculation not according to permit.	Recalculated. No TSS % removal violations.

TABLE 1 JEFFERSONTOWN WASTEWATER TREATMENT PLANT PERMIT VIOLATIONS

Month, Year	Parameter	Test Result		Permit Limit		No. of Actual Violations	No. Reported Violations	Explanation	Action Taken
		Monthly	Weekly	Monthly	Weekly				
March, 2008	Fecal Coliform	71	462	200	400	1	1	Violations for maximum week fecal coliform, monthly and maximum week loading for TSS, and maximum week loading for CBOD was due to four rain events resulting in 26 mg of blended wastewater; however, the monthly and weekly TSS and CBOD concentrations were achieved.	Because violations due to high wet weather flows, there were no actions to take.
	TSS	1714 lbs/day	3796 lbs/day	1000 lbs/day	1501 lbs/day	2	2		
	CBOD	644 lbs/day	1124 lbs/day	667 lbs/day	1001 lbs/day	1	1		
	% TSS Removal	86%	--	85%	--	0	1	1 violation reported for TSS % removal. Calculation not according to permit.	Recalculated. No TSS % removal violation.
	% CBOD Removal	88%	--	85%	--	0	1	1 violation reported for BOD % removal. Calculation not according to permit.	Recalculated. No BOD % removal violation.
Total						**17**	**28**		
Notes:									
April, 2007	Fecal Coliform	25	60					DOJ Letter 12/20/2007 indicated violation, but DMR did not	Records revealed No Violation, including EPA Envirofacts site
June, 2007	Fecal Coliform	12	339					DOJ Letter 12/20/2007 indicated violation, but DMR did not	Records revealed No Violation, including EPA Envirofacts site

1.2. Comprehensive Performance Evaluation Recommendations

As a result of the findings summarized previously, the CPE recommended a number of process and facility improvements. Within a CPE, improvements are categorized by type. Type 1 recommendations are mainly operations oriented, requiring little if any construction to implement. Type 2 recommendations require minor facility modifications to implement. Type 1 and Type 2 recommendations are typically implemented through Composite Correction Program (CCP) that determines delivery approaches and scheduling. Type 3 recommendations require major facility construction and are not addressed through a CCP. Constructing new clarifiers would be considered a Type 3 recommendation. Lists of the recommended Type 1 and Type 2 remedial actions are presented below.

1.2.1. Recommended Type 1 Improvements

- Develop an SOP for Process Control of the secondary treatment system using Mean Cell Resident Time (MCRT), Food to Microorganism (F/M) Ratio, and Sludge Volume Index (SVI) as the primary process control parameters.
- Train plant operators on the process control strategies.
- Update the O&M Manual.
- Increase Metro Operations staffing to typically provide for two plant operators on day shift, and one plant operator on the evening shift Monday-Friday. In addition, one plant operator could be shared on the midnight shift, Monday-Friday. Staff a plant operator on day shift on Saturday and Sunday, and a shared plant operator on the off-shifts on weekends and holidays. Staff with one plant operator during wet weather bypass events.
- Add polymer to the secondary clarifier influent during wet weather events to control blankets (currently provided).
- Implement a program to update the CMMS to improve asset information and preventive maintenance activities for both equipment and structures.
- Perform effluent sampling 24-hours /day, 7 days a week in accordance with the effluent parameters in the KPDES permit to ensure permit compliance during wet weather events, including bypass days. This recommendation was implemented April 1, 2008.

1.2.2. Recommended Type 2 Improvements

- Repair or replace aeration tanks influent gates at Plants 1 and 2 to allow parallel flow and contact stabilization mode of operation during wet weather events.
- Install a third permanent blower to replace the existing portable stand-by blower for Plant No. 1.
- Install a plant effluent flow meter after UV disinfection. This meter was installed July 17, 2008.
- Install secondary clarifier influent baffles at both plants to evenly distribute the MLSS and improve settling.
- Install chemical feed piping to the plant influent for adding sodium aluminate to the plant influent to improve primary clarifier effluent quality and UV disinfection during wet

weather events. Reduce the sodium aluminate to the aeration tank effluent with a goal of eliminating the sodium aluminate at these feeding points.

- Install a plate extension wall around the aeration tanks to prevent mixed liquor and foam from overflowing the tank tops during peak flow rates.
- Install minor piping modifications to the return activated sludge (RAS) system in order to operate in the contact stabilization mode.

This PCP for the Jeffersontown WWTP will incorporate the requirements cited above.

2.0 TREATMENT PROCESS MONITORING AND CONTROL

2.1 Process Description

The Jeffersontown WWTP is an advanced secondary treatment facility with an average day design capacity of 4 mgd and a peak hour design capacity of 9.5 mgd. It is a single stage activated sludge treatment plant with nitrification and chemical clarification for phosphorus removal (See Figures 1 and 3). During wet weather, infiltration and inflow (I/I) entering the Jeffersontown collection system causes wet weather peak flows approaching 20 mgd. To avoid treatment process overflows or treatment process upsets that will have long-term detrimental effects on effluent quality, wastewater flows in excess of 9.5 mgd receive primary treatment and then are routed around the secondary treatment process and blended with the secondary effluent, prior to disinfection and discharge to Chenoweth Run, a tributary of Floyd's Fork.

Jeffersontown WWTP has two parallel treatment trains: Plant No. 1 (the "new" plant, modified in 1998) and Plant No. 2 (the "old" plant, modified in 1975). See Figure 2 for a flow schematic of the plant.

During dry weather, influent wastewater is received through a mechanically-cleaned bar screen and a grit chamber (preliminary treatment). Following preliminary treatment, a portion of the influent flow (typically 25 percent during dry weather) is diverted to Plant No. 2 by a manual gate valve located in the influent channel prior to the influent to the Plant No. 1 primary clarifier tanks. The remainder of the influent flow then continues to the Plant No. 1 primary clarifier tanks.

During wet weather, a portion of the influent may be routed through the influent relief line (also known as the storm bypass line) that provides preliminary treatment through a separate manually-cleaned bar screen and grit chamber and enters the Plant No. 1 primary clarifier tanks. The Plant No. 1 primary clarifier effluent is then pumped to the Plant No. 1 aeration basins by the secondary pump station.

Each plant operates its activated sludge process independently. Plant No. 1 normally operates in a split flow mode through seven aeration basins. Plant No. 2 normally operates in a plug flow mode through three aeration basins.

Sodium aluminate ($Na_2Al_2O_2$), an aluminum salt, is added to the aeration tank effluent of each plant to precipitate phosphorus in the secondary clarifiers. The secondary clarifier effluent from the two treatment trains is mixed in a post aeration basin, disinfected using ultraviolet light (UV), and passes through post aeration steps and finally discharged to Chenoweth Run as shown in Figure 2.

In 1998, MSD modified the primary treatment system in Plant No. 1 to provide for side-stream treatment with "enhanced primary treatment" for wet weather flows that exceed the combined capacities of the secondary treatment systems in Plant No. 1 and Plant No. 2. Plant No. 1 has a

maximum capacity of 7.0 mgd and Plant No. 2 has a maximum capacity of 2.5 mgd for a combined maximum secondary treatment capacity of 9.5 mgd. As noted previously, flows are split between Plant No. 1 and Plant No. 2 on a 75/25 basis until the capacity of Plant No. 2 is reached at 2.5 mgd. Additional flows are then routed to Plant No. 1. Once the secondary treatment capacity of each plant has been maximized, the excess primary effluent is routed through a 30-inch line to the influent of the post aeration tanks where it is blended with the secondary effluent from both treatment trains. From the post aeration tanks, the blended secondary effluent (which includes the flow that has received full primary and secondary treatment) flows into the UV pump station where the blended flow is pumped to the UV disinfection channel, is then disinfected with ultraviolet light and then re-oxygenated over the post aeration steps and discharged to the stream through the permitted discharge location.

In 2000, MSD added a flow control splitter box on the 30-inch primary effluent line prior to the Plant No. 1 secondary pump station to improve the ability to maximize secondary treatment during wet weather events. This splitter box has an adjustable weir that is set 1.5 feet above the top of the divider wall slab. The water level at the top of the adjustable weir at this setting is one foot below the high-level alarm elevation in the secondary pump station. When the level in the splitter box increases to the top of the weir, the pump station will normally be pumping 7.0 mgd, the maximum flow rate to the influent of the Plant No. 1 aeration tanks. All flows greater 7.0 mgd, in this line, would then pass over the weir and flow to the influent of the post aeration tanks where it is blended as indicated above. When excess flow passes over the weir in the flow control splitter box, a flow meter sends a signal to the SCADA system and records the time and flow rate on a continuous basis until the flow blending ceases. In addition, the SCADA system automatically sends an alarm to the MFWTP control room and also triggers a text message to the Process Supervisors and other members of MSD management alerting them to the start of a blending event and when that event ceases. This alarm also activates the notification of blending on the Project WIN website.

2.2 Normal Operations

Normal operations are defined as dry-weather operation with influent flows that average approximately 4 mgd, and peak flows the result of normal diurnal fluctuations.

2.2.1 Process Control Monitoring and Control

The activated sludge process is a biological process that receives continually varying influent loads, and therefore is inherently unstable. As a result, it requires frequent and routine monitoring and evaluation in order to make appropriate adjustments to achieve the desire target goals of the individual major unit processes and ultimately the overall plant performance. Table 2 shows the recommended sampling and testing protocol that support the recommended process control approach. This process control approach will help ensure that the facility consistently achieves compliance with the KPDES permit limitations.

Key controllable operational parameters for the Jeffersontown WWTP include sludge age, (represented by MCRT and F/M); Dissolved Oxygen (DO) levels in the aeration tanks, secondary clarifier blanket depth, SVI, sodium aluminate addition for phosphorus removal, and treatment process microbiology. These parameters are controlled through modification of RAS rate, wasting rate, air flow rate, and chemical dosages. Parameters monitored include influent flow rate, Mixed Liquor Suspended Solids (MLSS), Mixed Liquor Volatile Suspended Solids

TABLE 2 – PROCESS CONTROL SAMPLING AND TESTING

Sample Parameter	Sample Location	Sample Type	Test Location	Daily	Weekly	Monthly	QTR.	Wet Weather Event	Unusual Sample
Raw Influent									
BOD_5	Influent	Composite	MFWTP	√					√
TSS	Influent	Composite	MFWTP	√					√
NH3	Influent	Composite	MFWTP	√					√
TKN	Influent	Composite	MFWTP		√				√
Total Phosphorus	Influent	Composite	MFWTP	√					
Ortho Phosphorus	Influent	Grab	JTWTP	√					√
pH		Grab	JTWTP	√					√
Plant No. 1									
Primary Clarifier									
Flow Meter	Plant No.1 Primary Influent	Totalizer	JTWTP	√					
Storm Flow Meter	Raw Influent	Totalizer	JTWTP	√					
BOD_5	Effluent	Grab	MFWTP	√					
TSS	Effluent	Grab	MFWTP	√					
NH3	Effluent	Grab	MFWTP	√					
Total Phosphorus	Effluent	Grab	MFWTP		√				
Ortho Phosphorus	Effluent	Grab	JTWTP		√			1 per 8 hr	
Aeration Tank									
Flow	Plant No. 1 Flow + Storm Flow - Bypass Flow	Totalizer	JTWTP	√					
RAS Flow	RAS Line	Totalizer	JTWTP	√					
WAS Flow	RAS Line		JTWTP	√					
DO	In situ	Grab	JTWTP	2 per day					
DO - Wet Weather SOP	In situ	Grab	JTWTP					1 per 8 hr	
Temperature	In situ	Grab	JTWTP	√					
Mixed Liquor TSS	Aeration Effluent	Grab	JTWTP	√					
Mixed Liquor VSS	Aeration Effluent	Grab	JTWTP	√					
RAS TSS	RAS Line	Grab	JTWTP	√					
RAS VSS	RAS Line	Grab	JTWTP			√			
Microscopic Exam	Aeration Effluent	Grab	JTWTP		√				
Settleability (30 min)	Aeration Effluent	Grab	JTWTP	√				1 per 4 hr	
Sludge Volume Index (SVI)	Calculation		JTWTP	√					
Food/Micorganism	Calculation		JTWTP		√				
MCRT	Calculation		JTWTP	√					
Secondary Clarifier									
Depth of Blanket (DOB)	Clarifier		JTWTP	2 per day				1 per hr	
Ortho Phosphorus	Clarifier Effluent	Grab	JTWTP	√					

TABLE 2 – PROCESS CONTROL SAMPLING AND TESTING, CONT.

Sample Parameter	Sample Location	Sample Type	Test Location	Daily	Weekly	Monthly	QTR.	Wet Weather Event	Unusual Sample
Plant No. 2									
Primary Clarifier									
Flow Meter	Plant No.2 Primary Influent	Totalizer	JTWTP	√					
BOD5	Effluent	Grab	MFWTP	√					
TSS	Effluent	Grab	MFWTP	√					
NH3	Effluent	Grab	MFWTP	√					
Total Phosphorus	Effluent	Grab	MFWTP	√					
Ortho Phosphorus	Effluent	Grab	JTWTP		√			1 per 8 hr	
Aeration Tank									
RAS Flow	RAS Line	Totalizer	JTWTP	√					
WAS Flow	RAS Line		JTWTP	√					
DO	In situ	Grab	JTWTP	2 per day					
DO - Wet Weather SOP	In situ	Grab	JTWTP					1 per 8 hr	
Temperature	In situ	Grab	JTWTP	√					
Mixed Liquor TSS	Aeration Effluent	Grab	JTWTP	√					
Mixed Liquor VSS	Aeration Effluent	Grab	JTWTP			√			
RAS TSS	RAS Line	Grab	JTWTP	√					
RAS VSS	RAS Line	Grab	JTWTP			√			
Microscopic Exam		Grab	JTWTP		√				
Settleability (30 min)	Aeration Effluent		JTWTP	√				1 per 4 hr	
Sludge Volume Index (SVI)	Calculation		JTWTP	√					
Food/Micorganism	Calculation		JTWTP		√				
MCRT	Calculation		JTWTP	√					
Secondary Clarifier									
Depth of Blanket (DOB)	Clarifier		JTWTP	√ (1/shift)				1 per hr	
Ortho Phosphorus	Clarifier Effluent	Grab	JTWTP	√					
Final Effluent									
Flow	Final Effluent	Totalizer	PI						
CBOD	Final Effluent	Composite	MFWTP	√					
TSS	Final Effluent	Composite	MFWTP	√					
NH3	Final Effluent	Composite	MFWTP	√					
TKN	Final Effluent	Composite	MFWTP		√				
Total Phosphorus	Final Effluent	Composite	MFWTP	√					
Ortho Phosphorus	Final Effluent	Grab	JTWTP	√				1 per 8 hr	
pH	Final Effluent	Grab	JTWTP	√					
DO	Final Effluent	Grab	JTWTP	√					
Fecal Coliform	Final Effluent	Grab	MFWTP	√					
Metals	Final Effluent	Composite	MFWTP				√		√
Biomonitoring	Final Effluent	Composite	Beckmar				√		

(MLVSS), Return Activated Sludge (RAS) concentrations, orthophosphorus concentration in the primary clarifier effluent, secondary clarifier effluent and plant effluent and observations of aeration basin foaming.

Table 3 shows the desired operating ranges for the various operational parameters based on the Jeffersontown WWTP Comprehensive Performance Evaluation review.

TABLE 3 – PROCESS CONTROL OPERATING RANGES
PLANT NO. 1 AND PLANT NO. 2

Jeffersontown Wastewater Treatment Plant Operating Parameters		
Parameter	**Typical Range**	**JTWTP (Target)**
Influent BOD	110 – 400 mg/l	200 mg/l
Influent TSS	100 – 350 mg/l	225 mg/l
Influent NH_3	12 -50 mg/l	15 mg/l
Influent TKN	20 – 50 mg/l	25 mg/l
Influent Total Phosphorus	4 – 15 mg/l	3 – 10 mg/l
Influent pH	6.8 - 7.6	6.8 - 7.6
Primary Effluent BOD		100 mg/l
Primary Effluent TSS		120 mg/l
Primary Effluent NH_3		12 mg/l
Primary Effluent TKN		20 mg/l
Primary Effluent Total Phosphorus		2 mg/l
Primary Effluent Orthophosphorus		1.8 mg/l
DO (Aeration Basins)	1-4 mg/l	2.0 mg/l
pH (Aeration Basins)	6.8 - 7.6	6.8 - 7.6
MLSS (Plug or Split Flow)	3,000 – 5000 mg/l	3000 mg/l
RAS Flow Rate (% Influent Flow)	20 - 40 %	25%
RAS (Plug or Split Flow)	6000 – 10000 mg/l	6000 mg/l
SVI	<100	80
MCRT	10 - 20 days	15 days
F/M	0.05-0.1	0.1
Clarifier Blanket Depths	1-3 feet	1-3 feet
Effluent CBOD	<20 mg/l	10 mg/l
Effluent TSS	<30 mg/l	20 mg/l
Effluent NH_3	< 5 mg/l	2 mg/l
Effluent Total Phosphorus	< 1.0 mg/l	0.5 mg/l
Effluent Orthophosphorus	<0.9 mg/l	0.4 mg/l
Effluent pH	6 - 9	7.0
Effluent DO	> 7.0 mg/l	> 7.0 mg/l
Effluent Fecal Coliform	<100 /100 ml	< 50 / 100 ml
Effluent Biomonitoring	< 1.00 TU	< 1.00 TU

2.2.2 Laboratory and Instrumentation

The composite samples that are collected and sent to the Morris Forman WWTP are analyzed according to approved EPA methods. The results of the composite samples are posted in the Laboratory Information Management System (LIMS) and are directly accessed by the Process Control Specialist at the Jeffersontown WWTP administration office. A copy of a typical LIMS report is in Attachment 3.

The Process Control Specialist can access the following on-line information regarding the current real time status of the Jeffersontown WWTP process at the workstation in the Jeffersontown WWTP Administration Building with respect to the following parameters:

- Effluent Flow Rate
- Plant No. 1 Flow Rate
- Plant No. 2 Flow Rate
- Storm Flow Rate
- Bypass Flow Rate
- Plant No. I RAS pump(s) – Speed, Flow (gpm), On/Off
- Plant No. 2 RAS pump (s) - Speed, Flow (gpm), On/Off
- Plant No. 1 Secondary Pumps – On/Off
- Plant No. 1 Blowers – On/Off, Timer, Auto, or Hand
- Plant No. 2 Blowers – On/Off, Timer, Auto, or Hand
- Collector Drives (All primary and secondary clarifiers) – On/Off
- Sodium Aluminate Tank Levels – gallons
- Wet Well Levels at the Jeffersontown WWTP Siphon, Plant No. 1 Secondary Pump Station, and Digester.
- UV System:
  - Number of Bulbs operating
  - Number of Ballasts In/Out
  - Bank A or B – Auto, Hand, In/Out
- Jeffersontown WWTP rain gauge

This information can also be monitored remotely by staff with appropriate security access. Screen captures of the on-line information presented above is included in Attachment 4.

The Process Specialist then uses a combination of information gathered from the LIMS, the on-site testing as indicated in Table 2 and the current on-line real time data in order to make adjustments to the process in order to achieve the target levels cited in Table 3.

2.2.3 Wet Weather Operation

Recognizing that wet weather conditions dictate different operator actions, MSD prepared and implemented an Enhanced Wet Weather SOP that included provisions for:

- Ensuring maximum utilization of secondary treatment capacity
- Chemical addition to improve pollutant removal during bypass events and
- Documentation and reporting system of bypass events

Both the MSD Emergency Response Director (ERD or designee) and the Morris Forman WWTP Computer Room monitor weather conditions and regional radar coverage. Between the ERD and Computer room, weather conditions are monitored on a continuous basis. When radar or National Weather Service (NWS) forecasts indicate the potential for significant rain, a page with this information is sent to a large number of staff across a wide range of MSD Divisions. The notification that significant rain is anticipated triggers mobilization of staff and pre-deployment of resources needed for the wide variety of activities that MSD conducts during rain events.

One of the activities that this page triggers is a review by Metro Operations of current staffing at the Jeffersontown WWTP. If rain is forecasted during an off-shift time when the plant is not usually staffed, a Plant Operator is called in on overtime to ensure that there is an operator on site when primary effluent overflows the flow split weir, and a blending event begins. The plant will remain staffed for the duration of the blending event. Depending on the expected severity and duration of the event, a second operator may also be called in to assist in implementing all aspects of this PCP, and the Wet Weather SOP. Overtime call-ins are made in accordance with MSD policy, and procedures contained in the union contract.

The Jeffersontown WWTP Wet Weather SOP also identifies the activities that MSD shall undertake when conditions indicate a probable need to Bypass. These activities include: monitoring flow rates, depth of clarifier blankets, performing settling tests, chemical addition (polymer), and testing DO in the aeration tanks. In addition, the SOP identifies operational activities for short-term wet weather events of less than 4 hours and for extended wet weather events lasting longer than 4 hours.

A copy of the Jeffersontown WWTP Wet Weather SOP current as of October 31, 2008, is in Attachment 5. It is anticipated that this Wet Weather SOP will be updated as conditions change at the plant, or a review of performance metrics indicates the potential for improvement. Operating staff should verify that they are using the most current version of the SOP for guidance during wet weather events.

3.0 JEFFERSONTOWN WWTP SIPHON MONITORING AND CONTROL

The location of the Jeffersontown WWTP siphon is indicated on Figure 1. The capacity of this siphon is dictated by upstream and downstream water levels and the condition of the siphon pipe. During wet weather, the siphon can become overloaded and create an SSO. To minimize the frequency and volume of SSOs at this point, or from manholes within 2000 feet of the Jeffersontown WWTP headworks, operating staff operate the treatment facilities in accordance with the Wet Weather SOP as previously described. This will keep downstream water levels as low as possible. In addition, the siphon is inspected and cleaned monthly to ensure that sedimentation is not reducing the available capacity.

During wet weather, the siphon and the manholes within 2000 feet of the Jeffersontown WWTP headworks are monitored both electronically and visually when the level in the siphon head box indicates that an overflow is imminent. The Jeffersontown WWTP Siphon and Overflow Monitoring protocol is detailed in Section 3.3.2.4 of the Sewer Overflow Response Protocol (SORP) Procedures. At the time this PCP was prepared, the most recent revision to the SORP

was dated November 5, 2008. Operating staff should review the most current update of the SORP to clearly understand their responsibility for monitoring the siphon and reporting SSOs at this location.

4.0 RESPONSIBLE STAFF & STAFFING REQUIREMENTS

The Plant Operator on-site is responsible for implementing this PCP. The CPE recommends that Metro Operations staffing for the Jeffersontown WWTP should typically assign two plant operators on day shift and one plant operator on the evening shift and one plant operator that is shared on the midnight shift, Monday-Friday. In addition, the CPE recommends that staff be increased to one plant operator on day shift on Saturday and Sunday, and a shared plant operator on the off-shifts on weekends and holidays. Also, staff should be increased to one plant operator during wet weather bypass events and depending on the expected severity and duration of the event, a second operator may also be called in to assist in implementing all aspects of this PCP, and the Wet Weather SOP. Overtime call-ins are made in accordance with MSD policy, and procedures contained in the union contract.

5.0 RECORD KEEPING AND REPORTING PROTOCOL

5.1 Operational Records

Current Jeffersontown WWTP operational records include:

- Monthly Operational Data Spreadsheets (manual)
- Monthly Laboratory Data Spreadsheets (manual)
- Jeffersontown WWTP Log Book (manual) – Records daily activities, unusual events, modified operational strategies, major equipment status, chemical inventories, etc.
- Flow totals and flow rates for influent, storm, secondary influent (each plant), storm-bypass, and total plant effluent (electronic) – flow rates are indicated and stored electronically in PI, in accordance with the "WWTP Monitoring and Recordkeeping Report" submitted to EPA and KDEP on September 30, 2008.

The Jeffersontown WWTP PCP includes a Process Control Monthly Spreadsheet that will replace the former manual Monthly Operational and Laboratory Data sheet. This Monthly Process Control Report not only contains daily effluent performance data, but also provides a place to record the results of all the tests and process control calculations necessary to operate and control the Jeffersontown WWTP. The spreadsheet includes the calculations for the secondary treatment processes as detailed in Tables 2 and 3. A copy of this spreadsheet is included in Attachment 6.

Because the Jeffersontown WWTP is a combination of two independent activated sludge processes, each plant must be controlled independently of each other. As a result, this process control spreadsheet provides for process control of: Plant No. 1; Plant No. 2; and the combined plant.

5.2 Process Control Spreadsheet

Below is a brief discussion of the key elements of this process control spreadsheet:

Plant No. 1 Influent Flow Rate: The flow rate is calculated from three flow meters: Plant No. 1 influent flow meter (meter F1 on Figure 2); the Wet Weather Influent Relief (meter F3 on Figure 2, formerly known as the Storm Bypass flow meter); and the Wet Weather Flow Management

(meter F4 formerly known as the Bypass flow meter). The influent flow rate is calculated as follows: F1 + F3 – F4. This value is recorded in PI on the MSD network. This flow rate is required for process control of the Plant No. 1 secondary process.

Plant No. 2 Influent Flow Rate: This flow rate is determined from the Plant No. 2 Primary Influent flow meter (meter F2 on Figure 2) and reported in PI. This flow rate is required for process control of the Plant No. 2 secondary process.

Bypass Flow: This flow rate is determined by the Bypass flow meter at the splitter box and reported in PI on the MSD network. This flow is required for reporting any bypass.

Final Effluent Flow: This flow rate is determined by the final effluent flow meter and is recorded in PI on the MSD network. This flow is required to determine permit compliance.

The Instantaneous Maximum Plant Flow Rate: This flow rate is determined from the final effluent flow meter and to evaluate the impact of the peak flow rate on the performance of the plant in relation to the plant design. During wet weather events, this is required when the flow rate can rapidly exceed the secondary treatment capacity of the plant. Maximum plant flow rate is not a controllable parameter.

BOD Percent Removal: This calculated value is a permit requirement based on the monthly average concentrations in the influent and effluent.

TSS Percent Removal: This calculated value is a permit requirement based on the monthly average concentrations in the influent and effluent.

Dissolved Oxygen (DO): DO should be monitored in each aeration basin and controlled to a target of 2-3 mg/l. Allowing DO to go below 0.5 mg/l at any time, or allowing it to get below 2 mg/l for more than a few hours will inhibit proper treatment. Allowing DO to elevate above set points wastes energy, causes an undesirable shift in aeration basin microbial populations, and contributes to excessive foaming.

Sludge Volume Index (SVI): This is a calculated value-based on the following formula: Settling volume, mls)(1,000)/MLSS, mg/l. Well settling sludge has an SVI of less than 100. A bulking sludge has an SVI approaching 200. Maintaining an SVI between 60 and 100 results in longer sustained peak flows through the clarifier without solids washout.

Blanket Depths in Secondary Clarifiers (DOB): Maintaining sludge blankets in the desired range of 1-3 feet in the secondary clarifiers is key to meeting effluent permit limits. Blanket depths are controlled by increasing or decreasing the RAS flow rate.

Solids Wasted – Actual Pounds: This is calculated value that compares what was actually wasted verses the pounds calculated to achieve the desired MCRT in days.

Solids Wasted (Pounds) – Calculated Plan: This is calculated value based on the number of days of MCRT the operator wants to achieve (operator inputs on the spreadsheet).

Solids Wasted (Gallons) – Calculated Plan: This is a calculated value that provides the operator with the quantity of gallons to waste the next day. With this number, the operator simply inputs the number of gallons to waste at the control station and the waste pumps will automatically pump that amount.

Total Pounds in Aeration Tanks: This is a calculated value that provides the total pounds of solids in each of the plant aeration tanks. The pounds of solids in the clarifiers are insignificant due to the low DOB's maintained.

Mean Cell Resident Time (MCRT): MCRT is used here because it is calculated based on the total solids in the system divided by the solids wasted out of the system including the effluent suspended solids. It can also be used in the same manner as "Sludge Age". Because of the waste component to this calculation, the activated sludge process and the waste rate can be controlled by manipulating the number of days of MCRT depending on conditions and trends in the system. MCRT is calculated for each plant.

Food to Microorganism Ratio (F/M): This is an important parameter to track to ensure the plant is not organically under loaded or overloaded. F/M is calculated for each plant.

5.3 Reports

In accordance with a recommendation of the CPE, MSD has developed a Discharge Monitoring Report Standard Operating Procedure (DMR SOP). The version of this DMR SOP that was current at the time this PCP was written is included in Attachment 2. It is anticipated that changes in DMR reporting procedures will require this SOP to be updated to reflect new requirements. Operating staff should verify that they are using the most current version of the SOP before using it for guidance in preparing a DMR.

The following reports summarize the operational performance of the Jeffersontown WWTP:

- Daily on-line equipment status report (manual, stored in paper copy at the Jeffersontown WWTP)
- Initial Discharge Report(s) (IDR) per the approved SORP regarding a bypass event
- The 5 Day Follow-up Letter(s) summarizing the bypass event per the approved SORP
- The monthly summary report of bypass events submitted with the DMR
- The monthly Discharge Monitoring Report (DMR)
- Bypass events posted to the MSD Website
- Project WIN Quarterly Reports
- Project WIN Annual Report

6.0 EVALUATION PROCESS

6.1 Process Control

It is good practice to periodically evaluate the effectiveness of the process control procedure and set points being used, to verify that the current practices are achieving the treatment goals established. If this evaluation indicates that improvements could be made, it is expected that this PCP will be updated, making adjustments as necessary to meet the established operating goals.

The Plant Process Specialist and/or Plant Operator implementing the PCP evaluates the performance of each unit process daily per the target parameters detailed in Table 3 and makes adjustments accordingly to achieve the desired targets per parameter. Certain key parameters will be monitored and correlated to ensure that the operating targets contained in this PCP are achieving the objectives. These evaluations include:

- Actual MCRT versus effluent CBOD5
- Actual MCRT versus effluent NH3
- Secondary clarifier DOB versus effluent TSS
- Sodium aluminate dose versus effluent total phosphorus

6.2 Performance Measures

The overall goal of the PCP is to achieve 100 percent compliance with the effluent permit limitations detailed in the KPDES permit on a weekly and monthly basis for Carbonaceous BOD (CBOD), Total Suspended Solids (TSS), Ammonia (NH3), and Total Phosphorus (TP), and on a daily basis for pH and DO, which includes any days in which a wet weather bypass occurred. The monthly DMR documents performance relative to the KPDES permit parameters.

An additional performance goal is to minimize the quantity of wastewater bypassed around the secondary treatment facilities during peak wet weather events as detailed in the Wet Weather SOP. Effective implementation of the Wet Weather SOP is measured by evaluating the flows that receive secondary treatment during wet weather blending events. Since flow control methods are imprecise and relatively slow to respond, perfect conformance to the calculated secondary treatment capacity is not achievable. MSD has established a goal of maximizing secondary treatment defined per the Wet Weather SOP during wet weather blending events.

Tracking and monitoring this performance goal is currently a manual evaluation on an event-by-event basis. A more automated and accurate way to monitor this performance goal requires the development of a plant capacity calculator similar to that used at the Morris Forman WWTP. Secondary flows can be compared against the secondary treatment capacity determined by the capacity calculator any time there is a positive flow reading on the blending line flow meter.

MSD has developed a plant capacity calculator similar to the capacity calculator used at the Morris Forman WWTP. An illustration of the draft Jeffersontown Wastewater Treatment Plant capacity calculator is included as Figure 3.

FIGURE 3 – CAPACITY CALCULATOR

Jeffersontown Wastewater Treatment Plant Capacity Calculator

Process Area	Number of Units	Capacity per Unit (mgd)	Number of Units Available	Current Capacity (mgd)
Headworks:				
a.) Bar Screens - Mechanical	2	7.5	2	15.0
b.) Bar Screen - Wet Weather	1	15	1	15.0
b.) Grit Chamber	1	20	1	20.0
Total Headworks Capacity				
a.) Bar Screens				**30.0**
b.) Grit Systems				**20.0**
Primary Clarifiers				
a. Plant No. 1	2	8.75	2	17.5
b. Plant No. 2	2	1.25	2	2.5
Total Primary Clarification				**20.0**
Secondary Clarification				
a.) Plant No. 1				
1. DOB > 5 feet	2	2.5		0.0
2. DOB =3-5 feet	2	2.8		0.0
3. DOB < 3 feet	2	3.5	2	7.0
Plant No. 1 Total				7.0
b.) Plant No. 2				
1. DOB > 4 feet	2	0.5		0.0
2. DOB =3-4 feet	2	1		0.0
3. DOB < 3 feet	2	1.25	2	2.5
Plant No. 2 Total				2.5
c.) Secondary Bypass	1	20		10.5
Total Secondary				**9.5**
UV Pump Station				
Small Pumps	4	1.44	4	5.8
Large Pumps	4	4.75	3	14.3
Total UV Pump Station				**20.0**
Total UV Disinfection	1	22	1	**22.0**
Plant Capacity Summary				
a.) Plant No. 1 Secondary Capacity				**7.0**
b.) Plant No. 2 Secondary Capacity				**2.5**
c.) Total Secondary Treatment				**9.5**
d.) Secondary Bypass				**10.5**
TOTAL PLANT CAPACITY				**20.0**

*Shaded boxes are to be filled in.

The calculator will initially consider the number of process units in service and depth of blankets in the final clarifiers. As the calculator is used, other rate limiting factors may be identified and incorporated into the calculator. The initial version of the capacity calculator was developed February 13, 2009. Process supervisors and other key operating personnel will be trained in the use of the calculator by March 15, 2009, and the calculator put into use by the staff that has been trained. After initial implementation of the calculator, a training program will be developed, and additional staff (10 – 20 people) trained in the use of the calculator. It is anticipated that all staff will be trained by July 31, 2009, and the capacity calculator in full use at that time.

The capacity calculator is envisioned to monitor the performance of each secondary treatment plant in terms of hydraulic and treatment process capacity, and the ability to achieve the KPDES permit limits in the final effluent. This calculator will be calibrated and periodically updated as part of the evaluation of the Wet Weather SOP during 2009 wet weather events. It is envisioned that the capacity of each plant will be optimized and tracked based on the process control procedures in the Wet Weather SOP as well as the plant KPDES permit parameters.

6.3 Annual Evaluation and Training

Although the Process Control Program is evaluated on a daily, weekly, and monthly basis, the overall PCP will be evaluated initially after six months and then annually with respect to meeting the KPDES permit requirements. The evaluation will be conducted jointly by Metro Operations Management and the Regulatory Services Division. The evaluation will review and examine the following activities with respect to providing value to meeting the goals of the PCP:

- The PCP goals
- All current the process control parameters
- All the current sample collection locations
- All the current frequencies the samples are collected and tested
- The current process control strategy (MCRT, Sludge Age, SVI, F/M, microscopic exam, etc)
- Wasting strategies
- The Wet Weather SOP goals
- The Wet Weather SOP control strategies
- The Wet Weather SOP process monitoring tests and frequencies (Depth of Blankets, Settleability Tests, Dissolved Oxygen, and Ortho-phosphorus tests)

Based on the results of the evaluation, the PCP testing program and the Wet Weather SOP may be modified to improve the efficiency and quality of the program. A training program will be developed and administered. The program will include simulated exercises as appropriate to illustrate and demonstrate staff proficiency for each portion of the PCP and Wet Weather SOP. During each subsequent program review, the training program will also be reviewed and updated as needed. The training module will be administered for responsible staff within three months of completing the annual PCP evaluation.

7.0 SUMMARY

This PCP was developed to minimize the frequency, duration and volume of any bypass at the Jeffersontown WWTP, and to improve performance of the secondary treatment system though proper management, operation, and maintenance controls. The following Table 4 presents action items and the schedule to implement this PCP:

TABLE 4 ACTION ITEMS AND SCHEDULE

Action	Start Date	Completion Date
Submited PCP to EPA		October 31, 2008
Received Comments from EPA		December 12, 2008
Prepared revisions and submit revised PCP to EPA and KDEP		January 16, 2009
Receive approval of PCP by EPA	January 17, 2009	January 31, 2009
Develop initial training program for plant operations staff on PCP	January 17, 2009	February 15, 2009
Develop capacity calculator	January 17, 2009	February 15, 2009
Initial training of process supervisors and selected key personnel	February 15, 2009	March 15, 2009
Implement PCP and conduct 30 day evaluation	March 16 2009	April 15, 2009
Revise PCP and training program (if needed)	April 16 , 2009	May 15, 2009
Train potentially affected staff (10 – 20 people)	May 16, 2009	July 31, 2009
6-month evaluation of PCP		January 31, 2010
Administer annual training		April 30, 2010
Annual evaluation of PCP		January 31, 2011

Figure 1

Jeffersontown Wastewater Treatment Plant Site Plan

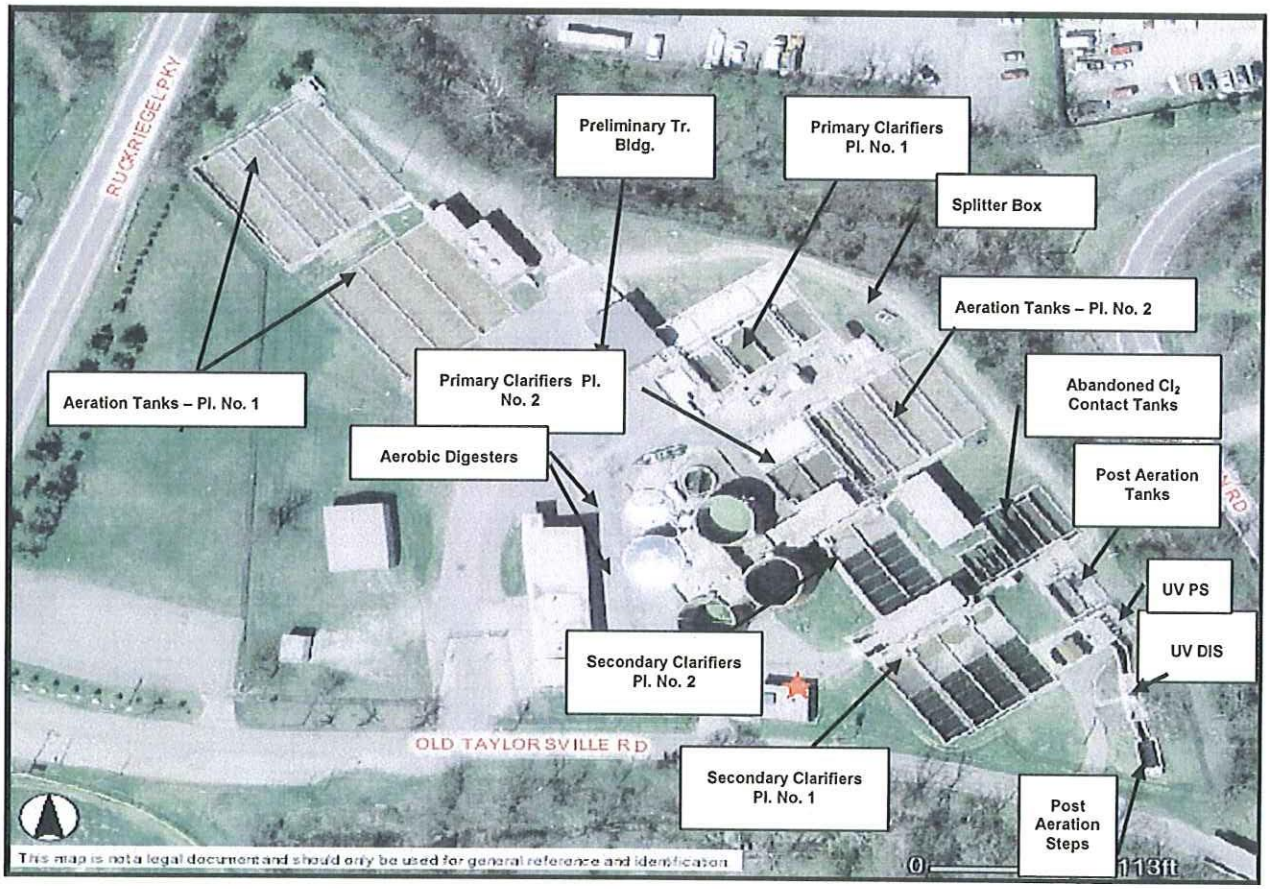


Figure 2

Jeffersontown Wastewater Treatment Plant

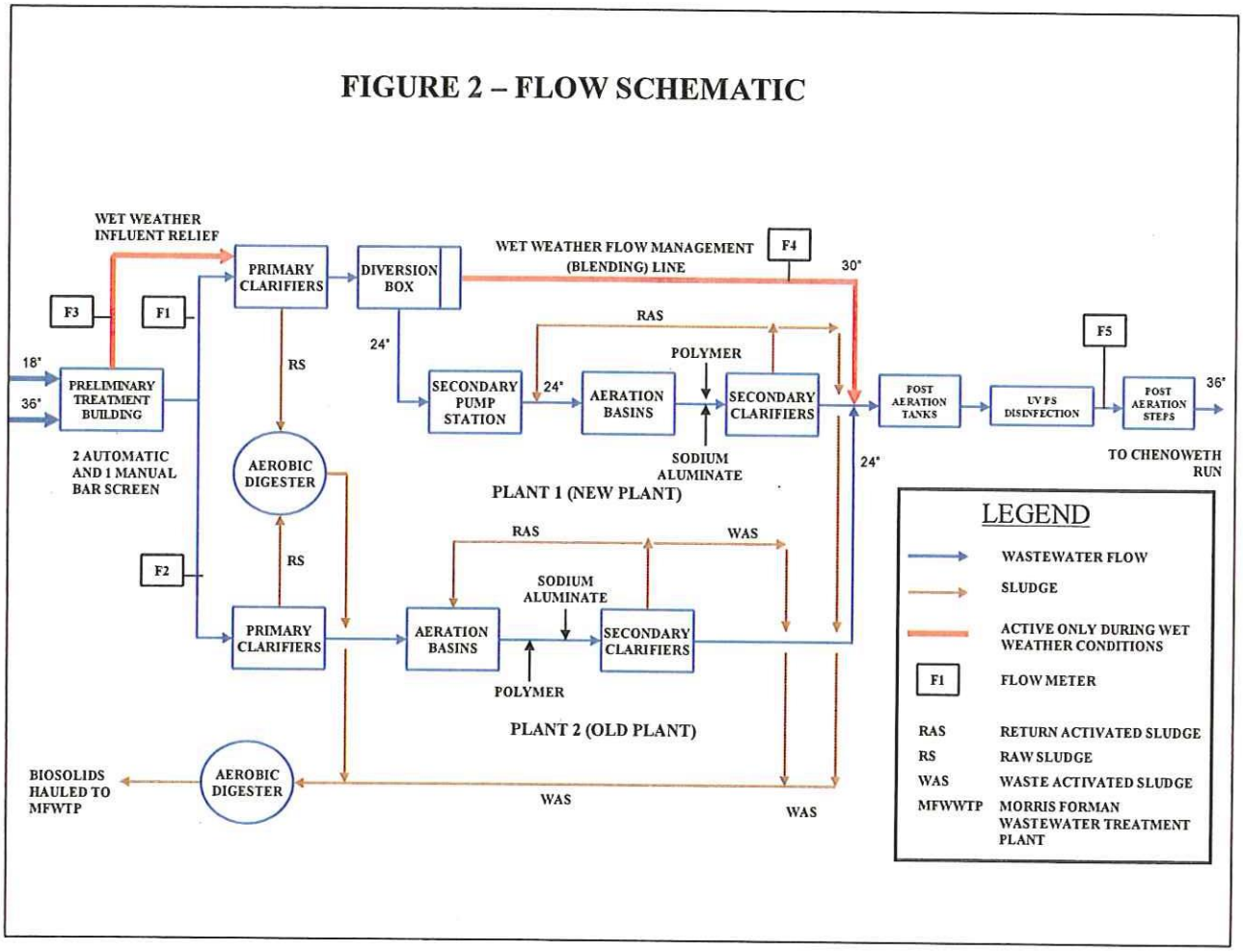
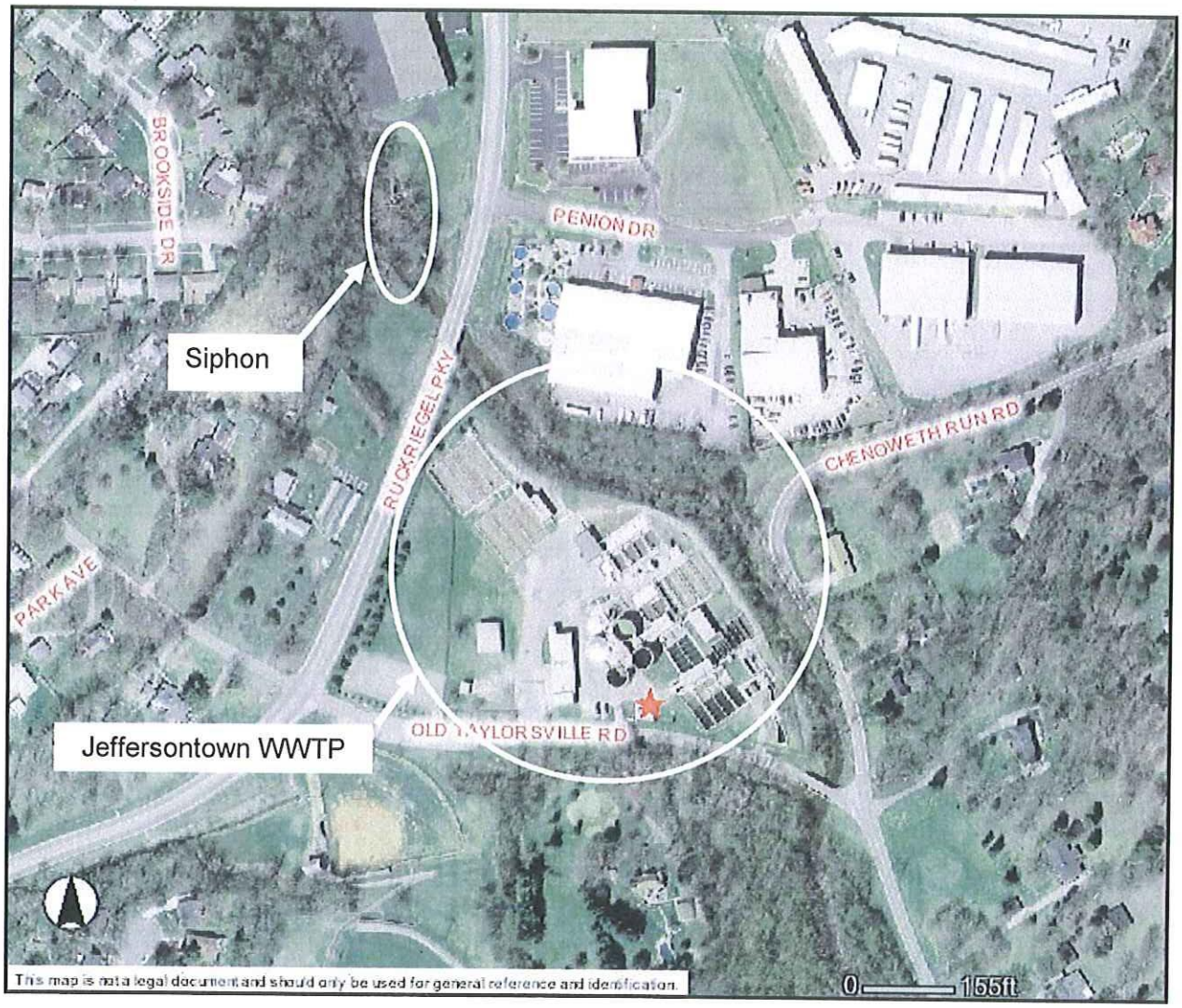


Figure 3

Jeffersontown Wastewater Treatment Plant

Siphon Location



ATTACHMENT 1

EPA LETTER DATED FEBRUARY 19, 2008

MSD

Louisville and Jefferson County Metropolitan Sewer District
700 West Liberty Street
Louisville Kentucky 40203-1911
502-540-6000
www.msdlouky.org

February 19, 2008

Mr. Douglas F. Mundrick
Chief, Water Programs Enforcement Branch
Water Management Program
US EPA Region 4
Atlanta Federal Center
61 Forsyth Street SW
Atlanta, GA 30303

Subject: Followup to February 6, 2008, Meeting in Atlanta
Concerning Peak Flow Management at Jeffersontown WWTP

Dear Mr. Mundrick:

On behalf of the Louisville and Jefferson County Metropolitan Sewer District ("MSD"), we appreciated the opportunity to meet with you and others concerning matters involving operations of MSD. We believe that the meeting was very productive and resulted in correcting some miscommunications.

We believe that continued face to face meetings are the most productive and will lead to an amicable resolution of all outstanding issues.

While we acknowledge that there are various issues left to resolve, we understand that the blending issue at the Jeffersontown Wastewater Treatment Plant is a primary concern for us both.

During the meeting, we agreed to begin reporting blending events at the Jeffersontown Wastewater Treatment Plant. As stated in the meeting, MSD has installed new technology, which will now provide us with real time information concerning blending events at the Jeffersontown Wastewater Treatment Plant. The information will assist us to maximize secondary treatment and minimize blending. MSD believes that some treatment is preferable to no treatment. MSD will also implement a public website notification of blending events at the Jeffersontown Wastewater Treatment Plant.

Enclosed is a copy of MSD's listed activities we will implement at the Jeffersontown Wastewater Treatment Plant. We look forward to further discussions with you and the others involved in this matter.

Sincerely,

H. J. Schardein, Jr.
Executive Director

cc:
Laurence J. Zielke, MSD
Paula Purifoy, MSD
W. Brian Bingham, MSD
Shannon Stamper, KDEP
Doug Mundrick, EPA
John Harkins, EPA
Bill Bush, EPA
Bill Weinischke, US DOJ
Alfreda Freeman, EPA
Scott Gordon, EPA
Cesar Zapata, EPA

Enclosure

Jeffersontown Wastewater Treatment Plant
Reporting/Actions Implementation Plan

1. Occurrences of blending events during wet weather will be reported per KAR 5:015, KAR 5:065, the Consent Decree and the approved Sewer Overflow Response Protocol (SORP).
   - The Initial Discharge Report (IDR) will be made via email within 24 hours of becoming aware of the start of the blending event. The emails will be sent per the approved Sewer Overflow Response Protocol, with the designated EPA and KDEP individuals receiving the emails. The following information will be contained in the IDR:
     1. Location of the blending event (Jeffersontown WWTP)
     2. Start date and time of the blending event
     3. Stop date and time of the blending event, if blending terminated at that time
     4. Estimated volume of the blending event, if blending terminated at that time

     When the blending event ceases, if the above information is not contained, then a Supplemental IDR will be sent containing the four pieces of information above. This activity will begin February 18, 2008.

   - A 5 day follow-up letter summarizing the blending event will be sent to Charlie Roth at the KDEP Louisville Field Office. The summary will include these components for each blending event, to be broken down by calendar days:
     1. Beginning date and time
     2. Ending date and time
     3. The volume of wastewater flows blended
     4. Total plant flow during the event
     5. Peak plant flow during the event

     This activity will begin with the February 12, 2008, blending event.

   - The blending events will be summarized monthly, per the components listed above, and included in the Jeffersontown wastewater treatment plant Discharge Monitoring Report (DMR), which is submitted to KDEP on the 28th day of the following calendar month. The package will also be scanned and sent via email to EPA as a PDF attachment. This activity will begin with the February 2008 DMRs, to be submitted by March 28, 2008.

   - The blending events will be summarized, per the components listed above, and included in the Project WIN Quarterly Reports, beginning with the report to be submitted April 30, 2008.

   - The blending events will be summarized, per the components listed above, and included in the Project WIN Annual Report, beginning with the report to be submitted December 30, 2008.

2. Occurrences of blending events during wet weather will be posted to MSD's Project WIN website, in a similar manner to wet weather overflows. The information anticipated to be shown include the start date and time of the blending event, the stop date and time of the blending event and the total quantity of flow blended during the blending event. This feature will be operational by March 1, 2008.

3. An enhanced Wet Weather Standard Operating Procedure (SOP) for the Jeffersontown Wastewater Treatment Plant will be prepared and implemented by March 15, 2008. This enhanced SOP will include provisions for:
   - Ensuring maximum utilization of secondary treatment capacity,
   - Chemical addition to improve pollutant removal during the blending event, and
   - A documentation and reporting system of blending events.

4. The constructed overflow upstream of the siphon has been equipped with telemetry equipment. This equipment monitors the depth of water in the siphon box and displays the level on a screen for monitoring, along with other pertinent plant data. The siphon box begins overflowing at the approximate depth of 6.4 feet. When the level reaches a depth of 4 feet, a text page is sent to Metro Operations staff as a high level warning. When the level reaches a depth of 6 feet, a second text page is sent to the Metro Operations staff, prompting a visual inspection by the on-site plant operator. When an overflow is observed at the siphon box, overflow information is collected and reported following the protocols contained within the approved SORP, which is outlined as follows:
   - The Initial Discharge Report (IDR) will be made via email within 24 hours of becoming aware of the start of the overflow event. The emails will be sent per the approved Sewer Overflow Response Protocol, with the designated EPA and KDEP individuals receiving the emails. The following information will be contained in the IDR:
     1. Location of the unauthorized discharge (Jeffersontown WWTP siphon box)
     2. Start date and time
     3. Stop date and time, if discharge terminated
     4. Estimated volume, if discharge terminated

     When the unauthorized discharge ceases, if the above information is not contained, then a Supplemental IDR will be sent containing the four pieces of information above. This activity will begin February 18, 2008.

   - The unauthorized discharge events will be summarized and included in the Jeffersontown WWTP Discharge Monitoring Report (DMR), which is submitted to KDEP on the 28th day of the following calendar month. The package will also be scanned and sent via email to EPA as a PDF attachment. The summary will include these components for each unauthorized discharge event:
     1. Sewershed name and specific location of the unauthorized discharge
     2. Start date and time of the unauthorized discharge
     3. Stop date and time of the unauthorized discharge
     4. Description of the cause of the unauthorized discharge
     5. Impact of the unauthorized discharge
     6. Description of actions taken to mitigate the unauthorized discharge
     7. Estimated volume of the unauthorized discharge
     8. Description of cleanup action taken

     This activity will begin with the February 2008 DMRs, to be submitted by March 28, 2008.

   - The unauthorized discharge events will be summarized and included in the Project WIN Quarterly Reports, beginning with the report to be submitted April 30, 2008.

   - The unauthorized discharge events will be summarized and included in the Project WIN Annual Report, beginning with the report to be submitted December 30, 2008.

ATTACHMENT 2

DISCHARGE MONITORING REPORT STANDARD OPERATING PROCEDURE

1.0 Introduction

The Louisville and Jefferson County Metropolitan Sewer District (MSD) operates six regional wastewater treatment plants (WWTPs), fifteen small WWTPs, and approximately 300 pump stations. Each plant is permitted to operate and discharge to the waters of the commonwealth in accordance with the Kentucky Pollutant Discharge Elimination System (KPDES), 401 KAR 5:075, through issuance of a KPDES permit. Each plant permit requires that a monthly Discharge Monitoring Report (DMR) be submitted to the Kentucky Department of Environmental Protection (KDEP) by the 28th day of each month, except Glenview Bluff WWTP which requires the DMR to be submitted on a quarterly basis.

2.0 DMR Process

Currently, all WWTP DMRs, except for the Morris Forman WWTP, are manually-generated, as compared to electronically-generated. This document describes the manual standard operating procedure (SOP) and quality assurance/quality control (QA/QC) process to be used to minimize errors and omissions in the DMRs. The process will also be beneficial in developing strategies for minimizing potential permit exceedances.

MSD is in the process of developing an electronic method of generating DMRs that will be used for all WWTPs, including Morris Forman WWTP. This SOP will be modified when the electronically generated DMR program becomes available and is approved for use by KDEP.

2.1 Procedure for Sample Collection, Analysis, and Reporting

1. Operations staff collects influent and effluent composite and grab samples (fecal coliform) and transports the samples from the regional plants to the Morris Forman Wastewater Treatment Plant (WWTP) Laboratory for analysis. Samples for the small wastewater treatment plants (except total phosphorus) are transported to the West County WWTP Laboratory for analysis.
2. The Laboratory performs the required parameter analysis, including QA/QC tests. The Laboratory then enters the test results into the computerized Laboratory Information System (LIMS).
3. Operations staff collects and analyzes effluent permit grab samples for dissolved oxygen (DO), pH, and Total Chlorine Residual (TRC) as well as process control tests and enter the results in the plant DMR Effluent Worksheet for the small wastewater treatments or the Plant Operational Data Sheets at the regional wastewater treatment plants.
4. At the end of the month, the Plant Operator signs the DMR Effluent Worksheet (with carbon copy) and hands over the original copy to the Operations Supervisor. The carbon copy remains at the WWTP.

2.2 DMR Generation

After the 5th of the month following the compliance period, the Operations Supervisor begins the process to manually prepare the DMR for each plant using the DMR Checklist at the end of this report. One DMR Checklist is to be completed and filed for each WWTP.

2.2.1 Small WWTP Monthly Operations Report (STPMOR)

a. For the compliance month, a STPMOR is generated as an excel spreadsheet from a standardized template containing a sheet for each of the small wastewater treatment plants. The MOR has already imported the laboratory data from LIMS for effluent concentrations of CBOD, TSS, ammonia, and fecal coliform. In addition, influent BOD and TSS concentrations at the North Hunting Creek, Hunting Creek South, and Timberlake WWTPs are also imported. The STPMOR, at this point, does not include the flow rate and test results for pH, DO, or TRC.

b. The daily flow rate from the plant DMR Effluent Worksheet is then entered into the STPMOR generated above. The spreadsheet automatically calculates the daily pounds effluent loading for CBOD, TSS, and ammonia, and influent pounds of BOD, TSS, and ammonia (NH_3) for the plants identified above. The spreadsheet then calculates the monthly average and maximum week for each parameter as well as the geometric mean for fecal coliform. In addition, the percent BOD and TSS removal is also calculated.

c. Pre-printed DMR forms for each small WWTP are mailed by KDEP to the Sr. Manager Metro Operations quarterly.

d. The Operations Supervisor makes a copy of a blank DMR specific for each plant and manually enters the minimum DO, the minimum and maximum pH, and the average and maximum TRC from the plant DMR Effluent Worksheet.

e. The Operations Supervisor then enters the average and maximum flow rates, monthly average and weekly maximum concentrations, and loadings for CBOD, TSS, and NH_3, and percent removal for BOD and TSS from the completed STPMOR above.

f. Metals Analysis and Reporting

Certain plants also require that the effluent be tested for heavy metals and reported on a pre-printed DMR form in accordance with the following schedule:

Annually: North Hunting Creek, Hunting Creek South, and Timberlake WWTPs - zinc, lead, copper, cadmium, and hardness.

g. The Operations Supervisor enters the number of exceedances per parameter. If there are none, a "zero" is entered.

2.2.2 Regional WWTPs

a. For the compliance month, a MOR for each regional plant is generated as an excel spreadsheet from the LIMS. The MOR has already imported the laboratory data from LIMS for effluent concentrations of CBOD, TSS, ammonia, total phosphorus and fecal coliform. The MOR, at this point, does not include the flow rate and test results for pH, DO, or TRC.

b. The daily flow rate from the Plant Operations Data Sheet is then entered into the MOR generated above. The spreadsheet automatically calculates the daily loading (pounds) for influent and effluent for CBOD, TSS and ammonia and effluent pounds of total phosphorus. The spreadsheet then calculates the monthly average and maximum week for each parameter as well as the geometric mean for fecal coliform. In addition, the percent BOD and TSS removal is also calculated.

c. Pre-printed DMR forms for each regional wastewater treatment plant are mailed by KDEP quarterly to the Sr. Manager Metro Operations except for the MFWTP. The pre-printed DMR forms for the MFWTP are sent directly to the MFWTP Operations Manager.

d. The Operations Supervisor makes a copy of a blank DMR specific for each plant and month and manually enters the minimum DO and the minimum and maximum pH from the Plant Operations Data Sheet.

e. The Operations Supervisor then enters the average and maximum flow rates; monthly average and weekly maximum concentrations and loadings for CBOD, TSS, NH_3, TP and percent removal for BOD and TSS from the completed MOR.

f. Metals Analysis and Reporting

Certain plants also require that the effluent be tested for heavy metals and reported on a pre-printed DMR form in accordance with the following schedule:

Monthly: West County WWTP – copper, cadmium, hexavalent chromium, lead, zinc, and hardness.

Hite Creek WWTP - cadmium, hexavalent chromium, cyanide, mercury*, and hardness.

*Mercury analysis is performed by a contract laboratory as part of the quarterly biomonitoring requirement described below.

g. Biomonitoring

Each regional WWTP is required by the KPDES permit to perform biomonitoring tests each quarter. The Operations staff sets up an automatic sampler and a contract laboratory collects and analyzes the sample.

The contract laboratory emails the biomonitoring report to KDEP and the Operations Supervisor for each regional plant.

The Operations Supervisor transfers the results of the biomonitoring report to the monthly DMR.

2.3 Quality Control Procedure

Upon completion of the draft DMR and checklist by the Operations Supervisor, the Senior Manager Metro Operations, or his/her designee, performs a QC analysis of each DMR and initials each element of the DMR Checklist (except MFWTP). The QC process is used to adjudicate conflicting data between the MORs to ensure each DMR is complete, accurate, verifiable, and in accordance with the DMR requirements and this SOP. A separate DMR Checklist is to be completed for each DMR submitted. The signed checklists are placed in the respective WWTP files as QC verification records.

Upon completion of the DMR QC process, the final DMR using the DMR pre-printed forms is generated and signed by the Operations Supervisor or Authorized Agent.

2.4 Cover Letter

The Operations Supervisor creates a cover letter using the template provided on MSDNet, which includes the items listed on the DMR Checklist. The letter should address exceedances and respective mitigation actions. In addition to the DMR sheets, attach the STPMOR or the regional WWTP MOR, as appropriate, the Monthly Bypass Report, the Monthly Unauthorized Discharge Report, and any letters previously submitted during the month regarding explanations and actions taken for exceedances.

2.5 Document Distribution and Filing

The DMR Checklist outlines the document distribution process. The permit file receives a copy of each of the following documents:

- Cover Letter
- Signed DMR
- Bypass Reports
- Unauthorized Discharge Reports
- Monthly Operations Report (MOR) for regional WWTPs
- Monthly Operations Report (STPMOR) for the small WWTPs
- Initialed DMR Checklist

3.0 Reporting Accuracy for Data

The detection limit (i.e. number of decimal points) of the analysis for each parameter must be equal to the limits specified in the permit. Do not add additional decimals, if not required. Refer to the following examples as illustration.

Concentration (mg/l)

Parameter	Permit	Report Example	Comments
CBOD	20	10	No decimals
TSS	30	5	No decimals
Ammonia	4	1	No decimals
Fecal Coli	200	200	No decimals
Phosphorus	2.0	1.1	1 decimal
pH	6.0	7.2	1 decimal
DO	7	8	No decimals
TRC	0.011	0.010	3 decimals

Loading (lbs/day))

Parameter	Permit	Report Example	Comments
CBOD	1001	1001	No decimals
CBOD	12.5	10.5	1 decimal
TSS	30	5	No decimals
TSS	37.5	25.5	1decimal
Ammonia	334	200	No decimals
Ammonia	5.0	3.5	1 decimal
Phosphorus	37	25	No decimals
Phosphorus	2.5	1.5	1 decimal

Flow (mgd)

Permit	Report Example	Comments
4.0	3.9	1 decimal
0.25	0.15	2 decimals
0.470	0.420	3 decimals

If the concentration of all the samples is less than the detection limit or is non-detectable, enter the following code "NODI = B" (No Discharge Indicator Code = B, below detect limit/no detect). If some of the samples have concentrations below the detection limit, use a "0" for the calculations.

4.0 Glossary of Terms Used

BOD	Biochemical Oxygen Demand
CBOD	Carbonaceous Biochemical Oxygen Demand
DMR	Discharge Monitoring Report
DO	Dissolved Oxygen
LIMS	Laboratory Information Management System
MOR	Monthly Operations Report
NH_3	Ammonia
TRC	Total Residual Chlorine
TSS	Total Suspended Solids

DMR Preparation Checklist

WWTP: _____ **KPDES Permit #:** _____

Month: _____ **Year:** _____

Plant Operations Supervisor: _____

QC Performed By: _____

Action	Description	Supervisor Review	QC Review
DMR Printed Form	Verify correct plant, month, and year		
Permit Row	Lists the minimum effluent limits for each parameter and a description of the statistical basis (minimum, average, and maximum month or day, etc). In addition, this row also lists the units of sample measurement, frequency of analysis, and sample type. All boxes in permit row should be already completed.		
Sample Measurement Row	All boxes must be completed.		
	Monitoring frequencies in permit are minimum. The results of additional effluent testing, in accordance with the permit, must be included with the calculations and the increased frequency of testing reported in the Frequency of Analysis box.		
	Enter the Sample Type collected. It should be the same as in the permit row.		
	Verify that values entered into the boxes have the appropriate number of decimals.		
Loading Calculations	Average weekly loadings are based on calculating each days loading and then averaged. Verify average weekly loading were calculated correctly.		
	Average monthly loadings are based on calculating each days loading and then averaged. Verify average monthly loading is calculated correctly.		
Percent CBOD and TSS Removal	Verify the monthly CBOD and TSS percent removals are calculated based on the monthly average influent and effluent concentrations.		

Action	Description	Supervisor Review	QC Review
Monthly Process Control Report/ LIMS Monthly Report	Cross check the Plant Monthly Process Control Report with the LIMS Monthly Report. All effluent averages must be exactly the same.		
Number of Exceedances	Enter the total number of exceedances for each parameter for both concentrations and loading for each week and the monthly average, minimum, and maximum.		
Fecal Coliform Exceedances	If there was a single day fecal coliform exceedance, were additional samples taken during the week and the geometric mean re-calculated? If so, was the additional sampling included in the Sampling Frequency Box.		
Principal Executive Officer Box	Enter H.J. Schardein, Jr., Executive Director		
	Signed by Authorized Agent – Plant Operations Supervisor, if so designated by the Executive Director, and officially reported to KDEP and EPA per 40 CFR 122.22(c).		
Telephone No. and Date	Enter (502) 540-6000 and the date signed.		
Cover Letter	Verify the correct Permit Number is on all correspondence.		
	List all exceedances. If there are weekly exceedances, cite each week that they occurred.		
	Provide an explanation for each exceedance(s) and the mitigation actions taken to return the plant to compliance with respective dates.		
	Provide brief description of any Bypass activities and attach the Monthly Bypass Report.		
	Provide brief description of any unauthorized discharge events and attach the Monthly Unauthorized Discharge Report.		
Assemble Documents	Assemble cover letter, DMR, MOR, the Monthly Bypass Report, Monthly Unauthorized Discharge Report, letters sent during month to address non-compliance (exceedances, bypasses, etc).		

Action	Description	Supervisor Review	QC Review
Copies	**Original** DMR Coordinator Kentucky Energy and Environmental Cabinet Division of Water Surface Water and Permits Branch 200 Fair Oaks Lane, 4th Floor Frankfort, Ky, 40601 **Paper Copies** 1. Charlie Roth Kentucky Department of Environmental Protection Division of Water Louisville Regional Office 9116 Leesgate Road Louisville, Ky. 40222 2. Copy to MSD GIS which is then scanned to eB 3. File copy to Cedar Creek WWTP with the initialed original Checklist.		
Mail	Postmark by the 28th day of the month.		
Post on MSD Web Site	IT to post DMR Packets on Project WIN website by the 10th day of each following month.		

ATTACHMENT 3

LIMS REPORT

MSD Laboratory Sample Report

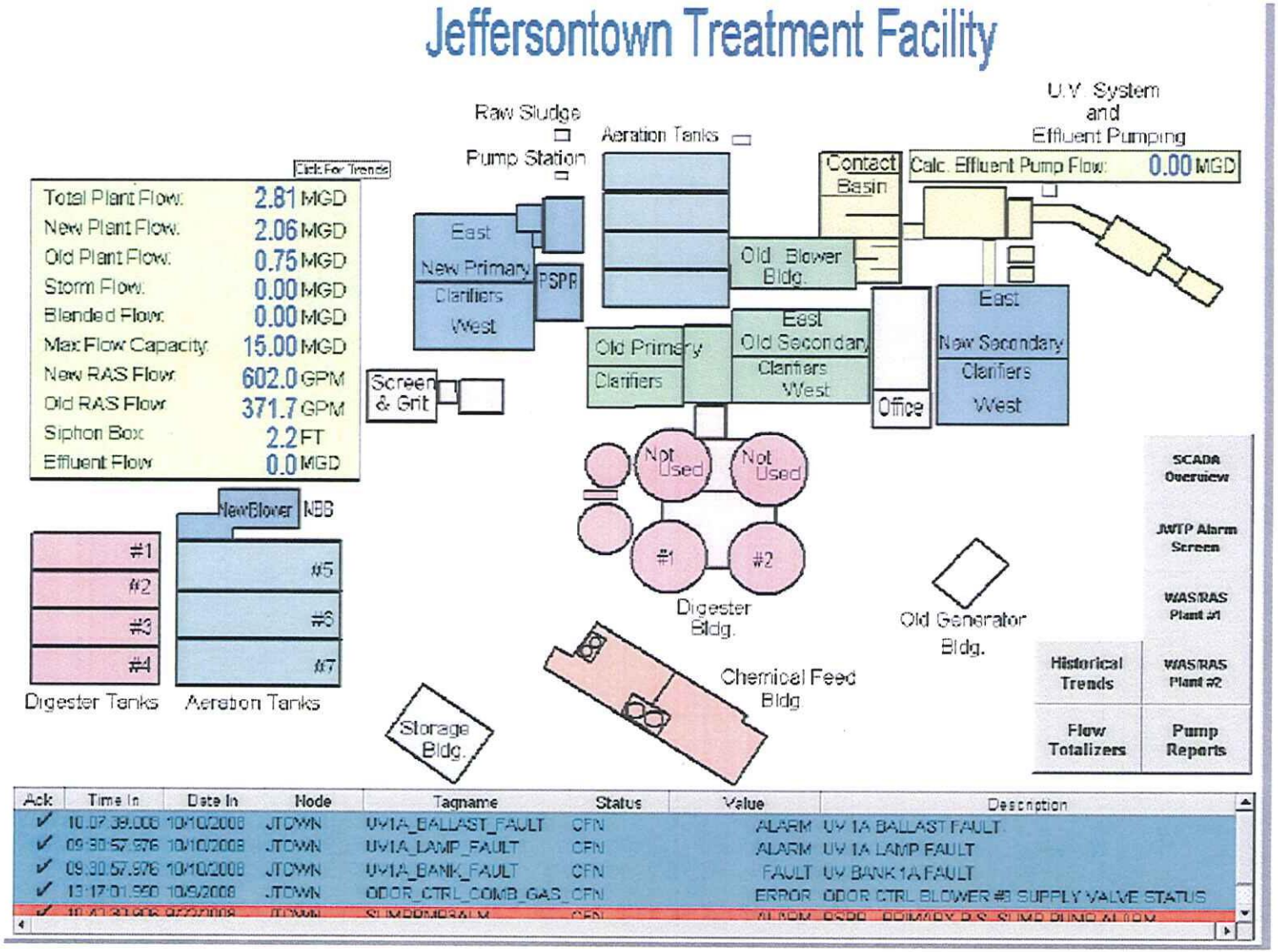
Report Date = 10-Oct-08 *Collection Date =* 01-Oct-08

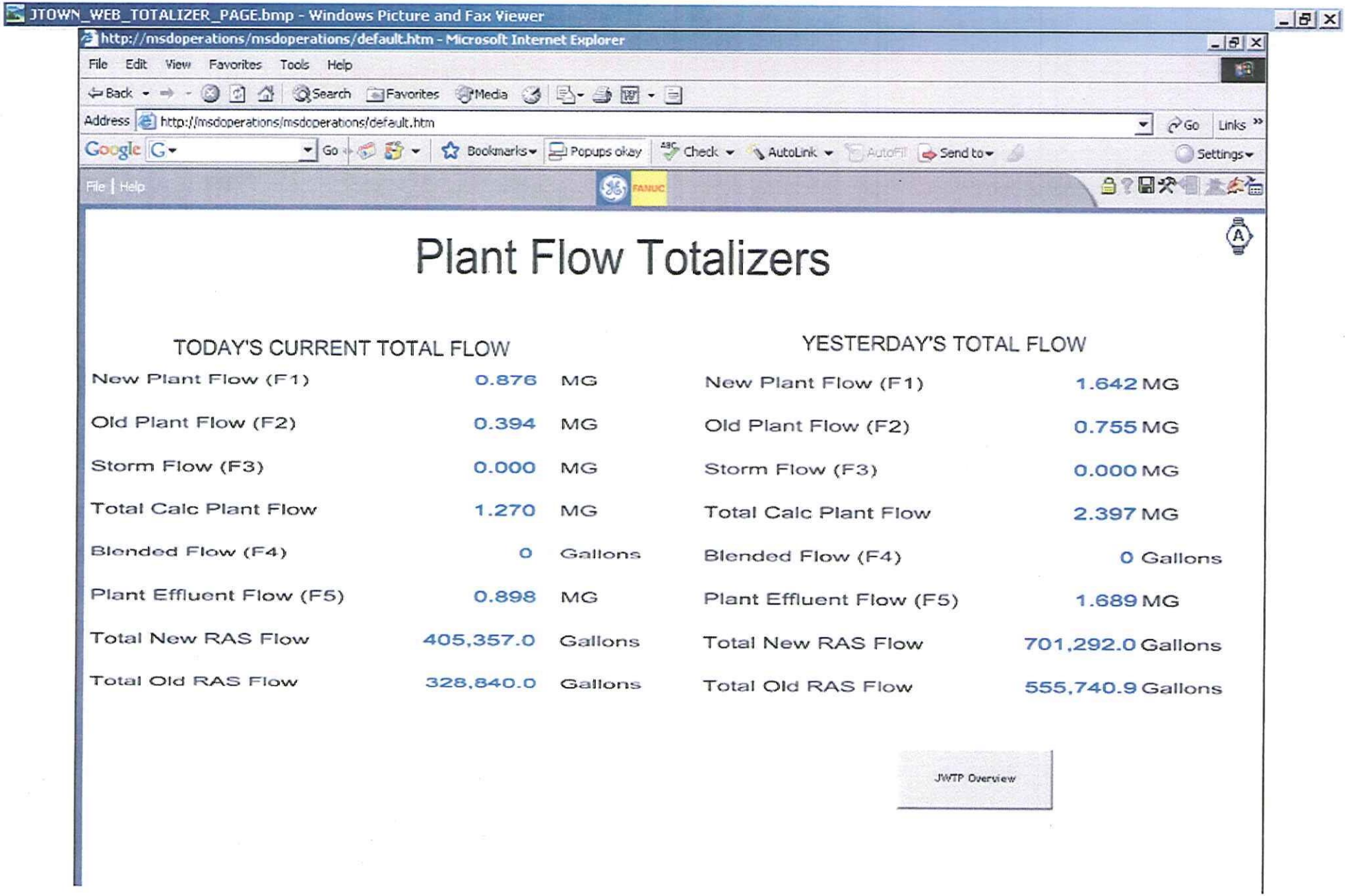
Location Code	*MSD Sample #*	*Location Description*	*Analysis Code*	*Analyte Name*	*Sample Result*	*Analysis Unit*	*Analysis MDL*	*Analysis Method Ref.*
T255EFF	AD35103	JTWTP Plant Effluent	COD	Chemical Oxygen Demand	10	mg/L	10.0	SM 5220 B
T255EFF	AD35103	JTWTP Plant Effluent	CBOD5	Carbonaceous BOD	3	mg/L	3	SM 5210 B
T255EFF	AD35103	JTWTP Plant Effluent	NH3N	Ammonia N	0.45	mg/L	0.055	SM 4500 NH3
T255EFF	AD35103	JTWTP Plant Effluent	FCOLIFRM	Coliform, Fecal	57	col./100 mL	1	9222 D
T255EFF	AD35103	JTWTP Plant Effluent	TP	Total Phosphorous via ICP	0.280	mg/l	0.060	EPA 200.7
T255EFF	AD35103	JTWTP Plant Effluent	FLOW	Flow	PENDING	MGD		Continuous,m
T255EFF	AD35103	JTWTP Plant Effluent	FLDDO	Field Dissolved oxygen	PENDING	mg/L		4500-O G
T255EFF	AD35103	JTWTP Plant Effluent	FLDPH	Field pH	PENDING	pH activity		SM 4500-H+ B
T255EFF	AD35103	JTWTP Plant Effluent	TSS	Total Suspended Solids	9	mg/L	2.0	SM 2540D

MSD Laboratory Manager/QC Manager

ATTACHMENT 4

WORKSTATION PRINT SCREENS


Jeffersontown Treatment Facility
Raw Sludge Pump Station
Aeration Tanks
U.V. System and Effluent Pumping
Contact Basin
Calc. Effluent Pump Flow: 0.00 MGD
Click For Trends
Total Plant Flow: 2.81 MGD
New Plant Flow: 2.06 MGD
Old Plant Flow: 0.75 MGD
Storm Flow: 0.00 MGD
Blended Flow: 0.00 MGD
Max Flow Capacity: 15.00 MGD
New RAS Flow: 602.0 GPM
Old RAS Flow: 371.7 GPM
Siphon Box: 2.2 FT
Effluent Flow: 0.0 MGD
East New Primary Clarifiers West
PSPR
Old Blower Bldg.
East Old Secondary Clarifiers West
East New Secondary Clarifiers West
Old Primary Clarifiers
Screen & Grit
Office
Not Used
Not Used
#1
#2
Digester Bldg.
Old Generator Bldg.
NewBlower
NBB
#1
#2
#3
#4
#5
#6
#7
Digester Tanks
Aeration Tanks
Chemical Feed Bldg.
Storage Bldg.
SCADA Overview
JWTP Alarm Screen
WAS/RAS Plant #1
WAS/RAS Plant #2
Historical Trends
Flow Totalizers
Pump Reports
Ack | Time In | Date In | Node | Tagname | Status | Value | Description
✓ 10:07:39.000 10/10/2008 JTOWN UV1A_BALLAST_FAULT CFN ALARM UV 1A BALLAST FAULT
✓ 09:30:57.976 10/10/2008 JTOWN UV1A_LAMP_FAULT CFN ALARM UV 1A LAMP FAULT
✓ 09:30:57.976 10/10/2008 JTOWN UV1A_BANK_FAULT CFN FAULT UV BANK 1A FAULT
✓ 13:17:01.950 10/9/2008 JTOWN ODOR_CTRL_COMB_GAS_ CFN ERROR ODOR CTRL BLOWER #3 SUPPLY VALVE STATUS



Plant Flow Totalizers

TODAY'S CURRENT TOTAL FLOW			YESTERDAY'S TOTAL FLOW		
New Plant Flow (F1)	0.876	MG	New Plant Flow (F1)	1.642	MG
Old Plant Flow (F2)	0.394	MG	Old Plant Flow (F2)	0.755	MG
Storm Flow (F3)	0.000	MG	Storm Flow (F3)	0.000	MG
Total Calc Plant Flow	1.270	MG	Total Calc Plant Flow	2.397	MG
Blended Flow (F4)	0	Gallons	Blended Flow (F4)	0	Gallons
Plant Effluent Flow (F5)	0.898	MG	Plant Effluent Flow (F5)	1.689	MG
Total New RAS Flow	405,357.0	Gallons	Total New RAS Flow	701,292.0	Gallons
Total Old RAS Flow	328,840.0	Gallons	Total Old RAS Flow	555,740.9	Gallons

JWTP Overview

JTOWN_INFLUENT_PUMP_STATION.pdf - Adobe Reader

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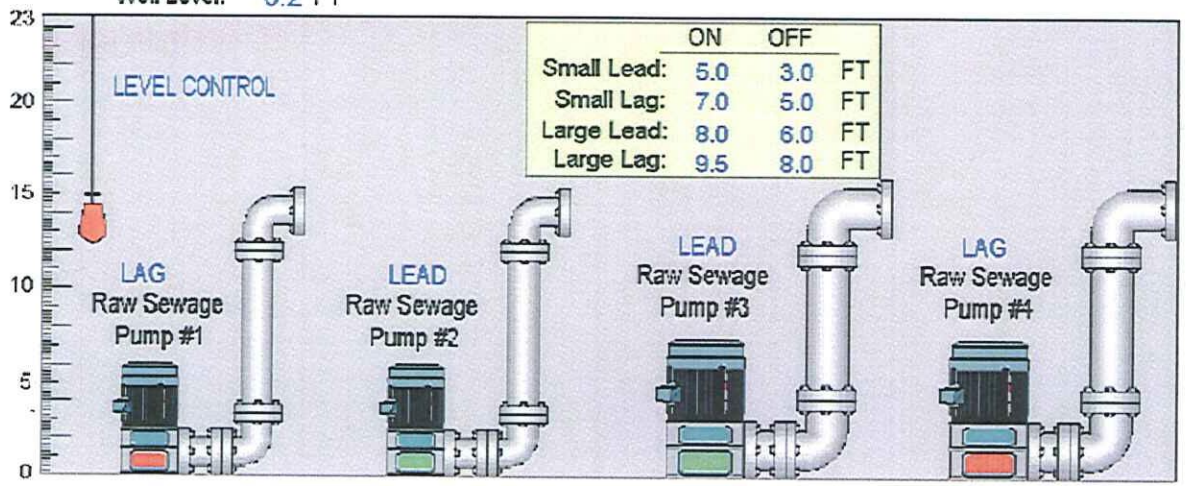
10:09:20 AM

Jeffersontown WTP
Raw Sewage Pump Station

10/13/2008

Well Level: 6.2 FT



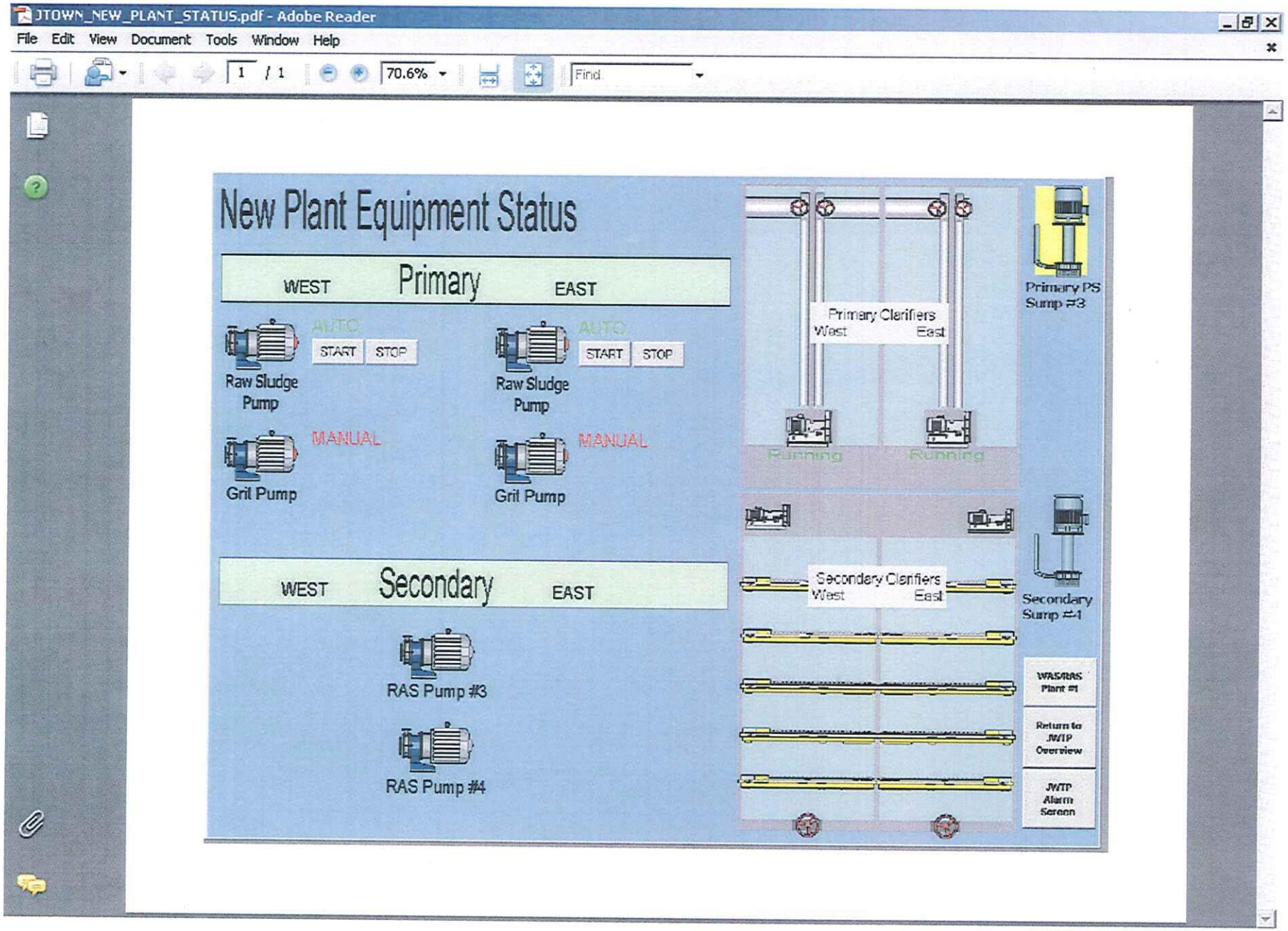
	ON	OFF	
Small Lead:	5.0	3.0	FT
Small Lag:	7.0	5.0	FT
Large Lead:	8.0	6.0	FT
Large Lag:	9.5	8.0	FT

AUTO	AUTO	AUTO	OFF
NORMAL	NORMAL	NORMAL	NORMAL
STOPPED	RUNNING	RUNNING	STOPPED

Return to JWTP Overview

JWTP Alarm Screen

Blended Flow: 0.00 MGD


JTOWN_NEW_PLANT_STATUS.pdf - Adobe Reader
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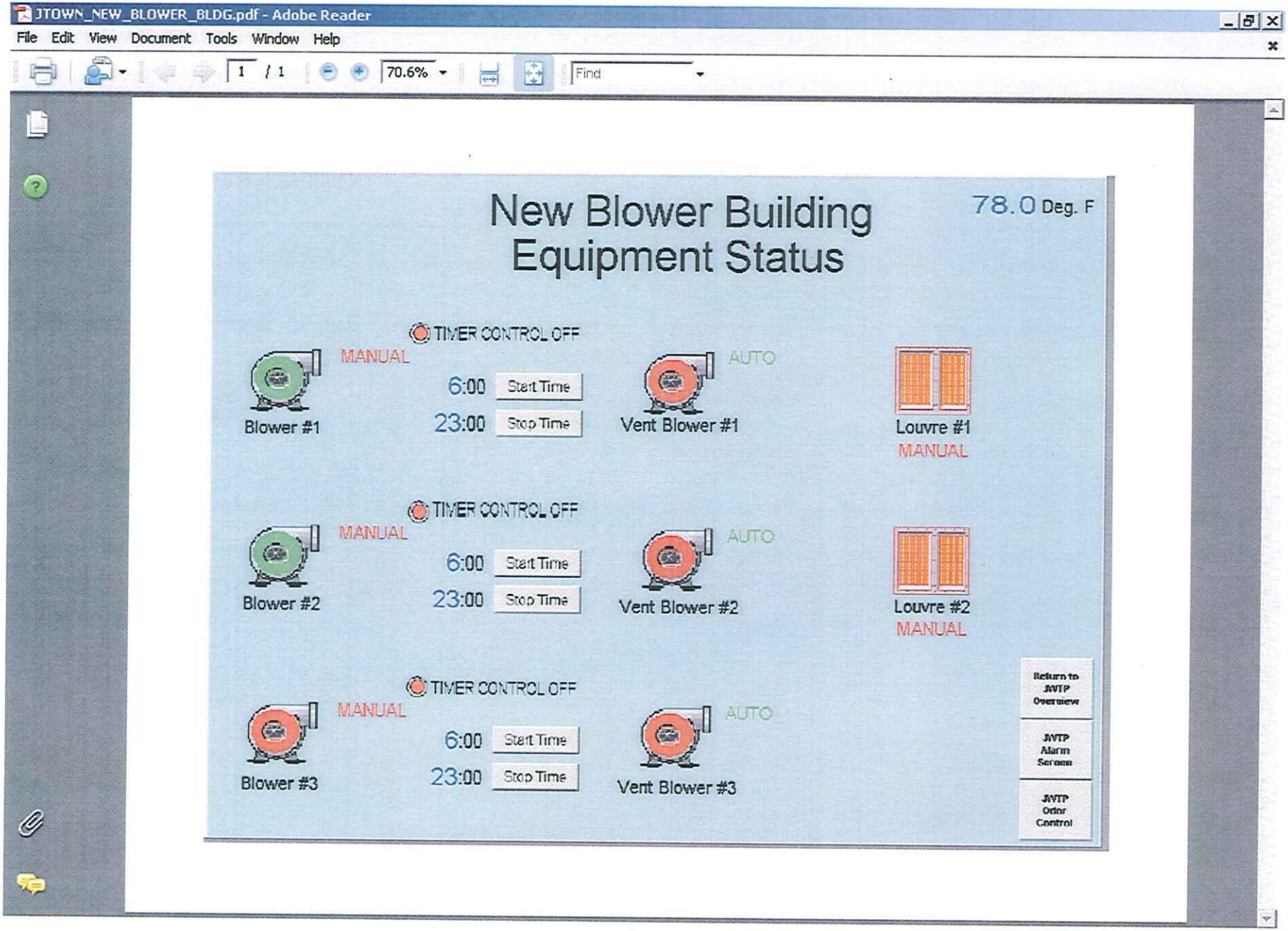
Find
New Plant Equipment Status
WEST
Primary
EAST
AUTO
START
STOP
Raw Sludge Pump
AUTO
START
STOP
Raw Sludge Pump
MANUAL
Grit Pump
MANUAL
Grit Pump
WEST
Secondary
EAST
RAS Pump #3
RAS Pump #4
Primary Clarifiers
West
East
Running
Running
Primary PS Sump #3
Secondary Clarifiers
West
East
Secondary Sump #1
WAS/RAS Plant #1
Return to JWTP Overview
JWTP Alarm Screen


JTOWN_NEW_BLOWER_BLDG.pdf - Adobe Reader
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Find
New Blower Building
Equipment Status
78.0 Deg. F
TIMER CONTROL OFF
MANUAL
6:00 Start Time
23:00 Stop Time
Blower #1
AUTO
Vent Blower #1
Louvre #1
MANUAL
TIMER CONTROL OFF
MANUAL
6:00 Start Time
23:00 Stop Time
Blower #2
AUTO
Vent Blower #2
Louvre #2
MANUAL
TIMER CONTROL OFF
MANUAL
6:00 Start Time
23:00 Stop Time
Blower #3
AUTO
Vent Blower #3
Return to JWTP Overview
JWTP Alarm Screen
JWTP Odor Control

JTOWN_ODOR_CONTROL.pdf - Adobe Reader

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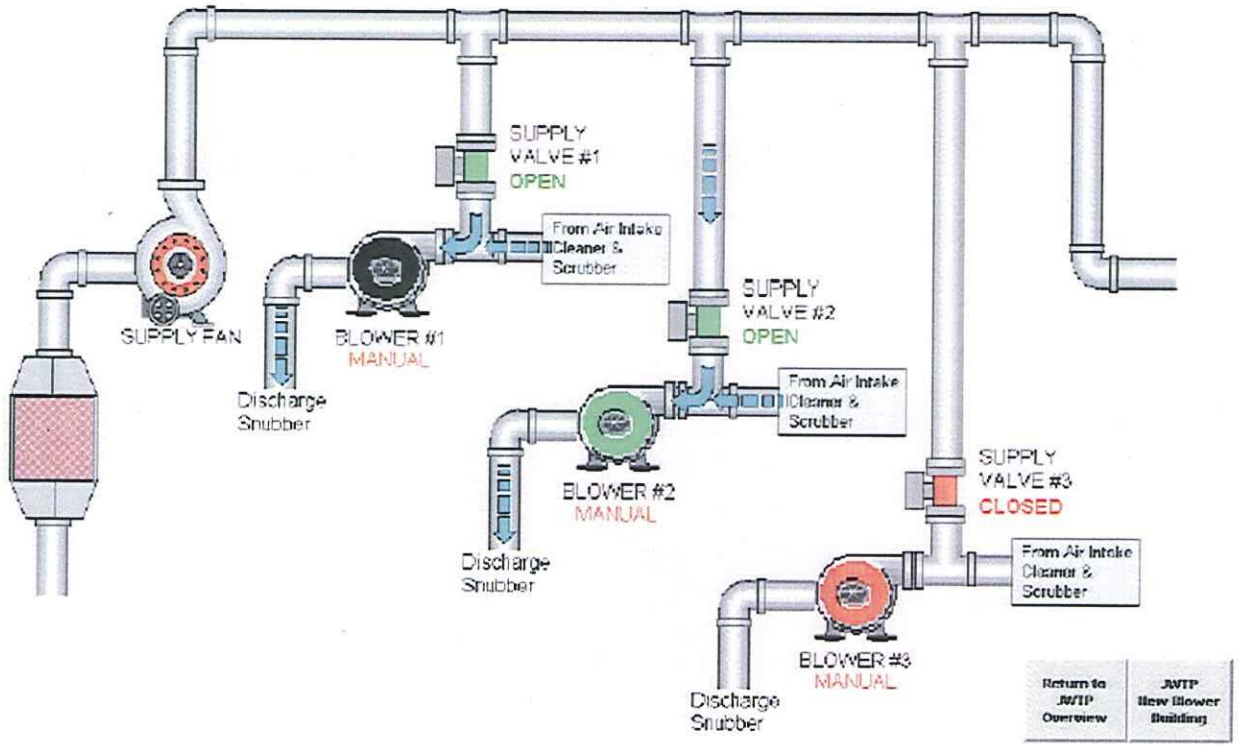
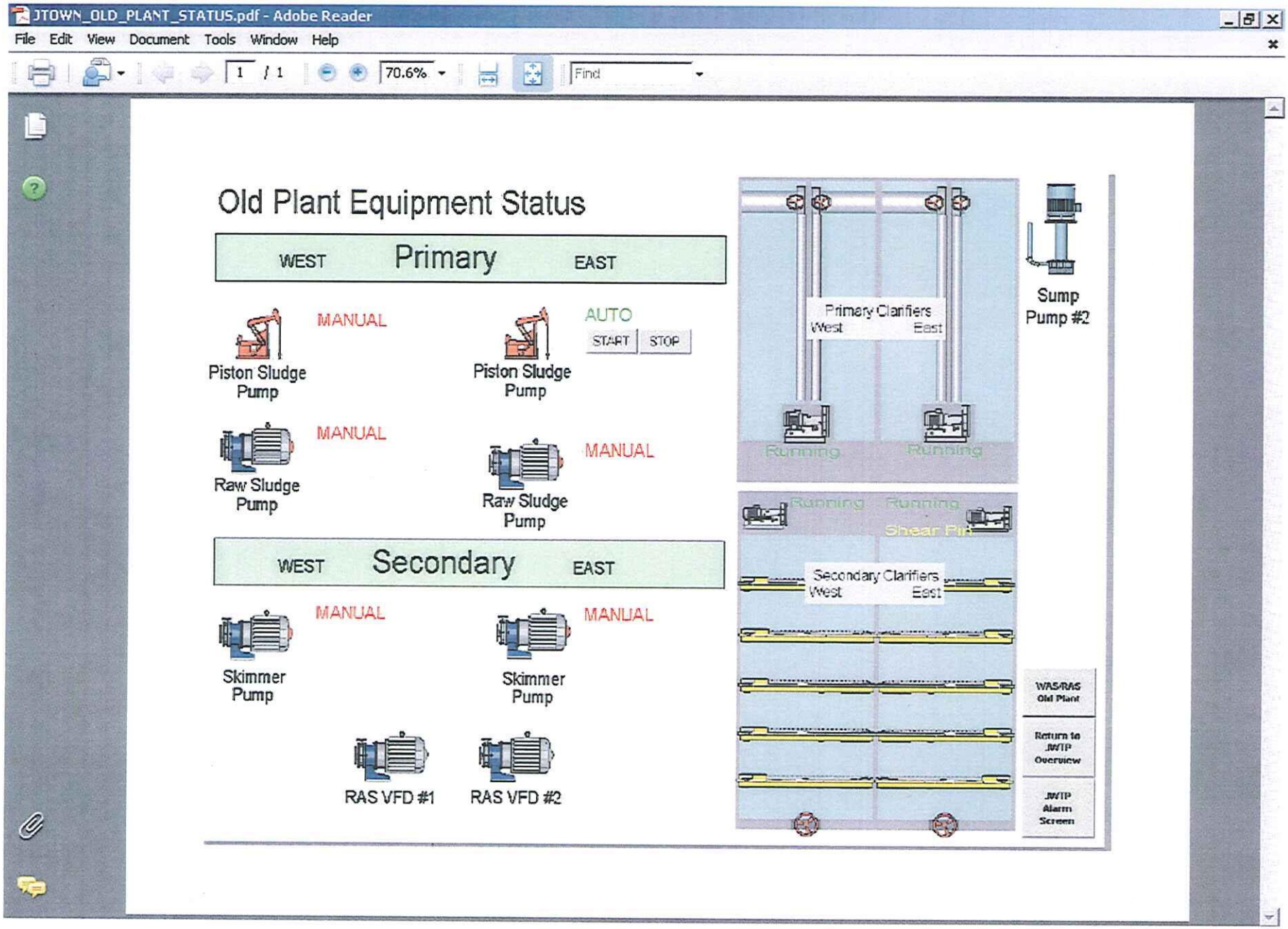
New Blower Building Odor Control

COMBUSTIBLE GAS: ERROR




JTOWN_OLD_PLANT_STATUS.pdf - Adobe Reader
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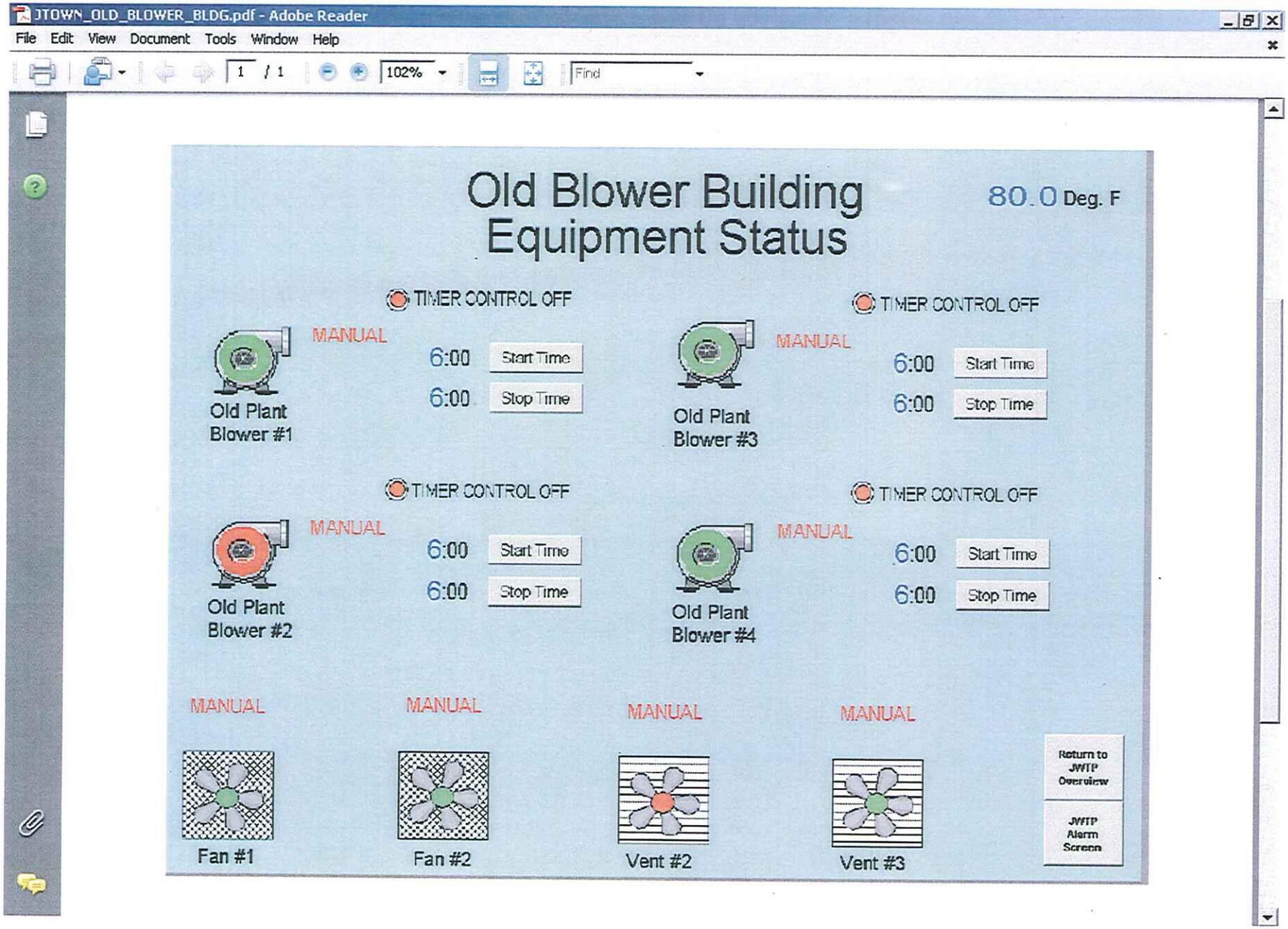
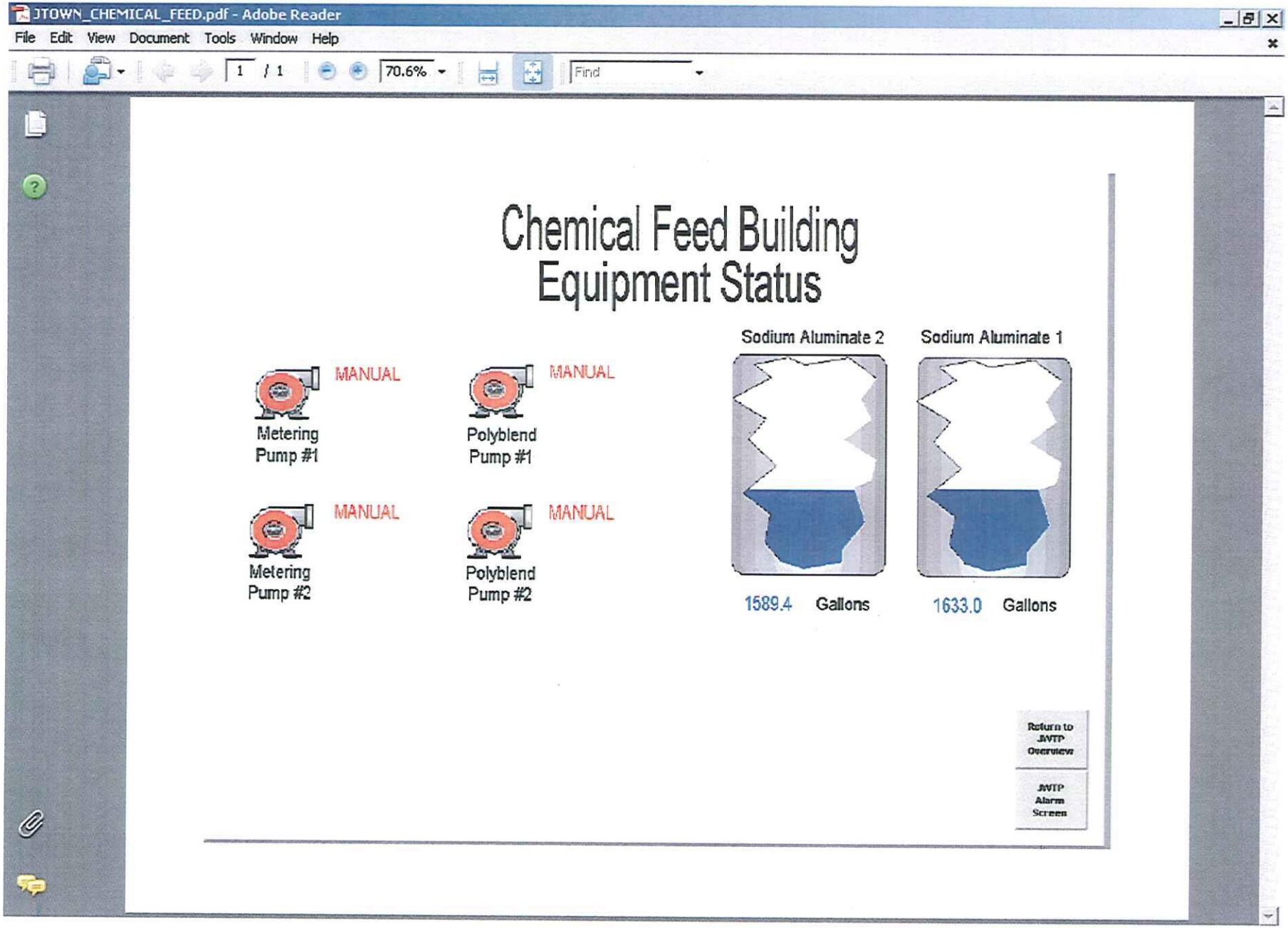
Find
Old Plant Equipment Status
WEST Primary EAST
MANUAL
Piston Sludge Pump
AUTO
START
STOP
Piston Sludge Pump
MANUAL
Raw Sludge Pump
MANUAL
Raw Sludge Pump
WEST Secondary EAST
MANUAL
Skimmer Pump
MANUAL
Skimmer Pump
RAS VFD #1
RAS VFD #2
Primary Clarifiers
West
East
Running
Running
Sump Pump #2
Running
Running
Shear Pin
Secondary Clarifiers
West
East
WAS/RAS Old Plant
Return to JWTP Overview
JWTP Alarm Screen


JTOWN_OLD_BLOWER_BLDG.pdf - Adobe Reader
File Edit View Document Tools Window Help
Old Blower Building
Equipment Status
80.0 Deg. F
TIMER CONTROL OFF
MANUAL
6:00
Start Time
6:00
Stop Time
Old Plant
Blower #1
TIMER CONTROL OFF
MANUAL
6:00
Start Time
6:00
Stop Time
Old Plant
Blower #3
TIMER CONTROL OFF
MANUAL
6:00
Start Time
6:00
Stop Time
Old Plant
Blower #2
TIMER CONTROL OFF
MANUAL
6:00
Start Time
6:00
Stop Time
Old Plant
Blower #4
MANUAL
Fan #1
MANUAL
Fan #2
MANUAL
Vent #2
MANUAL
Vent #3
Return to JWTP Overview
JWTP Alarm Screen


JTOWN_CHEMICAL_FEED.pdf - Adobe Reader
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Find
Chemical Feed Building
Equipment Status
MANUAL
Metering Pump #1
MANUAL
Polyblend Pump #1
MANUAL
Metering Pump #2
MANUAL
Polyblend Pump #2
Sodium Aluminate 2
Sodium Aluminate 1
1589.4 Gallons
1633.0 Gallons
Return to JWTP Overview
JWTP Alarm Screen

JTOWN_UV_OVERVIEW.pdf - Adobe Reader

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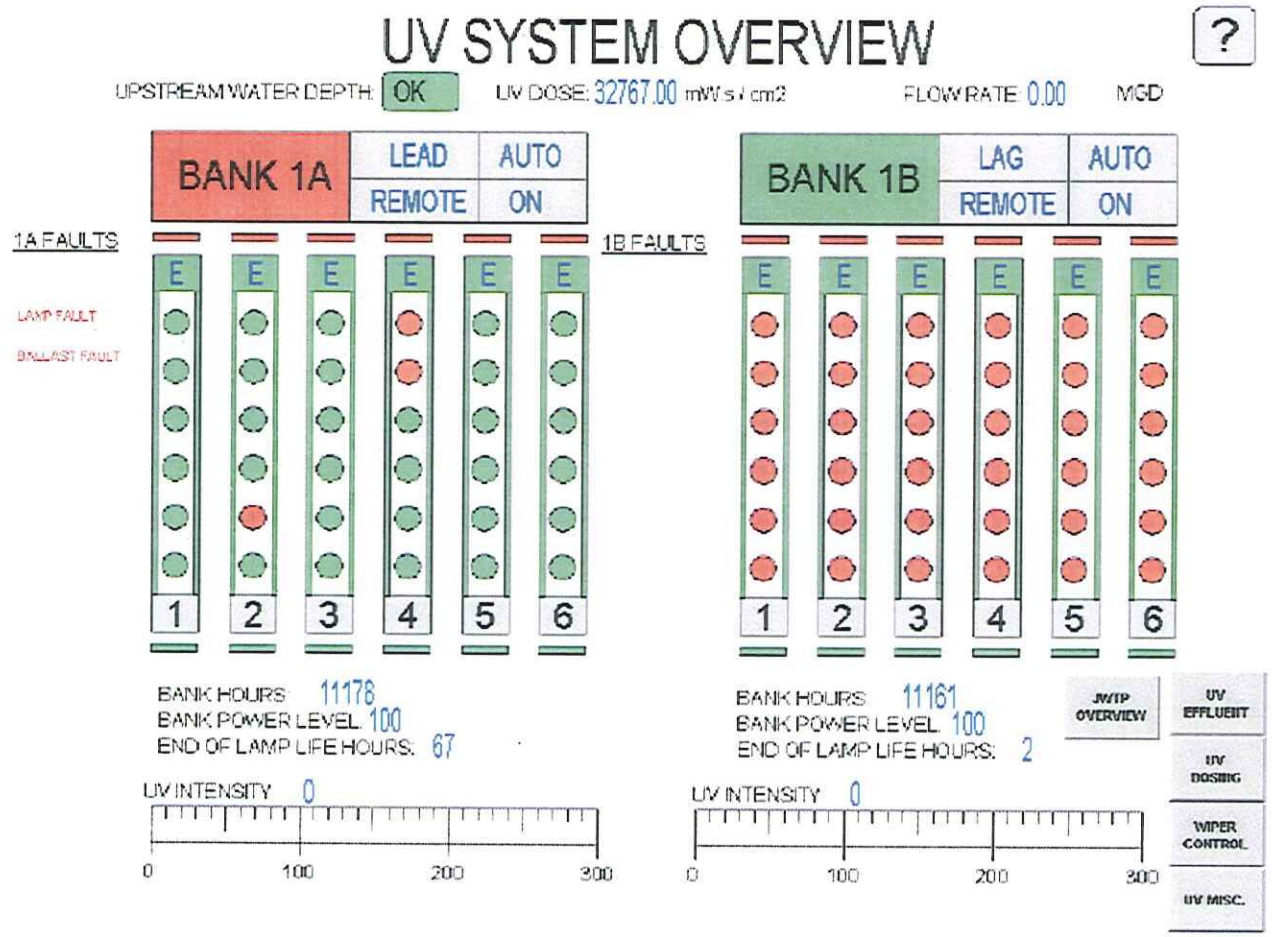
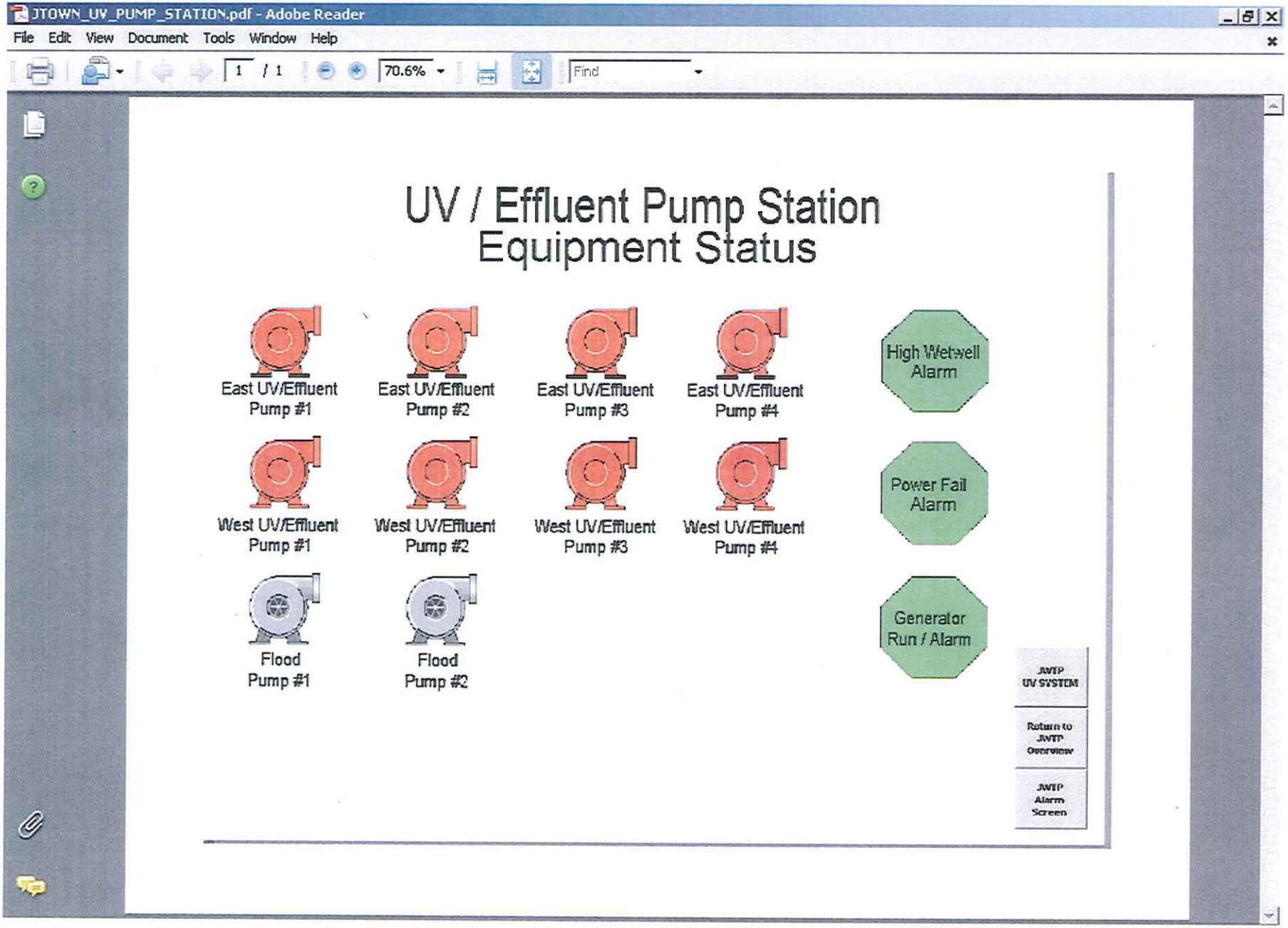



JTOWN_UV_PUMP_STATION.pdf - Adobe Reader
File Edit View Document Tools Window Help
1 / 1
70.6%
Find
UV / Effluent Pump Station
Equipment Status
East UV/Effluent Pump #1
East UV/Effluent Pump #2
East UV/Effluent Pump #3
East UV/Effluent Pump #4
West UV/Effluent Pump #1
West UV/Effluent Pump #2
West UV/Effluent Pump #3
West UV/Effluent Pump #4
Flood Pump #1
Flood Pump #2
High Wetwell Alarm
Power Fail Alarm
Generator Run / Alarm
JWTP UV SYSTEM
Return to JWTP Overview
JWTP Alarm Screen

JTOWN_DIGESTERS.pdf - Adobe Reader

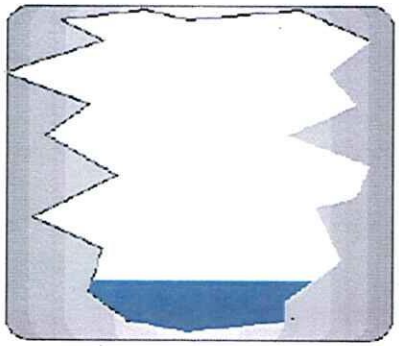
File Edit View Document Tools Window Help

1 / 1 102% Find

Digester Building
Equipment Status

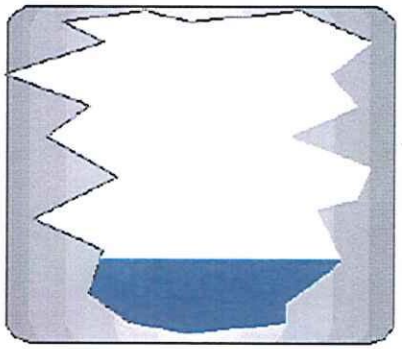
Sump Pump #1
Under Lab

Digester 2 Level



4.73 FEET

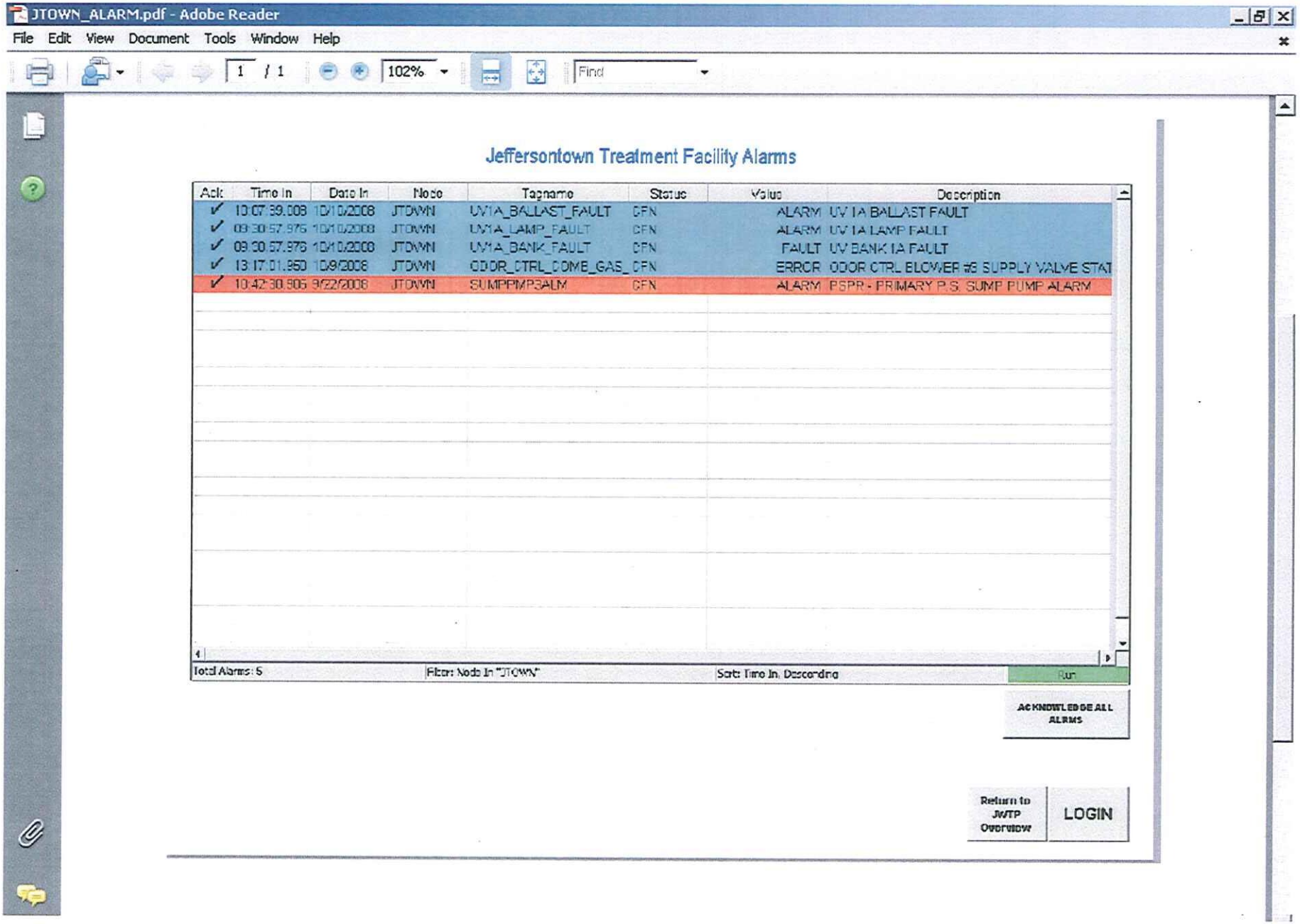
Digester 1 Level



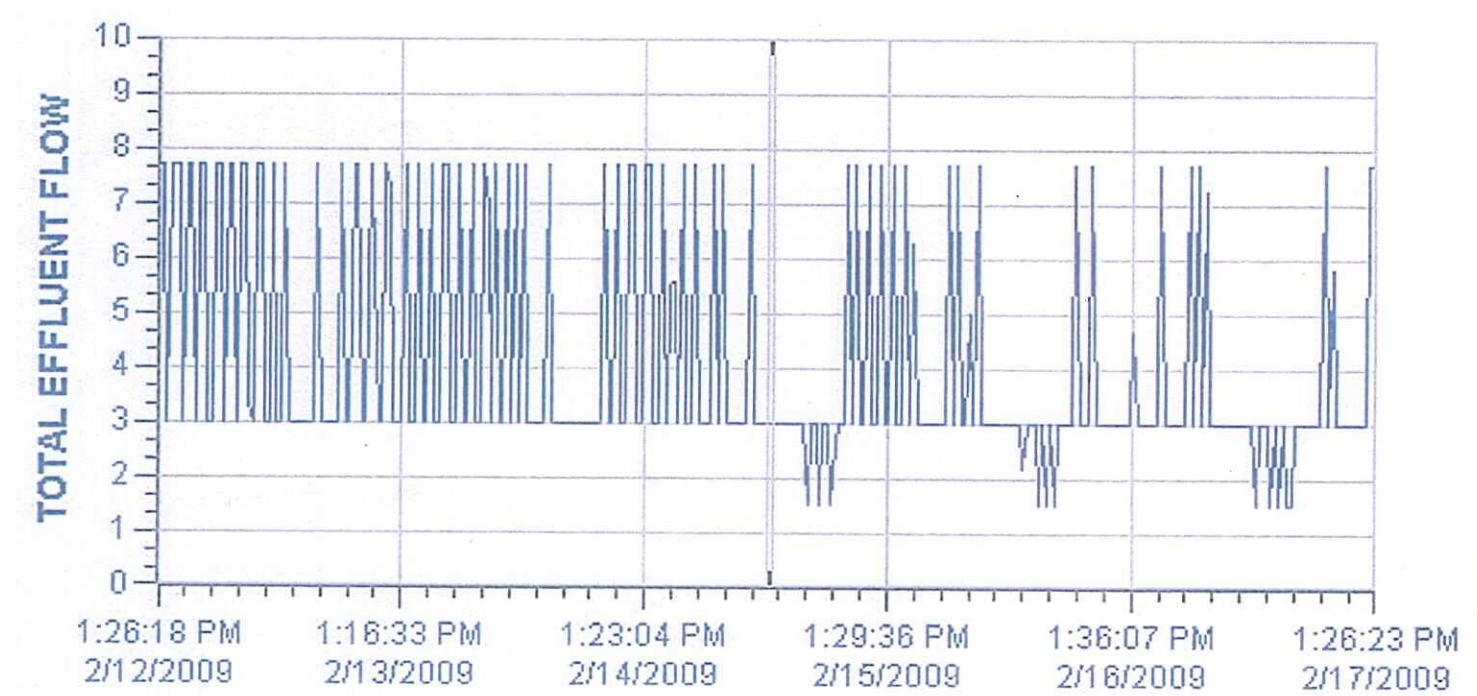
6.83 FEET

Return to JWTP Overview

JWTP Alarm Screen

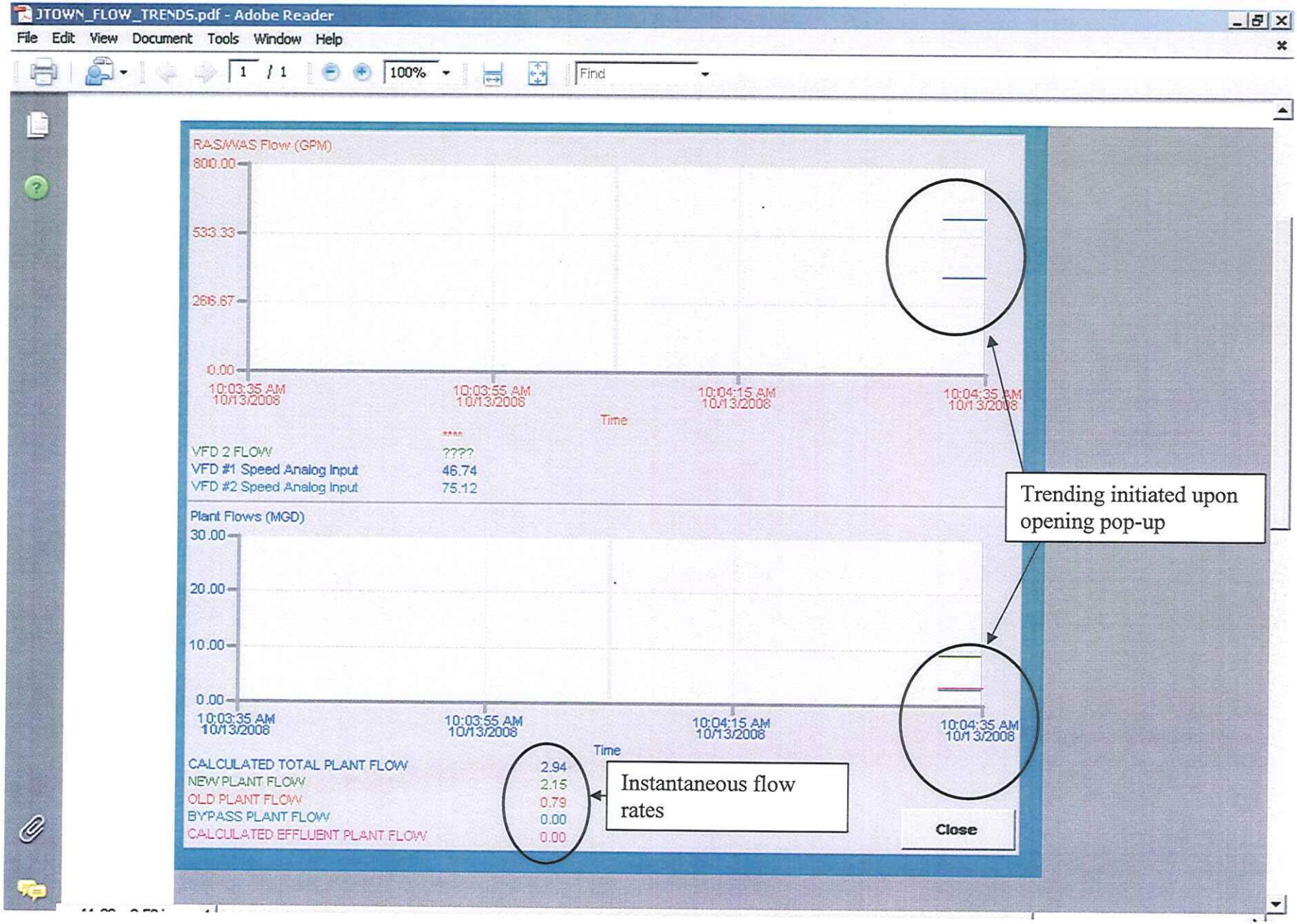

JTOWN_ALARM.pdf - Adobe Reader
File Edit View Document Tools Window Help
1 / 1
102%
Find
Jeffersontown Treatment Facility Alarms
Ack Time In Date In Node Tagname Status Value Description
10:07:39.008 10/10/2008 JTOWN UV1A_BALLAST_FAULT OFN ALARM UV 1A BALLAST FAULT
09:30:57.975 10/10/2008 JTOWN UV1A_LAMP_FAULT OFN ALARM UV 1A LAMP FAULT
09:30:57.975 10/10/2008 JTOWN UV1A_BANK_FAULT OFN FAULT UV BANK 1A FAULT
13:17:01.950 10/9/2008 JTOWN ODOR_CTRL_DOME_GAS_ OFN ERROR ODOR CTRL BLOWER #3 SUPPLY VALVE STAT
10:42:30.905 9/22/2008 JTOWN SUMPPMP3ALM OFN ALARM PSPR - PRIMARY P.S. SUMP PUMP ALARM
Total Alarms: 5
Filter: Node In "JTOWN"
Sort: Time In, Descending
Run
ACKNOWLEDGE ALL ALRMS
Return to JWTP Overview
LOGIN

Attachment 4



Pen Name	Description	Value
JT_PLANT_EFF_FLOW	JTOWN PLANT EFF FLOW	2.92
JT_TOTAL_PLANT_FLOW	JTOWN TOTAL PLANT FLOW	3.04

1:26:16 PM 2/12/2009 1:26:21 PM 2/17/2009


JTOWN_FLOW_TRENDS.pdf - Adobe Reader
File Edit View Document Tools Window Help
RAS/WAS Flow (GPM)
800.00
533.33
266.67
0.00
10:03:35 AM 10/13/2008
10:03:55 AM 10/13/2008
10:04:15 AM 10/13/2008
10:04:35 AM 10/13/2008
Time
VFD 2 FLOW ????
VFD #1 Speed Analog Input 46.74
VFD #2 Speed Analog Input 75.12
Plant Flows (MGD)
30.00
20.00
10.00
0.00
Time
CALCULATED TOTAL PLANT FLOW 2.94
NEW PLANT FLOW 2.15
OLD PLANT FLOW 0.79
BYPASS PLANT FLOW 0.00
CALCULATED EFFLUENT PLANT FLOW 0.00
Close
Trending initiated upon opening pop-up
Instantaneous flow rates

ATTACHMENT 5

WET WEATHER STANDARD OPERATING PROCEDURE

1.0 Introduction

The Jeffersontown Wastewater Treatment Plant (WWTP) is an advanced secondary treatment facility with an average day design capacity of 4 mgd and a peak hour design capacity of 9.5 mgd. During wet weather, significant precipitation results in excess infiltration and inflow (I/I) entering the Jeffersontown collection system causing wet weather peak flows approaching 20 mgd. To avoid treatment process overflows or treatment process upsets that would have long-term detrimental effects on effluent quality, influent wastewater flows in excess of 9.5 mgd must be routed around the secondary treatment process and blended with the secondary effluent, prior to disinfection and discharge to Chenoweth Run creek. To maximize the full capacity of the secondary treatment process at the Jeffersontown WWTP during wet weather events and minimize the impact on the environment, the following Wet Weather Standard Operating Procedure (SOP) has been adopted by MSD for use at this plant.

2.0 Treatment Process

The Jeffersontown WWTP is a single stage activated sludge treatment plant with nitrification and chemical clarification for phosphorus removal. See Figure 1. There are two parallel treatment trains: Plant No. 1 (the "new" plant, modified in 1998) and Plant No. 2 (the "old" plant, modified in 1975). See Figure 2 for a flow schematic of the plant. During dry weather, influent wastewater is received through a mechanically-cleaned bar screen and a grit chamber (preliminary treatment). Following preliminary treatment, a portion of the influent flow (typically 25 percent during dry weather) is diverted to Plant No. 2 by a manual gate valve located in the influent channel prior to the influent to the Plant No. 1 primary clarifier tanks. The remainder of the influent flow then continues to the Plant No. 1 primary clarifier tanks. During wet weather a portion of the influent may be routed through the influent relief line (also known as the storm water overflow line) that provides preliminary treatment through a separate manually-cleaned bar screen and a grit chamber and enters the Plant No. 1 primary clarifier tanks. The Plant No. 1 primary clarifier effluent is then pumped to the Plant No. 1 aeration basins by the secondary pump station.

Each plant operates its activated sludge process independently. Plant No. 1 normally operates in a split flow mode through 7 aeration basins. Plant No. 2 normally operates in a plug flow mode through 3 aeration basins.

Sodium aluminate ($NaAlO_2$) is added to the aeration tank effluent of each plant to precipitate phosphorus in the secondary clarifiers. The secondary clarifier effluent from the two treatment trains is mixed in a post aeration basin, disinfected using ultraviolet (UV) light, passes through post aeration steps and is then discharged to Chenoweth Run, a tributary of Floyd's Fork.

In 1998 MSD modified the primary treatment system in Plant No. 1 to provide for side-stream treatment with "enhanced primary treatment" for wet weather flows that exceed the combined capacities of the secondary treatment systems in Plant No. 1 and Plant No. 2. Plant No. 1 has a maximum capacity of 7.0 mgd and Plant No. 2 has a maximum capacity of 2.5 mgd, for a total combined maximum secondary treatment capacity of 9.5 mgd. As noted previously, flows are split between Plant No. 1 and Plant No. 2 on a 75/25 basis until the capacity of Plant No. 2 is reached. Additional flows are then routed to Plant No. 1. Once the secondary treatment capacity of each plant has been maximized, the excess primary effluent is routed through a 30" line to the influent of the post aeration tanks where it is blended with the secondary effluent from both treatment trains. From the post aeration tanks, the blended secondary effluent (which

includes the flow that has received full primary and secondary treatment) flows into the UV pump station where the blended flow is pumped to the UV disinfection channel, is then disinfected with ultraviolet light and then re-oxygenated over the post aeration steps and discharged to the stream through the permitted discharge location.

In 2000, MSD added a flow control splitter box, Figure 3, on the 30" primary effluent line prior to the Plant No. 1 secondary pump station. This splitter box has an adjustable weir that is set one foot below the high level alarm elevation in the secondary pump station. When the level in the splitter box increases to the top of the weir, the pump station will automatically be pumping 7 mgd to the influent of the Plant No. 1 aeration tanks. All flows greater than 7 mgd, in this line, would then pass over the weir and flow to the influent of the UV disinfection pump station where it is blended as indicated above.

When excess flow passes over the weir in the flow control splitter box, a flow meter sends a signal to the Supervisory Control and Data Acquisition (SCADA) system and records the time and flow rate on a continuous basis until the flow blending ceases. In addition, the SCADA system automatically sends an alarm to the Morris Forman WWTP control room, and also triggers a text message to the Process Supervisors and other members of the MSD management team alerting them to the start of a blending event and when the event ceases.

3.0 Wet Weather Operational Strategy Overview

The primary objective of this Jeffersontown WWTP Wet Weather SOP is to maximize the amount of flow receiving full secondary treatment. This objective is accomplished by managing the wastewater flow to each plant to ensure that the aeration tanks and channels are not overtopped, and also to prevent the biological mass from washing out due to secondary clarifier sludge blankets overflowing into the secondary effluent channel.

3.1 Flow Control

Based on a capacity analysis of the secondary treatment process, the following provides the distribution of maximum flows to each facility under short term wet weather events of less than 4 hours and for events extending beyond 4 hours:

Maximum Wet Weather Flows (Short Duration < 4 Hours)

Plant No. 2 -	2.5 mgd
Plant No. 1 -	7.0 mgd
Blended Flow –	10.5 mgd
Total WW Flow -	20 mgd

Maximum Wet Weather Flows (Extended Duration > 4 Hours)

Plant No. 2 -	2.0 mgd
Plant No. 1 -	5.0 mgd
Blended Flow –	13.0 mgd
Total WW Flow -	20 mgd

3.2 Secondary Clarifier Blanket Control

During peak wet weather events, the high wastewater flow rate to the secondary clarifiers will decrease the amount of time that the mixed liquor from the aeration basins has to settle resulting in less clarity in the secondary effluent. More importantly, the increased flow rate will cause the sludge blanket in the clarifier to rise. If the sludge blanket continues to rise, it is likely the solids blanket could top the clarifier and overflow into the effluent channel and eventually to Chenoweth Run. Since the sludge blanket typically has mixed liquor suspended solids (MLSS) levels near 7000 mg/l, this will have a serious detrimental affect on the plant effluent quality. In addition, when flows subside, the biomass lost in the effluent will not be available to maintain MLSS levels in the aeration basins. This can result in lower treatment efficiencies until biomass levels can be re-established through normal biological processes. To aid the settling of the mixed liquor in the secondary clarifiers during wet weather and to retain the sludge blankets within the clarifiers, polymeric flocculants can be added to the aeration tank effluent mixed liquor channel to each of the secondary clarifiers.

The following sections provide standard procedures for managing the wastewater flow, controlling the secondary clarifier sludge blankets, performing process control tests, and reporting procedures.

4.0 Preliminary Actions

The following actions should be taken in preparation for a wet weather event.

4.1 Flow Control Splitter Box

1. Ensure the adjustable weir is set 1.5 feet above the top of the divider wall slab. This level corresponds to one foot below the high level alarm in the secondary pump station. Once set, do not change the weir height until flow conditions return to normal.
2. Confirm the 24" gate to the secondary pump station is fully open.
3. Verify the flow meter is operational and available on the SCADA system.

4.2 Plant No. 1 Secondary Pump Station

1. Ensure the Plant No. 1 secondary pumps are in remote mode with only one (1) large pump (No. 3 or No. 4) in drive mode. If the pump station is in tilt-bulb control, it will start all pumps in drive mode, which would cause an overflow at the Plant No. 1 aeration basin influent channel.

4.3 Secondary Clarifiers

1. Ensure an adequate liquid polymer supply is available (use 55 gal drums of polymer if the polyblend pumps are not available) and be prepared to add to the aeration tank effluent mixed liquor channel to the secondary clarifiers for sludge blanket control during a wet weather event.
2. Determine initial polymer dosage rate for each plant's secondary clarifiers using jar tests. This task should be performed well in advance of a wet weather event.

5.0 Operating Procedure (Short Duration < 4 Hours)

Under normal operations at the design flow rate of 4.0 mgd, Plant No. 1 treats 3 mgd and Plant No. 2 treats 1.0 mgd.

5.1 Operation during short duration (<4 hours) wet weather events

1. As the total wastewater flow increases to 8 mgd, the flow should be split 6 mgd to Plant No. 1 and 2 mgd Plant No. 2. Do not adjust the gate valve to Plant No. 2 unless the flow to Plant No. 2 exceeds 2 mgd. If Plant No. 2 exceeds 2 mgd, throttle the gate valve to maintain 2 mgd.
2. As the total influent wastewater flow increases to 9.5 mgd, throttle the Plant No. 2 gate valve to limit wastewater flow to Plant No. 2 to 2.5 mgd.
3. The top elevation of the weir gate (EL 595.00) is set to one foot below the high level alarm (El 596.00) in the secondary pump station. At this level, the two 8" pumps (No. 1 and No. 2) and one 12" (No. 3 or No. 4) pump are operating at full speed to pump 7.0 mgd to the Plant No.1 aeration tanks.
4. Do not adjust the weir gate or the 24 " gate to the secondary pump station in the flow control splitter box anytime during the short duration wet weather event.
5. At this time, the Jeffersontown WWTP will be processing the maximum flow, 9.5 mgd, through the aeration tanks and secondary clarifiers.
6. As the level in the flow control splitter box rises to the top of the weir gate (El 595.00), it will overflow to the 30" blending line and the level in the secondary pump station wet well will remain below the high level alarm elevation and continue to pump 7 mgd to Plant No. 1.
7. The diluted wet weather primary effluent proceeds to the influent of the UV pump station where it is blended with the combined secondary effluent from Plant No. 1 and No. 2 prior to UV disinfection.
8. When the primary effluent begins to overflow the weir in the splitter box, the flow meter records the flow rate and sends an alarm to the MSD SCADA system. The SCADA system records the flow rate and the duration of the blended flow. From this information, MSD is able to determine the volume of the blended flow.

5.2 Secondary Clarifier Blanket Control

1. During wet weather events, it is essential to carefully monitor and distribute the wastewater flows as detailed in Section 5.1 above and keep carefully watch the level of the solids blanket in the secondary clarifiers.
2. Monitor the depth of blanket (DOB) in **all** the clarifiers during the wet weather event. Use a "Sludge Judge" and measure the DOB once an hour. Record levels in the plant logbook.
3. When the solids blanket in any of the secondary clarifiers rises above 3 feet, start adding polymer at the pre-determined dose rate and monitor the clarity of the secondary effluent and the DOB's. Increase polymer feed rate in small increments, if required, to achieve acceptable clarity in the secondary effluent.

Do not over feed polymer as this will not improve settleability and will turn the secondary effluent cloudy.

4. Polymer feed to the aeration tanks effluent will be adjusted based on settleability tests, DOB's, and effluent clarity.

5. If polymer feed is not effective in controlling blanket depths, reduce polymer feed. If adding polymer is determined to be not effective in controlling the clarifier solids blankets, discontinue polymer addition.

6. When it is determined that polymer addition is not effective in controlling the solids blankets in the secondary clarifiers, reduce flows as described under "Extended Duration" in Section 6.0 below. Enter into the logbook the information that warrants the decision to reduce flows accordingly.

5.3 Process Control Testing Procedures

1. Depth-of-Blanket (DOB) - Check the DOB in each secondary clarifier once per hour during the wet weather blending event and record in log book.

2. Settleability Test (Set. Test) - Perform a Set. Test once every 4 hours on the mixed liquors from Plant No. 1 and Plant No. 2 and record in log book.

3. Dissolved Oxygen (DO) - Check DO every eight (8) hours in aeration tanks No. 4, 7, 9 and 11, and record in log book.

4. Flow Monitoring - Real Time flow data is available in the MSD SCADA and stored in the Plant Information (PI) Server database which is accessible in the Operations Control Room.

6.0 Operating Procedure (Extended Duration > 4 Hours)

In the event that elevated wet weather flows extend beyond 4 hours, and the actions taken above are not effective in keeping the DOB's in the secondary clarifiers at depths of 3 to 4 feet, reduce the wastewater flow to the aeration basins of both plants as indicated below, and in the following order:

1. Plant No. 2 - Reduce the flow to 2 mgd by throttling the primary influent gate valve.

2. Plant No. 1 - Reduce the flow to 5 mgd by throttling the 24" gate to the secondary pump station.

3. At this time, the Jeffersontown WWTP will be processing a maximum of 7 mgd with full secondary treatment and up to 13 mgd of blended primary treated flow.

4. Continue with the Secondary Clarifier Blanket Control Procedure as describe in Section 5.2.

5. Continue with Process Control Testing Procedures as described in Section 5.3.

7.0 Sampling

KPDES Permit No. KY 0025194 requires effluent sampling 3 days per week. To improve plant control and provide additional documentation of plant performance during wet weather, the Jeffersontown WWTP effluent monitoring protocol has been voluntarily modified to collect wastewater samples 7 days a week and analyze for all parameters listed in the KPDES Permit. All tests results will be reported in the monthly Discharge Monitoring Report (DMR) in accordance with the KPDES permit.

8.0 Record Keeping and Reporting

8.1 Bypass and Blending Events

In addition to normal plant record-keeping and reporting, MSD is required to report "blending" as "bypassing" at the Jeffersontown WWTP. Note that "blending" at the Jeffersontown WWTP only refers to wet weather events when primary effluent from Plant No. 1 is routed around the activated sludge system directly to the UV pump station. Flow will be recorded on the flow meter labeled "F4" in plant schematic shown in Figure 2.

If flow routes through this channel any time other than during wet weather it is not blending, and will be reported as a "bypass". The Sewer Overflow Reporting Protocol (SORP) contains the process for monitoring and reporting both standard WWTP bypasses and bypass/blending events specifically occurring at the Jeffersontown WWTP.

The flow information during occurrences of bypass/blending is captured in MSD PI Server database. Data captured in PI, as shown below, is used to generate the required reports.

- Date and Time bypass/blending began
- Date and Time bypass/blending stopped
- Total flow rate for each day – mgd
- Peak flow rate for each day – mgd
- Total volume of flow bypass/blending for each day – mg

Once a bypass/blending event starts, the Operations Supervisor and the Metro Operations Regional Manager are notified via an automated page. Initial bypass/blending information is collected by the Operator on duty, recorded on the standard Overflow Report Form (see SORP) and reported to Metro Operations administration staff; following the protocols contained within the approved SORP. Once notified, office staff will initiate the appropriate Discharge Work Order in Hansen, with the BLEND Problem Code. The initiation of the work order triggers the Initial Discharge Report to the KDEP and EPA.

The Discharge Work Order also triggers a notification to staff that a five day letter is required. Within five days of the blending event occurring, a letter describing the event is sent to KDEP. Bypass and bypass/blending events at the Jeffersontown WWTP will be summarized and included in the Jeffersontown WTP Discharge Monitoring Report (DMR), which is submitted to KDEP on the 28th day of the following calendar month. A PDF file of the DMR Packet is posted to the MSD Project WIN website. The Discharge Monitoring Report Standard Operating Procedure outlines the process of developing, submitting and filing of each WWTP DMR packet. Project WIN Quarterly and Annual Reports will contain a summary of all bypass/blending events at the Jeffersontown WWTP.

MSD has also agreed to inform the public within 24 hours when Jeffersontown WWTP is bypass/blending. A posting is made to the Project WIN web page, http://www.msdlouky.org/projectwin/) that captures the start and stop times and the volume of each blending event. See Figure 4.

Refer to the SORP for a detailed description of the reporting process described above.

8.2 Siphon and Manhole Monitoring

Following the operating procedures identified in this document will inherently minimize overflow potential at the siphon box and manholes within 2000 feet. The location of the siphon is shown on Figure 5. To assist with monitoring, the constructed overflow at the influent siphon box has been equipped with telemetry to monitor the depth of water in the siphon box. This information is displayed on the MSD Operations website which is accessible by MSD staff. This website can also be used to monitor other operational data.

The siphon box begins overflowing at a depth of approximately 6.4 feet. When the level in the box reaches a depth of 4 feet, an automated text page is sent to MSD Metro Operations and Regulatory Services staff as a high level warning. When the level reaches a depth of 6 feet, a second text page is automatically sent to staff, prompting a visual inspection by the on-site plant operator in dry weather or Regulatory Services staff in wet weather. If an overflow is observed during this inspection at the siphon box, overflow information is collected by the staff witnessing the overflow, recorded on the standard Overflow Report Form (refer to SORP) and reported per the protocols contained within the SORP.

The documentation and reporting protocols for this structure are identified in the SORP.

Figure 1

Jeffersontown Wastewater Treatment Plant Site Plan

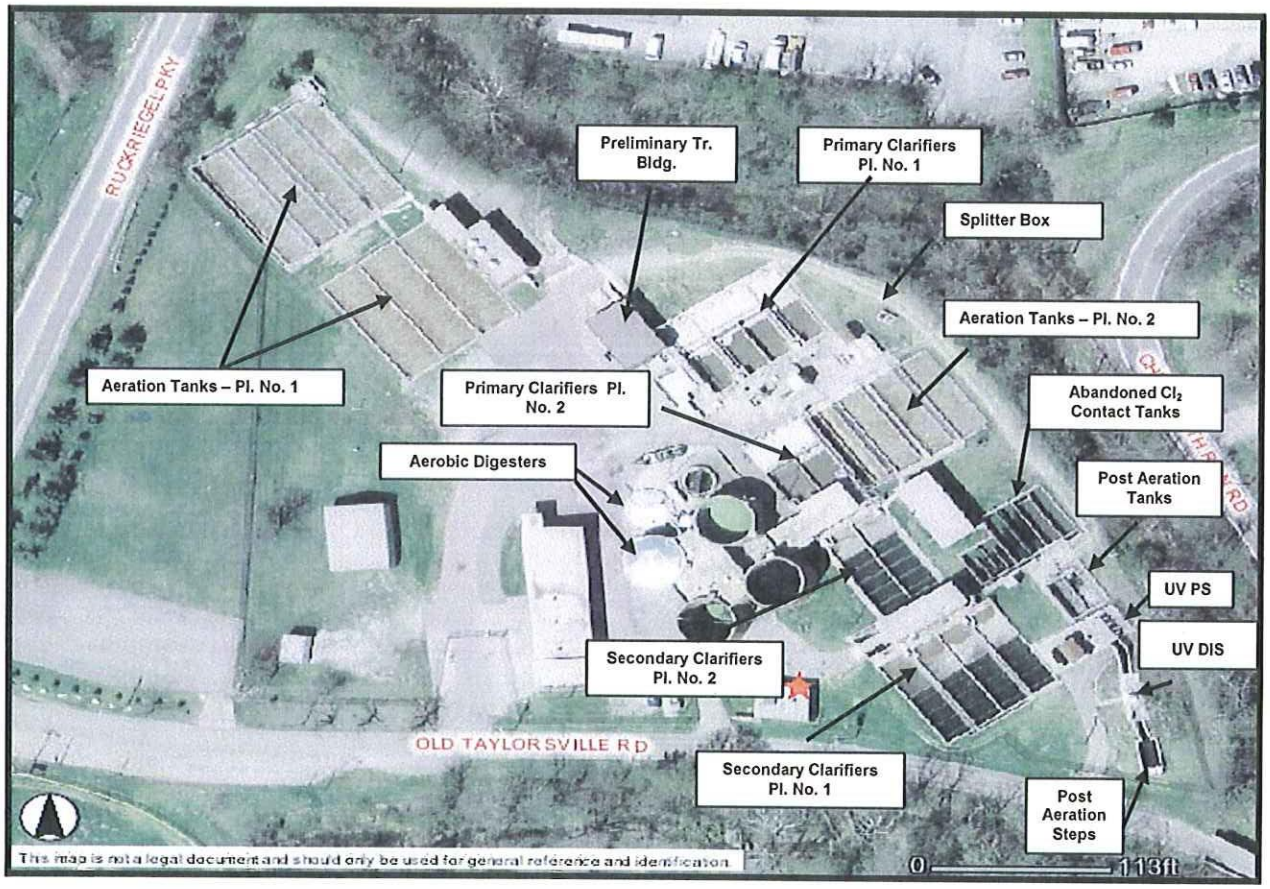


Figure 2
Jeffersontown Wastewater Treatment Plant
Plant Schematic

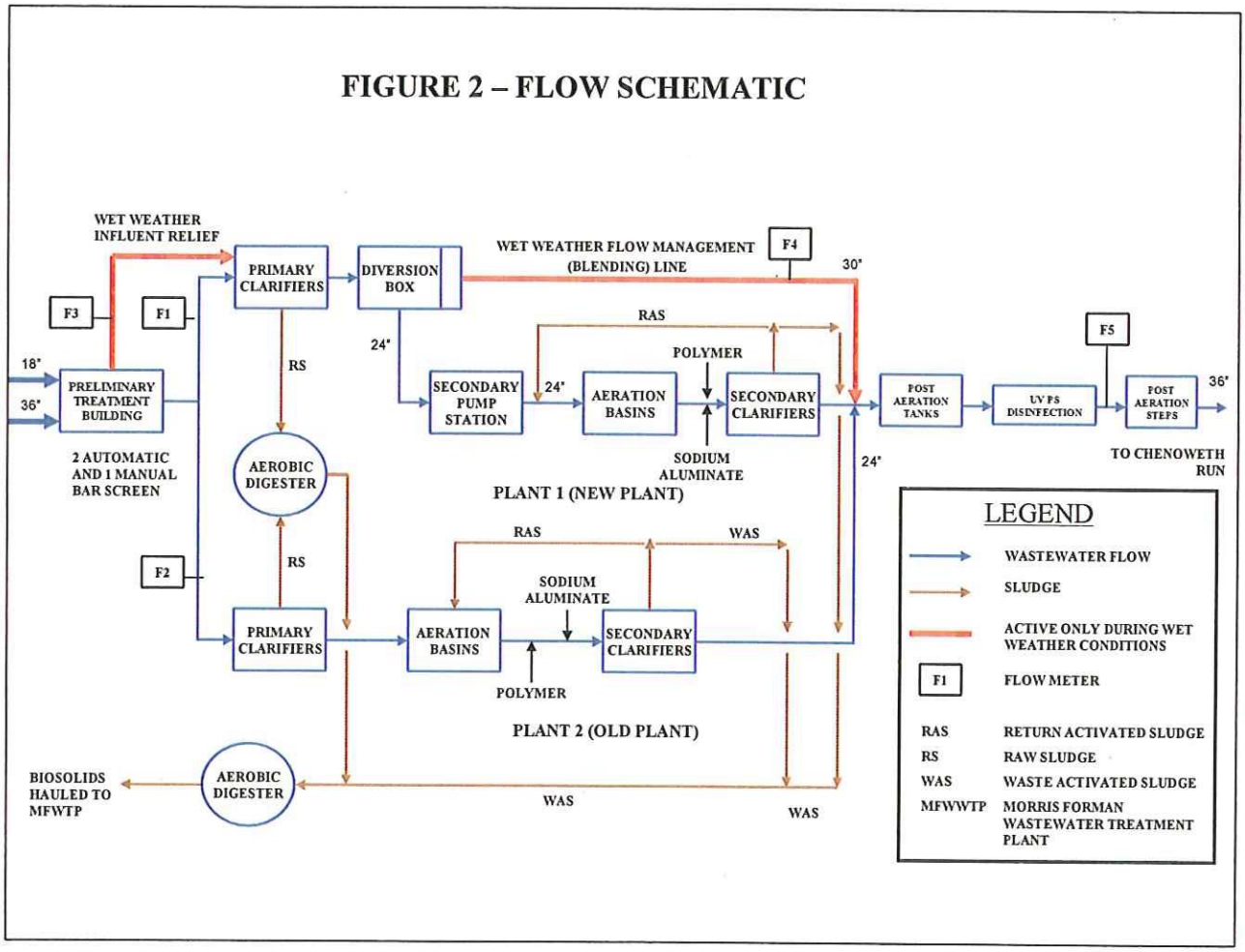


Figure 3

Flow Control Splitter Box

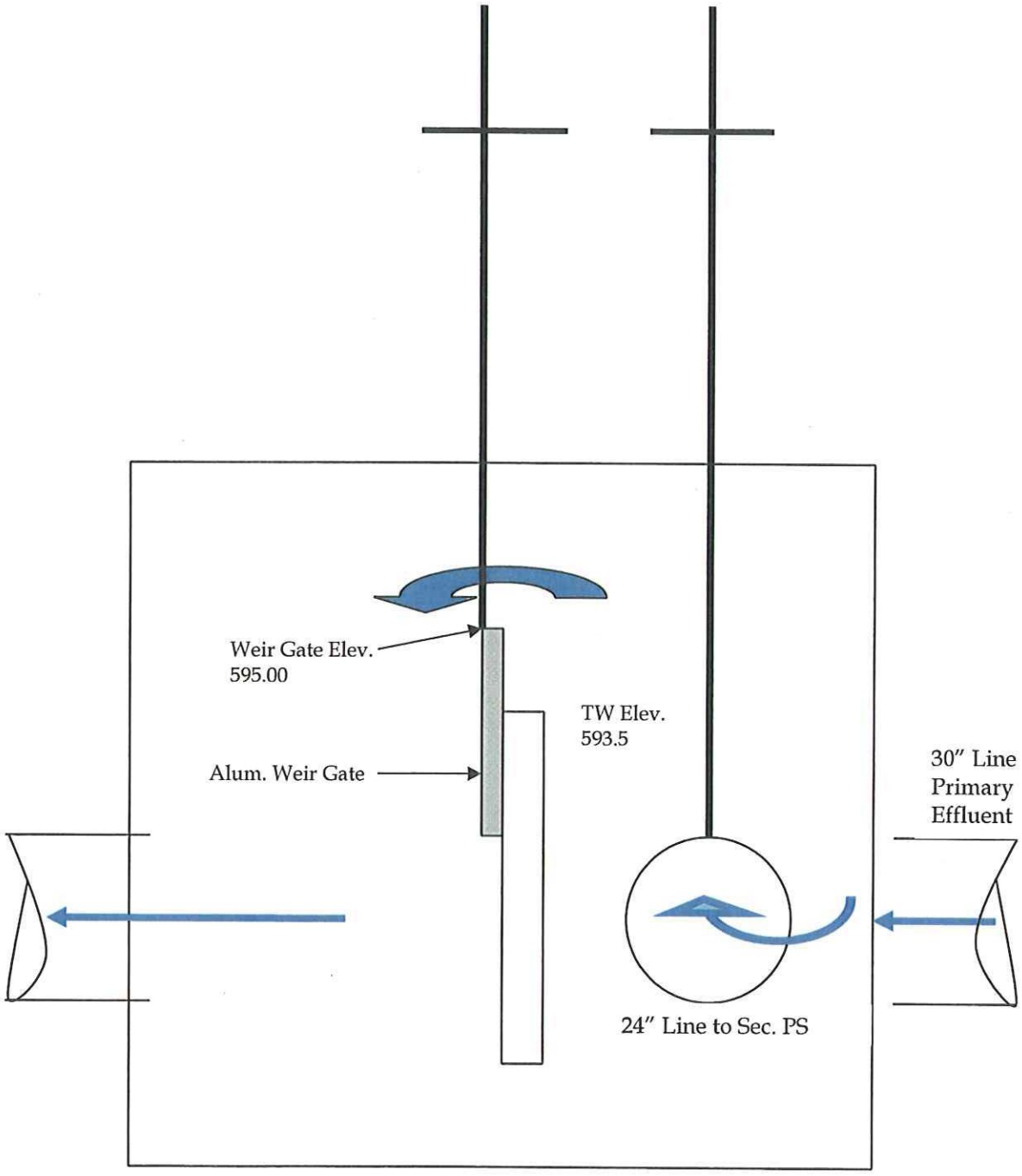


Figure 4

Jeffersontown Wastewater Treatment Plant

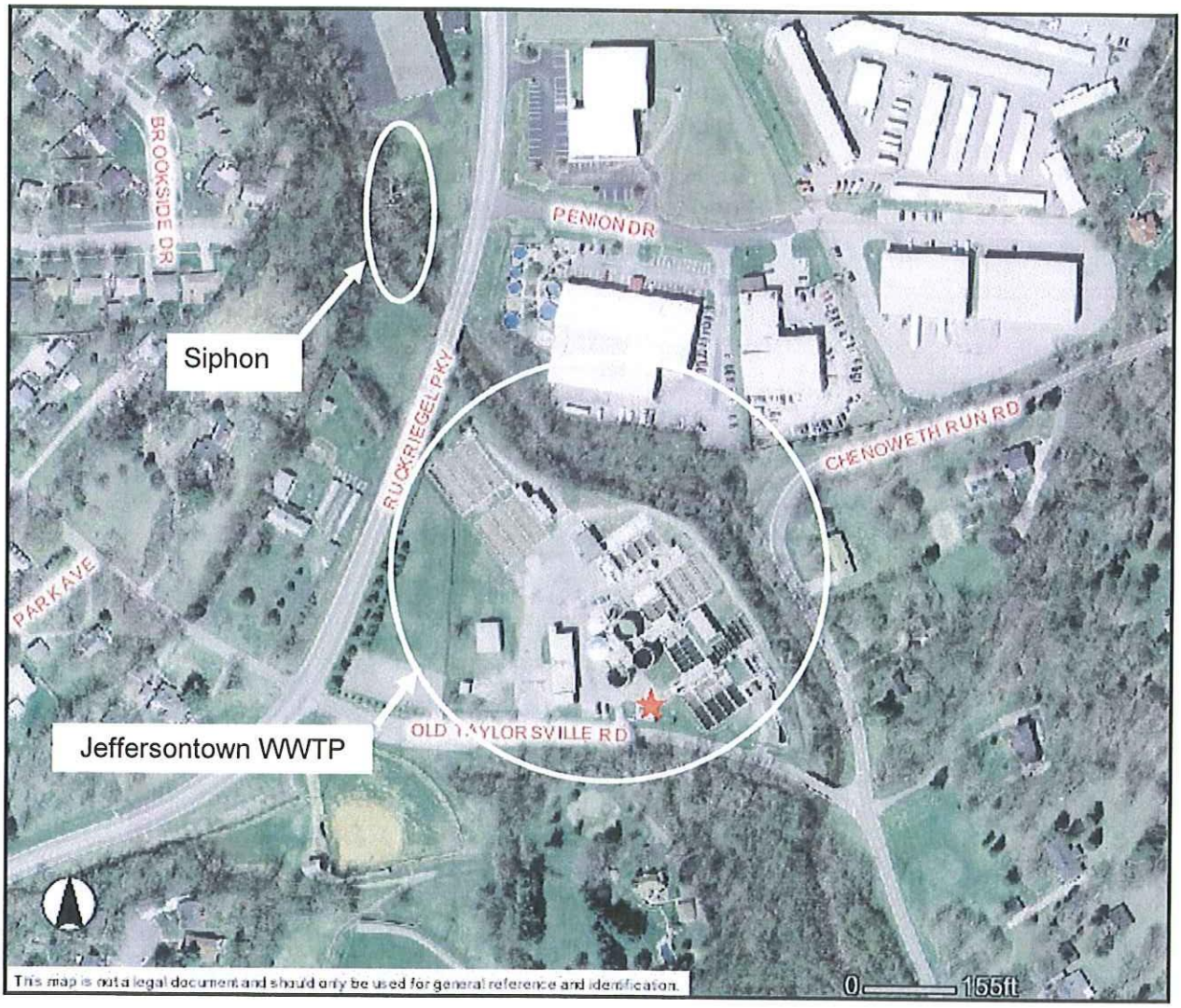
Sample of Public Notification on the Project WIN webpage

Jeffersontown ***Blended Flow Data***	**Wastewater**	**Treatment**	**Plant**
MSD is providing near real time flow information on blended flow from this plant. Thirty days of historical data will also be available from 2/12/08.			
Start Date/Time	**End Date/Time**	**Amount (Gal.)**	
03/10/2008 5:55 PM	03/10/2008 11:34 PM	101,450	
03/06/2008 3:50 PM	03/06/2008 4:22 PM	21,340	
03/04/2008 12:51 AM	03/06/2008 6:25 AM	10,712,305	
02/22/2008 1:18 PM	02/23/2008 5:57 AM	1,066,923	
02/12/2008 11:43 AM	02/13/2008 8:40 PM	659,036	

Figure 5

Jeffersontown Wastewater Treatment Plant

Siphon Location



ATTACHMENT 6

PROCESS CONTROL SPREADSHEET

Tot Ex. 0

Jeffersontown Process Control Data - October-08

PLANT NO. 1

DATE	Influent Flow (MGD)	Storm Flow (MGD)	Bypass Flow (MGD)	Secondary Flow (MGD)	Max Flow (MGD)	Pri. Inf. BOD (mg/l)	Pri. Eff. BOD (mg/l)	Pri. Inf. TSS (mg/l)	Pri. Eff. TSS (mg/l)	Pri. Inf. NH3 (mg/l)	Pri. Eff. NH3 (mg/l)	Pri. Inf. Ortho P (mg/L)	Pri. Eff. Ortho P (mg/l)	Sec. Eff. BOD (mg/L)	Sec. Eff. TSS (mg/L)	Sec. Eff. NH3 (mg/L)
Permit Limit or Target																
10/1/2008	3.50	0.00	0.00	3.50		250	100	245	98	28.00	14.00			12.00	18.00	1.20
10/2/2008	3.70	0.00	0.00	3.70		230	92	200	80	22.00	11.00			10.00	14.00	1.20
10/3/2008	3.50	0.00	0.00	3.50		300	120	250	100	27.00	13.50			8.00	15.00	1.30
10/4/2008	3.80	0.00	0.00	3.80		230	92	200	80	18.00	9.00			8.00	17.00	1.10
10/5/2008	4.10	0.00	0.00	4.10		220	88	215	86	20.00	10.00			9.00	12.00	0.95
10/6/2008	3.80	0.00	0.00	3.80		230	92	230	92	27.00	13.50			8.00	16.00	1.60
10/7/2008	3.50	0.00	0.00	3.50		330	132	270	108	28.00	14.00			6.00	16.00	1.60
10/8/2008																
10/9/2008																
10/10/2008																
10/11/2008																
10/12/2008																
10/13/2008																
10/14/2008																
10/15/2008																
10/16/2008																
10/17/2008																
10/18/2008																
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10/25/2008																
10/26/2008																
10/27/2008																
10/28/2008																
10/29/2008																
10/30/2008																
10/31/2008																
TOTAL	25.90			25.90		1790.0	715.0	1610.0	644.0	170.0	85.0			61.0	108.0	9.2
AVERAGE*	3.70			3.70		255.7	102.3	230.0	92.0	24.3	12.1			8.5	15.3	1.3
MINIMUM	3.50			3.50		220.0	88.0	200.0	80.0	18.0	9.0			6.0	12.0	1.0
MAXIMUM	4.10			4.10		330.0	132.0	270.0	108.0	28.0	14.0			12.0	18.0	1.8
MAX WK																

DATE	A.B.#1 D.O. (mg/l)	A.B.#2 D.O. (mg/l)	A.B.#3 D.O. (mg/l)	A.B.#4 D.O. (mg/l)	A.B.#5 D.O. (mg/l)	A.B.#6 D.O. (mg/l)	A.B.#7 D.O. (mg/l)	MLSS (mg/l)	MLVSS (mg/l)	MLVSS (%)	Settle. Test (ml/l)	SVI	Blanket Depth No 1	Blanket Depth No 2	RAS TSS (mg/l)	RAS Flow (MGD)
Permit Limit or Target	2.0	2.0	2.0	2.0	2.0	2.0	2.0	3000	2400			<100	<3	<3	6000	
10/1/2008	2.0	2.1	2.2	2.2	2.2	2.2	2.2	3400	2720	80%	273	80	1.6	1.6	7000	2.50
10/2/2008	2.1	2.2	2.3	2.3	2.3	2.3	2.3	3400	2720	80%	305	90	1.8	1.8	6500	2.70
10/3/2008	1.8	1.9	2.0	2.0	2.0	2.0	2.0	3000	2400	80%	255	85	1.8	1.8	6000	2.30
10/4/2008	2.1	2.2	2.3	2.3	2.3	2.3	2.3	3300	2640	80%	280	85	2.1	2.1	5800	2.30
10/5/2008	2.2	2.3	2.4	2.4	2.4	2.4	2.4	3200	2560	80%	272	85	2.6	2.6	6000	2.30
10/6/2008	2.1	2.2	2.3	2.3	2.3	2.3	2.3	3200	2560	80%	255	80	2.3	2.3	6200	2.00
10/7/2008	1.8	1.9	2.0	2.0	2.0	2.0	2.0	3000	2400	80%	240	80	2.2	2.2	6200	2.00
10/8/2008																
10/9/2008																
10/10/2008																
10/11/2008																
10/12/2008																
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10/29/2008																
10/30/2008																
10/31/2008																
TOTAL	14.1	14.8	15.5	15.5	15.5	15.5	15.5	22500.00	18000.00		1880.00		14.40	14.40	43700	16
AVERAGE*	2.0	2.1	2.2	2.2	2.2	2.2	2.2	3214	2671		269		2.06	2.06	6243	2
MINIMUM	1.8	1.9	2.0	2.0	2.0	2.0	2.0	3000.00	2400.00		240.00		1.60	1.60	5800	2
MAXIMUM	2.2	2.3	2.4	2.4	2.4	2.4	2.4	3400.00	2720.00		305.00		2.60	2.60	7000	3
MAX WK																

DATE	Solids Wasted Actual (Gallons)	Solids Wasted Actual (Pounds)	Calculated Plan (Pounds)	Calculated Plan (Gallons)	Solids Hauled (Gallons)	Secondary Process: Influent BOD (Pounds)	Effluent BOD (Pounds)	Influent TSS (Pounds)	Effluent TSS (Pounds)	Influent NH3 (Pounds)	Effluent NH3 (Pounds)	Total Eff. Phosphorus (mg/l)	Total Eff. Phosphorus (Pounds)	Pounds MLSS (Basins 1-7)	MCRT (Days)	F/M
Permit Limit or Target												2.0 Monthly 3.0 Weekly			15	0.1
10/1/2008	34000	1985	1978	33906	30000	2919	350.3	2861	525.4	409	35.0	0.50	14.60	37573	15	0.06
10/2/2008	34500	1870	2073	38236	40000	2839	308.6	2469	432.0	339	37.0	0.30	9.26	37573	16	0.06
10/3/2008	40000	2002	1772	35417	35000	3503	233.5	2919	437.9	394	37.9	0.35	10.22	33153	14	0.07
10/4/2008	35000	1693	1832	39121	40000	2916	253.5	2535	538.8	285	34.9	0.30	9.51	36467	16	0.07
10/5/2008	36000	1801	1847	36511	35000	3009	307.7	2841	410.3	342	32.5	0.20	6.84	35362	16	0.07
10/6/2008	36000	1861	1850	35785	35000	2916	253.6	2916	507.1	429	67.0	0.45	14.26	35362	15	0.07
10/7/2008	34000	1758	1743	33710	39000	3853	176.1	3153	467.0	409	46.7	0.40	11.68	33152	16	0.07
10/8/2008																
10/9/2008																
10/10/2008																
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10/30/2008																
10/31/2008																
TOTAL	249500	12971			254000	21954	1882	19792	3318	2606	281	2.50	76.35	248635		
AVERAGE*	35643	419			36286	3136	269	2827	474	372	40	0.36	10.91	6021		
MINIMUM	34000				30000	2839	175	2469	410	285	32	0.20	6.84			
MAXIMUM	40000	2002			40000	3853	350	3153	539	428	57	0.50	14.60	37572		
MAX WK		1853												35619		

PLANT NO. 2

DATE	Influent Flow (MGD)	Max Flow (MGD)	Pri. Inf. BOD (mg/l)	Pri. Eff. BOD (mg/l)	Pri. Inf. TSS (mg/l)	Pri. Eff. TSS (mg/l)	Pri. Inf. NH3 (mg/l)	Pri. Eff. NH3 (mg/l)	Pri. Inf. Ortho P (mg/l)	Pri. Eff. Ortho P (mg/l)	Sec. Eff. BOD (mg/L)	Sec. Eff. TSS (mg/L)	Sec. Eff. NH3 (mg/L)
Permit Limit or Target													
10/1/2008	1.10		250	100	245	98	28.00	14.00			12.0	18.0	1.2
10/2/2008	1.20		230	92	200	80	22.00	11.00			10.0	14.0	1.2
10/3/2008	0.80		300	120	250	100	27.00	13.50			8.0	15.0	1.3
10/4/2008	1.30		230	92	200	80	18.00	9.00			9.0	17.0	1.1
10/5/2008	1.40		220	88	215	66	20.00	10.00			8.0	12.0	1.0
10/6/2008	1.30		230	92	230	92	27.00	13.50			6.0	16.0	1.8
10/7/2008	1.10		330	132	270	108	28.00	14.00				16.0	1.6
10/8/2008													
10/9/2008													
10/10/2008													
10/11/2008													
10/12/2008													
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10/28/2008													
10/29/2008													
10/30/2008													
10/31/2008													
TOTAL	8.20		1790.0	716.0	1610.0	644.0	170.0	85.0					
AVERAGE*	1.17		255.7	102.3	230.0	92.0	24.3	12.1					
MINIMUM	0.80		220.0	88.0	200.0	80.0	18.0	9.0					
MAXIMUM	1.40		330.0	132.0	270.0	108.0	28.0	14.0					
MAX WK													

DATE	A.B.#9 D.O. (mg/l)	A.B.#10 D.O. (mg/l)	A.B.#11 D.O. (mg/l)	MLSS (mg/l)	MLVSS (mg/l)	MLVSS (%)	Settle. Test (ml/l)	SVI	Blanket Depth No 1	Blanket Depth No 2	RAS TSS (mg/l)	RAS Flow (MGD)	Solids Wasted Actual (Gallons)
Permit Limit or Target	2.0	2.0	2.0	3000	2400			<100	<3	<3	6000		
10/1/2008	2.0	2.1	2.2	3400	2720	80%	273	80	1.60	1.60	7000	0.40	10000
10/2/2008	2.1	2.2	2.3	3400	2720	80%	305	90	1.80	1.80	6500	0.50	11000
10/3/2008	1.8	1.9	2.0	3000	2400	80%	255	85	1.80	1.80	6000	0.35	10500
10/4/2008	2.1	2.2	2.3	3300	2640	80%	280	85	2.10	2.10	5800	0.35	11000
10/5/2008	2.2	2.3	2.4	3200	2560	80%	272	85	2.60	2.60	6000	0.35	10500
10/6/2008	2.1	2.2	2.3	3200	2560	80%	255	80	2.30	2.30	6200	0.30	9500
10/7/2008	1.8	1.9	2.0	3000	2400	80%	240	80	2.20	2.20	6200	0.30	9000
10/8/2008													
10/9/2008													
10/10/2008													
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10/28/2008													
10/29/2008													
10/30/2008													
10/31/2008													
TOTAL	14.1	14.8	15.5	22500.00	18000.00		1800.00		14.40	14.40	43700	3	71500
AVERAGE*	2.0	2.1	2.2	3214	2671		269		2.06	2.06	6243	0	10214
MINIMUM	1.8	1.9	2.0	3000.00	2400.00		240.00		1.60	1.60	5800	0	9000
MAXIMUM	2.2	2.3	2.4	3400.00	2720.00		305.00		2.60	2.60	7000	1	11000
MAX WK													

DATE	Solids Wasted (Pounds)	Calculated Plan (Pounds)	Calculated Plan (Gallons)	Solids Hauled (Gallons)	Secondary Process: Influent BOD (Pounds)	Effluent BOD (Pounds)	Influent TSS (Pounds)	Effluent TSS (Pounds)	Influent NH3 (Pounds)	Effluent NH3 (Pounds)	Total Phosphorus (mg/l)	Total Phosphorus (Pounds)	Pounds MLSS (Basins 9-11)	MCRT (Days)	F/M
Permit Limit or Target											2.0 Monthly 3.0 Weekly			15	0.1
10/1/2008	584	652	9147	9000	917	110.1	899	165.1	129	11.0	0.50	4.55	10750	14	0.07
10/2/2008	596	677	10635	10000	921	100.1	801	140.1	110	12.0	0.30	3.00	10750	15	0.07
10/3/2008	525	632	10637	10000	801	53.4	667	100.1	90	8.7	0.35	2.34	9495	15	0.07
10/4/2008	532	615	10569	10500	997	97.6	867	184.3	98	11.9	0.30	3.25	10434	15	0.07
10/5/2008	525	634	10679	10500	1027	93.4	1004	140.1	117	11.1	0.20	2.34	10117	15	0.07
10/6/2008	491	601	9589	10000	997	66.1	997	173.5	146	15.5	0.45	4.89	10117	16	0.07
10/7/2008	465	496	9350	9500	1211		991	146.8	128	14.7	0.40	3.67	9495	16	0.09
10/8/2008															
10/9/2008															
10/10/2008															
10/11/2008															
10/12/2008															
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10/31/2008															
TOTAL	3720			69500	6872	520	6227	1050	818	89	2.50	24.06	71138		
AVERAGE*	120			9929	982	87	890	150	117	13	0.36	3.44	2295		
MINIMUM				9000	801	53	667	100	90	9	0.20	2.34			
MAXIMUM	596			10500	1211	110	1004	184	146	20	0.50	4.88	10750		
MAX WK	631												10153		

Jeffersontown Process Control Data - October-08

COMBINED PLANT NO. 1 & PLANT NO. 2

DATE	Influent Flow (MGD)	Bypass Flow (MGD)	Effluent Flow (MGD)	Max Flow (MGD)	Rainfall	Infl. BOD (mg/l)	Effl. BOD (mg/l)	Effl. BOD (ppd)	BOD % Removal	Infl. TSS (mg/l)	Effl. TSS (mg/l)	Effl. TSS (ppd)	TSS % Removal
Permit Limit or Target	4.00		30.00				20 Monthly 30 Weekly	871 Monthly 1001 Weekly	85%		30 Monthly 45 Weekly	1001 Monthly 1501 Weekly	85%
10/1/2008	4.60	0.00	4.50			250	12	450	95%	245	18	676	93%
10/2/2008	4.90	0.00	4.80			230	10	400	96%	200	14	560	93%
10/3/2008	4.30	0.00	4.20			300	8	280	97%	250	15	525	94%
10/4/2008	5.10	0.00	5.00			230	8	334	97%	200	17	709	92%
10/5/2008	5.50	0.00	5.40			220	9	406	96%	215	12	540	94%
10/6/2008	5.10	0.00	5.00			230	8	334	97%	230	16	667	93%
10/7/2008	4.60	0.00	4.50			330	6	225	98%	270	16	600	94%
10/8/2008		0.00											
10/9/2008		0.00											
10/10/2008		0.00											
10/11/2008		0.00											
10/12/2008		0.00											
10/13/2008		0.00											
10/14/2008		0.00											
10/15/2008		0.00											
10/16/2008		0.00											
10/17/2008		0.00											
10/18/2008		0.00											
10/19/2008		0.00											
10/20/2008		0.00											
10/21/2008		0.00											
10/22/2008		0.00											
10/23/2008		0.00											
10/24/2008		0.00											
10/25/2008		0.00											
10/26/2008		0.00											
10/27/2008		0.00											
10/28/2008		0.00											
10/29/2008		0.00											
10/30/2008		0.00											
10/31/2008		0.00											
TOTAL	34.10		33.40			1790.00	61.00	2429		1610.00	108.00	4279	
AVERAGE*	1.10		4.77			255.71	8.71	347	97%	230	15	611	93%
MINIMUM			4.20			220.00	6.00	225		200.00	12.00	525	
MAXIMUM	5.50		5.40			330.00	12.00	450		270.00	18.00	709	
MAX WK	4.87												

DATE	Infl. NH3 (mg/l)	Effl. NH3 (mg/l)	Total Inf. Phosphorus (mg/l)	Total Inf. Ortho P (mg/L)	Total Eff. Phosphorus (mg/l)	Total Eff. Phosphorus (Pounds)	Total Eff. Ortho P (mg/L)	F'Coli (mg/l)	Infl. pH	Effl. pH	Effl. D.O. (mg/l)	Total Inf. Kjeldahl Nitrogen (mg/l)	Total Eff. Kjeldahl Nitrogen (mg/l)
Permit Limit or Target		10 Monthly 15 Weekly			2.0 Monthly 3.0 Weekly			200 Monthly 400 Weekly		6.0 - 9.0	> 7		
10/1/2008	28.00	1.20	10.00		0.50	18.77		75		6.80	7.50	31.00	2.00
10/2/2008	22.00	1.20	7.00		0.30	12.01		110		6.90	7.80	27.00	2.00
10/3/2008	27.00	1.30	9.00		0.35	12.26		80		6.80	7.80	31.00	1.80
10/4/2008	18.00	1.10	6.00		0.30	12.51		65		7.20	7.80	25.50	1.50
10/5/2008	20.00	0.95	8.50		0.20	9.01		45		7.00	8.00	29.50	1.70
10/6/2008	27.00	1.60	11.50		0.45	18.77		45		6.70	7.40	32.00	1.90
10/7/2008	28.00	1.60	11.00		0.40	15.01		55		6.90	7.40	32.00	1.80
10/8/2008													
10/9/2008													
10/10/2008													
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10/13/2008													
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10/30/2008													
10/31/2008													
TOTAL	170.00	9.15	63.00		2.50	99.33		475.00		48.30	53.70	208.00	12.70
AVERAGE*	24.29	1.31	9.00		0.36	14.06		64.76		6.90	7.67	29.71	1.81
MINIMUM	18.00	0.95	6.00		0.20	9.01		45.00		6.70	7.40	25.50	1.50
MAXIMUM	28.00	1.80	11.50		0.50	18.77		110.00		7.20	8.00	32.00	2.00
MAX WK													

Exceed
MxWkAvg
Mo Avg