APPENDIX A

WWTF Design Data

APPENDIX A. WOONSOCKET, RI WWTF - BASIC DESIGN DATA
SUMMARY OF PERMIT LIMITS

	UNITS	Existing Design 2000	Current 2010[a]	Revised Design 2030
RIPDES Permit Limits				
Seasonal - June 1 thru Oct. 31				
Effluent cBOD Concentration				
Average Monthly	mg/l	10	10	10
Average Weekly	mg/l	15	15	15
Maximum Daily	mg/l	17	17	17
Effluent cBOD Load				
Average Monthly	lb./day	1,340	1,340	1,340
Maximum Daily	lb./day	2,270	2,270	2,270
Effluent TSS				
Average Monthly	mg/l	15	15	15
Average Weekly	mg/l	20	20	20
Maximum Daily	mg/l	25	25	25
Effluent BOD Load				
Average Monthly	lb./day	2,000	2,000	2,000
Maximum Daily	lb./day	3,335	3,335	3,335
Seasonal - Nov. 1 thru May 31				
Effluent BOD Concentration				
Average Monthly	mg/l	30	30	30
Average Weekly	mg/l	45	45	45
Maximum Daily	mg/l	50	50	50
Effluent BOD Load				
Average Monthly	lb./day	4,000	4,000	4,000
Maximum Daily	lb./day	6,670	6,670	6,670
Effluent TSS				
Average Monthly	mg/l	30	30	30
Average Weekly	mg/l	45	45	45
Maximum Daily	mg/l	50	50	50
Effluent TSS Load				
Average Monthly	lb./day	4,000	4,000	4,000
Maximum Daily	lb./day	6,670	6,670	6,670
Nutrients:				
Effluent Ammonia-N - Monthly Average Concentration				
June 1 - October 31	mg/l	2	2	2
November 1 - April 30	mg/l	15	15	15
May 1 - 31	mg/l	12	12	12
Effluent Total-N - Monthly Average Concentration				
April 1 - 30	mg/l	10	10	10
May 1 - October 31	mg/l	10	3	3
November 1 - March 31	mg/l	--	--	--
Effluent Total Phosphorus - Monthly Average Concentration				
April 1 - October 31	mg/l	1.0	0.1	0.1
November 1 to March 31	mg/l	--	1.0	1.0
Metals & Toxics - Monthly Average:				
Cadmium	µg/l	2.7	0.66	0.66
Chromium, Hexavalent	µg/l	42.6	--	--
Copper	µg/l	26.8	21.1	21.1
Cyanide	µg/l	22.2	21.3	21.3
Lead	µg/l	5.4	5.4	5.4
Zinc	µg/l	241.0	272.0	272.0
Butylbenzylphthalate	µg/l	7.8	--	--
Naphthalene	µg/l	10.6	--	--

[a]Current year data is based on WWTF data from May 2007 through October 2010

APPENDIX A. WOONSOCKET, RI WWTF - BASIC DESIGN DATA SUMMARY OF DESIGN FLOWS AND LOADS				
	UNITS	Existing Design 2000	Current 2010[a]	Revised Design 2030
RAW INFLUENT - Includes Septage				
Influent Flow (Final Effluent)				
Annual Average	MGD	16.0	7.8	9.0
Max. Month	MGD	16.0	13.0	16.0
Peak Daily	MGD	24.0	22.2	24.0
Peak Hourly	MGD	32.0	32.0	32.0
Influent BOD				
Annual Average	lbs./day	21,350	14,200	16,330
Max. Month	lbs./day	-	27,100	31,170
Peak Daily (98th Percentile)	lbs./day	-	37,000	42,550
Peak Daily (100th Percentile)	lbs./day	-	51,300	59,000
Influent TSS				
Annual Average	lbs./day	16,013	11,600	13,340
Max. Month	lbs./day	-	18,800	21,620
Peak Daily (98th Percentile)	lbs./day	-	25,900	29,790
Peak Daily (100th Percentile)	lbs./day	-	39,200	45,080
Influent Ammonia				
Annual Average	lbs./day	2,669	1,146	1,320
Peak Daily (98th Percentile)	lbs./day	-	1,997	2,300
Peak Daily (100th Percentile)	lbs./day	-	1,997	2,300
Influent TKN				
Annual Average	lbs./day	5,338	1,800	2,070
Peak Daily (98th Percentile)	lbs./day	-	3,267	3,760
Peak Daily (100th Percentile)	lbs./day	-	3,629	4,170
Influent Phosphorus				
Annual Average	lbs./day	2,268	237	270
Peak Daily (98th Percentile)	lbs./day	-	354	410
Peak Daily (100tn Percentile)	lbs./day	-	368	420

APPENDIX A. WOONSOCKET, RI WWTF - BASIC DESIGN DATA SUMMARY OF DESIGN FLOWS AND LOADS				
	UNITS	Existing Design 2000	Current 2010[a]	Revised Design 2030
RETURN FLOWS				
Flow				
Annual Average	MGD	2.6	3.9	3.9
Max. Month	MGD	2.6	5.6	5.1
Peak Daily	MGD	2.6	8.5	5.1
Peak Hourly	MGD	2.6		5.1
BOD				
Annual Average	lbs./day	4,644	10,000	10,830
Max. Month	lbs./day	4,644	19,400	20,760
Peak Daily (98th Percentile)	lbs./day	4,644	26,700	28,690
Peak Daily (100th Percentile)	lbs./day	-	45,570	47,560
TSS				
Annual Average	lbs./day	6,882	15,900	16,160
Max. Month	lbs./day	6,882	54,300	54,930
Peak Daily (98th Percentile)	lbs./day	6,882	56,100	58,390
Peak Daily (99th Percentile)	lbs./day	-	74,900	77,190
Ammonia				
Annual Average	lbs./day	1,830	319	360
Peak Daily (98th Percentile)	lbs./day	1,830	575	640
Peak Daily (100th Percentile)	lbs./day	-	580	640
TKN				
Annual Average	lbs./day		1,182	1,230
Peak Daily (98th Percentile)	lbs./day	0	2,560	2,640
Peak Daily (100th Percentile)	lbs./day	-	2,849	2,930
Total Phosphorus				
Annual Average	lbs./day	-	861	890
Peak Daily (98th Percentile)	lbs./day	-	2,333	2,380
Peak Daily (100th Percentile)	lbs./day	-	2,621	2,670
SOLIDS GENERATION				
Primary Sludge				
Annual Average	lbs./day	16,891	26,700	28,266
Max. Month	lbs./day	16,891	61,600	64,460
Peak Daily	lbs./day	16,891	142,300	149,107
Waste Activated Sludge				
Annual Average	lbs./day	13,905	13,249	14,883
Max. Month	lbs./day	13,905	14,873	16,773
Peak Daily	lbs./day	13,905	33,302	38,324
Combined Sludge Production				
Annual Average	lbs./day	30,796	39,949	43,149
Max. Month	lbs./day	30,796	76,473	81,234
Peak Daily	lbs./day	30,796	175,602	187,431

[a]Current year data is based on WWTF data from May 2007 through October 2010

APPENDIX A. WOONSOCKET, RI WWTF - BASIC DESIGN DATA SEPTAGE RECEIVING				
	UNITS	Existing Design 2000	Current 2010a	Revised Design 2030
SEPTAGE QUANTITIES				
Average Day	gpd	--	2,250	2,250
Maximum Month	gpd	--	5,000	5,000
Maximum Day	gpd	--	20,000	20,000
RECEIVING STATIONS				
Number		1	1	1
Type		Dump Manhole	Dump Manhole	Quick Connect
Size	in.	N/A	N/A	6
Flow Meter	in.	N/A	N/A	1
Type		N/A	N/A	Mag
Range	gpm	N/A	N/A	600

APPENDIX A. WOONSOCKET, RI WWTF - BASIC DESIGN DATA
HEADWORKS - SCREENING

	UNITS	Existing Design 2000	Current 2010	Revised Design 2030
FLOW				
Annual Average	MGD	16.0	7.8	9.0
Max. Month	MGD	16.0	13.0	16.0
Peak Daily	MGD	24.0	22.2	24.0
Peak Hourly	MGD	32.0	32.0	32.0
MECHANICAL BAR SCREEN				
Number		1	1	1
Number Online (Normal conditions)		1	1	1
Screen Type		Catenary	Catenary	Climber
Channel Dimensions				
Width	ft.	4.5	4.5	4.5
Depth	ft.	6	6	6
Downstream Depth	ft.	3	3	3
Bar Screen Clear Opening	in.	2	2	3/8
Angle of Setting	°	80	84	84
Motor Size	HP	2	2	5
Motor Classification		Class 1, Div. 1	Class 1, Div. 1	Class 1, Div. 1
Screening Removal:				
Capacity, each	$ft.^3$/hr.			246
Projected Screenings Quantity				
Annual Average	$ft.^3$/mgal.			6.5
Peak Daily	$ft.^3$/mgal.			33.0
Peak Hourly	$ft.^3$/mgal.			130.0
Projected Screenings Quantity				
Annual Average	$ft.^3$/hr			2.4
Peak Daily	$ft.^3$/hr			33.0
Peak Hourly	$ft.^3$/hr			173.3
COMMINUTORS				
Number		2	2	2
Number Online (typically)		1	1	1
Manufacturer		Worthington Corp.	Worthington Corp.	Worthington Corp.
Model Number		36L-6	36L-6	36L-6
Motor Size	HP	2	2	2
Voltage	V	440 (3 phase)	440 (3 phase)	440 (3 phase)
Frequency	Hz	60	60	60
Motor Classification		Class 1, Div. 1	Class 1, Div. 1	Class 1, Div. 1
Capacity, each	MGD	11	11	11
Channel Width	in	48	48	48
Screen Diameter	in	30	30	30
Screen Slot Width	in	0.375	0.375	0.375

APPENDIX A. WOONSOCKET, RI WWTF - BASIC DESIGN DATA
HEADWORKS - SCREENING

	UNITS	Existing Design 2000	Current 2010	Revised Design 2030
SCREENINGS CONVEYORS				
Screenings Conveyor 1:				
Type:				Shaftless
Length	ft			28
Screw Diameter	in			11.0
Trough Diameter	in			12.5
Liner Type				UHMW PE
Liner Thickness	in			0.45
Screw speed, rpm	rpm			15
Fill Rate	%			25
Capacity	cf/hr			110
Capacity	cy/hr			4.1
Capacity	ton/hr			3.3
Motor, hp	hp			5
Motor Classification				Class 1, Div. 2
Motor speed	rpm			1,750
Screenings Conveyor 2:				
Type:				Shaftless
Length	ft			20
Screw Diameter	in			11.0
Trough Diameter	in			12.5
Liner Type				UHMW PE
Liner Thickness	in			0.45
Screw speed, rpm	rpm			15
Fill Rate	%			25
Capacity	cf/hr			110
Capacity	cy/hr			4.1
Capacity	ton/hr			3.3
Motor, hp	hp			5
Motor Classification				Class 1, Div. 2
Motor speed	rpm			1,750

APPENDIX A. WOONSOCKET, RI WWTF - BASIC DESIGN DATA
RAW INFLUENT PUMPING

	UNITS	Existing Design 2000	Current 2010a	Revised Design 2030
FLOW				
Annual Average	MGD	18.6	11.7	12.9
Max. Monthly	MGD	18.6	18.1	21.1
Peak Daily	MGD	26.6	26.1	29.1
Peak Hourly	MGD	34.6	35.0	37.1
INFLUENT WETWELLS				
Number		2	2	2
Number Online		2	2	2
Operations Bldg Wet Well				
Dimensions				
Total Length	ft.	40.5	40.5	40.5
Usable Length (varies)	ft.	30.5	30.5	30.5
Total Width	ft.	12	12	12
Usable Width (varies)	ft.	7.5	7.5	7.5
Depth @ Max W.S. 104.00	ft.	7	7	7
Total Rectangular Volume	gal.	25,450	25,450	25,450
Volume, Concrete Fill	gal.	6,522	6,522	6,522
Actual Pumping Volume	**gal.**	**18,928**	**18,928**	**18,928**
Detention Time				
Annual Average	min.	1.5	2.3	2.1
Max. Monthly	min.	1.5	1.5	1.3
Peak Daily	min.	1.0	1.0	0.9
Peak Hourly	min.	0.8	0.8	0.7
Aministration Bldg Wet Well *(Total Volume without concrete knock out wall)*				
Dimensions				
Total Length	ft.	48.67	48.67	48.67
Actual Length (varies)	ft.	36.67	36.67	36.67
Total Width	ft.	12.5	12.5	12.5
Actual Width (varies)	ft.	6.5	6.5	6.5
Max. Depth @ Max W.S. 104.00	ft.	7.2	7.2	7.2
Total Rectangular Volume	gal.	32,951	32,951	32,951
Volume, Concrete Fill	gal.	9,923	9,923	9,923
Actual Pumping Volume	**gal.**	**23,028**	**23,028**	**23,028**
Detention Time				
Annual Average	min.	1.8	2.8	2.6
Max. Monthly	min.	1.8	1.8	1.6
Peak Daily	min.	1.2	1.3	1.1
Peak Hourly	min.	1.0	0.9	0.9

APPENDIX A. WOONSOCKET, RI WWTF - BASIC DESIGN DATA RAW INFLUENT PUMPING				
	UNITS	Existing Design 2000	Current 2010a	Revised Design 2030
Aministration Bldg Wet Well *(Usable Volume with existing concrete knock out wall)*				
Dimensions				
Total Length	ft.	22.17	22.17	22.17
Actual Length (varies)	ft.	16.17	16.17	16.17
Total Width	ft.	12.5	12.5	12.5
Actual Width (varies)	ft.	6.5	6.5	6.5
Max. Depth @ Max W.S. 104.00	ft.	7.2	7.2	7.2
Total Rectangular Volume	gal.	15,010	15,010	15,010
Volume, Concrete Fill	gal.	4,662	4,662	4,662
Actual Pumping Volume	**gal.**	**10,348**	**10,348**	**10,348**
Detention Time				
Annual Average	min.	0.8	1.3	1.2
Max. Monthly	min.	0.8	0.8	0.7
Peak Daily	min.	0.6	0.6	0.5
Peak Hourly	min.	0.4	0.4	0.4
RAW INFLUENT (SEWAGE) PUMPS				
Operations Building				
Number		3	3	3
Name/Tag		RSP 2, 3, & 4	RSP 2, 3, & 4	RSP 2, 3, & 4
Type		Centrifugal	Centrifugal	Centrifugal
Manufacturer		Worthington	Worthington	Worthington
Model		16-MCC-1	16-MCC-1	16-MCC-1
Rotational Speed	RPM	700	700	700
Suction/Discharge piping	in.	16	16	16
Motor Size	HP	50	50	50
Motor Drive		VFD	VFD	VFD
Design Capacity				
Number Online		3	3	3
Flow, each	gpm	5,600	5,600	5,600
Flow, each	MGD	8	8	8
Total Pump Capacity (w/ 3 pumps operating in parallel)				
Flow, total	gpm	16,800	16,800	16,800
Flow, total	MGD	24.2	24.2	24.2
Total Dynamic Head	ft.	28.5	28.5	28.5

APPENDIX A. WOONSOCKET, RI WWTF - BASIC DESIGN DATA RAW INFLUENT PUMPING				
	UNITS	Existing Design 2000	Current 2010a	Revised Design 2030
Administration Building				
Name/Tag		RSP-6	RSP-6	RSP-6
Number		1	1	1
Type		Centrifugal	Centrifugal	Centrifugal
Manufacturer		Worthington	Worthington	Worthington
Model		16-MNC	16-MNC	16-MNC
Rotational Speed	RPM	700	700	700
Suction/Discharge piping	in.	16	16	16
Motor Size	HP	50	50	50
Motor Drive		VFD	VFD	VFD
Design Capacity				
Number Online		1	1	1
Flow, each	gpm	5,600	5,600	5,600
Flow, each	MGD	8.1	8.1	8.1
Total Dynamic Head	ft.	28.5	28.5	28.5
Name/Tag		RSP-5	RSP-5	RSP-5
Number		1	1	1
Type		Centrifugal	Centrifugal	Centrifugal
Manufacturer		Worthington	Worthington	Worthington
Model		16-MCC-1	16-MCC-1	16-MCC-1
Rotational Speed	RPM	690	690	690
Suction/Discharge piping	in.	16	16	16
Motor Size	HP	60	60	60
Motor Drive		VFD	VFD	VFD
Design Capacity				
Number Online		1	1	1
Flow, each	gpm	6,944	6,944	6,944
Flow, each	MGD	10	10	10
Total Pump Capacity (w/ 2 pumps operating in parallel)				
Flow, total	gpm	12,544	12,544	12,544
Flow, total	MGD	18.1	18.1	18.1
Total Dynamic Head	ft.	36	36	36

APPENDIX A. WOONSOCKET, RI WWTF - BASIC DESIGN DATA
HEADWORKS - AERATED GRIT SYSTEM

	UNITS	Existing Design 2000	Current 2010a	Revised Design 2030
FLOW				
Annual Average	MGD	18.6	11.7	12.9
Max. Month	MGD	18.6	18.1	21.1
Peak Daily	MGD	26.6	26.1	29.1
Peak Hourly	MGD	34.6	35.0	37.1
AERATED GRIT TANKS				
Number		2	2	2
Tank Dimensions, each				
Length	ft.	26	26	26
Width	ft.	14.5	14.5	14.5
Depth	ft.	10	10	10
Area, each	ft^2	377	377	377
Area, Total	ft^2	754	754	754
Volume, each	gal.	28,203	28,203	28,203
Volume, Total	gal.	56,407	56,407	56,407
Number Online		2	2	2
Overflow Rate				
Annual Average	gpd/sf	24,655	15,517	17,069
Max. Month	gpd/sf	24,655	24,005	27,984
Peak Daily	gpd/sf	35,265	34,615	38,594
Peak Hourly	gpd/sf	45,875	46,419	49,204
Detention Time				
Annual Average	min.	4.4	6.9	6.3
Max. Month	min.	4.4	4.5	3.8
Peak Daily	min.	3.1	3.1	2.8
Peak Hourly	min.	2.3	2.3	2.2
Grit Trough				
Depth, ft	ft.	2.5	2.5	2.5
Width at bottom, ft	ft.	3	3	3
Width at top, ft	ft.	5.5	5.5	5.5
Volume, each	cy	10	10	10
Loading				
Average	$ft.^3$/mgal	2.0	2.0	2.0
Maximum	$ft.^3$/mgal	10.0	10.0	10.0
Expected Grit Quantities at:				
Average Loading:				
Annual Average	cy/day	1.4	0.9	1.0
Max. Month (Load)	cy/day	1.4	1.3	1.6
Peak Daily (100th Percentile)	cy/day	2.0	1.9	2.2
Maximum Loading:				
Annual Average	cy/day	6.9	4.3	4.8
Max. Month (Load)	cy/day	6.9	6.7	7.8
Peak Daily (100th Percentile)	cy/day	9.8	9.7	10.8
Avg. Removal Frequency, each	day	7.4	11.8	10.7

APPENDIX A. WOONSOCKET, RI WWTF - BASIC DESIGN DATA
HEADWORKS - AERATED GRIT SYSTEM

	UNITS	Existing Design 2000	Current 2010a	Revised Design 2030
Grit Removal Mechanism				
Number		1	1	1
Type		Clamshell & Hoist	Clamshell & Hoist	Clamshell & Hoist
Operation		Manual	Manual	Manual
Clamshell Capacity	$yd.^3$	1/2	1/2	1/2
Cover				
Quantity		2 (1 per tank)	2 (1 per tank)	2 (1 per tank)
Dimensions				
Length	ft.	26	26	26
Width	ft.	14.5	14.5	14.5
Aeration Capacity				
Maximum	CFM/lf	8	8	8
BLOWERS				
Manufacturer		Spencer	Spencer	Spencer
Number		2	2	2
Number Online		1	1	1
Type		2 or 3 Lobe PD	2 or 3 Lobe PD	2 or 3 Lobe PD
Capacity, each				
Maximum	SCFM	200	200	200
Blower Inlet Pressure	psia	14.7	14.7	14.7
Blower Discharge Pressure	psig	6	6	6
Motor Size	HP	15	15	15
Motor Speed	rpm	3500	3500	3500
DIFFUSERS				
Number of Headers per tank		2	2	2
Diameter	in.	3	3	3
Number of Headers, total				
Number of Diffusers, per header		8	8	8
Number of Diffusers, Total		32	32	32
Type		Course Bubble	Course Bubble	Course Bubble
LIME SILO				
Diameter	ft.	12	12	12
Overall Height	ft.	29.6	29.6	29.6
Usable Storage Height	ft.	20	20	20
Storage Volume, approx.	cf	2262	2262	2262
Storage Volume, approx.	tons	45	45	45
LIME SCREW CONVEYOR				
Name		Screw conveyor	Screw conveyor	Screw conveyor
Manufacturer		KWS	KWS	KWS
Diameter	in.	4	4	4
Length	ft.	21	21	21
Design Dosage Rate	cf/hr	5.25	5.25	5.25
Hydrated Lime Density	lbs/cf	40 - 55	40 - 55	40 - 55
Hydrated Lime Density, wet	lbs/cf	65	65	65

APPENDIX A. WOONSOCKET, RI WWTF - BASIC DESIGN DATA HEADWORKS - AERATED GRIT SYSTEM				
	UNITS	Existing Design 2000	Current 2010a	Revised Design 2030
FERRIC CHLORIDE SYSTEM (CEPT)				
Number of Metering Pumps		2	2	2
Name/Tag		FCMP-1 & -2	FCMP-1 & -2	FCMP-1 & -2
Equipment Identification		Ferric Pump	Ferric Pump	Ferric Pump
Manufacturer		Wallace & Tiernan	Wallace & Tiernan	Wallace & Tiernan
Series		44	44	44
Model		Encore 700	Encore 700	Encore 700
Rating	gph	46	46	46
Motor Power	Hp	1	1	1
Voltage	V	230 / 60 Hz / 1 ph	230 / 60 Hz / 1 ph	230 / 60 Hz / 1 ph
FERRIC CHLORIDE STORAGE TANK				
Manufacturer		Poly Processing	Poly Processing	Poly Processing
Material		Polyethylene	Polyethylene	Polyethylene
Storage Volume	gal.	6350	6350	6350
POLYMER FEED SYSTEM				
Number of Units		2	2	2
Polymer Feed Unit #1:				
Tag		PFU-1	PFU-1	PFU-1
Manufacturer/Series		Stranco / M	Stranco / M	Stranco / M
Model		H600-D2.5-AA	H600-D2.5-AA	H600-D2.5-AA
Rating	gph	0 - 2.5	0 - 2.5	0 - 2.5
Motor Power	Hp	0.5	0.5	0.5
Voltage	V	120 / 60 Hz / 1 ph	120 / 60 Hz / 1 ph	120 / 60 Hz / 1 ph
Polymer Feed Unit #2:				
Tag		PFU-2	PFU-2	PFU-2
Manufacturer/Series		Stranco / M	Stranco / M	Stranco / M
Model		M2400-P18AA	M2400-P18AA	M2400-P18AA
Rating	gph	0.9 - 18	0.9 - 18	0.9 - 18
Motor Power	Hp	1.5	1.5	1.5
Voltage	V	120 / 60 Hz / 1 Ph	120 / 60 Hz / 1 Ph	120 / 60 Hz / 1 Ph
POLYMER STORAGE TANK				
Manufacturer		Poly Processing	Poly Processing	Poly Processing
Material		Polyethylene	Polyethylene	Polyethylene
Storage Volume	gal.	6350	6350	6350
Type		Anionic	Anionic	Anionic

APPENDIX A. WOONSOCKET, RI WWTF - BASIC DESIGN DATA
PRIMARY CLARIFIERS

	UNITS	Existing Design 2000	Current 2010a	Revised Design 2030
PRIMARY INFLUENT FLOW RATE				
Annual Average	MGD	18.6	11.7	12.9
Max. Month	MGD	18.6	18.1	21.1
Peak Daily	MGD	26.6	26.1	29.1
Peak Hourly	MGD	34.6	35.0	37.1
PRIMARY INFLUENT BOD				
Annual Average	lb./day	25,994	24,000	26,960
Max. Month	lb./day	-	42,500	47,930
Peak Daily (98th Percentile)	lb./day	-	50,000	57,540
Peak Daily (100th Percentile)	lbs./day	-	65,500	75,190
PRIMARY INFLUENT TSS				
Annual Average	lb./day	22,895	34,100	36,100
Max. Month	lb./day	-	74,300	77,750
Peak Daily (98th Percentile)	lb./day	-	91,900	98,080
Peak Daily (100th Percentile)	lbs./day	-	170,800	178,970
PRIMARY INFLUENT AMMONIA				
Annual Average	lb./day	4,499	1,057	1,270
Peak Daily (98th Percentile)	lb./day	-	1,605	1,970
Peak Daily (100th Percentile)	lbs./day	-	1,615	1,980
PRIMARY INFLUENT TKN				
Annual Average	lb./day	5,338	2,772	3,090
Peak Daily (98th Percentile)	lb./day	-	4,438	5,010
Peak Daily (100th Percentile)	lbs./day	-	4,948	5,570
PRIMARY INFLUENT PHOSPHORUS				
Annual Average	lb./day	2,268	1,206	1,240
Peak Daily (98th Percentile)	lb./day	-	2,687	2,740
Peak Daily (100th Percentile)	lbs./day	-	2,989	3,040
PRIMARY CLARIFIERS				
Number of Units		2	2	2
Dimensions				
Diameter	ft.	90	90	90
Side Wall Depth	ft.	11	11	11
Surface Area, each	$ft.^2$	6,362	6,362	6,362
Volume, each	Mgal.	0.523	0.523	0.523
Total Volume	Mgal.	1.047	1.047	1.047
Weir Length, each	ft.	283	283	283
Weir Length, total	ft.	565	565	565
Revolutions per Hour	rph	1.5	1.5	1.5
Number Online		2	2	2
Detention Time				
Annual Average	hr.	1.4	2.1	2.0
Max. Month	hr.	1.4	1.4	1.2
Peak Daily	hr.	0.9	1.0	0.9
Peak Hourly	hr.	0.7	0.7	0.7
Overflow Rate				
Annual Average	gpd/sf	1,461	920	1,012
Max. Month	gpd/sf	1,461	1,423	1,658
Peak Daily	gpd/sf	2,090	2,051	2,287
Peak Hourly	gpd/sf	2,719	2,751	2,916

APPENDIX A. WOONSOCKET, RI WWTF - BASIC DESIGN DATA
PRIMARY CLARIFIERS

	UNITS	Existing Design 2000	Current 2010a	Revised Design 2030
Weir Loading Rate				
Annual Average	gpd/ft.	32,874	20,690	22,759
Max. Month	gpd/ft.	32,874	32,008	37,313
Peak Daily	gpd/ft.	47,021	46,155	51,460
Peak Hourly	gpd/ft.	61,169	61,894	65,607
Primary Effluent Quality[a]				
Typical BOD_5 Removal	%	>30	42	42
Typical TSS Removal	%	>70	78	78
Typical Effluent BOD				
Annual Average	lb./day	18,095	13,900	15,614
Max. Month (Load)	lb./day	-	28,900	32,592
Peak Daily (98th Percentile)	lb./day	-	30,600	35,214
Peak Daily (100th Percentile)	lb./day	-	48,200	55,331
Typical Effluent TSS				
Annual Average	lb./day	6,004	7,400	7,834
Max. Month (Load)	lb./day	-	12,700	13,290
Peak Daily (98th Percentile)	lb./day	-	14,600	15,582
Peak Daily (100th Percentile)	lb./day	-	28,500	29,863
Primary Sludge Production				
Annual Average	lb./day	16,891	26,700	28,266
Max. Month (Load)	lb./day	16,891	61,600	64,460
Peak Daily (98th Percentile)	lb./day	16,891	77,300	82,498
Peak Daily (100th Percentile)	lb./day	16,891	142,300	149,107
Typical Sludge Concentration	%	3	3	3
Typical Sludge Volume				
Annual Average	gpm	47	74	78
Max. Month (Load)	gpm	47	171	179
Peak Daily (98th Percentile)	gpm	47	215	229
Peak Daily (100th Percentile)	gpm	47	395	414
PRIMARY SLUDGE PUMPS				
Number		2	2	2
Name		PSP-1	PSP-1	PSP-1
Manufacturer		Wastecorp	Wastecorp	Wastecorp
Type		Duplex Plunger	Duplex Plunger	Duplex Plunger
Model No.		1142	1142	1142
Serial No.		980550	980550	980550
Name		PSP-2	PSP-2	PSP-2
Manufacturer		ITT / Marlow	ITT / Marlow	ITT / Marlow
Type		Duplex Plunger	Duplex Plunger	Duplex Plunger
Model No.		PE112W	PE112W	PE112W
Serial No.		571614	571614	571614
Design Capacity, each				
Maximum				
Flow	gpm	255	255	255
Total Dynamic Head	ft.	80	80	80
Speed	RPM	1290	1290	1290
Minimum				
Flow	gpm	200	200	200
Total Dynamic Head	ft.	55	55	55
Speed	RPM	1020	1020	1020
Motor Size	HP	10	10	10
Motor Drive		VFD	VFD	VFD
Maximum Solids Pumped	in.	4	4	4

APPENDIX A. WOONSOCKET, RI WWTF - BASIC DESIGN DATA PRIMARY CLARIFIERS				
	UNITS	Existing Design 2000	Current 2010a	Revised Design 2030
PRIMARY SCUM PUMP				
Manufacturer		Penn Valley	Penn Valley	Penn Valley
Type		Double Disc	Double Disc	Double Disc
Capacity	gpm	100	100	100
Total Dynamic Head	ft.	75	75	75
Motor Size	HP	5	5	5
DEWATERING PUMP				
Number		1	1	1
Manufacturer		Worthington	Worthington	Worthington
Model No.		6FL15	6FL15	6FL15
Serial No.		159877	159877	159877
Capacity	gpm	600	600	600
Total Dynamic Head	ft.	25	25	25
Motor Size	HP	10	10	10
Motor Speed	rpm	700	700	700

[a]Based on monitoring data from May 2007 through October 2010

APPENDIX A. WOONSOCKET, RI WWTF - BASIC DESIGN DATA
PRIMARY EFFLUENT PUMPING

	UNITS	Existing Design 2000	Current 2010a	Revised Design 2030
FLOW				
Annual Average	MGD	18.6	11.7	12.9
Max. Monthly	MGD	18.6	18.1	21.1
Peak Daily	MGD	26.6	26.1	29.1
Peak Hourly	MGD	34.6	35.0	37.1
INFLUENT WETWELL				
Number		1	1	1
Number Online		1	1	1
Dimensions				
Length	ft.	25	25	25
Width	ft.	5	5	5
Depth @ Max W.S. 123.58	ft.	4.5	4.5	4.5
Volume	gal.	4,227	4,227	4,227
Total Volume	gal.	4,227	4,227	4,227
Detention Time				
Annual Average	min.	0.33	0.52	0.47
Max. Monthly	min.	0.33	0.34	0.29
Peak Daily	min.	0.23	0.23	0.21
Peak Hourly	min.	0.18	0.17	0.16
PRIMARY EFFLUENT (SCREW) PUMPS				
Number		2	2	2
Name/Tag		SP 1 & 2	SP 1 & 2	SP 1 & 2
Type		Enclosed Screw	Enclosed Screw	Enclosed Screw
Manufacturer		KWS Corp.	KWS Corp.	KWS Corp.
Capacity	gpm	11,120	11,120	11,120
Capacity	mgd	16	16	16
Vertical Lift		5' - 3 7/8"	5' - 3 7/8"	5' - 3 7/8"
Incline of Screw	degrees	30	30	30
Number of Flights		3	3	3
Maximum Screw Speed	RPM	41	41	41
Motor Size	HP	30	30	30
Motor Drive		Constant Speed	Constant Speed	Constant Speed
Screw Diameter	in.	60	60	60
PRIMARY EFFLUENT (SUBMERSIBLE) PUMPS				
Number		2	2	2
Type		Submersible	Submersible	Submersible
Manufacturer		Flyght	Flyght	Flyght
Suction/Discharge piping	in.	8	8	8
Motor Size	HP	30	30	30
Motor Drive		VFD	VFD	VFD

APPENDIX A. WOONSOCKET, RI WWTF - BASIC DESIGN DATA PRIMARY EFFLUENT PUMPING				
	UNITS	Existing Design 2000	Current 2010a	Revised Design 2030
Design Capacity				
Number Online		1	1	1
Rated Capacity, Each	gpm	5,560	5,560	5,560
Flow, total	gpm	5,560	5,560	5,560
Flow, total	MGD	8.0	8.0	8.0
Total Dynamic Head	ft.	5.5	5.5	5.5
Total Pumping Capcity				
w/Largest Pump Off-line	MGD	32.0	32.0	32.0
w/All 4 Pumps On-line	MGD	48.0	48.0	48.0
PRIMARY EFFLUENT PARSHALL FLUME				
Number		1	1	1
Measurement Range	MGD	0 - 32.6	0 - 32.6	0 - 32.6
Throat Width	in.	36	36	36
Max. Depth Reading	in.	2.5	2.5	2.5

APPENDIX A. WOONSOCKET, RI WWTF - BASIC DESIGN DATA
AERATION TANKS - MLE PROCESS

	UNITS	Existing Design 2000	Current 2010a	Revised Design 2030
TOTAL FLOW				
Annual Average	MGD	18.6	11.7	12.9
Max. Month	MGD	18.6	18.1	21.1
Peak Daily	MGD	26.6	26.1	29.1
Peak Hourly	MGD	34.6	35.0	37.1
AERATION SYSTEM DESIGN CRITERIA				
BOD Loading				
Annual Average	lb./day	18,095	13,900	15,614
Max. Month (Load)	lb./day	-	28,900	32,592
Peak Daily (98th Percentile)	lb./day	-	30,600	35,214
Peak Daily (100th Percentile)	lb./day		48,200	55,331
TSS Loading				
Annual Average	lb./day	6,004	7,400	7,834
Max. Month (Load)	lb./day	-	12,700	13,290
Peak Daily (98th Percentile)	lb./day	-	14,600	15,582
Peak Daily (100th Percentile)	lb./day		28,500	29,863
AMMONIA Loading				
Annual Average	lb./day	5,410	1,231	1,383
Max. Month (Load)	lb./day		2,091	2,358
Peak Daily (98th Percentile)	lb./day		2,445	2,814
Peak Daily (100th Percentile)	lb./day		2,874	3,299
TKN Loading				
Annual Average	lb./day	-	2,415	2,557
Max. Month (Load)	lb./day	-	5,188	5,429
Peak Daily (98th Percentile)	lb./day	-	6,585	7,028
Peak Daily (100th Percentile)	lb./day		6,925	7,256
PHOSPHORUS Loading				
Annual Average	lb./day	-	677	717
Max. Month (Load)	lb./day	-	1,363	1,426
Peak Daily (98th Percentile)	lb./day	-	1,692	1,806
Peak Daily (100th Percentile)	lb./day		1,958	2,052
AERATION TANKS - Biological Nitrification/Denitrification - MLE PROCESS				
Number		6	6	6
Overall Tank Dimensions				
Length	ft.	184	184	184
Width	ft.	46	46	46
Depth	ft.	15	15	15
Volume	Mgal.	0.95	0.95	0.95
Total Volume	Mgal.	5.70	5.70	5.70
Number Online		6	6	6
Zone Volume				
Anoxic Zone				
No. of zones, per tank		1	1	1
Length	ft.	46	46	46
Width	ft.	46	46	46
Depth	ft.	15	15	15
Volume, each	Mgal.	0.24	0.24	0.24
Volume, total	Mgal.	1.42	1.42	1.42

APPENDIX A. WOONSOCKET, RI WWTF - BASIC DESIGN DATA AERATION TANKS - MLE PROCESS				
	UNITS	Existing Design 2000	Current 2010a	Revised Design 2030
Aerobic Zones				
No. of zones, per tank		3	3	3
Length	ft.	46	46	46
Width	ft.	46	46	46
Depth	ft.	15	15	15
Volume, each	Mgal.	0.24	0.24	0.24
Volume, per tank	Mgal.	0.71	0.71	0.71
Volume, total	Mgal.	4.27	4.27	4.27
Detention Time (Overall Tankage)				
Annual Average	hr.	7.4	11.7	10.6
Max. Month	hr.	7.4	7.6	6.5
Peak Daily	hr.	5.1	5.2	4.7
Peak Hourly	hr.	4.0	3.9	3.7
Detention Time Anoxic Zone				
Annual Average	hr.	1.8	2.9	2.7
Max. Month	hr.	1.8	1.9	1.6
Peak Daily	hr.	1.3	1.3	1.2
Peak Hourly	hr.	1.0	1.0	0.9
Detention Time - Aerobic Zones				
Annual Average	hr.	5.5	8.8	8.0
Max. Month	hr.	5.5	5.7	4.9
Peak Daily	hr.	3.9	3.9	3.5
Peak Hourly	hr.	3.0	2.9	2.8
Design Temperature				
Minimum Weekly	C	15	20	20
Minimum Monthly	C	15	20	20
Maximum Daily	C	30	30	30
ANOXIC ZONES				
Mixers				
Type		Submersible	Submersible	Submersible
No. of Mixers		18	18	18
Motor	hp			
AEROBIC ZONES				
Dissolved Oxygen	mg/L	2	2	2
Projected Mixed Liquor Suspended Solids				
Average	mg/l	4,000	4,000	4,000
Max. Monthly	mg/l	4,000	4,000	4,000
Percent VSS	%	80	80	80
MLVSS	mg/l	3,200	3,200	3,200
F:M ratio, BOD		0.16	0.16	0.16
Total Solids Retention Time (SRT)				
Average	day	14.8	14.8	14.8
Max. Monthly	day	14.8	14.8	14.8

APPENDIX A. WOONSOCKET, RI WWTF - BASIC DESIGN DATA AERATION TANKS - MLE PROCESS				
	UNITS	Existing Design 2000	Current 2010a	Revised Design 2030
INTERNAL RECYCLE				
Internal Recycle Pumps				
Number		6	6	6
Manufacturer		US Filter - EMU	US Filter - EMU	US Filter - EMU
Series		RZP50-2.52-4/24	RZP50-2.52-4/24	RZP50-2.52-4/24
Capacity	gpm	5,500	5,500	5,500
Capacity	MGD	8	8	8
Ratio to Max Month Flow	%	43%	44%	38%
Total Dynamic Head	ft.	3	3	3
Motor Size	HP	15.4	15.4	15.4
Standard Oxygen Requirement				
Minimum	lbs./day	-	-	-
Average	lbs./day	106,284	58,761	67,212
Max. Monthly	lbs./day	-	152,439	167,154
Peak Daily	lbs./day	-	211,656	248,457
Design Process Air:				
Minimum	SCFM	-	-	-
Average	SCFM	15,217	8,269	10,570
Max. Monthly	SCFM	-	22,098	24,320
Peak Daily	SCFM	-	31,092	36,758
Minimum Process Air - Mixing Criteria				
Per Basin	SCFM/sf	0.12	0.12	0.12
Per Basin	SCFM	1,016	1,016	1,016
Total	SCFM	6,094	6,094	6,094
BLOWERS				
Original Blowers				
Number		2	2	2
Manufacturer		Hoffman	Hoffman	Hoffman
Type		Centrifugal	Centrifugal	Centrifugal
Rated Capacity	SCFM	6,500	6,500	6,500
Rated Discharge Pressure	PSIG	7.5	7.5	7.5
Rated Speed	RPM	3,600	3,600	3,600
Motor	HP	300	300	300
Variable Speed		Inlet Throttling	Inlet Throttling	Inlet Throttling
New Blowers				
Number		2	2	2
Manufacturer		APG-Neuros, Inc.	APG-Neuros, Inc.	APG-Neuros, Inc.
Model		NX300-C050	NX300-C050	NX300-C050
Type		Turbo	Turbo	Turbo
Rated Capacity	SCFM	6,500	6,500	6,500
Rated Discharge Pressure	PSIG	7.5	7.5	7.5
MAX. Rated Speed	RPM	16,118	16,118	16,118
Motor	HP	300	300	300
Variable Speed		VFD	VFD	VFD
No. Blowers in Service				
Annual Average		1	2	2
Max. Month		1	4	4
Peak Daily		2	4	4

APPENDIX A. WOONSOCKET, RI WWTF - BASIC DESIGN DATA
AERATION TANKS - MLE PROCESS

	UNITS	Existing Design 2000	Current 2010a	Revised Design 2030
Blower Capacity in Service				
Average		6,500	13,000	13,000
Max. Monthly		6,500	26,000	26,000
Peak Daily		13,000	26,000	26,000
FINE BUBBLE AERATION				
Manufacturer		Dualair	Dualair	Dualair
Type		Membrane	Membrane	Membrane
Diameter	in.	9	9	9
Number of Diffusers (Tank Nos. 1 thru No. 4)				
Number of Tanks		4	4	4
Anoxic/Aerobic Swing Zone				
Grid 1		432	432	432
Aerobic Zone 1				
Grid 2A		257	257	257
Grid 2B		427	427	427
Aerobic Zone 2				
Grid 3		432	432	432
Grid 4		240	240	240
Aerobic Zone 3				
Grid 5		60	60	60
Total Diffusers, Anoxic Zone		432	432	432
Total Diffusers, Aerobic Zone		1,416	1,416	1,416
Total Diffusers, per Tank		1,848	1,848	1,848
Total Diffusers, Tanks 1 thru 4		7,392	7,392	7,392
Total Aerobic Zone Diffusers, Tanks 1 thru 4		5,664	5,664	5,664
Number of Diffusers (Tank Nos. 5 & 6)				
Number of Tanks		2	2	2
Anoxic/Aerobic Swing Zone				
Grid 1		420	420	420
Aerobic Zone 1				
Grid 2		702	702	702
Aerobic Zone 2				
Grid 3		420	420	420
Grid 4		250	250	250
Aerobic Zone 3				
Grid 5		44	44	44
Total Diffusers, Anoxic Zone		420	420	420
Total Diffusers, Aerobic Zone		1,416	1,416	1,416
Total Diffusers, per Tank		1,836	1,836	1,836
Total Diffusers, Tanks 5 & 6		3,672	3,672	3,672
Total Aerobic Zone Diffusers, Tanks 5 & 6		2,832	2,832	2,832
Total Diffusers		11,064	11,064	11,064
Total Aerobic Zone Diffusers		8,496	8,496	8,496
Diffuser Air Rate Range				
Minimum	SCFM	0.5	0.5	0.5
Maximum	SCFM	3.0	3.0	3.0
Diffuser Aeration Capacity - Aerobic Zone:				
Minimum	SCFM	4,248	4,248	4,248
Maximum	SCFM	25,488	25,488	25,488

APPENDIX A. WOONSOCKET, RI WWTF - BASIC DESIGN DATA
SECONDARY CLARIFIERS

	UNITS	Existing Design 2000	Current 2010a	Revised Design 2030
TOTAL FLOW RATE				
Annual Average	MGD	18.6	11.7	12.9
Max. Month	MGD	18.6	18.1	21.1
Peak Daily	MGD	26.6	26.1	29.1
Peak Hourly	MGD	34.6	35.0	37.1
TANKS				
Number	ea	3	3	3
Number Online	ea	3	3	3
Dimensions				
Tank Inside Diameter	ft.	110	110	110
Launder Width	ft.	3	3	3
Side Wall Depth	ft.	11.6	11.6	11.6
Surface Area, each	$ft.^2$	9,503	9,503	9,503
Volume	Mgal.	0.82	0.82	0.82
Total Volume	Mgal.	2.47	2.47	2.47
Weir length	ft	346	346	346
Detention Time				
Annual Average	hr.	3.2	5.1	4.6
Max. Month	hr.	3.2	3.3	2.8
Peak Daily	hr.	2.2	2.3	2.0
Peak Hourly	hr.	1.7	1.7	1.6
Overflow Rate				
Annual Average	$gpd/ft.^2$	652	410	451
Max. Month	$gpd/ft.^2$	652	635	740
Peak Daily	$gpd/ft.^2$	933	915	1,021
Peak Hourly	$gpd/ft.^2$	1,213	1,228	1,301
Weir Loading Rate				
Annual Average	gpd/ft.	17,931	11,286	12,414
Max. Month	gpd/ft.	17,931	17,459	20,353
Peak Daily	gpd/ft.	25,648	25,175	28,069
Peak Hourly	gpd/ft.	33,365	33,760	35,786
Projected Waste Activated Sludge				
Annual Average	lb./day	13,905	13,249	14,883
Max. Month		13,905	14,873	16,773
Peak Day	lb./day	13,905	33,302	38,324
Typical WAS Concentration				
Annual Average	mg/l	7,500	13,800	13,800
Max. Month	mg/l	7,500	14,200	14,200
Typical Waste Activated Sludge Flow				
Annual Average	gpm	154	80	90
Max. Month	gpm	154	87	98
Peak Day	gpm	154	195	225
Solids Waste rate, Q_w	MGD	0.15	0.15	0.15
RAS Mixed Liquor VSS, Xr	mg/l	12,000	12,000	12,000
RAS Flow, Q_r	%	50	50	50

APPENDIX A. WOONSOCKET, RI WWTF - BASIC DESIGN DATA
SECONDARY CLARIFIERS

	UNITS	Existing Design 2000	Current 2010a	Revised Design 2030
SECONDARY CLARIFIER DRIVE UNITS				
Number		3	3	3
Manufacturer		DBS Drives	DBS Drives	DBS Drives
Ratio		25.6	25.6	25.6
Rotational speed	RPM	45	45	45
Motor Horsepower	HP	1/2	1/2	1/2
RETURN ACTIVATED SLUDGE PUMPS				
Number		4	4	4
Number in Service		3	3	3
Manufacturer		Chicago	Chicago	Chicago
Type		Centrifugal	Centrifugal	Centrifugal
Design Capacity				
Flow Rate, each	gpm	3,500	3,500	3,500
Total Dynamic Head, each	ft.	50	50	50
Shutoff Head	ft.	88	88	88
Motor Size	HP	75	75	75
Motor MAX. Speed	RPM	1,150	1,150	1,150
Total Capacity	gpm	10,500	10,500	10,500
	MGD	15.1	15.1	15.1
Return Sludge Capacity, % of Flow				
Annual Average	%	81	129	117
Max. Month	%	81	84	72
Peak Daily	%	57	58	52
Peak Hourly	%	44	43	41
WASTE ACTIVATED SLUDGE PUMPS				
Number		3	3	3
Number in Service		3	1	1
Manufacturer		(2) Chicago (1) Midland-Borneman	(2) Chicago (1) Midland-Borneman	(2) Chicago (1) Midland-Borneman
Type		(2) Centrifugal (1) Progressive Cavity	(2) Centrifugal (1) Progressive Cavity	(2) Centrifugal (1) Progressive Cavity
Design Capacity				
Flow Rate, each	gpm	350	350	350
Differential Pressure, each	ft.	35	35	35
Motor Size	HP	25	25	25
Motor MAX. Speed	RPM	525	525	525
Motor Drive		VFD	VFD	VFD

APPENDIX A. WOONSOCKET, RI WWTF - BASIC DESIGN DATA
EFFLUENT SAND FILTERS

	UNITS	Existing Design 2000	Current 2010a	Revised Design 2030
FLOW RATE				
Annual Average	MGD	18.6	11.7	12.9
Max. Month	MGD	18.6	18.1	21.1
Peak Daily	MGD	26.6	26.1	29.1
Peak Hourly	MGD	34.6	35.0	37.1
EFFLUENT FILTER PUMPS				
Number		4	4	4
Manufacturer		US Filter-EMU	US Filter-EMU	US Filter-EMU
Series		KPR	KPR	KPR
Type		Submersible	Submersible	Submersible
Capacity	gpm	7500	7500	7500
Capacity	MGD	10.8	10.8	10.8
Total Dynamic Head	ft.	10	10	10
Motor Size	hp	44	44	44
Motor Speed	RPM	890	890	890
Capacity w/ 3 Pumps in Service	MGD	32.4	32.4	32.4
Capacity w/ 4 Pumps in Service	MGD	43.2	43.2	43.2
EFFLUENT FILTERS				
Number		4	4	4
Number in Service		3	3	3
Manufacturer		US Filter Davco	US Filter Davco	US Filter Davco
Dimensions				
Length	ft.	86.5	86.5	86.5
Width	ft.	16	16	16
Surface Area, Each	ft^2	1384	1384	1384
Surface Area, Total	ft^2	4,152	4,152	4,152
Average Design Flow Rate, Each	MGD	6	6	6
Average Design Flow Rate, Total	MGD	18	18	18
Hydraulic Loading Rate				
Annual Average	gpm/ft^2	3.1	2.0	2.2
Max. Month	gpm/ft^2	3.1	3.0	3.5
Peak Daily	gpm/ft^2	4.4	4.4	4.9
Peak Hourly	gpm/ft^2	5.8	5.9	6.2
BACKWASH PUMPS				
Number		4	4	4
Type		Submersible	Submersible	Submersible
Capacity	gpm	533	533	533
Capacity	MGD	0.77	0.77	0.77
Total Dynamic Head	ft.	30	30	30
Motor Size	hp	7.4	7.4	7.4
WASHWATER PUMPS				
Number		4	4	4
Type		Submersible	Submersible	Submersible
Capacity	gpm	533	533	533
Capacity	MGD	0.77	0.77	0.77
Total Dynamic Head	ft.	15	15	15
Motor Size	hp	5.4	5.4	5.4
Backwash Rate				
Average	gpm/ft^2	25	25	25
Removal Rate				
TSS	%	70	70	70

APPENDIX A. WOONSOCKET, RI WWTF - BASIC DESIGN DATA
DISINFECTION SYSTEM

	UNITS	Existing Design 2000	Current 2010a	Revised Design 2030
FLOW RATE				
Annual Average	MGD	16.0	7.8	9.0
Max. Month	MGD	16.0	13.0	16.0
Peak Daily	MGD	24.0	22.2	24.0
Peak Hourly	MGD	32.0	32.0	32.0
CHLORINE CONTACT TANKS				
Number		2	2	2
Number Units in Service		2	2	2
Dimensions				
Total Length	ft.	210	210	210
Total Width	ft.	13	13	13
Depth of Water	ft.	10	10	10
Volume, each	gal.	204,231	204,231	204,231
Number Online		2	2	2
Contact Time				
Annual Average	min.	37	75	66
Max. Month	min.	37	45	37
Peak Daily	min.	25	26	25
Peak Hourly	min.	18	18	18
CHLORINE USE				
Disinfection Dosage				
Average	mg/l	3.5	3.5	3.5
Peak	mg/l	4.0	4.0	4.0
HYPOCHLORITE USE				
Solution Strength	%	12.5	12.5	12.5
Specific Gravity		1.24	1.24	1.24
Bulk Density	lb/gal	10.3	10.3	10.3
Solution Strength	lb/gal	1.29	1.29	1.29
Average Hypochlorite Usage				
Annual Average	gal/d	361	176	203
Max. Month	gal/d	361	294	361
Peak Daily	gal/d	542	501	542
Peak Hourly	gal/d	723	723	723
Peak Hypochlorite Usage				
Annual Average	gal/d	413	201	231
Max. Month	gal/d	413	335	413
Peak Daily	gal/d	619	573	619
Peak Hourly	gal/d	826	826	826

APPENDIX A. WOONSOCKET, RI WWTF - BASIC DESIGN DATA
DISINFECTION SYSTEM

	UNITS	Existing Design 2000	Current 2010a	Revised Design 2030
SODIUM BISULFITE USAGE				
Solution Strength	%	40	40	40
Specific Gravity		1.33	1.33	1.33
Bulk Density	lb/gal	11.1	11.1	11.1
Solution Strength	lb/gal	4.4	4.4	4.4
Disinfection Dosage				
Average	mg/l	1.0	1.0	1.0
Peak	mg/l	2.0	2.0	2.0
Average Usage				
Annual Average	gal/d	30	15	17
Max. Month	gal/d	30	24	30
Peak Daily	gal/d	45	42	45
Peak Hourly	gal/d	60	60	60
Peak Usage				
Annual Average	gal/d	60	29	34
Max. Month	gal/d	60	49	60
Peak Daily	gal/d	90	83	90
Peak Hourly	gal/d	120	120	120

APPENDIX A. WOONSOCKET, RI WWTF - BASIC DESIGN DATA
SLUDGE THICKENING AND STORAGE

Item	UNITS	1 Existing Design 2000	2 Current 2010a	3 Revised Design 2030	4 Existing Design Incl. PrimSl	5 Design Excl. PrimSl	6 Design Excl. WAS	7 Design Excl. WAS	8 Design Excl. Centrate	9 Design Excl. Centrate
Sludge Quantities										
Primary Sludge:										
Annual Average	lb/d	0	26,700	28,266	16,891	0	28,266	13,340	28,266	13,340
Maximum Month	lb/d	0	61,600	64,460	16,891	0	64,460	21,620	64,460	21,620
Peak Daily	lb/d	0	77,300	82,498	16,891	0	82,498	29,790	82,498	29,790
TSS	mg/l	0	30,000	30,000	30,000	0	30,000	30,000	30,000	30,000
Secondary Sludge:										
Annual Average	lb/d	13,905	13,249	14,883	13,905	14,883	0	0	14,883	14,883
Maximum Month	lb/d	13,905	14,873	16,773	13,905	16,773	0	0	16,773	16,773
Peak Daily	lb/d	13,905	33,302	38,324	13,905	38,324	0	0	38,324	38,324
TSS	mg/l	7,500	13,800	13,800	7,500	13,800	13,800	13,800	13,800	13,800
Centrate										
Annual Average	lb/d	2,162	2,765	3,027	2,162	3,027	3,027	3,027	0	0
Maximum Month	lb/d	2,162	6,630	7,257	2,162	7,257	7,257	7,257	0	0
Peak Daily	lb/d	2,162	24,070	26,355	2,162	24,070	26,355	26,355	0	0
Combined Thickener Feed										
TSS	mg/l	3,775	8,956	9,348	6,839	9,681	15,486	7,120	22,683	18,529
Annual Average	lb/d	16,067	42,714	46,176	32,958	17,910	31,293	16,367	43,149	28,223
Maximum Month	lb/d	16,067	83,103	88,491	32,958	24,030	71,717	28,877	81,234	38,393
Peak Daily	lb/d	16,067	134,672	147,177	32,958	62,394	108,853	56,145	120,822	68,114
Co-Thickening / Storage Facilities:										
Gravity Thickeners:										
Total No.		1	1	1	1	1	1	1	1	1
No. On-line		1	1	1	1	1	1	1	1	1
Diameter, ft	ft.	60	60	60	60	60	60	60	60	60
Side Depth, ft	ft.	15	15	15	15	15	15	15	15	15
Cone Depth, ft	ft.	4	4	4	4	4	4	4	4	4
Area, sq.ft.	sq.ft.	2,827	2,827	2,827	2,827	2,827	2,827	2,827	2,827	2,827
Total Volume each, gal	gal.	340,264	340,264	340,264	340,264	340,264	340,264	340,264	340,264	340,264
Volume @2 ft Side Depth	gal.	71,234	71,234	71,234	71,234	71,234	71,234	71,234	71,234	71,234
Volume @5 ft Side Depth	gal.	134,585	134,585	134,585	134,585	134,585	134,585	134,585	134,585	134,585
Volume @7.5 ft Side Depth	gal.	187,378	187,378	187,378	187,378	187,378	187,378	187,378	187,378	187,378
Volume @10 ft Side Depth	gal.	240,170	240,170	240,170	240,170	240,170	240,170	240,170	240,170	240,170
Solids Loading Rate:										
Annual Average	**lb/sq.ft./d**	**5.7**	**15.1**	**16.3**	**11.7**	**6.3**	**11.1**	**5.8**	**15.3**	**10.0**
Maximum Month	**lb/sq.ft./d**	**5.7**	**29.4**	**31.3**	**11.7**	**8.5**	**25.4**	**10.2**	**28.7**	**13.6**
Peak Daily	**lb/sq.ft./d**	**5.7**	**47.6**	**52.1**	**11.7**	**22.1**	**38.5**	**19.9**	**42.7**	**24.1**
Surface Overflow Rate:										
Annual Average	gpd/sq.ft.	181	202	210	204	78	86	97	81	65
Maximum Month	gpd/sq.ft.	181	303	312	204	133	143	109	137	82
Peak Daily	gpd/sq.ft.	181	417	440	204	212	234	121	219	160
Capture, %										
Annual Average	%	0.75	0.60	0.60	0.70	0.70	0.70	0.70	0.70	0.70
Maximum Month	%	0.75	0.43	0.43	0.70	0.70	0.70	0.70	0.70	0.70
Peak Daily	%	0.75	0.43	0.43	0.70	0.70	0.70	0.70	0.70	0.70

APPENDIX A. WOONSOCKET, RI WWTF - BASIC DESIGN DATA
SLUDGE THICKENING AND STORAGE

Item	UNITS	1 Existing Design 2000	2 Current 2010a	3 Revised Design 2030	4 Existing Design Incl. PrimSl	5 Design Excl. PrimSl	6 Design Excl. WAS	7 Design Excl. WAS	8 Design Excl. Centrate	9 Design Excl. Centrate
Thickened Sludge TSS, mg/l	mg/l	23,000	23,000	23,000	23,000	23,000	23,000	23,000	23,000	23,000
Storage Capacity:										
Average										
Solids	lb/d	12,050	25,628	27,706	23,070	12,537	21,905	11,457	30,204	19,756
Flow, gpd	gpd	62,821	133,607	144,435	120,271	65,358	114,196	59,727	157,462	102,993
Storage, days										
@5 ft Side Depth	days	2.1	1.0	0.9	1.1	2.1	1.2	2.3	0.9	1.3
@7.5 ft Side Depth	days	3.0	1.4	1.3	1.6	2.9	1.6	3.1	1.2	1.8
@10 ft Side Depth	days	3.8	1.8	1.7	2.0	3.7	2.1	4.0	1.5	2.3
Maximum Month										
Solids	lb/d	12,050	35,734	38,051	23,070	16,821	50,202	20,214	56,863	26,875
Flow, gpd	gpd	62,821	186,291	198,368	120,271	87,692	261,715	105,380	296,442	140,107
Storage, days										
@5 ft Side Depth	days	2.1	0.7	0.7	1.1	1.5	0.5	1.3	0.5	1.0
@7.5 ft Side Depth	days	3.0	1.0	0.9	1.6	2.1	0.7	1.8	0.6	1.3
@10 ft Side Depth	days	3.8	1.3	1.2	2.0	2.7	0.9	2.3	0.8	1.7
Peak Daily										
Solids	lb/d	12,050	57,909	63,286	23,070	43,676	76,197	39,302	84,575	47,680
Flow, gpd	gpd	62,821	301,892	329,925	120,271	227,691	397,233	204,887	440,911	248,565
Storage, days										
@5 ft Side Depth	days	2.1	0.4	0.4	1.1	0.6	0.3	0.7	0.3	0.5
@7.5 ft Side Depth	days	3.0	0.6	0.6	1.6	0.8	0.5	0.9	0.4	0.8
@10 ft Side Depth	days	3.8	0.8	0.7	2.0	1.1	0.6	1.2	0.5	1.0

APPENDIX A. WOONSOCKET, RI WWTF - BASIC DESIGN DATA
SLUDGE THICKENING AND STORAGE

Item	UNITS	1 Existing Design 2000	2 Current 2010a	3 Revised Design 2030	4 Existing Design Incl. PrimSl	5 Design Excl. PrimSl	6 Design Excl. WAS	7 Design Excl. WAS	8 Design Excl. Centrate	9 Design Excl. Centrate
Dewatering Feed - Blended Sludge (Primary, Secondary, & Centrate)										
Blended Sludge Mass:										
Annual Average	lb/d	12,050	25,628	27,706	23,070	12,537	21,905	11,457	30,204	19,756
Maximum Month	lb/d	12,050	35,734	38,051	23,070	16,821	50,202	20,214	56,863	26,875
Peak Daily	lb/d	12,050	57,909	63,286	23,070	43,676	76,197	39,302	84,575	47,680
Blended Sludge Volume:										
Annual Average	gpd	62,821	133,607	144,435	120,271	65,358	114,196	59,727	157,462	102,993
Maximum Month	gpd	62,821	186,291	198,368	120,271	87,692	261,715	105,380	296,442	140,107
Peak Daily	gpd	62,821	301,892	329,925	120,271	227,691	397,233	204,887	440,911	248,565
Blended Sludge Concentration										
Annual Average	mg/l	23,000	23,000	23,000	23,000	23,000	23,000	23,000	23,000	23,000
Maximum Month	mg/l	23,000	23,000	23,000	23,000	23,000	23,000	23,000	23,000	23,000
Peak Daily	mg/l	23,000	23,000	23,000	23,000	23,000	23,000	23,000	23,000	23,000
Return Loadings										
Flow										
Annual Average	gpd	447,482	438,225	447,852	457,540	156,473	128,092	215,892	70,628	79,639
Maximum Month	gpd	447,482	669,139	685,005	457,540	287,738	141,658	203,334	90,420	92,042
Peak Daily	gpd	447,482	876,412	912,790	457,540	370,613	265,481	136,480	178,169	203,485
TSS										
Annual Average	lb/d	4,017	17,086	18,470	9,887	5,373	9,388	4,910	12,945	8,467
Maximum Month	lb/d	4,017	47,369	50,440	9,887	7,209	21,515	8,663	24,370	11,518
Peak Daily	lb/d	4,017	76,763	83,891	9,887	18,718	32,656	16,844	36,247	20,434
BOD	lb/d	4,500	9,300							
TKN	lb/d	-	-							
NH3	lb/d	1,801	-							
P	lb/d	-	-							

TR-16 Allowable Solids Loading Rate:		
Primary	lb/sq.ft/d	20 to 30
Activated Sludge	lb/sq.ft/d	4 to 8
Primary and Activated Sludge	lb/sq.ft/d	6 to 10
Trickling Filter	lb/sq.ft/d	8 to 10
Primary and Trickling Filter	lb/sq.ft/d	10 to 12

APPENDIX B

RIPDES Permit
No. RI 0100111

Final Document RIPDES

REC'D SEP 29 =

File
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RHODE ISLAND
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
235 Promenade Street, Providence, RI 02908-5767 TDD 401-222-4462

September 18, 2008

CERTIFIED MAIL

Mayor Susan D. Menard
City of Woonsocket
169 Main Street
Woonsocket, RI 02895

Mike A

RE: Woonsocket Regional Wastewater Commission
RIPDES No. RI0100111

Dear Mayor Menard,

Enclosed is the final Rhode Island Pollutant Discharge Elimination System (RIPDES) Permit for the Woonsocket Regional Wastewater Commission, which is being issued in accordance with paragraph 10 of consent agreement RIA-368. State regulations, promulgated under Chapter 46-12 of the Rhode Island General Laws of 1956, as amended, require this permit to become effective on the date specified in the permit. No significant comments were received on the draft permit for this facility, therefore, a response to comments was not prepared.

The City of Woonsocket (the City) is advised that it must attain compliance with the final Total Nitrogen (May – October), Total Phosphorus, and Total Cadmium limits in accordance with the compliance schedule contained in paragraph 11 of consent agreement RIA-368. While the City is working on its compliance schedule, it shall be subject to interim limits for these pollutants in accordance with the conditions contained in the consent agreement.

The Department of Environmental Management appreciates the City's cooperation throughout the development of this permit. Should the City have any questions concerning this permit, feel free to contact Aaron Mello of the RIPDES Staff at (401) 222-4700, extension 7405.

Sincerely,

Eric A. Beck, P.E.
Supervising Sanitary Engineer

Enclosures

cc: EPA Permits Branch, New England Division
Aaron Mello, RIDEM-OWR
Annie McFarland, RIDEM-OWR
Joseph Haberek, RIDEM-OWR
Michael A. Annarummo, City of Woonsocket
Sean O. Coffey, Bums & Levinson, LLP

OCT - 2 2008

AUTHORIZATION TO DISCHARGE UNDER THE
RHODE ISLAND POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of Chapter 46-12 of the Rhode Island General Laws, as amended,

City of Woonsocket
City Hall
169 Main Street
Woonsocket, RI 02895

is authorized to discharge from a facility located at

Woonsocket Regional Wastewater Commission
11 Cumberland Hill Road
Woonsocket, RI 02895

to receiving waters named

Blackstone River

in accordance with effluent limitations, monitoring requirements and other conditions set forth herein.

This permit shall become effective on October 1, 2008.

This permit and the authorization to discharge expire at midnight, five (5) years from the effective date.

This permit supersedes the permit issued on July 15, 2000.

This permit consists of 23 pages in Part I including effluent limitations, monitoring requirements, etc. and 10 pages in Part II including General Conditions.

Signed this 18th day of September, 2008.

Angelo S. Liberti

Angelo S. Liberti, P.E., Chief of Surface Water Protection
Office of Water Resources
Rhode Island Department of Environmental Management
Providence, Rhode Island

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning effective date and lasting through permit expiration, the permittee is authorized to discharge from outfall serial number 001A (final treated discharge after disinfection). Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations					Monitoring Requirement	
	Quantity - lbs./day		Concentration - specify units				
	Average Monthly	Maximum Daily	Average Monthly *(Minimum)	Average Weekly	Maximum Daily *(Maximum)	Measurement Frequency	Sample Type
Flow	16 MGD	--- MGD				Continuous	Recorder
$CBOD_5$ (June 1 – October 31)	1,340	2,270	10 mg/L	15mg/L	17 mg/L	3/week	24-Hr. Comp.
BOD_5 (November 1 – May 31)	4,000	6,670	30 mg/L	45 mg/L	50 mg/L	3/Week	24-Hr. Comp.
BOD_5 - % Removal			85%			1/Month	Calculated
TSS (June 1 – October 31)	2,000	3,335	15 mg/L	20 mg/L	25 mg/L	3/Week	24-Hr. Comp.
(November 1 – May 31)	4,000	6,670	30 mg/L	45 mg/L	50 mg/L	3/Week	24-Hr. Comp.
TSS - % Removal			85%			1/Month	Calculated
Fecal Coliform			200 MPN[1] 100 mL	400 MPN[1] 100 mL	400 MPN[1] 100 mL	3/Week	Grab
Settleable Solids				--- ml/l	--- ml/l	1/Day	Grab
pH			(6.0 SU)		(9.0 SU)	2/Day	Grab
Total Residual Chlorine			56 µg/L[2]		97 µg/L[2]	Continuous	Recorder
Oil and Grease					--- mg/L	1/Month	Grab[3]

--- Signifies a parameter which must be monitored and data must be reported; no limit has been established at this time.

*Values in parentheses ( ) are to be reported as Minimum/Maximum for the reporting period rather than Average Monthly/Maximum Daily.

[1]The fecal coliform sample shall be taken at the same time as one of the TRC samples. The geometric mean shall be used to obtain the "weekly average" and the "monthly average."

[2]The use of a continuous TRC recorder after chlorination and prior to dechlorination is required to provide a record that proper disinfection was achieved at all times. Compliance with these limitations shall be determined by taking three (3) grab samples (one (1) each eight (8) hour shift). The three (3) samples will be averaged to obtain the daily value for use in determining the daily maximum and monthly average values. The following methods may be used to analyze the grab samples: (1) Low Level Amperometric Titration, Standard Methods (18th Edition) No. 4500-Cl E; (2) DPD Spectrophotometric, EPA No. 330.5 or Standard Methods (18th Edition) No. 4500-Cl G

[3]One (1) grab sample to be taken during each eight (8) hour shift for a single twenty-four (24) hour period. Each of the three (3) grab samples must be analyzed individually.

Testing for TSS, COD and BOD shall be performed and reported on influent and effluent with appropriate allowances for hydraulic detention (flow-through) time.

Sampling for BOD, COD, TSS, and Fecal Coliform shall be performed Tuesday, Thursday and Sunday. Sampling for Settleable Solids, pH, and Total Residual Chlorine shall be performed Sunday - Saturday.

All samples taken in compliance with the monitoring requirements specified above shall be taken at the following locations: Outfall 001A (final treated discharge after disinfection)

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

2. During the period beginning effective date and lasting through expiration, the permittee is authorized to discharge from outfall serial number 001A (final treated discharge after disinfection). Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations					Monitoring Requirement	
	Quantity - lbs./day		Concentration - specify units				
	Average Monthly	Maximum Daily	Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type
Phosphorus, Total as P							
(Apr 1 – Oct 31)			0.1 mg/L		--- mg/L	3/Week	24-Hr. Comp.
(Nov 1 – Mar 31)			1.0 mg/L		--- mg/L	3/Week	24-Hr. Comp.
Orthophosphorus (Nov 1 – Mar 31)			--- mg/L		--- mg/L	3/Week	24-Hr. Comp.
Ammonia, Total as N							
(June 1-October 31)			2.0 mg/L		49.4 mg/L	3/Week	24-Hr. Comp.
(November 1-April 30)			15 mg/L		53.8 mg/L	1/Week	24-Hr. Comp.
(May1-31)			12 mg/L		53.8 mg/L	1/Week	24-Hr. Comp.
Nitrate, Total as N							
(Apr 1 – Oct 31)			--- mg/L		--- mg/L	3/Week	24-Hr. Comp.
(Nov 1 – Mar 31)			--- mg/L		--- mg/L	1/Month	24-Hr. Comp.
Nitrite, Total as N							
(Apr 1 – Oct 31)			--- mg/L		--- mg/L	3/Week	24-Hr. Comp.
(Nov 1 – Mar 31)			--- mg/L		--- mg/L	1/Month	24-Hr. Comp.
TKN, Total as N							
(Apr 1 – Oct 31)			--- mg/L		--- mg/L	3/Week	24-Hr. Comp.
(Nov 1 – Mar 31)			--- mg/L		--- mg/L	1/Month	24-Hr. Comp.
Total Nitrogen [TKN+ Nitrite+Nitrate]							
(April)	--- lb/d		10 mg/L		--- mg/L	3/Week	24-Hr. Comp.
(May 1 – Oct 31)	400 lb/d		3.0 mg/L		--- mg/L	3/Week	24-Hr. Comp.
(Nov 1 – Mar 31)[1]	--- lb/d		--- mg/L		--- mg/L	1/Month	24-Hr. Comp.

[1] The permittee shall operate the treatment facility to reduce the discharge of total nitrogen, during the months of November through March, to the maximum extent possible using all available treatment equipment in place at the facility, except methanol addition.

--- signifies a parameter that must be monitored and data must be reported; no limit has been established at this time.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following locations: Outfall 001A (final treated discharge after disinfection)

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

3. During the period beginning effective date and lasting through expiration, the permittee is authorized to discharge from outfall serial number 001A (final treated discharge after disinfection). Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations					Monitoring Requirement	
	Quantity - lbs./day		Concentration - specify units				
	Average Monthly	Maximum Daily	Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type
Cadmium, Total[1]			0.66 µg/L		4.32 µg/L	2/Week	24 Hr. Comp.
Copper, Total[1]			21.1 µg/L		29.8 µg/L	2/Week	24 Hr. Comp.
Cyanide, Total[1]			21.3 µg/L		90 µg/L	2/Week	Composite[2]
Lead, Total[1]			5.4 µg/L		138 µg/L	2/Week	24 Hr. Comp.
Zinc, Total[1]			272 µg/L		272 µg/L	2/Week	24 Hr. Comp.

[1]Influent and Effluent shall be sampled for the above parameters twice per week. Sampling of Influent and Effluent shall be done to account for detention through the plant.

[2]This composite shall consist of one (1) grab sample to be taken during each eight (8) hour shift, over a twenty-four (24) hour period (total of three (3) grabs), and preserved. All three (3) samples shall be composited, then analyzed.

--- Signifies a parameter that must be monitored and data must be reported; no limit has been established at this time.

Samples taken in compliance with the monitoring requirements specified above shall be taken Thursday and Sunday at the following locations: Outfall 001A (final treated discharge after disinfection)

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

4. During the period beginning effective date and lasting through expiration, the permittee is authorized to discharge from outfall serial number 001A (final treated discharge after disinfection). Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations					Monitoring Requirement	
	Quantity - lbs./day		Concentration - specify units				
	Average Monthly	Maximum Daily	Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type
Ceriodaphnia sp.							
LC_{50}[1]					100% or Greater[2]	1/Quarter	24-Hr. Comp.
C-NOEC[3]					20% or Greater[4]	1/Quarter	24-Hr. Comp.

[1]LC_{50} is defined as the concentration of wastewater that causes mortality to 50% of the test organisms.

[2]The limit of 100% or greater is defined as a sample that is composed of 100% effluent.

[3]Chronic - No Observed Effects Concentration (C-NOEC) is the concentration of toxicant or effluent to which organisms are exposed in a life-cycle or partial life-cycle which causes no adverse effect on growth, survival or reproduction (see Section I.B.).

[4]The limit of 20% or greater is defined as a sample that is composed of 20% effluent.

--- signifies a parameter that must be monitored and data must be reported; no limit has been established at this time.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following locations: at Outfall 001A (final treated discharge after disinfection) in accordance with Part I.B. of the permit.

5. a. The pH of the effluent shall not be less than 6.0 nor greater than 9.0 standard units at any time, unless these values are exceeded due to natural causes or as a result of the approved treatment processes.

b. The discharge shall not cause visible discoloration of the receiving waters.

c. The effluent shall contain neither a visible oil sheen, foam, nor floating solids at any time.

d. The permittee's treatment facility (outfall 001A) shall maintain a minimum of 85 percent removal of total suspended solids and biochemical oxygen demand. The percent removal shall be based on monthly average values.

e. The permittee shall analyze its effluent from outfall 001A annually for the EPA Priority Pollutants as listed in 40 CFR 122, Appendix D, Tables II and III. The results of these analyses shall be submitted to the Department of Environmental Management by January 15th for the previous calendar year. All sampling and analysis shall be done in accordance with EPA Regulations, including 40 CFR, Part 136; grab and composite samples shall be taken as appropriate.

f. When the effluent discharged for a period of ninety (90) consecutive days exceeds 80 percent of the designed flow, the permittee shall submit to the permitting authorities a projection of loadings up to the time when the design capacity of the treatment facility will be reached, and a program for maintaining satisfactory treatment levels consistent with approved water quality management plans.

g. This permit serves as the State's Water Quality Certificate for the discharge described herein.

B. BIOMONITORING REQUIREMENTS AND INTERPRETATION OF RESULTS

1. General

Beginning on the effective date of the permit, the permittee shall perform four (4) chronic and four (4) acute toxicity tests per year on samples collected from discharge outfall 001A. The permittee shall conduct the tests during dry weather periods (no rain 48 hours prior to or during sampling unless approved by DEM) according to the following test frequency and protocol. Chronic and acute toxicity data shall be reported as outlined in Section 8. Chronic toxicity data shall be collected from the Ceriodaphnia tests. The chronic daphnid tests shall also be used to calculate the acute LC_{50} at the 48-hour exposure interval. Test results will be interpreted by the State. The State may require additional screening, range finding, definitive acute or chronic bioassays as deemed necessary based on the results of the initial bioassays required herein. Indications of toxicity could result in requiring a Toxicity Reduction Evaluation (TRE) to investigate the causes and to identify corrective actions necessary to eliminate or reduce toxicity to an acceptable level.

2. Test Frequency

On four (4) sampling events (one (1) each calendar quarter) the permittee will conduct toxicity tests on the specie listed below.

Species	Test Type	Frequency
Daphnid Ceriodaphnia sp.	Reproduction/Survival (Chronic static renewal - report chronic results and acute results 48 hours into test).	Quarterly

3. Methods

Chronic toxicity tests shall be conducted in accordance with protocols listed in the latest edition of Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms (EPA/600/4-89/001), incorporating any deviations from protocol listed herein, or additional methods if approved by the Director of DEM. Acute definitive toxicity tests shall be conducted in accordance with protocols listed in the EPA document: Cornelius I. Weber et al, 1991, Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms, 4th Edition EPA/600/4-90/027, incorporating any deviations from protocol listed herein, or additional methods if approved by the Director of DEM.

4. Sample Collection

For each sampling event a 24-hour flow proportioned composite, effluent sample shall be collected at a location just prior to chlorination and during a dry weather period (no rain 48 hours prior to or during sampling unless approved by DEM). Upon implementation of a disinfection process capable of meeting the total residual chlorine limits found on Page 3, the sampling location shall be moved to a point downstream from the disinfection process.

For the chronic toxicity tests, a sampling event shall consist of three (3) 24-hour composite samples collected over the seven (7) day test-period. The effluent samples shall be collected on Days 0, 3, and 5 of the seven (7) day exposure period. The first sample is used for test initiation, Day 1, and for test solution renewal on Day 2. The second sample would be used for test solution renewal on Days 3 and 4. The third sample would be used for test solution renewal on Days 5, 6, and 7.

To eliminate the problem of potential rainfall interference during the five (5) day sampling period for the chronic tests, DEM suggests collecting enough sample on Day 0 to properly store and use one-third (1/3) on both Days 3 and 5 if rain has occurred since Day 0. In addition, if no rainfall has occurred since Day 3, enough sample should also be collected on Day 3 to use for Day 5 if necessary.

In the laboratory, the initial sample (Day 0) will be split into two (2) subsamples, after thorough mixing, for the following:

A: Chemical Analysis
B: Acute and Chronic Toxicity Testing

Days 3 and 5 samples will be held until test completion. If either the Day 3 or 5 renewal sample causes lethality to 50 percent (50%) or more test organisms in any of the dilutions for the chronic tests, then a chemical analysis shall be performed on the appropriate sample(s) as well. All samples held overnight shall be refrigerated at 4°C.

5. Dilution Water

Dilution water used for freshwater toxicity analyses should be of sufficient quality to meet minimum acceptability of test results (see Sections 6 and 7). For the chronic and acute tests, natural freshwater shall be used as the dilution water. This water shall be collected from the Pawtucket Reservoir. If this natural freshwater diluent is found to be, or suspected to be toxic or unreliable during the preliminary screening for the toxicity tests, an alternate or laboratory source of water of known quality with a hardness and pH similar to that of the receiving water may be substituted AFTER RECEIVING APPROVAL FROM DEM.

6. Effluent Toxicity Test Conditions for the Daphnid (*Ceriodaphnia sp.*) Survival and Reproduction Test[1]

a.	Test Type	Static Renewal
b.	Temperature	25 ± 1°C
c.	Light Quality	Ambient Laboratory Illumination
d.	Photoperiod	16-Hour Light, 8-Hour Dark
e.	Test Chamber Size	30 ml
f.	Test Solution Volume	15 ml
g.	Renewal of Test Solutions	Daily, using most recently collected sample.
h.	Age of Test Organisms	Less than 24 hours and all released within an 8-hour period of each other.
i.	Number of Neonates Per Test Chamber	1
j.	Number of Replicate Test Chambers Per Treatment	10
k.	Number of Neonates Per Test Concentration	10
l.	Feeding Regime	Feed 0.1 ml each of YTC and algal suspension per exposure chamber daily.
m.	Aeration	None
n.	Dilution Water	Pawtucket Reservoir water, see Section 5.
o.	Effluent Concentrations	Five (5) effluent concentrations and a control: 100%, 50%, 25%, 12.5%, 6.25%, & 0%.
p.	Test Duration	Until 60% of control females have three (3) broods (may require seven (7) days).

q.	End Points	Survival and Reproduction
r.	Test Acceptability	80% or greater survival and an average of 15 or more young per female in the control solutions. At least 60% of surviving females in controls should have produced third brood.
s.	Sampling Requirements	For off-site tests, a minimum of three (3) samples are collected (i.e., Days 0, 3, & 5) and used for renewal (see Section 4). Off-site test samples must be first used within 48 hours of collection.
t.	Sample Volume Required	Minimum two (2) liters/day.

[1]Adapted from EPA/600/4-89/001

7. Chemical Analysis

The following chemical analysis shall be performed for every one-specie or two species sampling event.

Parameter	Effluent	Diluent	Minimum Detection Limit (mg/l)
Hardness[1]	X	X	0.5
Alkalinity	X	X	2.0
pH	X	X	---
Specific Conductance	X	X	---
Total Solids and Suspended Solids	X	X	---
Ammonia	X	X	0.1
Total Organic Carbon	X		0.5
Cyanide	X		0.010

[1]Method 314A (Hardness by Calculation) from APHA (1985) Standard Methods for the Examination of Water and Wastewater, 16th Edition.

During the first, second, and fourth calendar quarter bioassay sampling events, the following chemical analyses shall be performed:

Total Metals	Effluent	Diluent	Minimum Detection Limit (ug/l)
Cadmium	X		0.1
Chromium, Hexavalent	X		50.0
Copper	X	X	1.0
Lead	X	X	1.0
Nickel	X		1.0
Silver	X		0.2
Zinc	X		0.3

The above metal analyses may be used to fulfill, in part or in whole, monitoring requirements in the permit for these specific metals.

During the third calendar quarter bioassay sampling event a final effluent sample, collected during the same 24-hour period as the bioassay sample, shall be analyzed for priority pollutants (as listed in Tables II and III of Appendix D of 40 CFR 122). The bioassay priority pollutant scan shall be a full scan and may be coordinated with the User Fee Program and/or other permit conditions to fulfill any priority pollutant scan requirements.

In addition, the following chemical analyses shall be performed for the chronic toxicity tests as part of each daily renewal procedure on each dilution and the controls.

Parameter	Beginning of 24-Hour Exposure Period	End of 24-Hour Exposure Period
Dissolved Oxygen	X	X
Temperature	X	
pH	X	
Specific Conductance	X	
Alkalinity	X	
Hardness	X	

[1]These are performed on the 100% effluent and control samples only.

8. Toxicity Test Report Elements

A report of results will include the following:

- Description of sample collection procedures and site description.
- Names of individuals collecting and transporting samples, times, and dates of sample collection and analyses.
- General description of tests: age of test organisms, origin, dates and results of standard toxicant tests (quality assurance); light and temperature regime; dilution water description; other information on test conditions if different than procedures recommended.
- Raw data and laboratory sheets.
- Any other observations or test conditions affecting test outcome.
- Results of required chemical and physical analyses.

Toxicity test data shall include the following:

Chronic

- Daily survival of test organisms in the controls and all replicates in each dilution. Survival data should be analyzed by Fisher's Exact Test prior to analysis of reproduction data.
- Young per female for all replicates in each dilution for Ceriodahnia.
- Dissolved oxygen, pH, specific conductance, and temperature for each dilution.
- Results of Dunnett's Procedure and/or other EPA recommended or approved methods for analyzing the data.
- C-NOEC = Chronic No Observed Effect Concentration
- LOEC = Lowest Observed Effect Concentration
- MATC = Maximum Allowable Toxicant Concentration

Acute

- (For the acute daphnid results, these data points are to be obtained 48 hours into the chronic test)
- Survival for each concentration and replication at time 24, and 48 hours.
- Dissolved oxygen, pH, specific conductance for each concentration.
- LC_{50} and 95% confidence limits using one of the following methods in order of preference; Probit, Trimmed Spearman Karber, Moving Average Angle, or Graphical method; printout or copy of these calculations.

The Probit, Trimmed Spearman Karber, and Moving Average Angle methods of analyses can only be used when mortality of some of the test organisms are observed in at least two (2) of the (% effluent) concentrations tested (i.e., partial mortality). If a test results in a 100% survival and 100% mortality in adjacent treatments ("all or nothing" effect), a LC_{50} may be estimated using the graphical method.

9. Reporting of Bioassay Testing

Bioassay testing shall be reported as follows:

Quarter Testing to be Performed:	Report Due no later than:	Results Submitted on DMR for:
January 1 -March 31	April 15	March
April 1 - June 30	July 15	June
July 1 - September 30	October 15	September
October 1 - December 31	January 15	December

Bioassay testing following the protocol described herein shall commence during the 4th quarter (October 1 – December 31) of 2008, and the first report shall be submitted to DEM no later than January 15, 2009.

A signed copy of these, and all other reports required herein, shall be submitted to:

RIPDES Program
Office of Water Resources
Rhode Island Department of Environmental Management
235 Promenade Street
Providence, Rhode Island 02908-5767

C. INDUSTRIAL PRETREATMENT PROGRAM

1. Definitions

For the purpose of this permit, the following definitions apply.

a. 40 CFR 403 and sections thereof refer to the General Pretreatment regulations, 40 CFR Part 403 as revised.

b. Categorical Pretreatment Standards mean any regulation containing pollutant discharge limits promulgated by the USEPA in accordance with section 307(b) and (c) of the Clean Water Act (33 USC 1251), as amended, which apply to a specific category of industrial users and which appears in 40 CFR Chapter 1, subchapter N.

c. Pretreatment Standards include all specific prohibitions and prohibitive discharge limits established pursuant to 40 CFR 403.5, including but not limited to, local limits, and the Categorical Pretreatment Standards.

d. Regulated Pollutants shall include those pollutants contained in applicable categorical standards and any other pollutants listed in the Pretreatment Standards, which have reasonable potential to be present in an industrial users effluent.

2. Implementation

The authority and procedures of the Industrial Pretreatment Program shall at all times be fully and effectively exercised and implemented, in compliance with the requirements of this permit and in accordance with the legal authorities, policies, procedures and financial provisions described in the permittee's approved Pretreatment Program and Sewer Use Ordinance, the Rhode Island Pretreatment Regulations and the General Pretreatment Regulations 40 CFR 403. The permittee shall maintain adequate resource levels to accomplish the objectives of the Pretreatment Program.

3. Local Limits

Pollutants introduced into POTWs by a non-domestic source (user) shall not: pass through the POTW, interfere with the operation or performance of the works, contaminate sludge as to adversely effect disposal options, or adversely effect worker safety and health.

a. Within ninety (90) days of the effective date of the permit, the permittee shall submit to the DEM a workplan for the evaluation of the local discharge limitations for non-domestic users. The workplan must provide a description of the analysis to be performed, a brief summary of existing data which will be used in the evaluation, and a description of additional sampling and analysis to be performed during the evaluation. The DEM will review the workplan and provide written comment. Should the DEM determine that a deficiency exists in the proposed workplan, the permittee shall submit a revised workplan within thirty (30) days of the receipt of said notice.

b. Within six (6) months of DEM acceptance of the workplan described in Part I.C.3.a above, the permittee shall submit to the DEM a technically-based local limits evaluation in accordance with procedures set forth in the July, 2004 EPA Local Limits Guidance Manual, and the approved workplan specified in Part I.C.3.a of this permit. All supporting data must be submitted with the evaluation. Within sixty (60) days of the receipt of preliminary approval of the proposed local limits (unless a longer timeframe is specified therein), the permittee shall submit to the DEM a request for a pretreatment program modification in accordance with 40 CFR 403.18 and Part C.5.e of this permit. Upon final approval by the DEM and adoption by the permittee, these standards shall be deemed Pretreatment Standards for the purposes of Section 307(d) of the Clean Water Act.

c. Within thirty (30) days of final approval, the permittee shall adopt the revised local limits and reissue or modify all applicable industrial user permits to contain the modified effluent limits.

d. At the time of renewal of this permit and in accordance with 40 CFR 122.21(j)(4) as revised July 24, 1990, the permittee shall submit to the DEM with its permit renewal application a written technical evaluation of the need to revise local limits. The evaluation shall be based, at a minimum, on information obtained during the implementation of the permittee's local limits workplan and procedures required by Part I.C.3.a of this permit and current RIPDES permit discharge limits, sludge disposal criteria, secondary treatment inhibition, and worker health and safety criteria.

4. Enforcement Response Plan (ERP)

The permittee has an approved ERP that meets the requirements of 40 CFR 403.8(f)(5). The permittee shall continue to implement its approved ERP at all times.

5. General

a. The permittee shall carry out inspection, surveillance, and monitoring procedures, which will determine, independent of information supplied by the industrial user, whether the industrial user is in compliance with Pretreatment Standards. At a minimum, all significant industrial users shall be inspected and monitored for all regulated pollutants at the frequency established in the approved Industrial Pretreatment Program but in no case less than once per year (one (1) year being determined as the reporting year established in Part I.C.7 of this permit). In addition, these inspections, monitoring and surveillance activities must be conducted in accordance with EPA's Industrial User Inspection and Sampling Manual for POTW's, April 1994. All inspections, monitoring, and surveillance activities shall be performed, and have records maintained, with sufficient care to produce evidence admissible in enforcement proceedings or judicial actions. The permittee shall evaluate, at least every two years, whether each SIU requires a slug control plan. If a slug control plan is required, it must include, at a minimum, those elements contained in 40 CFR 403.8(f)(2)(v).

b. The permittee shall reissue all necessary Industrial User (IU) control mechanisms within thirty (30) days of their expiration date. The permittee shall issue, within sixty (60) days after the determination that an IU is a Significant Industrial User (SIU), all SIU control mechanisms. All SIU control mechanisms must contain, at a minimum, those conditions stated in 40 CFR 403.8(f)(1)(iii). All control mechanisms must be mailed via Certified Mail, Return Receipt Requested. A complete bound copy of the control mechanism with the appropriate receipt must be kept as part of the Industrial User's permanent file. In addition, the permittee must develop a fact sheet describing the basis for the SIU's permit and retain this fact sheet as part of the SIU's permanent file.

c. The permittee must identify each instance of noncompliance with any pretreatment standard and/or requirement and take a formal documented action for each instance of noncompliance. Copies of all such documentation must be maintained in the Industrial User's permanent file.

d. The permittee shall prohibit Industrial Users from the dilution of a discharge as a substitute for adequate treatment in accordance with 40 CFR 403.6(d).

e. The permittee shall comply with the procedures of 40 CFR 403.18 for instituting any modifications of the permittee's approved Pretreatment Program. Significant changes in the operation of a POTW's Approved Pretreatment Program must be submitted and approved following the procedures outlined in 40 CFR 403.18(b) and 403.9(b). However, the endorsement of local officials responsible for supervising and/or funding the pretreatment program required by 403.9(b)(2) will not be required until DEM completes a preliminary review of the submission. The DEM will evaluate and review the permittee's initial proposal for a modification and provide written notification either granting preliminary approval of the proposed modifications or stating the deficiencies contained therein. DEM's written notification will also include a determination whether the submission constitutes a substantial or non-substantial program modification as defined by 40 CFR 403.18. Should DEM determine that a deficiency exists in the proposed modification, the permittee shall submit to DEM, within thirty (30) days of the receipt of said notice, a revised submission consistent with DEM's notice of deficiency.

Pretreatment program modifications, which the permittee considers Non-substantial, shall be deemed to be approved within (90) days after submission of the request for modification, unless DEM determines that the modification is in fact a substantial

modification or notifies the permittee of deficiencies. Upon receipt of notification that DEM has determined the modification is substantial, the permittee shall initiate the procedures and comply with the deadlines for substantial modifications, which are outlined below.

For substantial modifications, the permittee shall, within sixty (60) days (unless a longer time frame is granted) of the receipt of DEM's preliminary approval of the proposed modification, submit a statement (as required by 403.9(b)(2)) that any local public notification/participation procedures required by local law have been completed and upon approval by DEM, the local officials will endorse and/or approve the modification.

Within thirty (30) days of DEM's final approval of the proposed modification(s), the permittee shall implement the modification. Upon final approval by the DEM and adoption by the permittee, this modification(s) shall become part of the approved pretreatment program and shall be incorporated into this permit in accordance with 40CFR 122.63(g).

f. All sampling and analysis required of the permittee, or by the permittee of any Industrial User, must be performed in accordance with the techniques described in 40 CFR 136.

g. For those Industrial Users with discharges that are not subject to Categorical Pretreatment Standards, the permittee shall require appropriate reporting in accordance with 40 CFR 403.12(h).

h. The permittee shall, in accordance with 40 CFR 403.12(f), require all Industrial Users to immediately notify the permittee of all discharges by the Industrial User that could cause problems to the POTW, including slug loadings, as defined by 40 CFR 403.5(b).

i. The permittee shall require all Industrial Users to notify the permittee of substantial changes in discharge as specified in 40 CFR 403.12(j).

j. The permittee shall require New Sources to install and have in operation all pollution control equipment required to meet applicable Pretreatment Standards before beginning to discharge. In addition, the permittee shall require New Sources to meet all applicable Pretreatment Standards within the shortest feasible time which shall not exceed ninety (90) days in accordance with 40 CFR 403.6(b).

k. The permittee shall require all Industrial Users who are required to sample their effluent and report the results of analysis to the POTW to comply with signatory requirements contained in 40 CFR 403.12(l) when submitting such reports.

l. The permittee shall determine, based on the criteria set forth in 40 CFR 403.8(f)(2)(vii), using the EPA method of "rolling quarters", the compliance status of each Industrial User. Any Industrial User determined to meet Significant Non-Compliance (SNC) criteria shall be included in an annual public notification as specified in 40 CFR 403.8(f)(2)(vii).

m. The permittee shall require Industrial Users to comply with the notification and certification requirements of 40 CFR 403.12(p)(1), (3) and (4) pertaining to the discharge of substances to the POTW, which if disposed of otherwise, would be a hazardous waste under 40 CFR Part 261.

n. The permittee shall continue to designate, as SIUs, those Industrial Users (IUs) that meet the definition contained in the permittee's sewer use ordinance. The permittee shall notify each newly designated SIU of its classification as an SIU within thirty (30) days of

identification and shall inform the SIU of the requirements of an SIU contained in 40 CFR 403.12.

6. Categorical Industrial Users (CIUs)

a. The permittee shall require Industrial Users to comply with applicable Categorical Pretreatment Standards in addition to all applicable Pretreatment Standards and Requirements. The permittee shall require of all Categorical Industrial Users (CIUs), all reports on compliance with applicable Categorical Pretreatment Standards and Categorical Pretreatment Standard deadlines as specified in and in accordance with Sections (b), (d), (e) and (g) of 40 CFR 403.12. In addition, the permittee shall require Categorical Industrial Users to comply with the report signatory requirements contained in 40 CFR 403.12(1) when submitting such reports.

b. If the permittee applies the Combined Wastestream Formula (CWF) to develop fixed alternative discharge limits of Categorical Pretreatment Standards, the application of the CWF and the enforcement of the resulting limits must comply with 40 CFR 403.6(e). The permittee must document all calculations within the control mechanism fact sheet and the resulting limits within the CIU's control mechanism. The permittee must ensure that the most stringent limit is applied to the CIU's effluent at end-of-pipe based upon a comparison of the resulting CWF limits and the permittee's local limits.

c. If the permittee has or obtains the authority to apply and enforce equivalent mass-per-day and/or concentration limitations of production-based Categorical Pretreatment Standards, then the permittee shall calculate and enforce the limits in accordance with 40 CFR 403.6(c). The permittee must document all calculations within the control mechanism fact sheet and the resulting limits within the CIU's control mechanism.

7. Annual Report

The annual report for the permittee's program shall contain information pertaining to the reporting year, which shall extend from July 1st through June 30th, and shall be submitted to the DEM by August 15th. Each item below must be addressed separately and any items, which are not applicable, must be so indicated. If any item is deemed not applicable a brief explanation must be provided. The annual report shall include the following information pertaining to the reporting year:

a. A listing of Industrial Users which complies with requirements stated in 40 CFR 403.12(i)(1). The list shall identify all Categorical Industrial Users, Significant Industrial Users and any other categories of users established by the permittee;

b. A summary list, including dates, of any notifications received by the permittee of any substantial change in the volume or character of pollutants being introduced into the POTW by new or existing IUs. If applicable, an evaluation of the quality and quantity of influent introduced into the POTW and any anticipated impact due to the changed discharge on the quantity or quality of effluent to be discharged from the POTW shall be included;

c. A summary list of the Compliance status of each Industrial User (IU), as of the end of last quarter covered by the annual report. The list shall identify all IUs in non-compliance, the pretreatment program requirement, which the IU failed to meet, and the type, and date of the enforcement action initiated by the permittee in response to the violation. If

applicable, the list shall also contain the date, which IUs in non-compliance returned to compliance, a description of corrective actions ordered, and the penalties levied.

d. A list of industries which were determined, in accordance with Part I.C.5.I of this permit, to be in significant non-compliance required to be published in a local newspaper and a copy of an affidavit of publication, from the newspaper, averring that the names of these violators has been published;

e. A summary list of inspection and monitoring activity performed by the permittee, including;

- significant industrial users inspected by the POTW (include inspection dates for each industrial user);
- significant industrial user sampled by the POTW (include sampling dates and dates of analysis, for each industrial user);

f. A summary list of permit issuance/reissuance activities including the name of the industrial user, expiration date of previous permit, issuance date of new permit, and a brief description of any changes to the permit;

g. A list including the report/notification type, due date, and receipt date for each report/notification required by 40 CFR 403.12.

h. A summary of public participation efforts including meetings and workshops held with the public and/or industry and notices/newsletters/bulletins published and/or distributed;

i. A program evaluation in terms of program effectiveness, local limits application and resources which addresses but is not limited to:

- A description of actions being taken to reduce the incidence of SNC by Industrial Users;
- effectiveness of enforcement response program;
- sufficiency of funding and staffing;
- sufficiency of the SUO, Rules and Regulations, and/or statutory authority;

j. An evaluation of recent/proposed program modifications, both substantial and non-substantial, in terms of the modification type, implementation and actual/ expected effect (note proposed modifications must be submitted under separate cover along with the information required by 40 CFR 403.18);

k. A detailed description of all interference and pass-through that occurred during the past year and, if applicable;

- A thorough description of all investigations into interference and pass-through during the past year;

- A description of the monitoring, sewer inspections and evaluations which were done during the past year to detect interference and pass-through, specifying pollutants analyzed and frequencies;

l. A summary of the average, maximum, and minimum concentration, and number of data points used for pollutant analytical results for influent, effluent, sludge and any toxicity or bioassay data from the wastewater treatment facility. The summary shall include a comparison of influent sampling results versus the maximum allowable headworks loadings contained in the approved local limits evaluation and effluent sampling results versus water quality standards. Such a comparison shall be based on the analytical results required in Parts I.A and I.C. of this permit and any additional sampling data available to the permittee; and

m. A completed pretreatment annual report summary (PARS) form (Attachment A-1 contains a copy of the PARS form, this form MUST be used).

8. Interjurisdictional Agreements

Within sixty (60) days of the effective date of the permit, the permittee shall submit to the DEM, an attorney's statement which contains an evaluation, by the City Solicitor or a public official acting in a comparable capacity, of the interjurisdictional agreements between the City of Woonsocket and the Towns of North Smithfield, RI, Bellingham, MA and Blackstone, MA. The analyses shall evaluate the adequacy of the agreements in terms of, but not limited to, legal authority provided for: the consistency of the Woonsocket Sewer Use Ordinance and adopted local limits with respect to those of the contributing jurisdictions; enforcement actions by Woonsocket for violations of the Woonsocket Pretreatment Program in the contributing jurisdictions; permitting, inspecting, and sampling of Industrial Users located in each contributing jurisdiction; Woonsocket's right to enter facilities located in the contributing jurisdictions; Woonsocket's authority to access all records compiled by each contributing jurisdiction in relation to pretreatment program activities; and remedies for breach of contract. In addition, the statement must evaluate the present status of the implementation of the agreement by the contributing jurisdictions.

If any interjurisdictional agreement is determined deficient, the statement shall contain a proposed agreement that provides adequate legal authority. A proposed compliance schedule for the contributing jurisdiction(s) shall also be submitted with the statement for implementing requirements of the agreement with Woonsocket that have yet to be fulfilled. Upon approval of the DEM, the proposed agreement and compliance schedule shall be adopted within 180 days.

9. Sewer Use Ordinance

The permittee has an approved Sewer Use Ordinance, which shall continue to be implemented at all times.

D. SLUDGE

The permittee shall conform and adhere to all conditions, practices and regulations as contained in the State of Rhode Island Rules and Regulations pertaining to the Disposal Utilization and Transportation of Wastewater Treatment Facility Sludge.

E. DETECTION LIMITS

The permittee shall assure that all wastewater testing required by this permit, is performed in conformance with the method detection limits below (the EPA method is noted for reference, other EPA approved methods found in 40 CFR Part 136 may be utilized). All sludge testing required by this permit shall be in conformance with the method detection limits found in 40 CFR 503.8. In accordance with 40 CFR Part 136, EPA approved analysis techniques, quality

assurance procedures and quality control procedures shall be followed for all reports required to be submitted under the RIPDES program. These procedures are described in "Methods for the Determination of Metals in Environmental Samples" (EPA/600/4-91/010) and "Methods for Chemical Analysis of Water and Wastes" (EPA/600/4-79/020).

The report entitled "Methods for the Determination of Metals in Environmental Samples" includes a test, which must be performed in order to determine if matrix interferences are present, and a series of tests to enable reporting of sample results when interferences are identified. Each step of the series of tests becomes increasingly complex, concluding with the complete Method of Standard Additions analysis. The analysis need not continue once a result, which meets the applicable quality control requirements, has been obtained. Documentation of all steps conducted to identify and account for matrix interferences shall be submitted along with the monitoring reports.

If after conducting the complete Method of Standard Additions analysis, the laboratory is unable to determine a valid result, the laboratory shall report "could not be analyzed". Documentation supporting this claim shall be submitted along with the monitoring report. If valid analytical results are repeatedly unobtainable, DEM may require that the permittee determine a method detection limit (MDL) for their effluent or sludge as outlined in 40CFR Part 136, Appendix B.

Therefore, all sample results shall be reported as; an actual value, "could not be analyzed", less than the reagent water MDL, or less than an effluent or sludge specific MDL. The effluent or sludge specific MDL must be calculated using the methods outlined in 40CFR Part 136, Appendix B. Samples, which have been diluted to ensure that the sample concentration will be within the linear dynamic range, shall not be diluted to the extent that the analyte is not detected. If this should occur the analysis shall be repeated using a lower degree of dilution.

When calculating sample averages for reporting on discharge monitoring reports (DMRs):

1. "could not be analyzed" data shall be excluded, and shall not be considered as failure to comply with the permit sampling requirements;
2. results reported as less than the MDL shall be included as values equal to the MDL, and the average shall be reported as "less than" the calculated value.

For compliance purposes DEM will replace all data reported as less than the MDL with zeroes, provided that DEM determines that all appropriate EPA approved methods were followed. If the recalculated average exceeds the permit limitation it will be considered a violation.

To help verify the absence of matrix or chemical interference the analyst is required to complete specific quality control procedures. For the metals analyses listed above the analyst must withdraw from the sample two (2) equal aliquots; to one aliquot add a known amount of analyte, and then dilute both to the same volume and analyze. The unspiked aliquot multiplied by the dilution factor should be compared to the original. Agreement of the results within 10% indicates the absence of interference. Comparison of the actual signal from the spiked aliquot to the expected response from the analyte in an aqueous standard should help confirm the finding from the dilution analysis. (Methods for Chemical Analysis of Water and Wastes EPA-600/4-79/020).

For Methods 624 and 625 the laboratory must on an ongoing basis, spike at least 5% of the samples from each sample site being monitored. For laboratories analyzing 1 to 20 samples per month, at least one spiked sample per month is required. The spike should be at the discharge permit limit or 1 to 5 times higher than the background concentration determined in Section 8.3.2, whichever concentration would be larger. (40 CFR Part 136 Appendix B Method 624 and 625 subparts 8.3.1 and 8.3.11).

LIST OF TOXIC POLLUTANTS

The following list of toxic pollutants has been designated pursuant to Section 307(a)(1) of the Clean Water Act. The Method Detection Limits (MDLs) represent the required Rhode Island MDLs.

Volatiles - EPA Method 624		MDL ug/l (ppb)
1V	acrolein	10.0
2V	acrylonitrile	5.0
3V	benzene	1.0
5V	bromoform	1.0
6V	carbon tetrachloride	1.0
7V	chlorobenzene	1.0
8V	chlorodibromomethane	1.0
9V	chloroethane	5.0
10V	2-chloroethylvinyl ether	5.0
11V	chloroform	1.0
12V	dichlorobromomethane	1.0
14V	1,1-dichloroethane	1.0
15V	1,2-dichloroethane	1.0
16V	1,1-dichloroethylene	1.0
17V	1,2-dichloropropane	1.0
18V	1,3-dichloropropylene	1.0
19V	ethylbenzene	1.0
20V	methyl bromide	5.0
21V	methyl chloride	10.0
22V	methylene chloride	1.0
23V	1,1,2,2-tetrachloroethane	1.0
24V	tetrachloroethylene	1.0
25V	toluene	1.0
26V	1,2-trans-dichloroethylene	1.0
27V	1,1,1-trichloroethane	1.0
28V	1,1,2-trichloroethane	1.0
29V	trichloroethylene	1.0
31V	vinyl chloride	5.0

Acid Compounds - EPA Method 625		MDL ug/l (ppb)
1A	2-chlorophenol	1.0
2A	2,4-dichlorophenol	1.0
3A	2,4-dimethylphenol	1.0
4A	4,6-dinitro-o-cresol	5.0
5A	2,4-dinitrophenol	10.0
6A	2-nitrophenol	1.0
7A	4-nitrophenol	2.4[1]
8A	p-chloro-m-cresol	2.0
9A	pentachlorophenol	5.0
10A	phenol	1.0
11A	2,4,6-trichlorophenol	1.0

Pesticides - EPA Method 625		MDL ug/l (ppb)
1P	aldrin	0.059
2P	alpha-BHC	0.058
3P	beta-BHC	0.043
4P	gamma-BHC	0.048
5P	delta-BHC	0.034
6P	chlordane	0.211
7P	4,4'-DDT	0.251
8P	4,4'-DDE	0.049
9P	4,4'-DDD	0.139
10P	dieldrin	0.082
11P	alpha-endosulfan	0.031
12P	beta-endosulfan	0.036
13P	endosulfan sulfate	0.109
14P	endrin	0.050
15P	endrin aldehyde	0.062
16P	heptachlor	0.029
17P	heptachlor epoxide	0.040

Pesticides - EPA Method 625		MDL ug/l (ppb)
18P	PCB-1242	0.289
19P	PCB-1254	0.298
20P	PCB-1221	0.723
21P	PCB-1232	0.387
22P	PCB-1248	0.283
23P	PCB-1260	0.222
24P	PCB-1016	0.494
25P	toxaphene	1.670

Base/Neutral - EPA Method 625		MDL ug/l (ppb)
1B	acenaphthene *	1.0
2B	acenaphthylene *	1.0
3B	anthracene *	1.0
4B	benzidine	5.0
5B	benzo(a)anthracene *	1.0
6B	benzo(a)pyrene *	1.0
7B	3,4-benzofluoranthene *	1.0
8B	benzo(ghi)perylene *	4.1[2]
9B	benzo(k)fluoranthene *	1.0
10B	bis(2-chloroethoxy)methane	1.0
11B	bis(2-chloroethyl)ether	1.0
12B	bis(2-chloroisopropyl)ether	1.0
13B	bis(2-ethylhexyl)phthalate	1.0
14B	4-bromophenyl phenyl ether	1.0
15B	butylbenzyl phthalate	1.0
16B	2-chloronaphthalene	1.0
17B	4-chlorophenyl phenyl ether	1.0
18B	chrysene *	1.0
19B	dibenzo (a,h)anthracene *	2.5[2]
20B	1,2-dichlorobenzene	1.0
21B	1,3-dichlorobenzene	1.0
22B	1,4-dichlorobenzene	1.0
23B	3,3'-dichlorobenzidine	5.0
24B	diethyl phthalate	1.0
25B	dimethyl phthalate	1.0
26B	di-n-butyl phthalate	1.0
27B	2,4-dinitrotoluene	2.0
28B	2,6-dinitrotoluene	1.9[2]
29B	di-n-octyl phthalate	1.0
30B	1,2-diphenylhydrazine (as azobenzene)	1.0
31B	fluoranthene *	1.0
32B	fluorene *	1.0
33B	hexachlorobenzene	1.0
34B	hexachlorobutadiene	0.9[2]
35B	hexachlorocyclopentadiene	2.0
36B	hexachloroethane	1.0
37B	indeno(1,2,3-cd)pyrene *	3.7[2]
38B	isophorone	1.0
39B	naphthalene *	1.0
40B	nitrobenzene	1.0
41B	N-nitrosodimethylamine	1.0
42B	N-nitrosodi-n-propylamine	1.0
43B	N-nitrosodiphenylamine	1.0
44B	phenanthrene *	1.0
45B	pyrene *	1.0
46B	1,2,4-trichlorobenzene	1.0

OTHER TOXIC POLLUTANTS

	MDL ug/l (ppb)
Antimony, Total	3.0 - EPA Method 204.2[3]
Arsenic, Total	1.0 - EPA Method 206.2[3]
Beryllium, Total	0.2 - EPA Method 210.2
Cadmium, Total	0.1 - EPA Method 213.2[3]
Chromium, Total	1.0 - EPA Method 218.2[3]
Chromium, Hexavalent	50.0 - Standard Methods 16th Ed., 312.B
Copper, Total	1.0 - EPA Method 220.2[3]
Lead, Total	1.0 - EPA Method 239.2
Mercury, Total	0.2 - EPA Method 245.1
Nickel, Total	1.0 - EPA Method 249.2[3]
Selenium, Total	2.0 - EPA Method 270.2[3]
Silver, Total	0.5 - EPA Method 272.2[3]
Thallium, Total	1.0 - EPA Method 279.2[3]
Zinc, Total	5.0 - EPA Method 200.9[3]
Asbestos***	**
Cyanide, Total	10.0 - EPA Method 335.3
Phenols, Total	50.0 - EPA Method 420.2
TCDD	**
MTBE (Methyl Tert Butyl Ether)	1.0 - EPA Method 524.2

* Polynuclear Aromatic Hydrocarbons.
** No Rhode Island Department of Environmental Management (DEM) MDL.
*** Not a toxic pollutant as designated in Section 307(a)(1) of the Clean Water Act.

NOTE:

All MDLs have been established in accordance with the definition of "Detection Limits" in the DEM Water Quality Regulations for Water Pollution Control. Unless otherwise noted the MDLs have been determined in reagent water by the Rhode Island Department of Health, Division of Laboratories. The MDL for a given analyte may vary with the type of sample. MDLs, which are determined in reagent water, may be lower than those determined in wastewater due to fewer matrix interferences. Wastewater is variable in composition and may therefore contain substances (interferents) that could affect MDLs for some analytes of interest. Variability in instrument performance can also lead to inconsistencies in determinations of MDLs.

[1]Method detection limits for Method 624 were determined by the US Environmental Protection Agency (USEPA) in reagent water; similar results were determined in representative wastewaters (40 CFR Part 136 Appendix A, Method 624).

[2]Method detection limits for Method 625 were determined by the USEPA in reagent water; actual results may vary based upon instrument sensitivity and matrix effects (40 CFR Part 136 Appendix A, Method 625).

[3]Method detection limits for these metals analyses were determined by the USEPA. They are not contrived values and should be obtainable with any satisfactory atomic absorption spectrophotometer. To insure valid data the analyst must analyze for matrix interference effects and if detected treat accordingly using either successive dilution matrix modification or method of Standard Additions (Methods for Chemical Analysis of Water and Wastes EPA-600/4-79/020).

F. MONITORING AND REPORTING

1. Reporting

Monitoring results obtained during the previous month shall be summarized and reported on Discharge Monitoring Report Form(s) postmarked no later than the 15th day of the month following the completed reporting period. A copy of the analytical laboratory report, specifying analytical methods used shall be included with each report submission. The first report is due on November 15, 2008.

Signed copies of these, and all other reports required herein, shall be submitted to:

RIPDES Program
Office of Water Resources
Rhode Island Department of Environmental Management
235 Promenade Street
Providence, Rhode Island 02908-5767

G. STANDARD CONDITIONS

1. Reopener Provision: In accordance with Rule 23 of the RIPDES Regulations, this permit may be reopened and modified (following proper administrative procedures) to include the appropriate effluent limitations (and compliance schedule, if necessary), or other appropriate requirements. The Department may determine that cause exists to reopen or modify the permit including but not limited to the following events:

   a. Water Quality Standards: The water quality standards of the receiving water(s) to which the permittee discharges are modified in such a manner as to require different effluent limits than those contained in this permit.

   b. Wasteload Allocation: A wasteload allocation is developed and approved by the State and/or EPA for incorporation in this permit.

   c. Water Quality Management Plan: A revision to the current water quality management plan is approved and adapted which calls for different effluent limitations than those contained in this permit.

2. Revocation and Reissuance: In accordance with Rule 23 of the Rhode Island Pollution Discharge Elimination System Regulations, when the Department receives any information, a determination may be made as to whether cause exists including but not limited to causes as provided under paragraphs (b) and (c) of Rule 23, for modification, or revocation and reissuance of the permits.

H. OPERATION AND MAINTENANCE OF THE SEWER SYSTEM

Operation and maintenance of the sewer system shall be in compliance with the General Requirements of Part II and the following terms and conditions:

1. Maintenance Staff

The permittee shall provide an adequate staff to carry out the operation, maintenance, repair, and testing functions required to ensure compliance with the terms and conditions of this permit.

2. Monthly Operating Reports (MORs)

Process control information obtained during the previous month shall be summarized and reported on a MOR postmarked no later than the 15th day of the month following the completed reporting period. The MOR shall include the information and follow the format described in DEM's letter dated March 9, 2000, unless DEM grants approval for modification thereof.

3. Infiltration/Inflow

The permittee shall minimize infiltration/inflow to the sewer system. A summary report of all actions taken to minimize infiltration/inflow during the previous two (2) calendar years shall be submitted to DEM, Office of Water Resources, by the 15th day of January of every other year. The first report is due January 15, 2010.

RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
235 PROMENADE STREET
PROVIDENCE, RHODE ISLAND 02908-5767

FACT SHEET

RHODE ISLAND POLLUTANT DISCHARGE ELIMINATION SYSTEM (RIPDES) PERMIT TO DISCHARGE TO WATERS OF THE STATE

RIPDES PERMIT NO. **RI0100111**

NAME AND ADDRESS OF APPLICANT:

City of Woonsocket
City Hall
169 Main Street
Woonsocket, RI 02895

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Woonsocket Regional Wastewater Commission
11 Cumberland Hill Road
Woonsocket, RI 02895

RECEIVING WATER: **Blackstone River**

CLASSIFICATION: **B1**

I. Proposed Action, Type of facility, and Discharge Location

The above named applicant has applied to the Rhode Island Department of Environmental Management (DEM) for the reissuance of its RIPDES Permit to discharge into the designated receiving water. The facility is engaged in the treatment of industrial and domestic wastewater.

II. Description of Discharge

A quantitative description of the discharge in terms of significant effluent parameters based upon DMR data from January 2001 through December 2005 is shown on Attachment A-2.

III. Permit Limitations and Conditions

The proposed effluent limitations and monitoring requirements may be found in the draft permit.

IV. Permit Basis and Explanation of Effluent Limitation Derivation

The City of Woonsocket (Woonsocket) operates a regional wastewater treatment facility on Cumberland Hill Road in Woonsocket. The discharge to the Blackstone River consists of treated domestic and industrial wastewater contributed by the City of Woonsocket and the Town's of North Smithfield, RI and Blackstone and Bellingham, MA. Treatment consists of: Coarse Screening, Communition, Aerated Grit Removal, Primary Settling, Biological Treatment w/ Nutrient Removal, Secondary Settling, Effluent Polishing Filters, Chlorination, and Dechlorination. Treated wastewater is discharged from Outfall 001A.

The requirements set forth in this permit are from the State's Water Quality Regulations and the State's Regulations for the Rhode Island Pollutant Discharge Elimination System, both filed pursuant to Chapter 46-12, as amended. DEM's primary authority over the permit comes from the Environmental Protection Agency's (EPA's) delegation of the program in September 1984 under the Federal Clean Water Act (CWA).

Development of RIPDES permit limitations is a multi-step process consisting of the following steps: calculating allowable water quality-based discharge levels based on instream criteria, background data and available dilution; identifying any technology-based limits that apply to the facility; assigning appropriate Best Professional Judgment (BPJ) limits; setting the most stringent of these limits (water quality-based, technology-based, and BPJ-based) as the final allowable discharge levels; comparing existing permit limits to the new allowable discharge levels; and evaluating the ability of the facility to meet the final permit effluent limits. A brief description of these steps is presented below. A more detailed presentation of the permit development may be found in the Woonsocket Wastewater Treatment Facility Permit Development Document. The City's first permit to contain water quality based limits was issued in 1994.

The "Average Monthly" and "Average Weekly" biochemical oxygen demand (BOD_5) and total suspended solids (TSS) limits for the winter months, November – May, the "Percent Removal" requirements for TSS and BOD_5, and the pH limitations are based upon the secondary treatment requirements of the CWA, as defined in 40 CFR 133.102 (a)-(c). The "Average Monthly" and "Average Weekly" total suspended solids (TSS) limits for the summer months, June - October, have been reduced from the secondary treatment requirements due to the increased removal that will be recognized through the operation of the additional equipment that is necessary to meet other permit limits. The Fecal coliform and "Maximum Daily" BOD_5 and TSS limits are based on Rhode Island requirements for Publicly Owned Treatment Works (POTWs) under Rule 17.04(b) of the RIPDES Regulations and as provided in 40 CFR 123.25.

The settleable solids limits have been set at monitor only since both DEM and EPA agree that the Total Suspended Solids are an appropriate measure of the solids content being discharged to the receiving waters and that settleable solids are a "process-control parameter" that can aid in assessment of the operation of the plant but need not be an effluent limit.

Oil and Grease monitoring requirements were assigned in the previous permit and have been maintained in this permit in order to serve as a process control parameter. Monitoring data will serve as an indicator of excessive levels of Oil and Grease which may result in blockages in the collection system and that are typically attributed to restaurants and other sources of Oil and Grease loading which discharge to the sewer collection system. The facility will be able to use this data to track and potentially initiate corrective action if necessary to prevent backups and blockages within the sewer collection system.

The Woonsocket sewer system previously served many textile industries, some of which treated their fabrics with a sizing chemical "PVA" that exerts a high COD load. In order to ensure that Woonsocket is properly regulating oxygen demanding wastes discharged to the treatment facility the Department had previously decided to require monitoring of COD in the facility's discharge. However, since the permit was previously issued, the largest textile industries have gone out of business and no longer have the potential to discharge. This is supported by a review of the effluent COD data, which shows average effluent COD values have decreased from a monthly average of approximately 120 mg/l to roughly 25 mg/l. Therefore, the DEM has eliminated the COD monitoring requirement from the permit.

For toxic pollutants, the effluent limitations as they appear in the draft permit were established on the basis of acute and chronic aquatic life and applicable human health criteria, from the Rhode Island Water Quality Regulations. Using an upstream river 7Q10 flow of 102 cfs (for aquatic life criteria), the mean harmonic flow of 357 cfs, (for human health criteria of carcinogens) and the 30Q5 flow of 134.4 cfs (for human health criteria of non-carcinogens); an allocation of 80% of the criteria; and the use of zero (0) for background upstream concentrations allowable water quality-based permit limits were calculated. Allocating 80% of the criteria for all pollutants present in Woonsocket's discharge is consistent with the Department's policy where instream data is not available or is inappropriate since it was influenced by upstream sources that were not properly regulated. For those metals criteria based on hardness, a semi-lognormal relationship was developed between flow and hardness from data collected at the Woonsocket US Geological Survey gauging station. Based on this relationship a hardness of 50 mg/l at the 7Q10 flow of 102 cfs was used to determine the appropriate metals criteria.

In accordance with 40 CFR Part 122.4(d)(1))(iii), it is only necessary to establish limitations for those pollutants in the discharge which have the reasonable potential to cause or contribute to the exceedance of the instream criteria. In order to evaluate the reasonable potential and, therefore, the need for permit limitations, the monthly average (chronic) permit limitations were compared to the monthly average Discharge Monitoring Report (DMR) data and the mean of the concentrations reported from the State User Fee Program. In addition, the daily maximum (acute) permit limitations were compared to the daily maximum DMR data and the maximum concentrations reported from the State User Fee Program. Based on this analysis, water quality-based permit limitations are required for cadmium, copper, lead, zinc, cyanide, and chlorine. The only changes from the 2000 permit limits are the elimination of limits for hexavalent chromium and total silver to reflect the fact that neither of these pollutants had reasonable potential to cause or contribute to exceedances of the instream criteria, since the effluent levels were well below the allowable water quality-based permit limits. However, quarterly monitoring for these pollutants will still be required as part of the permit's whole effluent toxicity testing program. In addition, the permit limits for cadmium, copper and zinc have changed due to a change in the water quality criteria.

The required priority pollutant scans are specified in the State User Fee Program. The biomonitoring requirements are set forth in 40 CFR 131.11 and in the State's Water Quality Regulations. DEM's toxicity permitting policy is based on past toxicity data and the level of available dilution. The assigned dilution of five (5) requires that both acute and chronic toxicity be evaluated. The bioassay requirements in the permit consist of chronic toxicity tests conducted on Ceriodaphnia, where the chronic test can be used to calculate the acute LC_{50}. The permit contains an acute LC_{50} toxicity limit of ≥100% effluent and a CNOEC limit of ≥20% effluent. If recurrent toxicity is demonstrated, then toxicity identification and/or reduction will be required.

A waste load allocation (WLA) for the Blackstone River was completed in November of 1997 to establish effluent discharge limits for all point sources that will ensure compliance with water quality standards. The Blackstone River WLA is based on a dissolved oxygen (DO) model developed by Dr. Ray Wright of the University of Rhode Island and funded by the EPA, the Rhode Island Department of Environmental Management (DEM), and the Massachusetts Department of Environmental Protection (MADEP). The WLA utilizes a mathematical water quality simulation model (QUAL2E) to establish discharge limits necessary to achieve the minimum dissolved oxygen criteria of 5.0 mg/l in the river. The model was calibrated and verified using water quality survey data collected in 1991. The water quality data and modeling report can be found in the Blackstone River Initiative document dated February 1998.

The DO-based WLA established the following permit limits for Woonsocket: monthly average $CBOD_5$ of 10 mg/l for June through October and monthly average Total Ammonia (as N) of 2.0 mg/l for June through October, monthly average Total Ammonia (as N) of 12 mg/l for May. The DO-based limits for Total Ammonia will also ensure compliance with the applicable instream Total Ammonia criteria for protection of aquatic life from chronic toxicity.

The Providence and Seekonk Rivers are also impacted by low DO levels and high phytoplankton concentrations that are related to excessive nitrogen loadings. Significant areas of the Providence and Seekonk Rivers suffer from hypoxic (low DO) and anoxic (lack of DO) conditions and violate water quality standards. Available data shows that nitrogen loads are dominated by wastewater treatment facility inputs.

DEM hired a consultant and has been working with a technical advisory committee (TAC), consisting primarily of scientists and engineers representing, academic, municipal, state and federal organizations, to calibrate a model and develop a water quality restoration plan, or TMDL. It was concluded that the hydrodynamic model formulation could not adequately simulate conditions due to the relatively severe changes in the bathymetry in the Providence River. Therefore, the DEM has concluded that the best method available for evaluating impacts and setting nitrogen load reduction targets for the Providence River is to use the set of empirical relations developed from the Marine Ecosystems Research Laboratory (MERL) enrichment gradient studies at the University of Rhode Island.

In February 2004, DEM developed an analysis titled "Evaluation of Nitrogen Targets and WWTF Load Reductions for the Providence and Seekonk Rivers". This analysis indicated that wastewater treatment facility (WWTF) discharges are required to be reduced to the limit of technology (total nitrogen of 3 mg/l), but that the Seekonk River and portions of the Providence River may not fully comply with existing water quality standards for dissolved oxygen.
DEM has evaluated the implementation costs, the performance of available technology, and estimates of water quality improvement to develop a phased plan for implementation of WWTF improvements at MA and RI WWTFs which maximizes the DO levels relative to implementation cost.

Estimates of capital costs to modify existing facilities to achieve the target levels on a seasonal basis were developed. These costs included allowances for planning, design, construction and administration and must be considered Order-of-Magnitude estimates, since specific facility characteristics were not evaluated.

DEM issued permit modification to the appropriate WWTFs in June of 2005 that established seasonal (May – October) limits for total nitrogen. These limits, in combination with the reductions being assigned to the other WWTFs, will achieve a 50% reduction from the 1995-1996 Rhode Island WWTF loading, consistent with the recommendations from The Governor's Narragansett Bay and Watershed Planning Commission.

In particular, on June 27, 2005, DEM issued the City of Woonsocket a permit modifications which added a seasonal total nitrogen limit of 5.0 mg/l, and required that the permittee operate the treatment facility to reduce the discharge of total nitrogen, during the months of November through March, to the maximum extent possible using all available treatment equipment in place at the facility, and carries over the 10.0 mg/l total nitrogen limit during April from the previous permit. Assigning seasonal total nitrogen limits and requiring that the WWTF be operated year round in a manner to reduce the discharge of nitrogen to the maximum extent possible will result in substantial progress towards the mitigation of hypoxic/anoxic events and meeting water quality standards. The analysis contained in "Evaluation of Nitrogen Targets and WWTF Load Reductions for the Providence and Seekonk Rivers", indicates that the contribution of Massachusetts WWTFs is significant and, therefore, the DEM is working with the Massachusetts Department of Environmental Protection and the EPA to pursue appropriate nitrogen reductions for these WWTFs.

The City of Woonsocket and DEM have entered a Consent Agreement to resolve the City's appeal of the June 2005 permit modification. Under this agreement the City will complete construction of the facility modifications necessary to achieve compliance with a Total Nitrogen Limit of 3.0 mg/l by March 31, 2014. Therefore the Total Nitrogen limits contained in the draft permit have been revised to 3.0 mg/l.

DEM has determined that total phosphorus effluent limits of 100 ug/l for the Woonsocket WWTF are necessary to achieve compliance with the Gold Book criterion for streams and to ensure the Blackstone River does not cause a violation of the RI Water Quality criteria in Scott Pond. The Gold Book-recommended criterion is applied based on the best currently available information. Furthermore, this limit is also consistent with the requirement to remove phosphates to the extent that such removal is or may become technically and reasonably feasible, found in Rule 8.D.(2)10.b of the Rhode Island Water Quality Regulations. In addition, EPA has developed a draft permit for the Upper Blackstone Water Pollution Abatement District WWTF which includes a phosphorus limit of 100 ug/l.

This Permit includes a warm weather limit of 0.1 mg/1 total phosphorous and a cold weather limit of 1 mg/l. The total phosphorous warm weather limit (0.1 mg/l) is applied April 1st to October 31st, the period during which eutrophic conditions are most likely to occur and during which phosphorus effluent loading is most detrimental to water quality goals. The total phosphorous cold weather limit (1.0 mg/l) applies November 1st to March 31st. A higher phosphorus effluent discharge limitation in the winter period is necessary to ensure that the higher levels of phosphorus discharged in the winter period do not result in the accumulation of phosphorus in the sediments. The limitation assumes that the dissolved fraction of the total phosphorus will likely remain dissolved and flow out of the system. To ensure DEM's understanding of the anticipated behavior of dissolved and particulate phosphorus is correct, a monitoring requirement for orthophosphorous has been included for the cold weather months (November 1st – March 31st) in order to determine the dissolved particulate fraction.

In the future, lower phosphorus limits may be required upon receipt of new information, including but not limited to the development of a State numeric nutrient criterion or assessment of the response of the Blackstone River and Scott Pond to WWTF phosphorus discharges.

A comparison of the DMR data with the final permit limitations indicates that the treatment facility is currently unable to attain the new seasonal Total Nitrogen permit limitations of 3.0 mg/l May – October, and may not be able to comply with the new seasonal Total Phosphorus permit limitations and the revised Total Cadmium permit limitations, and that interim limits are necessary. The Consent Agreement noted above, provides interim limits and a compliance schedule for the City to complete construction of the facility modifications necessary to achieve compliance with the

Total Nitrogen, Total Phosphous, and Total Cadmium permit. It is anticipated that the facility can comply with all other permit limits.

The effluent monitoring requirements have been specified in accordance with RIPDES regulations as well as 40 CFR 122.41(j), 122.44(i), and 122.48 to yield data representative of the discharge. The Office has determined that all permit limitations are consistent with the Rhode Island Antidegradation Policy.

The remaining general and specific conditions of the permit are based on the RIPDES regulations as well as 40 CFR Parts 122 through 125 and consisting primarily of management requirements common to all permits.

V. Comment Period, Hearing Requests, and Procedures for Final Decisions

All persons, including applicants, who believe any condition of the draft permit is inappropriate must raise all issues and submit all available arguments and all supporting material for their arguments in full by the close of the public comment period, to the Rhode Island Department of Environmental Management, Division of Water Resources, 235 Promenade Street, Providence, Rhode Island, 02908-5767. Any person, prior to such date, may submit a request in writing for a public hearing to consider the draft permit to the DEM. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public hearing may be held after at least thirty days public notice whenever the Director finds that response to this notice indicates significant public interest. In reaching a final decision on the draft permit the Director will respond to all significant comments and make these responses available to the public at DEM's Providence Office.
Following the close of the comment period, and after a public hearing, the Director will issue a final permit decision and forward a copy of the final decision to the applicant and each person who has submitted written comments or requested notice. Within thirty (30) days following the notice of the final permit decision any interested person may submit a request for a formal hearing to reconsider or contest the final decision. Requests for formal hearings must satisfy the requirements of Rule 49 of the Regulations for the Rhode Island Pollutant Discharge Elimination System (16 July 1984).

VI. DEM Contact

Additional information concerning the draft permit may be obtained between the hours of 8:30 a.m. and 4:00 p.m., Monday through Friday, excluding holidays from:

Joseph Haberek, P.E.
Department of Environmental Management
Office of Water Resources
235 Promenade Street
Providence, Rhode Island 02908-5767
Telephone: (401) 222-4700 ext. 7715
e-mail: joseph.Haberek@dem.ri.gov

8/06/08
Date

Eric A. Beck, P.E.
Supervising Sanitary Engineer
Office of Water Resources
Rhode Island Department of Environmental Management

ATTACHMENT A-1
EPA Region 1Annual Pretreatment Report Summary Sheet
December 2007

POTW Name:

NPDES Permit #:

Pretreatment Report Period Start Date:

Pretreatment Report Period End Date:

# of Significant Industrial Users (SIUs):

# of SIUs Without Control Mechanisms:

# of SIUs not Inspected:

# of SIUs not Sampled:

# of SIUs in Significant Noncompliance (SNC) with Pretreatment Standards:

# of SIUs in SNC with Reporting Requirements:

# of SIUs in SNC with Pretreatment Compliance Schedule:

# of SIUs in SNC Published in Newspaper:

# of SIUs with Compliance Schedules:

# of Violation Notices Issued to SIUs:

# of Administrative Orders Issued to SIUs:

# of Civil Suits Filed Against SIUs:

# of Criminal Suits Filed Against SIUs:

# of Categorical Industrial Users (CIUs):

# of CIUs in SNC:

Penalties

Total Dollar Amount of Penalties Collected $

# of IUs from which Penalties have been collected:

Local Limits

Date of Most Recent Technical Evaluation of Local Limits:

Date of Most Recent Adoption of Technically Based Local Limits:

Pollutant	Limit (mg/l)	MAHL (lb/day)

ATTACHMENT A-2

DESCRIPTION OF DISCHARGE: Treated domestic and industrial wastewater.
DISCHARGE: 001A - Treated Discharge

AVERAGE EFFLUENT CHARACTERISTICS AT POINT OF DISCHARGE:

PARAMETER		AVERAGE[1]	MAXIMUM[2]
FLOW		7.18 MGD	10.16 MGD
BOD_5		6.40 mg/l	16.62 mg/l
TSS		5.21 mg/l	15.53 mg/l
Fecal Coliform		3.18 MPN/100 ml	67.45 MPN/100 ml
pH		6.34 S.U.(Minimum)	7.23 S.U.(Maximum)
Total Chlorine Residual		24.65 ug/l	66.32 ug/l
Oil and Grease			1.57 mg/l
Total Phosphorus	(Nov – March)		5.05 mg/l
	(April – Oct)	0.98 mg/l	3.7 mg/l
Total Ammonia	(Nov – April)	5.48 mg/l	11.52 mg/l
	(May)	4.88 mg/l	11.24 mg/l
	(June – Oct)	2.95 mg/l	10.02 mg/l
Total Nitrate	(Nov – March)		4.94 mg/l
	(April – Oct)	4.30 mg/l	6.54 mg/l
Total Nitrite	(Nov – March)		0.18 mg/l
	(April – Oct)	0.23 mg/l	1.13 mg/l
TKN	(Nov – March)		8.17 mg/l
	(April – Oct)	5.74 mg/l	14.24 mg/l
Total Nitrogen	(Nov – March)		14.36 mg/l
	(April)	13.36 mg/l	22.14 mg/l
	(May – Oct)	9.55 mg/l	19.17 mg/l
Cadmium		0.94 ug/l	1.51 ug/l
Copper		7.68 ug/l	16.45 ug/l
Cyanide		17.36 ug/l	37.17 ug/l
Lead		1.62 ug/l	3.72 ug/l
Zinc		67.52 ug/l	211.77 ug/l

[1]Data represents the mean of the monthly average data from January 2001 – December 2005.
[2]Data represents the mean of the daily maximum data from January 2001 – December 2005.

Biotoxicity Data LC_{50} Values (in percent effluent)

	2003 4th qtr.	2004 1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	2005 1st qtr.	2nd qtr.	3rd qtr.	4th qtr.
Daphnid LC50	50	50	100	100	100	50	100	100	20
Daphnid NOEC	100	100	100	100	100	100	100	100	100
Fathead Minnow	100	57	100	100	100	100	100	100	100

APPENDIX C

Woonsocket's Inflow and Infiltration Removal Program

APPENDIX C

WOONSOCKET INFILTRATION AND INFLOW PROGRAM

1. INTRODUCTION

The City of Woonsocket (The City) has an older wastewater collection system that is considered separated, but has elevated levels of inflow and infiltration (I/I). The system does not have any combined sewer overflow structures or a wastewater treatment facility (WWTF) bypass structure, which was removed as part of the 1974 plant upgrade. The high levels of I/I were examined as part of the 2000 Facility Plan Amendment, and are believed to have been a concern in investigations prior to this time as well. The City initiated a detailed examination of I/I starting in 2007 as discussed further below. The first direct measures to remove sources of I/I were only initiated in 2009 and 2010.

The City has entered into a Consent Decree with RIDEM to carry out improvements at the WWTF to meet new, lower effluent nitrogen and phosphorus levels. As part of this effort, a Facility Plan Amendment is being prepared to establish the necessary design criteria and improvements needed to meet the new discharge permit limits. The required WWTF improvements must be completed by March 2014. The Facility Plan Amendment will include analysis of the required design flows including the maximum monthly flow (30-day moving average), the peak daily flow, and the peak hourly flow. The procedures for establishing the design criteria involve analyzing current flows based on a database of 3 or more years. In fact, the preliminary flows and loads analysis is based on data from May 2007 through September 2010. As a consequence, the analysis of flow data will not fully reflect the I/I remediation measures that have been completed recently, and the additional work scheduled to be completed prior to the March 2014 deadline. The purpose of Appendix C is to document the steps that the City is taking to investigate and implement I/I removal measures, and the potential impact on WWTF design criteria of the projects completed to date, and those that could be completed by March 2014.

The nature of the peak wet weather flows to the WWTF; the I/I investigations completed to date, and the identified sources of I/I do not allow a specific quantitative analysis. However, a qualitative assessment has been carried out in developing the recommended plan for further investigation and remediation of I/I sources in the Woonsocket collection system.

2. BACKGROUND

The City of Woonsocket's sanitary sewer collection system conveys flow from the City of Woonsocket and three adjacent communities Bellingham, Blackstone, North Smithfield to the Woonsocket Regional WWTF located along the Blackstone River. The Woonsocket sewer system consists of approximately 108 miles of gravity sewer. The WWTF collection area contains 18 pumping stations and 13 siphons. The Town of Bellingham has a pump station and force main that feeds the Bellingham Interceptor conveying flow directly to the WWTF. The Town of Blackstone has two connection locations, one on Rathbun Street and one on Canal Street. The Town of North Smithfield also has two connections; one on Elizabeth Avenue and one on Alice Avenue. Table C-1 shows the distribution of flows contributed to the WWTF from May 2007 through September 2010:

TABLE C-1: Woonsocket WWTF Contributing Flow Distribution

	Woonsocket Regional WWTF	City of Woonsocket, RI	Town of North Smithfield, RI	Town of Bellingham, MA	Town of Blackstone, MA
3-Year Average Flow Contribution	7.8 MGD	6.8 MGD	0.66 MGD	0.11 MGD	0.26 MGD
Percent of Total WWTF Flow	100%	87.1%	8.5%	1.4%	3.3%

3. INFILTRATION AND INFLOW

Infiltration and Inflow (I/I) are terms used to describe the ways that groundwater and stormwater enter into dedicated sanitary sewer collection systems. These extraneous "clear" water flows can reduce the capacity of the collection system, increase the potential for overflows and adversely affect wastewater treatment through increased costs and reduced treatment reliability.

Infiltration is groundwater that enters collection systems through cracks and/or leaks in the sewer pipes. Cracks or leaks in sewer pipes or manholes may be caused by age related deterioration, loose joints, poor design, installation or maintenance errors, damage or root infiltration. Groundwater can enter these cracks or leaks wherever collection systems lie beneath water tables or the soil above the sewer systems becomes saturated. Sewer systems are designed to last about 50-100 years, depending on what type of material is used, and can last for even longer periods with proper maintenance. Woonsocket has had a wastewater collection and treatment facility since about 1897, and much of the system is at or beyond the typical design life.

Inflow is stormwater that enters into collection systems at points of direct connection to the systems. Contributing sources to the inflow, including footing/foundation drains, roof drains or leaders, downspouts, drains from window wells, outdoor basement stairwells, drains from driveways, groundwater/basement sump pumps, and even streams. These sources are typically improperly or illegally connected to collection system, via either direct connections or discharge into sinks or tubs that are directly connected to the collection system. These flows should be entering the stormwater sewer system or allowed to soak into the ground without entering the sanitary sewer system.

Improper connections can be made in either residential homes or businesses, and can contribute a significant amount of flow to collection systems. As much as 70 to 80% of a collection system's total I/I flow can be attributed to private portions of the collection system. Eight-inch sanitary sewer pipes can adequately move the domestic wastewater flow from up to 200 homes, but only eight sump pumps operating at full capacity or six homes with downspouts connected to the sanitary sewer pipe will overload the capacity of the same eight-inch sewer pipes during wet weather. A single sump pump can contribute over 7,000 gallons of water to sanitary sewer systems in a 24-hour period, the equivalent of the average daily flow from about 26 homes.

Identification of I/I sources has traditionally been carried out through a program of I/I investigations followed by a Sewer system Evaluation Survey (SSES). However, the need for long-term preventative maintenance has become imperative throughout the U.S. as collection

systems age. Long-term preventative maintenance programs integrate I/I remediation with the additional key goal of maximizing the life of the collection system.

I/I investigations are typically performed in a phased approach to allow for a systematic investigation of the collection system for the purpose of reducing the amount of I/I to a collection system. Each phase of an I/I investigation builds upon the findings of the previous. The first phase includes flow monitoring and hydraulic analysis of the collection system. This allows for determination of where the trouble spots are and allows for further investigations to be focused. The second phase is a Sewer System Evaluation Survey (SSES) which consists of field investigations of the collection system for the purposes of identifying the I/I sources. Typical field investigations include smoke testing, flow isolation, television inspections of pipelines, manhole inspections and house to house building inspections. The third phase includes the development of recommendations for and removal of I/I sources.

A long-term preventative maintenance program is one component of an overall Capacity, Management, Operations and Maintenance (CMOM) Plan. The goal of a long-term preventative maintenance program is preservation of capital investments, prevention of service interruptions, prevention of excessive I/I and system failure that can result in Sanitary Sewer Overflows (SSOs).

4. PREVIOUS I/I INVESTIGATIONS

As noted previously, the City's I/I investigation was initiated in the spring of 2007 with a flow monitoring program of the City's collection system. The City subsequently decided on a more comprehensive approach to collection system capacity, management, operations, and maintenance (CMOM), and initiated an underground asset management (UGAM) program in the summer of 2009 contracting with Veolia Water North American (VWNA). The follow up to the initial I/I flow monitoring study was rolled into the scope of the UGAM program as will be discussed further below.

4.1. FLOW MONITORING

The City of Woonsocket contracted with CDM, in February of 2007 to conduct a flow monitoring study of their collection system. Upon completion of their flow monitoring and analysis, CDM submitted their draft Phase I I/I Remediation Program Interim Flow Monitoring Summary Report in November 2007.

The following are some of the key items and findings discussed in the report:

- Flow monitoring of the entire Woonsocket sewer system occurred from March through June of 2007 during a period of high groundwater and several rainfall events.
- The report recommended inspection and an analysis of river mill gates and a hydraulic capacity analysis which would have completed the Phase I analysis. (Note: Per discussions with City of Woonsocket representatives, to date neither the river mill gate inspection and analysis, nor the hydraulic capacity analysis recommended in the CDM Phase I report have been conducted or are currently scheduled.)
- CDM made recommendations within the report that a Phase II Sewer System Analysis begin in the spring of 2008. (Note: The Phase II services were to include additional SSES investigations. The City did not authorize a full SSES program, but rather has incorporated and funded certain aspects of an SSES program in the Underground Asset Management program.)
- The report separated the collection system into 36 drainage areas by flow metering. The zones were then ranked from highest to lowest by their I/I contributions to the system. The basis for the quantification of I/I flows is derived from composite storm values of four rainfall events during the monitoring period. A total of 29 of the 36 drainage areas were determined to exceed the Massachusetts Department of Environmental Protection thresholds for inflow and/or infiltration. A large storm event was also evaluated and I/I values between the storms were compared.
    - Average Storm (0.8 inches of rainfall w/ peak hourly intensity of 0.22 in/hr)
      Average total inflow volume - 12.37 MG (27% direct inflow, 73% indirect inflow)
      80% of total inflow volume from 63% of total piped sewer systems.
    - Large Storm (3.45 inches of rainfall w/ peak hourly intensity of 0.22 in/hr)

Total inflow volume - 58.62 MG (56% direct inflow, 46% indirect inflow)

80% of total inflow volume from 50% of total piped sewer systems.

- Total net base infiltration was calculated to be 8.19 MGD w/ corresponding Average Daily Flow of 10.70 MGD.
- Table 4-1 of the CDM Phase I report indicates that 19.35 MGD of total I/I was identified coming from the 29 drainage areas of concern for the derived composite storm.
- Groundwater Influence to I/I:

  Groundwater elevations were reviewed during the flow monitoring period to ensure that suitable conditions for infiltration were present. Groundwater elevations were obtained from the USGS groundwater monitoring well located in North Smithfield, RI. Groundwater levels appear to follow a consistent pattern each year and correlate with the WWTF flows. The difference between the high groundwater level season and low groundwater level season is in the range of 2.5 ft.
- River Level Influence to I/I:

  Part of the flow monitoring program included monitoring of the Blackstone River stage elevation to correlate the potential for river water to enter the collection system. River stage elevations were obtained from the local USGS river stage monitoring station located in Woonsocket, RI. River stage elevation data also appears to correlate with increased flows at the WWTF. During the large storm event, where the Blackstone River stage was greater than 9-ft, several areas exhibited significant increases in inflow. Several of the areas that experienced the greatest increase in inflow are either adjacent to the Blackstone river or have significant length of cross-country sewers adjacent to tributary brooks and streams.

4.2. ASSET MANAGEMENT AND I/I REMOVAL BY VWNA UGAM

The City of Woonsocket is engaged in a long-term preventative maintenance program with a focus on the public portion of the collection system. The City contracted Veolia Water North America (VWNA) in July of 2009 to manage the Woonsocket Collection System. The VWNA Underground Asset Management (UGAM) group uses the asset management software InfoNet to track and identify work that has been done in the collection systems. UGAM creates work

orders for sewer cleaning, CCTV, manhole inspections and smoke testing using the asset management software and tracks the progress. Defects discovered through the investigation are noted, graded for severity and input into the software database. The City has set an aggressive schedule to clean, CCTV and perform all manhole investigations of Woonsocket's collection system by the end of FY 2011. Through the end the calendar year of 2010 the state of the inspections stood as follows; 40% of the collection system has been CCTV'd and reviewed for defects, 19% of the collection system has been smoke tested and 30% of the collection system manholes have been inspected. The City's schedule requires that the CCTV work progresses all year long and is not confined to the periods when the ground water is high. This limits the ability of the CCTV crew(s) in estimating infiltration quantities associated with any noted defects.

4.2.1. VWNA FINDINGS

The focus of the inspections has been on finding, prioritizing, and repairing major defects in the municipal (public) portion of Woonsocket's collection system. Defects indentified to be severe or to contribute significant amounts of I/I are added to the City's list of defects prioritized for repair.

VWNA developed a preliminary report in November of 2009 which summarized the defects found through that date. The summary was derived from the completion of approximately 100,000 ft of smoke testing and 150,000 ft of CCTV inspection. Respectively this represents approximately 19% and 29% of the collection system. The summary shown in Table C-2 includes the 2009 data and has been supplemented with the additional CCTV inspection (10% of the collection system) that has occurred since the November 2009 report.

Table C-2: VWNA Summary of Defects Found thru December 2010

Defect	Count	Infiltration (gpd)	Inflow (gpd)
Infiltration Gushers	65[b]	248,400[b]	-
Infiltration Runners	109	226,080	--
Infiltration Dripper/Weepers	97	86,160	-
Broken Pipes[a]	129[b]	2,160	-
Break-in	3	-	2,261
Cleanouts	5	-	4,522
Roof Leaders	23	-	49,680
Vented Manholes	477	-	687,313
Totals		**562,800**	**743,775**

Note: a. Infiltration estimates were not available for the majority of indentified broken pipe defects.
b. Includes defects that have been repaired (21 infiltration gushers, 2 broken pipes).

Through the end of 2010 the UGAM inspection of the collection system has quantified defects contributing approximately 0.56 mgd of infiltration. Forty-four percent of the quantified infiltration was associated with infiltration gushers, 40% with infiltration runners and 15% with infiltration dripper/weepers. The identified infiltration is associated with the 271 defects that contribute infiltration and does not include infiltration that may be added through broken pipe which was not quantified as no infiltration was flowing through the defects at the time of the CCTV work.

5. CORRECTIVE ACTIONS

The City of Woonsocket has taken corrective actions to repair the most significant defects within the collection system that have been identified through VWNA's inspection program and other miscellaneous projects. The results of these actions to date are as follows:

5.1. VWNA UGAM REPAIR

Under the VWNA UGAM program, the following I/I remediation measures have been completed through December16, 2010:

- Approximately 0.1 mgd of estimated infiltration sources has been repaired and removed from the collection system.

- 59,760 gpd - Estimated Infiltration removed through spot liner repairs performed by UGAM between 11/18/09 and 12/24/09.
- 33,120 gpd - Estimated Infiltration removed through spot liner repairs performed by UGAM between 12/25/09 and 12/16/10.

- The City of Woonsocket has authorized the UGAM program to purchase and install 285 manhole inserts throughout the City's collection system. Manhole inserts are being installed on manholes that have covers with a minimum of 18 holes of 1-inch diameter or greater.
  - Through 12/16/10, a total of 200 of the manhole inserts have been installed by VWNA.
    - UGAM estimates that a manhole with 18 - 1" diameter holes contributes 4,847 gpd during a 1-year storm. UGAM estimates that a manhole with 24 - 1" diameter holes contributes 6,462 gpd during a 1-year storm. Inflow estimates for vented manhole covers were based on Neehan Foundry Company's report on inflow from surface water through manhole covers. (Note: Inflow contributions are dependent upon and will vary based on local ponding conditions at each of the manhole insert locations)
    - UGAM estimates that, for a 1-year storm event, between 0.97 MGD and 1.29 MGD of inflow have been prevented from entering the collections system through the use of 200 manhole inserts. Upon completion of the authorized manhole cover insert program, UGAM estimates that, for a 1-yr storm event, between 1.38 MGD and 1.84 MGD of inflow will have been prevented from entering the collection system through the use of 285 manhole inserts.

5.2. WOONSOCKET MIDDLE SCHOOL CAMPUS PROJECT

In addition to the work being carried out by the VWNA UGAM program, the City of Woonsocket Middle School Campus project has been noted to have resulted in significant I/I reductions. Construction of the Middle School Campus was completed in 2009 and the schools opened in January of 2010. The project transformed 19 acres of former industrial mill properties into a campus for two new middle schools. Observations made by the Woonsocket Regional WWTF staff indicate that the completion of this project has reduced the immediate surge of flow

to the WWTF which typically followed a rainfall event. Absent a specific identified source of the I/I emanating from the old industrial mill properties, quantification of the amount of I/I removed is difficult. Review of the historical aerial photos of the project site prior to construction show that the industrial mill buildings within that area had a sizable area of flat roofs. It was not uncommon for industrial mill buildings of that era to have roof drains (or other drains) connected to the sanitary sewer. The demolition of the industrial building and associated potential removal of flat roof drains from the collection system would seem to be a reasonable explanation for the reduction in I/I experienced to the WWTF, observed by the WWTF staff. Insufficient data was collected to allow precise quantification, but the flow reduction is estimated to be in the order of magnitude of 2 to 4 mgd of inflow during the 1-year 30-minute storm. Although the 2010 flow monitoring data did not show a reduction in the peak hourly flow reaching the WWTF, it is important to note that the impact of a specific project like this may not reduce the actual peak flows at the WWTF. However, it certainly reduced the duration of peak flows and this reduction is an important benefit that contributes to improved treatment performance during peak wet weather flows.

5.3. SEWER LINING RFP

The City of Woonsocket is currently engaged in a sewer rehabilitation project that includes the lining of 2,568 linear feet of sewer within the collection system and may possibly expand to 3,268 linear feet. The areas to be lined are located within or adjacent to a marshy area. In addition to the sewer lining, the manholes along the cross-country sewer will be regrouted and have new bolted and gasketed frames and covers installed.

6. DETERMINATION OF EXCESSIVE I/I

Municipal Wastewater Facilities must demonstrate that wastewater collection systems are not and will not contribute excessive infiltration or inflow. The methodology in EPA's Infiltration/Inflow (I/I) Analysis and Project Certification brochure (Ecology Publication No. 97-03) was used to determine if and to what extend there is excessive I/I to the City's collection system. EPA defines excessive Infiltration/Inflow as quantities which should be less costly to remove by sewer system rehabilitation than to transport and treat at the receiving facility, when

both capital costs of increased sewerage facilities capacity and the resulting operating costs are included. RIDEM has adopted the EPA criteria (discussed below).

EPA's guidance uses a national average to determine per capita criteria for non-excessive infiltration/inflow which are expressed in terms of average dry weather flow (ADWF) for infiltration and wet weather flow (WWF) for inflow. ADWF consists of the average daily sewage flow and groundwater infiltration (GWI). ADWF is the highest average daily flow recorded over a 7 to 14 day dry period (< 0.01 inches of rainfall per day) during a period of seasonal high groundwater. WWF consists of ADWF plus rainfall-dependent infiltration/inflow (RDI/I). WWF is the highest daily flow recorded during a storm event. For ADWF, 120 gallons per capita per day (gpcd) is the criteria for excessive levels and for WWF 275 gpcd is the threshold. Flows exceeding these values are considered to be excessive. Table C-3 shows the acceptable ADWF and WWF to the Woonsocket WWTF based on these criteria.

Table C-3: Calculated Flow Limits for Non-Excessive I/I to WWTF

	Excessive Infiltration/ Inflow Threshold	**Total Domestic/Commercial Flow (mgd) (Pop. 52,750 @80gpcd)**	**Industrial Flow (mgd)**	To achieve non-excessive I/I the **Total Base Sanitary Flow w/ I/I (mgd)**must be below:[a]	To achieve non-excessive I/I the **ADWF/WWF (mgd)** must be below:
ADWF (Infiltration)	120 gpcd	4.22	0.22	*6.33*	*6.55*
WWF (Inflow)	275 gpcd	4.22	0.22	*14.51*	*14.73*

Notes: a. Does not include industrial flow contribution.

6.1. INFILTRATION

Historic WWTF operating data was analyzed to determine whether raw influent to the WWTF is subject to excessive infiltration. The total flow to the WWTF consists of a combination of residential, commercial, and industrial flows as well as infiltration and inflow. For the period 2007-2010, the ADWF at the WWTF was determined during high ground water periods. Flows were further analyzed to determine the WWF experienced during rainstorm events.

TableC-4: Average Dry Weather Flow at Woonsocket Regional WWTF 2007-2010

Year	ADWF (mgd)	Total Domestic/Commercial Flow (mgd) (Pop. 52,750 @80gpcd)	Industrial Flow (mgd)	Total Base Sanitary Flow w/ Infiltration (mgd)[b]	ADWF (gpcd)[b]
2007	10.82	4.22	0.22	10.60	201
2008	10.27	4.22	0.22	10.05	191
2009	9.79	4.22	0.22	9.57	181
2010	14.9[a]	4.22	0.22	14.68	278

Notes: a. Occurred during period following extreme storm events and flooding of March 2010.
b. Does not include industrial flow contribution.

The analysis of flow data summarized in Table C-4 indicates that the WWTF appears to be subject to excessive infiltration. It should be noted that the highest ADWF for 2010 occurred following a period of extreme rainfall which caused flooding problems in the City. The remaining data set for 2010 did not produce a representative period for determining ADWF. Even if the 2010 data is considered anomalous, the results from 2007, 2008 and 2009 confirm that the City of Woonsocket's collection system is subject to excessive infiltration with ADWF above the EPA/RIDEM threshold of 120 gpd. The 2009 ADWF per capita flow rate was determined to be 181 gpcd which represents approximately 3.02 mgd of excessive infiltration in the collection system.

6.2. INFLOW

Historic WWTF operating data during storm events was analyzed to determine whether raw influent to the WWTF is subject to excessive inflow. The total flow to the WWTF consists of a combination of residential, commercial, and industrial flows as well as infiltration and inflow. For the period 2007-2010, the WWF at the WWTF was determined for the highest daily flow recorded during a storm event as shown in Table C-5. An alternative analysis was conducted using the 99th percentile flow for the 2007 to 2010 period as shown in Table C-6.

Table C-5: Wet Weather Flow at Woonsocket Regional WWTF 2007-2010

Year	WWF (mgd)	Total Domestic/Commercial Flow (mgd) (Pop. 52,750 @80gpcd)	Industrial Flow (mgd)	Total Base Sanitary Flow w/ I/I (mgd)[a]	WWF (gpcd)[a]
2007	20.5	4.22	0.22	20.28	384
2008	22.17	4.22	0.22	21.95	416
2009	11.47	4.22	0.22	11.25	213
2010	29.11	4.22	0.22	28.89	548

Notes: a. Does not include industrial flow contribution.

Table C-6: Wet Weather Flow at Woonsocket Regional WWTF 2007-2010 using 99% Storm

Year	WWF (mgd)	Total Domestic/Commercial Flow (mgd) (Pop. 52,750 @80gpcd)	Industrial Flow (mgd)	Total Base Sanitary Flow w/ I/I (mgd)[a]	WWF (gpcd)[a]
2007-2010	17.67	4.22	0.22	17.45	331

Notes: a. Does not include industrial flow contribution.

The analysis of flow data indicates that the WWTF appears to be subject to excessive inflow. Under an extreme storm event and corresponding flooding on March 30, 2010, the WWF per capita flow was determined to be 548 gpcd. This represents approximately 14.38 mgd of excessive inflow in the collection system. This extreme event may not be indicative of the typical inflow into the collection system during a large storm event due to the extreme flooding and ponding that occurred. The analysis using the 99th percentile flow to the plant shows WWF was determined to be 331 gpcd which is above the EPA/RIDEM threshold of 275 gpcd. This represents approximately 2.94 mgd of excessive inflow in the collection system.

6.3. ALTERNATIVE INFILTRATION ANALYSIS

An additional analysis of estimated I/I was performed (See table C-7) for comparison of current levels with those determined in the 2000 Facility Plan Amendment. This analysis was done for comparative purposes only as the analysis itself does not expressly meet the EPA guidance documents. This analysis determined the average daily flow (ADF) at the WWTF during the

entire high groundwater (HGW) period (Dec-May) and used that flow value to determine per capita flow rates. The flow data was further analyzed to determine the ADF during HGW periods on non-rainstorm event days.

Table C-7: I/I Comparison with 2000 Facilities Plan Amendment

Year	ADF (mgd)	Estimated Domestic/Commercial Flow (mgd) (Pop. 52,750 @80gpcd)	Industrial Flow (mgd)	Total Base Sanitary Flow w/ I/I (mgd)[a]	Total Base Sanitary Flow w/ I/I (gpcd)[a]
All HGW Days					
1995-1997	9.90	4.22	1.88	8.02	152
2007-2010	9.07	4.22	0.22	8.85	168
Non-Rain HGW Days					
1995-1997	8.18	4.22	1.88	6.30	119
2007-2010	8.65	4.22	0.22	8.43	160

Notes: a. Does not include industrial flow contribution.

Comparing the results of the 1995-1997 and 2007-2010 shows that the ADF during the HGW season has declined by approximately 0.83 mgd. However, the overall decline is attributable to changes in the Industrial flows which have decreased approximately 1.66 mgd, while total Domestic/Commercial Flows have remained relatively constant. Most significant for the current evaluation, the I/I portion of the Total Base Sanitary Flow and I/I have grown by 0.83 mgd over this period accounting for all HGW days . This increase is even more pronounced for the non-rain HGW days with an increase in I/I of 2.13 mgd. The increase is not to be unexpected for an aging sewer system that until recently had seen limited I/I remediation work.

7. INFILTRATION AND INFLOW SYSTEM-WIDE PROJECTIONS

In the preliminary report prepared in November of 2009, VWNA presented a summary projection of the potential I/I that could be identified and removed in the collection system. This information has been supplemented to account for the additional CCTV inspection (10% of collection system) that has occurred since that date. The defect summary results shown in Table

8 were extrapolated over the entire collection system to project the amount of I/I that could be removed from the system from similar defect types. The projected reductions shown in Table C-8 were reduced by 50% to account for the fact that the preliminary surveys were carried out in the service areas with the highest I/I levels.

Table C-8: VWNA Projections of Total System Potential Based on Sample Survey Area

Defect	Summary of Defects - December 2010			Projected System-wide Flow(gpd)	
	Infiltration (gpd)	Inflow (gpd)	Percent of System	Infiltration[b]	Inflow
Gushers	248,400	-	40	365,040	-
Runners	226,080	-	40	395,640	
Drippers/Weepers	86,160	-	40	150,780	
Break-in	-	2,261	19.73	-	5,730
Cleanouts	-	4,522	19.73	-	11,460
Roof Leaders	-	49,680	19.73	-	125,909
Vented Manholes	-	687,313[a]	19.73	-	1,741,926
Totals	**562,800**	**743,775**		**911,460**	**1,885,025**

Notes: a. Inflow values are reported to be based on 1 year storm event.
b. Typically the spot repair of an identified infiltration contributing defect is not 100% effective because a portion of the flow will enter the system in some other area.

The projections presented in Table C-8 represent the potential I/I sources that could be identified and removed using the I/I remediation techniques that the City is currently employing.

For infiltration, this means that under the current program of identifying gushers and major defects the City can expect to identify approximately 0.37 mgd of infiltration (refer to first row in Table C-8). This represents approximately 12% of the identified 3.0 mgd of excessive infiltration that should be cost effective to remove as determined in Section 6. Using cost data provided by VWNA, removal of this portion of the infiltration is estimated to cost approximately $180,000 to $200,000. It should be noted that the infiltration and estimated removal costs are inclusive of the corrective actions the City has authorized to date (refer to Section 5.1 VWNA UGAM Repairs). Estimates of the costs for removal of the remaining 88% of excessive infiltration will require further investigations to determine the infiltration sources and associated

repair requirements. It is anticipated that a program of sewer re-lining and manhole re-grouting would be a key long-term requirement. However, it is important to note that the role of private sources is not well understood at this time.

For inflow, this means that under the current program of installing manhole inserts the City can expect to identify approximately 1.74 mgd of inflow for a 1-year storm event. This represents approximately 59% of the identified 2.9 mgd of excessive inflow that should be cost effective to remove as determined in Section 6. Using cost data provided by VWNA, removal of this portion of the inflow is estimated to cost approximately $60,000 to $80,000 for the purchase and installation of manhole inserts. It should be noted that the inflow and estimated removal costs are inclusive of the corrective actions the City has authorized to date (refer to Section 5.1 VWNA UGAM Repairs). Estimates of the costs for removal of the remaining 41% of excessive inflow will require further investigations to determine the inflow sources and associated repair requirements.

The City's current program for I/I removal has focused on identifying the infiltration sources that are the most cost effective to remove. The repair costs to date have been low relative to the flows removed. As the investigations continue the amount of I/I contributed by identifiable and quantifiable sources is likely to decline significantly and the repair methods required to remove those sources will likely increase in scope and cost from those currently being implemented.

While specific estimates of the costs associated with removing the excessive I/I from the City of Woonsocket's collection system are not currently projectable due to the early status of the City's I/I investigations, experiences from other communities can provide a rough frame work for what may be encountered with a comprehensive I/I remediation program. The cost per gallon removed for I/I remediation is highly variable. Review of recent MWRA I/I remediation project, 47 projects since 2004, indicate that an average of $8.50/gpd. For planning purposes the City of Woonsocket may be looking at an average of $10/gpd after adjusting costs to 2011. It is important to keep in mind that much of the past work only dealt with public I/I as opposed to the private sources such as inflow from private drains, broken laterals, downspouts, and delayed inflow from sump pumps or leaking services; some of which are typically harder and more

expensive to find and remove. Not surprisingly, infiltration projects are often more cost effective than inflow projects because of the constant nature of infiltration. Some improvements will be more cost-effective, some less, but there is a need to identify the sources and then do an individual cost benefit analysis.

Nevertheless, on-going efforts to identify and remove sources of I/I are important in order to maintain the structural integrity of the collection system, prevent sanitary sewer overflows (SSOs), and minimize the flow to pumping stations and to the WWTF.. The I/I work is critical to avoid needing to increase the design capacity and to maintain reserve capacity for future growth.

8. I/I REMEDIATION IMPACTS ON WWTF UPGRADE

Infiltration and Inflow has been a documented problem in the City at least as far back as the 2000 Facilities Plan Update. The City has made significant strides in addressing the I/I problems through their initiation of a collection system I/I analysis, implementation of an asset management program and long-term preventative maintenance. These programs provide a sound foundation for a long-term program towards I/I abatement within the collection system. The first step has been to stem the upward trend of I/I entering into the collection system that has been noted over the past decade. The I/I remediation projects that have been implemented to date have been crucial towards this effort. Given the upward trend in I/I entering the collection system, the absence of an effective I/I remediation program would lead to a situation where an increase of the peak capacities at the WWTF would have been warranted. The summary of design and current flows presented in Table C-9 indicates that the current peak day and peak hour flows are approaching the design levels. Left unabated, I/I increases in the collection system would lead to an increase in the peak capacity requirements at the WWTF and would add significant cost including increasing of the pump capacity throughout the WWTF. However, as a result of this committed I/I identification and remediation program, an increase in peak capacity requirements is not warranted.

TABLE C-9: SUMMARY OF DESIGN AND CURRENT FLOWS

Item	Existing Design 2000	Current 2010[a]
Influent Flows (MGD):		
Average Annual	16	7.8
Maximum Monthly	-	13.0[b]
Peak Daily	24	22.2[b]
Peak Hourly	32	~32[b]

Notes: a. Based on data from May 2007 through September 2010.
b. The value shown excludes March 30, 2010 flood event. During the March 30, 2010 flood, the flow data for the raw influent indicates a maximum monthly flow of 15.8 mgd, a peak daily flow of 29.1 mgd, and a peak hourly flow of approximately 38 mgd.

9. RECOMMENDATIONS

Through the implementation of I/I investigations and long-term preventative maintenance, the City is targeting the elimination of excessive I/I flows from the collection system. The City has already implemented the foundation of successful I/I remediation program and will continue to set goals and milestones over the coming years to further this effort. The City has already identified several areas within the collection system where rehabilitation is expected to result in significant reductions in I/I flows. The following are recommendations for future I/I investigations and remediation efforts:.

- Continue the current activities related to the asset management program and long-term preventative maintenance. This includes continuing the current CCTVing, cleaning and manhole inspections of the collection system to meet the goal of completing inspection and cleaning of the entire system by the end of 2011 as specified in the City's CMOM checklist.
- Continue with the I/I remediation program and removal of known I/I sources as discovered through the asset management program and other means. The known hot spots for I/I such as areas near streams, rivers, and marshlands should be targeted. A diligent effort will allow for the preservation of the existing peak daily and peak hourly design criteria at the WWTF. As the UGAM program expands into other areas of the City’s collection system and additional infiltration and inflow sources are identified these sources will need to be rehabilitated to eliminate the I/I from entering the collection system in order to maintain integrity of the collection system and adequate peak reserve

capacity. It is important to note that the City has initiated and provided initial funding for the UGAM program which is being implemented to identify and eliminate (as funding allows) the sources of I/I, thus reducing the risk that sources of I/I will become worse over time.

- The evaluation of the river mill gates need to be carried out to determine the degree to which they allow inflow into the collection system. The preliminary analysis performed during the flow monitoring effort indicated that these gates probably have a notable effect on the peak flows experienced by the WWTF, especially those seen during the spring period when river levels are high.
- Authorize UGAM to institute a SSES program to identify I/I sources that may not be identified through current asset management program alone. Areas for SSES should be targeted based on the findings of the flow monitoring study. Understanding the significance of private I/I sources in regards to the overall collection system I/I will allow for informed decisions as the I/I remediation program moves forward.

APPENDIX D

Public Hearing
Workshop Material

CITY OF WOONSOCKET
CITY CLERK

MEMORANDUM

TO: City Council Members

FROM: Andrea M. Bicki, City Clerk AMB

DATE: February 16, 2011

SUBJECT: Work Session

Monday, February 21, 2011 – second floor conference room – 6:30 P.M.

1. Roll Call

2. Public workshop and information meeting with Administration to discuss Wastewater Facilities Plan Update.

3. Adjournment

For additional information or to request interpreter services, or other special services for the hearing impaired, please contact City Clerk Andrea M. Bicki three days prior to the meeting at (401) 762-6400.

Public Workshop and Information Meeting

Woonsocket Wastewater

Facility Plan for Nutrient & Phosphorous Removal

City of Woonsocket, RI
February 21, 2011

Introductions

Sheila McGauvran, P.E.

Paul Eisenhardt

David C. Bowen, P.E.

John Oatley

Richard Coen, Esq.

Presentation Overview

- New Treatment Plant Requirements (RIDEM)
- Project Overview
- Technologies Considered
- Process Recommendations and Why?
- Cost Implications and Financing
- Next Steps and Time Table
- Questions & Answers

Introduction - What's New?

New Effluent Limits – October 2008 *(Notification)*

Total Nitrogen Limit: 3.0 mg/L (May – Oct.)

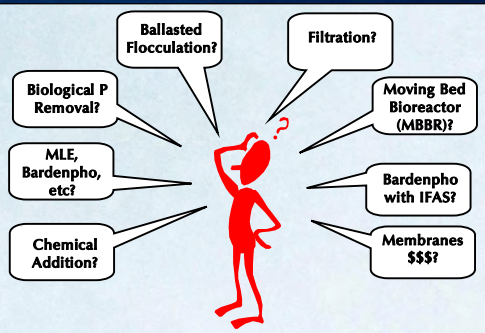
These are amongst the lowest limits in the country!

Total Phosphorus Limit: 0.1 mg/L (April - Oct.)

- *Existing Facilities not designed to meet these new more stringent nutrient limits (N and P)*
- *Consent Agreement with RIDEM*

Compliance by March 31, 2014

What Technology is Right for Woonsocket?



Tertiary Treatment System Alternatives

Evaluation and Selection Criteria

Screen explored technologies based on:

- Ability to reliably meet permitted Effluent Limits
- Proven track-record in the industry
- Probable construction costs
- O&M costs
- 20-year life cycle cost analysis
- Ease of operation and process flexibility
- Pro's and Con's evaluated

Screening Meetings/ Workshops - Dec. 2010 and Feb. 2011

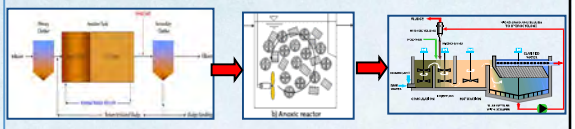
Technologies Considered

Process	Nitrogen Removal Technology Assessment		Phosphorus Removal Process	Intermediate Pumping Station
	Proven Technology	Proven Technology (TN < 3.0 mg/l)		
Bardenpho w/ IFAS	Yes	- Limited Full Scale - Pilot Scale	Ballasted Flocculation	Re-Use Existing
Bardenpho w/ Membranes	Yes	Full Scale	Inherent with the Membranes	Inherent with the Membranes
MLE w/ Sand Filter	Yes	Full Scale	Ballasted Flocculation	New P.S. Required
MLE w/ BAF	Yes	Full Scale	Ballasted Flocculation	New P.S. Required
MLE w/ MBBR	Yes	- Limited Full Scale - Pilot Scale	Ballasted Flocculation	Re-Use Existing

- *All reasonable Technologies were considered*

Technologies Selected

- Re-use existing MLE Process in Aeration Tanks
- New MBBR Nitrogen Removal Facility
  - Plastic media in a tank
- Solids Separation Process Downstream
  - Ballasted Flocculation for Phosphorus Removal



Existing Aeration Tanks MBBR Tanks Ballasted Floc.

Reasons for Recommendations

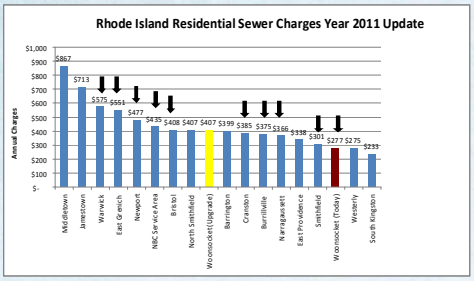
- Nitrogen Removal
  - Moving Bed Bioreactor (MBBR)
    - Lowest Capital and Annual Differential Cost Alternative
    - Simplest Process Alternative – *Operator Friendly*
    - Tertiary Nitrogen Process – *Robust Technology!*
    - Re-Use Existing Pumping Station - *Cost Benefit/ Savings*
- Phosphorus Removal
  - Ballasted Flocculation – *Robust Technology!*
- Multiple Manufacturers both Technologies – *Competition*

✓ ***Both Processes Will Meet New Permit Limits!***

Cost Implications and Financing

1. Preliminary Cost Estimates
   - Capital Costs: $35 - $40 Million Range
   - Operations Costs: $300 - $350,000/ Year Additional
2. Financing – Rhode Island Clean Water Finance
   (20 year Loans, 4% Interest)
3. On-going efforts to mitigate and reduce cost impacts

Impact on Woonsocket Wastewater Rates



Next Steps

March 31, 2011	-	Submit Draft Facility Plan to RIDEM
Summer 2011	-	RIDEM Review and Public Update
Late Fall 2011	-	100% Design Documents
Early 2012	-	Contractor(s) Competitively Selected
2012 – 2013	-	Construction
1st Quarter 2014	-	Start-up, Process Optimization
March 31, 2014	-	Facilities On-Line
	-	New Permit Requirements Operational

Questions & Answers

Additional Slides

Conclusions

- MBBR and Ballasted Flocculation recommended for further evaluation
  - Follow-up investigations of select technologies
  - Pilot Testing of MBBR Technology
- ~ $35 - $40M
- ~ $315k - $350k
- Submit DRAFT Facility Plan Amendment to RIDEM by March 31, 2011, per Consent Agreement *(may not need if schedule dates are added before)*
- *Lowest Limits of Nitrogen and Phosphorus in New England*

Summary of Nitrogen Removal Alternatives

Process	Cost Analysis			Additional Staff Required?	Pro's	Con's
	Capital Cost (2)	Incremental Power and Maintenance ($/yr)	Annual Differential Cost Analysis (3)			
Bardenpho w/ IFAS	$16.5M	$197K	$1.2M	Yes	- Eliminates Construction of New Tanks	-Higher Aeration Requirements - Single Stage Process
MLE w/ BAF	$19.5M	$94K	$1.3M	Yes	- Number of Full Scale Installations (1)	- Equipment Complexity - Large Connected Loads
MLE w/ MBBR	$15.8M	$124K	$1.1M	Yes	-Simplicity - Re-Use Ex. P.S	-Limited Number of Full Scale Installations (1)

1) Refers to the number of installations achieving low TN (i.e., less than 5.0 mg/l) effluent levels
2) Above Capital Costs are for TN Process Only (not P Removal or other Capital Upgrades that may be required.
3) Debt Retirement Costs – Capital Recover, Annual Debt Payment, Incremental Power and O&M

Introduction - *Existing Conditions*

<u>Existing Effluent Limits</u>

- 16.0 MGD – Monthly Flow
- Total Nitrogen Limit: 10.0 mg/L (May – Oct.)
- Total Phosphorus Limit: 1.0 mg/L (April - Oct.)

<u>2000-03 Upgrades</u> – Veolia Water (USFilter) Upgrades

- MLE Process for Total Nitrogen Removal
- Chemical Treatment and Filtration for Total Phosphorus Removal

Upgraded facilities work very well!

Technology Confirmations

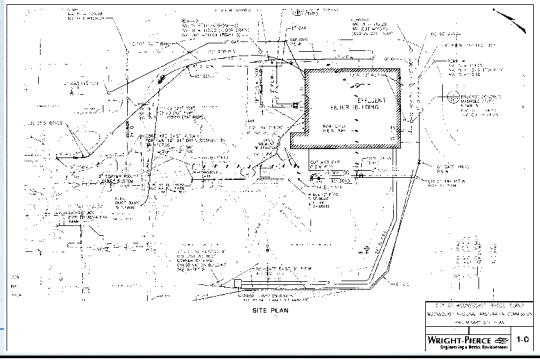
MBBR Installations

- US Nitrogen Removal Installations
  - Cheyenne, WY
  - Northport, MI
  - South Adams, CO
- Tertiary Nitrogen Removal Installations
  - South Caboolture WRF (Australia)
  - Malmo, Sweden (2 plants)
  - Noman Cole WPCP, Virginia (under construction)

Site Visits

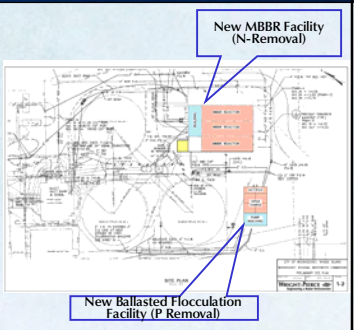
- W. Warwick (BAF), Groton (IFAS)
- *Interviews/ Visit (MBBR)?*

Current Site Layout



MBBR Process Layout

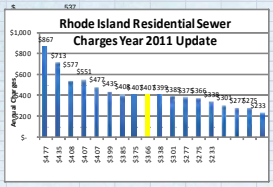
- Moving Bed Bioreactor Process (MBBR)
  - NOx-N < 1.0 mg/l
  - 3 Parallel Trains
  - Re-Use Ex. Pump Station
- Ballasted Flocculation Process
  - Required to remove effluent TSS from the MBBR Process
  - Phosphorus Removal to 0.1 mg/l



Impact on Woonsocket Wastewater Rates

Ri Residential Sewer Charges
Year 2011 Update

Location	Cost
Middletown	$ 867
Jamestown	$ 713
Warwick	$ 537
East Greenich	
Newport	
NBC Service Area	
Bristol	
North Smithfield	
Woonsocket (Upgrade)	
Barrington	
Cranston	
Burrville	
Narragansett	
East Providence	
Smithfield	
Woonsocket	
Westerly	
South Kingston	



APPENDIX E

RIDEM Facilities Plan Review Checklist
& Intergovernmental Review Correspondence

Rhode Island Department of Environmental Management
Office of Water Resources

DEM Facilities Plan (FP) Review Checklist

NOTE ON USE OF THIS CHECKLIST: Items in plain type are to be answered or addressed for **all** Facility Plans or Facility Plan Updates submitted for DEM review and approval. ***Items in italic type*** are to be answered or addressed **to be eligible** for construction assistance programs administered by DEM which contain federal funds (e.g. State Revolving Fund [SRF] Program).

	Yes/No/NA & Page No.
I. Executive Summary included?	Yes,ES-1
II. Project Need and Planning Area	
A. Statement of project need?	Yes,1-2
B. Planning Area	
1. A description of the planning area?	Yes,1-3
2. A description of political jurisdictions?	Yes,1-3
3. A description of institutional (governmental unit) structure?	NA
4. A description of wastewater utility management structure?	NA
5. A description of the current rate structure?	NA
6. Description of entities conducting planning?	Yes,1-3
7. Relationship between the FP and the Community Comprehensive Plan (CCP)?	NA
8. Is there a map which shows:	
a) Service Area (current & forecasted)?	NA
b) Political boundaries?	NA
c) Natural resources (e.g. wetlands, coastal) consistent with CCP inventory?	NA
d) Cultural resources consistent with CCP inventory?	NA
e) Historical and Archeological resources consistent with CCP inventory?	NA
III. Effluent Limitations	
A. Copy of RIPDES permit?	Yes,Appendix
B. Is the receiving water "water quality limited"?	No
C. Will state water quality standards/goals/objectives be impaired by FP?	No
IV. Assess Current Situation	
A. Existing conditions in planning area	
1. Geophysical	
a) Describes soils?	NA
b) Describes topography?	NA
c) Describes geology?	NA
d) Describes hydrology?	NA
2. Surface water watersheds, wetlands, floodplains, estuarine (coastal) areas?	NA
3. Surface water quality, quantity, uses?	NA
4. Groundwater aquifers, recharge, and protection areas?	NA
5. Groundwater quality, quantity, and uses?	NA
6. Land-use and demographic data consistent with CCP?	Yes,3-2
7. Other environmental conditions	
a) Air quality?	NA

b) Noise levels? Yes,9-17

c) Other federal/state projects which affect the environment? NA

d) Affected plant/animal communities? NA

e) Documentation of ISDS problem areas? NA

B. Existing System and Flows

1. Existing System

a) Wastewater Treatment Facilities (WWTF)

1) Location of all treatment plants, sludge treatment and disposal areas, pretreatment facilities? Yes,1-4

2) WWTF performance compared to RIPDES permit? Yes,1-14

3) Adequacy of plant hydraulics? Yes,2-3

4) Quality of operation and process control? Yes,8-18

5) Actual number and qualifications of operating staff versus planned/needed? NA

6) Adequacy of laboratory facilities? NA

7) Adequacy of sampling & testing? NA

8) Adequacy of maintenance program? NA

9) Adequacy of cost recovery and user charges? NA

10) Impact of septage on WWTF? Yes,2-1

11) Effluent treatment/reuse methods? Yes,2-7

12) Sludge treatment/disposal/reuse methods? Yes,2-2

13) Flow/waste reduction measures? Yes,2-1

14) Services provided? Yes,1-1

b) Collection system

1) Location of all pumping stations and sewers? NA

2) Number of service connections? NA

3) Number of service connections approved but not connected? NA

4) Number of service connections requested but not approved? NA

5) Number of service connections forecasted? NA

6) Location and description of major industrial discharges? Yes,3-1

7) Location of all bypasses and overflows? NA

2. Existing flows

a) Average and peak? Yes,2-1

b) Dry and wet weather? Yes,2-1

c) Septage (in & out of town)? Yes,2-2

d) Combined sewer overflows? NA

e) Infiltration/inflow? Yes,2-22

f) Wastewater characteristics (BOD, TSS, etc.) Yes,3-1

g) Proportion of residential/commercial/industrial flows? Yes,2-3

V. Assess Future Situation

At least the following factors must be considered when forecasting future wasteloads and flows: minimum of a twenty (20) year planning period; future land use consistent with CCP and SGP; future economic, industrial, and population projections are consistent with the State Guide Plan (SGP); sewer system extensions and septage generation; projections of flow and waste reductions possible by implementing I/I correction, pretreatment, and/or other waste reduction programs.

A. Land Use Forecasts

1. Consistent with local CCP? Yes,3-3
2. Utilized in estimating future development? Yes,3-3
3. Utilized in estimating future wasteloads? Yes,3-3

B. Demographic forecasts consistent with SGP *or State Implementation Plan*? Yes

C. Economic forecasts consistent with SGP? NA

1. Industrial projections? Yes
2. Commercial? Yes
3. Household income/financial data? NA

D. Forecasted flows and wasteloads

1. Residential
   a) Residential wastewater strength approximates 200 mg/l BOD_5 and TSS? Yes,3-9
   b) Domestic future flows are based on analysis of flow records and/or approximates 75 gpcd? Yes,3-9
   c) Collector (lateral) sewers service area extensions consistent with CCP? NA
2. Industrial
   a) Known future industrial flows are supported by letters of intent indicating flow volume and waste strength characteristics? No
   b) Forecasted future industrial flows are consistent with the CCP? Yes
3. Commercial
   a) Known future commercial flows are supported by letters of intent indicating flow volume and waste strength characteristics? No
   b) Forecasted future commercial flows are consistent with forecasts in the CCP? Yes
4. Septage
   a) Septage forecasts are based on sewered/unsewered forecasts in CCP? Yes
   b) Septage forecasts consider domestic, industrial, commercial sources? Yes,2-2
   c) Out-of-town septage considered in forecasts? Yes
5. Solids Treatment and Disposal
   a) Forecasts solids and composition for WWTF treatment from sewer flows? Yes,2-2
   b) Forecasts solids and composition for WWTF treatment from septage? Yes,2-2
   c) Forecasts residual solids and composition from sludge treatment & dewatering? Yes,2-3
   d) Long-term treatment and disposal method is consistent with DEM sludge disposal regulations? Yes,2-3
6. Waste Reduction Programs
   a) Infiltration/Inflow (I/I)
      1) Does an I/I study exist for the sewer service area? Yes,2-22
      2) Is the I/I study approved by DEM? Yes,2-22
      3) Does excessive I/I exist by DEM criteria? (i.e 120 gpcd of I/I during periods of high groundwater and during a storm event I/I flow does not exceed 275 gpcd or cause WWTF operational problems) Yes,2-22
      4) Is a Sewer System Evaluation Survey (SSES) necessary (i.e. infiltration significantly greater than 120 gpcd)? No
      5) Does an SSES exist for the sewer service area? Yes,2-22
      6) Is the SSES approved by DEM? NA

7. Is a sewer rehabilitation program proposed which includes a cost-effectiveness analysis of reduction versus treatment costs, the scope of work, cost estimates, and a schedule for completion which is reasonable and represents realistic expectations for excessive I/I reductions which can be included as part of a sewer rehabilitation contract's performance standards? NA

   a) Pretreatment

      1) Does a Pretreatment Program exist? Yes

      2) Has the Pretreatment Program been approved by DEM? Yes

      3) Is the Pretreatment Program currently in compliance with DEM regulations? Yes

VI. Development and Evaluation of Alternatives

All reasonable alternatives generated must be based upon and consistent with the local Comprehensive Plan (which must be consistent with the State Guide Plan) and must be evaluated to include the following factors: no-action alternative; direct, indirect, beneficial, and detrimental impacts of the entire municipal wastewater treatment system on all other related environmental objectives; existing and future environmental conditions, including all other related environmental objectives, affected by the entire system; the total life-cycle costs of the alternative, including net annualized cost; land-use and other socioeconomic parameters affected by the entire system; cumulative impacts evaluated within the context of complete municipal treatment system as well as other public works projects and future community growth.

A. Optimum Operation of Existing Facilities

Optimizing performance of existing facilities must be considered first. The level of treatment attainable with optimum performance should serve as a baseline for planning additions or modifications to the treatment system. This alternative was previously called the "no-build" alternative. The Facilities Plan should consider the following items:

1. The optimum performance level possible with the existing process design. Yes,5-1
2. The age and reliability of existing equipment and its remaining useful life. Yes,7-1
3. The qualifications, number and training of current operating personnel. NA
4. Additional operating modifications/improvements and laboratory facilities needed to monitor and/or improve operations. Yes,8-1
5. Possible process or operational modifications (e.g. conversion of conventional activated sludge to contact stabilization, the addition of mechanical aeration or lagoons, off-peak solids processing for energy savings, etc.). Yes,5-1
6. The impact of implementing a Pretreatment Program for industrial dischargers. NA
7. The impact of reducing I/I or of other flow and waste reduction programs. Yes,2-22

B. Regional Solutions

Regionalizing facilities and services must be considered, and is particularly appropriate for long-term septage and residual solids treatment and disposal. An analysis of regional solutions should address the following special considerations: effects of interceptor location on land use, particularly where land is undeveloped; effects of alternative combinations on surface waters in the region; possible limitation on future expansion due to unavailability of land; differences in reliability, operation, and maintenance of facilities.

1. The regionalization alternative is consistent with the recommendations of the applicable water quality management (WQM) plan and the SGP? NA
2. The applicant recognizes the need to execute intermunicipal service agreements before proceeding with FP implementation? NA
3. Considers cost savings realized through economies of scale/more efficient operation? NA

C. Unsewered Areas*

1. Description of the unsewered area:
   a) Identification of the approximate number, type, and location of ISDS systems; NA
   b) Map of the unsewered area; NA
   c) Identification of the approximate number of and impacts of failed/failing systems; on surface and ground water; NA
   d) An analysis of the cause(s) in ISDS failure area(s). NA

2. Assess the continued use of ISDS systems within the unsewered area(s). If continued use is found to be unsuitable, are alternatives evaluated? NA

3. Description of a method to ensure regular ISDS maintenance including, but not limited to: an information and education initiative with a method for tracking maintenance activities; an information and education initiative with inspection and maintenance incentives (e.g. pump-out subsidies); a requirement for regular inspection and maintenance. NA

4. Description of a community assistance program for ISDS repair/replacement. At a minimum this should include:
   a) the nature and extent of the assistance to be provided to the community (i.e. financial, technical, etc.); NA
   b) application procedure and any community imposed eligibility requirements; NA
   c) method to advertise the assistance; NA
   d) designation of a party responsible for the assistance program. NA

5. Financial analysis:
   a) estimated cost of repairing/replacing failed ISDS in the area; NA
   b) estimated cost for installing, operating, and maintaining collection and treatment system; NA
   c) estimated cost(s) for ISDS management program as described in items #2 and 3 above. NA

* If after a public meeting, the recommendation of this section is to implement an ISDS management program solely featuring the repair/replacement of individual systems on individual lots, then the community may elect to end the facilities planning process at this point and request a Categorical Exclusion for the unsewered area(s). The information developed to this point shall be used to justify the Categorical Exclusion request. A group or community ISDS unit cannot qualify for a Categorical Exclusion.

D. Sewer Extensions

Where sewer extensions are proposed, the plan should insure that:

1. The need for sewers is justified and documented, including justification for abandoning ISDS's rather than implementing a WWMD. NA

2. Consideration is given to conveyance of treated wastewater by small diameter gravity, pressure, or vacuum sewers. NA

3. Alternative methods of collection and disposal have been evaluated and compared to conventional sewers with regard to total costs *and environmental impacts*. NA

4. The sewers will not encourage or induce development in identified environmentally sensitive areas (e.g. wetlands). NA

5. The sewers are aligned and designed so construction will minimize impacts to identified environmentally sensitive areas. NA

6. Preliminary designs and the resulting cost estimates reflect state design guidelines. NA

E. Sludge Treatment and Disposal

1. Do proposed sludge treatment and disposal methods comply with regulatory requirements of applicable state and federal laws (e.g. R.I. Clean Air Act, R.I. Groundwater Protection Act, Resource Conservation and Recovery Act)? Yes,2-3

2. Has the applicant given appropriate consideration to sludge treatment and disposal *by evaluating several alternatives*? Yes,2-3

3. Is the sludge treatment and disposal method(s) selected/*evaluated* appropriate to the size and location of the project? Yes,2-3

4. *Has serious consideration been given to sludge treatment and disposal alternatives which recycle or reclaim sludge such as methane recovery, self-sustaining incineration, composting, and land application?* NA

F. Septage treatment and disposal

1. Does the FP consider a WWMD as the mechanism for regulating septage? NA

2. Has the applicant given appropriate consideration to current and future septage treatment and disposal *by evaluating several alternatives?* NA

3. Do the alternatives evaluated include regionalized treatment and disposal at an existing WWTF based on the goals and objectives in the SGP *and the recommendations in the Areawide Waste Treatment Management Plan ("208" Plan)?* NA

G. Combined Sewer Overflows (CSO's)

The plan for control of pollution from CSO's must be considered if application of Best Available Technology (BAT) for wet-weather flows would not meet water quality standards. Where measures are to be considered for CSO`s, the Facilities Plan is to evaluate the following for a 20 year planning period.

1. Alternative control techniques and management practices that could attain various levels of pollution control. NA

2. Cost of achieving various levels of pollution control by each of the control techniques that appear to be most feasible and cost effective. NA

3. Benefits to receiving waters of a range of pollution control alternatives during wet weather conditions. Consult WQM plan as appropriate. NA

4. Costs and benefits from addition of advanced wastewater treatment (AWT) processes for dry weather flows in the area as an alternative to CSO control. NA

5. A final alternative selected for control of CSO's must meet the following criteria:

   a. The recommendations for CSO's are consistent with the R.I. CSO Policy. NA

   b. Provision has been made for secondary treatment of all dry weather flows in the planning area. NA

H. Conventional Wastewater Management

An analysis of conventional treatment technologies should insure that:

1. The treatment process evaluated is capable of meeting RIPDES effluent limits. Yes,6-1

2. Communities with small populations (usually 10,000 or less) have considered low cost treatment technologies such as facultative ponds, trickling filters, oxidation ditches, and overland flow. NA

3. The conventional treatment process is appropriate to the character and quantity of the wastewater and the size and location of the community. Yes,4-4

I. Alternative Technologies

Applicants must evaluate alternative treatment technologies. The following should be addressed:

1. *The proposed process is proven and within the CWA definition.* Yes,5-4

2. *Expected treatment results are within normal ranges for the process selected.* Yes,4-4

3. *Loading rates and other design criteria are based on State design standards, and are within the normal ranges recommended in EPA guidance for the process.* Yes,4-8

4. *Land application is a specific alternative technology which must be addressed. Should suitable land be identified, the following factors must be addressed for land application alternatives:*

   a. Site Selection - The plan should identify suitable sites and describe reasons for rejecting other sites. NA

   b. Loading Rates and Land Area - Design values which are significantly different from EPA's process design manual should be justified by adequate supporting data. NA

   c. Estimated Costs - Preliminary costs for land treatment should be comparable with those referenced in the EPA process design manual. Significant differences in land treatment costs should be well documented. NA

   d. Preapplication Treatment - The need for pre-application treatment greater than that recommended in EPA's process design manual should be well documented. NA

   e. Environmental Effects - Are the benefits of land treatment, including resource conservation and higher levels of treatment acknowledged and discussed? NA

J. Innovative Technologies

The applicant must evaluate innovative technologies and consider the following items:

1. *The processes must be developed but not fully proven and within the CWA definition.* NA
2. *The Facilities Plan must assess the risks, and must establish that the level of risk is acceptable in light of the corresponding benefits.* NA
3. *Where the risk of a promising technology is relatively high, field testing of the technology must be used to further evaluate the proposed project.* NA

K. Environmental

1. Does the Facility Plan forecast the future environment in the planning area without the proposed project(s) in the Facility Plan? (i.e. "no build" alternative). Yes,3-3
2. Direct Impacts
   a. Will there be disruption of traffic, business or other daily activities during construction? No,9-13
   b. Will there be damage to historical, archaeological, cultural or recreational areas during construction or permanently? No,9-14
   c. Will there be disturbance of sensitive ecosystems such as wetlands and habitats of endangered or threatened species during construction or permanently? No,9-15
   d. Will there be pollution of surface waters due to erosion in the project(s) area(s) during or after construction? No,9-15
   e. Will there be impacts on water quality from effluent discharge(s) during construction or operation? No,9-16
   f. Will there be displacements of households, businesses, or services occurring? If so, how many? No,9-16
   g. Will there be discharge of pollutants, noise or visual impacts? No,9-17
   h. Will there be increased: air or noise pollution; solid waste production; or demand for potable water from induced changes in population and land use? No,9-18
3. Indirect Impacts:
   a. Does the plan adequately discuss indirect impacts? Yes,9-20
   b. Does the environmental analysis give special attention to indirect impacts to determine whether they will violate Federal, State, or local laws? NA
   c. Has induced growth been considered?
4. General aspects
   a. Does the plan adequately consider cumulative impacts? Yes,9-19
   b. Are mitigation measures specified for direct and indirect detrimental impacts? NA
   c. Is the information sufficient to be considered an Environmental Assessment? Yes
   d. Do(es) the project(s) qualify for Categorical Exclusion? NA
   e. Will a FONSI be required? Yes
   f. Will an EIS and ROD be required? NA
5. Summary of Environmental Considerations
   a. Does the plan include a summary of the existing system and environmental needs? Yes,9-10
   b. Does the plan include a summary of the future environment without the project? Yes,9-19
   c. Does the plan contain a summary of the alternatives generation, evaluation, and selection process which led to the preferred alternative? Yes,9-11

L. Segmented (Staged) Construction

1. Is adding plant capacity or extending sewers in stages during the planning period more cost effective/affordable than full construction initially? NA

2. Has the relative cost of providing full capacity initially been compared with the present worth of deferred costs for providing capacity when needed? NA

M. Is this a multiple purpose project? (i.e. meets RIPDES permit requirements, but also may serve agricultural, recreational, industrial water supply, or energy production purposes) No

N. Financial

1. For segmented construction, develops a schedule and an affordable financing plan for the construction of all contracts, to provide adequate capacity for wastewater treatment needs during the twenty year planning period. NA

2. Are the proposed construction and costs consistent with the implementation and capital improvement budget elements of the CCP for the next five years? NA

3. A cost analysis assigns reasonable useful lives to major components and considers their salvage value at the end of the planning period *for each alternative evaluated.* NA

4. Has a rate structure analysis been performed and defined the least expensive cost recovery/rate increases needed to build the contracts proposed in the FP? NA

5. Monetary evaluation includes:

a. Sunk costs; NA

b. Present worth (twenty year analysis); Yes,9-5

c. Useful life of major components; Yes,9-5

d. Escalation for land and energy; NA

e. Interest during construction; NA

f. Costs per: capita, household, and user; NA

g. Net annualized costs for each alternative evaluated; NA

6. *Is there a User Charge System analysis based on annual OM&R cost recovery requirements?* No

7. *Capital Finance Plan (CFP)*

a. Has a CFP been prepared which takes into account the cost relationship between the proposed contract(s) and future town debt capacity? NA

b. Does the CFP project costs for waste treatment and disposal services within the planning area for a period of at least 10 years? NA

c. Does the CFP project the nature, extent, and timing of future expansion and reconstruction of treatment works which will be necessary to satisfy the future requirements for waste treatment services? NA

d. Does the CFP identify the way intended to finance future expansion and reconstruction for a period of at least ten years? NA

VII. Plan Selection

A. Selected Plan (major features) and reasons for selection

1. Is there a narrative summary of why the proposed plan was selected? Yes,9-1

2. Is there a narrative summary demonstrating that the proposed plan is not only cost-effective but also environmentally sound? Yes,9-1

3. Does the plan contain a summary of how the selected alternative will address and comply with federal, state, and local environmental laws and regulations? Yes,9-1

B. Evaluation and ranking of proposals

1. *Were engineering considerations (e.g. reliability, energy use, process complexity) used to evaluate and select the plan?* Yes

2. *Were monetary considerations (e.g. capital costs, annual O & M costs, cost per*

user/household/capita) used to evaluate and select the plan? NA

3. *Were waste reduction, recycling, and reclamation considered in evaluating and selecting the plan?* NA
4. *Were legal, institutional, and financial constraints considered in evaluating and selecting the plan?*

C. *Environmental Impacts of Selected Alternative*

1. *Are unavoidable detrimental impacts identified?* NA
2. *Are mitigation measures for unavoidable detrimental impacts identified?* NA
3. *Are irretrievable and irreversible commitments of resources identified?* NA
4. *Is the relationship between short-term uses of the environment and the maintenance and enhancement of long-term environmental productivity addressed?* Yes,9-19
5. *Does the plan address mitigation measures for all significant detrimental impacts?* NA

VIII. Plan Implementation

A. Institutional Responsibilities

1. Does each jurisdiction affected by the selected plan find it acceptable, particularly financially? NA
2. Are DRAFT intermunicipal agreements to implement the plan included? NA
3. Does the FP identify each party, its jurisdiction, and responsibilities necessary to implement the plan? Yes
4. Does the FP demonstrate that each agency has the ability and authority under state law to finance, design, construct, have or require access to, operate, and maintain the portions of the project within its jurisdiction necessary to implement the project? Yes
5. Are there DRAFT copies of resolutions of FP acceptance for all parties involved in implementation of the plan? NA
6. If there is opposition to the plan, is there a description of steps necessary to reach agreement on implementing the plan? NA
7. Are referenda or voter approval items needed for implementation identified? NA

B. Implementation Steps (including segmented construction)

1. Is the implementation/construction schedule necessary to implement the FP consistent with enforceable requirements of the RIPDES discharge permit? Yes
2. Is the implementation/construction schedule consistent with the CCP? NA

C. Operation & Maintenance

1. Staffing Plan
   a. Is a staffing plan for both the collection and treatment systems included? NA
   b. Is the staffing plan based on the cumulative time requirements for monitoring, testing, and collection and treatment system process units O & M? NA
   c. Does the staffing plan show the assumed basis for productive man-hours per employee per year (i.e. X hours per year less allowed holidays, vacation, & sick leave multiplied by a productivity factor)? NA
   d. Are the shift staffing levels based on energy (e.g. off-peak dewatering), maintenance (e.g. downtime during low flow), or other process considerations rather than a standard work week? NA
2. Is a DRAFT Plan of Operation included? NA

IX. Preliminary design and cost estimates

A. Does the plan include basic design criteria which meet state guidelines? Yes

B. Will each segmented contract result in a fully operational component of the plan? Yes

C. Are segments consistent with the five-year implementation element of the CCP? NA

D. Are detailed cost estimates included along with an ENR cost index number? Yes

X. *Public Participation*

A. Was a public participation program implemented which adequately informed the public of the project alternatives and provided a mechanism for comment? Yes

B. Was a public meeting/workshop held to solicit further public comment at the point where several reasonable alternatives were identified for detailed study? TBD

C. If an EIS was necessary, was there a public notice of a scoping meeting? NA

D. Was there a public hearing held to present the DRAFT FP and EA/EIS? TBD

E. Were substantive public comments on alternative selection received?

F. Are copies of all agency and substantive public comments included? No

G. Are there responses to all substantive comments? NA

H. *Were the views of the public considered in selecting the preferred alternative?* TBD

FOR DEM USE ONLY

Based on staff review of the contents of the Facilities Plan documents, it is my opinion that all requirements for issuing an approval for this Facilities Plan have been met.

SIGNED:_____, P.E., Supervising Sanitary Engineer

DATE:_____, 200_

Also, based on staff review of the environmental documents associated with the Facilities Plan, it is my opinion that the environmental information and analyses provided have met the statutory intent of the Clean Water Act environmental review requirements and are sufficient to issue a Categorical Exclusion/Finding of No Significant Impact/Record of Decision on the projects identified in the approved Facilities Plan.

SIGNED:_____, P.E., Supervising Sanitary Engineer

DATE:_____, 200_

Intergovernmental Review Contacts

Mr. Christopher J. Raithel
RI Department of Environmental Management
Division of Fish and Wildlife
Great Swamp Field Headquarters
277 Great Neck Road
West Kingston, RI 02892

Mr. Anthony Tur*
Endangered Species Specialist
U.S. Department of the Interior
FISH AND WILDLIFE SERVICE
New England Field Office
70 Commercial St. – Suite 300
Concord, NH 03301-5087

Ms. Nancy Hess
Principal Environmental Planner
Rhode Island Statewide Planning Program
One Capitol Hill
Providence, RI 02908

J. Michael Bennett, P.E.
Deputy Chief Engineer
Rhode Island Department of Transportation
Two Capitol Hill, Rm. 226
Providence, RI 02903-1124

Mr. Edward F. Sanderson, Executive Director
Deputy State Historic Preservation Officer
Historical Preservation & Heritage Commission
Old State House
150 Benefit Street
Providence, RI 02903-1029

Mr. John Brown
Tribal Council Member
Narragansett Indian Tribal Historic Preservation
215 Fenner Hill Road
Hope Valley, RI 02832

Mr. Grover J. Fugate, Executive Director
Coastal Resources Management Council
Oliver H. Stedman Government Center
4808 Tower Hill Road – Suite 3
Wakefield, RI 02879-1900

NOAA/NMFS
Habitat Conservation Division
212 Rogers Avenue
Milford, CT 06460

*The Fish and Wildlife Service no longer wishes to receive intergovernmental review requests. They ask that you visit their website to find updated lists of federally-listed or proposed threatened or endangered species and critical habitats in the project area in question. The link is:

www.fws.gov/northeast/newenglandfieldoffice/EndangeredSpec-Consultation.htm

DEPARTMENT OF PUBLIC WORKS
WOONSOCKET, RHODE ISLAND

March 8, 2011

Mr. Christopher J. Raithel
RI Department of Environmental Management
Division of Fish and Wildlife
Great Swamp Field Headquarters
277 Great Neck Road
West Kingston, RI 02892

Re: **Intergovernmental Review**
City of Woonsocket, RI Wastewater Treatment Facility
Facility Plan Amendment

Dear Mr. Raithel:

The City of Woonsocket is hereby submitting a brief summary of our ongoing Facility Planning Amendment efforts (attached) along with the associated Environmental Assessment for your agency's review & comment. The project consists of planning and preliminary design of upgrades to meet the wastewater facility's most recently revised Rhode Island Pollution Discharge Elimination System (RIPDES) Permit. Specifically, the facility is required to reduce effluent concentrations of nitrogen and phosphorus that are discharged to the Blackstone River. The facility cannot treat wastewater to the more stringent nutrient limits outlined in the permit as currently designed, therefore capital improvements are necessary.

We trust the information provided will be sufficient for your review. We will assume your agency has no questions or comments regarding the project if not received by this office after March 29, 2011. Should you have any questions or comments, please contact the undersigned at (401) 767-9209.

Sincerely,

Sheila McGauvran, P.E.
Director of Public Works

Enclosures: Executive Summary
Conceptual Figures of Proposed Improvements
Environmental Assessment

CITY HALL · P.O.BOX B · WOONSOCKET, RI 02895
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1. Article Addressed to:

Mr Christopher Raither
RI Dept of Environmental Mgt
great swamp Hdqtrs.
277 great neck Rd.
West Kingston RI 02892

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X ☐ Agent ☐ Addressee

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DEPARTMENT OF PUBLIC WORKS
WOONSOCKET, RHODE ISLAND

March 8, 2011

Mr. Anthony Tur
Endangered Species Specialist
U.S. Department of the Interior
FISH AND WILDLIFE SERVICE
New England Field Office
70 Commercial St. – Suite 300
Concord, NH 03301-5087

Re: **Intergovernmental Review**
City of Woonsocket, RI Wastewater Treatment Facility
Facility Plan Amendment

Dear Mr. Tur:

The City of Woonsocket is hereby submitting a brief summary of our ongoing Facility Planning Amendment efforts (attached) along with the associated Environmental Assessment for your agency's review & comment. The project consists of planning and preliminary design of upgrades to meet the wastewater facility's most recently revised Rhode Island Pollution Discharge Elimination System (RIPDES) Permit. Specifically, the facility is required to reduce effluent concentrations of nitrogen and phosphorus that are discharged to the Blackstone River. The facility cannot treat wastewater to the more stringent nutrient limits outlined in the permit as currently designed, therefore capital improvements are necessary.

We trust the information provided will be sufficient for your review. We will assume your agency has no questions or comments regarding the project if not received by this office after March 29, 2011. Should you have any questions or comments, please contact the undersigned at (401) 767-9209.

Sincerely,

SMcGauvran

Sheila McGauvran, P.E.
Director of Public Works

Enclosures: Executive Summary
Conceptual Figures of Proposed Improvements
Environmental Assessment

CITY HALL • P.O.BOX B • WOONSOCKET, RI 02895
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1. Article Addressed to:

Mr anthony Tur
U.S. Dept of The interior
new England field office
70 commercial st.
suite 300
Concord NH 03301

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X Molly Sperduto ☒ Agent ☐ Addressee

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DEPARTMENT OF PUBLIC WORKS
WOONSOCKET, RHODE ISLAND

March 8, 2011

Ms. Nancy Hess
Principal Environmental Planner
Rhode Island Statewide Planning Program
One Capitol Hill
Providence, RI 02908

Re: **Intergovernmental Review**
City of Woonsocket, RI Wastewater Treatment Facility
Facility Plan Amendment

Dear Ms. Hess:

The City of Woonsocket is hereby submitting a brief summary of our ongoing Facility Planning Amendment efforts (attached) along with the associated Environmental Assessment for your agency's review & comment. The project consists of planning and preliminary design of upgrades to meet the wastewater facility's most recently revised Rhode Island Pollution Discharge Elimination System (RIPDES) Permit. Specifically, the facility is required to reduce effluent concentrations of nitrogen and phosphorus that are discharged to the Blackstone River. The facility cannot treat wastewater to the more stringent nutrient limits outlined in the permit as currently designed, therefore capital improvements are necessary.

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Sincerely,

S M McGauvran

Sheila McGauvran, P.E.
Director of Public Works

Enclosures: Executive Summary
Conceptual Figures of Proposed Improvements
Environmental Assessment

CITY HALL • P.O.BOX B • WOONSOCKET, RI 02895
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1. Article Addressed to:

MS Nancy Hess
RI Statewide Planning
one capitol Hill
Providence RI 02908

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X [signature] ☐ Agent ☐ Addressee

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DEPARTMENT OF PUBLIC WORKS
WOONSOCKET, RHODE ISLAND

March 8, 2011

J. Michael Bennett, P.E.
Deputy Chief Engineer
Rhode Island Department of Transportation
Two Capitol Hill, Rm. 226
Providence, RI 02903-1124

Re: **Intergovernmental Review**
City of Woonsocket, RI Wastewater Treatment Facility
Facility Plan Amendment

Dear Mr. Bennett:

The City of Woonsocket is hereby submitting a brief summary of our ongoing Facility Planning Amendment efforts (attached) along with the associated Environmental Assessment for your agency's review & comment. The project consists of planning and preliminary design of upgrades to meet the wastewater facility's most recently revised Rhode Island Pollution Discharge Elimination System (RIPDES) Permit. Specifically, the facility is required to reduce effluent concentrations of nitrogen and phosphorus that are discharged to the Blackstone River. The facility cannot treat wastewater to the more stringent nutrient limits outlined in the permit as currently designed, therefore capital improvements are necessary.

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Sincerely,

Sm McGauvran

Sheila McGauvran, P.E.
Director of Public Works

Enclosures: Executive Summary
Conceptual Figures of Proposed Improvements
Environmental Assessment

CITY HALL · P.O.BOX B · WOONSOCKET, RI 02895
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City, State, ZIP+4: Providence, RI 02903

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1. Article Addressed to:

J. Michael Bennett
RI Dept of transportation
Two Capital Hill
Rm 226
Providence RI 02903

2. Article Number *(Transfer from service label)* 7010 3090 0001 0303 2175

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A. Signature
X George Carrington ☐ Agent ☐ Addressee

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DEPARTMENT OF PUBLIC WORKS
WOONSOCKET, RHODE ISLAND

March 8, 2011

Mr. Edward F. Sanderson, Executive Director
Deputy State Historic Preservation Officer
Historical Preservation & Heritage Commission
Old State House
150 Benefit Street
Providence, RI 02903-1029

Re: **Intergovernmental Review**
City of Woonsocket, RI Wastewater Treatment Facility
Facility Plan Amendment

Dear Mr. Sanderson:

The City of Woonsocket is hereby submitting a brief summary of our ongoing Facility Planning Amendment efforts (attached) along with the associated Environmental Assessment for your agency's review & comment. The project consists of planning and preliminary design of upgrades to meet the wastewater facility's most recently revised Rhode Island Pollution Discharge Elimination System (RIPDES) Permit. Specifically, the facility is required to reduce effluent concentrations of nitrogen and phosphorus that are discharged to the Blackstone River. The facility cannot treat wastewater to the more stringent nutrient limits outlined in the permit as currently designed, therefore capital improvements are necessary.

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Sincerely,

Sheila McGauvran, P.E.
Director of Public Works

Enclosures: Executive Summary
Conceptual Figures of Proposed Improvements
Environmental Assessment

CITY HALL • P.O.BOX B • WOONSOCKET, RI 02895
TELEPHONE (401) 767-9209 • FAX (401) 766-7876 • E-MAIL: smcgauvran@woonsocketri.org

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1. Article Addressed to:

Edward Sanderson
Deputy State Preservation off.
Old State House
150 Benefit street
Providence RI 02903

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A. Signature
X Rosemary Carreiro ☐ Agent ☐ Addressee

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DEPARTMENT OF PUBLIC WORKS
WOONSOCKET, RHODE ISLAND

March 8, 2011

Mr. John Brown
Tribal Council Member
Narragansett Indian Tribal Historic Preservation
215 Fenner Hill Road
Hope Valley, RI 02832

Re: **Intergovernmental Review**
City of Woonsocket, RI Wastewater Treatment Facility
Facility Plan Amendment

Dear Mr. Brown:

The City of Woonsocket is hereby submitting a brief summary of our ongoing Facility Planning Amendment efforts (attached) along with the associated Environmental Assessment for your agency's review & comment. The project consists of planning and preliminary design of upgrades to meet the wastewater facility's most recently revised Rhode Island Pollution Discharge Elimination System (RIPDES) Permit. Specifically, the facility is required to reduce effluent concentrations of nitrogen and phosphorus that are discharged to the Blackstone River. The facility cannot treat wastewater to the more stringent nutrient limits outlined in the permit as currently designed, therefore capital improvements are necessary.

We trust the information provided will be sufficient for your review. We will assume your agency has no questions or comments regarding the project if not received by this office after March 29, 2011. Should you have any questions or comments, please contact the undersigned at (401) 767-9209.

Sincerely,

Sheila McGauvran, P.E.
Director of Public Works

Enclosures: Executive Summary
Conceptual Figures of Proposed Improvements
Environmental Assessment

CITY HALL • P.O.BOX B • WOONSOCKET, RI 02895
TELEPHONE (401) 767-9209 • FAX (401) 766-7876 • E-MAIL: smcgauvran@woonsocketri.org

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PROVIDENCE RI 02903 MAR 8 2011

Sent To: John Brown - ~~TRIBAL~~ TRIBAL COUNCIL
Street, Apt. No.; or PO Box No.: 215 Fenner Hill Rd
City, State, ZIP+4: Hope Valley RI 02832

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1. Article Addressed to:

Mr John Brown
tribal council Member
Narr. Indian tribal pres.
215 Fenner Hill Rd
Hope Valley RI 02832

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Ella Bee
☐ Agent
☐ Addressee

B. Received by (*Printed Name*)
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PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

DEPARTMENT OF PUBLIC WORKS
WOONSOCKET, RHODE ISLAND

March 8, 2011

Mr. Grover J. Fugate, Executive Director
Coastal Resources Management Council
Oliver H. Stedman Government Center
4808 Tower Hill Road – Suite 3
Wakefield, RI 02879-1900

Re: **Intergovernmental Review**
City of Woonsocket, RI Wastewater Treatment Facility
Facility Plan Amendment

Dear Mr. Fugate:

The City of Woonsocket is hereby submitting a brief summary of our ongoing Facility Planning Amendment efforts (attached) along with the associated Environmental Assessment for your agency's review & comment. The project consists of planning and preliminary design of upgrades to meet the wastewater facility's most recently revised Rhode Island Pollution Discharge Elimination System (RIPDES) Permit. Specifically, the facility is required to reduce effluent concentrations of nitrogen and phosphorus that are discharged to the Blackstone River. The facility cannot treat wastewater to the more stringent nutrient limits outlined in the permit as currently designed, therefore capital improvements are necessary.

We trust the information provided will be sufficient for your review. We will assume your agency has no questions or comments regarding the project if not received by this office after March 29, 2011. Should you have any questions or comments, please contact the undersigned at (401) 767-9209.

Sincerely,

Sm McGauvran

Sheila McGauvran, P.E.
Director of Public Works

Enclosures: Executive Summary
Conceptual Figures of Proposed Improvements
Environmental Assessment

CITY HALL • P.O.BOX B • WOONSOCKET, RI 02895
TELEPHONE (401) 767-9209 • FAX (401) 766-7876 • E-MAIL: smcgauvran@woonsocketri.org

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Total Postage & Fees	$ $7.17	03/08/2011

Sent To: Grover Fugate
Street, Apt. No.; or PO Box No.: 4808 Tower Hill rd - St 3
City, State, ZIP+4: Wakefield, RI 02879

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1. Article Addressed to:

Mr Grover Fugate
CRCM
Oliver Stedman Gvt Center
4808 Tower Hill rd- St 3
Wakefield RI 02879

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A. Signature
X ☐ Agent ☐ Addressee

B. Received by (Printed Name) C. Date of Delivery

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DEPARTMENT OF PUBLIC WORKS
WOONSOCKET, RHODE ISLAND

March 8, 2011

NOAA/NMFS
Habitat Conservation Division
212 Rogers Avenue
Milford, CT 06460

Re: **Intergovernmental Review**
City of Woonsocket, RI Wastewater Treatment Facility
Facility Plan Amendment

Dear Sir/Madam:

The City of Woonsocket is hereby submitting a brief summary of our ongoing Facility Planning Amendment efforts (attached) along with the associated Environmental Assessment for your agency's review & comment. The project consists of planning and preliminary design of upgrades to meet the wastewater facility's most recently revised Rhode Island Pollution Discharge Elimination System (RIPDES) Permit. Specifically, the facility is required to reduce effluent concentrations of nitrogen and phosphorus that are discharged to the Blackstone River. The facility cannot treat wastewater to the more stringent nutrient limits outlined in the permit as currently designed, therefore capital improvements are necessary.

We trust the information provided will be sufficient for your review. We will assume your agency has no questions or comments regarding the project if not received by this office after March 29, 2011. Should you have any questions or comments, please contact the undersigned at (401) 767-9209.

Sincerely,

SMcGauvran

Sheila McGauvran, P.E.
Director of Public Works

Enclosures: Executive Summary
Conceptual Figures of Proposed Improvements
Environmental Assessment

CITY HALL • P.O.BOX B • WOONSOCKET, RI 02895
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PROVIDENCE BLANK STA 02903 MAR 8 2011

Sent To NOAA/NMFS Habitat Conservation Division
Street, Apt. No.; or PO Box No. 212 Rogers Ave
City, State, ZIP+4 Milford, CT 06460

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1. Article Addressed to:

NOAA/NMFS
Habitat conservation
212 Rogers ave
Milford, CT 06460

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A. Signature
X [signature] ☒ Agent ☐ Addressee

B. Received by (Printed Name) Carlitta Sipes
C. Date of Delivery 3/10/11

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DEPARTMENT OF PUBLIC WORKS
WOONSOCKET, RHODE ISLAND

March 8, 2011

Mr. Jay Manning
Division of Water Resources / SRF
RIDEM
235 Promenade Street
Providence, RI 02908-5767

Re: **Intergovernmental Review**
City of Woonsocket, RI Wastewater Treatment Facility
Facility Plan Amendment

Dear Mr. Manning:

The City of Woonsocket is hereby submitting a brief summary of our ongoing Facility Planning Amendment efforts (attached) along with the associated Environmental Assessment for your agency's review & comment. The project consists of planning and preliminary design of upgrades to meet the wastewater facility's most recently revised Rhode Island Pollution Discharge Elimination System (RIPDES) Permit. Specifically, the facility is required to reduce effluent concentrations of nitrogen and phosphorus that are discharged to the Blackstone River. The facility cannot treat wastewater to the more stringent nutrient limits outlined in the permit as currently designed, therefore capital improvements are necessary.
0
We trust the information provided will be sufficient for your review. We will assume your agency has no questions or comments regarding the project if not received by this office after March 29, 2011. Should you have any questions or comments, please contact the undersigned at (401) 767-9209.

Sincerely,

SMMcGauvran

Sheila McGauvran, P.E.
Director of Public Works

Enclosures: Executive Summary
Conceptual Figures of Proposed Improvements
Environmental Assessment

CITY HALL • P.O.BOX B • WOONSOCKET, RI 02895
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Total Postage & Fees	$ $7.00

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MAR 8 2011
PROVIDENCE RI 02903
03/08/2011

Sent To RIDEM / SCF
Street, Apt. No.; or PO Box No. 235 Promenade St.
City, State, ZIP+4 Providence RI 02908

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1. Article Addressed to:

Mr Jay Manning
RIDEM
235 Promenade st.
Providence RI
02908

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X ☐ Agent ☐ Addressee

B. Received by (*Printed Name*) C. Date of Delivery

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STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

COASTAL RESOURCES MANAGEMENT COUNCIL
Oliver H. Stedman Government Center
4808 Tower Hill Road, Suite 3
Wakefield, R.I. 02879-1900

(401) 783-3370
FAX: (401) 783-3767

March 22, 2011

Ms. Sheila McGauvran, PE
Director of Public Works
Woonsocket City Hall
P O Box B
Woonsocket, RI 02895

RE: CRMC File No. 2011-03-037 – Wastewater Facility upgrades to meet RIDEM RIPDES permit, Woonsocket, RI, Intergovernmental Review.

Dear Ms. McGauvran:

Based on review of the document entitled "Facility Plan Amendment Intergovernmental Review," dated March 2011, by Veolia Water and Wright-Pierce, no further review or permit shall be required by the CRMC, as the facility improvements do not increase the sewage flow rate from the plant to the Blackstone River.

Thank you for the opportunity to review the document.

Sincerely,

Jeffrey M. Willis, Deputy Director
Coastal Resources Management Council

/kc
cc: Ken Anderson
Dave Reis

Division of Planning - Statewide Planning Program
One Capitol Hill
Providence, Rhode Island 02908
(401) 222-6480

MEMORANDUM

To: Shelia McGauvran, Director of Public Works

CC: Art Zeman, RI DEM

Subject: Request for State Guide Plan Consistency
Date: 03.29.11
From: NH Nancy Hess, Supervising Land Use Planner

Project: Facility Plan Amendment – Woonsocket Regional Wastewater Treatment Facility

Applicant: City of Woonsocket

I reviewed the Intergovernmental Review documents dated March 2010 concerning the proposed upgrades to the regional treatment facility for consistency with the Rhode Island State Guide Plan (SGP).

The purpose of this Amendment is to meet discharge limitations established by the Consent Agreement with RI DEM along with a design and implementation schedule for construction of the required improvements. The existing MLE process will be retained and 2 tertiary nutrient removal facilities added to the plant. Construction will be at the existing plant site. The intent is to complete the improvements by March 2014.

The proposed Amendment is consistent with the SGP policies concerning providing infrastructure support as needed for remediation of existing water quality concerns. The proposed reduction in the discharge of nutrients to downstream receiving waters (Blackstone River) will result in improved water quality and is consistent with the appropriate elements of the SGP related to land use, outdoor recreation, and water resources.

Thank you for the opportunity to comment on the Amendment. Should you have any questions about this review, please feel free to contact me at the number above.

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
HISTORICAL PRESERVATION & HERITAGE COMMISSION
Old State House • 150 Benefit Street • Providence, R.I. 02903-1209
TEL (401) 222-2678 FAX (401) 222-2968
TTY (401) 222-3700 Website www.preservation.ri.gov

14 January 2013

Jeffrey A. Nield
Environmental Permitting Task Manager
CH2M HILL
18 Tremont Street, Suite 700
Boston, Massachusetts 02108

Re: City of Woonsocket Wastewater Treatment Facility
Facilities Plan Amendment – December 2012 Revision

Dear Mr. Nield,

The Rhode Island Historical Preservation and Heritage Commission (RIHPHC) staff has reviewed the information that you provided regarding the planning and preliminary design of upgrades for the City of Woonsocket Wastewater Treatment Facility.

Based on the information that you submitted, it is our conclusion that these upgrades will have no effect on any significant cultural resources (those listed on, or eligible for listing on, the National Register of Historic Places).

These comments are provided in accordance with the Rhode Island Historic Preservation Act (RIGL 42-45 et seq.) and the Procedures of the Rhode Island Historical Preservation and Heritage Commission ("Procedures for the Registration and Protection of Historic Properties"). Please note that the RIHPHC responds to project review requests within 30 days of receipt, as established under Section 106 of the National Historic Preservation Act, and lack of a response prior to that should not be considered approval. If you have any questions, please contact Jeffrey Emidy, Project Review Coordinator of this office.

Very truly yours,

For Edward F. Sanderson
Executive Director
State Historic Preservation Officer

130114.05jde

State of Rhode Island and Providence Plantations
Coastal Resources Management Council
Oliver H. Stedman Government Center
4808 Tower Hill Road, Suite 3
Wakefield, RI 02879-1900

(401) 783-3370
Fax (401) 783-3767

January 16, 2013

Mr. Jeffrey A. Nield
CH2M HILL
18 Tremont Street, Suite 700
Boston, MA 02108

Re: **City of Woonsocket Wastewater Treatment Facility: December 2012 Revision – Facility Plan Amendment**
CRMC File 2013-01-006 – Intergovernmental Review Request

Dear Mr. Nield:

Thank you for submitting the City of Woonsocket Wastewater Treatment Facility: December 2012 Revision – Facility Plan Amendment document consisting of the Executive Summary and Section 9.5 Environmental Assessment. The document was received in this office on December 26, 2012. You have requested the Coastal Resources Management Council (CRMC) to conduct an intergovernmental review of this plan for conformance with the State coastal program. The CRMC has authority for such a review pursuant to Section 320 of the Coastal Resources Management Plan and will determination whether the proposed project may pose any adverse impact to the coastal resources of the State of Rhode Island.

The Facility Plan Amendment summarizes the various system improvements that were investigated and outlines recommended improvements that need to be implemented so that the wastewater facility can meet regulatory discharge effluent limits for nitrogen and phosphorous establish by the RI department of Environmental Management (RIDEM) in the RI Pollutant Discharge Elimination System permit No. RI 0100111 issued October 1, 2008. The recommendation is for the construction of a two-stage activated AB process followed by reuse of the existing traveling bridge sand filters. The Facility Plan Amendment contains an implementation plan and schedule (Figure ES-4) to comply with the February 2011 Consent Agreement between the City and RIDEM.

The wastewater treatment facility is located at 11 Cumberland Hill Road, Woonsocket. Treated wastewater effluent from the facility is discharged to the Blackstone River, which eventually enters the Seekonk River in Pawtucket and ultimately into the Providence River at the head of Narragansett Bay. No portion of the sewer service area within the City of Woonsocket or the neighboring communities of Bellingham and Blackstone, MA and Smithfield, RI (which have intermunicipal agreements with the City) are located on a coastal feature or its contiguous area.

Nor are they located within a CRMC Special Area Management Plan. The wastewater treatment facility upgrades are intended to meet mandated wastewater effluent nutrient limits and improve water quality in the Blackstone River and Narragansett Bay.

Based on the documentation provided we have concluded that there will be no adverse impact to coastal resources of the State from the proposed wastewater facility plan improvement project, provided all necessary authorizations are obtained and the project is constructed, operated, and maintained in strict accordance with all applicable state and federal (EPA) rules and regulations.

Please contact James Boyd of my staff should you have any questions concerning this determination.

Sincerely,

Jeffrey M. Willis, Deputy Director
Coastal Resources Management Council

/lat
cc: Grover Fugate, CRMC Executive Director
James Boyd, CRMC Coastal Policy Analyst
Arthur Zeman, RIDEM
Nancy Hess, Statewide Planning

Division of Planning - Statewide Planning Program

One Capitol Hill
Providence, Rhode Island 02908
(401) 222-6480

MEMORANDUM

To: Jeffrey Nield, Environmental Permitting Task Manager, CH2MHILL

CC: Art Zeman, RI DEM

Subject: Request for State Guide Plan Consistency
Date: 01.23.13
From: NH Nancy Hess, Supervising Land Use Planner

Project: December 2012 Revision - Facilities Plan Amendment – Woonsocket Wastewater Treatment Facility - 11 Cumberland Hill Road, Woonsocket

Applicant: City of Woonsocket

I reviewed the Executive Summary documents dated December 2012 concerning the proposed upgrades to the regional treatment facility for consistency with the Rhode Island State Guide Plan (SGP).

The purpose of this Amendment is to authorize improvements to the plant to meet mandatory discharge limitations for nitrogen and phosphorous established by the Consent Agreement with RI DEM finalized in 2011. Included in the amendments is a design and implementation schedule for construction of the required improvements. The existing MLE process will be retained and 2 tertiary nutrient removal facilities added to the plant. Construction will be at the existing plant site. The intent is to complete the improvements by March 2014.

The proposed construction is entirely within the Urban Services Boundary of *Land Use 2025*. The proposed amendment is consistent with all SGP policies concerning providing infrastructure support as needed for remediation of existing water quality concerns. Additionally, the proposed reduction in the discharge of nutrients to downstream receiving waters (Blackstone River) will result in improved water quality and is consistent with the appropriate elements of the SGP related to land use, outdoor recreation, and water resources.

Thank you for the opportunity to comment on the Amendment. Should you have any questions about this review, please feel free to contact me at the number above.

United States Department of the Interior

FISH AND WILDLIFE SERVICE

New England Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5087
http://www.fws.gov/newengland

January 22, 2013

Reference:	Project	Location
	Wastewater treatment plant facilities plan amendment	Woonsocket, RI

Mr. Jeffrey A. Nield
CH2M Hill
18 Tremont Street, Suite 700
Boston, MA 02108

Dear Mr. Nield:

This responds to your recent correspondence requesting information on the presence of federally listed and/or proposed endangered or threatened species in relation to the proposed activity referenced above. These comments are provided in accordance with the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531, *et seq.*).

Based on information currently available to us, no federally listed or proposed, threatened or endangered species or critical habitat under the jurisdiction of the U.S. Fish and Wildlife Service are known to occur in the project area. Preparation of a Biological Assessment or further consultation with us under section 7 of the Endangered Species Act is not required. No further Endangered Species Act coordination is necessary for a period of one year from the date of this letter, unless additional information on listed or proposed species becomes available.

To obtain updated lists of federally listed or proposed threatened or endangered species and critical habitats, it is not necessary to contact this office. Instead, please visit the Endangered Species Consultation page on the New England Field Office's website:

www.fws.gov/newengland/endangeredspec-consultation.htm (accessed January 2013)

On the website, there is also a link to procedures that may allow you to conclude if habitat for a listed species is present in the project area. If no such habitat exists, then no federally listed species are present in the project area and there is no need to contact us for further consultation. If the above conclusion cannot be reached, further consultation with this office is advised. Information describing the nature and location of the proposed activity that should be provided to us for further informal consultation can be found at the above-referenced site.

Thank you for your coordination. Please contact Brett Hillman of this office at 603-223-2541, extension 34, if we can be of further assistance.

Sincerely yours,

Thomas R. Chapman
Supervisor
New England Field Office

EXECUTIVE SUMMARY

ES.1 INTRODUCTION

The City of Woonsocket, Rhode Island is responsible for an extensive wastewater collection system and regional treatment facility that also accepts flow from the neighboring communities of Bellingham and Blackstone, Massachusetts, and North Smithfield, Rhode Island. These three client communities discharge to the Woonsocket Regional Wastewater Treatment Facility (WWTF) under intermunicipal agreements with the City of Woonsocket. The City of Woonsocket is the holder of the discharge permit issued under the Rhode Island Pollution Discharge Elimination System (RIPDES). The treated effluent from the WWTF is discharged into the Blackstone River.

In June 2012, the City contracted with CH2M HILL to enter into an Operate-Design-Build-Operate (O-DBO) contract to operate, maintain, design and build the nutrient removal upgrades to the Regional Wastewater Treatment Facility. Under the new contract CH2M HILL took over operations of the wastewater treatment facility on October 1, 2012. CH2M HILL is responsible for permit compliance with the facility's RIPDES permit.

The last significant upgrades to the facility were constructed between 2001 and 2004 in accordance with an approved Rhode Island Department of Environmental Management (RIDEM) Facility Plan Amendment completed in February 2000. These upgrades and supplemental improvement projects were completed to achieve the nitrogen and phosphorus removal requirements of the 2000 RIPDES discharge permit.

The RIDEM recently issued a revised Rhode Island Pollutant Discharge Elimination System permit (No. RI 0100111, issued October 1, 2008) which requires more stringent water quality discharge requirements for the facility, specifically lower limits for both the facility's seasonal effluent total nitrogen and total phosphorus concentrations. Under this new permit the facility is now required to meet a seasonal total effluent nitrogen concentration of 3.0 mg/L between May 1 and October 31, and a total effluent phosphorus concentration of 0.1 mg/ L between April 1 and October 31 along with a 1.0 mg/L effluent limit from November 1 to March 31.

The facility's permit has interim seasonal limits of 10 mg/L and 1.0 mg/L for nitrogen and phosphorus respectively. RIPDES permit modifications are discussed in detail in Section 1 – Introduction.

In order to address these new permit modifications, the City entered into a Consent Agreement (RIA-368) with the RIDEM (finalized and signed February 2011) agreeing to submit a Facilities Plan Amendment to develop a proposed solution and implementation schedule for necessary improvements to achieve compliance with the new effluent total nitrogen and total phosphorus limits. The Consent Agreement established a compliance schedule for completing the Facility Plan Amendment along with the design and implementation schedule for construction of the necessary improvements. A letter, dated March 23, 2012, from RIDEM to the City revised some of the dates in the consent decree and provided guidance on the construction schedule. Although the WWTF operates very well and satisfies the design objectives and regulated water quality requirements imposed at the time of the previous upgrades, the 2000 facility improvements were not designed to meet the new low level seasonal effluent limits for total nitrogen and total phosphorus.

ES.2 PURPOSE

This document is prepared to serve as an Amendment to the City of Woonsocket's 2000 RIDEM approved Facility Plan Amendment. This Amendment summarize the various system improvements that were investigated and outlines the recommended improvements that should be implemented to ensure compliance with the facility's new RIPDES permit. This Facility Plan Amendment supplements and updates the City's existing Facility Plan Amendment, which was submitted by US Filter (Veolia) and the Maguire Group, Inc. in February 2000.

The overall purpose of this Facility Plan Amendment includes the following:

- Document the current conditions of the WWTF's equipment systems, and facilities;
- Develop projected future flows and loads for the 20-year planning period (Design Year 2030);
- Evaluate alternatives and develop recommendations to address the immediate nutrient removal requirements for effluent nitrogen and phosphorus for the 20-year planning period;

- Evaluate other WWTF equipment, systems and facility upgrade needs required for the 20-year planning period;
- Provide an opinion of probable capital and O&M costs for recommended treatment system improvements and long-term upgrades;
- Develop an implementation plan and schedule for the required facility upgrades to achieve compliance with the new RIPDES requirements for enhanced nutrient removal, and;
- Provide an brief summary of the upgrades the City of Woonsocket has begun to implement within its sewage collection system.

ES.3 REPORT FORMAT

The Facility Plan Amendment is presented in ten report sections and five appendices. The ten sections present the existing and future WWTF conditions, analyze current secondary treatment system operation based on process modeling, evaluate alternatives to achieve the immediate enhanced nutrient removal needs, and recommend various improvements to allow for the efficient reliable operation of the facility for the next 20 years. The appendices include WWTF design data, the current RIPDES Permit, a summary of the City's Inflow and Infiltration Removal Program, the Public Participation Workshop Presentation, the RIDEM Facility Plan Checklist, and Intergovernmental Review correspondence.

ES.4 SECTION 1 – INTRODUCTION

This section presents background information, objectives of the facility planning process, history and description of the Woonsocket Regional WWTF, description of need for improvements, and presentation of the modified RIPDES discharge permit limits. An outline of the Facility Plan Amendment and its contents is also provided.

ES.4.1 Historical Overview of the Facility

The original treatment facility was constructed in 1897 and has been modified numerous times throughout the years. The first modern era upgrade was completed in 1930. The current WWTF layout and treatment processes bear little resemblance to the plant that existed in the 1930's. In 1962, a major upgrade to the WWTF was completed and included construction of the Operations Building, where the main influent wetwell is located. The next major upgrade to the WWTF was completed in 1977. Based on recommendations in the last Facility Plan Update in

February 2000, a series of design-build facility upgrades were implemented in the early 2000's to provide the capacity to meet a seasonal total nitrogen limit of 10 mg/L and a total phosphorus limit of 1 mg/L. Figure ES-1 shows an aerial view of the Woonsocket WWTF with the major buildings and processes highlighted. A summary of basic design data for the existing facility is included as Appendix A.

FIGURE ES-1
WWTF AERIAL VIEW

ES.5 SECTION 2 – EXISTING FLOWS AND LOADS

This section presents a summary of the existing flows and loads in the planning area based on historic operating data from 2007 to 2010,supplemented with additional wastewater characterization data from 2012 (see Appendix G, Current Plant Date) with special emphasis on the characteristics of the raw influent, recycle, primary clarifier influent, and primary effluent flows and loads, specifically BOD, TSS, nitrogen, phosphorus, temperature, and alkalinity. Additionally, loads were allocated for industrial facilities to develop and support the Local Limits Analysis.

The primary effluent flows and loads have a direct impact on the evaluation and design of the secondary system process improvements that are needed to meet the revised nitrogen and phosphorus limits.

While developing this Facility Plan Amendment, CH2M HILL and Wright-Pierce worked with City representatives to review historic operations at the WWTF. Current flow and loading conditions were developed based on analysis of historic WWTF operating data over a three year period. The data was used to benchmark current conditions at the WWTF relative to the facility's design capacity of 16 mgd (maximum month): 24 mgd (maximum day) and 32 mgd (peak hour). Table ES-1 summarizes the existing raw influent flows and loads from May 2007 through September 2010, excluding the March 30, 2010 flooding events (see Section 2 for detailed discussion). Table ES-2 provides data for primary effluent flows and loads.

TABLE ES-1
RAW INFLUENT FLOWS AND LOADS
MAY 2007 – SEPTEMBER 2010

Constituent	Average Day	Maximum Month	Maximum Day
Raw Influent Flow, mgd	7.8	13[1]	22.2[1]
TSS (lbs/day)	11,600	18,800	39,200
BOD (lbs/day)	14,200	27,100	51,300
TKN (lbs/day)	1,800	--	3,629
Ammonia-N (lbs/day)	1,146	--	1,997
Total Phosphorus (lbs/day)	237	--	368

Note:
[1]The value shown excludes March 30, 2010 flood event. During the March 30, 2010 flood, the flow data for the raw influent indicates a maximum monthly flow of 15.8 mgd, a peak daily flow of 29.1 mgd, and a peak hourly flow of approximately 38 mgd

TABLE ES-2
PRIMARY EFFLUENT FLOWS AND LOADS
MAY 2007 – SEPTEMBER 2010

Constituent	Average Day	Maximum Month	Maximum Day
Primary Effluent Flow, mgd	11.7	18.1[1]	26.2[1]
TSS (lbs/day)	7,400	12,700	28,500
BOD (lbs/day)	13,900	28,900	48,200
TKN (lbs/day)	2,415	5,188	6,925
Ammonia-N (lbs/day)	1,231	2,091	2,874
Total Phosphorus (lbs/day)	677	1,363	1,958

Note:

[1]The value shown excludes March 30, 2010 flood event. During the March 30, 2010 flood, the flow data for the primary effluent indicates a maximum monthly flow of 22.3 mgd, a peak daily flow of 34.6 mgd, and a peak hourly flow of approximately 42 mgd.

ES.6 SECTION 3 – FUTURE DESIGN FLOWS AND LOADS

This section presents a summary of the projected future design flow and loading conditions, which are the basis for evaluating alternatives for the nutrient removal systems.

Based on consultation and input from City representatives and review of available U.S. Census, State Guide Plans (SGP), and Community Comprehensive Plans (CCPs) it is anticipated there will be minimal population growth within the planning area over the next twenty (20) year planning period. Specifically, published U.S. Census information predicts 2030 population changes of approximately:

TABLE ES-3
POPULATION ESTIMATES AND PROJECTIONS

Community	U.S. Census 2000 Population[a]	U.S. Census 2010 Population[b]	% Increase or Decrease from 2000 to 2010[c]	R.I./MA./U.S. Census 2030 Population Projection[a]
Woonsocket	43,224	41,186	-4.7%	40,772
North Smithfield	10,618	11,967	+12.7%	11,207
Bellingham	15,314	16,332	+6.6%	16,642

Blackstone	8,804	9,026	+2.5%	9,852
Totals	77,960[d]	78,511[d]	+0.7 %	78,473[d]

Notes:

[a] U.S. Census 2000; Rhode Island State Planning Program Technical Paper 154, August 2004; and Metropolitan Area Planning Council, January 2006.

[b] U.S. Census Population Estimate2010 – Population Finder website recently released.

[c] % Population change from 2000 to 2010

[d] Population figures are not for the WWTF service area but rather for the entire communities.

Based on the above, it is anticipated there will be relatively small population growth changes over the 20 year planning period. The future increase in residential and commercial flows and loads will likely be expected at similar levels.

It is recognized that the City of Woonsocket also needs to maintain a certain level of reserve capacity for future industrial flows and loads. Accordingly, a modest reserve capacity allotment for future industrial flows and loads is recommended as a minimal allowance, which is generally consistent with the City's goals for economic development.

Table ES-4 summarizes the average, maximum monthly, peak daily, and peak hourly flows through the WWTF from May 2007 through September 2010, excluding the March 30, 2010 flooding events along with the projected 2030 design flows.

TABLE ES-4
SUMMARY OF CURRENT AND PROJECTED YEAR 2030 FLOWS

Item	Existing Design 2000	Current 2010[a]	Updated Design 2030
Raw Influent Flows (MGD):			
Average Annual	16	7.8	9.0
Maximum Monthly	16	13.0[b]	16.0
Peak Daily	24	22.2[b]	24
Peak Hourly	32	~32[b]	32
Recycle Flows (MGD):			
Average Annual	2.6	3.9	3.9
Maximum Monthly		5.6	5.1
Peak Daily		8.5	5.1
Peak Hourly		-	5.1

Primary Inf./Eff. Flows (MGD):			
Average Annual	18.6	11.7	12.9
Maximum Monthly	18.6	18.1[c]	21.1
Peak Daily	26.6	26.2[c]	29.1
Peak Hourly	34.6	35[c]	37.1

Notes:

[a] Based on data from May 2007 through September 2010.

[b] The value shown excludes March 30, 2010 flood event. During the March 30, 2010 flood, the flow data for the raw influent indicates a maximum monthly flow of 15.8 mgd, a peak daily flow of 29.1 mgd, and a peak hourly flow of approximately 38 mgd.

[c] The value shown excludes March 30, 2010 flood event. During the March 30, 2010 flood, the flow data for the primary influent indicates a maximum monthly flow of 22.3 mgd, a peak daily flow of 34.6 mgd, and a peak hourly flow of approximately 42 mgd.

Section 3 concludes with a description of design criteria and the basis for evaluating candidate nutrient removal treatment systems for future conditions in the planning area.

ES.7 SECTION 4 and 4.A– PERFORMANCE OF SECONDARY TREATMENT FACILITIES AND PROCESS MODEL DEVELOPMENT

In this section, the WWTF's secondary treatment facilities were evaluated to identify their conditions and need for potential improvements or upgrades. Sections 4 and 4.A describe the findings of these evaluations based on historic plant operating data. These sections also presents a summary of the Bio Win™ and Pro2D process models and include an operational review of the WWTF's existing MLE activated sludge process. A description of the existing MLE process is presented along with a summary of existing operating data and options for optimizing nitrification and denitrification. Additionally the process modeling and basis of design for the two-stage activated sludge AB process are presented.

ES.8 SECTION 5 – SCREENING OF NUTRIENT REMOVAL ALTERNATIVES

This section presents a preliminary screening of nutrient removal alternatives. Wastewater characterization is presented along with a discussion of the WWTF's ability to achieve the revised nutrient limits. Nutrient removal technologies are evaluated for both advanced nitrogen and phosphorus removal including budgetary opinions of probable costs for each alternative.

Given the nature of the facility's new RIPDES treatment limits and the size and complexity of the WWTF, only those processes with a proven track record (i.e., other full scale similar installations) were considered. To achieve the newly regulated limits, multiple barriers will be required and unit treatment processes in series will be required.

Preliminary opinions of probable cost estimates were prepared for each explored alternative to determine the general order of capital costs for the different alternative. Of the five process alternatives evaluated, four processes were recommended for further analysis as follows:

- 4-Stage Bardenpho with Integrated Fixed Film Activated Sludge (IFAS) (*for nitrogen removal*) followed by a ballasted flocculation process (*for phosphorus and solids removal*).
- MLE Process with tertiary Biological Anoxic Filter (BAF) (*for nitrogen removal*) followed by a ballasted flocculation process.
- MLE Process with tertiary Moving Bed Biological Reactor (MBBR) (*for nitrogen removal*) followed by a ballasted flocculation process.
- Two –Stage Activated Sludge AB Process followed by Traveling Bridge Sand Filters

The first three of the evaluated nitrogen removal systems will need to upgrade the WWTF's screening facilities to ensure the new tertiary treatment systems are capable of reliably meeting the facility's new permit limits. However, the fourth nitrogen removal system will not require a fine screening upgrade, but will include screening upgrades to increase reliability since the process does not include a new tertiary treatment process. Similarly, there is also need to upgrade various ancillary electrical services and equipment systems which are integral to the all of the treatment alternatives.

ES.9 SECTION 6 – DETAILED EVALUATION OF NUTRIENT REMOVAL ALTERNATIVES

This section presents a more detailed evaluation of the short-listed nutrient removal alternatives outlined in Section 5. For each evaluated alternative, more detailed capital and operation and maintenance (O&M) cost, along with the 20-year life cycle costs comparison is presented. This section evaluates and ranks the selected alternatives.

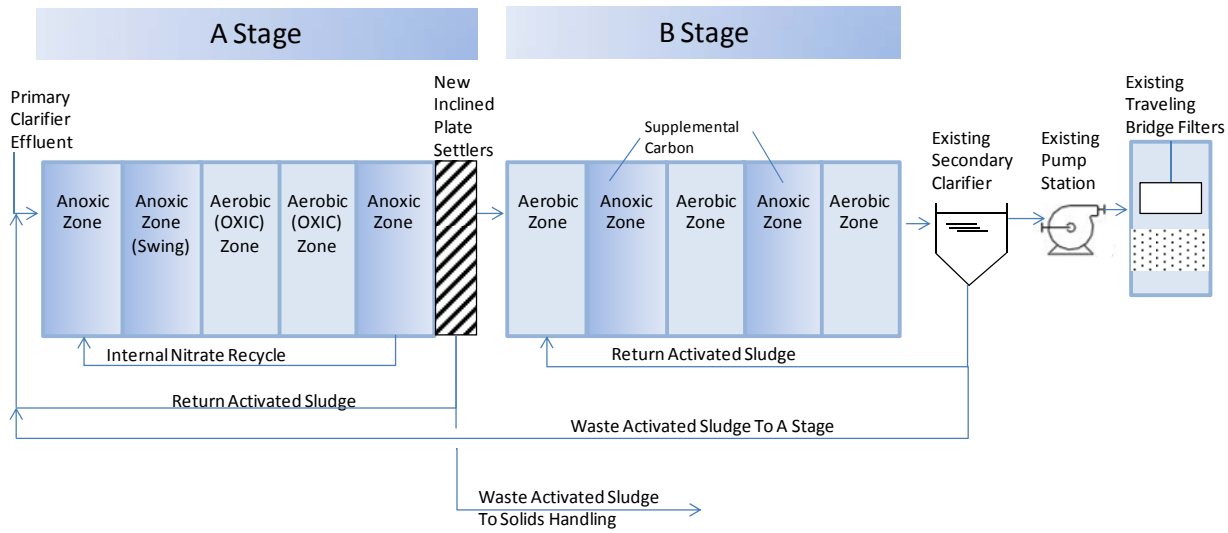
Conceptual layouts of the four short-listed treatment alternatives are presented along with a summary of the basis-of-design information, advantages/disadvantages, site modification requirements, economic analysis and associated process recommendations based on the recommended design flow and loading information previously presented in Section 3.

Based on the treatment technology evaluations and associated life-cycle costs for each alternative to reliably achieve the effluent nitrogen and phosphorus limits, the Two-Stage Activated Sludge AB Process followed by the existing Traveling Bridge Filters is the recommended alternative for nitrogen and phosphorus removal. It is recommended that the City of Woonsocket upgrade the WWTF to incorporate use of a two-stage activated sludge AB Process for the following reasons:

1. Two-stage process, thereby providing a robust multi-barrier type treatment approach to low level nitrogen removal
2. Nitrification is seeded in the first stage and protected from washout by the second stage
3. Simple operation (no complicated control sequence)
4. Nitrification and denitrification are incorporated into both stages of the AB biological treatment process. This gives greater operational flexibility and the optimization of the process size allows both stages to be located in the same area of the plant.
5. This alternative has a competitive capital and annual differential cost (annual debt retirement plus power and maintenance cost) of the four process alternatives evaluated.
6. The facility's existing secondary effluent pumping station can be re-utilized with this process, thereby minimizing overall project costs for compliance.
7. The alternative will require minimum new aeration basin tankage to be built and will fit within the available land area of the existing facility's fenced property line.
8. Of the four short-listed process alternatives, the two-stage activated sludge AB process will be the simplest to operate and maintain and is endorsed by the plant's current operating staff.

This recommended nutrient removal treatment system combines nitrogen removal and phosphorus removal processes and is graphically depicted in Figure ES-2. The AB process would consist of three (3) “A” process trains followed by two (2) “B” process trains and then flow would be conveyed by gravity to the secondary clarifiers and then pumped to the existing traveling bridge sand filters (4 filters).

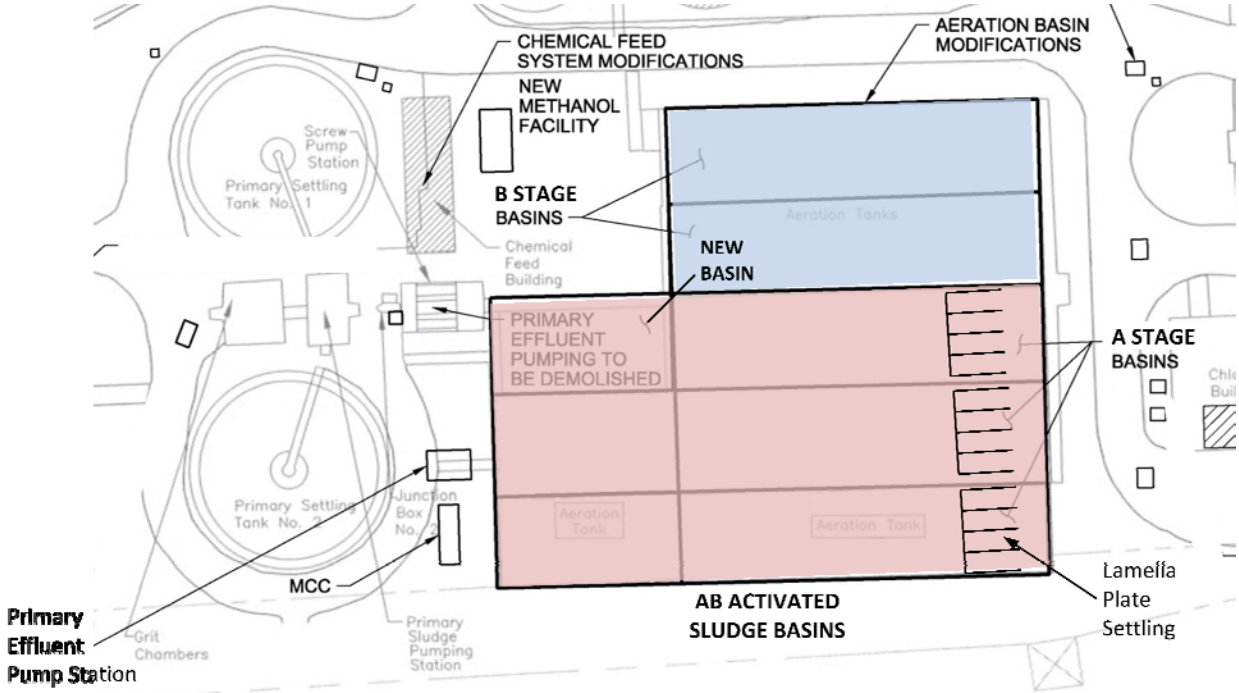
FIGURE ES-2
TWO-STAGE ACTIVATED SLUDGE AB PROCESS FOLLOWED BY EXISTING TRAVELING BRIDGE SAND FILTERS PROCESS FLOW DIAGRAM



With this recommended nitrogen and phosphorus removal alternative it is proposed that the existing aeration tanks be modified into a two-stage activated sludge AB process.. The facility currently has six (6) 0.95 million gallon (mgal) aeration tanks, thereby providing a total volume of approximately 5.7 mgal. Under this nitrogen removal alternative it is proposed that a new 0.5 mgal aeration tank be constructed and the existing aeration tanks be reconfigured into two-stages with multiple anoxic and aerobic zones. One of the significant advantages of the AB process is that the traveling bridge sand filters are reused and the filter building retained.

Another advantage of the AB process is that no new process tanks are constructed to the west or within the vicinity of the current filter building complex. Figure ES-3 depicts the Two-stage Activated Sludge AB Process conceptual layout.

FIGURE ES-3
TWO-STAGE ACTIVATED SLUDGE AB PROCESS CONCEPTUAL LAYOUT



ES.10 SECTION 7 – DEVELOPMENT AND EVALUATION OF ANCILLARY WASTEWATER TREATMENT IMPROVEMENTS

This section presents an evaluation of ancillary WWTF process improvements needed to support the new nitrogen and phosphorus removal processes. As a result of the evaluations in Sections 5 and 6, certain WWTF systems and unit processes were identified as requiring upgrades and/or improvements. Evaluations of alternatives are provided for individual unit processes.

The recommended upgrades in Section 7 are separated into two categories; those required as part of the immediate nutrient removal treatment system upgrades, and those upgrades that may be addressed under the WWTF's long-term capital improvements plan.

Although not directly required for the immediate nitrogen and phosphorus system upgrades that are required to ensure compliance with the new RIPDES discharge permit, a number of other WWTF systems and unit processes were identified as requiring upgrades and/or

improvements over the 20-year planning period. It is envisioned that the majority of these ancillary system improvements will be completed in a prioritized phased approach over the 20-year planning period to replace and/or upgrade aging infrastructure and treatment systems. Similarly, the City of Woonsocket and its sewage collection system operator,Veolia Water (VWNA) have been working on a comprehensive underground asset management (UGAM) program throughout the community. This program has resulted in recent and planned upgrades to the collection system, which will result in additional benefit to the treatment facility. These upgrades are mentioned in this section too.

Working with Veolia Water, Wright-Pierce conducted several site visits to the WWTF to assess the condition of the existing facilities. The information gathered from visual observations during these site visits along with review of facility record drawings, reports and discussions with WWTF staff was used to develop the various recommendations for equipment replacement and facility upgrades in this section. Those systems that are recommended to be replaced as a part of the planned capital improvements are included in CH2M HILL's proposal for the design-build upgrades to the treatment plant.

By the time the new RIPDES permit limits officially take effect on May 1, 2017, many of the buildings, structures and equipment systems at the facility will have been in service for approximately 40-50 years. Generally speaking, structures and buildings at wastewater facilities are considered to have a useful design life of 50 years, while individual unit processes and equipment systems are designed for an approximate 20 to 25 year useful life expectancy. Typically, this is considered an appropriate design life such that all of the existing process equipment systems would not be expected to last through the next 20 year planning period.

Significant portions of the older systems and equipment at the WWTF should be considered for replacement or upgrade over the 20-year planning period due to deteriorating physical conditions and the diminishing availability of spare parts. Major facility systems that were considered for future replacement and their respective issues and concerns identified are summarized in Table ES-5.

TABLE ES-5
WWTF SYSTEMS AND EQUIPMENT TO BE CONSIDERED FOR REPLACEMENT AND/OR UPGRADE OVER 20-YEAR PLANNING PERIOD

Unit Process/Equipment	Issues/Concerns
Headworks – Influent Screening Facility	• 1962 and 1974 vintage equipment systems
Headworks – Raw Influent and Recycle Pumping Facilities	• 1962 and 1974 vintage equipment systems Deterioration/loss of wall thickness on discharge piping • Insufficient pumping system redundancy Isolation sluice gates inoperable • Area sump pumps • Need for Plant Water for seal water
Aerated Grit Facilities	• 1962 vintage equipment systems • Corrosion/deterioration • Aerated Grit Blower unit service reliability
Primary Clarifiers	• 1962 vintage equipment systems (sludge collection mechanisms) • Corrosion/deterioration
Primary Sludge Pumping Station	• 1962 vintage equipment systems • Corrosion/ deterioration • Primary Sludge Pump (1)
Primary Effluent Pumping Facilities	• 1974 vintage screw pumps/ systems • Insufficient pumping system redundancy
Aeration Tanks – Optimize BNR Process	• 1974 vintage aeration blower units (2) • Inefficient air flow control systems • Poor dissolved oxygen control • RAS piping system modifications • Recycle Pumps and mixer systems
Secondary Clarifiers	• 1974 vintage equipment systems • Corrosion/deterioration
Return Sludge Pumping Station	• 1974 vintage Pumping units • Deteriorated discharge piping systems (pipe and valves) • RAS, WAS and Secondary Scum pumping units

ES.11 SECTION 8 – EVALUATION OF BUILDING SUPPORT SYSTEMS

The assessment of the existing building and support systems at the Woonsocket WWTF is summarized in this Section including architectural/structural, heating, ventilation and air conditioning (HVAC), instrumentation and controls, and electrical.

The assessments presented in Section 8 are based on information gathered from site visits, review of facility record drawings, previous studies/reports, and discussions with WWTF operations staff. The assessment includes both improvements that are required by the immediate project to achieve enhanced nitrogen and phosphorus removal, and other additional long-term capital improvements which are recommended over the 20-year planning period.

The Woonsocket WWTF has numerous systems that have served the City well and exceeded their intended design life expectancy. Generally speaking, the overall condition of the facility and its building and support services is acceptable, but significant capital improvement needs were identified which should be included in the City's WWTF long-term capital improvement plan. The facility's electrical systems and equipment are the source of the greatest upgrade needs that must be addressed as part of the immediate improvements project. The recent electrical mapping work, performed in 2012 by CH2M HILL, provided observations and recommendations for upgrades to the electrical system. The need to address standby/emergency power is an immediate priority and the facility's instrumentation and controls will also require a major upgrade.

The most significant elements of the facility's building and support service upgrade needs include:

- New 13.8kV switchgear
- Incoming power from National Grid
- The interconnection between the WWTF and Synagro
- Power from the new 2500 KW standby generator
- Distribution feeders to WWTF site loads
- A new 2500 kw standby generator (back-up power for the treatment plant);
- New Main Distribution Switchboard in an existingbuilding

The improvements to the electrical service equipment are graphically shown in Figure 8-10.

ES.12 SECTION 9 – PLAN SELECTION and SECTION 10 – PLAN IMPLEMENTATION

These sections present the recommended upgrade plan and schedule to ensure compliance with the revised water quality criteria contained in the new permit. Institutional responsibilities, public work shop awareness, and a schedule of improvements are addressed.

Section 9 includes the recommendations for the nutrient removal upgrade requirements outlined in Sections 5 and 6, along with the other long-term maintenance program capital improvements that will need to be completed in a prioritized manner during the 20-year planning period. Section 9 also presents the design-build construction costs for the WWTF's immediate nutrient removal upgrade and other planned capital improvements. The recommended upgrades and are as described below.

ES.12.1 Nutrient Removal Recommended Improvements

As a result of the Facility Planning efforts, a number of major WWTF systems and equipment are recommended to be upgraded to ensure reliable compliance with the new nitrogen and phosphorus treatment standards. These upgrade recommendations are summarized in Table ES-6. These upgrades are also described in more detail in Sections 5, 6, 7 and 8, and are shown on Figure ES-5.

TABLE ES-6
RECOMMENDED IMPROVEMENTS FOR NUTRIENT REMOVAL

Unit Process/Equipment	Recommended Improvements
Headworks – Influent Screening Facility	Requirement for the nitrogen and phosphorus upgrades: • 1st Stage Screening System (replace existing coarse screen system with new 3/8" mechanical screening system)
Headworks – Raw Influent and Recycle Pumping Facilities	Requirement for peak design flow unit process redundancy: • New pumping unit for system redundancy
Influent Flow Metering	Requirement for the nitrogen and phosphorus upgrades: • Magnetic type flow meters on influent pumping station discharge lines • Magnetictype flow meter on recycle line/

TABLE ES-6
RECOMMENDED IMPROVEMENTS FOR NUTRIENT REMOVAL

Unit Process/Equipment	Recommended Improvements
	plant drain
Primary Effluent Pumping Facility	Requirement for peak design flow unit process redundancy: • New pumping unit(s) for system redundancy
Aeration Basins	Requirement for the nitrogen and phosphorus upgrades: • 1st and 2nd Stage Modifications to Aerations Basins • New Plate Settlers • New Fine Bubble Diffusers • New 1st Stage RAS/WAS Pumping
Nutrient Removal Modifications and Chemical Systems	Nitrogen Removal Treatment Process: • Supplemental Carbon System • Modifications to optimize BNR in Aeration Tanks • Chemical Feed System modifications Phosphorus Removal Systems: • Chemical Feed System modifications
Electrical and Standby Power Systems	Requirement of the nitrogen and phosphorus upgrades: • New double ended Motor Control Center to replace MCC-1 in Operations Building • Relocated primary power feed to MCC-2 in Operations Building • Remove existing generator in Operations Building • Replace Main Distribution Switchboard . • New 2500 kW generator within outdoor sound-proof enclosure for backup power to Main Distribution Switch Gear

TABLE ES-6
RECOMMENDED IMPROVEMENTS FOR NUTRIENT REMOVAL

Unit Process/Equipment	Recommended Improvements
SCADA System Modifications	Requirement of the nitrogen and phosphorus upgrades: • Integrate new nutrient removal systems into existing SCADA • Replace multiple PLC with more-open architecture (Allen-Bradley based with Ethernet communication protocol) • Selective upgrades to communication wiring • Expand SCADA to include data from Synagro's Solids Handling Facility SCADA system

ES.12.2 Opinion of Probable Construction Costs

The WWTF design build capital improvements cost is $36,899,314, based on the contract agreement between the City and CH2M HILL for construction and engineering services for the treatment facility modifications to meet the nitrogen and phosphorus removal requirements and to provide the facility modifications including the following:

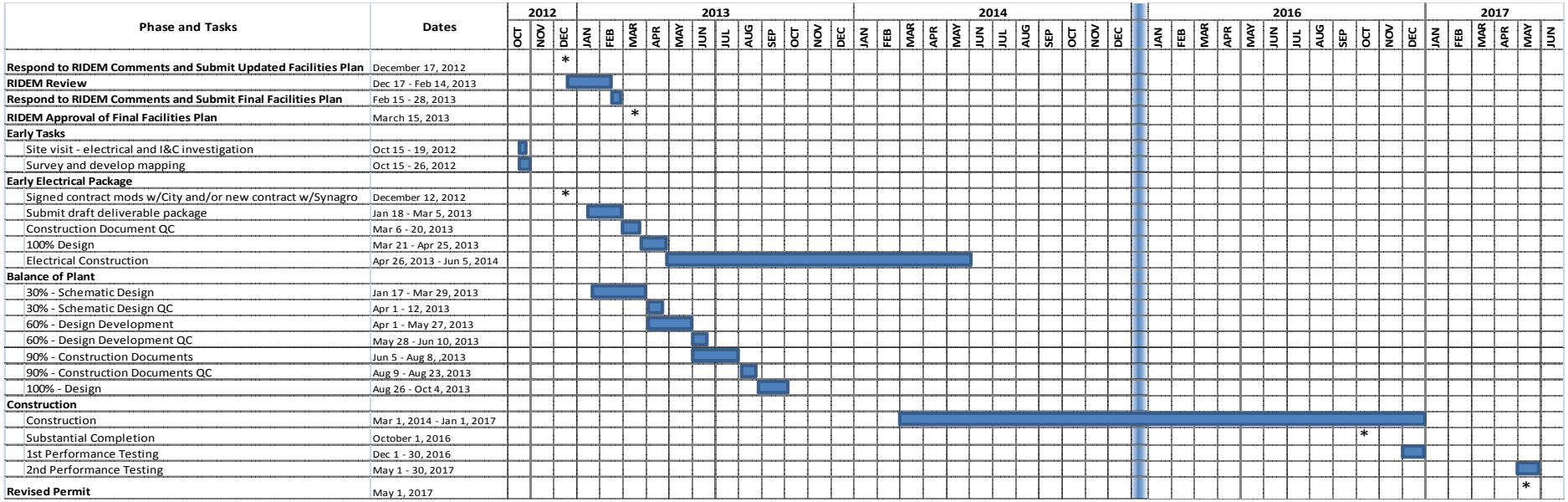
- New influent pump
- New influent screening facility with odor control system
- New influent flow measurement
- Modified primary effluent pump station
- Activated sludge modifications to include first and second stage activated sludge basins, lamella plate first stage settling, and new first stage return and waste sludge pumping
- Electrical power system modifications and new standby generator
- HVAC modifications to selected facilities
- I&C modifications

ES.13 IMPLEMENTATION SCHEDULE FOR RECOMMENDED TERTIARY TREATMENT SYSTEM IMPROVEMENTS

The recommended implementation schedule for the required nutrient removal upgrades and ancillary system improvements required to reliably meet the new nitrogen and phosphorus standards (identified in Section 10 – Plan Implementation) has been developed. This schedule

which is based upon deadlines agreed upon through the Consent Agreement and the revised schedules is presented in Figure ES-4.

FIGURE ES-4
IMPLEMENTATION SCHEDULE

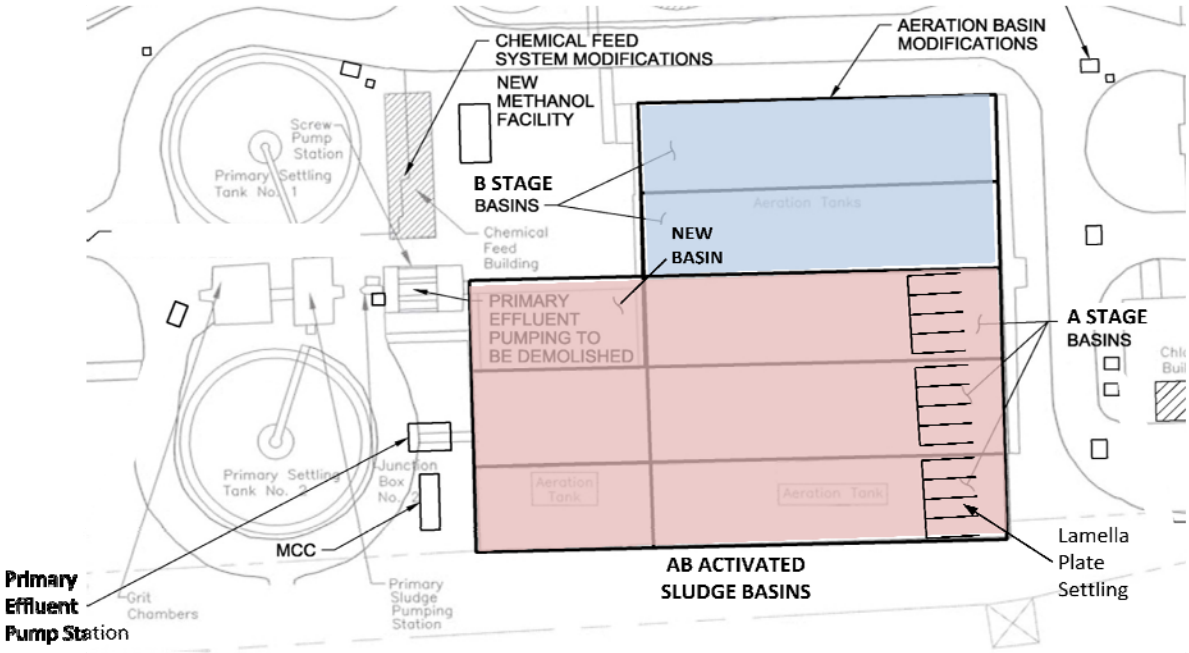


ES.14 RECOMMENDED PLAN TO MEET RIPDES PERMIT LIMITS

There are many variables to consider when evaluating different nutrient removal technologies and determining the most appropriate technology. Since RIPDES Permit compliance was of primary concern, the selection of a treatment technology that achieves permit requirements was essential. Based on the technology evaluations and understanding of the individual effectiveness for each evaluated alternative to reliably meet the new permitted effluent nitrogen and phosphorus limits a new two-stage activated sludge AB process will be implemented for nitrogen and phosphorus removal.

It is recommended that the City of Woonsocket construct a two-stage activated sludge AB process followed by reuse of the existing traveling bridge sand filters to meet the new nitrogen and phosphorus permit limits. All of the proposed construction activities will be within the existing city-owned property lines for the WWTF, thereby minimizing disturbance to the environment including the Blackstone River. Figure ES-5 shows a layout of a portion of the Woonsocket WWTF highlighting the proposed location for the recommended new tertiary treatment facilities that are required to ensure compliance with the new RIPDES permit limits.

FIGURE ES-5
LOCATION OF RECOMMENDED TWO-STAGE ACTIVATED SLUDGE AB PROCESS



9.5 ENVIRONMENTAL ASSESSMENT

9.6.1 Introduction

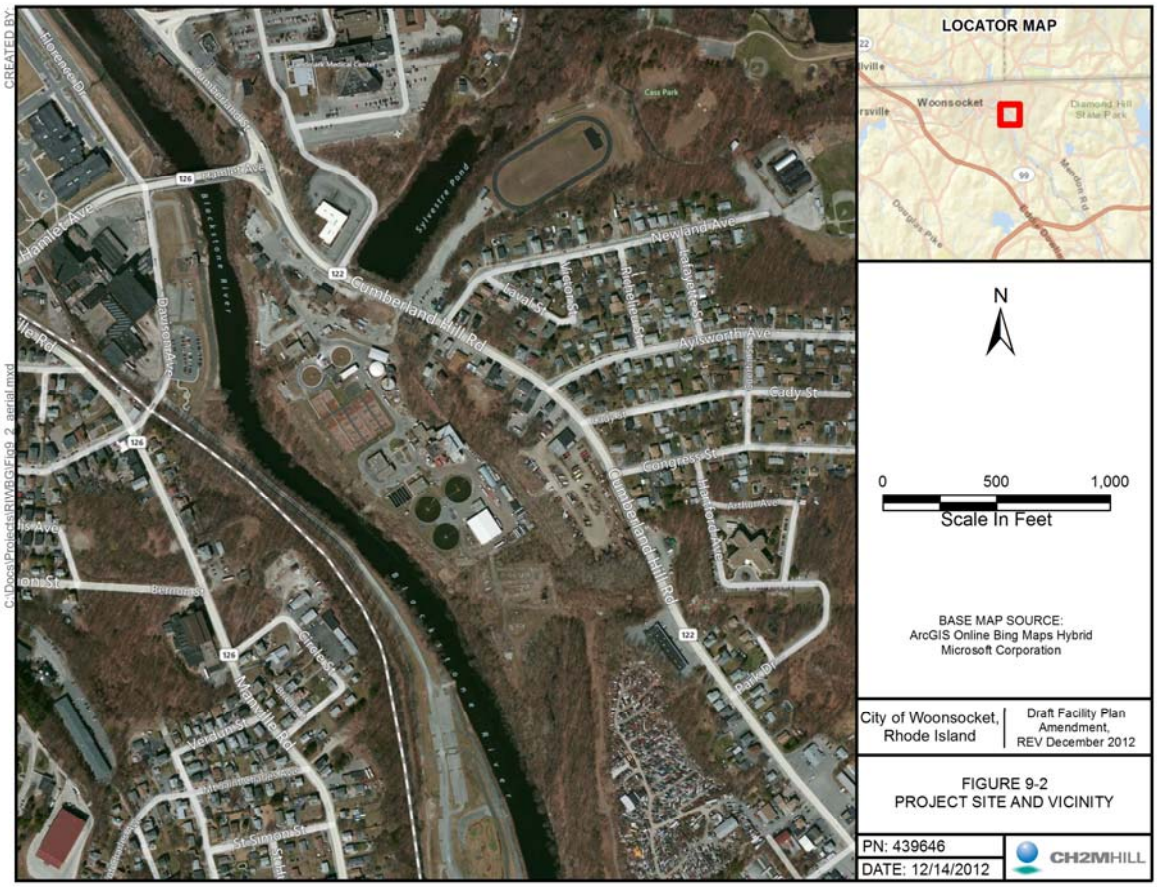
The Environmental Assessment (EA) serves as a basis from which RIDEM can determine whether to issue a Finding of No Significant Impact (FONSI), or require that further environmental review be undertaken in an Environmental Impact Statement (EIS). This section of the Facility Plan Amendment will briefly document compliance with the state review requirements if no EIS is required.

This EA was prepared to comply with the RIDEM *Rules and Regulations for State Revolving Fund (SRF) Program, September 2001* (Regulation #12-190-020). It is meant to meet the requirements of the State Revolving Loan Fund (SRF) by analyzing and evaluating the environmental impacts associated with the project. The EA will provide sufficient evidence and analysis of the effects and impacts on the environment in the vicinity of the proposed project in order that RIDEM may determine the appropriate ruling on the need for further environmental review.

9.6.2 Project Description and Location

The EA presented in this section is for facilities planning for wastewater treatment improvements to the Woonsocket Regional Wastewater Treatment Facility (WWTF) owned by the City of Woonsocket, and operated and maintained by CH2M HILL, Inc. The scope of this EA also includes planned upgrades to the wastewater collection system owned by the City of Woonsocket, and managed in partnership with Veolia Water through a comprehensive underground asset management (UGAM) program. The facility is located at 11 Cumberland Hill Road in Woonsocket, Rhode Island on the eastern bank of the Blackstone River, north of the Cumberland/Woonsocket City Line and just south of the intersection of Cumberland Hill Road with Hamlet Avenue, refer to Figure 9-2, Locus Map. The Blackstone River and its watershed comprise 640 square miles in southeastern Massachusetts and northern Rhode Island. It is a major drainage of the Narragansett Bay Estuary.

FIGURE 9-2
LOCUS MAP



For the purpose of defining a "planning area" for the scope of this EA, the 120-mile wastewater collection system and the WWTF property will be considered the planning area.

Upgrades to the existing WWTF are being implemented in order to improve quality of the effluent from the facility and to promote the enhancement of water quality in the Blackstone River and Narragansett Bay overall. Revised stringent RIPDES permit effluent limits for nitrogen and phosphorus cannot be achieved under the facility's current configuration and treatment processes. Reconfiguration of the activated sludge basins to provide additional treatment along with other ancillary improvements will be necessary to allow the WWTF to perform in compliance with its permit discharge requirements.

As a result of the City and VWNA implementation of UGAM throughout the community, several improvements to the wastewater collection system have accomplished and planned. Funding for these improvements will be sought through the State Revolving Fund and therefore, are discussed in the context of the EA yet should be considered ancillary to the WWTF, which is the focus of the Draft Facility Plan Amendment under review by RIDEM. The collection system upgrades include, but are not limited to, the following items:

- Sewer expansion along Beausoeil Street, Mendon Road, Comstock Court, Dudley Street, Jillson Avenue, Roy Avenue, Hillview Street, and Cranston Street;
- Proposed Capital Repairs FY 2012-13
    - Dig and replace sewer main on Wagon Wheel Lane
    - Dig and replace sewer main on Rachel Street
    - Dig and replace 168’ of sewer main on Avenue C
    - Dig and replace 50’ of sewer main on Huntington Street
    - Dig and replace 20’ of sewer main of River Street
    - Dig and replace 20’ of sewer main on Lambert Street
    - Dig and replace 10’ of sewer main on Mt. St. Charles Avenue
    - Dig and replace 75' of sewer main on St. Francis Street
    - Dig and Replace entire section of main on Knight Street
    - Dig and replace entire segment of main on Rose Avenue
    - Dig and Replace 6’ of sewer main on Cumberland Street
    - Dig and Replace 6’ of sewer main on Williams Street
    - Dig and replace entire segment of main on Walnut Hill Road
    - Dig and replace entire segment of main on Knollwood Drive
    - Dig and replace entire segment of main on Grandview Avenue
    - Dig and replace 15’ of sewer main on Grandview Avenue
    - Dig and replace 10’ of sewer main of Grandview Avenue

These upgrades will be generally covered within the EA to follow.

9.6.3 Summary of Alternatives Considered

Section 5 and 6 of the Facilities Plan Amendment provide a thorough explanation of the treatment and removal technological alternatives that were considered as WWTF upgrades aimed at complying with the more stringent RIPDES permit effluent limitations for nutrients. A "no build" alternative is not a viable option as the current WWTF is unable able to operate and meet new effluent limits so no additional discussion about this alternative will occur. The alternative technologies that were removed were screened for their potential to lower nutrient effluent levels of the WWTF. Those technologies that could theoretically be applied (installed) at the WWTF

and provide the nutrient removal required were further evaluated against practical considerations such as, spatial requirements, cost, compatibility with existing equipment, etc. Ultimately, only one technology was selected for future engineering and design – the preferred alternative – comprising the WWTF upgrade that is the subject of this Plan Amendment.

A description of the preferred alternative – the two-stage activated sludge AB Process – has been provided in Section 6.0. The existing conditions at the WWTF are outlined in Section 2 – Existing Flows and Loads of the Facility Plan Amendment. The physical upgrades to the WWTF are summarized below:

- Existing aeration tanks expanded for additional volume
- New influent pump stations
- New influent screening facility with odor control system
- New influent flow measurement
- New primary effluent pump station
- Activated sludge basin modifications to include retrofit of first and second stage activated sludge basins, lamella plate first stage settling, and new first stage return and waste sludge pumping
- Electrical power system modifications and new standby generator
- HVAC modifications to selected facilities
- I&C modifications

No appreciable increase in the existing footprint of the WWTF will occur as a result of the proposed upgrades described in this Facility Plan Amendment. The greater proportion of upgrades involves modifications to existing equipment and structures to enhance treatment through nutrient removal. Proposed changes related directly to the treatment process will positively impact the effluent discharging from the WWTF thus achieving the desired, mandated water quality improvements. Upgrades to ancillary equipment and associated structures, such as pump stations, electrical system, heating and ventilation, emergency power, may involve new or renovated structures within the WWTF fence line and in previously built-upon or disturbed areas.

An EA was included in the 2000 Facility Plan Amendment, and after RIDEM review, a FONSI was issued.

9.6.4 Project Purpose and Need

The purpose and need for this project are a result of the facility's revised RIPDES permit limits. Wastewater collection system upgrades are the result of the implementation of a comprehensive UGAM and needed to improve the function of the wastewater system overall.

Under the new permit, the facility is now required to meet a seasonal total effluent nitrogen concentration of 3.0 mg/L between May 1 and October 31, and a total effluent phosphorus concentration of 0.1 mg/ L between April 1 and October 31 along with a 1.0 mg/L effluent limit from November 1 to March 31. To address these new permit modifications, the City entered into a Consent Agreement (RIA-368) with the RIDEM (finalized and signed February 2011) agreeing to submit a Facilities Plan Amendment to develop a proposed solution and implementation schedule for necessary improvements to achieve compliance with the new effluent total nitrogen and total phosphorus limits. A more detailed description of the permit modifications and the purpose and need for this Facilities Plan Amendment is provided in Section 1.

9.6.5 Direct Environmental Impacts

This section reviews the potential *direct* environmental impacts associated with the planned upgrades to the WWTF and wastewater collection system. Direct environmental impacts are commonly considered to be those impacts that may occur during the construction, operation or maintenance of the proposed activity (i.e. upgrades) at the location of these activities (i.e. WWTF, various points along the collection system). The order of the environmental issues addressed is based on RIDEM's *Facilities Plan (FP) Review Checklist.*

Traffic & Business

The Woonsocket WWTF is located in an urbanized area immediately adjacent to the Blackstone River. The site sits below surrounding parcels and is accessed by a driveway next to the Woonsocket Fire Department accessed directly from either travel lane of Cumberland Hill Road. The area is predominantly industrial and commercial although there is residential neighborhood just to the north of the site.

The construction phase of the WWTF upgrades is estimated to be approximately 2.5 years beginning in March of 2014. The construction will need to be sequenced to maintain plant operations and permit compliance. Construction is required to be completed by January 1, 2017. During the construction phase of the Project, additional vehicle traffic will result from materials, equipment, and workers transporting to the WWTF. Vehicle traffic from workers commuting to the site, and from deliveries of construction material, would moderately increase the traffic flow during normal working hours over the course of the construction period. The additional traffic is expected to be temporary and localized to Cumberland Hill Road and the driveway to the WWTF. Collection system upgrades will take place over the next several years. Related construction activities will occur at specific locations throughout the community on a short-term basis and will, at times, involve work along roads and sidewalks. When work occurs within traffic zones, minor disturbances to traffic flow may be experienced from the diversion of traffic to protect the work zone. Within the context of the urbanized setting and corresponding levels of existing traffic, only negligible to minor direct impacts to traffic in the area can be anticipated due to periodic, short-term increases in congestion. The construction, operation and maintenance of the proposed upgrades will not have any long-term adverse impact on traffic or business.

Historical, Archaeological, Cultural or Recreational

No direct, temporary or permanent, adverse impacts to historical, archaeological, cultural or recreational resources will result from the construction, operation, and maintenance of the proposed upgrades to the WWTF or collection system. The proposed upgrades involve minimal, localized earth disturbance within the WWTF's fence line from equipment traffic and staging. The area has been previously disturbed from previous construction and facility operation so the risk of encountering any previously undiscovered archaeological resources is negligible. Any new structures within the facility or collection system will occur within existing structure footprints and no use or visual impacts to cultural resources are expected.

The most notable recreational resource located within the Project's vicinity that will experience direct impacts from the Project is the Blackstone River. Water quality of the river is expected to improve over time because of the anticipated improvements to the effluent discharging from the WWTF resulting from the proposed upgrades. The direct impact overall to the river will be beneficial.

Sensitive Ecosystems

No adverse, direct impacts to sensitive ecosystems are expected as a result of the proposed facility or collection system upgrades. There are no known rare, threatened or endangered ecological resources documented in the planning area.[1] The Project is located within the 200-foot riverbank wetland and floodplain of the Blackstone River. Proposed upgrades to the WWTF will involve modifications to existing structures with no anticipated increase in footprint or encroachment on the Blackstone River, 200-foot riverbank wetland or floodplain. No loss of flood storage will result from the proposed structural modifications to the aeration tanks because these modifications will occur within the walls of the WWTF's existing tanks. As previously mentioned, water quality of the river is expected to improve over time because of the anticipated improvements to the effluent discharging from the WWTF resulting from the proposed upgrades. The direct impact to the river and the aquatic ecosystem it supports will be beneficial overall.

Coastal Zone Management

The City of Woonsocket and project site are not located in a coastal zone; therefore, there are no adverse impacts to coastal areas expected. The project will not have any impact on environmentally sensitive coastal areas.

Surface Water Impacts /Erosion & Sedimentation Controls

Negligible impacts to surface water quality from construction-related erosion are expected during the construction of the proposed upgrades. At this time, less than one acre of earth disturbance is estimated during the construction phase of the WWTF Project and collection system upgrades. Therefore, the Project will not require coverage under the *Rhode Island Pollution Discharge Elimination System General Permit for Stormwater related to Construction Activity* (General Permit). However, in accordance with the City's erosion and sediment control ordinance, construction best management practices and appropriate erosion and sedimentation controls will be incorporated into the Project's site plans and implemented, where appropriate. In the event that the final estimate of earth disturbance exceeds one acre, the City will file a Notice of Intent for coverage under the General Permit and complete a Stormwater Pollution Prevention Plan in

[1] RIDEM, 2012. *RI Natural Heritage GIS Datalayer, Environmental Resource Map.* Accessed on December 4, 2012 at http://www.dem.ri.gov/amps/index.htm.

conformance with RIDEM regulations and technical guidance.

Water Quality (effluent – construction & operation)

No adverse direct impacts to the Blackstone River (receiving waters) from the effluent produced from the WWTF are anticipated. The water quality of the Blackstone River and ultimately Narragansett Bay is affected by the quality of the effluent from the WWTF. As discussed in previous sections, the intent of implementing the recommended improvements in this Facility Plan Amendment is to enhance wastewater treatment and reduce final effluent nitrogen and phosphorus concentrations. The upgrades to the WWTF and collection system will ultimately result in improving water quality in the Blackstone River, and therefore no significant adverse impact on surface waters is anticipated.

Displacement of Existing Land Uses

No direct impacts to current land uses, business or households in and around the planning area are anticipated. The WWTF is located entirely on city-owned land zoned for industrial uses. The WWTF was established there in 1897 and has been in operation, with several expansions and modifications over the years, since that time. An old landfill lies upriver on a parcel adjacent to the WWTF site and it is crossed by overhead, high-voltage electrical transmission lines. With the exception of the residential neighborhood lying northeast of the WWTF, the dominant land uses in the area are industrial, commercial, and institutional. The proposed upgrades to the WWTF and collection system will not require a zoning change or alter the existing land uses, on-site or in the immediate vicinity.

Noise

The WWTF and collection system are located within an urbanized, industrialized area of Woonsocket with noise levels consistent with such environments. The residential neighborhoods in the vicinity of the WWTF and collection system would be potential receptors of any additional noise generated from proposed construction activities. The nature and level of existing noise in the area are typical of a busy commercial and industrial area with moderate to heavy periods of traffic. In addition, the proximity of the WWTF to the Woonsocket Fire Department and the Landmark Medical Center result in frequently heard sounds from emergency vehicles sirens. The City of Woonsocket's Animal Shelter is also located nearby and frequent barking of impounded

dogs can be heard in the vicinity of the WWTF. Any receptors of noise from activity at the WWTF would be exposed to these other ambient sounds on a regular basis.

During construction of the proposed upgrades, temporary noise impacts would result from construction traffic and activities. This noise will predominantly occur during normal working hours and will be mitigated as all equipment shall have sound-control devices in working order which are no less effective than that provided when the equipment was purchased. During operation and maintenance of the upgraded WWTF, no appreciable increase in sound-producing activity is expected. Given the urban and industrial character of the WWTF location, noise resulting from the construction, operation and maintenance of the project will be negligible and not be expected to cause adverse, direct impacts to the area.

Visual

No visual impacts will result from the proposed WWTF and collection system upgrades. Physical modifications to the facility will not result in any significant changes to the profile or footprint of the WWTF.

Air Quality

Negligible impacts to air quality are expected from the proposed facility and collection system upgrades. Overall, WWTF upgrades are expected to improve air quality through existing or upgraded odor control; therefore, any direct impacts will be positive. Under implementation of the recommended plan, installation of a new odor control system will help to alleviate any odor issues adjacent to the Operations and Administration Building.

A new standby generator will be installed at the WWTF and it is anticipated that it will be covered under RIDEM's Diversion of Air Resources General Permit for Smaller-scale Electrical Generation. The generator to be installed will be compliant with RIDEM Air Pollution Control Regulation No. 43 and EPA regulations for nonroad emission sources (43 CFR § 89.112).

In the vicinity of the project site, air quality would be representative of an urban industrialized area. Synagro operates a sludge incinerator immediately adjacent to the WWTF and is categorized as a major source of air pollutants. The incinerator operates under a RIDEM air permit. This plan does not apply to the Synagro operation.

Solid Waste

Small volumes of construction waste will generated during the construction phase of the project. Construction and demolition waste will be hauled away and disposed of properly at an appropriate facility.

Water Supply

No impacts to existing public water supplies will occur as a result of the proposed upgrades. The project site is not located within a public drinking water supply watershed, aquifer protection area, or wellhead protection district. Potable water is supplied to the existing site area by the City of Woonsocket. Construction, operation and maintenance of the proposed upgrades will not result in increased usage of city water.

9.6.6 Summary of Direct Environmental Impacts

Negligible to minor, localized and short-term direct impacts to traffic, noise, air quality, and water quality are possible during the construction of the proposed upgrades to the WWTF and the collection system. Direct impacts can be avoided and minimized in most cases through proper planning and implementation of best management practices throughout the construction phase with respect to vehicle and equipment operation and maintenance; noise control; erosion & sedimentation controls; and waste management. Where applicable, strict adherence to any project environmental permits will also minimize potential environmental impacts. No impacts to sensitive ecosystems, land use, cultural and aesthetic (visual) resources are expected during the construction of the proposed upgrades.

Any issues related to environmental concerns will be brought to the attention of the engineer and/or facility staff immediately and the general contractor will be directed to properly address such issues. Table 9-1 summarizes specific environmental impacts associated with the proposed WWTF and collection system improvements as they compare to existing conditions at the site.

TABLE 9-1
SUMMARY OF DIRECT ENVIRONMENTAL IMPACTS

Environmental Concern	Direct Impact
Traffic	Additional traffic is expected to be moderate during construction. Therefore, no adverse long-term direct impact is expected.
Historical, archaeological, cultural or recreational	No direct adverse impacts
Sensitive ecosystems	No direct adverse impacts. Water quality improvements will benefit the aquatic ecosystem.
Erosion and Sedimentation Controls (of surface waters)	Negligible to minor direct impacts during construction, mainly from vehicle and equipment movement and staging
Land Use	WWTF property is all owned by the City and there is no anticipated impact on existing land use in and around the planning area. No. businesses or household will be displaced as a result of the Project.
Coastal Zone Management	There are no adverse impacts to coastal waters.
Air Quality	Proposed improvements will help to improve air quality; therefore the direct impact is positive.
Visual	No adverse direct aesthetic impacts are anticipated.
Water Quality	Proposed improvements will result in a long-term positive impact on the water quality of the Blackstone River.
Water Supply	Proposed improvements will not have any direct impact on the City of Woonsocket water supply.

9.6.7 Indirect Impacts

Indirect impacts are commonly thought of impacts from an action that are experienced later on or in a spatial context different than the project location. Construction, operation and maintenance of the proposed WWTF and collection system upgrades will not result in any significant long-term indirect impacts. The anticipated indirect impacts will be temporary in nature and may include urbanization, impacts to local businesses and recreation, economics, public safety, visual aesthetics, etc. These possible indirect impacts are discussed in more detail below.

Urbanization

The proposed improvements at the WWTF and collection system will not result in any [additional] urbanization of the community. The majority of the City of Woonsocket is densely settled and currently has sewer service; therefore implementation of the proposed project will not result in any unplanned urbanization. Upgrades are planned for existing components of the established system.

Impact on Local Economy

Improvements at the WWTF and collection system have the potential to provide short-term benefits to local skilled and unskilled workers with jobs in various construction trades. Construction also creates a short-term demand for materials such as pipes, soils, pumps and asphalt, plus the work will promote local economic benefits due to worker needs for food, beverage, and equipment. Local vendors will also receive some increase in business during construction.

Recreation

The primary benefit for implementing the proposed improvements at the WWTF is to help improve the water quality of the Blackstone River. Overall improved water quality of Rhode Island's largest river and bay is the main reason for the construction project. Water quality does have an indirect impact on recreational activities in both the Blackstone River and Narragansett Bay, especially during the summer months.

Economics

It is anticipated that there will be minor, short-term indirect impact to the local economy during construction from incidental purchasing activity of goods and services by project workers. Increased nutrient removal from the WWTF effluent is anticipated to improve the water quality of the Blackstone River and may improve public perceptions about the river and promote additional recreational usage.

9.6.8 Future Environment without the Proposed Project

If the proposed recommended improvements are not implemented at the WWTF and collection, it is expected that the water quality of the Blackstone River would remain the same or worsen with secondary impacts to the riparian ecosystem as a whole. Again, this project is driven by the facility's modified RIPDES permit limitations. Therefore, maintaining the current level of treatment at the WWTF would be in violation of the RIDEM Consent Agreement and RIPDES permit.

9.6.9 Future Environment with the Proposed Project

Overall, the proposed recommended improvements will have a positive impact on the environment. The improvements will include the construction of necessary treatment processes that will allow the WWTF to comply with the current RIPDES permit. Specifically, the facility's

ability to remove solids, BOD, nitrogen, and phosphorus will be greatly enhanced. This will certainly result in increased water quality in the Blackstone River. Collection system upgrades will help to improve the overall operational efficiency and function of the wastewater system in general.

9.6.10 Agency Review

The RIDEM along with several other state and federal agencies have reviewed this environmental assessment via an Intergovernmental Review. An executive summary along with the EA were sent to review agencies on March 8, 2011, and again the week of December 17, 2012. Per RIDEM guidelines a review period of 21 days was allotted for agency comments. Response letters received by the City will be included in Appendix E. RIDEM will either issue a FONSI or will require that an EIS be prepared. Table 9-2 provides a list of the contacts at the respective governmental agencies required to review this document:

TABLE 9-2
LIST OF REVIEW AGENCIES

Agency	Contact
RIDEM, Division of Fish and Wildlife	Mr. Christopher J. Raithel
RIDEM, Office of Technical and Customer Assistance	Mr. Joseph Antonio
U.S. Department of the Interior, Fish and Wildlife Service, New England Field Office	Mr. Anthony Tur
RI Statewide Planning Program	Ms. Nancy Hess
RI Department of Transportation	Mr. J. Michael Bennett, P.E.
Historical Preservation & Heritage Commission	Mr. Edward F. Sanderson, Executive Director
Narragansett Indian Tribal Historic Preservation	Mr. John Brown
Coastal Resources Management Council	Mr. Grover J. Fugate, Executive Director
NOAA/NMFS Habitat Conservation Division, New England Office	Ms. Susan Tuxbury

February 20,2013

Dear Customer:

The following is the proof-of-delivery for tracking number **794367864703**.

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Service type:	FedEx Priority Overnight	**Delivery date:**	Dec 26, 2012 12:09
Special Handling	Deliver Weekday		

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Recipient:
John Brown
Narragansett Indian Tribe

Shipper:
Jody McNelly
CH2MHILL INC
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Suite 700
Boston, MA 02108 US

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18 Tremont St.
Suite 700
Boston, MA 02108
Tel 617-523-2260
Fax 617-723-9036

February 20, 2013

Mr. John Brown, Director
Narragansett Indian Tribal Historic Preservation
P.O. Box 700
Wyoming, RI 02898

Subject: **Intergovernmental Review Request**
City of Woonsocket, Wastewater Treatment Facility
DECEMBER 2012 REVISION – FACILITIES PLAN AMENDMENT

Dear Director Brown:

On behalf of the City of Woonsocket, CH2M HILL Inc. is hereby submitting the executive summary of the December 2012 Revision of the Draft Wastewater Treatment Facilities Plan along with the associated Environmental Assessment for your agency's review and comment. You may recall that you received a related update from the City of Woonsocket in March of 2011. We respectfully request your attention to this matter again.

Effective October 1, 2012, CH2M HILL assumed operational control of the City's Wastewater Treatment Facility. Based on recent effluent water quality testing results, we revised the proposed upgrades to the facility resulting in an updated Facilities Plan Amendment. The purpose of the upgrades and Plan Amendment is to enhance nutrient (nitrogen and phosphorus) removal from the facility's effluent in order to meet revised Rhode Island Pollution Discharge Elimination System (RIPDES) permit limits and foster the improvement of water quality in the Blackstone River. The facility cannot meet new permit effluent limits with the current treatment process. Capital improvements to the facility are necessary in order to achieve the nutrient removal required to meet the revised RIPDES permit limits. The City of Woonsocket is also implementing a variety of upgrades to its wastewater collection system that should also have a benefit to facility and the Blackstone River.

We have provided an Executive Summary of the Facilities Plan Amendment and the Draft Environmental Assessment (both attached) for the Tribe's review and comment. If you should have any comments or concerns, please respond in writing to CH2M HILL, Inc., c/o Jeffrey Nield at the address provided above. CH2M HILL and the City of Woonsocket will assume that your agency has no questions or comments regarding the project if not received by this office 21 days after receipt of this notification. In the interim, if you should have any questions that require immediate attention, please contact Jeffrey Nield at 401-207-2856 or jeffrey.nield@ch2m.com.

Sincerely,

CH2M HILL

Jeffrey A. Nield
Environmental Permitting Task Manager

Encl: Draft Facilities Plan, December 2012 Revision, Executive Summary
Draft Environmental Assessment

February 20,2013

Dear Customer:

The following is the proof-of-delivery for tracking number **794367407577**.

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Tracking number:	794367407577	**Ship date:**	Dec 20, 2012
		Weight:	1.0 lbs/0.5 kg

Recipient:
Grover Fugate
Coastal Resources Management Counci

Shipper:
Jody McNelly
CH2MHILL INC
18 Tremont Street
Suite 700
Boston, MA 02108 US

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18 Tremont St.
Suite 700
Boston, MA 02108
Tel 617-523-2260
Fax 617-723-9036

February 20, 2013

Mr. Grover J. Fugate, Executive Director
Coastal Resources Management Council
Oliver H. Stedman Government Center
4808 Tower Hill Road — Suite 3
Wakefield, RI 02879-1900

Subject: **Intergovernmental Review Request**
City of Woonsocket, Wastewater Treatment Facility
DECEMBER 2012 REVISION – FACILITIES PLAN AMENDMENT

Dear Director Fugate:

On behalf of the City of Woonsocket, CH2M HILL Inc. is hereby submitting the executive summary of the December 2012 Revision of the Draft Wastewater Treatment Facilities Plan along with the associated Environmental Assessment for your agency's review and comment. You may recall that you received a related update from the City of Woonsocket in March of 2011. Thank you for your agency's previous comments. We respectfully request your attention to this matter again.

Effective October 1, 2012, CH2M HILL assumed operational control of the City's Wastewater Treatment Facility. Based on recent effluent water quality testing results, we revised the proposed upgrades to the facility resulting in an updated Facilities Plan Amendment. The purpose of the upgrades and Plan Amendment is to enhance nutrient (nitrogen and phosphorus) removal from the facility's effluent in order to meet revised Rhode Island Pollution Discharge Elimination System (RIPDES) permit limits and foster the improvement of water quality in the Blackstone River. The facility cannot meet new permit effluent limits with the current treatment process. Capital improvements to the facility are necessary in order to achieve the nutrient removal required to meet the revised RIPDES permit limits. The City of Woonsocket is also implementing a variety of upgrades to its wastewater collection system that should also have a benefit to facility and the Blackstone River.

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Sincerely,

CH2M HILL

Jeffrey A. Nield
Environmental Permitting Task Manager

Encl: Draft Facilities Plan, December 2012 Revision, Executive Summary
Draft Environmental Assessment

February 20,2013

Dear Customer:

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Tracking number:	794367573180	**Ship date:**	Dec 20, 2012
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Recipient:
Christopher Raithel
RIDEM

Shipper:
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CH2M HILL
18 Tremont St.
Suite 700
Boston, MA 02108
Tel 617-523-2260
Fax 617-723-9036

February 20, 2013

Mr. Christopher J. Raithel
Rhode Island Department of Environmental Management
Division of Fish and Wildlife - Great Swamp Field Headquarters
277 Great Neck Road
West Kingston, RI 02892

Subject: **Intergovernmental Review Request**
City of Woonsocket, Wastewater Treatment Facility
DECEMBER 2012 REVISION – FACILITIES PLAN AMENDMENT

Dear Mr. Raithel:

On behalf of the City of Woonsocket, CH2M HILL Inc. is hereby submitting the executive summary of the December 2012 Revision of the Draft Wastewater Treatment Facilities Plan along with the associated Environmental Assessment for your agency's review and comment. You may recall that you received a related update from the City of Woonsocket in March of 2011. We respectfully request your attention to this matter again.

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Sincerely,

CH2M HILL

Jeffrey A. Nield
Environmental Permitting Task Manager

Encl: Draft Facilities Plan, December 2012 Revision, Executive Summary
Draft Environmental Assessment

February 20,2013

Dear Customer:

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Tracking number:	794366958347	**Ship date:**	Dec 20, 2012
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Recipient:
Susan Tuxbury
NOAA Fisheries, HCD

Shipper:
Jody McNelly
CH2MHILL INC
18 Tremont Street
Suite 700
Boston, MA 02108 US

Reference 439646.03.02.01.31.99.86/AAB00080865

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CH2M HILL
18 Tremont St.
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Boston, MA 02108
Tel 617-523-2260
Fax 617-723-9036

February 20, 2013

Ms. Susan Tuxbury
NOAA Fisheries, HCD
55 Great Republic Drive
Gloucester, MA 01930

Subject: **Intergovernmental Review Request**
City of Woonsocket, Wastewater Treatment Facility
DECEMBER 2012 REVISION – FACILITIES PLAN AMENDMENT

Dear Ms. Tuxbury:

On behalf of the City of Woonsocket, CH2M HILL Inc. is hereby submitting the executive summary of the December 2012 Revision of the Draft Wastewater Treatment Facilities Plan along with the associated Environmental Assessment for your agency's review and comment. You may recall that you received a related update from the City of Woonsocket in March of 2011. We respectfully request your attention to this matter again.

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Sincerely,

CH2M HILL

Jeffrey A. Nield
Environmental Permitting Task Manager

Encl: Draft Facilities Plan, December 2012 Revision, Executive Summary
Draft Environmental Assessment

February 20,2013

Dear Customer:

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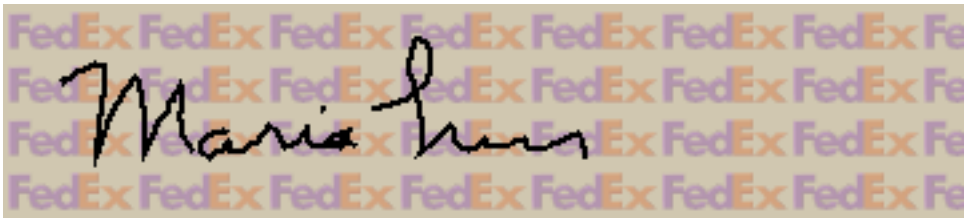
Special Handling	Deliver Weekday		



Shipping Information:

Tracking number:	794367136737	**Ship date:**	Dec 20, 2012
		Weight:	1.0 lbs/0.5 kg

Recipient:
Anthony Tur
U.S. Dept of Interior Fish & Wildli

Shipper:
Jody McNelly
CH2MHILL INC
18 Tremont Street
Suite 700
Boston, MA 02108 US

Reference 439646.03.02.01.31.99.86/AAB00080865

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CH2M HILL
18 Tremont St.
Suite 700
Boston, MA 02108
Tel 617-523-2260
Fax 617-723-9036

February 20, 2013

Mr. Anthony Tur, Endangered Species Specialist
U.S. Department of the Interior – Fish & Wildlife Service
New England Field Office
70 Commercial St. — Suite 300
Concord, NH 03301-5087

Subject: **Intergovernmental Review Request**
City of Woonsocket, Wastewater Treatment Facility
DECEMBER 2012 REVISION – FACILITIES PLAN AMENDMENT

Dear Mr. Tur:

On behalf of the City of Woonsocket, CH2M HILL Inc. is hereby submitting the executive summary of the December 2012 Revision of the Draft Wastewater Treatment Facilities Plan along with the associated Environmental Assessment for your agency's review and comment. You may recall that you received a related update from the City of Woonsocket in March of 2011. We respectfully request your attention to this matter again.

Effective October 1, 2012, CH2M HILL assumed operational control of the City's Wastewater Treatment Facility. Based on recent effluent water quality testing results, we revised the proposed upgrades to the facility resulting in an updated Facilities Plan Amendment. The purpose of the upgrades and Plan Amendment is to enhance nutrient (nitrogen and phosphorus) removal from the facility's effluent in order to meet revised Rhode Island Pollution Discharge Elimination System (RIPDES) permit limits and foster the improvement of water quality in the Blackstone River. The facility cannot meet new permit effluent limits with the current treatment process. Capital improvements to the facility are necessary in order to achieve the nutrient removal required to meet the revised RIPDES permit limits. The City of Woonsocket is also implementing a variety of upgrades to its wastewater collection system that should also have a benefit to facility and the Blackstone River.

We have provided an Executive Summary of the Facilities Plan Amendment and the Draft Environmental Assessment (both attached) for your agency's review and comment. If you should have any comments or concerns, please respond in writing to CH2M HILL, Inc., c/o Jeffrey Nield at the address provided above. CH2M HILL and the City of Woonsocket will assume that your agency has no questions or comments regarding the project if not received by this office 21 days after receipt of this notification. In the interim, if you should have any questions that require immediate attention, please contact Jeffrey Nield at 401-207-2856 or jeffrey.nield@ch2m.com.

Sincerely,

CH2M HILL

Jeffrey A. Nield
Environmental Permitting Task Manager

Encl: Draft Facilities Plan, December 2012 Revision, Executive Summary
Draft Environmental Assessment

February 20,2013

Dear Customer:

The following is the proof-of-delivery for tracking number **794367225700**.

Delivery Information:

Status:	Delivered	**Delivered to:**	Receptionist/Front Desk
Signed for by:	C.CANNAL	**Delivery location:**	235 PROMENADE ST Providence, RI 02908
Service type:	FedEx Standard Overnight	**Delivery date:**	Dec 24, 2012 08:43
Special Handling	Deliver Weekday		

Shipping Information:

Tracking number:	794367225700	**Ship date:**	Dec 20, 2012
		Weight:	1.0 lbs/0.5 kg

Recipient:
Joseph Antonio
RIDEM

Shipper:
Jody McNelly
CH2MHILL INC
18 Tremont Street
Suite 700
Boston, MA 02108 US

Reference
439646.03.02.01.31.99.86/AAB00080865

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CH2M HILL
18 Tremont St.
Suite 700
Boston, MA 02108
Tel 617-523-2260
Fax 617-723-9036

December 20, 2012

Mr. Joseph Antonio
Rhode Island Department of Environmental Management
Permitting Assistance – Office of Customer and Technical Assistance
235 Promenade Street
Providence, RI 02908-5767

Subject: **Intergovernmental Review Request**
City of Woonsocket, Wastewater Treatment Facility
DECEMBER 2012 REVISION – FACILITIES PLAN AMENDMENT

Dear Mr. Antonio,

On behalf of the City of Woonsocket, CH2M HILL Inc. is hereby submitting the executive summary of the December 2012 Revision of the Draft Wastewater Treatment Facilities Plan along with the associated Environmental Assessment for your agency's review and comment. You may recall that you received a related update from the City of Woonsocket in March of 2011. We respectfully request your attention to this matter again.

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Sincerely,

CH2M HILL

Jeffrey A. Nield
Environmental Permitting Task Manager

Encl: Draft Facilities Plan, December 2012 Revision, Executive Summary
Draft Environmental Assessment

February 20,2013

Dear Customer:

The following is the proof-of-delivery for tracking number **794367315789**.

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Signed for by:	F.MCCRAY	**Delivery location:**	2 CAPITOL HL 226 226 Providence, RI 02903
Service type:	FedEx Standard Overnight	**Delivery date:**	Dec 24, 2012 09:37
Special Handling	Deliver Weekday		

Shipping Information:

Tracking number:	794367315789	**Ship date:**	Dec 20, 2012
		Weight:	1.0 lbs/0.5 kg

Recipient:
J. Michael Bennett, P.E.
Rhode Island Dept of Transportation

Shipper:
Jody McNelly
CH2MHILL INC
18 Tremont Street
Suite 700
Boston, MA 02108 US

Reference
439646.03.02.01.31.99.86/AAB00080865

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CH2M HILL
18 Tremont St.
Suite 700
Boston, MA 02108
Tel 617-523-2260
Fax 617-723-9036

February 20, 2013

J. Michael Bennett, P.E.
Deputy Chief Engineer
Rhode Island Department of Transportation
Two Capitol Hill, Rm. 226
Providence, RI 02903-1124

Subject: **Intergovernmental Review Request**
City of Woonsocket, Wastewater Treatment Facility
DECEMBER 2012 REVISION – FACILITIES PLAN AMENDMENT

Dear Mr. Bennett:

On behalf of the City of Woonsocket, CH2M HILL Inc. is hereby submitting the executive summary of the December 2012 Revision of the Draft Wastewater Treatment Facilities Plan along with the associated Environmental Assessment for your agency's review and comment. You may recall that you received a related update from the City of Woonsocket in March of 2011. We respectfully request your attention to this matter again.

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Sincerely,

CH2M HILL

Jeffrey A. Nield
Environmental Permitting Task Manager

Encl: Draft Facilities Plan, December 2012 Revision, Executive Summary
Draft Environmental Assessment

February 20,2013

Dear Customer:

The following is the proof-of-delivery for tracking number 794367493786.

Delivery Information:

Status:	Delivered	**Delivered to:**	Receptionist/Front Desk
Signed for by:	J.HARDEN	**Delivery location:**	1 CAPITOL HL Providence, RI 02908
Service type:	FedEx Standard Overnight	**Delivery date:**	Dec 24, 2012 09:43
Special Handling	Deliver Weekday		

Shipping Information:

Tracking number:	794367493786	**Ship date:**	Dec 20, 2012
		Weight:	1.0 lbs/0.5 kg

Recipient:
Nancy Hess
Rhode Island State Wide Planning Pr

Shipper:
Jody McNelly
CH2MHILL INC
18 Tremont Street
Suite 700
Boston, MA 02108 US

Reference
439646.03.02.01.31.99.86/AAB00080865

Thank you for choosing FedEx.

CH2M HILL
18 Tremont St.
Suite 700
Boston, MA 02108
Tel 617-523-2260
Fax 617-723-9036

February 20, 2013

Ms. Nancy Hess
Principal Environmental Planner
Rhode Island Statewide Planning Program
One Capitol Hill
Providence, RI 02908

Subject: **Intergovernmental Review Request**
City of Woonsocket, Wastewater Treatment Facility
DECEMBER 2012 REVISION – FACILITIES PLAN AMENDMENT

Dear Ms. Hess:

On behalf of the City of Woonsocket, CH2M HILL Inc. is hereby submitting the executive summary of the December 2012 Revision of the Draft Wastewater Treatment Facilities Plan along with the associated Environmental Assessment for your agency's review and comment. You may recall that you received a related update from the City of Woonsocket in March of 2011. Thank you for your previous comments. We respectfully request your attention to this matter again.

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Sincerely,

CH2M HILL

Jeffrey A. Nield
Environmental Permitting Task Manager

Encl: Draft Facilities Plan, December 2012 Revision, Executive Summary
Draft Environmental Assessment

February 20,2013

Dear Customer:

The following is the proof-of-delivery for tracking number **794367706899**.

Delivery Information:

Status:	Delivered	**Delivered to:**	Receptionist/Front Desk
Signed for by:	C.CARRELO	**Delivery location:**	OLD STATE HOUSE Providence, RI 02903
Service type:	FedEx Standard Overnight	**Delivery date:**	Dec 24, 2012 11:30
Special Handling	Deliver Weekday		

Shipping Information:

Tracking number:	794367706899	**Ship date:**	Dec 20, 2012
		Weight:	1.0 lbs/0.5 kg

Recipient:
Edward Sanderson
RI Historical Preservation & Herita

Shipper:
Jody McNelly
CH2MHILL INC
18 Tremont Street
Suite 700
Boston, MA 02108 US

Reference 439646.03.02.01.31.99.86/AAB00080865

Thank you for choosing FedEx.

CH2M HILL
18 Tremont St.
Suite 700
Boston, MA 02108
Tel 617-523-2260
Fax 617-723-9036

February 20, 2013

Mr. Edward F. Sanderson, Executive Director
Rhode Island Historical Preservation & Heritage Commission
Old State House
150 Benefit Street
Providence, RI 02903-1029

Subject: **Intergovernmental Review Request**
City of Woonsocket, Wastewater Treatment Facility
DECEMBER 2012 REVISION – FACILITIES PLAN AMENDMENT

Dear Mr. Sanderson:

On behalf of the City of Woonsocket, CH2M HILL Inc. is hereby submitting the executive summary of the December 2012 Revision of the Draft Wastewater Treatment Facilities Plan along with the associated Environmental Assessment for your agency's review and comment. You may recall that you received a related update from the City of Woonsocket in March of 2011. We respectfully request your attention to this matter again.

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Sincerely,

CH2M HILL

Jeffrey A. Nield
Environmental Permitting Task Manager

Encl: Draft Facilities Plan, December 2012 Revision, Executive Summary
Draft Environmental Assessment

Intergovernmental Agency Review Contacts

City of Woonsocket Wastewater Treatment Facility - Facilities Plan Amendment

Mr. Christopher J. Raithel
RI Department of Environmental Management
Division of Fish and Wildlife
Great Swamp Field Headquarters
277 Great Neck Road
West Kingston, RI 02892

Mr. Joseph Antonio
Rhode Island Department of Environmental Management
Permitting Assistance – Office of Customer and Technical Assistance
235 Promenade Street
Providence, RI 02908-5767

Mr. Anthony Tur
Endangered Species Specialist
U.S. Department of the Interior
FISH AND WILDLIFE SERVICE
New England Field Office
70 Commercial St. — Suite 300
Concord, NH 03301-5087

Ms. Nancy Hess
Principal Environmental Planner
Rhode Island Statewide Planning Program
One Capitol Hill
Providence, RI 02908

J. Michael Bennett, P.E.
Deputy Chief Engineer
Rhode Island Department of Transportation
Two Capitol Hill, Rm. 226
Providence, RI 02903-1124

Mr. Edward F. Sanderson, Executive Director
Deputy State Historic Preservation Officer
Historical Preservation & Heritage Commission
Old State House
150 Benefit Street
Providence, RI 02903-1029

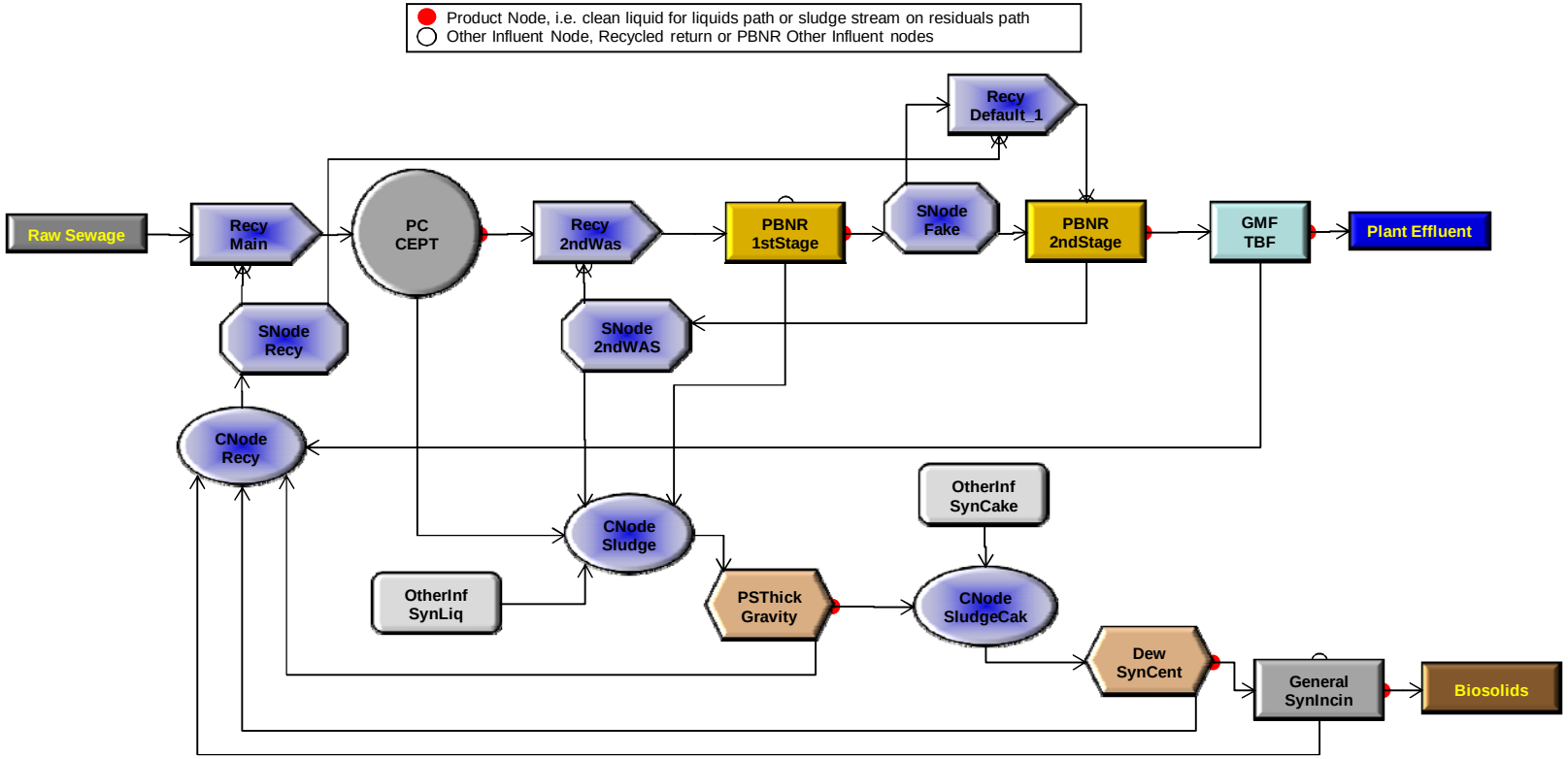
Mr. John Brown, Director
Narragansett Indian Tribal Historic Preservation
P.O. Box 700
Wyoming, RI 02898

Mr. Grover J. Fugate, Executive Director
Coastal Resources Management Council
Oliver H. Stedman Government Center
4808 Tower Hill Road — Suite 3
Wakefield, RI 02879-1900

Ms. Susan Tuxbury
NOAA Fisheries, HCD
55 Great Republic Drive
Gloucester, MA 01930

APPENDIX F

Pro2D Files



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Facility Operating Parameters		
Item		**Value**
Influent Wastewater	(US)	(US)
Flow	MG/day	
Design Average		**9.00**
Design Diurnal Peak		**32.00**
Design Peaking Factor for WW Diurnal flow		3.6
Design Peaking Factor for WW Diurnal loads		**3.00**
Carbonaceous Five-Day Biochemical Oxygen Demand (CBOD5)		
Design Average Concentration	mg/L	262
Design Average Mass Loading	lb/day	**19,715**
Design Diurnal Peak Mass Loading	lb/day	59,148
Total Suspended Solids (TSS)		
Design Average Concentration	mg/L	178
Design Average Mass Loading	lb/day	**13,340**
Design Diurnal Peak Mass Loading	lb/day	40,022
Volatile Suspended Solids (VSS)		
Percent VSS	%	**85%**
Design Average Concentration	mg/L	151
Design Average Mass Loading	lb/day	11,339
Design Diurnal Peak Mass Loading	lb/day	34,019
Total Kjeldahl Nitrogen (TKN as N)		
Design Average Concentration	mg/L	28
Design Average Mass Loading	lb/day	**2,070**
Design Diurnal Peak Mass Loading	lb/day	6,210
Ammonia-Nitrogen (NH3-N as N)		
Design Average Concentration	mg/L	18
Design Average Mass Loading	lb/day	**1,320**
Design Diurnal Peak Mass Loading	lb/day	3,960
Total Phosphorus (as P)		
Design Average Concentration	mg/L	3.6
Design Average Mass Loading	lb/day	**270**
Design Diurnal Peak Mass Loading	lb/day	810
Alkalinity (as CaCO3)		
Design Average Concentration	mg/L	250
Design Average Mass Loading	lb/day	**18,776**
Design Diurnal Peak Mass Loading	lb/day	56,332
Hydrogen Sulfide (H2S)		
Design Average Concentration	mg/L	6
Design Average Mass Loading	lb/day	**451**
Design Diurnal Peak Mass Loading	lb/day	1,352
Chemical Addition:		
Select the Metal Salt (if used	**Ferric Chloride**	2
Wastewater Temperature		
Raw Sewage Temperature	oC	**13.9**
Plant Elevation	feet	**125**
Ambient Atmospheric Pressure	psia	14.6
Is the Temperature Model Used?	**No**	
N/A	oF	**70**
N/A	mph	**5**
N/A	%	**60%**
N/A	%	**50%**
N/A	degrees	**45**
N/A	Date	**12/11/12**
Primary Clarifiers: CEPT		
Primary Clarifiers?	**Yes**	
Total Area	ft2	**12,723**
Overflow Rate	gpd-sq.ft.	

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Average		957
Diurnal Peak		2,933
Chemical Compound Applied to Primary Influent **Yes**		
Chemical Formula		FeCl3
Chemical Dosage (mg chemical/L treated)	mg/L	**5**
Chemical Dosage (as chemical)	lb/day	517
Molar Ratio of Metal to Phosphate		0.81
Percent of Soluble P that is ortho-P		**100%**
Percent Removal of Colloidal Matter		**8%**
TSS Removal Efficiency at Average Conditions		**70%**
TSS Removal Efficiency at Diurnal Peak Conditions		**50%**
Effective TSS Removal with Chemical Addition - Average Conditions(%)		71%
Effective TSS Removal with Chemical Addition - Peak Conditions(%)		53%
Percent BOD5 Removal		35%
Primary Effluent	mg/L	
TSS		74
TP		1.64
OP		0.74
Primary Sludge Concentratio	mg/L	**10,000**
Biological Process - PBNR: 1stStage		
Total SRT (anaerobic + anoxic + aerobic)	days	**4.00**
System pH		**7.20**
Nitrifier Minimum Aerobic SRT (SRT_{min})	days	1.50
Aerobic SRT		3.10
Nitrification Safety Factor		2.07
DO	mg/L	1.83
Temperature in the Biological Process	oC	23
SVI	mL/g	**120**
Biosolids Production Rates		
Net Yield (mg TSS/mg BOD_5)	lb/lb	0.61
Volatile Fraction	%	78%
Active Fraction	%	54%
Nitrifier Fraction	%	2%
Nitrogen Content, N/VSS	%	6%
Phosphorus Content, P/VSS	%	2%
Process Oxygen Requirements - Minus MBR Tank (if used)		
Carbonaceous AOR/BOD5 - wt/wt	lb/lb	0.99
Total AOR/BOD% - wt/wt	lb/lb	1.08
AOR (wt/day)	lb/day	
Average		19,892
Diurnal Peak		35,737
AOR	mg/L-hr	
Average		29
Diurnal Peak		53
Bioreactor **With Secondary Clarifier**		
Total Bioreactor Volume	MG	**3.39**
HRT	hr	6.65
% non-aerobic		23%
% aerobic		77%
Average MLSS Concentration	mg/L	1,876
No Media Reactors Included **AKI K1**		
Bulk Specific Surface Area (Biofilm Active)	ft2/ft3	**No Media**
Bulk Liquid Volume Displacement	-	**No Media**
Bioreactor Clarifier		
Total Area	sq.ft.	**45,036**
Overflow Rate	gpd-sq.ft.	
Average		271
Diurnal Peak		832

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Effluent TSS		mg/L	
Average			20
Diurnal Peak			30
Underflow Rate			
Average Flow Ratio			50%
Average Rate		gpd-sq.ft.	136
Peak Flow Ratio			50%
Peak Rate		gpd-sq.ft.	416
Solids Loading Rate		lb/day-sq.ft.	
Average			6
Diurnal Peak			20
Limiting Solids Loading Rate		lb/day-sq.ft.	49
Return sludge rate at which limiting solids rate can be achieved			
RAS Flow Rate		MGD	23.32
Percent of Influent to Bioreactor		%	191%
RAS Concentration		mg/L	
Average			5,364
Diurnal Peak			5,629
No Membrane Bioreactor Selected	**GE/Zenon**		
Calculate Based on Flux or # of Modules?	**Flux**	gph	10
Design Membrane Net Flux Rate		gfd	10
Minimum Required Membrane Area		ft2	1,196,822
Membrane Module Area		ft2	340
Number of Modules			3,520
Air Rate per Module			11.80
Percent of Time Membrane Air Scour is on			25%
Total Membrane Air Scour Rate		scfm	10,384
Force MBR DO to Match Air Rate?	**No**		
Effluent TSS		mg/L	
Average			1.0
Diurnal Peak			1.0
Chemical Compound Applied before Secondary Clarifier			
Chemical Added?	**No**		
Chemical Type			Ferric Chloride
Chemical Dosage (as chemical)		lb/day	0
Chemical Dosage (mg chemical/L treated)		mg/L	N/A
Molar Ratio Dosage Applied (M+:PO4-P)			N/A
Effluent PO4-P		lb/day	N/A
Effluent PO4-P		mg/L	N/A
Flow Splitter: Fake			
Splitter Influent Flow		MGD	11.97
Flow Splits			
Fake Splitter Effluent (SplitE) PBNR2ndStage		%	100%
Fake Splitter Effluent (SplitE) RecyDefault_1		%	0%
		%	0%
		%	0%
		%	0%
		%	0%
		%	0%
		%	0%
		%	0%
Biological Process - PBNR: 2ndStage			
Total SRT (anaerobic + anoxic + aerobic)		days	10.00
System pH			7.20
Nitrifier Minimum Aerobic SRT (SRT_{min})		days	1.07
Aerobic SRT			4.76
Nitrification Safety Factor			4.45
DO		mg/L	2.00
Temperature in the Biological Process		oC	24

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SVI		mL/g	120
Biosolids Production Rates			
Net Yield (mg TSS/mg BOD_5)		lb/lb	1.10
Volatile Fraction		%	55%
Active Fraction		%	21%
Nitrifier Fraction		%	1%
Nitrogen Content, N/VSS		%	4%
Phosphorus Content, P/VSS		%	1%
Process Oxygen Requirements - Minus MBR Tank (if used)			
Carbonaceous AOR/BOD5 - wt/wt		lb/lb	0.96
Total AOR/BOD% - wt/wt		lb/lb	1.31
AOR (wt/day)		lb/day	
Average			2,594
Diurnal Peak			2,697
AOR		mg/L-hr	
Average			7
Diurnal Peak			7
Bioreactor	**With Secondary Clarifier**		
Total Bioreactor Volume		MG	1.90
HRT		hr	3.67
% non-aerobic			52%
% aerobic			48%
Average MLSS Concentration		mg/L	1,896
No Media Reactors Included	**AKI K1**		
Bulk Specific Surface Area (Biofilm Active)		ft2/ft3	No Media
Bulk Liquid Volume Displacement		-	No Media
Bioreactor Clarifier			
Total Area		sq.ft.	28,510
Overflow Rate		gpd-sq.ft.	
Average			436
Diurnal Peak			1,310
Effluent TSS		mg/L	
Average			8
Diurnal Peak			15
Underflow Rate			
Average Flow Ratio			50%
Average Rate		gpd-sq.ft.	218
Peak Flow Ratio			50%
Peak Rate		gpd-sq.ft.	655
Solids Loading Rate		lb/day-sq.ft.	
Average			10
Diurnal Peak			31
Limiting Solids Loading Rate		lb/day-sq.ft.	49
Return sludge rate at which limiting solids rate can be achieved			
RAS Flow Rate		MGD	14.76
Percent of Influent to Bioreactor		%	123%
RAS Concentration		mg/L	
Average			5,740
Diurnal Peak			5,689
No Membrane Bioreactor Selected	**GE/Zenon**		
Calculate Based on Flux or # of Modules?	**Flux**	gph	10
Design Membrane Net Flux Rate		gfd	10
Minimum Required Membrane Area		ft2	1,238,553
Membrane Module Area		ft2	340
Number of Modules			3,643
Air Rate per Module			11.80
Percent of Time Membrane Air Scour is on			25%
Total Membrane Air Scour Rate		scfm	10,747

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Force MBR DO to Match Air Rate?	No		
Effluent TSS		mg/L	
Average			1.0
Diurnal Peak			1.0
Chemical Compound Applied before Secondary Clarifier			
Chemical Added?	Yes		
Chemical Type			Ferric Chloride
Chemical Dosage (as chemical)		lb/day	400
Chemical Dosage (mg chemical/L treated)		mg/L	3
Molar Ratio Dosage Applied (M+:PO4-P)			3.67
Effluent PO4-P		lb/day	2
Effluent PO4-P		mg/L	0.02
Filters: TBF			
Filters?	Yes		
Total Area		ft2	5,536
Hydraulic Loading Rate		gpm/ft2	
Average			1.41
Diurnal Peak			4.53
Solids Loading Rate		lb/day-sq.ft.	
Average			0.03
Diurnal Peak			0.17
Filter Run Time		hr	24
Instantaneous Backwash Rate		gpm/ft2	20
Duration of Backwash Flow		minutes	10
Backwash Operating Time (%cycle)		%	0.69%
Backwash Flow Rate		MGD	1.11
Ratio of Backwash Production to Filter Influent		%	8.9%
TSS Removal Efficiency at Average Conditions			60%
TSS Removal Efficiency at Diurnal Peak Conditions			50%
Effluent TSS at Average Conditions		mg/L	3.5
Effluent TSS at Peak Conditions		mg/L	7.7
Chemical Compound Applied to Filter Influent	No		
Chemical Formula			FeCl3
Chemical Dosage (mg chemical/L treated)		mg/L	10
Chemical Dosage (as chemical)		lb/day	1,033.63
Molar Ratio of Metal to Phosphate			3.85
Percent of Soluble P that is ortho-P			*100%*
Effective TSS Removal with Chemical Addition - Average Conditions(%)			60%
Effective TSS Removal with Chemical Addition - Peak Conditions(%)			50%
Backwash Concentratior		mg/L	53
Other Influent: SynLig			
Flow		MG/day	
Design Average			**1.11**
Design Diurnal Peak			1.50
Design Peaking Factor for WW Diurnal flow			1.35
Design Peaking Factor for WW Diurnal loads			1.30
Carbonaceous Five-Day Biochemical Oxygen Demand (CBOD5)			
Design Average Concentration		mg/L	3,800
Design Average Mass Loading		lb/day	35,212
Design Diurnal Peak Mass Loading		lb/day	45,775
Total Suspended Solids (TSS)			
Design Average Concentration		mg/L	10,001
Design Average Mass Loading		lb/day	92,662
Design Diurnal Peak Mass Loading		lb/day	120,461
Volatile Suspended Solids (VSS)			
Percent VSS		%	76%
Design Average Concentration		mg/L	7,600
Design Average Mass Loading		lb/day	70,423
Design Diurnal Peak Mass Loading		lb/day	91,550

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Total Kjeldahl Nitrogen (TKN as N)		
Design Average Concentration	mg/L	752
Design Average Mass Loading	lb/day	**6,972**
Design Diurnal Peak Mass Loading	lb/day	9,063
Ammonia-Nitrogen (NH_3-N as N)		
Design Average Concentration	mg/L	31
Design Average Mass Loading	lb/day	**289**
Design Diurnal Peak Mass Loading	lb/day	375
Total Phosphorus (as P)		
Design Average Concentration	mg/L	53
Design Average Mass Loading	lb/day	**493**
Design Diurnal Peak Mass Loading	lb/day	641
Alkalinity (as $CaCO_3$)		
Design Average Concentration	mg/L	250
Design Average Mass Loading	lb/day	**2,317**
Design Diurnal Peak Mass Loading	lb/day	3,012
Hydrogen Sulfide (H_2S)		
Design Average Concentration	mg/L	6
Design Average Mass Loading	lb/day	**56**
Design Diurnal Peak Mass Loading	lb/day	72
Water Temperature	oC	**20**
Primary Sludge Thickening: Gravity		
Primary Sludge Thickener? **Yes**		
Solids Capture	%	**97%**
Thickened Sludge Concentration	mg/L	**50,000**
Belt Wash Water Flow Rate	gpm	**0**
Hours/Day of Operation		**24**
Days/Week of Operation		**7**
Fermentation Occurring? **Yes**		
Conversion Efficiency of VSS to VFAs	lbs VFAs/lbs V	**0.02**
Elutriate VFA Productior	lbs VFA COD/	1,466
Other Influent: SynCake		
Flow	MG/day	
Design Average		**0.07**
Design Diurnal Peak		**1.50**
Design Peaking Factor for WW Diurnal flow		21.00
Design Peaking Factor for WW Diurnal loads		**1.30**
Carbonaceous Five-Day Biochemical Oxygen Demand (CBOD5)		
Design Average Concentration	mg/L	78,110
Design Average Mass Loading	lb/day	**46,554**
Design Diurnal Peak Mass Loading	lb/day	60,520
Total Suspended Solids (TSS)		
Design Average Concentration	mg/L	150,008
Design Average Mass Loading	lb/day	**89,406**
Design Diurnal Peak Mass Loading	lb/day	116,227
Volatile Suspended Solids (VSS)		
Percent VSS	%	**76%**
Design Average Concentration	mg/L	114,006
Design Average Mass Loading	lb/day	67,948
Design Diurnal Peak Mass Loading	lb/day	88,333
Total Kjeldahl Nitrogen (TKN as N)		
Design Average Concentration	mg/L	11,287
Design Average Mass Loading	lb/day	**6,727**
Design Diurnal Peak Mass Loading	lb/day	8,745
Ammonia-Nitrogen (NH_3-N as N)		
Design Average Concentration	mg/L	46
Design Average Mass Loading	lb/day	**28**
Design Diurnal Peak Mass Loading	lb/day	36
Total Phosphorus (as P)		

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Design Average Concentration		mg/L	798
Design Average Mass Loading		lb/day	**476**
Design Diurnal Peak Mass Loading		lb/day	618
Alkalinity (as $CaCO_3$)			
Design Average Concentration		mg/L	250
Design Average Mass Loading		lb/day	**149**
Design Diurnal Peak Mass Loading		lb/day	194
Hydrogen Sulfide (H_2S)			
Design Average Concentration		mg/L	6
Design Average Mass Loading		lb/day	**4**
Design Diurnal Peak Mass Loading		lb/day	5
Water Temperature		oC	**20**
Dewatering: SynCent			
Dewatering?	**Yes**		
Solids Capture		%	**97%**
Dewatered Sludge Concentration		%	**23%**
Belt Wash Water Flow Rate		gpm	**0**
Hours/Day of Operation			**24**
Days/Week of Operatior			**7**
General Node: SynIncin			
Is the General Node in Service?	**Yes**		
Fraction of Ash Captured for Disposal			**94%**
Fraction of Ash Captured From Flue Gas			**94%**
Fraction of Nutrients in Disposal Ash			**100%**
Scour Water Flow			**1.10**
Scour Water Temperature		C	**102**
Total Recycle Loads (not necessarily with Incin)			
Flow			3.86
BOD			8,936
TSS			13,245
TKN			1,224
Ammonia			352
TP			82
Flow Splitter: 2ndWAS			
Splitter Influent Flow		MGD	0.05
Flow Splits			
2ndWAS Splitter Effluent (SplitE) Recy2ndWas		%	100%
2ndWAS Splitter Effluent (SplitE) CNodeSludge		%	**0%**
		%	**0%**
		%	**0%**
		%	**0%**
		%	**0%**
		%	**0%**
		%	**0%**
		%	**0%**
Flow Splitter: Recy			
Splitter Influent Flow		MGD	3.86
Flow Splits			
Recy Splitter Effluent (SplitE) RecyMain		%	88%
Recy Splitter Effluent (SplitE) RecyDefault_1		%	**12%**
		%	**0%**
		%	**0%**
		%	**0%**
		%	**0%**
		%	**0%**

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Facility Operating Parameters		
Item		**Value**
Influent Wastewater	(US)	(US)
Flow	MG/day	
Design Average		**16.00**
Design Diurnal Peak		**32.00**
Design Peaking Factor for WW Diurnal flow		2.0
Design Peaking Factor for WW Diurnal loads		**2.22**
Carbonaceous Five-Day Biochemical Oxygen Demand (CBOD5)		
Design Average Concentration	mg/L	200
Design Average Mass Loading	lb/day	**26,678**
Design Diurnal Peak Mass Loading	lb/day	59,148
Total Suspended Solids (TSS)		
Design Average Concentration	mg/L	154
Design Average Mass Loading	lb/day	**20,587**
Design Diurnal Peak Mass Loading	lb/day	45,642
Volatile Suspended Solids (VSS)		
Percent VSS	%	**85%**
Design Average Concentration	mg/L	131
Design Average Mass Loading	lb/day	17,499
Design Diurnal Peak Mass Loading	lb/day	38,796
Total Kjeldahl Nitrogen (TKN as N)		
Design Average Concentration	mg/L	18
Design Average Mass Loading	lb/day	**2,363**
Design Diurnal Peak Mass Loading	lb/day	5,240
Ammonia-Nitrogen (NH3-N as N)		
Design Average Concentration	mg/L	11
Design Average Mass Loading	lb/day	**1,450**
Design Diurnal Peak Mass Loading	lb/day	3,215
Total Phosphorus (as P)		
Design Average Concentration	mg/L	2.7
Design Average Mass Loading	lb/day	**358**
Design Diurnal Peak Mass Loading	lb/day	794
Alkalinity (as CaCO3)		
Design Average Concentration	mg/L	250
Design Average Mass Loading	lb/day	**33,380**
Design Diurnal Peak Mass Loading	lb/day	74,006
Hydrogen Sulfide (H2S)		
Design Average Concentration	mg/L	6
Design Average Mass Loading	lb/day	**801**
Design Diurnal Peak Mass Loading	lb/day	1,776
Chemical Addition:		
Select the Metal Salt (if used	**Ferric Chloride**	2
Wastewater Temperature		
Raw Sewage Temperature	oC	**16.2**
Plant Elevation	feet	**125**
Ambient Atmospheric Pressure	psia	14.6
Is the Temperature Model Used?	**No**	
N/A	oF	**70**
N/A	mph	**5**
N/A	%	**60%**
N/A	%	**50%**
N/A	degrees	**45**
N/A	Date	**12/11/12**
Primary Clarifiers: CEPT		
Primary Clarifiers?	**Yes**	
Total Area	ft2	**12,723**
Overflow Rate	gpd-sq.ft.	

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Average		1,580
Diurnal Peak		3,004
Chemical Compound Applied to Primary Influent **Yes**		
Chemical Formula		FeCl3
Chemical Dosage (mg chemical/L treated)	mg/L	**5**
Chemical Dosage (as chemical)	lb/day	853
Molar Ratio of Metal to Phosphate		1.21
Percent of Soluble P that is ortho-P		**100%**
Percent Removal of Colloidal Matter		**8%**
TSS Removal Efficiency at Average Conditions		**70%**
TSS Removal Efficiency at Diurnal Peak Conditions		**50%**
Effective TSS Removal with Chemical Addition - Average Conditions(%)		71%
Effective TSS Removal with Chemical Addition - Peak Conditions(%)		53%
Percent BOD5 Removal		41%
Primary Effluent	mg/L	
TSS		69
TP		1.23
OP		0.39
Primary Sludge Concentratio	mg/L	**10,000**
Biological Process - PBNR: 1stStage		
Total SRT (anaerobic + anoxic + aerobic)	days	**3.00**
System pH		**7.20**
Nitrifier Minimum Aerobic SRT (SRT_{min})	days	1.51
Aerobic SRT		1.64
Nitrification Safety Factor		1.09
DO	mg/L	1.75
Temperature in the Biological Process	oC	23
SVI	mL/g	**120**
Biosolids Production Rates		
Net Yield (mg TSS/mg BOD_5)	lb/lb	0.64
Volatile Fraction	%	78%
Active Fraction	%	53%
Nitrifier Fraction	%	1%
Nitrogen Content, N/VSS	%	6%
Phosphorus Content, P/VSS	%	2%
Process Oxygen Requirements - Minus MBR Tank (if used)		
Carbonaceous AOR/BOD5 - wt/wt	lb/lb	0.97
Total AOR/BOD% - wt/wt	lb/lb	0.99
AOR (wt/day)	lb/day	
Average		22,196
Diurnal Peak		37,656
AOR	mg/L-hr	
Average		33
Diurnal Peak		56
Bioreactor **With Secondary Clarifier**		
Total Bioreactor Volume	MG	**3.39**
HRT	hr	4.04
% non-aerobic		45%
% aerobic		55%
Average MLSS Concentration	mg/L	1,871
No Media Reactors Included **AKI K1**		
Bulk Specific Surface Area (Biofilm Active)	ft2/ft3	**No Media**
Bulk Liquid Volume Displacement	-	**No Media**
Bioreactor Clarifier		
Total Area	sq.ft.	**45,036**
Overflow Rate	gpd-sq.ft.	
Average		447
Diurnal Peak		851

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Effluent TSS		mg/L	
Average			20
Diurnal Peak			30
Underflow Rate			
Average Flow Ratio			50%
Average Rate		gpd-sq.ft.	224
Peak Flow Ratio			50%
Peak Rate		gpd-sq.ft.	426
Solids Loading Rate		lb/day-sq.ft.	
Average			10
Diurnal Peak			20
Limiting Solids Loading Rate		lb/day-sq.ft.	49
Return sludge rate at which limiting solids rate can be achieved			
RAS Flow Rate		MGD	23.32
Percent of Influent to Bioreactor		%	116%
RAS Concentration		mg/L	
Average			5,405
Diurnal Peak			5,613
No Membrane Bioreactor Selected	**GE/Zenon**		
Calculate Based on Flux or # of Modules?	**Flux**	gph	10
Design Membrane Net Flux Rate		gfd	10
Minimum Required Membrane Area		ft2	1,982,479
Membrane Module Area		ft2	340
Number of Modules			5,831
Air Rate per Module			11.80
Percent of Time Membrane Air Scour is on			25%
Total Membrane Air Scour Rate		scfm	17,201
Force MBR DO to Match Air Rate?	**No**		
Effluent TSS		mg/L	
Average			1.0
Diurnal Peak			1.0
Chemical Compound Applied before Secondary Clarifier			
Chemical Added?	**No**		
Chemical Type			Ferric Chloride
Chemical Dosage (as chemical)		lb/day	0
Chemical Dosage (mg chemical/L treated)		mg/L	N/A
Molar Ratio Dosage Applied (M+:PO4-P)			N/A
Effluent PO4-P		lb/day	N/A
Effluent PO4-P		mg/L	N/A
Flow Splitter: Fake			
Splitter Influent Flow		MGD	19.82
Flow Splits			
Fake Splitter Effluent (SplitE) PBNR2ndStage		%	100%
Fake Splitter Effluent (SplitE) RecyDefault_1		%	0%
		%	0%
		%	0%
		%	0%
		%	0%
		%	0%
		%	0%
		%	0%
Biological Process - PBNR: 2ndStage			
Total SRT (anaerobic + anoxic + aerobic)		days	10.00
System pH			7.20
Nitrifier Minimum Aerobic SRT (SRT_{min})		days	1.08
Aerobic SRT			4.75
Nitrification Safety Factor			4.39
DO		mg/L	2.00
Temperature in the Biological Process		oC	24

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SVI		mL/g	120
Biosolids Production Rates			
Net Yield (mg TSS/mg BOD_5)		lb/lb	1.03
Volatile Fraction		%	57%
Active Fraction		%	20%
Nitrifier Fraction		%	2%
Nitrogen Content, N/VSS		%	4%
Phosphorus Content, P/VSS		%	1%
Process Oxygen Requirements - Minus MBR Tank (if used)			
Carbonaceous AOR/BOD5 - wt/wt		lb/lb	1.01
Total AOR/BOD% - wt/wt		lb/lb	1.64
AOR (wt/day)		lb/day	
Average			5,096
Diurnal Peak			5,890
AOR		mg/L-hr	
Average			13
Diurnal Peak			15
Bioreactor	**With Secondary Clarifier**		
Total Bioreactor Volume		MG	1.90
HRT		hr	2.23
% non-aerobic			52%
% aerobic			48%
Average MLSS Concentration		mg/L	2,884
No Media Reactors Included	**AKI K1**		
Bulk Specific Surface Area (Biofilm Active)		ft2/ft3	No Media
Bulk Liquid Volume Displacement		-	No Media
Bioreactor Clarifier			
Total Area		sq.ft.	28,510
Overflow Rate		gpd-sq.ft.	
Average			717
Diurnal Peak			1,344
Effluent TSS		mg/L	
Average			8
Diurnal Peak			15
Underflow Rate			
Average Flow Ratio			50%
Average Rate		gpd-sq.ft.	358
Peak Flow Ratio			50%
Peak Rate		gpd-sq.ft.	672
Solids Loading Rate		lb/day-sq.ft.	
Average			25
Diurnal Peak			49
Limiting Solids Loading Rate		lb/day-sq.ft.	49
Return sludge rate at which limiting solids rate can be achieved			
RAS Flow Rate		MGD	14.76
Percent of Influent to Bioreactor		%	74%
RAS Concentration		mg/L	
Average			8,729
Diurnal Peak			8,653
No Membrane Bioreactor Selected	**GE/Zenon**		
Calculate Based on Flux or # of Modules?	**Flux**	gph	10
Design Membrane Net Flux Rate		gfd	10
Minimum Required Membrane Area		ft2	2,038,548
Membrane Module Area		ft2	340
Number of Modules			5,996
Air Rate per Module			11.80
Percent of Time Membrane Air Scour is on			25%
Total Membrane Air Scour Rate		scfm	17,688

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Force MBR DO to Match Air Rate? **No**		
Effluent TSS	mg/L	
Average		**1.0**
Diurnal Peak		**1.0**
Chemical Compound Applied before Secondary Clarifier		
Chemical Added? **Yes**		
Chemical Type		Ferric Chloride
Chemical Dosage (as chemical)	lb/day	**700**
Chemical Dosage (mg chemical/L treated)	mg/L	3
Molar Ratio Dosage Applied (M+:PO4-P)		3.07
Effluent PO4-P	lb/day	4
Effluent PO4-P	mg/L	0.02
Filters: TBF		
Filters? **Yes**		
Total Area	ft2	**5,536**
Hydraulic Loading Rate	gpm/ft2	
Average		2.42
Diurnal Peak		4.65
Solids Loading Rate	lb/day-sq.ft.	
Average		0.05
Diurnal Peak		0.18
Filter Run Time	hr	**24**
Instantaneous Backwash Rate	gpm/ft2	**20**
Duration of Backwash Flow	minutes	**10**
Backwash Operating Time (%cycle)	%	0.69%
Backwash Flow Rate	MGD	1.11
Ratio of Backwash Production to Filter Influent	%	5.4%
TSS Removal Efficiency at Average Conditions		**60%**
TSS Removal Efficiency at Diurnal Peak Conditions		**50%**
Effluent TSS at Average Conditions	mg/L	3.4
Effluent TSS at Peak Conditions	mg/L	7.7
Chemical Compound Applied to Filter Influent **No**		
Chemical Formula		FeCl3
Chemical Dosage (mg chemical/L treated)	mg/L	**10**
Chemical Dosage (as chemical)	lb/day	1,701.27
Molar Ratio of Metal to Phosphate		3.50
Percent of Soluble P that is ortho-P		***100%***
Effective TSS Removal with Chemical Addition - Average Conditions(%)		60%
Effective TSS Removal with Chemical Addition - Peak Conditions(%)		50%
Backwash Concentratior	mg/L	88
Other Influent: SynLig		
Flow	MG/day	
Design Average		**1.11**
Design Diurnal Peak		**1.50**
Design Peaking Factor for WW Diurnal flow		1.35
Design Peaking Factor for WW Diurnal loads		**1.30**
Carbonaceous Five-Day Biochemical Oxygen Demand (CBOD5)		
Design Average Concentration	mg/L	3,800
Design Average Mass Loading	lb/day	**35,212**
Design Diurnal Peak Mass Loading	lb/day	45,775
Total Suspended Solids (TSS)		
Design Average Concentration	mg/L	10,001
Design Average Mass Loading	lb/day	**92,662**
Design Diurnal Peak Mass Loading	lb/day	120,461
Volatile Suspended Solids (VSS)		
Percent VSS	%	**76%**
Design Average Concentration	mg/L	7,600
Design Average Mass Loading	lb/day	70,423
Design Diurnal Peak Mass Loading	lb/day	91,550

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Total Kjeldahl Nitrogen (TKN as N)		
Design Average Concentration	mg/L	486
Design Average Mass Loading	lb/day	**4,507**
Design Diurnal Peak Mass Loading	lb/day	5,859
Ammonia-Nitrogen (NH_3-N as N)		
Design Average Concentration	mg/L	38
Design Average Mass Loading	lb/day	**352**
Design Diurnal Peak Mass Loading	lb/day	458
Total Phosphorus (as P)		
Design Average Concentration	mg/L	53
Design Average Mass Loading	lb/day	**493**
Design Diurnal Peak Mass Loading	lb/day	641
Alkalinity (as $CaCO_3$)		
Design Average Concentration	mg/L	250
Design Average Mass Loading	lb/day	**2,317**
Design Diurnal Peak Mass Loading	lb/day	3,012
Hydrogen Sulfide (H_2S)		
Design Average Concentration	mg/L	6
Design Average Mass Loading	lb/day	**56**
Design Diurnal Peak Mass Loading	lb/day	72
Water Temperature	oC	**20**
Primary Sludge Thickening: Gravity		
Primary Sludge Thickener? **Yes**		
Solids Capture	%	**94%**
Thickened Sludge Concentration	mg/L	**50,000**
Belt Wash Water Flow Rate	gpm	**0**
Hours/Day of Operation		**24**
Days/Week of Operation		**7**
Fermentation Occurring? **Yes**		
Conversion Efficiency of VSS to VFAs	lbs VFAs/lbs V	**0.01**
Elutriate VFA Productior	lbs VFA COD/	1,094
Other Influent: SynCake		
Flow	MG/day	
Design Average		**0.07**
Design Diurnal Peak		**1.50**
Design Peaking Factor for WW Diurnal flow		21.00
Design Peaking Factor for WW Diurnal loads		**1.30**
Carbonaceous Five-Day Biochemical Oxygen Demand (CBOD5)		
Design Average Concentration	mg/L	57,003
Design Average Mass Loading	lb/day	**33,974**
Design Diurnal Peak Mass Loading	lb/day	44,166
Total Suspended Solids (TSS)		
Design Average Concentration	mg/L	150,008
Design Average Mass Loading	lb/day	**89,406**
Design Diurnal Peak Mass Loading	lb/day	116,227
Volatile Suspended Solids (VSS)		
Percent VSS	%	**76%**
Design Average Concentration	mg/L	114,006
Design Average Mass Loading	lb/day	67,948
Design Diurnal Peak Mass Loading	lb/day	88,333
Total Kjeldahl Nitrogen (TKN as N)		
Design Average Concentration	mg/L	7,296
Design Average Mass Loading	lb/day	**4,349**
Design Diurnal Peak Mass Loading	lb/day	5,653
Ammonia-Nitrogen (NH_3-N as N)		
Design Average Concentration	mg/L	36
Design Average Mass Loading	lb/day	**22**
Design Diurnal Peak Mass Loading	lb/day	28
Total Phosphorus (as P)		

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Design Average Concentration		mg/L	798
Design Average Mass Loading		lb/day	**476**
Design Diurnal Peak Mass Loading		lb/day	618
Alkalinity (as $CaCO_3$)			
Design Average Concentration		mg/L	250
Design Average Mass Loading		lb/day	**149**
Design Diurnal Peak Mass Loading		lb/day	194
Hydrogen Sulfide (H_2S)			
Design Average Concentration		mg/L	6
Design Average Mass Loading		lb/day	**4**
Design Diurnal Peak Mass Loading		lb/day	5
Water Temperature		oC	**20**
Dewatering: SynCent			
Dewatering?	**Yes**		
Solids Capture		%	**95%**
Dewatered Sludge Concentration		%	**23%**
Belt Wash Water Flow Rate		gpm	**0**
Hours/Day of Operation			**24**
Days/Week of Operatior			**7**
General Node: SynIncin			
Is the General Node in Service?	**Yes**		
Fraction of Ash Captured for Disposal			**98%**
Fraction of Ash Captured From Flue Gas			**98%**
Fraction of Nutrients in Disposal Ash			**100%**
Scour Water Flow			**2.10**
Scour Water Temperature		C	**80**
Total Recycle Loads (not necessarily with Incin)			
Flow			5.04
BOD			12,129
TSS			20,293
TKN			1,396
Ammonia			400
TP			158
Flow Splitter: 2ndWAS			
Splitter Influent Flow		MGD	0.04
Flow Splits			
2ndWAS Splitter Effluent (SplitE) Recy2ndWas		%	100%
2ndWAS Splitter Effluent (SplitE) CNodeSludge		%	**0%**
		%	**0%**
		%	**0%**
		%	**0%**
		%	**0%**
		%	**0%**
		%	**0%**
		%	**0%**
Flow Splitter: Recy			
Splitter Influent Flow		MGD	5.04
Flow Splits			
Recy Splitter Effluent (SplitE) RecyMain		%	88%
Recy Splitter Effluent (SplitE) RecyDefault_1		%	**12%**
		%	**0%**
		%	**0%**
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Mass Balance for Average Flow Conditions

Constituent	Raw Wastewater (RW)	Main Recycle Influent (RecyI)	Main Recycled Stream (Recycle)	Main Combined Recycle Effluent (RecyE)	CEPT Primary Influent (PI)	CEPT Primary Effluent (PE)	2ndWas Recycle Influent (RecyI)	2ndWas Recycled Stream (Recycle)	2ndWas Combined Recycle Effluent (RecyE)	1stStage Bioreactor Influent (BI)
Flow (gallons/day)	9,000,000	9,000,000	3,392,990	12,392,990	12,392,990	12,174,224	12,174,224	45,506	12,219,730	12,219,730
Carbonaceous BOD_5 (lbs/day)	19,715	19,715	7,864	27,578	27,578	18,047	18,047	378	18,425	18,425
Particulate	9,252	9,252	4,344	13,595	13,595	4,739	4,739	13	4,752	4,752
Heterotrophs	11	11	252	263	263	91	91	272	362	362
Methanol Degraders	11	11	28	38	38	13	13	64	77	77
AOBs	3	3	9	13	13	4	4	23	27	27
NOBs	3	3	1	5	5	2	2	0	2	2
PAOs	7	7	99	105	105	36	36	7	43	43
PHA	1	1	1	2	2	1	1	0	1	1
Filtrate	10,427	10,427	3,130	13,557	13,557	13,161	13,161	0	13,161	13,161
COD (lbs/day)	36,745	36,745	16,265	53,010	53,010	33,628	33,628	1,681	35,309	35,309
Particulate Bio	15,023	15,023	7,054	22,077	22,077	7,696	7,696	20	7,716	7,716
Particulate Non-Bio	1,605	1,605	976	2,581	2,581	899	899	218	1,117	1,117
Decay Prod Aer/Anx	1,288	1,288	1,326	2,614	2,614	901	901	799	1,700	1,700
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Heterotrophs	19	19	890	908	908	313	313	466	780	780
Methanol Degraders	19	19	48	67	67	23	23	110	133	133
AOBs	19	19	52	71	71	24	24	39	63	63
NOBs	19	19	7	26	26	9	9	0	9	9
PAOs	19	19	272	291	291	100	100	19	119	119
PHA	2	2	3	5	5	2	2	0	2	2
Soluble Bio	9,702	9,702	1,644	11,345	11,345	11,145	11,145	1	11,146	11,146
VFA	4,945	4,945	2,321	7,267	7,267	7,138	7,138	0	7,138	7,138
Colloidal Bio	2,031	2,031	1,041	3,072	3,072	2,766	2,766	0	2,766	2,766
Soluble Non-Bio	1,837	1,837	520	2,357	2,357	2,315	2,315	9	2,324	2,324
Colloidal Non-Bio	217	217	112	329	329	296	296	0	296	296
TSS (lbs/day)	13,401	13,401	11,656	25,057	25,057	7,517	7,517	2,180	9,697	9,697
Biodegradable	9,478	9,478	3,790	13,268	13,268	4,628	4,628	13	4,640	4,640
Non-Biodegradable	1,432	1,432	1,018	2,450	2,450	852	852	207	1,059	1,059
Inorganic Particles	1,403	1,403	4,455	5,858	5,858	654	654	558	1,212	1,212
Decay Prod Aer/Anx	1,008	1,008	1,164	2,172	2,172	748	748	625	1,373	1,373
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Metal Hydroxide	1	1	78	80	80	75	75	207	282	282
Metal Phosphate	0	0	53	53	53	155	155	74	229	229
Heterotrophs	15	15	747	762	762	263	263	365	628	628
Methanol Degraders	15	15	40	55	55	19	19	86	105	105
AOBs	15	15	45	60	60	21	21	30	51	51
NOBs	15	15	6	21	21	7	7	0	7	7
PAOs	15	15	248	263	263	91	91	15	105	105
PHA	1	1	2	3	3	1	1	0	1	1
Poly-P	4	4	8	12	12	4	4	0	4	4
VSS (lbs/day)	11,339	11,339	6,834	18,174	18,174	6,335	6,335	1,259	7,593	7,593
Biodegradable	9,004	9,004	3,749	12,753	12,753	4,447	4,447	11	4,459	4,459
Non-Biodegradable	1,360	1,360	980	2,340	2,340	814	814	186	1,000	1,000
Decay Prod Aer/Anx	907	907	1,081	1,988	1,988	685	685	562	1,248	1,248
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Metal Hydroxide	0	0	20	20	20	19	19	52	71	71
Heterotrophs	13	13	685	698	698	241	241	329	569	569
Methanol Degraders	13	13	37	50	50	17	17	77	95	95
AOBs	13	13	41	55	55	19	19	27	46	46
NOBs	13	13	6	19	19	7	7	0	7	7
PAOs	13	13	233	246	246	85	85	13	98	98
PHA	1	1	2	3	3	1	1	0	1	1
TKN (lbs/day)	2,070	2,070	1,077	3,147	3,147	2,427	2,427	102	2,529	2,529
NH_3-N (lbs-N/day)	1,320	1,320	310	1,630	1,630	1,601	1,601	0	1,601	1,601
Particulate Bio Org N	281	281	156	437	437	153	153	0	153	153
Non-Bio Part Org N	43	43	77	119	119	41	41	14	55	55
Decay Prod Aer/Anx	78	78	196	274	274	94	94	48	143	143
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Heterotrophs	1	1	106	107	107	37	37	28	65	65
Methanol Degraders	1	1	3	4	4	1	1	7	8	8
AOBs	1	1	42	43	43	15	15	2	17	17
NOBs	1	1	1	2	2	1	1	0	1	1
PAOs	1	1	48	49	49	17	17	1	18	18
Non-Bio Soluble Org. N	110	110	57	167	167	164	164	1	165	165
Non-Bio Colloidal Org. N	6	6	5	10	10	9	9	0	9	9
Soluble Bio Org N	186	186	47	233	233	229	229	0	229	229
Colloidal Bio Org N	40	40	32	72	72	64	64	0	64	64
NO_2-N (lbs-N/day)	0	0	0	0	0	0	0	0	0	0
NO_3-N (lbs-N/day)	174	174	260	434	434	426	426	0	427	427
Total Nitrogen (lbs-N/day)	2,244	2,244	1,337	3,581	3,581	2,854	2,854	102	2,956	2,956
TP (lbs-P/day)	270	270	72	342	342	167	167	44	211	211
Bio Particulate	81	81	23	104	104	36	36	0	36	36
Non-Bio Particulate	12	12	5	17	17	6	6	1	7	7
Decay Prod Aer/Anx	26	26	15	40	40	14	14	16	30	30
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Metal Phosphate	0	0	9	9	9	29	29	14	43	43
Heterotrophs	0	0	12	13	13	4	4	9	14	14
Methanol Degraders	0	0	1	1	1	0	0	2	3	3
AOBs	0	0	1	1	1	0	0	1	1	1
NOBs	0	0	0	0	0	0	0	0	0	0
PAOs	0	0	2	3	3	1	1	0	1	1
Poly-P	1	1	0	2	2	1	1	0	1	1
Ortho-PO4	148	148	4	152	152	75	75	0	75	75
Alkalinity (lbs/day as $CaCO_3$)	18,776	18,776	4,747	23,523	23,523	22,919	22,919	90	23,008	23,008
H_2S (lbs/day)	451	451	0	451	451	0	0	0	0	0
Temperature (^oC)	14	14	47	23	23	23	23	24	23	23
BOD_5 (mg/L)	262	262	278	267	267	178	178	996	181	181
COD (mg/L)	489	489	574	513	513	331	331	4,425	346	346
TSS (mg/L)	178	178	412	242	242	74	74	5,740	95	95
VSS (mg/L)	151	151	241	176	176	62	62	3,177	74	74
TKN (mg-N/L)	28	28	38	30	30	24	24	267	25	25
NH_3-N (mg-N/L)	18	18	11	16	16	16	16	0	16	16
NO_2-N (mg/L)	0	0	0	0	0	0	0	0	0	0
NO_3-N (mg-N/L)	2	2	9	4	4	4	4	1	4	4
Total Nitrogen (mg/L)	30	30	47	35	35	28	28	268	29	29
TP (mg-P/L)	4	4	3	3	3	2	2	115	2	2
Alkalinity (mg/L as $CaCO_3$)	250	250	168	227	227	226	226	237	226	226
H_2S (mg/L)	6	6	0	4	4	0	0	0	0	0

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Mass Balance for Average Flow C

Constituent	1stStage Secondary Clarifier Influent (SI)	1stStage Secondary Clarifier Effluent (SE)	Fake Splitter Influent (SplitI)	Fake Splitter Effluent (SplitE) PBNR2ndStage	Fake Splitter Effluent (SplitE) RecyDefault_1	Default_1 Recycle Influent (RecyI)	Default_1 Recycled Stream (Recycle)	Default_1 Combined Recycle Effluent (RecyE)	2ndStage Bioreactor Influent (BI)	2ndStage Bioreactor Other Influent (BOI)
Flow (gallons/day)	18,329,604	11,968,171	11,968,171	11,968,171	0	0	462,680	462,680	11,968,171	462,680
Carbonaceous BOD_5 (lbs/day)	123,814	907	907	907	0	0	1,072	1,072	907	1,072
Particulate	5,236	36	36	36	0	0	592	592	36	592
Heterotrophs	112,912	787	787	787	0	0	34	34	787	34
Methanol Degraders	1,484	10	10	10	0	0	4	4	10	4
AOBs	3,424	24	24	24	0	0	1	1	24	1
NOBs	0	0	0	0	0	0	0	0	0	0
PAOs	691	5	5	5	0	0	13	13	5	13
PHA	0	0	0	0	0	0	0	0	0	0
Filtrate	68	45	45	45	0	0	427	427	45	427
COD (lbs/day)	319,276	4,546	4,546	4,546	0	0	2,218	2,218	4,546	2,218
Particulate Bio	8,503	59	59	59	0	0	962	962	59	962
Particulate Non-Bio	24,163	168	168	168	0	0	133	133	168	133
Decay Prod Aer/Anx	78,916	550	550	550	0	0	181	181	550	181
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Heterotrophs	193,798	1,350	1,350	1,350	0	0	121	121	1,350	121
Methanol Degraders	2,546	18	18	18	0	0	7	7	18	7
AOBs	5,846	41	41	41	0	0	7	7	41	7
NOBs	0	0	0	0	0	0	1	1	0	1
PAOs	1,909	13	13	13	0	0	37	37	13	37
PHA	0	0	0	0	0	0	0	0	0	0
Soluble Bio	93	61	61	61	0	0	224	224	61	224
VFA	16	10	10	10	0	0	317	317	10	317
Colloidal Bio	0	0	0	0	0	0	142	142	0	142
Soluble Non-Bio	3,486	2,276	2,276	2,276	0	0	71	71	2,276	71
Colloidal Non-Bio	0	0	0	0	0	0	15	15	0	15
TSS (lbs/day)	286,781	1,998	1,998	1,998	0	0	1,589	1,589	1,998	1,589
Biodegradable	5,194	36	36	36	0	0	517	517	36	517
Non-Biodegradable	22,907	160	160	160	0	0	139	139	160	139
Inorganic Particles	27,914	194	194	194	0	0	608	608	194	608
Decay Prod Aer/Anx	61,750	430	430	430	0	0	159	159	430	159
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Metal Hydroxide	7,944	55	55	55	0	0	11	11	55	11
Metal Phosphate	1,368	10	10	10	0	0	7	7	10	7
Heterotrophs	151,642	1,056	1,056	1,056	0	0	102	102	1,056	102
Methanol Degraders	1,993	14	14	14	0	0	5	5	14	5
AOBs	4,574	32	32	32	0	0	6	6	32	6
NOBs	0	0	0	0	0	0	1	1	0	1
PAOs	1,494	10	10	10	0	0	34	34	10	34
PHA	0	0	0	0	0	0	0	0	0	0
Poly-P	1	0	0	0	0	0	1	1	0	1
VSS (lbs/day)	226,607	1,578	1,578	1,578	0	0	932	932	1,578	932
Biodegradable	4,675	33	33	33	0	0	511	511	33	511
Non-Biodegradable	20,617	144	144	144	0	0	134	134	144	134
Decay Prod Aer/Anx	55,575	387	387	387	0	0	147	147	387	147
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Metal Hydroxide	2,009	14	14	14	0	0	3	3	14	3
Heterotrophs	136,478	951	951	951	0	0	93	93	951	93
Methanol Degraders	1,793	12	12	12	0	0	5	5	12	5
AOBs	4,117	29	29	29	0	0	6	6	29	6
NOBs	0	0	0	0	0	0	1	1	0	1
PAOs	1,345	9	9	9	0	0	32	32	9	32
PHA	0	0	0	0	0	0	0	0	0	0
TKN (lbs/day)	18,900	383	383	383	0	0	147	147	383	147
NH_3-N (lbs-N/day)	140	91	91	91	0	0	42	42	91	42
Particulate Bio Org N	179	1	1	1	0	0	21	21	1	21
Non-Bio Part Org N	1,191	8	8	8	0	0	10	10	8	10
Decay Prod Aer/Anx	4,779	33	33	33	0	0	27	27	33	27
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Heterotrophs	11,737	82	82	82	0	0	14	14	82	14
Methanol Degraders	154	1	1	1	0	0	0	0	1	0
AOBs	354	2	2	2	0	0	6	6	2	6
NOBs	0	0	0	0	0	0	0	0	0	0
PAOs	116	1	1	1	0	0	7	7	1	7
Non-Bio Soluble Org. N	247	161	161	161	0	0	8	8	161	8
Non-Bio Colloidal Org. N	0	0	0	0	0	0	1	1	0	1
Soluble Bio Org N	2	1	1	1	0	0	6	6	1	6
Colloidal Bio Org N	0	0	0	0	0	0	4	4	0	4
NO_2-N (lbs-N/day)	0	0	0	0	0	0	0	0	0	0
NO_3-N (lbs-N/day)	229	149	149	149	0	0	35	35	149	35
Total Nitrogen (lbs-N/day)	19,129	532	532	532	0	0	182	182	532	182
TP (lbs-P/day)	6,109	49	49	49	0	0	10	10	49	10
Bio Particulate	28	0	0	0	0	0	3	3	0	3
Non-Bio Particulate	154	1	1	1	0	0	1	1	1	1
Decay Prod Aer/Anx	1,578	11	11	11	0	0	2	2	11	2
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Metal Phosphate	256	2	2	2	0	0	1	1	2	1
Heterotrophs	3,876	27	27	27	0	0	2	2	27	2
Methanol Degraders	51	0	0	0	0	0	0	0	0	0
AOBs	117	1	1	1	0	0	0	0	1	0
NOBs	0	0	0	0	0	0	0	0	0	0
PAOs	38	0	0	0	0	0	0	0	0	0
Poly-P	0	0	0	0	0	0	0	0	0	0
Ortho-PO4	10	7	7	7	0	0	1	1	7	1
Alkalinity (lbs/day as $CaCO_3$)	36,763	24,004	24,004	24,004	0	0	647	647	24,004	647
H_2S (lbs/day)	0	0	0	0	0	0	0	0	0	0
Temperature (^oC)	23	23	23	23	23	23	47	47	23	47
BOD_5 (mg/L)	809	9	9	9	#DIV/0!	#DIV/0!	278	278	9	278
COD (mg/L)	2,087	46	46	46	#DIV/0!	#DIV/0!	574	574	46	574
TSS (mg/L)	1,875	20	20	20	#DIV/0!	#DIV/0!	412	412	20	412
VSS (mg/L)	1,481	16	16	16	#DIV/0!	#DIV/0!	241	241	16	241
TKN (mg-N/L)	124	4	4	4	#DIV/0!	#DIV/0!	38	38	4	38
NH_3-N (mg-N/L)	1	1	1	1	#DIV/0!	#DIV/0!	11	11	1	11
NO_2-N (mg/L)	0	0	0	0	#DIV/0!	#DIV/0!	0	0	0	0
NO_3-N (mg-N/L)	1	1	1	1	#DIV/0!	#DIV/0!	9	9	1	9
Total Nitrogen (mg/L)	125	5	5	5	#DIV/0!	#DIV/0!	47	47	5	47
TP (mg-P/L)	40	0	0	0	#DIV/0!	#DIV/0!	3	3	0	3
Alkalinity (mg/L as $CaCO_3$)	240	240	240	240	#DIV/0!	#DIV/0!	168	168	240	168
H_2S (mg/L)	0	0	0	0	#DIV/0!	#DIV/0!	0	0	0	0

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Mass Balance for Average Flow C

Constituent	2ndStage Secondary Clarifier Influent (SI)	2ndStage Secondary Clarifier Effluent (SE)	TBF Granular Media Filter Influent (GMFI)	TBF Granular Media Filter Effluent (GMFE)	Plant Effluent (PLE)	CEPT Primary Sludge (PSD)	1stStage WAS	SynLiq Other Influent (OInf)	Sludge Combined Discharge	Gravity Primary Sludge Thickener Influent (PSTI)
Flow (gallons/day)	18,415,068	12,385,476	12,385,476	11,278,339	11,278,339	218,766	251,568	1,110,260	1,580,594	1,580,594
Carbonaceous BOD_5 (lbs/day)	50,386	269	269	169	169	9,529	4,860	35,212	49,601	49,601
Particulate	1,677	5	5	2	2	9,014	206	31,697	40,917	40,917
Heterotrophs	36,114	103	103	41	41	172	4,434	1,178	5,784	5,784
Methanol Degraders	8,505	24	24	10	10	25	58	125	208	208
AOBs	3,013	9	9	1	1	8	134	60	203	203
NOBs	0	0	0	0	0	3	0	12	15	15
PAOs	895	3	3	1	1	69	27	1,043	1,139	1,139
PHA	0	0	0	0	0	1	0	10	12	12
Filtrate	183	126	126	115	115	236	1	1,086	1,323	1,323
COD (lbs/day)	225,850	3,174	3,174	2,567	2,567	19,382	12,446	101,011	132,839	132,839
Particulate Bio	2,723	8	8	3	3	14,637	334	72,230	87,201	87,201
Particulate Non-Bio	29,029	83	83	33	33	1,709	949	8,956	11,614	11,614
Decay Prod Aer/Anx	106,131	303	303	121	121	1,713	3,099	10,321	15,134	15,134
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Heterotrophs	61,985	177	177	71	71	595	7,611	4,103	12,309	12,309
Methanol Degraders	14,597	42	42	17	17	44	100	210	354	354
AOBs	5,144	15	15	6	6	46	230	335	611	611
NOBs	0	0	0	0	0	17	0	70	87	87
PAOs	2,472	7	7	3	3	191	75	2,882	3,148	3,148
PHA	0	0	0	0	0	3	0	27	30	30
Soluble Bio	215	150	150	136	136	200	1	451	653	653
VFA	78	52	52	48	48	128	0	597	726	726
Colloidal Bio	0	0	0	0	0	50	0	605	655	655
Soluble Non-Bio	3,477	2,338	2,338	2,129	2,129	42	48	158	247	247
Colloidal Non-Bio	0	0	0	0	0	5	0	65	70	70
TSS (lbs/day)	289,660	827	827	329	329	18,257	11,262	92,662	122,181	122,181
Biodegradable	1,663	5	5	2	2	8,802	204	42,981	51,987	51,987
Non-Biodegradable	27,521	79	79	31	31	1,621	900	10,708	13,228	13,228
Inorganic Particles	74,206	212	212	85	85	5,204	1,096	19,761	26,061	26,061
Decay Prod Aer/Anx	83,044	237	237	95	95	1,423	2,425	10,607	14,456	14,456
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Metal Hydroxide	27,501	79	79	34	34	142	312	116	570	570
Metal Phosphate	9,841	28	28	7	7	295	54	352	701	701
Heterotrophs	48,502	138	138	55	55	499	5,955	4,229	10,684	10,684
Methanol Degraders	11,422	33	33	13	13	36	78	214	328	328
AOBs	4,025	11	11	5	5	39	180	345	564	564
NOBs	0	0	0	0	0	14	0	71	85	85
PAOs	1,934	6	6	2	2	172	59	2,960	3,191	3,191
PHA	0	0	0	0	0	2	0	21	23	23
Poly-P	0	0	0	0	0	8	0	296	304	304
VSS (lbs/day)	167,255	477	477	192	192	12,048	8,899	70,423	91,370	91,370
Biodegradable	1,497	4	4	2	2	8,459	184	42,689	51,332	51,332
Non-Biodegradable	24,769	71	71	28	28	1,548	810	10,387	12,745	12,745
Decay Prod Aer/Anx	74,740	213	213	85	85	1,303	2,182	9,960	13,446	13,446
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Metal Hydroxide	6,955	20	20	9	9	36	79	31	146	146
Heterotrophs	43,652	125	125	50	50	458	5,360	3,959	9,776	9,776
Methanol Degraders	10,280	29	29	12	12	33	70	203	306	306
AOBs	3,623	10	10	4	4	36	162	324	521	521
NOBs	0	0	0	0	0	13	0	67	80	80
PAOs	1,741	5	5	2	2	161	53	2,781	2,995	2,995
PHA	0	0	0	0	0	2	0	22	24	24
TKN (lbs/day)	13,674	222	222	183	183	720	732	7,013	8,465	8,465
NH_3-N (lbs-N/day)	17	12	12	10	10	29	2	289	319	319
Particulate Bio Org N	63	0	0	0	0	290	7	1,813	2,111	2,111
Non-Bio Part Org N	1,810	5	5	2	2	79	47	858	984	984
Decay Prod Aer/Anx	6,428	18	18	7	7	179	188	2,114	2,481	2,481
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Heterotrophs	3,754	11	11	4	4	70	461	914	1,445	1,445
Methanol Degraders	884	3	3	1	1	3	6	32	41	41
AOBs	312	1	1	0	0	28	14	336	378	378
NOBs	0	0	0	0	0	1	0	12	13	13
PAOs	150	0	0	0	0	32	5	578	615	615
Non-Bio Soluble Org. N	251	169	169	154	154	3	3	27	33	33
Non-Bio Colloidal Org. N	0	0	0	0	0	0	0	3	3	3
Soluble Bio Org N	6	4	4	4	4	4	0	15	19	19
Colloidal Bio Org N	0	0	0	0	0	1	0	21	23	23
NO_2-N (lbs-N/day)	0	0	0	0	0	0	0	0	0	0
NO_3-N (lbs-N/day)	82	55	55	50	50	8	3	172	183	183
Total Nitrogen (lbs-N/day)	13,756	277	277	233	233	728	735	7,185	8,648	8,648
TP (lbs-P/day)	5,825	18	18	7	7	175	240	493	908	908
Bio Particulate	8	0	0	0	0	68	1	252	322	322
Non-Bio Particulate	166	0	0	0	0	11	6	46	63	63
Decay Prod Aer/Anx	2,123	6	6	2	2	27	62	87	175	175
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Metal Phosphate	1,842	5	5	1	1	55	10	37	102	102
Heterotrophs	1,240	4	4	1	1	8	152	24	185	185
Methanol Degraders	292	1	1	0	0	1	2	3	6	6
AOBs	103	0	0	0	0	1	5	2	7	7
NOBs	0	0	0	0	0	0	0	1	1	1
PAOs	49	0	0	0	0	2	1	26	29	29
Poly-P	0	0	0	0	0	1	0	10	11	11
Ortho-PO4	3	2	2	2	2	1	0	5	7	7
Alkalinity (lbs/day as $CaCO_3$)	36,348	24,446	24,446	22,261	22,261	412	505	2,155	3,071	3,071
H_2S (lbs/day)	0	0	0	0	0	0	0	0	0	0
Temperature (^oC)	24	24	24	24	24	23	23	19	20	20
BOD_5 (mg/L)	328	3	3	2	2	5,219	2,315	3,800	3,760	3,760
COD (mg/L)	1,470	31	31	27	27	10,616	5,928	10,902	10,071	10,071
TSS (mg/L)	1,885	8	8	3	3	10,000	5,364	10,001	9,263	9,263
VSS (mg/L)	1,088	4	4	2	2	6,599	4,201	7,600	6,927	6,927
TKN (mg-N/L)	89	2	2	2	2	394	349	752	642	642
NH_3-N (mg-N/L)	0	0	0	0	0	16	1	31	24	24
NO_2-N (mg/L)	0	0	0	0	0	0	0	0	0	0
NO_3-N (mg-N/L)	1	1	1	1	1	4	1	19	14	14
Total Nitrogen (mg/L)	90	3	3	2	2.5	399	350	771	653	653
TP (mg-P/L)	38	0	0	0	0.1	96	114	53	69	69
Alkalinity (mg/L as $CaCO_3$)	237	237	237	237	237	226	240	233	233	233
H_2S (mg/L)	0	0	0	0	0	0	0	0	0	0

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Mass Balance for Average Flow C

Constituent	Gravity Thickened Primary Sludge (PST)	SynCake Other Influent (OInf)	SludgeCake Combined Discharge	SynCent Dewatering Influent (DWI)	SynCent Dewatered Sludge (DWE)	SynIncin General Influent (BWI)	SynIncin General Effluent (BWE)	Biosolids to Disposal	2ndStage WAS	TBF Filter Backwash (BW)
Flow (gallons/day)	279,911	71,416	351,327	351,327	104,152	104,152	3,477	3,477	45,506	1,107,137
Carbonaceous BOD_5 (lbs/day)	59,420	46,554	105,973	105,973	110,020	110,020	0	0	378	92
Particulate	50,672	41,908	92,580	92,580	106,141	106,141	0	0	13	3
Heterotrophs	6,832	1,557	8,389	8,389	344	344	0	0	272	61
Methanol Degraders	196	165	361	361	344	344	0	0	64	14
AOBs	106	80	186	186	179	179	0	0	23	2
NOBs	15	16	31	31	31	31	0	0	0	0
PAOs	1,105	1,379	2,484	2,484	2,408	2,408	0	0	7	2
PHA	11	14	25	25	24	24	0	0	0	0
Filtrate	483	1,435	1,918	1,918	548	548	0	0	0	11
COD (lbs/day)	125,079	133,548	258,627	258,627	248,511	248,511	0	0	1,681	607
Particulate Bio	82,285	95,497	177,781	177,781	172,359	172,359	0	0	20	5
Particulate Non-Bio	11,260	11,841	23,101	23,101	22,397	22,397	0	0	218	50
Decay Prod Aer/Anx	14,672	13,646	28,319	28,319	27,455	27,455	0	0	799	182
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Heterotrophs	11,933	5,424	17,357	17,357	16,828	16,828	0	0	466	106
Methanol Degraders	343	278	620	620	602	602	0	0	110	25
AOBs	593	443	1,036	1,036	1,005	1,005	0	0	39	9
NOBs	84	92	176	176	171	171	0	0	0	0
PAOs	3,052	3,810	6,862	6,862	6,653	6,653	0	0	19	4
PHA	29	35	64	64	62	62	0	0	0	0
Soluble Bio	268	596	864	864	256	256	0	0	1	13
VFA	388	790	1,178	1,178	349	349	0	0	0	5
Colloidal Bio	116	800	916	916	272	272	0	0	0	0
Soluble Non-Bio	44	209	253	253	75	75	0	0	9	209
Colloidal Non-Bio	12	86	98	98	29	29	0	0	0	0
TSS (lbs/day)	116,800	89,406	206,206	206,206	199,916	199,916	46,478	46,478	2,180	493
Biodegradable	49,055	41,470	90,525	90,525	87,764	87,764	0	0	13	3
Non-Biodegradable	12,825	10,332	23,157	23,157	22,450	22,450	0	0	207	47
Inorganic Particles	25,266	19,067	44,333	44,333	42,981	42,981	46,478	46,478	558	127
Decay Prod Aer/Anx	14,015	10,234	24,249	24,249	23,510	23,510	0	0	625	142
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Metal Hydroxide	567	111	679	679	658	658	0	0	207	51
Metal Phosphate	651	340	991	991	960	960	0	0	74	10
Heterotrophs	10,358	4,081	14,439	14,439	13,998	13,998	0	0	365	83
Methanol Degraders	318	207	525	525	509	509	0	0	86	20
AOBs	547	333	880	880	853	853	0	0	30	7
NOBs	83	69	151	151	147	147	0	0	0	0
PAOs	3,093	2,856	5,949	5,949	5,767	5,767	0	0	15	3
PHA	22	20	42	42	41	41	0	0	0	0
Poly-P	0	286	286	286	277	277	0	0	0	0
VSS (lbs/day)	87,257	67,948	155,205	155,205	150,472	150,472	0	0	1,259	287
Biodegradable	48,438	41,189	89,627	89,627	86,893	86,893	0	0	11	3
Non-Biodegradable	12,356	10,022	22,379	22,379	21,696	21,696	0	0	186	42
Decay Prod Aer/Anx	13,036	9,610	22,646	22,646	21,955	21,955	0	0	562	128
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Metal Hydroxide	143	30	173	173	168	168	0	0	52	13
Heterotrophs	9,478	3,820	13,298	13,298	12,892	12,892	0	0	329	75
Methanol Degraders	297	195	492	492	477	477	0	0	77	18
AOBs	505	312	817	817	793	793	0	0	27	6
NOBs	78	65	143	143	138	138	0	0	0	0
PAOs	2,904	2,683	5,587	5,587	5,417	5,417	0	0	13	3
PHA	23	21	44	44	43	43	0	0	0	0
TKN (lbs/day)	7,847	6,515	14,362	14,362	14,212	14,212	0	0	102	39
NH_3-N (lbs-N/day)	62	28	90	90	27	27	0	0	0	1
Particulate Bio Org N	1,992	1,750	3,741	3,741	3,627	3,627	0	0	0	0
Non-Bio Part Org N	954	828	1,781	1,781	1,727	1,727	0	0	14	3
Decay Prod Aer/Anx	2,405	2,040	4,445	4,445	4,309	4,309	0	0	48	11
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Heterotrophs	1,401	882	2,283	2,283	2,213	2,213	0	0	28	6
Methanol Degraders	39	31	70	70	24	24	0	0	7	2
AOBs	367	325	691	691	1,119	1,119	0	0	2	1
NOBs	13	11	24	24	24	24	0	0	0	0
PAOs	596	558	1,154	1,154	1,119	1,119	0	0	1	0
Non-Bio Soluble Org. N	6	26	32	32	9	9	0	0	1	15
Non-Bio Colloidal Org. N	1	3	4	4	1	1	0	0	0	0
Soluble Bio Org N	8	15	23	23	7	7	0	0	0	0
Colloidal Bio Org N	4	21	25	25	7	7	0	0	0	0
NO_2-N (lbs-N/day)	0	0	0	0	0	0	0	0	0	0
NO_3-N (lbs-N/day)	32	166	199	199	59	59	59	59	0	5
Total Nitrogen (lbs-N/day)	7,879	6,682	14,561	14,561	14,271	14,271	59	59	102	44
TP (lbs-P/day)	880	476	1,355	1,355	1,311	1,311	0	0	44	9
Bio Particulate	304	243	547	547	530	530	0	0	0	0
Non-Bio Particulate	61	44	105	105	102	102	0	0	1	0
Decay Prod Aer/Anx	170	84	254	254	246	246	0	0	16	4
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Metal Phosphate	124	36	160	160	155	155	0	0	14	2
Heterotrophs	179	23	202	202	196	196	0	0	9	2
Methanol Degraders	6	3	8	8	8	8	0	0	2	1
AOBs	7	2	9	9	9	9	0	0	1	0
NOBs	1	1	2	2	2	2	0	0	0	0
PAOs	28	25	53	53	52	52	0	0	0	0
Poly-P	0	9	9	9	9	9	0	0	0	0
Ortho-PO4	0	5	5	5	2	2	0	0	0	0
Alkalinity (lbs/day as $CaCO_3$)	544	139	682	682	202	202	1	1	90	2,185
H_2S (lbs/day)	0	0	0	0	0	0	0	0	0	0
Temperature (^oC)	20	19	20	20	20	20	102	102	24	24
BOD_5 (mg/L)	25,437	78,110	36,144	36,144	137,264	137,264	0	0	996	10
COD (mg/L)	53,544	224,072	88,208	88,208	285,908	285,908	0	0	4,425	66
TSS (mg/L)	50,000	150,008	70,329	70,329	230,000	230,000	1,601,780	1,601,780	5,740	53
VSS (mg/L)	37,353	114,006	52,935	52,935	173,115	173,115	0	0	3,177	31
TKN (mg-N/L)	3,359	11,287	4,898	4,898	16,359	16,359	0	0	267	4
NH_3-N (mg-N/L)	27	46	31	31	31	31	0	0	0	0
NO_2-N (mg/L)	0	0	0	0	0	0	0	0	0	0
NO_3-N (mg-N/L)	14	279	68	68	68	68	2,030	2,030	1	1
Total Nitrogen (mg/L)	3,373	11,566	5,038	5,038	16,427	16,427	2,030	2,030	268	5
TP (mg-P/L)	377	798	462	462	1,508	1,508	0	0	115	1
Alkalinity (mg/L as $CaCO_3$)	233	233	233	233	233	233	20	20	237	237
H_2S (mg/L)	0	0	0	0	0	0	0	0	0	0

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Mass Balance for Average Flow C

Constituent	Gravity Primary Sludge Thickening Recycle (PSTR)	SynCent Dewatering Recycle (DWR)	SynIncin General Residual (BWR)	Recy Combined Discharge	2ndWAS Splitter Influent (SplitI)	2ndWAS Splitter Effluent (SplitE) Recy2ndWas	2ndWAS Splitter Effluent (SplitE) CNodeSludge	Recy Splitter Influent (SplitI)	Recy Splitter Effluent (SplitE) RecyMain	Recy Splitter Effluent (SplitE) RecyDefault_1
Flow (gallons/day)	1,300,683	247,175	1,200,675	3,855,670	45,506	45,506	0	3,855,670	3,392,990	462,680
Carbonaceous BOD_5 (lbs/day)	4,098	4,745	0	8,936	378	378	0	8,936	7,864	1,072
Particulate	1,594	3,339	0	4,936	13	13	0	4,936	4,344	592
Heterotrophs	215	11	0	287	272	272	0	287	252	34
Methanol Degraders	6	11	0	31	64	64	0	31	28	4
AOBs	3	6	0	11	23	23	0	11	9	1
NOBs	0	1	0	1	0	0	0	1	1	0
PAOs	35	76	0	112	7	7	0	112	99	13
PHA	0	1	0	1	0	0	0	1	1	0
Filtrate	2,244	1,301	0	3,557	0	0	0	3,557	3,130	427
COD (lbs/day)	7,760	10,116	0	18,483	1,681	1,681	0	18,483	16,265	2,218
Particulate Bio	2,589	5,422	0	8,016	20	20	0	8,016	7,054	962
Particulate Non-Bio	354	705	0	1,109	218	218	0	1,109	976	133
Decay Prod Aer/Anx	462	864	0	1,507	799	799	0	1,507	1,326	181
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Heterotrophs	375	529	0	1,011	466	466	0	1,011	890	121
Methanol Degraders	11	19	0	55	110	110	0	55	48	7
AOBs	19	32	0	59	39	39	0	59	52	7
NOBs	3	5	0	8	0	0	0	8	7	1
PAOs	96	209	0	310	19	19	0	310	272	37
PHA	1	2	0	3	0	0	0	3	3	0
Soluble Bio	1,246	608	0	1,868	1	1	0	1,868	1,644	224
VFA	1,804	829	0	2,638	0	0	0	2,638	2,321	317
Colloidal Bio	539	644	0	1,183	0	0	0	1,183	1,041	142
Soluble Non-Bio	204	178	0	590	9	9	0	590	520	71
Colloidal Non-Bio	58	69	0	127	0	0	0	127	112	15
TSS (lbs/day)	3,674	6,289	2,789	13,245	2,180	2,180	0	13,245	11,656	1,589
Biodegradable	1,543	2,761	0	4,307	13	13	0	4,307	3,790	517
Non-Biodegradable	403	706	0	1,157	207	207	0	1,157	1,018	139
Inorganic Particles	795	1,352	2,789	5,063	558	558	0	5,063	4,455	608
Decay Prod Aer/Anx	441	740	0	1,323	625	625	0	1,323	1,164	159
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Metal Hydroxide	18	21	0	89	207	207	0	89	78	11
Metal Phosphate	20	30	0	61	74	74	0	61	53	7
Heterotrophs	326	440	0	849	365	365	0	849	747	102
Methanol Degraders	10	16	0	46	86	86	0	46	40	5
AOBs	17	27	0	51	30	30	0	51	45	6
NOBs	3	5	0	7	0	0	0	7	6	1
PAOs	97	181	0	282	15	15	0	282	248	34
PHA	1	1	0	2	0	0	0	2	2	0
Poly-P	0	9	0	9	0	0	0	9	8	1
VSS (lbs/day)	2,745	4,734	0	7,766	1,259	1,259	0	7,766	6,834	932
Biodegradable	1,524	2,734	0	4,260	11	11	0	4,260	3,749	511
Non-Biodegradable	389	683	0	1,114	186	186	0	1,114	980	134
Decay Prod Aer/Anx	410	691	0	1,229	562	562	0	1,229	1,081	147
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Metal Hydroxide	5	5	0	23	52	52	0	23	20	3
Heterotrophs	298	406	0	779	329	329	0	779	685	93
Methanol Degraders	9	15	0	42	77	77	0	42	37	5
AOBs	16	25	0	47	27	27	0	47	41	6
NOBs	2	4	0	7	0	0	0	7	6	1
PAOs	91	170	0	265	13	13	0	265	233	32
PHA	1	1	0	2	0	0	0	2	2	0
TKN (lbs/day)	618	567	0	1,224	102	102	0	1,224	1,077	147
NH_3-N (lbs-N/day)	288	63	0	352	0	0	0	352	310	42
Particulate Bio Org N	63	114	0	177	0	0	0	177	156	21
Non-Bio Part Org N	30	54	0	87	14	14	0	87	77	10
Decay Prod Aer/Anx	76	136	0	222	48	48	0	222	196	27
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Heterotrophs	44	70	0	120	28	28	0	120	106	14
Methanol Degraders	1	1	0	3	7	7	0	3	3	0
AOBs	12	35	0	47	2	2	0	47	42	6
NOBs	0	1	0	1	0	0	0	1	1	0
PAOs	19	35	0	54	1	1	0	54	48	7
Non-Bio Soluble Org. N	27	22	0	65	1	1	0	65	57	8
Non-Bio Colloidal Org. N	3	3	0	5	0	0	0	5	5	1
Soluble Bio Org N	37	16	0	53	0	0	0	53	47	6
Colloidal Bio Org N	19	17	0	36	0	0	0	36	32	4
NO_2-N (lbs-N/day)	0	0	0	0	0	0	0	0	0	0
NO_3-N (lbs-N/day)	151	140	0	295	0	0	0	295	260	35
Total Nitrogen (lbs-N/day)	769	706	0	1,519	102	102	0	1,519	1,337	182
TP (lbs-P/day)	28	45	0	82	44	44	0	82	72	10
Bio Particulate	10	17	0	26	0	0	0	26	23	3
Non-Bio Particulate	2	3	0	5	1	1	0	5	5	1
Decay Prod Aer/Anx	5	8	0	17	16	16	0	17	15	2
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Metal Phosphate	4	5	0	11	14	14	0	11	9	1
Heterotrophs	6	6	0	14	9	9	0	14	12	2
Methanol Degraders	0	0	0	1	2	2	0	1	1	0
AOBs	0	0	0	1	1	1	0	1	1	0
NOBs	0	0	0	0	0	0	0	0	0	0
PAOs	1	2	0	3	0	0	0	3	2	0
Poly-P	0	0	0	0	0	0	0	0	0	0
Ortho-PO4	0	4	0	4	0	0	0	4	4	1
Alkalinity (lbs/day as $CaCO_3$)	2,527	480	202	5,394	90	90	0	5,394	4,747	647
H_2S (lbs/day)	0	0	0	0	0	0	0	0	0	0
Temperature (^oC)	20	20	102	47	24	24	24	47	47	47
BOD_5 (mg/L)	378	2,442	0	278	996	996	#DIV/0!	278	278	278
COD (mg/L)	715	4,904	0	574	4,425	4,425	#DIV/0!	574	574	574
TSS (mg/L)	339	3,049	278	412	5,740	5,740	#DIV/0!	412	412	412
VSS (mg/L)	253	2,295	0	241	3,177	3,177	#DIV/0!	241	241	241
TKN (mg-N/L)	57	275	0	38	267	267	#DIV/0!	38	38	38
NH_3-N (mg-N/L)	27	31	0	11	0	0	#DIV/0!	11	11	11
NO_2-N (mg/L)	0	0	0	0	0	0	#DIV/0!	0	0	0
NO_3-N (mg-N/L)	14	68	0	9	1	1	#DIV/0!	9	9	9
Total Nitrogen (mg/L)	71	343	0	47	268	268	#DIV/0!	47	47	47
TP (mg-P/L)	3	22	0	3	115	115	#DIV/0!	3	3	3
Alkalinity (mg/L as $CaCO_3$)	233	233	20	168	237	237	#DIV/0!	168	168	168
H_2S (mg/L)	0	0	0	0	0	0	#DIV/0!	0	0	0

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Mass Balance for Average Flow Conditions

Constituent	Raw Wastewater (RW)	Main Recycle Influent (RecyI)	Main Recycled Stream (Recycle)	Main Combined Recycle Effluent (RecyE)	CEPT Primary Influent (PI)	CEPT Primary Effluent (PE)	2ndWas Recycle Influent (RecyI)	2ndWas Recycled Stream (Recycle)	2ndWas Combined Recycle Effluent (RecyE)	1stStage Bioreactor Influent (BI)
Flow (gallons/day)	16,000,000	16,000,000	4,433,723	20,433,723	20,433,723	20,098,057	20,098,057	44,098	20,142,155	20,142,155
Carbonaceous BOD_5 (lbs/day)	26,678	26,678	10,674	37,352	37,352	21,934	21,934	546	22,480	22,480
Particulate	14,261	14,261	7,298	21,559	21,559	7,116	7,116	18	7,134	7,134
Heterotrophs	20	20	545	565	565	185	185	409	594	594
Methanol Degraders	20	20	39	59	59	19	19	63	82	82
AOBs	6	6	17	22	22	7	7	44	52	52
NOBs	6	6	2	8	8	3	3	0	3	3
PAOs	12	12	158	170	170	56	56	11	67	67
PHA	2	2	2	3	3	1	1	0	1	1
Filtrate	12,352	12,352	2,612	14,965	14,965	14,547	14,547	0	14,547	14,547
COD (lbs/day)	50,302	50,302	22,805	73,107	73,107	41,600	41,600	2,495	44,095	44,095
Particulate Bio	23,158	23,158	11,851	35,010	35,010	11,556	11,556	30	11,585	11,585
Particulate Non-Bio	2,477	2,477	1,691	4,168	4,168	1,375	1,375	395	1,770	1,770
Decay Prod Aer/Anx	1,988	1,988	2,252	4,239	4,239	1,388	1,388	1,182	2,570	2,570
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Heterotrophs	33	33	1,682	1,715	1,715	562	562	671	1,233	1,233
Methanol Degraders	33	33	67	100	100	33	33	103	136	136
AOBs	33	33	92	125	125	41	41	76	117	117
NOBs	33	33	12	46	46	15	15	0	15	15
PAOs	33	33	436	470	470	154	154	31	185	185
PHA	4	4	4	8	8	3	3	0	3	3
Soluble Bio	11,350	11,350	1,368	12,718	12,718	12,509	12,509	0	12,509	12,509
VFA	5,942	5,942	1,889	7,831	7,831	7,703	7,703	0	7,703	7,703
Colloidal Bio	2,440	2,440	916	3,356	3,356	3,026	3,026	0	3,026	3,026
Soluble Non-Bio	2,515	2,515	447	2,962	2,962	2,914	2,914	6	2,920	2,920
Colloidal Non-Bio	261	261	98	359	359	324	324	0	324	324
TSS (lbs/day)	20,683	20,683	17,858	38,541	38,541	11,562	11,562	3,212	14,775	14,775
Biodegradable	14,610	14,610	7,109	21,719	21,719	7,170	7,170	19	7,189	7,189
Non-Biodegradable	2,210	2,210	1,923	4,132	4,132	1,361	1,361	391	1,753	1,753
Inorganic Particles	2,164	2,164	4,324	6,488	6,488	728	728	675	1,403	1,403
Decay Prod Aer/Anx	1,555	1,555	2,126	3,681	3,681	1,205	1,205	925	2,130	2,130
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Metal Hydroxide	3	3	179	182	182	149	149	362	511	511
Metal Phosphate	0	0	120	120	120	222	222	150	373	373
Heterotrophs	26	26	1,462	1,489	1,489	487	487	525	1,013	1,013
Methanol Degraders	26	26	59	86	86	28	28	80	108	108
AOBs	26	26	84	110	110	36	36	59	95	95
NOBs	26	26	12	38	38	12	12	0	12	12
PAOs	26	26	443	469	469	154	154	25	178	178
PHA	2	2	3	6	6	2	2	0	2	2
Poly-P	8	8	13	20	20	7	7	0	7	7
VSS (lbs/day)	17,499	17,499	12,780	30,279	30,279	10,000	10,000	1,914	11,914	11,914
Biodegradable	13,880	13,880	7,015	20,895	20,895	6,897	6,897	17	6,914	6,914
Non-Biodegradable	2,099	2,099	1,846	3,945	3,945	1,300	1,300	352	1,652	1,652
Decay Prod Aer/Anx	1,400	1,400	1,973	3,373	3,373	1,104	1,104	832	1,937	1,937
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Metal Hydroxide	1	1	45	46	46	38	38	92	129	129
Heterotrophs	24	24	1,338	1,362	1,362	446	446	473	919	919
Methanol Degraders	24	24	55	78	78	26	26	72	98	98
AOBs	24	24	77	101	101	33	33	53	86	86
NOBs	24	24	11	35	35	11	11	0	11	11
PAOs	24	24	416	439	439	144	144	22	166	166
PHA	2	2	3	6	6	2	2	0	2	2
TKN (lbs/day)	2,363	2,363	1,229	3,592	3,592	2,658	2,658	144	2,802	2,802
NH_3-N (lbs-N/day)	1,450	1,450	352	1,802	1,802	1,773	1,773	0	1,773	1,773
Particulate Bio Org N	357	357	191	548	548	181	181	0	182	182
Non-Bio Part Org N	54	54	93	147	147	48	48	18	66	66
Decay Prod Aer/Anx	120	120	243	363	363	119	119	72	191	191
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Heterotrophs	2	2	151	153	153	50	50	41	91	91
Methanol Degraders	2	2	4	6	6	2	2	6	8	8
AOBs	2	2	48	50	50	16	16	5	21	21
NOBs	2	2	1	3	3	1	1	0	1	1
PAOs	2	2	55	57	57	19	19	2	21	21
Non-Bio Soluble Org. N	151	151	39	190	190	187	187	0	187	187
Non-Bio Colloidal Org. N	6	6	3	9	9	8	8	0	8	8
Soluble Bio Org N	176	176	28	203	203	200	200	0	200	200
Colloidal Bio Org N	39	39	21	60	60	54	54	0	54	54
NO_2-N (lbs-N/day)	0	0	0	0	0	0	0	0	0	0
NO_3-N (lbs-N/day)	310	310	177	487	487	479	479	0	479	479
Total Nitrogen (lbs-N/day)	2,673	2,673	1,406	4,079	4,079	3,137	3,137	144	3,281	3,281
TP (lbs-P/day)	358	358	139	497	497	207	207	72	279	279
Bio Particulate	125	125	44	169	169	55	55	0	55	55
Non-Bio Particulate	19	19	9	28	28	9	9	2	12	12
Decay Prod Aer/Anx	40	40	28	68	68	22	22	24	46	46
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Metal Phosphate	0	0	22	22	22	42	42	28	70	70
Heterotrophs	1	1	25	26	26	9	9	13	22	22
Methanol Degraders	1	1	1	2	2	1	1	2	3	3
AOBs	1	1	1	2	2	1	1	2	2	2
NOBs	1	1	0	1	1	0	0	0	0	0
PAOs	1	1	4	5	5	2	2	1	2	2
Poly-P	2	2	0	3	3	1	1	0	1	1
Ortho-PO4	169	169	4	173	173	66	66	0	66	66
Alkalinity (lbs/day as $CaCO_3$)	33,380	33,380	4,940	38,320	38,320	37,310	37,310	82	37,392	37,392
H_2S (lbs/day)	801	801	0	801	801	0	0	0	0	0
Temperature (^oC)	16	16	47	23	23	23	23	24	23	23
BOD_5 (mg/L)	200	200	288	219	219	131	131	1,484	134	134
COD (mg/L)	377	377	616	429	429	248	248	6,780	262	262
TSS (mg/L)	155	155	483	226	226	69	69	8,729	88	88
VSS (mg/L)	131	131	345	178	178	60	60	4,951	71	71
TKN (mg-N/L)	18	18	33	21	21	16	16	390	17	17
NH_3-N (mg-N/L)	11	11	10	11	11	11	11	0	11	11
NO_2-N (mg/L)	0	0	0	0	0	0	0	0	0	0
NO_3-N (mg-N/L)	2	2	5	3	3	3	3	1	3	3
Total Nitrogen (mg/L)	20	20	38	24	24	19	19	391	20	20
TP (mg-P/L)	3	3	4	3	3	1	1	196	2	2
Alkalinity (mg/L as $CaCO_3$)	250	250	134	225	225	222	222	223	222	222
H_2S (mg/L)	6	6	0	5	5	0	0	0	0	0

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Mass Balance for Average Flow C

Constituent	1stStage Secondary Clarifier Influent (SI)	1stStage Secondary Clarifier Effluent (SE)	Fake Splitter Influent (SplitI)	Fake Splitter Effluent (SplitE) PBNR2ndStage	Fake Splitter Effluent (SplitE) RecyDefault_1	Default_1 Recycle Influent (RecyI)	Default_1 Recycled Stream (Recycle)	Default_1 Combined Recycle Effluent (RecyE)	2ndStage Bioreactor Influent (BI)	2ndStage Bioreactor Other Influent (BOI)
Flow (gallons/day)	30,213,245	19,824,703	19,824,703	19,824,703	0	0	604,599	604,599	19,824,703	604,599
Carbonaceous BOD_5 (lbs/day)	210,995	1,659	1,659	1,659	0	0	1,456	1,456	1,659	1,456
Particulate	13,671	96	96	96	0	0	995	995	96	995
Heterotrophs	189,061	1,326	1,326	1,326	0	0	74	74	1,326	74
Methanol Degraders	2,013	14	14	14	0	0	5	5	14	5
AOBs	4,512	32	32	32	0	0	2	2	32	2
NOBs	0	0	0	0	0	0	0	0	0	0
PAOs	1,462	10	10	10	0	0	22	22	10	22
PHA	0	0	0	0	0	0	0	0	0	0
Filtrate	277	182	182	182	0	0	356	356	182	356
COD (lbs/day)	517,668	6,760	6,760	6,760	0	0	3,110	3,110	6,760	3,110
Particulate Bio	22,199	156	156	156	0	0	1,616	1,616	156	1,616
Particulate Non-Bio	47,376	332	332	332	0	0	231	231	332	231
Decay Prod Aer/Anx	117,829	826	826	826	0	0	307	307	826	307
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Heterotrophs	310,395	2,176	2,176	2,176	0	0	229	229	2,176	229
Methanol Degraders	3,305	23	23	23	0	0	9	9	23	9
AOBs	7,703	54	54	54	0	0	12	12	54	12
NOBs	0	0	0	0	0	0	2	2	0	2
PAOs	4,038	28	28	28	0	0	60	60	28	60
PHA	1	0	0	0	0	0	1	1	0	1
Soluble Bio	316	207	207	207	0	0	187	187	207	187
VFA	126	83	83	83	0	0	258	258	83	258
Colloidal Bio	0	0	0	0	0	0	125	125	0	125
Soluble Non-Bio	4,380	2,874	2,874	2,874	0	0	61	61	2,874	61
Colloidal Non-Bio	0	0	0	0	0	0	13	13	0	13
TSS (lbs/day)	471,935	3,309	3,309	3,309	0	0	2,435	2,435	3,309	2,435
Biodegradable	13,952	98	98	98	0	0	969	969	98	969
Non-Biodegradable	46,915	329	329	329	0	0	262	262	329	262
Inorganic Particles	43,209	303	303	303	0	0	590	590	303	590
Decay Prod Aer/Anx	92,198	646	646	646	0	0	290	290	646	290
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Metal Hydroxide	16,485	116	116	116	0	0	24	24	116	24
Metal Phosphate	4,525	32	32	32	0	0	16	16	32	16
Heterotrophs	242,875	1,703	1,703	1,703	0	0	199	199	1,703	199
Methanol Degraders	2,586	18	18	18	0	0	8	8	18	8
AOBs	6,028	42	42	42	0	0	11	11	42	11
NOBs	0	0	0	0	0	0	2	2	0	2
PAOs	3,159	22	22	22	0	0	60	60	22	60
PHA	1	0	0	0	0	0	0	0	0	0
Poly-P	3	0	0	0	0	0	2	2	0	2
VSS (lbs/day)	371,111	2,602	2,602	2,602	0	0	1,743	1,743	2,602	1,743
Biodegradable	12,557	88	88	88	0	0	957	957	88	957
Non-Biodegradable	42,223	296	296	296	0	0	252	252	296	252
Decay Prod Aer/Anx	82,978	582	582	582	0	0	269	269	582	269
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Metal Hydroxide	4,169	29	29	29	0	0	6	6	29	6
Heterotrophs	218,588	1,533	1,533	1,533	0	0	182	182	1,533	182
Methanol Degraders	2,327	16	16	16	0	0	7	7	16	7
AOBs	5,425	38	38	38	0	0	11	11	38	11
NOBs	0	0	0	0	0	0	2	2	0	2
PAOs	2,843	20	20	20	0	0	57	57	20	57
PHA	1	0	0	0	0	0	0	0	0	0
TKN (lbs/day)	29,862	787	787	787	0	0	168	168	787	168
NH_3-N (lbs-N/day)	603	396	396	396	0	0	48	48	396	48
Particulate Bio Org N	362	3	3	3	0	0	26	26	3	26
Non-Bio Part Org N	1,765	12	12	12	0	0	13	13	12	13
Decay Prod Aer/Anx	7,136	50	50	50	0	0	33	33	50	33
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Heterotrophs	18,799	132	132	132	0	0	21	21	132	21
Methanol Degraders	200	1	1	1	0	0	1	1	1	1
AOBs	467	3	3	3	0	0	7	7	3	7
NOBs	0	0	0	0	0	0	0	0	0	0
PAOs	245	2	2	2	0	0	8	8	2	8
Non-Bio Soluble Org. N	281	184	184	184	0	0	5	5	184	5
Non-Bio Colloidal Org. N	0	0	0	0	0	0	0	0	0	0
Soluble Bio Org N	5	3	3	3	0	0	4	4	3	4
Colloidal Bio Org N	0	0	0	0	0	0	3	3	0	3
NO_2-N (lbs-N/day)	0	0	0	0	0	0	0	0	0	0
NO_3-N (lbs-N/day)	142	93	93	93	0	0	24	24	93	24
Total Nitrogen (lbs-N/day)	30,004	880	880	880	0	0	192	192	880	192
TP (lbs-P/day)	10,126	82	82	82	0	0	19	19	82	19
Bio Particulate	82	1	1	1	0	0	6	6	1	6
Non-Bio Particulate	313	2	2	2	0	0	1	1	2	1
Decay Prod Aer/Anx	2,357	17	17	17	0	0	4	4	17	4
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Metal Phosphate	847	6	6	6	0	0	3	3	6	3
Heterotrophs	6,208	44	44	44	0	0	3	3	44	3
Methanol Degraders	66	0	0	0	0	0	0	0	0	0
AOBs	154	1	1	1	0	0	0	0	1	0
NOBs	0	0	0	0	0	0	0	0	0	0
PAOs	81	1	1	1	0	0	1	1	1	1
Poly-P	1	0	0	0	0	0	0	0	0	0
Ortho-PO4	18	12	12	12	0	0	1	1	12	1
Alkalinity (lbs/day as $CaCO_3$)	60,298	39,565	39,565	39,565	0	0	674	674	39,565	674
H_2S (lbs/day)	0	0	0	0	0	0	0	0	0	0
Temperature (^oC)	23	23	23	23	23	23	47	47	23	47
BOD_5 (mg/L)	837	10	10	10	#DIV/0!	#DIV/0!	288	288	10	288
COD (mg/L)	2,053	41	41	41	#DIV/0!	#DIV/0!	616	616	41	616
TSS (mg/L)	1,872	20	20	20	#DIV/0!	#DIV/0!	483	483	20	483
VSS (mg/L)	1,472	16	16	16	#DIV/0!	#DIV/0!	345	345	16	345
TKN (mg-N/L)	118	5	5	5	#DIV/0!	#DIV/0!	33	33	5	33
NH_3-N (mg-N/L)	2	2	2	2	#DIV/0!	#DIV/0!	10	10	2	10
NO_2-N (mg/L)	0	0	0	0	#DIV/0!	#DIV/0!	0	0	0	0
NO_3-N (mg-N/L)	1	1	1	1	#DIV/0!	#DIV/0!	5	5	1	5
Total Nitrogen (mg/L)	119	5	5	5	#DIV/0!	#DIV/0!	38	38	5	38
TP (mg-P/L)	40	0	0	0	#DIV/0!	#DIV/0!	4	4	0	4
Alkalinity (mg/L as $CaCO_3$)	239	239	239	239	#DIV/0!	#DIV/0!	134	134	239	134
H_2S (mg/L)	0	0	0	0	#DIV/0!	#DIV/0!	0	0	0	0

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Mass Balance for Average Flow C

Constituent	2ndStage Secondary Clarifier Influent (SI)	2ndStage Secondary Clarifier Effluent (SE)	TBF Granular Media Filter Influent (GMFI)	TBF Granular Media Filter Effluent (GMFE)	Plant Effluent (PLE)	CEPT Primary Sludge (PSD)	1stStage WAS	SynLiq Other Influent (OInf)	Sludge Combined Discharge	Gravity Primary Sludge Thickener Influent (PSTI)
Flow (gallons/day)	30,341,842	20,385,393	20,385,393	19,278,256	19,278,256	335,665	317,465	1,110,260	1,763,390	1,763,390
Carbonaceous BOD_5 (lbs/day)	123,664	393	393	238	238	15,415	6,397	35,212	57,024	57,024
Particulate	4,139	8	8	3	3	14,615	415	31,697	46,728	46,728
Heterotrophs	92,518	173	173	67	67	380	5,737	1,178	7,295	7,295
Methanol Degraders	14,152	27	27	10	10	40	61	125	225	225
AOBs	10,050	19	19	2	2	15	137	60	212	212
NOBs	0	0	0	0	0	5	0	12	18	18
PAOs	2,571	5	5	2	2	114	44	1,043	1,202	1,202
PHA	0	0	0	0	0	2	0	10	12	12
Filtrate	234	162	162	153	153	243	3	1,086	1,331	1,331
COD (lbs/day)	567,608	4,241	4,241	3,436	3,436	31,507	15,613	101,011	148,131	148,131
Particulate Bio	6,721	13	13	5	5	23,734	674	72,230	96,638	96,638
Particulate Non-Bio	89,416	167	167	67	67	2,823	1,438	8,956	13,217	13,217
Decay Prod Aer/Anx	267,349	501	501	200	200	2,851	3,576	10,321	16,748	16,748
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Heterotrophs	151,893	285	285	114	114	1,153	9,419	4,103	14,675	14,675
Methanol Degraders	23,235	44	44	17	17	67	100	210	378	378
AOBs	17,159	32	32	13	13	84	234	335	653	653
NOBs	0	0	0	0	0	31	0	70	101	101
PAOs	7,102	13	13	5	5	316	123	2,882	3,321	3,321
PHA	0	0	0	0	0	5	0	27	32	32
Soluble Bio	300	209	209	198	198	209	3	451	663	663
VFA	73	49	49	46	46	129	1	597	727	727
Colloidal Bio	0	0	0	0	0	51	0	605	656	656
Soluble Non-Bio	4,359	2,929	2,929	2,770	2,770	49	46	158	253	253
Colloidal Non-Bio	0	0	0	0	0	5	0	65	70	70
TSS (lbs/day)	726,635	1,361	1,361	540	540	28,013	14,321	92,662	134,996	134,996
Biodegradable	4,224	8	8	3	3	14,726	423	42,981	58,130	58,130
Non-Biodegradable	88,545	166	166	66	66	2,796	1,424	10,708	14,928	14,928
Inorganic Particles	152,743	286	286	114	114	5,760	1,311	19,761	26,833	26,833
Decay Prod Aer/Anx	209,194	392	392	157	157	2,476	2,798	10,607	15,881	15,881
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Metal Hydroxide	81,890	153	153	66	66	307	500	116	923	923
Metal Phosphate	34,023	64	64	16	16	457	137	352	946	946
Heterotrophs	118,852	223	223	89	89	1,001	7,370	4,229	12,601	12,601
Methanol Degraders	18,181	34	34	14	14	58	78	214	350	350
AOBs	13,427	25	25	10	10	74	183	345	602	602
NOBs	0	0	0	0	0	26	0	71	97	97
PAOs	5,557	10	10	4	4	315	96	2,960	3,371	3,371
PHA	0	0	0	0	0	4	0	21	25	25
Poly-P	0	0	0	0	0	14	0	296	310	310
VSS (lbs/day)	432,891	811	811	326	326	20,539	11,261	70,423	102,224	102,224
Biodegradable	3,802	7	7	3	3	14,165	381	42,689	57,236	57,236
Non-Biodegradable	79,690	149	149	60	60	2,669	1,281	10,387	14,338	14,338
Decay Prod Aer/Anx	188,274	353	353	141	141	2,268	2,518	9,960	14,746	14,746
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Metal Hydroxide	20,710	39	39	17	17	78	127	31	235	235
Heterotrophs	106,967	200	200	80	80	916	6,633	3,959	11,508	11,508
Methanol Degraders	16,363	31	31	12	12	53	71	203	326	326
AOBs	12,084	23	23	9	9	68	165	324	556	556
NOBs	0	0	0	0	0	23	0	67	91	91
PAOs	5,001	9	9	4	4	295	86	2,781	3,163	3,163
PHA	0	0	0	0	0	4	0	22	26	26
TKN (lbs/day)	32,670	270	270	222	222	934	889	4,699	6,521	6,521
NH_3-N (lbs-N/day)	24	16	16	15	15	30	6	352	388	388
Particulate Bio Org N	112	0	0	0	0	372	11	1,172	1,555	1,555
Non-Bio Part Org N	3,979	7	7	3	3	99	54	555	707	707
Decay Prod Aer/Anx	16,192	30	30	12	12	244	217	1,367	1,828	1,828
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Heterotrophs	9,199	17	17	7	7	103	570	591	1,264	1,264
Methanol Degraders	1,407	3	3	1	1	4	6	21	31	31
AOBs	1,039	2	2	1	1	34	14	217	265	265
NOBs	0	0	0	0	0	2	0	8	10	10
PAOs	430	1	1	0	0	38	7	374	420	420
Non-Bio Soluble Org. N	282	189	189	179	179	3	3	17	23	23
Non-Bio Colloidal Org. N	0	0	0	0	0	0	0	2	2	2
Soluble Bio Org N	5	4	4	3	3	3	0	10	13	13
Colloidal Bio Org N	0	0	0	0	0	1	0	14	15	15
NO_2-N (lbs-N/day)	0	0	0	0	0	0	0	0	0	0
NO_3-N (lbs-N/day)	267	180	180	170	170	8	1	111	121	121
Total Nitrogen (lbs-N/day)	32,937	449	449	392	392	942	890	4,810	6,642	6,642
TP (lbs-P/day)	16,282	34	34	14	14	290	307	493	1,090	1,090
Bio Particulate	23	0	0	0	0	114	3	252	369	369
Non-Bio Particulate	551	1	1	0	0	19	9	46	74	74
Decay Prod Aer/Anx	5,347	10	10	4	4	45	72	87	204	204
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Metal Phosphate	6,368	12	12	3	3	86	26	37	148	148
Heterotrophs	3,038	6	6	2	2	17	188	24	230	230
Methanol Degraders	465	1	1	0	0	1	2	3	6	6
AOBs	343	1	1	0	0	1	5	2	8	8
NOBs	0	0	0	0	0	1	0	1	1	1
PAOs	142	0	0	0	0	3	2	26	32	32
Poly-P	0	0	0	0	0	2	0	10	12	12
Ortho-PO4	5	4	4	3	3	1	0	5	7	7
Alkalinity (lbs/day as $CaCO_3$)	56,569	38,007	38,007	35,942	35,942	623	634	2,155	3,411	3,411
H_2S (lbs/day)	0	0	0	0	0	0	0	0	0	0
Temperature (^oC)	24	24	24	24	24	23	23	19	20	20
BOD_5 (mg/L)	488	2	2	1	1	5,503	2,415	3,800	3,875	3,875
COD (mg/L)	2,242	25	25	21	21	11,247	5,893	10,902	10,066	10,066
TSS (mg/L)	2,870	8	8	3	3	10,000	5,405	10,001	9,173	9,173
VSS (mg/L)	1,710	5	5	2	2	7,332	4,203	7,600	6,946	6,946
TKN (mg-N/L)	129	2	2	1	1	333	335	486	443	443
NH_3-N (mg-N/L)	0	0	0	0	0	11	2	38	26	26
NO_2-N (mg/L)	0	0	0	0	0	0	0	0	0	0
NO_3-N (mg-N/L)	1	1	1	1	1	3	1	12	8	8
Total Nitrogen (mg/L)	130	3	3	2	2.4	336	336	498	438	438
TP (mg-P/L)	64	0	0	0	0.1	104	116	53	74	74
Alkalinity (mg/L as $CaCO_3$)	223	223	223	223	223	222	239	233	232	232
H_2S (mg/L)	0	0	0	0	0	0	0	0	0	0

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Mass Balance for Average Flow C

Constituent	Gravity Thickened Primary Sludge (PST)	SynCake Other Influent (OInf)	SludgeCake Combined Discharge	SynCent Dewatering Influent (DWI)	SynCent Dewatered Sludge (DWE)	SynIncin General Influent (BWI)	SynIncin General Effluent (BWE)	Biosolids to Disposal	2ndStage WAS	TBF Filter Backwash (BW)
Flow (gallons/day)	301,671	71,416	373,087	373,087	106,551	106,551	3,622	3,622	44,098	1,107,137
Carbonaceous BOD_5 (lbs/day)	65,107	33,974	99,081	99,081	96,345	96,345	0	0	546	136
Particulate	55,058	30,584	85,641	85,641	93,076	93,076	0	0	18	5
Heterotrophs	8,163	1,136	9,299	9,299	313	313	0	0	409	101
Methanol Degraders	210	120	330	330	313	313	0	0	63	15
AOBs	111	58	170	170	161	161	0	0	44	3
NOBs	17	12	29	29	28	28	0	0	0	0
PAOs	1,132	1,007	2,139	2,139	2,032	2,032	0	0	11	3
PHA	12	10	22	22	21	21	0	0	0	0
Filtrate	404	1,047	1,451	1,451	401	401	0	0	0	9
COD (lbs/day)	136,382	97,461	233,843	233,843	220,483	220,483	0	0	2,495	806
Particulate Bio	89,407	69,692	159,099	159,099	151,144	151,144	0	0	30	8
Particulate Non-Bio	12,451	8,641	21,092	21,092	20,037	20,037	0	0	395	100
Decay Prod Aer/Anx	15,777	9,959	25,736	25,736	24,449	24,449	0	0	1,182	300
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Heterotrophs	13,824	3,958	17,782	17,782	16,893	16,893	0	0	671	171
Methanol Degraders	356	203	558	558	530	530	0	0	103	26
AOBs	615	324	939	939	892	892	0	0	76	19
NOBs	95	67	162	162	154	154	0	0	0	0
PAOs	3,128	2,781	5,909	5,909	5,613	5,613	0	0	31	8
PHA	30	26	56	56	53	53	0	0	0	0
Soluble Bio	222	435	657	657	188	188	0	0	0	11
VFA	312	576	888	888	254	254	0	0	0	3
Colloidal Bio	112	584	696	696	199	199	0	0	0	0
Soluble Non-Bio	43	152	196	196	56	56	0	0	6	159
Colloidal Non-Bio	12	63	75	75	21	21	0	0	0	0
TSS (lbs/day)	125,880	89,406	215,286	215,286	204,521	204,521	48,415	48,415	3,212	810
Biodegradable	53,780	41,470	95,250	95,250	90,488	90,488	0	0	19	5
Non-Biodegradable	14,062	10,332	24,394	24,394	23,174	23,174	0	0	391	100
Inorganic Particles	25,276	19,067	44,343	44,343	42,126	42,126	48,415	48,415	675	172
Decay Prod Aer/Anx	14,960	10,234	25,194	25,194	23,935	23,935	0	0	925	235
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Metal Hydroxide	886	111	998	998	948	948	0	0	362	99
Metal Phosphate	859	340	1,199	1,199	1,139	1,139	0	0	150	24
Heterotrophs	11,870	4,081	15,951	15,951	15,153	15,153	0	0	525	134
Methanol Degraders	330	207	537	537	510	510	0	0	80	20
AOBs	567	333	900	900	855	855	0	0	59	15
NOBs	91	69	160	160	152	152	0	0	0	0
PAOs	3,175	2,856	6,031	6,031	5,729	5,729	0	0	25	6
PHA	23	20	43	43	41	41	0	0	0	0
Poly-P	0	286	286	286	272	272	0	0	0	0
VSS (lbs/day)	95,335	67,948	163,283	163,283	155,119	155,119	0	0	1,914	488
Biodegradable	52,953	41,189	94,143	94,143	89,435	89,435	0	0	17	4
Non-Biodegradable	13,506	10,022	23,529	23,529	22,352	22,352	0	0	352	90
Decay Prod Aer/Anx	13,891	9,610	23,501	23,501	22,326	22,326	0	0	832	212
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Metal Hydroxide	224	30	254	254	241	241	0	0	92	25
Heterotrophs	10,840	3,820	14,660	14,660	13,927	13,927	0	0	473	120
Methanol Degraders	307	195	502	502	477	477	0	0	72	18
AOBs	524	312	836	836	794	794	0	0	53	14
NOBs	85	65	151	151	143	143	0	0	0	0
PAOs	2,979	2,683	5,663	5,663	5,379	5,379	0	0	22	6
PHA	24	21	45	45	43	43	0	0	0	0
TKN (lbs/day)	5,781	4,216	9,997	9,997	9,653	9,653	0	0	144	48
NH_3-N (lbs-N/day)	69	22	91	91	26	26	0	0	0	1
Particulate Bio Org N	1,439	1,131	2,570	2,570	2,441	2,441	0	0	0	0
Non-Bio Part Org N	666	535	1,202	1,202	1,142	1,142	0	0	18	4
Decay Prod Aer/Anx	1,722	1,319	3,040	3,040	2,888	2,888	0	0	72	18
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Heterotrophs	1,191	570	1,761	1,761	1,673	1,673	0	0	41	10
Methanol Degraders	29	20	49	49	16	16	0	0	6	2
AOBs	250	210	460	460	718	718	0	0	5	1
NOBs	9	7	17	17	16	16	0	0	0	0
PAOs	395	361	756	756	718	718	0	0	2	0
Non-Bio Soluble Org. N	4	17	21	21	6	6	0	0	0	10
Non-Bio Colloidal Org. N	0	2	2	2	1	1	0	0	0	0
Soluble Bio Org N	4	9	14	14	4	4	0	0	0	0
Colloidal Bio Org N	3	13	16	16	5	5	0	0	0	0
NO_2-N (lbs-N/day)	0	0	0	0	0	0	0	0	0	0
NO_3-N (lbs-N/day)	21	107	128	128	37	37	37	37	0	10
Total Nitrogen (lbs-N/day)	5,802	4,323	10,125	10,125	9,690	9,690	37	37	144	57
TP (lbs-P/day)	1,027	476	1,502	1,502	1,424	1,424	0	0	72	16
Bio Particulate	341	243	584	584	555	555	0	0	0	0
Non-Bio Particulate	70	44	114	114	108	108	0	0	2	1
Decay Prod Aer/Anx	192	84	276	276	262	262	0	0	24	6
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Metal Phosphate	163	36	198	198	189	189	0	0	28	4
Heterotrophs	217	23	240	240	228	228	0	0	13	3
Methanol Degraders	6	3	9	9	8	8	0	0	2	1
AOBs	8	2	10	10	9	9	0	0	2	0
NOBs	1	1	2	2	2	2	0	0	0	0
PAOs	30	25	55	55	52	52	0	0	1	0
Poly-P	0	9	9	9	9	9	0	0	0	0
Ortho-PO4	0	5	5	5	2	2	0	0	0	0
Alkalinity (lbs/day as $CaCO_3$)	584	139	722	722	206	206	0	0	82	2,064
H_2S (lbs/day)	0	0	0	0	0	0	0	0	0	0
Temperature (^oC)	20	19	20	20	20	20	80	80	24	24
BOD_5 (mg/L)	25,861	57,003	31,822	31,822	119,213	119,213	0	0	1,484	15
COD (mg/L)	54,171	163,524	75,104	75,104	247,950	247,950	0	0	6,780	87
TSS (mg/L)	50,000	150,008	69,144	69,144	230,000	230,000	1,601,780	1,601,780	8,729	88
VSS (mg/L)	37,867	114,006	52,442	52,442	174,443	174,443	0	0	4,951	53
TKN (mg-N/L)	2,296	7,296	3,211	3,211	10,860	10,860	0	0	390	5
NH_3-N (mg-N/L)	27	36	29	29	29	29	0	0	0	0
NO_2-N (mg/L)	0	0	0	0	0	0	0	0	0	0
NO_3-N (mg-N/L)	8	180	41	41	41	41	1,211	1,211	1	1
Total Nitrogen (mg/L)	2,305	7,477	3,295	3,295	10,901	10,901	1,211	1,211	391	6
TP (mg-P/L)	408	798	483	483	1,601	1,601	0	0	196	2
Alkalinity (mg/L as $CaCO_3$)	232	233	232	232	232	232	11	11	223	223
H_2S (mg/L)	0	0	0	0	0	0	0	0	0	0

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Mass Balance for Average Flow C

Constituent	Gravity Primary Sludge Thickening Recycle (PSTR)	SynCent Dewatering Recycle (DWR)	SynIncin General Residual (BWR)	Recy Combined Discharge	2ndWAS Splitter Influent (SplitI)	2ndWAS Splitter Effluent (SplitE) Recy2ndWas	2ndWAS Splitter Effluent (SplitE) CNodeSludge	Recy Splitter Influent (SplitI)	Recy Splitter Effluent (SplitE) RecyMain	Recy Splitter Effluent (SplitE) RecyDefault_1
Flow (gallons/day)	1,461,719	266,536	2,202,929	5,038,322	44,098	44,098	0	5,038,322	4,433,723	604,599
Carbonaceous BOD_5 (lbs/day)	5,941	6,052	0	12,129	546	546	0	12,129	10,674	1,456
Particulate	3,390	4,899	0	8,293	18	18	0	8,293	7,298	995
Heterotrophs	503	16	0	620	409	409	0	620	545	74
Methanol Degraders	13	16	0	45	63	63	0	45	39	5
AOBs	7	8	0	19	44	44	0	19	17	2
NOBs	1	1	0	3	0	0	0	3	2	0
PAOs	70	107	0	180	11	11	0	180	158	22
PHA	1	1	0	2	0	0	0	2	2	0
Filtrate	1,957	1,002	0	2,968	0	0	0	2,968	2,612	356
COD (lbs/day)	11,749	13,361	0	25,915	2,495	2,495	0	25,915	22,805	3,110
Particulate Bio	5,505	7,955	0	13,467	30	30	0	13,467	11,851	1,616
Particulate Non-Bio	767	1,055	0	1,922	395	395	0	1,922	1,691	231
Decay Prod Aer/Anx	971	1,287	0	2,559	1,182	1,182	0	2,559	2,252	307
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Heterotrophs	851	889	0	1,911	671	671	0	1,911	1,682	229
Methanol Degraders	22	28	0	76	103	103	0	76	67	9
AOBs	38	47	0	104	76	76	0	104	92	12
NOBs	6	8	0	14	0	0	0	14	12	2
PAOs	193	295	0	496	31	31	0	496	436	60
PHA	2	3	0	5	0	0	0	5	4	1
Soluble Bio	1,074	469	0	1,554	0	0	0	1,554	1,368	187
VFA	1,510	634	0	2,147	0	0	0	2,147	1,889	258
Colloidal Bio	543	497	0	1,041	0	0	0	1,041	916	125
Soluble Non-Bio	209	140	0	508	6	6	0	508	447	61
Colloidal Non-Bio	58	53	0	112	0	0	0	112	98	13
TSS (lbs/day)	7,751	10,764	968	20,293	3,212	3,212	0	20,293	17,858	2,435
Biodegradable	3,311	4,763	0	8,079	19	19	0	8,079	7,109	969
Non-Biodegradable	866	1,220	0	2,185	391	391	0	2,185	1,923	262
Inorganic Particles	1,556	2,217	968	4,913	675	675	0	4,913	4,324	590
Decay Prod Aer/Anx	921	1,260	0	2,416	925	925	0	2,416	2,126	290
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Metal Hydroxide	55	50	0	204	362	362	0	204	179	24
Metal Phosphate	53	60	0	137	150	150	0	137	120	16
Heterotrophs	731	798	0	1,662	525	525	0	1,662	1,462	199
Methanol Degraders	20	27	0	68	80	80	0	68	59	8
AOBs	35	45	0	95	59	59	0	95	84	11
NOBs	6	8	0	14	0	0	0	14	12	2
PAOs	196	302	0	503	25	25	0	503	443	60
PHA	1	2	0	4	0	0	0	4	3	0
Poly-P	0	14	0	14	0	0	0	14	13	2
VSS (lbs/day)	5,870	8,164	0	14,522	1,914	1,914	0	14,522	12,780	1,743
Biodegradable	3,260	4,707	0	7,972	17	17	0	7,972	7,015	957
Non-Biodegradable	832	1,176	0	2,098	352	352	0	2,098	1,846	252
Decay Prod Aer/Anx	855	1,175	0	2,242	832	832	0	2,242	1,973	269
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Metal Hydroxide	14	13	0	52	92	92	0	52	45	6
Heterotrophs	667	733	0	1,521	473	473	0	1,521	1,338	182
Methanol Degraders	19	25	0	62	72	72	0	62	55	7
AOBs	32	42	0	88	53	53	0	88	77	11
NOBs	5	8	0	13	0	0	0	13	11	2
PAOs	183	283	0	472	22	22	0	472	416	57
PHA	1	2	0	4	0	0	0	4	3	0
TKN (lbs/day)	740	608	0	1,396	144	144	0	1,396	1,229	168
NH_3-N (lbs-N/day)	334	65	0	400	0	0	0	400	352	48
Particulate Bio Org N	89	128	0	217	0	0	0	217	191	26
Non-Bio Part Org N	41	60	0	106	18	18	0	106	93	13
Decay Prod Aer/Anx	106	152	0	276	72	72	0	276	243	33
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Heterotrophs	73	88	0	172	41	41	0	172	151	21
Methanol Degraders	2	1	0	4	6	6	0	4	4	1
AOBs	15	38	0	54	5	5	0	54	48	7
NOBs	1	1	0	1	0	0	0	1	1	0
PAOs	24	38	0	63	2	2	0	63	55	8
Non-Bio Soluble Org. N	19	15	0	45	0	0	0	45	39	5
Non-Bio Colloidal Org. N	2	2	0	3	0	0	0	3	3	0
Soluble Bio Org N	21	10	0	32	0	0	0	32	28	4
Colloidal Bio Org N	12	11	0	24	0	0	0	24	21	3
NO_2-N (lbs-N/day)	0	0	0	0	0	0	0	0	0	0
NO_3-N (lbs-N/day)	100	92	0	201	0	0	0	201	177	24
Total Nitrogen (lbs-N/day)	840	700	0	1,598	144	144	0	1,598	1,406	192
TP (lbs-P/day)	64	79	0	158	72	72	0	158	139	19
Bio Particulate	21	29	0	50	0	0	0	50	44	6
Non-Bio Particulate	4	6	0	11	2	2	0	11	9	1
Decay Prod Aer/Anx	12	14	0	32	24	24	0	32	28	4
Decay Prod Anaerobic	0	0	0	0	0	0	0	0	0	0
Metal Phosphate	10	10	0	24	28	28	0	24	22	3
Heterotrophs	13	12	0	29	13	13	0	29	25	3
Methanol Degraders	0	0	0	1	2	2	0	1	1	0
AOBs	0	0	0	1	2	2	0	1	1	0
NOBs	0	0	0	0	0	0	0	0	0	0
PAOs	2	3	0	5	1	1	0	5	4	1
Poly-P	0	0	0	0	0	0	0	0	0	0
Ortho-PO4	0	4	0	4	0	0	0	4	4	1
Alkalinity (lbs/day as $CaCO_3$)	2,828	516	206	5,614	82	82	0	5,614	4,940	674
H_2S (lbs/day)	0	0	0	0	0	0	0	0	0	0
Temperature (^oC)	20	20	80	47	24	24	24	47	47	47
BOD_5 (mg/L)	487	2,949	0	288	1,484	1,484	#DIV/0!	288	288	288
COD (mg/L)	963	6,006	0	616	6,780	6,780	#DIV/0!	616	616	616
TSS (mg/L)	635	4,839	53	483	8,729	8,729	#DIV/0!	483	483	483
VSS (mg/L)	481	3,670	0	345	4,951	4,951	#DIV/0!	345	345	345
TKN (mg-N/L)	61	274	0	33	390	390	#DIV/0!	33	33	33
NH_3-N (mg-N/L)	27	29	0	10	0	0	#DIV/0!	10	10	10
NO_2-N (mg/L)	0	0	0	0	0	0	#DIV/0!	0	0	0
NO_3-N (mg-N/L)	8	41	0	5	1	1	#DIV/0!	5	5	5
Total Nitrogen (mg/L)	69	315	0	38	391	391	#DIV/0!	38	38	38
TP (mg-P/L)	5	35	0	4	196	196	#DIV/0!	4	4	4
Alkalinity (mg/L as $CaCO_3$)	232	232	11	134	223	223	#DIV/0!	134	134	134
H_2S (mg/L)	0	0	0	0	0	0	#DIV/0!	0	0	0

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APPENDIX G

Current Plant Data

	Daily Com	DS Inf BOD mg/l	DS Influent Modified BOD mg/l	DS Inf CBOD mg/l	DS Influent Modified CBOD mg/l	DS Inf TSS mg/l	COD RAW mg/l	DS Influent Soluble COD mg/l	DS Influent FFCOD mg/l	DS Inf NO3 Ex BOD mg/l	Methyl Alcohol mg/l	Ethyl Alcohol mg/l	Raw Nitrate mg/l
1 Thu		3000.00		860.00			550	250	160				
2 Fri		180.00	270	160.00	110	160.00	280	44	30				
3 Sat		230.00	370	200.00	98	260.00	280	44	30				
4 Sun		190.00	100	90.00	100	280.00	290	70	64	0.60			
5 Mon		320.00	150	300.00	60	240.00	360	65	50				
6 Tue		300.00	190	200.00	100	240.00	340	40	40	0.40			
7 Wed		270.00	380	250.00	260	360.00	390	56	53	0.40	2.00	2.00	0.7
8 Thu		170.00	120	140.00	130	190.00	260	46	44	0.40	2.00	2.00	0.6
9 Fri		180.00	170	170.00	82	210.00	360	68	67	0.50	2.80	6.40	1.5
10 Sat		160.00	110	120.00	96	210.00	350	49	38	0.30			
11 Sun		200.00	230	180.00	160	260.00	370	60	47	0.20	2.00	2.00	
12 Mon		310.00	720	300.00	250	250.00	460	92	84	0.40	12.00	14.00	1.8
13 Tue		270.00	310	220.00	130	250.00	510	92	80	0.20	7.00	20.00	2.0
14 Wed													
15 Thu													
16 Fri													
17 Sat													
18 Sun													
19 Mon													
20 Tue													
21 Wed													
22 Thu													
23 Fri													
24 Sat													
25 Sun													
26 Mon													
27 Tue													
28 Wed													
29 Thu													
30 Fri													
MIN		160.00	100	90.00	60	160.00	260	40	30	0.20	2.00	2.00	0.6
MAX		3,000.00	720	860.00	260	360.00	550	250	160	0.60	12.00	20.00	2.0
AVG		444.62	260	245.38	131	242.50	369	75	61	0.38	4.63	7.73	1.3
SUM		5,780.00	3,120	3,190.00	1,576	2,910.00	4,800	976	787	3.40	27.80	46.40	6.6
WkAvg 1		900.00	247	327.50	103	233.33	350	102	71	0.60	-	-	-
WkAvg 2		228.57	193	194.29	127	244.29	347	55	48	0.37	2.20	3.10	0.9
WkAvg 3		290.00	515	260.00	190	250.00	485	92	82	0.30	9.50	17.00	1.9
WkAvg 4		-	-	-	-	-	-	-	-	-	-	-	-

	Daily Com	BOD Plant Drain mg/l	DS CBOD Plant Drain mg/l	COD DRAIN mg/l	DS Plant Drain SCOD mg/l	DS Plant Drain FFCOD mg/l	TSS DRAIN mg/l	Plant Drain Ammonia mg/l	Plant Drain T Phos mg/l	Plant Drain PO4 ppm	Grit Eff BOD mg/l	Grit Effluent CBOD mg/l	Grit Eff COD mg/l
1 Thu		500.0		1100.0	260	240	790.0				280.00	220.0	640.00
2 Fri		570.0	400	1100.0	510	510	350.0				220.00	210.0	380.00
3 Sat		570.0	400	1100.0	510	510	350.0				220.00		380.00
4 Sun		170.0	57	210.0	74	71	82.0				210.00	200.0	420.00
5 Mon		120.0	75	760.0	330	300	370.0				290.00	210.0	380.00
6 Tue		4200.0	2600	5600.0	840	120	940.0				650.00		960.00
7 Wed		1100.0	880	2200.0	420	410	1200.0				360.00	380.0	680.00
8 Thu		360.0	360	660.0	93	85	580.0				400.00		360.00
9 Fri		340.0	190	1200.0	150	130	270.0				330.00	250.0	480.00
10 Sat				190.0	66	62	510.0						910.00
11 Sun				1200.0			1000.0						140.00
12 Mon		230.0	200	700.0	120	110	450.0				310.00	270.0	600.00
13 Tue		680.0	580	1300.0	230	220	900.0				660.00	470.0	810.00
14 Wed													
15 Thu													
16 Fri													
17 Sat													
18 Sun		380.0					380.0						
19 Mon													
20 Tue													
21 Wed													
22 Thu		600.0					230.0						
23 Fri													
24 Sat													
25 Sun													
26 Mon													
27 Tue													
28 Wed													
29 Thu		190.0					390.0	16.00	35.00				
30 Fri													
MIN		120.0	57	190.0	66	62	82.0	16.00	35.00	-	210.00	200.0	140.00
MAX		4,200.0	2,600	5,600.0	840	510	1,200.0	16.00	35.00	-	660.00	470.0	960.00
AVG		715.0	574	1,332.3	300	231	549.5	16.00	35.00	-	357.27	276.3	549.23
SUM		10,010.0	5,742	17,320.0	3,603	2,768	8,792.0	16.00	35.00	-	3,930.00	2,210.0	7,140.00
WkAvg 1		444.0	286	877.5	339	333	393.0	-	-	-	232.50	210.0	455.00
WkAvg 2		1,224.0	821	1,687.1	317	185	695.7	-	-	-	406.00	280.0	558.57
WkAvg 3		430.0	390	1,000.0	175	165	576.7	-	-	-	485.00	370.0	705.00
WkAvg 4		600.0	-	-	-	-	230.0	-	-	-	-	-	-

	Daily Com	DS Grit Effluent SCOD mg/l	DS Grit Effluent FFCOD mg/l	Grit Eff TSS mg/l	BOD PRIMARY EFF mg/l	COD PRIMARY EFF mg/l	DS Primary Effluent SCOD mg/l	DS Primary Effluent FFCOD mg/l	TSS PRIMARY EFF mg/l	Primary Eff NH3 mg/l	Pri Eff TP mg/l	Primary Eff OP mg/l	Technics BOD mg/l
1 Thu		200	190	560.00	140	170	100	86					
2 Fri		140	140	68.00	120	210	100	96	80				
3 Sat		140	140	68.00	120	210	100	96	80				
4 Sun		130	110	250.00	87	200	53	49	96				
5 Mon		110	100	290.00	160	200	67	64	66				
6 Tue		240	220	530.00	200	270	120	120	100				
7 Wed		140	140	440.00	150	240	130	120	72				
8 Thu		68	67	300.00	170	180	45	230	100				6700.00
9 Fri		130	130	500.00	140	240	110	100	60				
10 Sat		99	98	360.00		150	53	47	72				
11 Sun		45	29	810.00		1000	78	72	92				
12 Mon		100	96	370.00	110	220	80	68	91				
13 Tue		230	210	580.00	180	260	120	120	90				
14 Wed													
15 Thu													
16 Fri													
17 Sat													
18 Sun													
19 Mon													
20 Tue													
21 Wed													
22 Thu					350				100				
23 Fri													
24 Sat										20.000	7.20		
25 Sun													
26 Mon													
27 Tue													
28 Wed													
29 Thu					150				57				
30 Fri													
MIN		45	29	68.00	87	150	45	47	57	20.000	7.20	-	6,700.00
MAX		240	220	810.00	350	1,000	130	230	100	20.000	7.20	-	6,700.00
AVG		136	128	394.31	160	273	89	98	83	20.000	7.20	-	6,700.00
SUM		1,772	1,670	5,126.00	2,077	3,550	1,156	1,268	1,156	20.000	7.20	-	6,700.00
WkAvg 1		153	145	236.50	112	198	88	82	85	-	-	-	-
WkAvg 2		119	112	461.43	164	326	86	108	80	-	-	-	6,700.00
WkAvg 3		165	153	475.00	145	240	100	94	91	-	-	-	-
WkAvg 4		-	-	-	350	-	-	-	100	20.000	7.20	-	-

	Daily Com	Technics Mod BOD mg/l	Technics CBOD mg/l	Technics Mod CBOD mg/l	Technics TSS mg/l	Technics COD mg/l	Technics SCOD mg/l	Technics FFCOD mg/l	Tech NO3 mg/l	Tech NO3 Ex BOD mg/l	Tech Methyl mg/l	Tech Ethyl mg/l
1 Thu												
2 Fri												
3 Sat												
4 Sun												
5 Mon												
6 Tue												
7 Wed												
8 Thu		2400.00	6200.00	1800.00	23.00	9000.00	3100.00	2900.00	1000.00	1.40	360.00	840.00
9 Fri												
10 Sat												
11 Sun												
12 Mon												
13 Tue												
14 Wed												
15 Thu												
16 Fri												
17 Sat												
18 Sun												
19 Mon												
20 Tue												
21 Wed												
22 Thu												
23 Fri												
24 Sat												
25 Sun												
26 Mon												
27 Tue												
28 Wed												
29 Thu												
30 Fri												
MIN		2,400.00	6,200.00	1,800.00	23.00	9,000.00	3,100.00	2,900.00	1,000.00	1.40	360.00	840.00
MAX		2,400.00	6,200.00	1,800.00	23.00	9,000.00	3,100.00	2,900.00	1,000.00	1.40	360.00	840.00
AVG		2,400.00	6,200.00	1,800.00	23.00	9,000.00	3,100.00	2,900.00	1,000.00	1.40	360.00	840.00
SUM		2,400.00	6,200.00	1,800.00	23.00	9,000.00	3,100.00	2,900.00	1,000.00	1.40	360.00	840.00
WkAvg 1		-	-	-	-	-	-	-	-	-	-	-
WkAvg 2		2,400.00	6,200.00	1,800.00	23.00	9,000.00	3,100.00	2,900.00	1,000.00	1.40	360.00	840.00
WkAvg 3		-	-	-	-	-	-	-	-	-	-	-
WkAvg 4		-	-	-	-	-	-	-	-	-	-	-

2031

	Raw	Recycles	Raw+Recycles	PI	PE	
BOD5:						
Annual Average	16,330	10,830	27,160	26,960	15,610	42%
Maximum Monthly	31,170	20,760	51,930	47,930	32,590	32%
Peak Daily						
98th Percentile	42,550	28,690	71,240	57,540	35,210	39%
100th Percentile		47,560		75,190	55,330	26%
TSS:						
Annual Average	13,340	16,160	29,500	36,100	7,830	59%
Maximum Monthly	21,620	54,930	76,550	77,750	13,290	61%
Peak Daily						
98th Percentile	29,790	58,390	88,180	98,080	15,580	
100th Percentile	45,080	198,770	243,850	178,970	29,860	
Ammonia:						
Annual Average	1,320	360	1,680	1,270	1,380	
MM (estimated)					2,360	
Peak Daily						
98th Percentile	2,300	640	2,940	1,970	2,810	
100th Percentile	2,300	640	2,940	1,980	3,300	
Total Kjeldahl Nitrogen						
Annual Average	2,070	1,230	3,300	3,090	2,560	
MM (estimated)					5,430	
Peak Daily						
98th Percentile	3,760	2,640	6,400	5,010	7,030	
100th Percentile	4,170	2,930	7,100	5,570	7,260	
Phosphorus:						
Annual Average	270	890	1,160	1,240	720	
MM (estimated)					1,430	
Peak Daily						
98th Percentile	410	2,380	2,790	2,740	1,810	
100th Percentile	420	2,670	3,090	3,040	2,050	

Raw	TSS	BOD	TKN	Ammonia	Total Phosphorus	
MM PF	1.74	1.58	1.25	1.18	1.14	
MW PF	2.34	2.03	1.44	1.32	1.24	
MD PF	4.55	3.37	2.01	1.74	1.56	
Design	21,620	31,170	MM			
Average	12,454	19,715	lbs/d			
Industrial Load						
		1.21				
Domestic	165	200	25	16	3.2	mg/L
Flow		9				MGD
	12,392	15,021	1,878	1,202	240	lbs/d
Design Basis	**Raw - No Industrial**					
Average	12,500	15,000	1,900	1,200	240	
MM	21,700	23,800	2,400	1,500	280	
MW	29,200	30,500	2,800	1,600	300	
MD	57,000	50,600	3,900	2,100	380	
Design Basis	**Industrial**					
Average	840	4,715	170	120	30	
MM	1,458	7,370	212	142	34	
MW	1,962	9,585	245	159	37	
MD	3,825	15,881	342	209	47	
Design Basis Full						
Average	13,340	19,715	2,070	1,320	270	
MM	23,158	31,170	2,612	1,642	314	
MW	31,162	40,085	3,045	1,759	337	
MD	60,825	66,481	4,242	2,309	427	

2010	Raw	Recycles	Raw+Recycles	PI	2010/2011 Q3	Q42011 Raw	Q3Q4 R+R
BOD5:							
Annual Average	14,200	10,000	24,200	24,000	24,203	13,152	23,152
Maximum Monthly	27,100	19,400	46,500	42,500	32,752		
Peak Daily							
98th Percentile	37,000	27,700	64,700	50,000			
100th Percentile	59,000	45,570	104,570	65,500	72,614		
TSS:							
Annual Average	11,600	15,900	27,500	34,100	25,063	11,379	24,403
Maximum Monthly	18,800	54,300	73,100	74,300	38,678		
Peak Daily							
98th Percentile	25,900	56,100	82,000	91,900			
100th Percentile	39,200	190,600	229,800	170,800	73,332		
Ammonia:							
Annual Average	1,146	319	1,465	1,057		1,146	1,465
MM (estimated)				1,509			
Peak Daily							
98th Percentile	1,997	575	2,572	1,605			
100th Percentile	1,997	580	2,577	1,615			
Total Kjeldahl Nitrogen							
Annual Average	1,800	1,182	2,982	2,772		1,800	2,982
MM (estimated)			0	3,957			
Peak Daily							
98th Percentile	3,267	2,560	5,827	4,438			
100th Percentile	3,629	2,849	6,478	4,948			
Phosphorus:							
Annual Average	237	861	1,098	1,206		237	1,098
MM (estimated)			0	2,260			
Peak Daily							
98th Percentile	354	2,333	2,687	2,687			
100th Percentile	368	2,621	2,989	2,989			

Recycles

Average Data	13,218	9,028
Average FP	16,160	

Recycle Nutrient Peaking Factors

Raw	TSS	BOD	TKN	Ammonia	Total Phosphorus
MM PF	1.52	1.89	1.34	1.19	1.49
MW PF	2.22	3.06	1.79	1.44	2.14
MD PF	2.68	4.61	2.38	1.78	3.00

PI Nutrient Peaking Factors

Raw	TSS	BOD	TKN	Ammonia	Total Phosphorus
MM PF	1.54	1.35	1.14	1.10	1.33
MW PF	2.22	2.07	1.43	1.30	1.99
MD PF	2.93	3.00	1.80	1.56	2.85

	Raw Plan	Raw Revised	Recycles Plan	Recycles Revised	PI Plan	PI Revised	For Modeling	
BOD5:								
Annual Average	16,330	19,715	10,830	9,028	27,160	28,742	Raw	Recy
Maximum Monthly	31,170	31,170	20,760	19,162	47,930	38,895	26,678	12,216
Peak Daily								
98th Percentile	42,550	40,085	28,690	27,626	57,540	59,512	40,820	18,692
100th Percentile		66,481	47,560	46,783	75,190	86,233	59,148	27,085
TSS:								
Annual Average	13,340	13,340	16,160	13,218	29,500	26,558		
Maximum Monthly	21,620	23,158	54,930	19,740	36,100	40,985	20,587	20,398
Peak Daily								
98th Percentile	29,790	31,162	58,390	29,324	98,080	59,073	29,672	29,400
100th Percentile	45,080	60,825	198,770	34,941	178,970	77,705	39,031	38,674
Ammonia:								
Annual Average	1,320	1,320	360	360	1,270	1,680		
MM (estimated)		1,642		429		1,846	1,450	396
Peak Daily								
98th Percentile	2,300	1,759	640	520	1,970	2,183	1,715	468
100th Percentile	2,300	2,309	640	640	1,980	2,619	2,058	561
Total Kjeldahl Nitrogen								
Annual Average	2,070	2,070	1,230	1,230	3,090	3,300		
MM (estimated)		2,612		1,649		3,768	2,363	1,404
Peak Daily								
98th Percentile	3,760	3,045	2,640	2,199	5,010	4,718	2,959	1,758
100th Percentile	4,170	4,242	2,930	2,930	5,570	5,949	3,731	2,217
Phosphorus:								
Annual Average	270	270	890	72	1,240	342		
MM (estimated)		314		107		454	358	95
Peak Daily								
98th Percentile	410	337	2,380	154	2,740	680	537	143
100th Percentile	420	427	2,670	216	3,040	974	769	205

Raw 2031	**Flow**	**TSS**	**BOD**	**TKN**	**Ammonia**	**tal Phosphorus**
Average	**9.0**	13,340	19,715	2,070	1,320	270
MM	**16.0**	20,587	26,678	2,363	1,450	358
MW	**23.0**	29,672	40,820	2,959	1,715	537
MD	**24.0**	39,031	59,148	3,731	2,058	769

Recycles 2031	**Flow**	**TSS**	**BOD**	**TKN**	**Ammonia**	**tal Phosphorus**
Average	**9.0**	13,218	9,028	1,230	360	72
MM	**16.0**	20,398	12,216	1,404	396	95
MW	**23.0**	29,400	18,692	1,758	468	143
MD	**24.0**	38,674	27,085	2,217	561	205

Trial values	Total 30 day Load	Total Load	Raw Load	Raw Load (D12)	Recycle Load	Recycle Load (D13)	30dRaw2	30dRecyclesBOD	BOD Load 3.5	Recycle BOD Loads
25988	33,001.34	28,252.58	14,369.18	22,193.06	13,883.40	7,479.32	18,605.06	8,938.05	12,684.64	11,763.08
6285	33,001.99	27,973.04	19,730.10	14,708.09	8,242.94	16,087.68	15,091.05	10,519.74	9,357.71	9,529.12
9327	33,005.56	20,581.00	15,688.26	11,627.96	4,892.74	19,633.41	13,665.00	10,390.02	8,250.02	15,585.61
9783	33,009.40	24,923.67	14,792.97	19,605.32	10,130.70	10,463.29	10,110.33	10,237.11	5,819.27	8,410.53
27564	33,011.03	34,032.61	28,592.77	20,107.85	5,439.84	9,887.01	10,849.30	11,963.04	9,988.88	6,030.35
25792	33,011.61	25,006.57	10,675.23	15,222.84	14,331.34	15,505.34	12,228.56	9,572.38	11,396.75	3,437.35
3560	33,018.99	20,268.59	15,495.16	17,600.31	4,773.42	12,778.63	13,595.77	9,662.68	13,935.12	9,325.59
13371	33,021.11	17,476.89	9,213.25	16,357.59	8,263.65	14,209.88	22,000.90	10,944.34	5,495.57	14,251.55
15313	33,021.15	59,695.40	40,880.79	18,393.51	18,814.61	11,868.61	12,037.67	11,146.71	16,985.68	15,807.70
8305	33,022.79	17,982.46	7,304.79	14,405.69	10,677.67	16,456.24	13,441.07	7,994.52	12,559.81	9,376.73
4530	33,025.79	26,244.56	17,008.15	18,228.78	9,236.41	12,062.69	10,667.23	8,386.11	9,136.22	17,464.11
22104	33,028.72	24,509.06	15,793.73	16,478.84	8,715.32	14,078.05	12,207.55	10,644.82	17,321.89	6,418.01
15534	33,029.35	28,308.55	19,237.19	20,019.48	9,071.35	10,006.95	12,130.27	7,065.49	20,891.61	17,578.33
6941	33,030.63	26,588.16	11,786.57	20,290.01	14,801.59	9,697.12	11,028.30	9,159.94	18,509.42	9,455.82
21307	33,031.23	19,628.85	11,879.23	14,267.03	7,749.62	16,624.15	12,645.00	8,145.20	22,605.00	6,355.55
1285	33,032.13	28,335.92	22,619.23	19,033.97	5,716.69	11,143.07	10,685.19	5,855.79	34,313.14	5,101.27
22646	33,033.74	31,985.69	25,545.30	17,019.14	6,440.39	13,461.73	14,040.79	9,358.41	19,812.58	9,216.28
14400	33,037.28	26,010.40	16,908.83	13,143.95	9,101.56	17,921.73	16,828.44	10,382.26	13,168.53	8,331.87
16071	33,038.58	14,792.67	9,950.62	13,879.76	4,842.05	17,076.86	9,777.58	7,692.09	6,539.45	4,937.63
27795	33,040.65	65,018.30	58,474.96	14,780.88	6,543.34	16,042.64	15,418.03	9,703.43	19,161.86	18,334.69
10093	33,044.91	36,753.92	25,851.40	19,047.59	10,902.51	11,140.17	15,022.03	5,631.53	8,768.42	17,093.79
24393	33,046.21	35,213.81	12,950.97	15,762.72	22,262.83	14,919.09	18,322.43	12,856.19	9,767.44	3,396.19
4982	33,048.04	33,865.30	21,530.96	21,201.35	12,334.35	8,666.48	12,466.57	11,661.64	17,123.57	31,141.64
11900	33,052.32	26,649.47	10,155.36	19,779.63	16,494.11	10,305.75	12,886.52	12,065.42	7,995.48	13,673.71
2056	33,054.95	20,957.76	13,314.05	17,350.42	7,643.71	13,101.97	13,489.66	6,493.47	19,611.89	13,360.97
4915	33,058.36	25,336.67	20,132.40	17,928.60	5,204.27	12,440.47	9,941.05	7,091.85	26,643.52	2,950.42
18860	33,059.19	37,907.63	23,864.51	22,110.80	14,043.11	7,631.77	12,573.23	11,398.19	27,468.95	9,648.87
2975	33,062.20	35,419.69	14,358.71	12,679.96	21,060.97	18,480.25	9,860.51	12,115.70	15,824.66	6,691.53
6214	33,063.55	16,846.48	7,153.62	16,432.61	9,692.86	14,166.05	10,654.30	16,124.07	28,995.48	6,997.99
3206	33,064.00	18,479.44	13,807.17	14,399.42	4,672.27	16,504.67	14,762.62	9,760.59	8,663.35	13,419.77
2583	33,064.70	38,637.84	17,693.91	17,471.47	20,943.93	12,972.50	9,542.48	9,987.39	22,067.87	8,534.93
13168	33,064.86	51,050.42	30,584.39	15,645.49	20,466.04	15,072.55	19,907.46	9,818.26	9,229.97	3,481.06
18625	33,068.57	12,104.19	7,852.91	10,478.21	4,251.29	21,018.63	10,758.91	10,724.95	10,523.87	8,127.37
10597	33,076.59	27,282.77	14,894.66	13,886.66	12,388.11	17,106.93	9,675.91	11,628.57	14,843.13	9,858.99
3331	33,082.15	34,853.98	22,571.00	12,339.66	12,282.98	18,891.54	12,271.83	11,426.54	17,466.67	13,108.72
101	33,082.61	24,060.76	10,721.67	19,468.03	13,339.10	10,694.38	15,418.29	9,966.66	13,270.47	9,495.24
25406	33,085.57	14,581.06	11,106.99	20,334.02	3,474.08	9,701.44	14,083.83	9,899.62	10,012.66	5,828.18
27021	33,085.92	20,975.08	10,879.93	16,488.28	10,095.15	14,124.40	17,419.99	9,600.70	25,686.19	8,092.83
17045	33,087.73	18,059.97	10,395.97	15,992.74	7,664.00	14,696.08	14,231.04	9,733.19	28,633.02	14,054.61
5897	33,088.24	18,441.99	9,059.40	18,108.36	9,382.59	12,263.62	11,685.84	13,724.43	7,868.50	6,105.10
7553	33,088.42	23,646.97	16,623.18	17,084.31	7,023.79	13,441.46	13,637.46	11,090.76	10,645.75	7,253.14
29235	33,092.38	26,914.39	14,430.51	16,086.10	12,483.88	14,593.37	13,305.09	9,183.87	22,607.85	23,196.33
3302	33,093.64	24,426.49	8,990.41	18,339.32	15,436.08	12,003.41	10,963.58	17,370.86	12,677.60	9,236.18
27349	33,095.04	20,525.53	13,397.06	19,478.14	7,128.47	10,695.18	17,657.90	11,338.58	21,287.58	8,557.09
20282	33,095.25	27,013.67	16,929.42	13,658.43	10,084.25	17,388.06	11,186.91	10,511.59	21,442.56	12,371.96
14058	33,096.00	24,084.88	13,537.02	13,928.63	10,547.85	17,078.07	9,480.42	7,659.87	17,359.50	31,858.23
4984	33,096.39	37,534.64	20,446.81	14,795.09	17,087.83	16,082.04	16,272.27	8,329.44	18,274.76	9,984.32
21503	33,098.86	22,301.37	10,817.99	17,663.78	11,483.39	12,785.51	9,325.73	8,454.33	17,257.32	5,204.35
10913	33,099.21	20,630.17	12,212.26	16,788.43	8,417.91	13,792.52	10,922.05	9,149.48	14,301.50	21,737.04
6052	33,100.13	25,658.06	17,435.79	14,280.33	8,222.27	16,677.75	17,149.33	8,540.63	14,729.05	14,494.53
28044	33,100.94	28,827.10	24,408.23	19,142.63	4,418.87	11,086.92	13,962.85	11,452.20	17,256.72	6,594.69

Trial values	Total 30 day Load	Total Load	Raw Load	Raw Load (D12)	Recycle Load	Recycle Load (D13)	30dRaw2	30dRecyclesBOD	BOD Load 3.5	Recycle BOD Loads
28799	33,101.91	17,637.67	7,899.78	18,442.84	9,737.89	11,892.65	9,173.24	15,980.29	22,063.94	5,472.86
292	33,102.31	16,633.82	6,581.13	13,694.27	10,052.70	17,353.90	9,576.50	10,038.70	11,791.54	9,850.91
28296	33,102.90	16,527.79	7,080.73	19,474.75	9,447.06	10,706.94	11,850.46	10,338.06	23,872.06	17,106.83
687	33,103.27	24,075.87	13,811.40	18,561.12	10,264.47	11,757.98	9,383.39	12,928.42	56,787.72	17,055.13
3074	33,103.50	31,320.18	12,491.62	12,650.66	18,828.56	18,555.25	10,525.24	5,694.68	34,143.77	14,628.21
24631	33,104.98	36,362.33	20,363.17	17,936.84	15,999.16	12,477.61	12,833.93	7,408.96	12,442.86	10,351.88
777	33,108.08	19,227.92	13,741.20	20,827.44	5,486.73	9,156.53	13,847.88	11,516.89	23,960.60	8,554.66
11057	33,108.23	22,265.83	13,058.02	15,825.57	9,207.81	14,908.82	13,327.44	12,283.47	21,177.22	14,233.65
4398	33,109.32	13,321.13	10,537.40	18,970.40	2,783.73	11,293.36	11,970.68	9,273.12	11,877.47	4,878.74
1302	33,109.80	26,597.89	18,450.28	20,331.46	8,147.61	9,728.62	10,031.97	12,208.15	23,074.55	6,644.16
21432	33,109.92	42,154.12	24,795.54	11,607.60	17,358.58	19,761.19	12,798.63	8,170.83	12,083.28	4,889.00
11742	33,114.06	19,461.66	10,798.25	14,456.17	8,663.41	16,489.47	12,949.72	12,093.84	13,425.03	7,118.38
22054	33,115.29	36,194.73	31,381.94	12,600.87	4,812.79	18,624.29	10,062.62	7,270.34	6,917.90	10,111.56
17734	33,117.97	31,585.56	22,175.97	14,119.52	9,409.59	16,880.53	9,553.20	9,258.42	7,277.47	12,040.21
13917	33,120.87	26,493.81	18,476.28	20,496.86	8,017.53	9,549.49	11,666.03	5,092.89	11,711.72	6,892.79
14502	33,123.76	18,013.23	11,698.63	19,124.46	6,314.60	11,130.63	12,935.69	9,198.74	19,266.81	2,537.63
6278	33,126.32	37,807.60	10,566.57	12,426.40	27,241.04	18,835.96	14,749.71	13,200.15	20,346.17	17,455.10
18480	33,128.99	19,665.58	7,600.90	21,113.28	12,064.67	8,848.71	9,718.69	10,313.04	11,308.69	8,196.91
3835	33,129.13	17,680.47	14,259.69	14,255.21	3,420.77	16,735.64	18,603.18	9,828.13	20,860.09	8,914.27
7034	33,129.53	30,384.61	21,230.95	16,683.24	9,153.66	13,943.81	15,382.61	7,165.30	11,883.39	9,429.79
28328	33,129.55	32,137.06	10,805.64	12,689.30	21,331.42	18,536.86	12,054.90	6,534.88	6,012.99	13,703.02
15446	33,131.44	31,366.33	17,384.88	20,532.18	13,981.44	9,519.43	9,328.74	17,633.65	25,775.75	10,238.52
27458	33,131.76	17,484.71	13,502.05	16,284.00	3,982.65	14,405.16	11,159.81	5,877.19	17,166.27	3,302.83
16061	33,132.33	12,918.41	5,756.45	15,541.00	7,161.96	15,260.18	10,420.26	9,039.00	24,743.88	7,775.41
23773	33,133.32	43,087.76	26,177.16	16,862.33	16,910.61	13,741.64	11,757.30	9,589.83	24,000.15	9,022.09
16223	33,135.89	26,402.21	17,220.98	18,464.39	9,181.23	11,901.84	11,036.61	11,943.33	12,368.77	7,126.13
2858	33,144.48	27,196.55	19,496.77	19,514.83	7,699.79	10,702.42	9,529.98	7,332.11	28,634.45	1,571.29
26799	33,147.74	29,385.83	24,008.37	16,918.43	5,377.46	13,691.54	10,826.97	7,015.51	10,834.87	7,773.95
28010	33,149.71	20,685.18	9,295.53	16,534.00	11,389.65	14,135.61	16,116.67	16,049.48	17,538.14	12,361.30
12104	33,150.60	20,763.47	17,336.33	14,634.17	3,427.14	16,321.30	11,411.00	7,512.04	20,373.89	11,613.60
147	33,153.09	19,803.92	11,714.36	18,344.46	8,089.56	12,056.96	14,252.38	7,677.71	22,907.13	8,040.04
18690	33,155.71	23,737.78	6,871.28	12,665.17	16,866.50	18,590.77	10,851.26	6,904.16	31,993.64	9,565.17
4514	33,157.60	19,096.27	11,398.33	13,473.92	7,697.93	17,662.60	11,241.26	8,653.36	29,432.58	5,052.25
27464	33,158.07	25,210.67	12,991.94	19,874.91	12,218.74	10,301.92	12,514.03	11,007.32	8,146.22	9,756.78
18886	33,159.22	36,569.00	23,657.24	16,689.16	12,911.77	13,966.69	12,918.35	10,629.18	13,641.12	10,365.03
26967	33,164.39	30,003.60	19,447.15	15,039.85	10,556.45	15,868.56	10,872.93	6,910.53	14,673.59	6,759.26
24183	33,164.61	47,428.57	38,221.71	20,441.31	9,206.86	9,657.10	10,130.54	21,155.30	27,693.59	13,394.72
25592	33,167.44	35,249.83	23,397.26	18,182.34	11,852.57	12,257.75	14,290.79	8,009.80	18,171.51	5,680.30
2208	33,171.44	40,513.55	26,264.84	17,408.94	14,248.71	13,151.15	9,801.97	11,534.55	8,500.33	6,464.42
25340	33,171.95	32,097.51	13,815.71	17,888.56	18,281.79	12,600.11	14,440.76	18,409.27	10,738.56	22,811.62
9067	33,172.71	31,013.04	19,912.98	16,929.44	11,100.06	13,703.85	24,430.05	6,969.13	10,262.51	23,964.88
13557	33,173.07	24,082.26	14,577.33	13,213.31	9,504.93	17,977.77	19,717.93	12,561.56	13,458.30	8,582.40
25383	33,174.53	24,125.00	13,249.90	18,496.91	10,875.10	11,903.08	10,401.05	8,914.72	11,212.92	6,083.58
19159	33,184.24	18,111.09	11,137.24	12,729.37	6,973.85	18,545.46	16,010.96	15,333.48	9,944.10	11,422.09
19791	33,198.99	19,362.55	12,988.26	17,315.06	6,374.29	13,286.66	11,354.74	10,345.18	18,292.15	7,017.00
25806	33,200.72	37,124.28	25,644.40	16,603.36	11,479.88	14,106.86	15,327.28	12,680.03	25,511.26	13,861.57
5577	33,202.78	28,467.60	22,981.84	12,233.86	5,485.75	19,133.84	13,978.45	6,750.41	11,476.64	9,465.14
15159	33,204.18	19,173.09	10,573.55	17,473.87	8,599.54	13,109.23	13,073.59	7,607.99	7,715.69	9,405.70
4229	33,206.32	26,136.95	20,366.24	16,890.92	5,770.71	13,781.77	9,856.00	8,798.70	17,079.99	4,693.79
4394	33,211.87	22,750.37	16,259.38	13,083.91	6,490.99	18,165.37	14,395.57	8,058.51	14,131.22	12,255.85
17206	33,212.19	19,807.40	17,304.64	19,852.51	2,502.76	10,381.80	14,130.95	10,645.48	10,971.70	8,933.44

Trial values	Total 30 day Load	Total Load	Raw Load	Raw Load (D12)	Recycle Load	Recycle Load (D13)	30dRaw2	30dRecyclesBOD	BOD Load 3.5	Recycle BOD Loads
297	33,213.01	22,242.61	14,446.25	15,113.04	7,796.36	15,833.01	11,990.04	10,414.89	6,787.62	16,116.91
14904	33,214.30	27,032.33	20,295.63	15,927.16	6,736.70	14,898.07	12,622.10	14,517.70	9,263.06	19,579.45
6851	33,214.56	14,023.36	9,559.68	12,731.79	4,463.68	18,573.00	9,263.56	12,474.84	15,947.18	7,328.91
24052	33,218.06	29,893.27	25,091.49	15,404.97	4,801.77	15,502.34	14,718.59	11,472.73	23,725.50	15,334.38
1205	33,219.46	43,481.95	23,358.83	14,187.84	20,123.12	16,903.44	14,538.54	6,475.35	11,667.83	10,594.19
12270	33,219.51	37,521.86	15,730.20	19,531.29	21,791.65	10,758.53	11,518.06	10,105.12	16,132.89	10,133.94
5142	33,220.13	31,421.51	21,846.50	14,494.61	9,575.02	16,551.33	10,985.50	8,945.02	7,099.28	7,279.97
25798	33,220.96	44,570.52	34,210.76	17,053.33	10,359.76	13,609.63	14,766.49	10,268.67	15,262.74	12,787.36
22611	33,221.55	24,428.61	13,869.95	16,974.08	10,558.66	13,701.36	15,166.87	11,342.98	11,287.80	3,649.91
23651	33,223.34	29,846.29	15,195.85	20,163.72	14,650.44	10,035.06	10,449.45	15,101.45	7,742.28	5,740.76
10114	33,224.75	55,632.85	10,199.46	15,381.33	45,433.39	15,536.23	13,532.37	11,312.97	13,470.62	12,421.51
5256	33,225.80	28,086.13	16,945.79	18,090.33	11,140.34	12,421.92	14,043.60	10,789.84	6,276.45	9,819.40
4495	33,227.39	17,943.23	14,644.98	13,361.05	3,298.24	17,862.18	14,483.10	8,990.52	10,145.11	1,839.03
13362	33,230.10	32,924.65	18,011.97	13,060.58	14,912.68	18,210.43	10,132.80	5,538.13	16,229.74	9,864.23
22503	33,230.25	22,134.34	10,149.39	14,939.37	11,984.95	16,049.98	10,372.74	6,381.32	26,325.15	8,531.27
11873	33,230.26	33,810.07	17,451.62	16,744.44	16,358.45	13,974.15	10,932.52	11,378.43	20,972.90	7,910.60
858	33,231.09	35,422.40	30,230.25	11,209.53	5,192.15	20,340.13	13,371.38	17,866.55	18,377.29	18,693.37
3939	33,231.92	30,644.97	20,506.65	14,510.91	10,138.32	16,544.37	14,642.48	12,610.83	15,853.98	5,700.58
28692	33,235.09	27,509.94	15,532.42	18,579.52	11,977.52	11,868.64	10,834.04	12,664.89	14,061.87	3,963.02
27259	33,237.40	31,660.32	19,087.98	12,802.49	12,572.34	18,514.53	14,692.60	7,644.08	13,311.47	14,161.33
6119	33,239.22	23,510.37	12,596.59	18,428.17	10,913.78	12,046.83	10,092.59	9,072.23	18,045.61	5,450.99
7606	33,240.16	18,782.17	13,187.29	18,678.46	5,594.88	11,759.93	10,716.35	7,244.42	8,248.33	7,864.69
5499	33,240.91	14,399.38	7,991.73	14,500.43	6,407.65	16,565.42	10,828.55	9,119.03	14,705.49	7,371.86
25549	33,241.82	20,087.43	10,593.58	13,441.60	9,493.86	17,783.98	10,630.62	8,883.88	7,045.43	7,545.09
6169	33,242.83	21,584.31	9,593.68	14,870.40	11,990.63	16,141.86	10,955.68	8,836.41	17,056.45	13,670.12
21270	33,248.14	27,859.31	8,216.09	14,792.58	19,643.22	16,236.68	14,210.58	12,180.53	13,395.86	5,059.33
16254	33,250.43	17,137.56	9,605.36	13,202.40	7,532.20	18,067.67	12,927.25	9,059.37	20,485.84	9,179.76
4225	33,251.64	29,129.46	16,129.55	14,972.86	12,999.91	16,032.85	10,997.11	7,799.79	30,476.98	13,142.06
28850	33,252.25	36,403.55	26,640.05	12,143.39	9,763.50	19,287.35	10,426.42	11,499.41	18,589.61	9,815.92
10107	33,256.65	23,485.77	11,560.22	12,193.74	11,925.55	19,233.84	12,176.00	13,108.98	18,798.58	5,693.11
17930	33,257.09	19,013.56	9,205.92	14,945.69	9,807.65	16,069.55	15,346.85	9,986.46	42,217.85	8,963.52
28213	33,257.14	59,712.53	31,700.90	15,246.76	28,011.63	15,723.36	12,169.05	9,921.18	14,017.60	9,847.26
14284	33,257.42	63,736.21	51,874.19	14,968.93	11,862.02	16,043.15	10,905.87	9,025.93	17,522.93	8,026.04
24337	33,259.24	41,239.25	32,845.59	17,727.22	8,393.66	12,872.93	13,463.33	18,161.45	18,760.32	16,821.21
21907	33,260.04	33,851.85	24,793.71	17,048.38	9,058.13	13,654.41	9,625.49	8,066.72	11,758.68	11,078.68
20594	33,260.06	16,999.90	6,832.31	18,161.84	10,167.60	12,373.94	21,541.87	23,996.49	13,880.79	17,487.81
24164	33,266.12	34,477.87	23,953.28	18,688.52	10,524.60	11,774.32	9,940.86	10,765.08	13,861.23	4,393.95
2785	33,266.61	35,960.47	11,918.06	14,014.33	24,042.40	17,150.14	13,231.81	13,076.26	31,542.96	9,814.50
22475	33,267.18	29,735.65	17,744.34	18,153.11	11,991.31	12,391.10	16,863.82	12,711.50	21,300.13	8,753.91
24951	33,267.90	28,520.84	21,972.25	17,448.93	6,548.59	13,201.63	11,778.20	10,663.47	11,551.80	14,186.81
13271	33,271.06	31,757.90	21,759.24	15,974.51	9,998.67	14,900.38	14,377.98	7,026.60	10,684.49	9,149.24
16944	33,272.26	16,817.79	8,613.90	18,120.38	8,203.89	12,433.83	13,974.74	6,341.65	29,660.67	9,563.01
9569	33,272.82	29,661.67	23,155.91	17,839.67	6,505.76	12,757.20	13,201.45	12,292.38	10,518.99	16,857.89
24841	33,274.32	24,322.49	10,439.43	13,104.23	13,883.06	18,204.46	12,029.48	10,767.06	27,984.15	24,388.93
2713	33,275.69	26,653.37	15,730.10	18,747.32	10,923.27	11,716.27	13,218.63	15,038.96	26,957.88	13,242.24
9100	33,276.71	31,514.51	26,448.89	18,950.57	5,065.62	11,483.55	12,374.51	8,996.75	29,667.94	6,247.37
950	33,276.93	39,335.24	16,716.78	15,552.83	22,618.46	15,391.18	10,457.20	13,729.17	19,304.50	13,089.52
23742	33,278.26	31,124.12	13,764.95	15,037.74	17,359.17	15,984.87	12,715.18	9,224.56	37,622.23	6,895.53
17763	33,282.59	34,385.51	14,653.48	20,798.31	19,732.03	9,364.53	13,016.50	13,668.58	25,696.01	17,614.26
9697	33,283.24	16,092.47	9,818.44	19,717.79	6,274.02	10,607.79	11,150.33	15,582.05	10,481.64	3,843.44
22061	33,284.37	28,952.54	15,909.38	12,592.05	13,043.16	18,803.52	13,382.42	10,858.08	11,354.21	7,149.01

Trial values	Total 30 day Load	Total Load	Raw Load	Raw Load (D12)	Recycle Load	Recycle Load (D13)	30dRaw2	30dRecyclesBOD	BOD Load 3.5	Recycle BOD Loads
2843	33,284.58	49,870.95	41,308.16	17,905.29	8,562.79	12,693.50	9,204.04	10,363.52	8,418.27	4,533.49
27436	33,284.91	57,506.48	44,089.88	21,172.64	13,416.60	8,936.37	14,850.51	8,859.40	20,261.41	6,400.93
22708	33,286.12	25,506.83	20,045.56	15,468.10	5,461.28	15,497.80	13,775.92	7,138.82	8,661.57	4,934.63
16858	33,290.44	19,195.63	7,573.64	12,835.97	11,621.99	18,529.07	15,258.66	10,250.26	7,466.83	5,207.75
164	33,291.72	19,154.19	13,974.46	19,501.55	5,179.73	10,864.94	9,888.77	6,405.71	23,007.96	11,685.67
21574	33,291.96	27,585.71	21,144.80	20,557.07	6,440.92	9,651.33	16,676.71	6,740.71	15,546.22	12,528.40
8217	33,293.01	18,470.85	9,293.00	19,889.55	9,177.85	10,420.02	13,004.30	11,655.23	17,300.49	6,487.03
21822	33,293.04	19,343.77	12,910.23	21,402.62	6,433.53	8,680.03	10,022.51	7,148.80	18,893.64	7,958.03
26466	33,295.15	32,003.05	22,655.81	16,694.79	9,347.25	14,096.15	15,583.84	12,753.50	15,284.50	21,747.41
17092	33,297.32	27,147.16	14,961.66	17,527.87	12,185.50	13,140.27	10,774.98	7,829.55	7,118.39	10,811.55
15660	33,299.83	16,975.11	11,922.93	18,181.25	5,052.18	12,391.39	13,264.11	7,697.20	11,731.97	9,377.79
15815	33,299.95	30,519.91	22,214.69	15,308.06	8,305.22	15,695.68	9,814.17	10,079.77	13,885.90	7,038.64
13269	33,301.40	19,010.02	13,408.35	22,615.20	5,601.67	7,293.92	14,252.54	7,698.26	15,280.98	7,877.98
27262	33,302.89	27,556.97	15,304.44	20,930.88	12,252.54	9,232.38	16,439.13	15,780.91	17,546.22	13,415.00
1625	33,303.24	57,789.72	49,994.74	14,695.93	7,794.98	16,402.92	10,911.75	8,067.41	20,886.59	12,186.66
4924	33,303.41	31,695.27	18,566.05	14,077.31	13,129.22	17,114.51	15,555.49	8,810.21	10,137.25	3,287.12
27688	33,303.73	22,763.36	10,942.92	15,470.92	11,820.44	15,512.17	17,604.59	10,767.11	17,962.66	8,566.78
23107	33,311.00	23,030.85	15,715.85	14,144.39	7,315.00	17,044.94	12,937.13	7,380.42	8,238.03	5,885.55
25528	33,315.50	28,646.70	13,775.36	16,671.11	14,871.34	14,143.73	12,010.64	9,326.53	15,972.21	9,680.91
24510	33,319.32	14,132.05	6,203.81	16,373.03	7,928.24	14,490.34	9,055.72	8,971.50	12,781.37	29,635.52
4467	33,319.74	12,170.72	7,682.14	15,125.11	4,488.58	15,925.86	8,989.59	7,883.26	15,100.00	3,353.27
6930	33,319.78	18,314.61	10,392.70	21,380.43	7,921.90	8,732.29	11,958.80	6,824.38	13,337.54	7,183.16
21293	33,322.94	26,814.99	20,235.90	13,811.24	6,579.10	17,440.02	17,034.74	8,904.17	13,337.25	5,424.27
27286	33,323.28	28,729.37	15,018.08	16,771.62	13,711.29	14,035.92	9,625.64	9,289.49	29,465.07	12,171.94
11208	33,324.38	39,043.10	20,171.39	17,138.36	18,871.70	13,615.27	13,267.54	8,674.96	19,547.38	9,770.95
26983	33,326.12	39,819.78	20,768.56	17,711.93	19,051.23	12,957.40	15,944.61	6,881.66	32,547.46	11,705.66
17554	33,326.25	18,120.96	13,926.21	15,041.86	4,194.75	16,028.11	12,478.47	11,800.53	11,690.41	17,613.95
3142	33,329.21	21,552.32	13,884.41	17,418.24	7,667.92	13,298.23	9,572.86	7,416.40	9,238.47	13,217.16
28194	33,331.35	38,973.24	31,018.53	13,358.24	7,954.71	17,969.38	10,678.65	14,294.76	11,976.97	14,207.49
26554	33,333.19	26,176.86	11,376.10	19,221.05	14,800.75	11,228.99	14,807.55	18,915.36	13,426.93	6,775.43
27927	33,334.57	45,199.05	24,688.37	18,713.68	20,510.68	11,813.84	9,198.59	11,648.48	11,832.19	7,138.84
15285	33,336.16	23,883.58	16,079.96	16,410.46	7,803.62	14,464.13	10,858.60	11,240.80	23,329.10	7,668.08
4391	33,336.28	30,922.67	18,570.89	16,997.67	12,351.78	13,788.96	12,524.13	13,669.11	17,121.13	17,429.12
25962	33,337.01	44,281.81	38,816.48	15,836.16	5,465.32	15,125.43	9,801.20	7,946.65	28,475.60	6,802.72
1961	33,337.02	35,601.95	27,342.24	11,401.51	8,259.71	20,225.29	10,940.61	5,706.91	20,437.04	2,825.90
11675	33,340.99	36,493.75	22,480.42	18,387.84	14,013.33	12,194.97	13,409.20	7,702.21	11,614.32	5,453.00
13815	33,344.62	17,802.56	9,877.68	19,763.96	7,924.88	10,616.07	9,976.28	9,606.90	15,179.86	29,462.25
17818	33,345.04	31,093.17	18,595.55	18,223.46	12,497.62	12,388.06	18,817.33	14,305.19	18,546.85	15,922.43
29912	33,346.38	31,258.42	21,460.51	18,516.12	9,797.91	12,052.85	18,645.46	9,667.18	12,677.07	15,528.19
3393	33,347.57	28,722.51	19,952.30	20,291.50	8,770.22	10,012.34	18,416.58	13,906.79	8,533.94	9,500.84
25320	33,347.91	14,637.46	5,587.61	14,356.71	9,049.85	16,837.69	13,213.29	13,015.44	14,001.77	7,039.08
25787	33,349.65	36,311.78	30,574.55	12,836.12	5,737.24	18,588.11	16,281.65	11,480.76	21,424.64	4,473.64
22347	33,354.38	51,375.89	25,401.71	17,172.99	25,974.18	13,605.44	22,628.33	11,526.89	6,936.21	4,025.38
9024	33,358.39	30,467.15	17,620.25	21,086.96	12,846.90	9,108.38	16,393.03	12,720.37	13,520.81	8,436.55
28198	33,361.45	71,240.79	53,734.03	16,985.02	17,506.76	13,828.68	9,573.15	11,065.07	10,436.10	4,666.28
13550	33,362.08	27,977.45	12,179.84	20,226.73	15,797.61	10,101.34	14,705.25	11,559.35	9,714.59	5,008.01
10043	33,362.93	56,858.99	40,398.59	17,113.27	16,460.40	13,682.66	13,563.08	10,402.45	14,332.38	8,691.97
24138	33,363.37	17,108.06	7,989.41	16,834.93	9,118.65	14,003.20	10,984.47	14,786.03	6,843.46	12,595.20
18866	33,363.68	14,382.17	10,432.07	20,565.92	3,950.10	9,712.87	14,202.55	7,121.59	12,233.53	4,039.38
27004	33,366.59	22,922.23	19,275.69	11,532.81	3,646.53	20,103.86	11,938.60	11,265.04	15,729.65	4,851.91
18283	33,366.66	16,075.49	13,451.64	18,232.73	2,623.84	12,399.03	10,211.47	8,692.10	22,383.28	9,495.36

Trial values	Total 30 day Load	Total Load	Raw Load	Raw Load (D12)	Recycle Load	Recycle Load (D13)	30dRaw2	30dRecyclesBOD	BOD Load 3.5	Recycle BOD Loads
7232	33,367.34	22,528.58	14,577.05	14,385.02	7,951.53	16,824.56	9,545.97	9,754.44	19,418.96	11,418.62
2402	33,369.05	30,153.25	25,365.86	18,639.96	4,787.39	11,933.10	14,597.07	13,255.56	20,698.99	8,476.49
24665	33,373.18	30,375.44	22,313.48	21,395.01	8,061.96	8,768.92	9,439.05	6,352.75	14,536.86	5,414.18
3268	33,375.85	20,009.03	14,503.06	14,127.56	5,505.97	17,129.15	14,023.60	9,193.35	14,768.08	13,863.92
9893	33,379.23	22,414.54	11,683.04	13,683.12	10,731.49	17,643.64	11,377.34	12,357.92	13,173.92	15,000.67
8143	33,379.84	24,886.68	19,643.94	18,484.80	5,242.74	12,122.32	11,931.37	9,990.34	12,918.02	7,492.43
27431	33,381.81	26,729.89	19,157.70	16,458.36	7,572.19	14,454.70	11,985.52	8,237.84	18,639.56	8,410.54
13672	33,382.97	18,969.79	9,987.39	14,570.91	8,982.40	16,626.43	10,966.87	6,375.23	13,318.39	6,813.43
12999	33,383.72	40,271.86	28,751.39	19,736.91	11,520.47	10,686.28	25,565.84	8,648.00	5,863.18	15,833.46
28898	33,383.90	15,309.62	10,120.57	15,324.28	5,189.04	15,760.98	11,451.56	9,451.64	19,205.87	5,302.48
17850	33,385.19	30,840.25	19,124.76	15,832.00	11,715.50	15,178.39	14,700.03	9,175.21	14,432.49	7,821.69
12600	33,385.42	27,584.55	14,839.04	18,666.44	12,745.51	11,919.02	12,011.26	6,864.30	19,382.07	9,639.05
16973	33,386.95	31,292.16	15,523.82	21,238.66	15,768.33	8,962.49	10,665.58	11,536.98	16,729.97	8,457.79
25492	33,389.12	25,602.78	20,730.37	20,657.88	4,872.41	9,632.56	11,963.97	8,732.20	15,398.39	22,422.84
690	33,392.08	44,830.66	30,516.13	10,408.60	14,314.52	21,422.19	11,037.63	8,718.34	6,519.77	27,469.52
19026	33,394.24	29,036.56	19,858.07	14,580.10	9,178.49	16,627.12	10,150.60	6,678.64	15,660.91	9,466.41
19514	33,397.21	14,871.69	6,535.91	18,453.84	8,335.78	12,175.29	10,545.99	7,669.16	12,605.34	7,205.52
9461	33,399.29	28,945.71	14,361.47	15,887.07	14,584.24	15,129.16	10,498.13	6,521.91	15,893.58	13,649.38
23738	33,399.86	22,284.50	14,258.61	16,853.50	8,025.89	14,018.34	17,260.43	10,400.05	18,065.26	9,443.22
21903	33,401.66	19,278.47	10,965.96	19,290.40	8,312.51	11,217.70	11,368.17	12,819.78	12,870.46	16,579.78
4743	33,401.97	23,974.35	15,598.28	13,471.77	8,376.07	17,909.44	10,443.81	9,287.27	17,823.64	22,759.33
23286	33,404.98	25,963.77	21,093.07	18,340.89	4,870.71	12,312.96	11,735.23	6,357.56	24,601.18	13,816.73
18424	33,406.32	21,542.72	9,809.38	19,736.45	11,733.34	10,709.40	18,416.62	9,988.98	11,187.61	4,884.30
10549	33,407.87	37,465.27	16,346.50	14,463.73	21,118.76	16,774.59	10,495.13	10,450.66	11,025.57	12,563.62
23415	33,408.19	23,762.36	16,096.93	14,201.80	7,665.44	17,076.12	10,051.14	10,027.37	19,335.40	9,161.27
25777	33,410.83	25,773.33	17,101.44	10,555.11	8,671.89	21,272.46	12,839.75	11,391.11	12,438.56	6,906.00
3312	33,411.46	18,942.19	15,607.13	14,186.60	3,335.06	17,096.88	11,674.16	7,218.85	18,550.98	13,016.94
10350	33,411.73	32,919.46	13,719.60	16,922.90	19,199.86	13,950.40	9,419.04	6,594.66	10,051.31	4,338.03
24772	33,411.87	28,790.48	21,466.16	14,556.22	7,324.32	16,672.22	14,300.23	8,921.93	27,891.81	8,782.19
19408	33,416.57	14,978.70	10,294.51	15,422.91	4,684.18	15,680.22	9,169.17	14,276.77	28,403.26	7,118.13
3785	33,419.96	27,202.75	14,968.95	17,388.10	12,233.80	13,423.64	13,718.11	9,531.46	19,647.33	4,860.74
1603	33,421.89	33,430.13	17,109.16	15,913.02	16,320.97	15,121.92	12,742.61	11,082.13	32,690.30	11,932.08
21274	33,427.02	34,389.39	27,135.27	17,424.53	7,254.12	13,388.81	8,991.71	7,911.22	6,565.34	7,744.99
27871	33,432.17	29,214.17	19,544.40	21,180.27	9,669.77	9,074.86	17,851.09	12,260.76	25,052.17	16,694.89
7767	33,432.22	26,207.63	16,320.82	18,455.24	9,886.81	12,208.70	15,256.46	9,522.01	22,533.46	14,987.41
17665	33,432.66	20,487.45	12,478.54	18,689.10	8,008.91	11,940.19	10,020.45	15,178.84	18,617.63	17,411.19
12411	33,433.41	22,601.00	14,572.74	21,481.55	8,028.26	8,729.62	10,753.88	13,458.81	16,763.71	14,912.39
2493	33,433.82	15,455.67	10,362.55	10,107.29	5,093.11	21,810.44	9,675.13	10,900.30	6,137.05	3,871.79
12633	33,436.95	25,891.56	17,988.25	19,200.74	7,903.31	11,356.10	11,518.59	17,440.37	17,717.16	4,390.92
23352	33,438.15	34,847.22	14,963.75	16,459.73	19,883.47	14,509.46	12,587.38	7,519.60	26,465.98	32,373.90
3909	33,438.28	14,711.18	7,717.20	14,134.83	6,993.98	17,183.23	12,242.00	7,549.85	12,799.25	7,269.38
16142	33,441.36	21,762.57	11,238.47	13,928.48	10,524.09	17,423.61	11,438.65	9,191.27	13,734.42	12,783.92
22090	33,443.16	28,721.38	24,573.32	14,419.17	4,148.06	16,861.12	10,856.46	10,768.31	16,226.84	8,907.30
8708	33,443.56	50,616.84	25,333.11	17,842.86	25,283.74	12,924.26	9,764.92	7,815.72	22,987.83	12,870.25
19829	33,444.79	14,006.56	10,920.84	18,007.75	3,085.72	12,735.88	18,965.48	8,568.32	22,067.80	3,792.55
13664	33,445.30	28,497.41	11,232.68	19,865.11	17,264.73	10,600.42	9,379.23	10,790.04	21,374.72	6,376.92
26892	33,449.46	36,688.21	14,029.60	18,218.26	22,658.61	12,498.46	12,677.57	9,035.73	7,492.58	6,008.67
16130	33,452.49	27,394.09	22,050.29	17,710.83	5,343.79	13,085.04	9,243.81	13,041.99	13,367.85	7,894.49
7181	33,453.19	31,541.03	18,938.85	10,490.51	12,602.19	21,389.11	10,911.05	8,994.92	15,433.15	3,906.88
27515	33,454.67	14,428.97	6,666.23	18,529.75	7,762.74	12,145.46	14,088.80	9,949.79	11,399.56	8,699.14
1094	33,457.78	49,935.71	43,147.84	19,189.15	6,787.86	11,390.26	9,415.32	9,037.02	8,898.10	5,418.67

Trial values	Total 30 day Load	Total Load	Raw Load	Raw Load (D12)	Recycle Load	Recycle Load (D13)	30dRaw2	30dRecyclesBOD	BOD Load 3.5	Recycle BOD Loads
27192	33,459.17	27,856.74	19,266.38	14,223.27	8,590.36	17,102.41	13,294.60	4,754.15	33,800.55	3,935.71
448	33,459.34	32,367.12	23,069.03	17,868.73	9,298.10	12,910.29	12,661.40	6,443.29	25,340.74	12,027.06
27054	33,460.56	46,942.32	19,023.50	15,740.47	27,918.82	15,359.02	12,017.40	7,036.79	17,335.14	1,881.41
12245	33,467.61	30,011.40	23,599.01	18,848.51	6,412.40	11,791.83	9,292.62	14,693.66	15,855.39	4,865.45
10274	33,467.91	29,426.24	16,621.79	18,835.30	12,804.45	11,807.31	11,673.85	16,255.68	27,420.26	17,379.34
9662	33,467.99	13,205.03	7,151.06	18,450.06	6,053.97	12,250.42	17,314.41	13,550.62	10,923.98	12,835.68
14977	33,468.52	48,178.18	38,792.17	13,502.24	9,386.01	17,940.95	9,692.12	10,333.61	5,966.63	5,526.75
27452	33,482.94	35,008.45	27,122.37	12,528.53	7,886.08	19,075.13	14,339.24	9,811.34	6,782.18	10,770.85
22559	33,488.97	20,747.92	14,653.66	20,924.78	6,094.26	9,425.47	13,464.51	8,585.15	34,277.45	8,044.82
2229	33,490.19	19,946.48	14,968.49	14,495.77	4,978.00	16,820.06	13,552.17	9,040.78	39,643.04	7,914.70
27533	33,493.09	20,006.63	13,973.70	16,945.49	6,032.93	14,005.77	11,246.20	15,992.48	24,435.56	14,748.57
20563	33,493.67	16,591.78	12,185.47	20,406.97	4,406.31	10,025.66	9,860.70	6,514.43	9,032.98	12,791.93
16515	33,494.28	12,414.95	7,760.71	9,373.93	4,654.24	22,714.26	11,511.31	7,624.17	6,945.31	7,187.69
4609	33,495.28	34,550.71	27,459.12	19,918.69	7,091.59	10,588.79	12,191.11	10,096.13	9,851.05	10,432.67
23913	33,495.90	35,276.28	22,923.18	15,868.77	12,353.10	15,246.81	14,011.98	10,534.80	9,031.66	6,180.84
29397	33,499.36	44,657.67	34,184.77	18,198.37	10,472.90	12,571.24	13,972.54	6,632.33	11,939.06	5,457.99
1114	33,502.13	13,053.15	6,940.52	20,962.88	6,112.63	9,394.82	9,695.99	8,570.35	25,593.48	10,392.01
24086	33,504.28	51,264.39	10,398.65	16,784.47	40,865.74	14,202.14	11,727.34	12,652.45	17,475.63	4,010.25
29148	33,504.44	24,920.63	15,197.93	17,616.19	9,722.70	13,245.82	11,476.37	6,732.73	11,844.85	11,145.48
20522	33,504.70	28,938.91	17,495.98	11,826.33	11,442.93	19,904.41	11,465.12	11,737.97	7,272.37	4,878.73
24568	33,508.68	14,130.49	8,379.67	15,239.44	5,750.81	15,983.32	9,965.08	12,568.02	9,918.26	4,519.22
9940	33,510.04	38,900.02	30,703.95	14,150.00	8,196.08	17,237.54	11,532.41	12,581.12	14,034.34	5,732.30
28764	33,511.19	42,692.45	29,844.47	20,191.16	12,847.98	10,291.35	14,247.99	11,640.30	17,480.84	8,073.84
26243	33,516.98	26,062.52	15,656.52	18,781.78	10,406.01	11,917.93	9,930.12	8,898.54	14,568.82	3,204.44
1136	33,521.74	10,726.88	8,871.82	17,018.92	1,855.06	13,949.98	12,899.06	10,026.55	15,298.29	13,964.86
23508	33,523.18	19,648.89	7,995.51	21,864.42	11,653.38	8,379.10	12,605.37	11,143.35	14,652.44	4,602.89
435	33,523.97	40,407.20	36,372.28	19,266.67	4,034.91	11,367.30	10,231.44	11,316.58	11,820.86	7,224.58
29601	33,527.41	12,165.85	7,131.11	13,383.30	5,034.74	18,136.61	12,701.72	6,646.19	9,181.85	4,595.69
11552	33,527.67	44,678.78	35,396.53	19,534.12	9,282.25	11,063.44	16,143.46	11,354.71	15,173.16	11,475.45
26432	33,527.69	22,814.88	13,034.31	15,996.68	9,780.57	15,131.51	13,960.39	8,926.98	19,548.88	6,502.77
20750	33,533.24	19,580.74	12,460.85	19,508.93	7,119.89	11,097.96	10,176.33	8,793.18	6,857.06	7,787.77
29152	33,536.62	12,513.81	9,997.72	14,317.41	2,516.09	17,071.60	10,915.95	13,152.55	31,384.26	9,648.86
19647	33,543.03	27,400.10	17,379.60	21,208.54	10,020.50	9,153.21	12,131.26	6,076.62	22,933.77	12,220.29
3181	33,544.59	21,672.77	15,148.70	10,358.08	6,524.07	21,632.80	9,657.01	11,619.85	16,135.62	6,919.68
204	33,547.33	44,667.77	31,868.04	17,125.38	12,799.73	13,853.14	15,804.30	9,366.36	34,085.99	8,657.45
24186	33,548.81	16,928.73	10,540.76	17,977.59	6,387.97	12,874.58	14,655.26	8,103.08	22,093.29	9,064.25
12343	33,549.92	21,334.63	8,900.51	17,405.78	12,434.12	13,533.28	10,283.19	8,572.32	17,400.83	6,124.40
7744	33,550.79	23,117.41	9,986.00	15,249.82	13,131.41	16,013.49	10,647.06	10,075.35	24,293.79	9,938.77
28407	33,555.79	46,162.31	28,509.92	13,165.22	17,652.39	18,415.79	10,409.22	8,401.66	12,249.84	8,799.80
2913	33,556.27	23,076.59	17,829.88	17,454.81	5,246.71	13,483.24	9,534.66	8,095.30	24,477.39	9,466.01
1398	33,557.54	19,650.52	13,720.96	19,276.24	5,929.56	11,389.87	9,651.20	8,443.17	7,419.24	6,705.84
25018	33,557.75	28,113.68	22,330.14	17,623.75	5,783.54	13,290.44	11,356.99	9,547.56	23,060.47	8,383.49
12840	33,558.21	30,581.28	26,722.21	16,865.68	3,859.07	14,162.69	15,734.56	7,086.19	25,588.68	15,192.74
15828	33,558.56	47,299.15	24,265.14	13,578.34	23,034.00	17,943.48	10,123.45	9,917.80	14,909.71	6,008.72
18052	33,558.86	13,803.40	7,511.81	15,031.80	6,291.58	16,272.30	21,191.01	12,796.77	16,751.83	11,318.66
1662	33,559.54	31,869.82	15,942.29	18,235.12	15,927.53	12,589.15	15,907.84	9,768.14	11,424.88	5,539.30
16596	33,560.24	25,547.60	7,703.23	12,812.39	17,844.37	18,826.00	14,276.93	10,752.81	11,032.81	7,918.08
10939	33,563.11	32,460.36	17,698.85	15,862.65	14,761.51	15,321.06	18,686.27	6,012.99	22,650.80	10,761.85
24933	33,563.73	24,711.24	16,694.00	12,524.27	8,017.24	19,160.82	10,472.12	10,073.75	12,621.08	2,944.93
3663	33,566.37	22,349.19	16,832.28	16,977.88	5,516.91	14,041.81	11,008.72	6,585.61	14,006.35	4,926.69
19343	33,567.98	14,422.76	9,014.22	17,418.55	5,408.55	13,536.65	10,755.46	8,239.75	13,005.42	8,714.99

Trial values	Total 30 day Load	Total Load	Raw Load	Raw Load (D12)	Recycle Load	Recycle Load (D13)	30dRaw2	30dRecyclesBOD	BOD Load 3.5	Recycle BOD Loads
11928	33,569.57	23,391.95	9,681.31	18,465.29	13,710.64	12,334.49	12,374.21	9,737.79	24,771.13	11,130.24
26777	33,573.18	18,378.36	13,255.54	19,717.04	5,122.82	10,898.58	11,788.33	10,543.00	18,977.63	15,805.27
19548	33,578.85	24,376.33	8,580.74	18,078.26	15,795.59	12,788.85	11,383.24	7,087.64	17,943.17	9,237.25
2806	33,579.02	18,497.75	8,277.08	16,574.65	10,220.67	14,518.18	8,823.53	11,090.45	12,586.37	5,675.43
20197	33,580.96	19,824.94	12,096.30	15,566.57	7,728.64	15,679.40	9,063.47	7,987.82	11,244.78	9,246.63
25339	33,583.10	16,805.96	9,590.82	14,474.96	7,215.14	16,936.90	9,498.17	6,726.94	21,808.51	3,953.01
16408	33,585.82	19,515.28	16,464.34	19,698.34	3,050.94	10,932.73	16,988.00	10,227.49	29,668.65	9,225.62
25827	33,585.85	20,518.36	7,918.77	14,733.13	12,599.59	16,642.75	16,879.85	6,945.83	13,541.57	6,673.85
8624	33,586.08	19,165.02	8,523.96	15,979.65	10,641.06	15,209.48	10,540.92	14,721.16	12,620.36	3,951.63
18716	33,587.06	27,186.46	15,341.75	16,601.89	11,844.72	14,494.90	13,199.55	9,919.47	10,642.11	12,810.60
17235	33,587.49	29,090.95	16,383.98	20,111.77	12,706.98	10,458.95	11,077.74	10,896.14	16,752.23	15,107.04
11834	33,591.16	29,840.07	21,937.56	22,034.99	7,902.51	8,250.93	12,378.54	8,515.64	24,703.62	14,593.83
3117	33,593.40	19,705.44	14,058.34	18,741.83	5,647.10	12,040.29	16,354.59	11,039.77	10,160.30	7,948.64
4154	33,595.04	15,818.61	10,796.92	19,271.28	5,021.69	11,433.06	10,637.80	9,307.16	11,005.29	6,976.51
24846	33,595.73	9,447.33	5,844.27	18,244.67	3,603.06	12,614.36	14,142.18	11,118.30	18,244.44	12,150.07
2191	33,599.97	14,709.84	11,484.59	19,752.00	3,225.25	10,885.17	15,313.05	11,160.60	18,378.41	10,382.07
23641	33,613.50	26,139.71	18,820.03	15,150.90	7,319.68	16,189.97	12,053.05	13,093.48	24,773.76	5,191.64
20643	33,614.12	29,114.04	19,462.54	20,506.04	9,651.50	10,032.17	13,949.05	8,845.78	36,617.89	10,777.92
2891	33,615.55	24,742.15	19,282.14	21,069.46	5,460.00	9,385.67	10,313.98	10,756.20	9,924.04	20,452.46
5791	33,618.23	24,655.99	16,034.23	12,299.27	8,621.76	19,474.07	19,025.10	14,788.09	13,897.15	4,655.20
20093	33,620.43	16,356.41	10,843.10	14,561.01	5,513.32	16,875.27	13,099.71	7,462.43	12,073.06	4,771.31
1920	33,623.90	34,548.99	27,885.98	21,376.60	6,663.00	9,040.82	10,647.73	11,076.44	10,900.77	10,987.53
2528	33,629.55	13,548.46	10,404.08	18,478.83	3,144.38	12,378.89	16,000.69	7,933.39	13,000.83	6,475.34
7259	33,631.18	22,956.84	6,701.05	16,152.98	16,255.79	15,055.25	9,417.97	8,027.37	19,297.91	5,116.64
7511	33,631.39	19,009.90	7,548.49	19,792.80	11,461.41	10,869.67	11,305.20	11,466.53	14,873.59	22,101.81
20155	33,632.60	25,341.92	16,811.80	15,102.95	8,530.12	16,264.20	8,835.22	8,582.06	10,963.04	3,408.91
426	33,633.50	23,045.18	11,556.92	10,763.44	11,488.25	21,255.54	14,163.41	14,314.93	18,750.98	6,724.93
24144	33,634.24	16,649.87	11,016.04	15,354.44	5,633.83	15,976.63	12,011.82	8,862.50	17,925.86	3,527.00
6393	33,635.00	29,220.65	13,489.48	15,205.11	15,731.17	16,149.12	15,289.11	10,521.72	15,016.25	8,488.02
29096	33,636.62	19,030.40	10,125.79	16,773.52	8,904.61	14,347.07	12,060.79	12,932.45	12,362.48	16,877.50
15184	33,639.77	27,185.01	18,282.68	17,944.20	8,902.34	13,003.94	14,188.89	9,782.99	9,620.29	14,083.15
14711	33,640.32	10,781.27	7,405.09	17,681.59	3,376.18	13,306.49	13,307.52	6,672.98	20,134.09	8,311.18
3355	33,641.49	18,449.91	10,404.41	16,131.97	8,045.50	15,089.72	11,090.88	6,164.07	24,345.61	8,950.72
9005	33,643.91	12,188.33	9,105.89	13,703.05	3,082.44	17,885.41	14,814.99	7,804.40	10,744.81	10,510.10
28212	33,646.42	24,344.25	9,899.90	14,170.35	14,444.35	17,350.52	12,612.85	7,526.42	26,147.69	6,632.71
15309	33,651.13	16,319.85	10,804.85	13,961.11	5,515.00	17,595.86	14,544.49	10,984.36	9,120.97	1,791.54
27239	33,655.06	16,616.89	10,113.64	15,243.80	6,503.25	16,124.70	10,492.08	5,159.93	7,909.42	12,920.20
8601	33,657.93	20,072.60	10,803.31	19,367.46	9,269.29	11,385.35	9,192.97	7,729.24	7,517.20	9,853.17
29760	33,659.68	64,560.68	32,205.13	15,946.07	32,355.55	15,321.70	9,891.48	6,836.69	11,684.68	4,765.81
22189	33,659.85	19,899.08	15,932.61	16,113.12	3,966.47	15,129.77	14,313.58	16,647.83	18,038.66	8,698.17
11255	33,660.28	33,317.67	12,698.73	15,369.19	20,618.94	15,985.72	12,322.99	14,223.11	19,344.91	11,108.79
25225	33,660.77	27,590.91	12,107.91	17,142.98	15,483.00	13,946.34	13,138.79	6,734.56	17,377.89	9,055.91
7223	33,661.14	36,668.35	22,571.58	24,035.24	14,096.77	6,020.61	13,471.57	6,883.22	17,890.80	9,370.63
24706	33,666.91	21,146.65	11,917.79	14,608.17	9,228.86	16,867.51	14,151.54	8,747.69	6,910.77	17,456.60
11359	33,669.15	14,872.16	7,721.73	17,498.23	7,150.43	13,546.18	13,697.76	8,691.17	9,556.21	10,888.83
25237	33,670.30	25,868.83	19,230.92	15,978.03	6,637.90	15,295.57	22,136.97	6,325.23	14,544.02	11,646.12
2668	33,672.05	18,153.13	7,907.29	19,694.30	10,245.84	11,023.61	11,321.62	11,172.93	20,391.96	7,618.91
23882	33,674.18	49,991.65	35,393.79	21,094.81	14,597.86	9,415.15	13,521.35	9,298.04	18,306.67	2,828.64
5274	33,679.99	14,812.80	10,691.55	19,843.60	4,121.26	10,859.84	11,018.23	12,788.59	14,224.54	7,766.14
16619	33,680.00	29,323.43	12,062.68	17,507.18	17,260.75	13,546.75	10,780.51	9,821.93	27,934.73	18,557.62
4040	33,680.37	36,816.79	25,170.19	10,392.30	11,646.60	21,729.23	11,645.84	9,454.25	19,280.51	12,317.72

Trial values	Total 30 day Load	Total Load	Raw Load	Raw Load (D12)	Recycle Load	Recycle Load (D13)	30dRaw2	30dRecyclesBOD	BOD Load 3.5	Recycle BOD Loads
25978	33,680.39	20,447.05	10,786.61	12,519.72	9,660.44	19,282.70	11,797.28	10,742.72	11,834.36	17,498.06
13594	33,680.50	24,570.72	13,725.30	17,681.30	10,845.42	13,347.00	15,305.26	8,856.71	21,838.13	29,434.10
28413	33,684.95	17,504.36	10,675.19	15,776.26	6,829.17	15,542.25	24,029.77	14,687.10	17,782.08	5,831.54
20378	33,685.01	29,732.43	16,683.90	17,607.77	13,048.53	13,436.08	13,341.21	8,586.70	13,084.21	12,687.05
5860	33,686.62	16,832.01	12,706.87	16,777.65	4,125.14	14,392.32	11,653.79	11,963.44	9,490.42	11,561.44
10522	33,687.26	15,348.41	10,507.73	19,027.70	4,840.68	11,805.40	13,033.57	7,784.07	9,179.55	7,079.96
29767	33,687.77	30,518.92	15,070.85	20,933.44	15,448.07	9,614.31	13,023.90	10,934.73	24,470.33	10,412.73
22292	33,689.07	15,191.25	12,446.95	20,634.94	2,744.30	9,958.89	13,145.24	9,477.87	7,910.82	8,635.59
28379	33,693.01	27,915.40	17,014.39	17,726.81	10,901.02	13,307.18	10,764.91	6,499.16	14,959.90	6,051.93
7897	33,700.21	21,530.94	10,622.97	17,847.88	10,907.98	13,175.14	10,322.33	9,471.23	12,112.18	5,379.24
25082	33,701.46	22,494.62	15,595.05	12,869.56	6,899.57	18,901.46	10,447.33	10,643.03	28,693.43	16,558.12
10281	33,704.42	18,805.78	9,160.03	16,354.99	9,645.75	14,896.18	14,080.34	13,149.44	16,200.66	10,975.91
8954	33,705.99	26,366.83	20,171.71	19,650.80	6,195.12	11,107.57	8,740.16	8,010.49	11,661.77	14,009.92
406	33,712.88	18,155.61	9,553.05	14,887.45	8,602.56	16,592.32	10,094.35	13,403.32	6,576.69	22,615.20
26426	33,717.63	46,772.79	9,879.89	17,959.54	36,892.90	13,064.17	19,366.22	16,924.88	10,703.97	10,555.93
8964	33,717.99	44,336.41	25,201.66	17,172.20	19,134.75	13,969.96	9,398.44	8,252.12	8,439.67	12,642.72
8877	33,722.06	37,790.39	27,610.66	21,475.06	10,179.73	9,025.75	13,185.29	11,500.04	17,305.22	4,381.04
7346	33,725.93	35,887.21	22,237.24	19,677.21	13,649.98	11,097.14	10,837.10	9,610.17	23,561.78	12,027.96
22719	33,726.69	24,209.84	9,731.34	21,175.07	14,478.50	9,375.36	10,775.84	8,003.60	14,652.76	7,115.53
4335	33,730.15	25,926.65	12,757.01	17,232.85	13,169.64	13,912.37	10,100.13	7,307.21	9,957.38	4,956.02
8138	33,731.66	12,289.37	8,702.12	19,966.21	3,587.25	10,770.52	9,485.56	10,055.93	33,181.80	3,703.04
29880	33,733.46	23,108.19	11,345.27	21,641.36	11,762.92	8,845.90	20,184.78	13,006.51	9,329.24	15,763.92
17286	33,733.73	23,853.64	8,831.28	21,223.36	15,022.36	9,326.86	11,712.51	12,949.83	24,874.97	10,936.02
21473	33,734.02	21,300.83	8,563.97	10,999.17	12,736.87	21,084.97	10,486.92	7,852.99	12,189.40	5,591.53
7879	33,742.33	33,816.03	13,304.91	21,352.40	20,511.12	9,187.07	23,122.94	16,187.62	8,020.06	8,418.29
26479	33,744.35	19,609.57	12,004.54	14,044.75	7,605.04	17,592.90	11,811.44	18,597.69	14,613.72	2,508.34
3941	33,744.84	21,781.10	15,420.02	19,989.47	6,361.08	10,756.95	13,075.27	8,729.04	13,629.35	5,865.13
13355	33,747.12	28,331.71	22,220.53	13,646.85	6,111.18	18,053.25	10,118.68	11,619.86	19,859.32	12,984.31
27543	33,747.52	20,652.56	11,846.16	19,368.08	8,806.39	11,474.23	11,653.93	9,524.42	11,943.25	3,999.00
9521	33,748.58	33,947.06	14,860.77	16,621.20	19,086.29	14,634.20	10,923.40	4,840.34	6,864.49	9,162.65
11143	33,750.68	44,646.22	34,877.83	19,940.84	9,768.39	10,818.72	9,998.34	13,172.92	5,416.90	6,645.81
16450	33,751.72	35,115.81	31,393.36	18,018.67	3,722.44	13,030.25	16,854.44	13,472.82	12,210.53	12,168.92
15677	33,753.59	31,274.35	16,080.03	18,222.38	15,194.32	12,797.86	11,885.88	8,626.99	46,040.29	8,988.99
27716	33,754.90	24,050.93	15,194.76	11,233.16	8,856.17	20,836.77	9,919.91	11,664.42	29,141.49	18,763.59
26159	33,755.90	40,609.62	26,807.80	19,112.82	13,801.82	11,776.15	13,465.36	12,887.95	7,633.70	2,771.49
9383	33,757.50	34,370.45	18,879.97	14,806.23	15,490.47	16,730.33	10,683.06	10,906.25	13,608.47	15,786.36
29089	33,757.54	47,019.35	36,784.58	18,517.71	10,234.78	12,462.17	16,769.60	6,896.19	16,218.30	6,426.94
14576	33,759.54	15,580.91	11,292.01	15,616.83	4,288.90	15,800.18	14,414.96	9,068.61	7,137.59	9,511.95
8892	33,759.77	43,247.76	34,875.32	21,032.77	8,372.44	9,572.08	9,532.36	15,406.86	9,220.62	3,385.98
27380	33,760.76	33,842.60	11,040.77	15,409.92	22,801.82	16,039.35	12,533.09	9,865.50	21,987.68	3,654.88
22439	33,766.20	29,614.66	21,513.92	16,161.35	8,100.73	15,180.65	9,217.39	10,695.02	12,221.86	6,545.62
28825	33,767.95	17,881.00	8,833.49	17,006.83	9,047.51	14,210.10	17,090.69	10,537.40	21,693.65	2,464.20
3981	33,770.08	17,194.96	6,210.10	21,211.41	10,984.85	9,376.96	10,776.26	13,804.46	38,429.69	4,757.52
13589	33,772.28	39,380.18	13,886.67	14,624.99	25,493.51	16,953.54	14,449.97	7,641.11	12,268.66	4,332.69
6593	33,773.24	19,253.74	6,970.88	19,160.16	12,282.86	11,739.06	15,180.52	13,305.37	26,870.78	18,651.97
10781	33,782.81	21,941.19	9,801.28	15,943.81	12,139.90	15,447.43	16,971.69	8,819.68	7,621.94	6,782.18
15800	33,785.61	20,803.49	8,716.16	18,616.37	12,087.33	12,376.78	9,392.15	15,631.74	7,322.28	10,852.82
936	33,786.34	39,211.38	15,095.70	12,307.90	24,115.67	19,632.26	10,668.22	6,872.16	24,645.90	9,982.65
29201	33,786.81	18,745.34	8,278.27	16,742.13	10,467.07	14,533.37	11,439.70	12,927.62	16,642.46	13,164.54
28562	33,787.75	8,753.30	6,712.90	18,325.49	2,040.41	12,713.44	17,324.35	13,314.62	16,016.77	16,623.65
22277	33,788.88	33,314.44	21,715.75	16,249.53	11,598.69	15,101.92	14,897.04	9,680.67	12,924.49	19,135.32

Trial values	Total 30 day Load	Total Load	Raw Load	Raw Load (D12)	Recycle Load	Recycle Load (D13)	30dRaw2	30dRecyclesBOD	BOD Load 3.5	Recycle BOD Loads
28708	33,790.42	45,952.21	17,930.94	20,789.91	28,021.27	9,882.02	13,937.57	18,473.01	7,891.41	2,287.02
25338	33,791.46	23,148.79	11,751.75	19,880.54	11,397.04	10,928.84	16,895.68	9,045.44	19,773.58	7,505.96
29274	33,792.44	18,233.27	6,695.02	17,987.27	11,538.24	13,107.08	10,055.08	13,283.40	11,855.24	4,857.10
20116	33,804.90	37,412.82	8,928.37	13,831.93	28,484.44	17,898.18	16,793.21	7,787.23	6,619.14	9,236.65
16288	33,808.44	29,175.59	23,940.72	17,711.16	5,234.87	13,440.61	12,587.31	12,665.91	11,610.70	11,307.48
16877	33,813.12	29,630.25	15,699.81	15,510.88	13,930.44	15,975.61	9,066.33	11,720.93	15,543.83	9,713.70
11322	33,816.22	29,224.87	23,083.45	16,038.10	6,141.42	15,372.41	12,354.30	10,455.79	15,713.03	6,200.12
12180	33,824.81	32,210.12	21,367.24	12,505.06	10,842.88	19,443.99	11,489.42	7,059.72	19,674.51	7,101.93
3930	33,825.12	25,490.24	16,227.60	23,402.83	9,262.64	6,911.87	15,834.52	10,581.52	8,672.02	9,220.18
28018	33,829.56	27,117.45	16,595.63	14,192.69	10,521.81	17,507.97	11,091.55	7,864.16	14,263.92	4,016.61
781	33,832.56	46,520.35	25,848.59	17,781.91	20,671.75	13,383.36	9,818.03	7,731.32	9,953.15	3,620.30
10649	33,838.34	30,410.03	17,847.72	17,735.90	12,562.31	13,442.05	11,994.88	7,618.59	12,512.51	7,439.82
21977	33,839.68	31,550.61	19,828.09	15,648.53	11,722.52	15,843.87	12,185.06	14,558.13	38,215.64	10,674.75
5194	33,840.19	29,255.85	21,160.07	11,802.54	8,095.78	20,267.26	9,403.73	7,153.10	15,681.08	8,981.69
21684	33,841.23	13,905.24	10,525.12	19,584.68	3,380.11	11,318.85	10,572.12	7,486.91	8,585.95	6,057.88
21567	33,854.23	52,744.79	40,490.59	14,429.30	12,254.20	17,260.54	12,451.80	8,348.75	22,399.98	4,958.75
21622	33,855.23	22,937.42	16,255.25	18,972.53	6,682.17	12,036.81	12,416.54	11,619.36	6,219.85	7,305.64
15519	33,855.91	19,605.31	14,401.40	19,759.83	5,203.91	11,132.10	12,871.66	8,303.90	22,108.83	1,185.01
6446	33,856.88	17,799.81	10,187.28	13,643.09	7,612.53	18,167.33	11,895.74	10,234.74	35,460.14	13,076.10
4661	33,857.89	30,496.07	20,020.93	13,677.25	10,475.14	18,129.05	10,212.51	13,527.57	9,829.46	18,258.35
2466	33,858.35	34,907.59	17,403.11	10,928.21	17,504.47	21,290.92	12,122.80	12,823.98	12,039.50	3,631.12
12864	33,859.76	35,647.93	23,725.05	23,622.82	11,922.88	6,693.51	10,496.82	13,244.89	22,736.26	4,805.85
21419	33,860.62	33,597.81	17,127.66	15,309.12	16,470.15	16,255.13	18,952.94	6,529.73	23,784.91	10,115.88
7515	33,860.83	23,918.29	15,822.73	16,676.67	8,095.55	14,682.66	10,221.78	6,764.36	16,127.65	4,250.80
17417	33,864.55	17,445.17	9,775.37	20,210.55	7,669.80	10,622.42	16,007.88	15,380.33	9,807.12	6,751.86
17802	33,874.59	38,569.29	30,389.14	11,619.43	8,180.15	20,512.24	11,741.28	9,402.82	24,336.26	9,019.55
15917	33,878.59	30,223.51	22,992.31	17,770.82	7,231.20	13,442.14	11,079.25	15,298.18	30,651.36	9,272.78
881	33,879.33	23,811.81	19,492.52	17,916.52	4,319.29	13,275.34	12,298.79	14,508.36	11,261.83	5,017.11
16073	33,880.07	29,212.18	20,886.22	22,200.14	8,325.96	8,349.92	9,200.38	7,166.98	20,578.00	3,759.24
29181	33,881.07	21,036.76	9,650.32	12,981.07	11,386.44	18,952.84	12,824.46	6,959.46	14,028.36	10,945.84
5131	33,881.96	25,375.54	20,360.83	12,419.42	5,014.71	19,599.63	11,063.55	7,845.81	5,973.29	10,901.84
10159	33,885.70	52,266.38	35,337.63	21,078.08	16,928.74	9,645.91	13,921.51	12,774.04	24,508.16	16,929.35
6330	33,886.59	34,567.58	24,070.72	14,740.58	10,496.87	16,934.92	10,138.89	13,454.92	18,990.61	12,876.43
9442	33,889.92	29,851.36	23,734.47	14,973.42	6,116.90	16,670.48	12,034.48	6,997.57	21,458.47	14,295.06
25262	33,890.22	12,718.41	8,130.66	17,216.38	4,587.75	14,091.39	11,607.24	7,588.01	11,824.39	26,313.77
5430	33,890.24	28,625.96	23,598.86	12,165.11	5,027.10	19,900.37	11,418.39	9,222.23	6,054.60	2,299.01
20246	33,892.98	19,770.85	14,070.80	12,858.20	5,700.05	19,106.05	9,677.11	10,927.32	9,368.05	5,871.96
29286	33,892.98	54,957.88	34,057.07	16,033.24	20,900.81	15,454.76	11,521.82	10,857.96	12,477.10	9,929.72
10669	33,893.84	17,023.89	7,428.74	21,842.31	9,595.15	8,775.18	9,620.83	10,039.81	24,247.03	15,052.81
18940	33,896.64	26,100.41	13,306.87	16,536.71	12,793.53	14,879.43	12,241.21	6,562.51	23,205.15	8,037.97
4339	33,899.15	23,094.85	11,246.66	21,432.02	11,848.19	9,252.32	9,742.54	8,440.28	13,852.06	8,544.06
14096	33,902.97	20,546.33	16,894.72	16,904.21	3,651.61	14,463.12	11,135.09	8,843.32	11,796.08	8,432.82
10492	33,907.04	23,071.62	16,096.57	14,558.21	6,975.06	17,165.10	10,754.37	11,726.31	21,337.94	12,754.02
5658	33,907.16	35,792.91	10,532.34	22,423.45	25,260.57	8,120.20	10,007.03	14,811.67	13,591.27	10,196.45
2038	33,907.44	28,506.24	22,159.34	13,721.61	6,346.90	18,127.59	15,111.79	12,775.63	26,753.49	14,697.84
9613	33,908.43	23,576.37	13,678.80	19,588.40	9,897.57	11,381.78	10,076.57	24,933.72	12,449.27	9,038.81
15544	33,909.23	23,760.96	11,252.18	20,584.50	12,508.77	10,237.06	12,071.43	5,112.65	19,213.59	17,593.57
27821	33,910.17	23,169.10	13,245.64	12,471.16	9,923.46	19,568.34	14,226.67	7,602.02	8,381.31	4,231.50
1115	33,910.36	23,439.91	18,223.16	17,548.22	5,216.75	13,729.91	12,195.49	8,679.61	9,710.03	12,441.22
22730	33,914.62	39,652.64	25,565.75	18,396.40	14,086.88	12,758.77	14,242.48	6,870.45	8,007.58	12,151.44
25460	33,917.66	16,537.96	9,774.79	18,901.47	6,763.17	12,180.97	13,285.68	10,151.05	13,154.90	7,554.49

Trial values	Total 30 day Load	Total Load	Raw Load	Raw Load (D12)	Recycle Load	Recycle Load (D13)	30dRaw2	30dRecyclesBOD	BOD Load 3.5	Recycle BOD Loads
7651	33,923.73	16,067.93	7,830.40	18,560.01	8,237.53	12,579.71	10,777.72	7,656.86	32,114.30	9,776.94
10617	33,926.25	24,315.35	17,344.76	17,260.02	6,970.59	14,077.23	18,822.32	9,031.51	8,724.95	17,713.75
22964	33,929.10	35,001.73	19,957.27	19,255.74	15,044.45	11,785.00	11,140.41	7,435.18	13,141.14	5,220.46
268	33,930.62	18,768.89	12,692.14	17,463.12	6,076.75	13,848.03	16,799.70	14,689.55	10,556.44	6,328.43
1815	33,934.09	13,660.98	6,560.87	22,869.34	7,100.11	7,634.36	10,112.05	12,309.01	16,917.84	14,938.29
19427	33,937.31	25,931.41	16,709.77	18,331.46	9,221.64	12,856.13	12,661.19	7,413.92	13,336.51	5,849.03
7339	33,940.30	13,745.94	6,650.53	14,349.98	7,095.41	17,437.83	14,400.39	12,269.46	21,456.39	21,127.63
8384	33,946.03	35,485.42	17,614.50	14,921.81	17,870.92	16,785.95	12,452.25	10,979.49	19,424.92	5,753.02
12046	33,950.25	29,907.84	24,380.38	18,738.43	5,527.46	12,401.06	11,017.28	10,790.51	13,305.66	13,187.86
13604	33,952.95	33,011.44	15,233.53	11,849.52	17,777.91	20,326.00	16,729.67	7,868.03	12,460.76	17,518.61
593	33,953.83	22,401.61	16,769.49	17,355.47	5,632.11	13,995.05	11,136.19	10,985.81	11,488.20	10,394.09
23232	33,958.41	20,256.72	8,663.02	14,935.10	11,593.71	16,783.05	10,398.66	14,980.87	16,079.79	12,313.63
23092	33,960.38	24,934.45	19,371.84	14,561.34	5,562.60	17,214.84	10,340.80	9,058.31	8,314.84	16,594.37
20133	33,962.92	34,119.56	22,212.69	17,492.79	11,906.87	13,846.22	13,037.87	13,290.17	15,689.91	4,440.09
7486	33,968.62	19,733.30	13,753.14	15,071.21	5,980.16	16,636.73	16,022.62	9,286.12	29,340.04	6,060.97
29950	33,972.01	12,883.40	10,104.35	19,943.33	2,779.05	11,037.19	11,039.37	6,834.77	19,444.76	5,950.36
802	33,972.17	15,582.25	7,922.07	16,678.79	7,660.18	14,791.56	11,025.01	11,950.70	6,961.02	6,498.65
15157	33,973.61	20,157.76	6,495.43	15,204.06	13,662.33	16,488.95	13,340.32	9,127.65	12,693.63	12,669.99
11166	33,978.51	48,393.34	35,524.13	12,884.03	12,869.20	19,161.88	13,112.12	7,050.35	6,543.37	10,350.38
11070	33,983.29	49,554.85	29,301.08	19,557.69	20,253.77	11,491.95	13,619.06	10,000.54	12,982.80	18,084.20
14415	33,984.52	18,047.72	9,839.07	22,449.84	8,208.65	8,167.21	9,703.43	10,132.41	15,153.85	9,136.27
11631	33,991.82	16,211.74	6,070.12	17,626.41	10,141.61	13,721.45	10,169.64	9,142.52	20,347.87	6,478.11
9223	33,992.76	15,334.93	6,768.52	16,371.71	8,566.41	15,165.29	14,613.46	12,328.48	6,915.89	3,993.38
28910	33,996.17	18,846.59	10,811.12	15,201.83	8,035.47	16,514.07	16,402.02	7,848.56	5,979.61	5,907.76
14216	33,997.83	30,094.32	23,120.20	17,702.03	6,974.12	13,640.50	13,584.15	15,759.77	8,346.37	14,429.55

Date	Year	Month	Flow Effluent (MGD)	BOD RAW INF. (mg/l)		TSS RAW INF. (mg/l)	BOD PRIM. EFF. (mg/l)	TSS PRIM. EFF. (mg/l)	Plant Drain Flow (MGD)	TSS DRAIN (mg/l)	BOD Drain (mg/l)	7dFlow, MGD	30dFlow, MGD	BOD Raw (lbs/d)	30dBODRaw Unclean (lbs/d)	BOD Raw Cleaned (lbs/d)	7dBOD Raw (lbs/d)	30dBODRaw (lbs/d)	TSS Raw (lbs/d)	7dTSS Raw (lbs/d)	30dTSSRaw (lbs/d)	BOD Recycle (lbs/d)	7dBOD Recycle (lbs/d)	30dBODRecycle (lbs/d)	TSS Recycle (lbs/d)	30dTSSRecycle unclean (lbs/d)	TSS Recycle Cleaned (lbs/d)	7dTSS Recycle (lbs/d)	30dTSSRecycle (lbs/d)	BOD/TSS	BOD Cleaned R&R (lbs/d)	7dBOD Cleaned R&R (lbs/d)	30dBOD Cleaned R&R (lbs/d)	TSS Cleaned R&R (lbs/d)	7dTSS Cleaned R&R (lbs/d)	30dTSS Cleaned R&R (lbs/d)	Recycles Flow, MGD	7d Recycles Flow, MGD	30d Recycles Flow, MGD
1/1/2010	2010	1	7.70						5.73																					N			N			5.73		
1/2/2010	2010	1	7.83						5.72																					N			N			5.72		
1/3/2010	2010	1	7.72	231	231	110	173	100	5.65					14,887	N				7,089										2.1	N			N			5.65		
1/4/2010	2010	1	7.51		N				5.41						N															N			N			5.41		
1/5/2010	2010	1	7.59	307	307	124	358	106	5.17					19,450	N				7,856										2.5	N			N			5.17		
1/6/2010	2010	1	7.35		N				5.34						N															N			N			5.34		
1/7/2010	2010	1	7.08	302	302	148	145	92	5.24	124.0	189	7.5		17,833	N				8,739	7,895		8,272			5,427		5,427		2.0	N	N		14,167	N		5.24	5.47	
1/8/2010	2010	1	6.87		N				5.14			7.4			N					7,895										N	N		N	N		5.14	5.38	
1/9/2010	2010	1	6.48		N				5.62			7.2			N					7,895										N	N		N	N		5.62	5.37	
1/10/2010	2010	1	6.22	154	154	214	113	106	5.68	252.0		7.0		7,993		7,993			11,107	9,234					11,949		11,949		0.7	N	N		23,056	N		5.68	5.37	
1/11/2010	2010	1	6.07		N				5.10			6.8			N					9,234										N	N		N	N		5.10	5.33	
1/12/2010	2010	1	6.14	214	214	186	165	116	5.45	208.0		6.6		10,963		10,963			9,529	9,792					9,466		9,466	8,948	1.2	N	N		18,995	18,739		5.45	5.37	
1/13/2010	2010	1	5.93		N				5.65			6.4			N					9,792								8,948		N	N		N	18,739		5.65	5.41	
1/14/2010	2010	1	5.97	266	266	274	269	126	5.62			6.2		13,250		13,250	10,736		13,649	11,428									1.0	N	N		N	N		5.62	5.47	
1/15/2010	2010	1	6.09		N				5.35			6.1			N		10,736			11,428										N	N		N	N		5.35	5.50	
1/16/2010	2010	1	6.03		N				5.42			6.1			N		10,736			11,428										N	N		N	N		5.42	5.47	
1/17/2010	2010	1	6.41	252	252	172	159	138	5.32			6.1		13,471		13,471	12,562		9,195	10,791									1.5	N	N		N	N		5.32	5.42	
1/18/2010	2010	1	8.55		N				5.78			6.4			N		12,562			10,791										N	N		N	N		5.78	5.51	
1/19/2010	2010	1	7.61	203	203	182	176	128	5.75			6.7		12,888		12,888	13,203		11,554	11,466									1.1	N	N		N	N		5.75	5.56	
1/20/2010	2010	1	7.31		N				5.77			6.9			N		13,203			11,466										N	N		N	N		5.77	5.57	
1/21/2010	2010	1	6.84	353	353	202	235	122	6.07			7.0		20,153		20,153	15,504		11,532	10,760									1.7	N	N		N	N		6.07	5.64	
1/22/2010	2010	1	6.69		N				6.02			7.1			N		15,504			10,760										N	N		N	N		6.02	5.73	
1/23/2010	2010	1	6.57		N				6.00			7.1			N		15,504			10,760										N	N		N	N		6.00	5.82	
1/24/2010	2010	1	6.78	248	248	260	116	94	5.68			7.2		14,037		14,037	15,693		14,716	12,601									1.0	N	N		N	N		5.68	5.87	
1/25/2010	2010	1	9.77		N				4.47			7.4			N		15,693			12,601										N	N		N	N		4.47	5.68	
1/26/2010	2010	1	10.05	195	N	316	116	96	5.68			7.7		16,357		16,357	16,849		26,506	17,585									0.6	N	N		N	N		5.68	5.67	
1/27/2010	2010	1	9.49		N				5.81			8.0			N		16,849			17,585										N	N		N	N		5.81	5.68	
1/28/2010	2010	1	9.61	276	N	382	134	104	5.52			8.4		22,126		22,126	17,507		30,624	23,949									0.7	N	N		N	N		5.52	5.60	
1/29/2010	2010	1	8.58		N				6.04			8.7			N		17,507			23,949										N	N		N	N		6.04	5.60	
1/30/2010	2010	1	8.02		N				6.27			8.9	7.4		15,284	N	17,507			23,949	13,508									N	N	N	N	N	N	6.27	5.64	5.58
1/31/2010	2010	1	7.72	210	210	260	150	78	6.04			9.0	7.4	13,535	15,149	13,535	17,339		16,757	24,629	13,758								0.8	N	N	N	N	N	N	6.04	5.69	5.59
2/1/2010	2010	2	7.31		N				5.99			8.7	7.3		15,149	N	17,339			24,629	13,758									N	N	N	N	N	N	5.99	5.91	5.60
2/2/2010	2010	2	7.02	257	257	330	231	92	6.02			8.2	7.3	15,053	15,162	15,053	16,905	14,530	19,329	22,237	14,700								0.8	N	N	N	N	N	N	6.02	5.96	5.61
2/3/2010	2010	2	6.86		N				5.97			7.9	7.3		15,162	N	16,905	14,530		22,237	14,700									N	N	N	N	N	N	5.97	5.98	5.63
2/4/2010	2010	2	6.60	426	426	224	234	90	6.12			7.4	7.3	23,474	15,472	23,474	17,354	15,275	12,343	16,143	15,045								1.9	N	N	N	N	N	N	6.12	6.07	5.67
2/5/2010	2010	2	6.42		N				6.04			7.1	7.2		15,472	N	17,354	15,275		16,143	15,045									N	N	N	N	N	N	6.04	6.07	5.69
2/6/2010	2010	2	6.39		N				5.92			6.9	7.2		15,275	N	17,354	15,275		16,143	15,570									N	N	N	N	N	N	5.92	6.02	5.71
2/7/2010	2010	2	6.27	310	310	246	140	106	5.99	168.0	172	6.7	7.2	16,214	15,347	16,214	18,247	15,347	12,867	14,846	15,362	8,595			8,395		8,395		1.3		24,809	N		21,262	N	5.99	6.01	5.74
2/8/2010	2010	2	6.00		N				5.97			6.5	7.2		15,347	N	18,247	15,347		14,846	15,362									N	N	N	N	N	N	5.97	6.01	5.75
2/9/2010	2010	2	5.84	346	346	168	187	140	5.86	152.0	164	6.3	7.2	16,850	16,029	N	N	15,960	8,182	11,131	15,137	8,014	8,304		7,428		7,428		2.1	N	N	N		15,609	N	5.86	5.98	5.76
2/10/2010	2010	2	6.19		N				5.65			6.2	7.2		16,029	N	N	15,960		11,131	15,137		8,304							N	N	N	N	N	N	5.65	5.94	5.78
2/11/2010	2010	2	5.79	261	261	211	282	124	5.80	252.0	416	6.1	7.2	12,606	16,155	12,606	N	16,097	10,191	10,413	15,188	20,147	12,252		12,204		12,204	9,342	1.2		32,753	N	N	22,395	19,755	N	5.80	5.89	5.79
2/12/2010	2010	2	5.57		N				5.78			6.0	7.1		16,155	N	N	16,097		10,413	15,188		12,252					9,342		N	N	N	N		19,755	N	5.78	5.85	5.79
2/13/2010	2010	2	5.57		N				5.66			5.9	7.1		16,397	N	N	16,356		10,413	15,316		12,252					9,342		N	N	N	N		19,755	N	5.66	5.81	5.79
2/14/2010	2010	2	5.44	455	455	166	260	130	5.49	184.0	181	5.8	7.1	20,672	16,726	N	N	16,356	7,542	8,638	14,718	8,294	12,152		8,432		8,432	9,355	2.7	N	N	N		15,974	17,993	N	5.49	5.74	5.80
2/15/2010	2010	2	5.32		N				5.19			5.7	7.1		16,726	N	N	16,356		8,638	14,718		12,152					9,355		N	N	N	N		17,993	N	5.19	5.63	5.79
2/16/2010	2010	2	5.57	736	736	198	335	130	5.42			5.6	7.1	34,228	18,323	N	N	N	9,208	8,980	14,719		14,221						3.7	N	N	N	N	N	N	5.42	5.57	5.79
2/17/2010	2010	2	5.44		N				5.51			5.5	7.0		18,323	N	N	N		8,980	14,719		14,221							N	N	N	N	N	N	5.51	5.55	5.78
2/18/2010	2010	2	5.53	680	680	198	308	122	5.51			5.5	6.9	31,408	19,747	N	N	N	9,145	8,632	14,534								3.4	N	N	N	N	N	N	5.51	5.51	5.78
2/19/2010	2010	2	5.38		N				5.31			5.5	6.8		19,747	N	N	N		8,632	14,534									N	N	N	N	N	N	5.31	5.44	5.76
2/20/2010	2010	2	5.33		N				5.18			5.4	6.8		19,713	N	N	N		8,632	14,784									N	N	N	N	N	N	5.18	5.37	5.73
2/21/2010	2010	2	5.32	551	551	200	189	136	5.37			5.4	6.7	24,451	20,078	N	N	N	8,875	9,076	14,330								2.8	N	N	N	N	N	N	5.37	5.36	5.71
2/22/2010	2010	2	5.26		N				5.32			5.4	6.7		20,078	N	N	N		9,076	14,330									N	N	N	N	N	N	5.32	5.37	5.69
2/23/2010	2010	2	5.73	520	520	183	318	88	5.15			5.4	6.6	24,873	20,911	N	N	N	8,753	8,925	13,871								2.8	N	N	N	N	N	N	5.15	5.34	5.67
2/24/2010	2010	2	10.33		N				6.07			6.1	6.7		20,911	N	N	N		8,925	13,871									N	N	N	N	N	N	6.07	5.42	5.72
2/25/2010	2010	2	12.17	218	N	162	243	128	7.39			7.1	6.7	22,135	21,356	22,135	N	N	16,449	11,359	13,097								1.3	N	N	N	N	N	N	7.39	5.68	5.78
2/26/2010	2010	2	14.50		N				8.87			8.4	6.9		21,356	N	N	N		11,359	13,097									N	N	N	N	N	N	8.87	6.19	5.88
2/27/2010	2010	2	13.02		N				8.86			9.5	7.0		21,292	N	N	N		11,359	11,637									N	N	N	N	N	N	8.86	6.72	5.99
2/28/2010	2010	2	11.74	468	N	138	153	84	8.55			10.4	7.1	45,861	23,181	N	N	N	13,523	12,908	11,782								3.4	N	N	N	N	N	N	8.55	7.17	6.08
3/1/2010	2010	3	11.70		N				7.32			11.3	7.2		23,181	N	N	N		12,908	11,782									N	N	N	N	N	N	7.32	7.46	6.11
3/2/2010	2010	3	10.27	305	N	105	265	62	6.72			12.0	7.3	26,138	24,151	N	N	N	8,998	12,990	11,185								2.9	N	N	N	N	N	N	6.72	7.68	6.13
3/3/2010	2010	3	10.35		N				7.19			12.0	7.4		24,151	N	N	N		12,990	11,185									N	N	N	N	N	N	7.19	7.84	6.17
3/4/2010	2010	3	9.95	337	N	86	339	70	7.11			11.6	7.5	27,986	25,146	N	N	N	7,142	9,888	10,248								3.9	N	N	N	N	N	N	7.11	7.80	6.21
3/5/2010	2010	3	9.28		N				6.98			10.9	7.6		25,146	N	N	N		9,888	10,248									N	N	N	N	N	N	6.98	7.53	6.24
3/6/2010	2010	3	9.09		N				6.86			10.3	7.7		25,285	N	N	N		9,888	10,073									N	N	N	N	N	N	6.86	7.25	6.27
3/7/2010	2010	3	8.83	185	N	132	105	88	6.53			9.9	7.8	13,633	24,389	13,633	N	N	9,728	8,623	10,046								1.4	N	N	N	N	N	N	6.53	6.96	6.28
3/8/2010	2010	3	8.55		N				6.35			9.5	7.8		24,389	N	N	N		8,623	10,046									N	N	N	N	N	N	6.35	6.82	6.30
3/9/2010	2010	3	7.96	367	367	104	216	78	6.39			9.1	7.9	24,372	25,016	N	N	N	6,907	7,925	9,588								3.5	N	N	N	N	N	N	6.39	6.77	6.31
3/10/2010	2010	3	7.68		N				6.47			8.8	8.0		25,016	N	N	N		7,925	9,588									N	N	N	N	N	N	6.47	6.67	6.33
3/11/2010	2010	3	7.91	233	233	92	223	76	6.30			8.5	8.0	15,388	24,904	N	N	N	6,076	7,570	9,426								2.5	N	N	N	N	N	N	6.30	6.56	6.34
3/12/2010	2010	3	7.68		N				6.10			8.2	8.1		24,904	N	N	N		7,570	9,426									N	N	N	N	N	N	6.10	6.43	6.36
3/13/2010	2010	3	9.18		N				6.74			8.3	8.2		25,929	N	N	N		7,570	9,362									N	N	N	N	N	N	6.74	6.41	6.39
3/14/2010	2010	3	15.69	207	N	227	147	79	8.69			9.2	8.5	27,099	26,019	27,099	N	N	29,717	14,233	10,928								0.9	N	N	N	N	N	N	8.69	6.72	6.49
3/15/2010	2010	3	18.88		N				7.23			10.7	9.0		26,019	N	N	N		14,233	10,928									N	N	N	N	N	N	7.23	6.85	6.54
3/16/2010	2010	3	17.82	142	N	93	59	77	8.38			12.1	9.4	21,122	26,053	21,122	N	N	13,833	16,542	11,412								1.5	N	N	N	N	N	N	8.38	7.13	6.64
3/17/2010	2010	3	16.08		N				8.46			13.3	9.7		26,053	N	N	N		16,542	11,412									N	N	N	N	N	N	8.46	7.42	6.75
3/18/2010	2010	3	14.29	194	N	98	216	236	8.12			14.2	10.0	23,126	25,199	23,126	23,782	N	11,682	18,411	11,602								2.0	N	N	N	N	N	N	8.12	7.67	6.84
3/19/2010	2010	3	12.44		N				7.73			14.9	10.3		25,199	N	23,782	N		18,411	11,602									N	N	N	N	N	N	7.73	7.91	6.91
3/20/2010	2010	3	12.01		N				6.96			15.3	10.5		24,682	N	23,782	N		18,411	11,807									N	N	N	N	N	N	6.96	7.94	6.96
3/21/2010	2010	3	11.06	181	N	65	116	103	6.82			14.7	10.7	16,703	24,068	N	N	N	5,998	10,505	11,360								2.8	N	N	N	N	N	N	6.82	7.67	7.01
3/22/2010	2010	3	10.76		N				6.56			13.5	10.9		24,068	N	N	N		10,505	11,360									N	N	N	N	N	N	6.56	7.58	7.05
3/23/2010	2010	3	15.57	170	N	157	212	88	7.25			13.2	11.2	22,090	23,887	22,090	N	N	20,401	12,694	12,247								1.1	N	N	N	N	N	N	7.25	7.42	7.12
3/24/2010	2010	3	15.87		N				7.88			13.1	11.5		23,887	N	N	N		12,694	12,247									N	N	N	N	N	N	7.88	7.33	7.20
3/25/2010	2010	3	14.39	195	N	121	138	87	7.84			13.2	11.8	23,424	23,775	23,424	N	N	14,535	13,645	12,691								1.6	N	N	N	N	N	N	7.84	7.29	7.29
3/26/2010	2010	3	13.36		N				7.92			13.3	11.9		23,775	N	N	N		13,645	12,691									N	N	N	N	N	N	7.92	7.32	7.35
3/27/2010	2010	3	12.10		N				7.91			13.3	11.9		23,912	N	N	N		13,645	12,378									N	N	N	N	N	N	7.91	7.45	7.37
3/28/2010	2010	3	11.91	227	N	165	170	128	7.29			13.4	11.8	22,562	23,808	22,562	22,692	N	16,400	17,112	12,688								1.4	N	N	N	N	N	N	7.29	7.52	7.32
3/29/2010	2010	3	17.77		N				6.37			14.4	12.0		23,808	N	22,692	N		17,112	12,688									N	N	N	N	N	N	6.37	7.49	7.23
3/30/2010	2010	3		166	166	114	61	62	5.51			14.2	12.0	40,327	23,382	40,327	28,771	N	27,695	19,543	13,778								1.5	N	N	N	N	N	N	5.51	7.24	7.13
3/31/2010	2010	3			N				5.58			13.9	12.0		23,382	N	28,771	N		19,543	13,778									N	N	N	N	N	N	5.58	6.92	7.08
4/1/2010	2010	4	25.26	127	N	80	106	50	3.91			16.1	12.6	26,774	23,431	26,774	29,888	N	16,866	20,320	14,383								1.6	N	N	N	N	N	N	3.91	6.35	6.98
4/2/2010	2010	4	21.80		N				3.49			17.8	13.0		23,431	N	29,888	N		20,320	14,383									N	N	N	N	N	N	3.49	5.72	6.86
4/3/2010	2010	4	19.03		N				3.00			19.2	13.3		23,052	N	29,888	N		20,320	14,986									N	N	N	N	N	N	3.00	5.02	6.72
4/4/2010	2010	4	17.03	127	N	84	90	82	2.65			20.2	13.6	18,047	22,667	18,047	28,383	N	11,937	18,832	14,752								1.5	N	N	N	N	N	N	2.65	4.36	6.58
4/5/2010	2010	4	15.20		N				4.27			19.7	13.8		22,667	N	28,383	N		18,832	14,752									N	N	N	N	N	N	4.27	4.06	6.49
4/6/2010	2010	4	14.88	173	N	80	197	114	6.46			18.9	14.0	21,476	23,270	N	N	N	9,931	12,911	14,767								2.2	N	N	N	N	N	N	6.46	4.20	6.49
4/7/2010	2010	4	13.24		N				6.96			18.1	14.2		23,270	N	N	N		12,911	14,767									N	N	N	N	N	N	6.96	4.39	6.51
4/8/2010	2010	4	12.27	167	N	114	176	162	7.08			16.2	14.3	17,100	22,711	17,100	N	N	11,673	11,180	15,134								1.5	N	N	N	N	N	N	7.08	4.85	6.53
4/9/2010	2010	4	12.67		N				7.04			14.9	14.5		22,711	N	N	N		11,180	15,134									N	N	N	N	N	N	7.04	5.35	6.55
4/10/2010	2010	4	11.86		N				7.79			13.9	14.6		23,321	N	N	N		11,180	15,889									N	N	N	N	N	N	7.79	6.04	6.60
4/11/2010	2010	4	11.65	144	N	158	158	148	5.85			13.1	14.8	14,005	22,604	14,005	N	23,243	15,367	12,324	15,849								0.9	N	N	N	N	N	N	5.85	6.50	6.59
4/12/2010	2010	4	10.45		N				4.38			12.4	14.8		22,604	N	23,243			12,324	15,849									N	N	N	N	N	N	4.38	6.51	6.51
4/13/2010	2010	4	10.18	177	N	131	144	106	4.68			11.8	14.6	15,031	21,676	15,031	15,379	22,146	11,124	12,721	14,419								1.4	N	N	N	N	N	N	4.68	6.26	6.38
4/14/2010	2010	4	9.66		N				4.49			11.2	14.3		21,676	N	15,379	22,146		12,721	14,419									N	N	N	N	N	N	4.49	5.90	6.29
4/15/2010	2010	4	9.55	385	N	168	211	102	4.49	224.0	213	10.9	14.0	30,690	22,412	N	N		13,392	13,294	14,385	7,986		8,398		8,398			2.3	N	N	N		21,790	N	N	4.49	5.53	6.16
4/16/2010	2010	4	9.82		N				4.77			10.5	13.8		22,412	N	N			13,294	14,385									N	N	N	N	N	N	4.77	5.21	6.04
4/17/2010	2010	4	9.37		N				4.47			10.1	13.6		22,352	N	N			13,294	14,610									N	N	N	N	N	N	4.47	4.73	5.91
4/18/2010	2010	4	8.91	204	N	156	140	162	4.54			9.7	13.5	15,167	21,800	15,167	N	N	11,598	12,038	14,378								1.3	N	N	N	N	N	N	4.54	4.54	5.81
4/19/2010	2010	4	8.74		N				4.38			9.5	13.4		21,800	N	N	N		12,038	14,378									N	N	N	N	N	N	4.38	4.54	5.72

Date	Year	Month	Flow Effluent (MGD)	BOD RAW INF. (mg/l)		TSS RAW INF. (mg/l)	BOD PRIM. EFF. (mg/l)	TSS PRIM. EFF. (mg/l)	Plant Drain Flow (MGD)	TSS DRAIN (mg/l)	BOD Drain (mg/l)
4/20/2010	2010	4	7.48	201	201	131	338	148	5.20	600.0	665
4/21/2010	2010	4	8.19		N				4.75		
4/22/2010	2010	4	8.05	593	N	218	209	114	4.59	288.0	272
4/23/2010	2010	4	7.18		N				4.36		
4/24/2010	2010	4	7.45		N				4.54		
4/25/2010	2010	4	7.70	661	661	310	106	88	4.13	272.0	149
4/26/2010	2010	4	8.17		N				4.20		
4/27/2010	2010	4	7.62	517	517	155	252	92	4.52	584.0	507
4/28/2010	2010	4	7.10		N				4.29		
4/29/2010	2010	4	6.93	539	539	328	211	94	4.20	328.0	349
4/30/2010	2010	4	5.91		N				4.89		
5/1/2010	2010	5	6.78		N				3.77		
5/2/2010	2010	5	6.97	320	320	280	179	76	3.43	308.0	204
5/3/2010	2010	5	7.07		N				4.21		
5/4/2010	2010	5	6.72	600	600	192	308	130	5.07	212.0	212
5/5/2010	2010	5	6.58		N				6.21		
5/6/2010	2010	5	6.47	305	305	258	332	246	4.70	276.0	280
5/7/2010	2010	5	6.02		N				4.89		
5/8/2010	2010	5	6.78		N				4.67		
5/9/2010	2010	5	5.80	240	240	135	203	114	4.94		
5/10/2010	2010	5	6.66		N				5.22		
5/11/2010	2010	5	5.75	362	362	184	255	76	5.93		
5/12/2010	2010	5	5.97		N				5.45		
5/13/2010	2010	5	5.71	425	425	192	293	110	4.93		
5/14/2010	2010	5	5.74		N				4.82		
5/15/2010	2010	5	5.84		N				4.50		
5/16/2010	2010	5	5.40	461	461	664	176	26	4.55		
5/17/2010	2010	5	5.34		N				4.69		
5/18/2010	2010	5	5.87	491	491	260	635	120	4.79	328.0	
5/19/2010	2010	5	7.25		N				4.94		
5/20/2010	2010	5	6.13	395	395	308	364	186	5.07	348.0	453
5/21/2010	2010	5	5.88		N				5.00		
5/22/2010	2010	5	5.83		N				5.43		
5/23/2010	2010	5	5.88	308	308	228	244	92	5.65	192.0	174
5/24/2010	2010	5	5.75		N				4.63		
5/25/2010	2010	5	5.74	357	357	264	331	70	4.78	336.0	319
5/26/2010	2010	5	5.71		N				4.92		
5/27/2010	2010	5	5.64	371	371	468	269	88	5.04	400.0	229
5/28/2010	2010	5	5.29		N				4.84		
5/29/2010	2010	5	5.68		N				4.56		
5/30/2010	2010	5	5.15	200	200	561	161	76	4.40	516.0	319
5/31/2010	2010	5	5.16		N				4.39		
6/1/2010	2010	6	7.43	335	335	364	190	150	4.51	412.0	340
6/2/2010	2010	6	6.31		N				4.26		
6/3/2010	2010	6	6.31	277	277	204	324	162	4.11	650.0	1,329
6/4/2010	2010	6	5.94		N				4.09		
6/5/2010	2010	6	6.45		N				3.85		
6/6/2010	2010	6	6.31	140	140	134	140	66	4.17	608.0	417
6/7/2010	2010	6	5.60		N				4.56		
6/8/2010	2010	6	5.51	320	320	184	206	80	4.67	496.0	454
6/9/2010	2010	6	5.75		N				4.59		
6/10/2010	2010	6	5.94	463	463	268	166	98	4.53	156.0	266
6/11/2010	2010	6	5.79		N				4.57		
6/12/2010	2010	6	6.07		N				4.52		
6/13/2010	2010	6	6.74	179	179	110	205	70	4.61	373.0	760
6/14/2010	2010	6	6.17		N				4.49		
6/15/2010	2010	6	5.90	888	888	215	443	94	4.63	188.0	473
6/16/2010	2010	6	5.75		N				4.31		
6/17/2010	2010	6	5.93	602	602	248	319	98	4.50	296.0	390
6/18/2010	2010	6	5.56		N				4.39		
6/19/2010	2010	6	5.56		N				4.33		
6/20/2010	2010	6	5.59	342	342	427	222	88	3.79	252.0	193
6/21/2010	2010	6	5.35		N				4.12		
6/22/2010	2010	6	5.36	302	302	278	262	94	4.17	312.0	427
6/23/2010	2010	6	5.55		N				4.47		
6/24/2010	2010	6	5.44	286	286	222	238	78	4.24	308.0	346
6/25/2010	2010	6	4.99		N				4.51		
6/26/2010	2010	6	5.04		N				4.51		
6/27/2010	2010	6	5.10	333	333	270	129	87	4.18	243.0	291
6/28/2010	2010	6	5.26		N				4.26		
6/29/2010	2010	6	5.17	380	380	257	276	80	4.24	524.0	618
6/30/2010	2010	6	4.73		N				4.47		
7/1/2010	2010	7	4.71	448	448	195	523	80	4.25	432.0	953
7/2/2010	2010	7	4.57		N				4.16		
7/3/2010	2010	7	4.53		N				3.99		
7/4/2010	2010	7	4.54	199	199	238	151	36	3.83	127.0	346
7/5/2010	2010	7	4.59		N				3.68		
7/6/2010	2010	7	4.78	350	350	190	212	54	4.40	1,128.0	143
7/7/2010	2010	7	4.81		N				3.88		
7/8/2010	2010	7	4.86	500	500	244	296	56	4.21	956.0	437
7/9/2010	2010	7	4.74		N				3.91		
7/10/2010	2010	7	5.10		N				3.99		
7/11/2010	2010	7	4.55	262	262	156	158	124	3.93		396
7/12/2010	2010	7	4.64		N				3.67		
7/13/2010	2010	7	4.94	231	231	98	271	164	3.40	1,872.0	388
7/14/2010	2010	7	5.47		N				4.05		
7/15/2010	2010	7	4.84	273	273	149	236	78	3.46	1,764.0	802
7/16/2010	2010	7	4.87		N				3.79		
7/17/2010	2010	7	4.70		N				3.63		
7/18/2010	2010	7	5.20	315	315	318	201		2.85	4,400.0	1,215
7/19/2010	2010	7	5.45		N				2.96		
7/20/2010	2010	7	4.65	267	267	334	299	76	4.93	384.0	225
7/21/2010	2010	7	4.83		N				3.40		
7/22/2010	2010	7	4.60	599	599	350	247	120	3.44	240.0	376
7/23/2010	2010	7	5.35		N				4.65		
7/24/2010	2010	7	5.39		N				3.58		
7/25/2010	2010	7	4.93	300	300	348	142	96	3.29	348.0	275
7/26/2010	2010	7	4.70		N				3.81		
7/27/2010	2010	7	4.52	381	381	220	342	70	3.26	216.0	295
7/28/2010	2010	7	4.66		N				3.29		
7/29/2010	2010	7	4.80	481	481	272	294	78	3.17	436.0	375
7/30/2010	2010	7	4.21		N				3.66		
7/31/2010	2010	7	4.32		N				3.75		
8/1/2010	2010	8	4.34	264	264	127	179	76	3.53	312.0	351
8/2/2010	2010	8	4.45		N				3.36		
8/3/2010	2010	8	4.48	411	411	130	251	98	3.46	340.0	308
8/4/2010	2010	8	4.94		N				5.13		
8/5/2010	2010	8	5.59	690	690	250	264	88	4.65	324.0	258
8/6/2010	2010	8	4.62		N				4.05		

Date	7dFlow, MGD	30dFlow, MGD	BOD Raw (lbs/d)	30dBODRaw Unclean (lbs/d)	BOD Raw Cleaned (lbs/d)	7dBOD Raw (lbs/d)	30dBODRaw (lbs/d)	TSS Raw (lbs/d)	7dTSS Raw (lbs/d)	30dTSSRaw (lbs/d)	BOD Recycle (lbs/d)	7dBOD Recycle (lbs/d)	30dBODRecycle (lbs/d)	TSS Recycle (lbs/d)	30dTSSRecycle unclean (lbs/d)	TSS Recycle Cleaned (lbs/d)	7dTSS Recycle (lbs/d)	30dTSSRecycle (lbs/d)
4/20/2010	9.1	13.2	12,549	21,480	12,549	N	20,643	8,179	11,056	14,546	28,884	18,435		26,061		26,061		
4/21/2010	8.9	13.1		21,480	N	N	20,643		11,056	14,546		18,435						
4/22/2010	8.7	12.9	39,813	22,843	N	N	N	14,636	11,471	14,102	10,418	19,651		11,031		11,031		
4/23/2010	8.3	12.6		22,843	N	N	N		11,471	14,102		19,651						
4/24/2010	8.0	12.3		22,795	N	N	N		11,471	14,066		19,651						
4/25/2010	7.8	12.1	42,461	24,308	N	N	N	19,914	14,243	14,516	5,132	14,811		9,369		9,369	15,487	
4/26/2010	7.7	12.0		24,308	N	N	N		14,243	14,516		14,811					15,487	
4/27/2010	7.8	11.8	32,863	25,100	N	N	N	9,852	14,801	14,013	19,128	11,559		22,033		22,033	14,144	
4/28/2010	7.6	11.4		25,100	N	N	N		14,801	14,013		11,559					14,144	
4/29/2010	7.5	11.3	31,187	24,397	31,187	N	N	18,978	16,248	13,342	12,225	12,162	13,962	11,490		11,490	14,297	
4/30/2010	7.3	11.1		24,397	N	N	N		16,248	13,342		12,162	13,962				14,297	
5/1/2010	7.2	10.5		24,199	N	N	N		16,248	13,048		12,162	13,962				14,297	
5/2/2010	7.1	10.0	18,614	23,769	18,614	N	N	16,287	15,039	13,298	5,845	12,399	12,803	8,825		8,825	14,116	
5/3/2010	6.9	9.6		23,769	N	N	N		15,039	13,298		12,399	12,803				14,116	
5/4/2010	6.8	9.3	33,650	24,970	N	N	N	10,768	15,344	13,208	8,966	9,012	12,323	8,966		8,966	9,760	
5/5/2010	6.7	9.0		24,970	N	N	N		15,344	13,208		9,012	12,323				9,760	
5/6/2010	6.6	8.7	16,479	24,585	16,479	N	N	13,940	13,665	13,516	10,986	8,599	12,175	10,829		10,829	9,540	
5/7/2010	6.7	8.5		24,585	N	N	N		13,665	13,516		8,599	12,175				9,540	
5/8/2010	6.7	8.3		25,209	N	N	N		13,665	13,670		8,599	12,175				9,540	
5/9/2010	6.5	8.0	11,625	24,164	11,625	N	N	6,539	10,416	13,121		9,976	12,175					
5/10/2010	6.4	7.9		24,164	N	N	N		10,416	13,121		9,976	12,175					
5/11/2010	6.3	7.7	17,378	24,424	17,378	15,161	N	8,833	9,771	12,619			12,175					
5/12/2010	6.2	7.5		24,424	N	15,161	N		9,771	12,619			12,175					
5/13/2010	6.1	7.4	20,266	24,826	N	N	N	9,156	8,176	12,467			12,175					
5/14/2010	6.1	7.2		24,826	N	N	N		8,176	12,467			12,175					
5/15/2010	5.9	7.1		24,338	N	N	N		8,176	12,390			12,698					
5/16/2010	5.9	7.0	20,761	24,063	20,761	N	N	29,903	15,964	13,737			12,698					
5/17/2010	5.7	6.8		24,063	N	N	N		15,964	13,737			12,698					
5/18/2010	5.7	6.7	24,034	24,745	24,034	N	N	12,727	17,262	13,824			12,698	13,099		13,099		
5/19/2010	5.9	6.7		24,745	N	N	N		17,262	13,824			12,698					
5/20/2010	5.9	6.6	20,212	25,334	20,212	21,669	N	15,760	19,463	14,407	19,177		11,485	14,732		14,732		
5/21/2010	6.0	6.6		25,334	N	21,669	N		19,463	14,407			11,485					
5/22/2010	6.0	6.5		24,127	N	21,669	N		19,463	14,388			11,637					
5/23/2010	6.0	6.4	15,102	23,433	15,102	19,783	N	11,180	13,222	14,141	8,203	13,690	11,208	9,051		9,051	12,294	
5/24/2010	6.1	6.4		23,433	N	19,783	N		13,222	14,141		13,690	11,208				12,294	
5/25/2010	6.1	6.3	17,095	21,482	17,095	17,470	N	12,641	13,194	13,582	12,723	13,368	12,157	13,401		13,401	12,395	
5/26/2010	5.8	6.2		21,482	N	17,470	N		13,194	13,582		13,368	12,157				12,395	
5/27/2010	5.8	6.2	17,461	20,297	17,461	16,553	19,086	22,027	15,283	14,518	9,624	10,183	10,969	16,810		16,810	13,087	
5/28/2010	5.7	6.1		20,297	N	16,553	19,086		15,283	14,518		10,183	10,969				13,087	
5/29/2010	5.7	6.1		19,390	N	16,553	N		15,283	14,147		10,183	10,789				13,087	
5/30/2010	5.6	6.0	8,599	18,560	8,599	14,385	17,033	24,120	19,596	14,914	11,702	11,349	10,903	18,928		18,928	16,380	
5/31/2010	5.5	6.0		18,560	N	14,385	17,033		19,596	14,914		11,349	10,903				16,380	
6/1/2010	5.7	6.0	20,774	18,726	20,774	15,611	17,229	22,572	22,906	15,397	12,791	11,372	11,771	15,500		15,500	17,079	
6/2/2010	5.8	6.0		18,726	N	15,611	17,229		22,906	15,397		11,372	11,771				17,079	
6/3/2010	5.9	6.0	14,587	17,260	14,587	14,653	17,009	10,743	19,145	15,395	45,598	23,363	16,350	22,301		22,301	18,910	
6/4/2010	6.0	5.9		17,260	N	14,653	17,009		19,145	15,395		23,363	16,350				18,910	
6/5/2010	6.1	5.9		17,325	N	14,653	17,057		19,145	15,517		23,363	17,117				18,910	
6/6/2010	6.3	6.0	7,372	16,559	7,372	14,244	16,250	7,056	13,457	14,866	14,527	24,305	16,793	21,181		21,181	19,661	
6/7/2010	6.3	5.9		16,559	N	14,244	16,250		13,457	14,866		24,305	16,793				19,661	
6/8/2010	6.1	5.9	14,721	16,797	14,721	12,227	16,508	8,465	8,754	15,014	17,701	25,942	16,894	19,339		19,339	20,940	
6/9/2010	6.0	5.9		16,797	N	12,227	16,508		8,754	15,014		25,942	16,894				20,940	
6/10/2010	5.9	5.9	22,938	17,225	22,938	15,010	16,971	13,277	9,599	15,356	10,056	14,095	16,210	5,898	15,476	5,898	15,473	15,476
6/11/2010	5.9	5.9		17,225	N	15,010	16,971		9,599	15,356		14,095	16,210		15,476		15,473	15,476
6/12/2010	5.9	5.9		16,971	N	15,010	16,971		9,599	15,873		14,095	16,210		15,476		15,473	15,476
6/13/2010	5.9	5.9	10,074	16,441	10,074	15,911	16,441	6,191	9,311	15,128	29,233	18,997	17,394	14,347	15,382	14,347	13,195	15,382
6/14/2010	6.0	5.9		16,441	N	15,911	16,441		9,311	15,128		18,997	17,394		15,382		13,195	15,382
6/15/2010	6.1	6.0	43,707	18,206	N	N	16,081	10,582	10,017	13,642	18,270	19,187	17,467	7,262	14,758	7,262	9,169	14,758
6/16/2010	6.1	6.0		18,206	N	N	16,081		10,017	13,642		19,187	17,467		14,758		9,169	14,758
6/17/2010	6.0	6.0	29,790	18,649	N	N	15,358	12,272	9,682	13,607	14,651	20,718	17,251	11,120	14,605	11,120	10,910	14,605
6/18/2010	6.0	5.9		18,649	N	N	15,358		9,682	13,607		20,718	17,251		14,605		10,910	14,605
6/19/2010	5.9	5.9		18,518	N	N	N		9,682	13,427		20,718	17,090		14,595		10,910	14,595
6/20/2010	5.8	5.9	15,948	18,321	15,948	N	14,970	19,911	14,255	13,926	6,097	13,006	16,244	7,961	14,085	7,961	8,781	14,085
6/21/2010	5.7	5.9		18,321	N	N	14,970		14,255	13,926		13,006	16,244		14,085		8,781	14,085
6/22/2010	5.6	5.8	13,516	18,199	13,516	N	14,826	12,441	14,875	14,023	14,854	11,868	16,756	10,853	14,223	10,853	9,978	14,223
6/23/2010	5.6	5.8		18,199	N	N	14,826		14,875	14,023		11,868	16,756		14,223		9,978	14,223
6/24/2010	5.5	5.8	12,992	17,883	12,992	14,152	14,453	10,084	14,146	13,826	12,257	11,069	16,720	10,911	14,032	10,911	9,908	14,032
6/25/2010	5.4	5.8		17,883	N	14,152	14,453		14,146	13,826		11,069	16,720		14,032		9,908	14,032
6/26/2010	5.3	5.8		17,918	N	14,152	N		14,146	13,143		11,069	17,312		13,800		9,908	13,800
6/27/2010	5.3	5.8	14,167	17,630	14,167	13,558	14,153	11,487	11,338	13,016	10,162	12,424	16,762	8,485	13,391	8,485	10,083	13,391
6/28/2010	5.2	5.8		17,630	N	13,558	14,153		11,338	13,016		12,424	16,762		13,391		10,083	13,391
6/29/2010	5.2	5.8	16,382	18,228	16,382	14,514	14,861	11,080	10,884	12,012	21,864	14,761	17,543	18,539	13,361	18,539	12,645	13,361
6/30/2010	5.1	5.8		18,228	N	14,514	14,861		10,884	12,012		14,761	17,543		13,361		12,645	13,361
7/1/2010	5.0	5.7	17,619	17,986	N	N	N	7,669	10,079	10,866	33,836	21,954	19,162	15,338	13,349	15,338	14,121	13,349
7/2/2010	4.9	5.6		17,986	N	N	N		10,079	10,866		21,954	19,162		13,349		14,121	13,349
7/3/2010	4.9	5.5		18,269	N	N	N		10,079	10,876		21,954	16,959		12,603		14,121	12,603
7/4/2010	4.8	5.5	7,541	17,444	7,541	N	N	9,018	9,256	10,733	11,062	22,254	16,505	4,060	11,946	4,060	12,646	11,946
7/5/2010	4.7	5.4		17,444	N	N	N		9,256	10,733		22,254	16,505		11,946		12,646	11,946
7/6/2010	4.6	5.4	13,964	17,951	13,964	N	N	7,581	8,089	10,774	5,256	16,718	15,792	41,461	13,506			11,176
7/7/2010	4.6	5.4		17,951	N	N	N		8,089	10,774		16,718	15,792		13,506			11,176
7/8/2010	4.7	5.3	20,273	18,378	N	N	N	9,893	8,831	10,884	15,338	10,552	15,611	33,554	14,599	33,554		12,361
7/9/2010	4.7	5.3		18,378	N	N	N		8,831	10,884		10,552	15,611		14,599			12,361
7/10/2010	4.8	5.3		17,998	N	N	N		8,831	10,684		10,552	16,073		15,324			12,948
7/11/2010	4.8	5.2	9,939	17,378	9,939	N	N	5,918	7,797	10,318	13,001	11,198	15,837		15,324			12,948
7/12/2010	4.8	5.2		17,378	N	N	N		7,797	10,318		11,198	15,837		15,324			12,948
7/13/2010	4.8	5.1	9,526	17,336	N	N	N	4,041	6,618	10,152	10,997	13,112	14,434	53,058	18,550			
7/14/2010	4.9	5.1		17,336	N	N	N		6,618	10,152		13,112	14,434		18,550			
7/15/2010	4.9	5.1	11,020	14,821	11,020	N	N	6,015	5,325	9,801	23,148	15,716	14,809	50,915	22,188			
7/16/2010	4.9	5.0		14,821	N	N	N		5,325	9,801		15,716	14,809		22,188			
7/17/2010	4.9	5.0		13,574	N	N	N		5,325	9,595		15,716	14,823		23,194			
7/18/2010	5.0	5.0	13,669	13,581	13,669	N	N	13,799	7,952	9,918	28,912	21,019	15,906	104,704	29,987			
7/19/2010	5.1	5.0		13,581	N	N	N		7,952	9,918		21,019	15,906		29,987			
7/20/2010	5.0	5.0	10,360	13,151	10,360	11,683	N	12,960	10,925	9,384	9,259	20,440	16,150	15,802	30,640	15,802		
7/21/2010	4.9	4.9		13,151	N	11,683	N		10,925	9,384		20,440	16,150		30,640			
7/22/2010	4.9	4.9	22,980	13,879	22,980	15,670	N	13,428	13,395	9,459	10,797	16,323	15,838	6,892	30,310	6,892		
7/23/2010	5.0	4.9		13,879	N	15,670	N		13,395	9,459		16,323	15,838		30,310			
7/24/2010	5.1	4.9		13,953	N	15,670	N		13,395	9,407		16,323	16,136		32,074			
7/25/2010	5.0	4.9	12,351	13,830	12,351	15,230	N	14,327	13,572	9,786	7,559	9,205	15,476	9,566	30,198	9,566	10,753	
7/26/2010	4.9	4.9		13,830	N	15,230	N		13,572	9,786		9,205	15,476		30,198		10,753	
7/27/2010	4.9	4.9	14,376	13,846	14,376	16,569	N	8,301	12,019	9,541	8,030	8,796	15,312	5,880	29,981	5,880	7,446	
7/28/2010	4.9	4.8		13,846	N	16,569	N		12,019	9,541		8,796	15,312		29,981		7,446	
7/29/2010	4.9	4.8	19,265	14,068	19,265	15,331	N	10,894	11,174	9,526	9,907	8,499	14,393	11,518	29,396	11,518	8,988	
7/30/2010	4.7	4.8		14,068	N	15,331	N		11,174	9,526		8,499	14,393		29,396		8,988	
7/31/2010	4.6	4.8		13,772	N	15,331	N		11,174	9,681		8,499	12,772		30,674		8,988	
8/1/2010	4.5	4.8	9,571	13,449	N	N	N	4,604	7,933	9,291	10,343	9,427	12,585	9,194	28,884	9,194	8,864	
8/2/2010	4.5	4.8		13,449	N	N	N		7,933	9,291		9,427	12,585		28,884		8,864	
8/3/2010	4.5	4.8	15,350	14,050	N	N	N	4,855	6,785	8,970	8,897	9,715	12,419	9,821	29,364	9,821	10,178	
8/4/2010	4.5	4.8		14,050	N	N	N		6,785	8,970		9,715	12,419		29,364		10,178	
8/5/2010	4.6	4.8	32,208	15,453	N	N	N	11,669	7,043	9,285	10,015	9,752	12,785	12,577	26,957	12,577	10,531	
8/6/2010	4.7	4.8		15,453	N	N	N		7,043	9,285		9,752	12,785		26,957		10,531	

Date	BOD/TSS	BOD Cleaned R&R (lbs/d)	7dBOD Cleaned R&R (lbs/d)	30dBOD Cleaned R&R (lbs/d)	TSS Cleaned R&R (lbs/d)	7dTSS Cleaned R&R (lbs/d)	30dTSS Cleaned R&R (lbs/d)	Recycles Flow, MGD	7d Recycles Flow, MGD	30d Recycles Flow, MGD
4/20/2010	1.5	41,433	N	N	34,240	N	N	5.20	4.62	5.67
4/21/2010		N	N	N	N	N	N	4.75	4.66	5.61
4/22/2010	2.7	N	N	N	25,667	N	N	4.59	4.67	5.52
4/23/2010		N	N	N	N	N	N	4.36	4.61	5.40
4/24/2010		N	N	N	N	N	N	4.54	4.62	5.29
4/25/2010	2.1	N	N	N	29,282	29,730	N	4.13	4.56	5.16
4/26/2010		N	N	N	N	29,730	N	4.20	4.54	5.04
4/27/2010	3.3	N	N	N	31,885	28,945	N	4.52	4.44	4.95
4/28/2010		N	N	N	N	28,945	N	4.29	4.37	4.88
4/29/2010	1.6	43,412	N	N	30,468	30,545	N	4.20	4.32	4.84
4/30/2010		N	N	N	N	30,545	N	4.89	4.39	4.81
5/1/2010		N	N	N	N	30,545	N	3.77	4.28	4.81
5/2/2010	1.1	24,459	N	N	25,112	29,155	N	3.43	4.19	4.81
5/3/2010		N	N	N	N	29,155	N	4.21	4.19	4.85
5/4/2010	3.1	N	N	N	19,734	25,105	N	5.07	4.27	4.93
5/5/2010		N	N	N	N	25,105	N	6.21	4.54	4.99
5/6/2010	1.2	27,465	N	N	24,769	23,205	N	4.70	4.61	4.93
5/7/2010		N	N	N	N	23,205	N	4.89	4.61	4.86
5/8/2010		N	N	N	N	23,205	N	4.67	4.74	4.78
5/9/2010	1.8	N	N	N	N	N	N	4.94	4.96	4.71
5/10/2010		N	N	N	N	N	N	5.22	5.10	4.63
5/11/2010	2.0	N	N	N	N	N	N	5.93	5.22	4.63
5/12/2010		N	N	N	N	N	N	5.45	5.12	4.67
5/13/2010	2.2	N	N	N	N	N	N	4.93	5.15	4.67
5/14/2010		N	N	N	N	N	N	4.82	5.14	4.69
5/15/2010		N	N	N	N	N	N	4.50	5.12	4.69
5/16/2010	0.7	N	N	N	N	N	N	4.55	5.06	4.68
5/17/2010		N	N	N	N	N	N	4.69	4.98	4.69
5/18/2010	1.9	N	N	N	25,826	N	N	4.79	4.82	4.69
5/19/2010		N	N	N	N	N	N	4.94	4.75	4.71
5/20/2010	1.3	39,389	N	N	30,492	N	N	5.07	4.77	4.71
5/21/2010		N	N	N	N	N	N	5.00	4.79	4.72
5/22/2010		N	N	N	N	N	N	5.43	4.92	4.75
5/23/2010	1.4	23,305	N	N	20,231	25,516	N	5.65	5.08	4.79
5/24/2010		N	N	N	N	25,516	N	4.63	5.07	4.79
5/25/2010	1.4	29,818	30,837	N	26,042	25,589	N	4.78	5.07	4.81
5/26/2010		N	30,837	N	N	25,589	N	4.92	5.07	4.84
5/27/2010	0.8	27,085	26,736	N	38,837	28,370	N	5.04	5.06	4.85
5/28/2010		N	26,736	N	N	28,370	N	4.84	5.04	4.87
5/29/2010		N	26,736	N	N	28,370	N	4.56	4.92	4.88
5/30/2010	0.4	20,301	25,734	N	43,049	35,976	N	4.40	4.74	4.87
5/31/2010		N	25,734	N	N	35,976	N	4.39	4.70	4.89
6/1/2010	0.9	33,565	26,984	N	38,072	39,986	N	4.51	4.66	4.92
6/2/2010		N	26,984	N	N	39,986	N	4.26	4.57	4.93
6/3/2010	1.4	60,185	38,017	N	33,044	38,055	N	4.11	4.44	4.89
6/4/2010		N	38,017	N	N	38,055	N	4.09	4.33	4.82
6/5/2010		N	38,017	N	N	38,055	N	3.85	4.23	4.80
6/6/2010	1.0	21,899	38,550	N	28,237	33,118	N	4.17	4.20	4.77
6/7/2010		N	38,550	N	N	33,118	N	4.56	4.22	4.77
6/8/2010	1.7	32,422	38,169	N	27,803	29,695	N	4.67	4.24	4.76
6/9/2010		N	38,169	N	N	29,695	N	4.59	4.29	4.74
6/10/2010	1.7	32,994	29,105	N	19,175	25,072	30,073	4.53	4.35	4.69
6/11/2010		N	29,105	N	N	25,072	30,073	4.57	4.42	4.66
6/12/2010		N	29,105	N	N	25,072	30,073	4.52	4.52	4.65
6/13/2010	1.6	39,307	34,908	32,752	20,538	22,505	29,279	4.61	4.58	4.64
6/14/2010		N	34,908	32,752	N	22,505	29,279	4.49	4.57	4.64
6/15/2010	4.1	N	N	32,752	17,844	19,186	28,399	4.63	4.56	4.64
6/16/2010		N	N	32,752	N	19,186	28,399	4.31	4.52	4.63
6/17/2010	2.4	N	N	32,752	23,392	20,591	28,212	4.50	4.52	4.62
6/18/2010		N	N	32,752	N	20,591	28,212	4.39	4.49	4.60
6/19/2010		N	N	N	N	20,591	28,022	4.33	4.47	4.58
6/20/2010	0.8	22,045	N	31,175	27,873	23,036	28,011	3.79	4.35	4.54
6/21/2010		N	N	31,175	N	23,036	28,011	4.12	4.30	4.49
6/22/2010	1.1	28,369	N	31,635	23,295	24,853	28,246	4.17	4.23	4.44
6/23/2010		N	N	31,635	N	24,853	28,246	4.47	4.25	4.44
6/24/2010	1.3	25,248	25,221	31,220	20,995	24,054	27,858	4.24	4.22	4.42
6/25/2010		N	25,221	31,220	N	24,054	27,858	4.51	4.23	4.41
6/26/2010		N	25,221	N	N	24,054	26,943	4.51	4.26	4.39
6/27/2010	1.2	24,329	25,982	30,970	19,972	21,421	26,407	4.18	4.31	4.37
6/28/2010		N	25,982	30,970	N	21,421	26,407	4.26	4.33	4.36
6/29/2010	1.5	38,246	29,275	32,601	29,618	23,529	25,374	4.24	4.34	4.35
6/30/2010		N	29,275	32,601	N	23,529	25,374	4.47	4.35	4.36
7/1/2010	2.3	N	N	N	23,007	24,199	24,215	4.25	4.35	4.35
7/2/2010		N	N	N	N	24,199	24,215	4.16	4.30	4.34
7/3/2010		N	N	N	N	24,199	23,479	3.99	4.22	4.34
7/4/2010	0.8	18,602	N	N	13,079	21,901	22,679	3.83	4.17	4.33
7/5/2010		N	N	N	N	21,901	22,679	3.68	4.09	4.33
7/6/2010	1.8	19,220	N	N	N	N	22,216	4.40	4.11	4.33
7/7/2010		N	N	N	N	N	22,216	3.88	4.03	4.31
7/8/2010	2.0	N	N	N	43,448	N	23,520	4.21	4.02	4.29
7/9/2010		N	N	N	N	N	23,520	3.91	3.99	4.27
7/10/2010		N	N	N	N	N	23,915	3.99	3.99	4.25
7/11/2010	1.7	22,940	N	N	N	N	23,915	3.93	4.00	4.23
7/12/2010		N	N	N	N	N	23,915	3.67	4.00	4.20
7/13/2010	2.4	N	N	N	N	N	N	3.40	3.86	4.16
7/14/2010		N	N	N	N	N	N	4.05	3.88	4.15
7/15/2010	1.8	34,169	N	N	N	N	N	3.46	3.77	4.11
7/16/2010		N	N	N	N	N	N	3.79	3.76	4.09
7/17/2010		N	N	N	N	N	N	3.63	3.70	4.06
7/18/2010	1.0	42,582	N	N	N	N	N	2.85	3.55	4.01
7/19/2010		N	N	N	N	N	N	2.96	3.45	3.97
7/20/2010	0.8	19,619	32,123	N	28,762	N	N	4.93	3.67	4.01
7/21/2010		N	32,123	N	N	N	N	3.40	3.57	3.98
7/22/2010	1.7	33,778	31,993	N	20,319	N	N	3.44	3.57	3.96
7/23/2010		N	31,993	N	N	N	N	4.65	3.70	3.96
7/24/2010		N	31,993	N	N	N	N	3.58	3.69	3.94
7/25/2010	0.9	19,911	24,436	N	23,893	24,325	N	3.29	3.75	3.90
7/26/2010		N	24,436	N	N	24,325	N	3.81	3.87	3.88
7/27/2010	1.7	22,406	25,365	N	14,181	19,465	N	3.26	3.63	3.85
7/28/2010		N	25,365	N	N	19,465	N	3.29	3.62	3.81
7/29/2010	1.8	29,172	23,830	N	22,413	20,162	N	3.17	3.58	3.78
7/30/2010		N	23,830	N	N	20,162	N	3.66	3.44	3.75
7/31/2010		N	23,830	N	N	20,162	N	3.75	3.46	3.73
8/1/2010	2.1	N	N	N	13,798	16,797	N	3.53	3.50	3.71
8/2/2010		N	N	N	N	16,797	N	3.36	3.43	3.69
8/3/2010	3.2	N	N	N	14,676	16,962	N	3.46	3.46	3.68
8/4/2010		N	N	N	N	16,962	N	5.13	3.72	3.73
8/5/2010	2.8	N	N	N	24,247	17,574	N	4.65	3.93	3.74
8/6/2010		N	N	N	N	17,574	N	4.05	3.99	3.74

Date	Year	Month	Flow Effluent (MGD)	BOD RAW INF. (mg/l)		TSS RAW INF. (mg/l)	BOD PRIM. EFF. (mg/l)	TSS PRIM. EFF. (mg/l)	Plant Drain Flow (MGD)	TSS DRAIN (mg/l)	BOD Drain (mg/l)	7dFlow, MGD	30dFlow, MGD	BOD Raw (lbs/d)	30dBODRaw Unclean (lbs/d)	BOD Raw Cleaned (lbs/d)	7dBOD Raw (lbs/d)	30dBODRaw (lbs/d)	TSS Raw (lbs/d)	7dTSS Raw (lbs/d)	30dTSSRaw (lbs/d)	BOD Recycle (lbs/d)	7dBOD Recycle (lbs/d)	30dBODRecycle (lbs/d)	TSS Recycle (lbs/d)	30dTSSRecycle unclean (lbs/d)	TSS Recycle Cleaned (lbs/d)	7dTSS Recycle (lbs/d)	30dTSSRecycle (lbs/d)	BOD/TSS	BOD Cleaned R&R (lbs/d)	7dBOD Cleaned R&R (lbs/d)	30dBOD Cleaned R&R (lbs/d)	TSS Cleaned R&R (lbs/d)	7dTSS Cleaned R&R (lbs/d)	30dTSS Cleaned R&R (lbs/d)	Recycles Flow, MGD	7d Recycles Flow, MGD	30d Recycles Flow, MGD
8/7/2010	2010	8	4.31		N				3.67			4.7	4.8		15,051	N	N	N		7,043	9,234		9,752	12,572		26,357		10,531			N	N	N	N	17,574	N	3.67	3.98	3.72
8/8/2010	2010	8	4.36	208	208	140	231	98	3.39	800.0	502	4.7	4.8	7,567	14,476	7,567	N	N	5,093	7,206	8,916	14,209	11,040	12,698	22,643	26,048	22,643	15,014		1.5	21,775	N	N	27,736	22,220	N	3.39	3.96	3.71
8/9/2010	2010	8	4.60		N				2.86			4.7	4.8		14,476	N	N	N		7,206	8,916		11,040	12,698		26,048		15,014			N	N	N	N	22,220	N	2.86	3.89	3.67
8/10/2010	2010	8	4.81	340	340	180	226	110	2.68	624.0	403	4.7	4.8	13,647	14,761	13,647	N	N	7,225	7,996	9,016	9,001	11,075	12,390	13,937	25,116	13,937	16,386		1.9	22,648	N	N	21,162	24,382	N	2.68	3.78	3.63
8/11/2010	2010	8	4.40		N				2.93			4.7	4.8		14,761	N	N	N		7,996	9,016		11,075	12,390		25,116		16,386			N	N	N	N	24,382	N	2.93	3.46	3.60
8/12/2010	2010	8	4.50	863	863	186	371	100	2.91	336.0	438	4.5	4.8	32,389	16,519	N	N	N	6,981	6,433	9,242	10,653	11,287	12,364	8,172	21,663	8,172	14,917	11,455	4.6	N	N	N	15,153	21,350	20,576	2.91	3.21	3.59
8/13/2010	2010	8	4.15		N				3.14			4.4	4.7		16,519	N	N	N		6,433	9,242		11,287	12,364		21,663		14,917	11,455		N	N	N	N	21,350	20,576	3.14	3.08	3.56
8/14/2010	2010	8	4.13		N				2.98			4.4	4.7		16,978	N	N	N		6,433	9,511		11,287	11,465		19,226		14,917	11,455		N	N	N	N	21,350	20,576	2.98	2.98	3.54
8/15/2010	2010	8	4.36	365	365	190	179	118	2.94	896.0	307	4.4	4.7	13,274	16,693	13,274	N	N	6,910	7,038	9,311	7,542	9,065	11,163	22,012	19,440	22,012	14,707	12,335	1.9	20,816	N	N	28,921	21,745	21,272	2.94	2.92	3.51
8/16/2010	2010	8	4.88		N				2.94			4.5	4.7		16,693	N	N	N		7,038	9,311		9,065	11,163		19,440		14,707	12,335		N	N	N	N	21,745	21,272	2.94	2.93	3.49
8/17/2010	2010	8	4.85	702	702	234	310	48	3.90	504.0	565	4.5	4.7	28,417	17,827	N	N	N	9,472	7,788	8,978	18,395	12,197	10,354	16,409	12,648	16,409	15,531	12,648	3.0	N	N	N	25,881	23,318	21,626	3.90	3.11	3.52
8/18/2010	2010	8	4.52		N				3.63			4.5	4.6		17,827	N	N	N		7,788	8,978		12,197	10,354		12,648		15,531	12,648		N	N	N	N	23,318	21,626	3.63	3.21	3.55
8/19/2010	2010	8	4.35	563	563	263	123	50	4.04	300.0	156	4.5	4.6	20,432	18,602	N	N	N	9,544	8,642	8,716	5,264	10,400	10,047	10,124	12,211	10,124	16,181	12,211	2.1	N	N	N	19,668	24,824	20,927	4.04	3.37	3.52
8/20/2010	2010	8	4.30		N				4.12			4.5	4.6		18,602	N	N	N		8,642	8,716		10,400	10,047		12,211		16,181	12,211		N	N	N	N	24,824	20,927	4.12	3.51	3.54
8/21/2010	2010	8	4.17		N				4.57			4.5	4.6		18,237	N	N	N		8,642	8,323		10,400	9,985		12,654		16,181	12,654		N	N	N	N	24,824	20,977	4.57	3.74	3.58
8/22/2010	2010	8	5.32	307	307	284	137	80	4.15	568.0	348	4.6	4.6	13,618	17,882	13,618	N	N	12,598	10,538	8,652	12,040	11,900	10,143	19,651	13,193	19,651	15,394	13,193	1.1	25,657	N	N	32,249	25,933	21,844	4.15	3.91	3.56
8/23/2010	2010	8	5.79		N				3.92			4.8	4.6		17,882	N	N	N		10,538	8,652		11,900	10,143		13,193		15,394	13,193		N	N	N	N	25,933	21,844	3.92	4.05	3.57
8/24/2010	2010	8	5.50	666	666	292	323	128	3.09	804.0	263	4.9	4.6	30,591	19,285	N	N	N	13,412	11,851	8,581	6,782	8,029	10,083	20,732	14,052	20,732	16,836	14,052	2.3	N	N	N	34,145	28,687	22,633	3.09	3.93	3.57
8/25/2010	2010	8	5.89		N				3.08			5.0	4.7		19,285	N	N	N		11,851	8,581		8,029	10,083		14,052		16,836	14,052		N	N	N	N	28,687	22,633	3.08	3.85	3.54
8/26/2010	2010	8	5.20	444	444	226	262	142	3.15	512.0	313	5.2	4.7	19,275	19,662	19,275	N	N	9,811	11,940	8,698	8,215	9,012	10,097	13,438	14,633	13,438	17,940	14,633	2.0	27,490	N	N	23,249	29,881	23,331	3.15	3.73	3.54
8/27/2010	2010	8	4.81		N				3.44			5.2	4.7		19,662	N	N	N		11,940	8,698		9,012	10,097		14,633		17,940	14,633		N	N	N	N	29,881	23,331	3.44	3.63	3.54
8/28/2010	2010	8	4.72		N				3.14			5.3	4.7		19,695	N	N	N		11,940	8,515		9,012	10,113		14,892		17,940	14,892		N	N	N	N	29,881	23,407	3.14	3.42	3.54
8/29/2010	2010	8	4.67	232	232	193	139	104	2.99	592.0	412	5.2	4.7	9,033	18,875	9,033	N	N	7,514	10,246	8,438	10,279	8,425	10,126	14,770	14,883	14,770	16,313	14,883	1.2	19,312	N	N	22,284	26,559	23,321	2.99	3.26	3.52
8/30/2010	2010	8	4.62		N				3.05			5.1	4.7		18,875	N	N	N		10,246	8,438		8,425	10,126		14,883		16,313	14,883		N	N	N	N	26,559	23,321	3.05	3.13	3.50
8/31/2010	2010	8	4.89	541	541	286	326	90	3.16	356.0	219	5.0	4.7	22,058	19,835	22,058	16,789	N	11,661	9,662	8,980	5,779	8,091	9,775	9,394	14,898	9,394	12,534	14,898	1.9	27,836	24,879	N	21,055	22,196	23,879	3.16	3.14	3.48
9/1/2010	2010	9	4.77		N				2.92			4.8	4.8		19,835	N	16,789	N		9,662	8,980		8,091	9,775		14,898		12,534	14,898		N	24,879	N	N	22,196	23,879	2.92	3.12	3.47
9/2/2010	2010	9	4.70	548	548	312	229	118	3.19	268.0	194	4.7	4.8	21,506	20,309	21,506	17,532	N	12,244	10,473	9,549	5,157	7,072	9,487	7,124	14,691	7,124	10,429	14,691	1.8	26,663	24,604	N	19,368	20,902	24,240	3.19	3.13	3.46
9/3/2010	2010	9	5.32		N				3.76			4.8	4.8		20,309	N	17,532	N		10,473	9,549		7,072	9,487		14,691		10,429	14,691		N	24,604	N	N	20,902	24,240	3.76	3.17	3.41
9/4/2010	2010	9	4.84		N				3.50			4.8	4.7		19,317	N	17,532	N		10,473	9,372		7,072	9,443		14,867		10,429	14,867		N	24,604	N	N	20,902	24,239	3.50	3.22	3.38
9/5/2010	2010	9	4.33	208	208	182	80	68	3.59	196.0	187	4.8	4.7	7,510	18,409	7,510	17,025	N	6,571	10,159	9,157	5,608	5,515	9,148	5,878	14,176	5,878	7,465	14,176	1.1	13,118	22,539	N	12,449	17,624	23,332	3.59	3.31	3.36
9/6/2010	2010	9	4.26		N				3.69			4.7	4.7		18,409	N	17,025	N		10,159	9,157		5,515	9,148		14,176		7,465	14,176		N	22,539	N	N	17,624	23,332	3.69	3.40	3.36
9/7/2010	2010	9	4.64	978	978	234	399	48	3.20	256.0	216	4.7	4.7	37,907	20,743	N	N	N	9,070	9,295	9,463	5,773	5,513	8,499	6,842	12,960	6,842	6,615	12,960	4.2	N	N	N	15,912	15,910	22,423	3.20	3.41	3.35
9/8/2010	2010	9	4.92		N				3.41			4.7	4.8		20,743	N	N	N		9,295	9,463		5,513	8,499		12,960		6,615	12,960		N	N	N	N	15,910	22,423	3.41	3.48	3.37
9/9/2010	2010	9	4.49	409	409	198	181	64	3.50	240.0	195	4.7	4.7	15,341	20,873	N	N	N	7,427	7,689	9,478	5,700	5,694	8,245	7,016	12,428	7,016	6,579	12,428	2.1	N	N	N	14,442	14,268	21,906	3.50	3.52	3.40
9/10/2010	2010	9	4.38		N				3.44			4.6	4.7		20,873	N	N	N		7,689	9,478		5,694	8,245		12,428		6,579	12,428		N	N	N	N	14,268	21,906	3.44	3.48	3.42
9/11/2010	2010	9	4.17		N				3.33			4.5	4.7		19,913	N	N	N		7,689	9,686		5,694	8,044		12,782		6,579	12,782		N	N	N	N	14,268	22,469	3.33	3.45	3.43
9/12/2010	2010	9	4.45	370	370	244	157	82	3.39	544.0	220	4.5	4.7	13,734	19,438	13,734	N	N	9,057	8,518	9,638	6,218	5,897	7,904	15,376	12,982	15,376	9,744	12,982	1.5	19,952	N	N	24,432	18,262	22,620	3.39	3.42	3.44
9/13/2010	2010	9	4.41		N				2.93			4.5	4.8		19,438	N	N	N		8,518	9,638		5,897	7,904		12,982		9,744	12,982		N	N	N	N	18,262	22,620	2.93	3.32	3.44
9/14/2010	2010	9	4.43	606	606	474	298	84	4.02	196.0	200	4.5	4.8	22,379	20,139	22,379	N	N	17,504	11,329	10,453	6,711	6,210	7,840	6,576	11,795	6,576	9,656	11,795	1.3	29,090	N	N	24,081	20,985	22,247	4.02	3.43	3.47
9/15/2010	2010	9	4.35		N				4.02			4.4	4.7		20,139	N	N	N		11,329	10,453		6,210	7,840		11,795		9,656	11,795		N	N	N	N	20,985	22,247	4.02	3.52	3.51
9/16/2010	2010	9	4.40	828	828	327	451	76	3.95	652.0	178	4.4	4.7	30,400	20,291	N	N	N	12,006	12,856	10,648	5,864	6,264	6,876	21,480	12,185	21,480	14,477	12,185	2.5	N	N	N	33,486	27,333	22,832	3.95	3.58	3.51
9/17/2010	2010	9	4.86		N				3.50			4.4	4.7		20,291	N	N	N		12,856	10,648		6,264	6,876		12,185		14,477	12,185		N	N	N	N	27,333	22,832	3.50	3.59	3.51
9/18/2010	2010	9	4.53		N				3.80			4.5	4.7		20,279	N	N	N		12,856	10,740		6,264	7,010		12,356		14,477	12,356		N	N	N	N	27,333	23,096	3.80	3.66	3.50
9/19/2010	2010	9	4.46	398	398	270	186	66	3.81	496.0	230	4.5	4.7	14,821	19,860	14,821	N	N	10,055	13,188	10,687	7,311	6,629	7,034	15,767	12,619	15,767	14,608	12,619	1.5	22,133	N	N	25,821	27,796	23,306	3.81	3.72	3.49
9/20/2010	2010	9	4.27		N				3.38	352.0		4.5	4.7		19,860	N	N	N		13,188	10,687		6,629	7,034	9,922	12,426	9,922	13,436	12,426		N	N	N	N	27,796	23,306	3.38	3.78	3.45
9/21/2010	2010	9	4.26	902	902	460	373	74	4.46	712.0	119	4.4	4.7	32,029	21,276	32,029	N	N	16,334	12,798	10,974	4,432	5,869	6,448	26,520	12,917	26,520	18,422	12,917	2.0	36,461	N	N	42,854	34,054	24,121	4.46	3.85	3.46
9/22/2010	2010	9	4.40		N				3.50	408.0		4.5	4.7		21,276	N	N	N		12,798	10,974		5,869	6,448	11,924	12,851	11,924	17,122	12,851		N	N	N	N	34,054	24,121	3.50	3.77	3.45
9/23/2010	2010	9	4.33	1,209	1,209	268	570	132	3.54	472.0	214	4.4	4.6	43,698	22,284	N	N	N	9,687	12,025	10,688	6,316	6,020	6,413	13,932	12,397	13,932	15,613	12,397	4.5	N	N	N	23,618	30,764	23,312	3.54	3.71	3.46
9/24/2010	2010	9	4.36		N				3.63			4.4	4.6		22,284	N	N	N		12,025	10,688		6,020	6,413		12,397		15,613	12,397		N	N	N	N	30,764	23,312	3.63	3.73	3.48
9/25/2010	2010	9	4.53		N				3.65			4.4	4.6		22,535	N	N	N		12,025	10,761		6,020	6,262		12,323		15,613	12,323		N	N	N	N	30,764	23,317	3.65	3.71	3.50
9/26/2010	2010	9	4.20	261	261	214	152	94	3.86	260.0	98	4.3	4.5	9,138	21,504	9,138	N	N	7,492	11,171	10,509	3,155	4,634	6,023	8,369	12,059	8,369	14,133	12,059	1.2	12,293	N	N	15,862	27,445	22,743	3.86	3.72	3.51
9/27/2010	2010	9	4.55		N				3.74			4.4	4.5		21,504	N	N	N		11,171	10,509		4,634	6,023		12,059		15,186	12,059		N	N	N	N	27,445	22,743	3.74	3.77	3.53
9/28/2010	2010	9	5.88	463	463	296	271	78	3.53	192.0	147	4.6	4.6	22,723	22,557	22,723	N	N	14,527	10,569	11,049	4,336	4,602	5,566	5,663	11,452	5,663	9,972	11,452	1.6	27,058	N	N	20,190	19,890	22,582	3.53	3.64	3.55
9/29/2010	2010	9	4.89		N				3.73			4.7	4.6		22,557	N	N	N		10,569	11,049		4,602	5,566		11,452		9,321	11,452		N	N	N	N	19,890	22,582	3.73	3.67	3.57
9/30/2010	2010	9	4.96	718	718	231	289	84	3.78	408.0	127	4.8	4.6	29,701	23,145	N	N	N	9,556	10,525	10,887	4,002	3,831	5,430	12,857	11,683	12,857	8,963	11,683	3.1	N	N	N	22,413	19,488	22,687	3.78	3.70	3.59
10/1/2010	2010	10	5.19		N				3.76			4.9	4.6		23,145	N	N	N		10,525	10,887		3,831	5,430		11,683		8,963	11,683		N	N	N	N	19,488	22,687	3.76	3.72	3.62
10/2/2010	2010	10	4.62		N				4.82			4.9	4.6		23,282	N	N	N		10,525	10,774		3,831	5,452		12,009		8,963	12,009		N	N	N	N	19,488	22,963	4.82	3.89	3.67
10/3/2010	2010	10	4.57	264	264	628	133	78	3.96	336.0	113	5.0	4.6	10,070	22,265	10,070	N	N	23,955	16,012	11,788	3,735	4,024	5,320	11,104	11,948	11,104	9,875	11,948	0.4	13,805	N	N	35,059	25,887	23,894	3.96	3.90	3.68
10/4/2010	2010	10	4.94		N				3.95			5.0	4.6		22,265	N	N	N		16,012	11,788		4,024	5,320		11,948		9,875	11,948		N	N	N	N	25,887	23,894	3.95	3.93	3.70
10/5/2010	2010	10	5.23	438	438	534	281	70	4.09	228.0	146	4.9	4.6	19,114	23,158	19,114	N	N	23,303	18,938	13,075	4,989	4,242	5,272	7,790	12,076	7,790	10,584	12,076	0.8	24,103	N	N	31,094	29,522	25,328	4.09	4.01	3.71
10/6/2010	2010	10	7.06		N				4.23			5.2	4.7		23,158	N	N	N		18,938	13,075		4,242	5,272		12,076		10,584	12,076		N	N	N	N	29,522	25,328	4.23	4.08	3.73
10/7/2010	2010	10	5.88	617	617	255	265	76	4.32	180.0	122	5.4	4.7	30,291	22,572	N	N	N	12,519	19,926	13,340	4,397	4,373	5,167	6,488	12,052	6,488	8,461	12,052	2.4	N	N	N	19,007	28,387	25,566	4.32	4.16	3.77
10/8/2010	2010	10	5.32		N				4.25			5.4	4.7		22,572	N	N	N		19,926	13,340		4,373	5,167		12,052		8,461	12,052		N	N	N	N	28,387	25,566	4.25	4.23	3.80
10/9/2010	2010	10	5.09		N				4.36			5.4	4.8		23,175	N	N	N		19,926	13,833		4,373	5,122		12,412		8,461	12,412		N	N	N	N	28,387	26,493	4.36	4.17	3.82
10/10/2010	2010	10	4.85	445	445	200	203	88	4.25	908.0	304	5.5	4.8	18,010	22,778	N	N	N	8,094	14,639	13,391	10,792	6,726	5,558	32,234	13,733	32,234	15,504	13,733	2.2	N	N	N	40,329	30,143	27,557	4.25	4.21	3.85
10/11/2010	2010	10	4.94		N				4.08			5.5	4.8		22,778	N	N	N		14,639	13,391		6,726	5,558		13,733		15,504	13,733		N	N	N	N	30,143	27,557	4.08	4.23	3.88
10/12/2010	2010	10	4.99	855	855	1,010	205	86	4.05	396.0	62	5.4	4.8	35,571	24,457	35,571	N	N	42,019	20,877	15,927	2,098	5,762	5,241	13,399	13,602	13,399	17,374	13,602	0.8	37,669	N	N	55,418	38,251	29,941	4.05	4.22	3.90
10/13/2010	2010	10	4.78		N				4.55			5.1	4.8		24,457	N	N	N		20,877	15,927		5,762	5,241		13,602		17,374	13,602		N	N	N	N	38,251	29,941	4.55	4.27	3.95
10/14/2010	2010	10	4.89	560	560	159	244	36	4.58	152.0	189	5.0	4.9	22,858	24,494	N	N	N	6,490	18,868	15,080	7,221	6,704	5,281	5,808	13,550	5,808	17,147	13,550	3.5	N	N	N	12,298	36,015	29,034	4.58	4.30	3.97
10/15/2010	2010	10	6.88		N				4.74			5.2	4.9		24,494	N	N	N		18,868	15,080		6,704	5,281		13,550		17,147	13,550		N	N	N	N	36,015	29,034	4.74	4.37	4.00
10/16/2010	2010	10	5.65		N				4.63			5.3	5.0		24,002	N	N	N		18,868	15,336		6,704	5,232		12,984		17,147	12,984		N	N	N	N	36,015	28,663	4.63	4.41	4.02
10/17/2010	2010	10	5.41	368	368	94	102	98	4.68	152.0	50	5.4	5.0	16,608	23,433	N	N	N	4,242	17,584	14,483	1,954	3,758	4,980	5,940	12,514	5,940	8,382	12,514	3.9	N	N	N	10,183	25,966	27,242	4.68	4.47	4.06
10/18/2010	2010	10	5.11		N				4.77			5.4	5.0		23,433	N	N	N		17,584	14,483		3,758	4,980		12,514		8,382	12,514		N	N	N	N	25,966	27,242	4.77	4.57	4.09
10/19/2010	2010	10	4.97	446	446	130	232	68	5.60	96.0	103	5.4	5.0	18,488	23,715	N	N	N	5,389	5,374	14,124	4,814	4,663	4,788	4,487	11,763	4,487	5,412	11,763	3.4	N	N	N	9,876	10,785	26,015	5.60	4.79	4.15
10/20/2010	2010	10	5.04		N				5.32			5.4	5.1		23,715	N	N	N		5,374	14,124		4,663	4,788		11,894		5,412	11,894		N	N	N	N	10,785	26,015	5.32	4.90	4.21
10/21/2010	2010	10	5.16	631	631	430	314	105	5.23	928.0	335	5.5	5.1	27,146	23,340	27,146	N	N	18,499	9,377	14,290	14,624	7,131	5,572	40,511	12,893			10,769	1.5	41,770	N	N	N	N	24,612	5.23	5.00	4.24
10/22/2010	2010	10	4.68		N				5.33			5.1	5.1		23,340	N	N	N		9,377	14,290		7,131	5,572		12,968			10,673		N	N	N	N	N	24,612	5.33	5.08	4.30
10/23/2010	2010	10	4.85		N				5.14			5.0	5.1		21,643	N	N	N		9,377	14,674		7,131	5,510		12,888			10,376		N	N	N	N	N	24,702	5.14	5.15	4.35
10/24/2010	2010	10	4.99	260	260	490	190	130	5.00	540.0	240	5.0	5.1	10,833	20,812	10,833	N	N	20,416	14,768	15,116	10,023	9,820	5,857	22,551	13,631	22,551		11,391	0.5	20,856	N	N	42,967	N	26,224	5.00	5.20	4.40
10/25/2010	2010	10	5.15		N				5.03			5.0	5.2		20,812	N	N	N		14,768	15,116		9,820	5,857		13,631			11,391		N	N	N	N	N	26,224	5.03	5.24	4.45
10/26/2010	2010	10	5.13	490	490	360	240	110	4.94	380.0	180	5.0	5.2	20,973	21,722	20,973	19,651	N	15,409	18,108	15,724	7,421	10,689	6,185	15,667	14,192	15,667		11,999	1.4	28,394	30,340	N	31,076	N	27,492	4.94	5.14	4.48
10/27/2010	2010	10	5.44		N				5.11			5.1	5.2		21,722	N	19,651	N		18,108	15,724		10,689	6,185		14,192			11,999		N	30,340	N	N	N	27,492	5.11	5.11	4.53
10/28/2010	2010	10	4.94	370	370	210	260	56	5.12	260.0	210	5.0	5.2	15,252	21,147	15,252	15,686	N	8,657	14,827	15,273	8,969	8,804	6,541	11,105	14,611	11,105	16,441	12,453	1.8	24,221	24,490	N	19,761	31,268	27,457	5.12	5.09	4.58
10/29/2010	2010	10	4.69		N				5.28			5.0	5.2		21,147	N	15,686	N		14,827	15,273		8,804	6,541		14,611		16,441	12,453		N	24,490	N	N	31,268	27,457	5.28	5.09	4.63
10/30/2010	2010	10	4.56		N				5.30			5.0	5.2		20,435	N	15,686	N		14,827	15,749		8,804	6,753		14,757		16,441	12,416		N	24,490	N	N	31,268	27,915	5.30	5.11	4.68
10/31/2010	2010	10	4.44	230	230	380	130	75	5.05	230.0	190	4.9	5.1	8,528	19,519	8,528	14,918	N	14,090	12,719	15,622	8,009	8,133	6,850	9,695	14,368	9,695	12,155	12,189	0.6	16,537	23,051	N	23,785	24,874	27,571	5.05	5.12	4.73
11/1/2010	2010	11	4.19		N				5.53			4.8	5.1		19,519	N	14,918	N		12,719	15,622		8,133	6,850		14,368		12,155	12,189		N	23,051	N	N	24,874	27,571	5.53	5.19	4.75
11/2/2010	2010	11	4.20	550	550	560	380	88	4.54	570.0	200	4.6	5.1	19,282	20,227	19,282	14,354	N	19,632	14,126	15,289	7,574	8,184	7,145	21,587	15,174	21,587	14,129	13,063	1.0	26,856	22,538	N	41,219	28,255	28,084	4.54	5.13	4.77
11/3/2010	2010	11	4.25		N				5.68			4.5	5.1		20,227	N	14,354	N		14,126	15,289		8,184	7,145		15,174		14,129	13,063		N	22,538	N	N	28,255	28,084	5.68	5.21	4.83
11/4/2010	2010	11	5.14	550	550	220	430	99	5.60	190.0	230	4.5	5.1	23,595	20,572	N	N	N	9,438	14,387	14,223	10,757	8,780	7,589	8,886	15,258	8,886	13,389	13,154	2.5	N	N	N	18,324	27,776	27,020	5.60	5.28	4.88
11/5/2010	2010	11	5.22		N				5.55			4.6	5.0		20,572	N	N	N		14,387	14,223		8,780	7,589		15,258		13,389	13,154		N	N	N	N	27,776	27,020	5.55	5.32	4.92
11/6/2010	2010	11	4.78		N				5.36			4.6	5.0		19,762	N	N	N		14,387	14,365		8,780	7,855		15,989		13,389	13,760		N	N	N	N	27,776	27,749	5.36	5.33	4.95
11/7/2010	2010	11	4.81	300	300	330	190	160	5.31	210.0	110	4.7	5.0	12,032	19,167	12,032	N	N	13,235	14,102	14,278	4,879	7,737	7,626	9,314	15,476	9,314	13,262	13,389	0.9	16,910	N	N	22,548	27,364	27,315	5.31	5.37	4.99
11/8/2010	2010	11	5.50		N				5.38			4.8	5.0		19,167	N	N	N		14,102	14,278		7,737	7,626		15,476		13,262	13,389		N	N	N	N	27,364	27,315	5.38	5.35	5.02
11/9/2010	2010	11	5.84	930	930	240	300	160	5.25	750.0	420	5.1	5.0	45,310	21,267	N	N	N	11,693	11,455	14,555	18,389	11,342	8,210	32,838	15,522	32,838	17,012	13,440	3.9	N	N	N	44,531	28,468	27,665	5.25	5.45	5.06
11/10/2010	2010	11	5.43		N				5.34			5.2	5.0		21,267	N	N	N		11,455	14,555		11,342	8,210		15,522		17,012	13,440		N	N	N	N	28,468	27,665	5.34	5.40	5.10
11/11/2010	2010	11	5.18	510	510	200	280	170	5.81	260.0	190	5.3	5.0	22,055	20,228	N	N	N	8,649	11,192	11,988	9,210	10,826	8,757	12,604	15,461	12,604	18,252	13,373	2.6	N	N	N	21,253	29,444	24,818	5.81	5.43	5.16
11/12/2010	2010	11	4.81		N				5.50			5.2	5.0		20,228	N	N	N		11,192	11,988		10,826	8,757		15,461		18,252	13,373		N	N	N	N	29,444	24,818	5.50	5.42	5.19
11/13/2010	2010	11	4.86		N				5.58			5.2	5.0		20,009	N	N	N		11,192	12,446		10,826	8,885		16,265		18,252	14,061		N	N	N	N	29,444	25,957	5.58	5.45	5.22
11/14/2010	2010	11	4.94	402	402	232	125	90	5.66	120.0	121	5.2	5.0	16,575	19,744	16,575	N	N	9,566	9,969	12,224	5,716	11,105	8,641	5,669	15,450	5,669	17,037	13,362	1.7	22,291	N	N	15,234	27,006	25,063	5.66	5.50	5.25
11/15/2010	2010	11	5.09		N				5.11			5.2	5.0		19,744	N	N	N		9,969	12,224		11,105	8,641		15,450		17,037	13,362		N	N	N	N	27,006	25,063	5.11	5.46	5.27
11/16/2010	2010	11	5.09	387	387	383	229	96	4.98	232.0	230	5.1	4.9	16,425	19,730	16,425	N	N	16,234	11,483	13,147	9,549	8,158	9,226	9,632	15,734	9,632	9,302	13,669	1.0	25,974	N	N	25,866	20,784	26,370	4.98	5.43	5.28
11/17/2010	2010	11	6.63		N				5.32			5.2	5.0		19,730	N	N	N		11,483	13,147		8,158	9,226		15,734		9,302	13,669		N	N	N	N	20,784	26,370	5.32	5.42	5.30
11/18/2010	2010	11	5.67	608	608	240	240	92	5.37	112.0	185	5.3	5.0	28,772	20,521	N	N	N	11,357	12,386	13,606	8,293	7,853	9,493	5,021	15,775	5,021	6,774	13,714	2.5	N	N	N	16,378	19,160	26,912	5.37	5.36	5.29
11/19/2010	2010	11	5.17		N				5.59			5.3	5.0		20,521	N	N	N		12,386	13,606		7,853	9,493		15,775		6,774	13,714		N	N	N	N	19,160	26,912	5.59	5.37	5.30
11/20/2010	2010	11	5.63		N				5.39			5.5	5.0		19,969	N	N	N		12,386	13,198		7,853	9,066		13,714		6,774	13,714		N	N	N	N	19,160	26,912	5.39	5.35	5.30
11/21/2010	2010	11	5.07	332	332	210	213	100	5.44	140.0	191	5.5	5.1	14,046	19,514	14,046	N	N	8,884	12,158	12,866	8,677	8,840	9,036	6,360	13,148	6,360	7,005	13,148	1.6	22,723	N	N	15,245	19,163	26,014	5.44	5.31	5.31
11/22/2010	2010	11	5.59		N				5.05			5.6	5.1		19,514	N	N	N		12,158	12,866		8,840	9,036		13,148		7,005	13,148		N	N	N	N	19,163	26,014	5.05	5.31	5.31
11/23/2010	2010	11	5.42	416	416	184	298	160	5.71	196.0	242	5.6	5.1	18,815	20,128	N	N	N	8,322	9,521	11,936	11,532	9,501	9,152	9,340	12,132	9,340	6,907	12,132	2.3	N	N	N	17,662	16,428	24,068	5.71	5.41	5.33

Date	Year	Month	Flow Effluent (MGD)	BOD RAW INF. (mg/l)		TSS RAW INF. (mg/l)	BOD PRIM. EFF. (mg/l)	TSS PRIM. EFF. (mg/l)	Plant Drain Flow (MGD)	TSS DRAIN (mg/l)	BOD Drain (mg/l)
11/24/2010	2010	11	5.02		N				6.25		
11/25/2010	2010	11	5.16	262	262	216	137	102	6.14	196.0	169
11/26/2010	2010	11	4.95		N				5.82		
11/27/2010	2010	11	4.79		N				5.98		
11/28/2010	2010	11	4.68	258	258	182	250	84	6.25	196.0	242
11/29/2010	2010	11	4.58		N				5.59		
11/30/2010	2010	11	4.94	608	608	190	459	118	4.94	388.0	274
12/1/2010	2010	12	6.19		N				4.76		
12/2/2010	2010	12	5.18	404	404	246	325	140	5.34	884.0	359
12/3/2010	2010	12	5.00		N				4.01		
12/4/2010	2010	12	4.58		N				3.39		
12/5/2010	2010	12	4.63	272	272	334	119	94	3.33	116.0	261
12/6/2010	2010	12	4.54		N				3.38		
12/7/2010	2010	12	3.74	1,587	1,587	1,056	178	114	2.93	284.0	202
12/8/2010	2010	12	4.87		N				3.70		
12/9/2010	2010	12	4.24	731	731	122	339	124	3.73	1,484.0	265
12/10/2010	2010	12	4.18		N				3.82		
12/11/2010	2010	12	4.28		N				3.96		
12/12/2010	2010	12	7.58	225	225	130	112	134	3.47	204.0	164
12/13/2010	2010	12	11.37		N				3.95		
12/14/2010	2010	12	8.66	518	N	114	302	74	4.63	396.0	235
12/15/2010	2010	12	8.01		N				4.42		
12/16/2010	2010	12	7.36	700	700	703	421	106	4.38	824.0	478
12/17/2010	2010	12	6.63		N				4.71		
12/18/2010	2010	12	6.57		N				4.11		
12/19/2010	2010	12	6.49	417	417	82	216	72	3.49	612.0	313
12/20/2010	2010	12	6.19		N				3.95		
12/21/2010	2010	12	6.06	250	250	344	235	86	3.61	304.0	167
12/22/2010	2010	12	6.05		N				3.62		
12/23/2010	2010	12	5.85	437	437	112	330	78	3.58	512.0	255
12/24/2010	2010	12	5.55		N				3.88		
12/25/2010	2010	12	5.09		N				3.37		
12/26/2010	2010	12	5.28	436	436	140	230	20	3.79	364.0	218
12/27/2010	2010	12	5.31		N				4.12		
12/28/2010	2010	12	5.30	705	705	258	325	96	3.68	532.0	286
12/29/2010	2010	12	5.06		N				3.41		
12/30/2010	2010	12	4.89	450	450	138	284	92	3.80	268.0	255
12/31/2010	2010	12	4.98		N				3.41		
1/1/2011	2011	1	4.95		N				3.27		
1/2/2011	2011	1	5.60	576	576	190	279	92	3.30	268.0	507
1/3/2011	2011	1	5.38		N				3.76		
1/4/2011	2011	1	5.41	620	620	200	368	122	3.66	526.0	346
1/5/2011	2011	1	5.36		N				4.06		
1/6/2011	2011	1	5.04	482	482	207	271	86	4.17	912.0	262
1/7/2011	2011	1	5.04		N				4.02		
1/8/2011	2011	1	5.27		N				4.05		
1/9/2011	2011	1	5.19	651	651	114	282	98	3.60		
1/10/2011	2011	1	4.67		N				3.43		
1/11/2011	2011	1	4.69	1,143	1,143	59	485	62	4.29	108.0	275
1/12/2011	2011	1	5.23		N				3.61		
1/13/2011	2011	1	4.73	629	629	215	324	94	3.97	244.0	377
1/14/2011	2011	1	4.63		N				3.93		
1/15/2011	2011	1	4.73		N				4.10		
1/16/2011	2011	1	4.62	289	289	140	230	90	3.71	304.0	339
1/17/2011	2011	1	4.28		N				4.10		
1/18/2011	2011	1	5.04	384	384	524	335	112	3.49	476.0	360
1/19/2011	2011	1	5.76		N				3.62		
1/20/2011	2011	1	5.13	1,605	1,605	176	435	90	4.11	364.0	301
1/21/2011	2011	1	5.23		N				3.90		
1/22/2011	2011	1	4.71		N				4.38		
1/23/2011	2011	1	4.84	912	912	974	274	146	4.36		
1/24/2011	2011	1	4.41	3,654	3,654	272			4.16		
1/25/2011	2011	1	4.98	851	851	198	446	92	3.74	220.0	450
1/26/2011	2011	1	4.83	985	985	244			3.76		
1/27/2011	2011	1	4.87	690	690	278	356	74	3.67	1,404.0	602
1/28/2011	2011	1	4.55		N				3.78		
1/29/2011	2011	1	4.79		N				4.11		
1/30/2011	2011	1	4.58	420	420	270	290	88	4.39	152.0	146
1/31/2011	2011	1	4.39	1,326	1,326				3.84		
2/1/2011	2011	2	4.60	1,476	1,476	353	742	100	3.18		
2/2/2011	2011	2	4.91	1,059	1,059	186			3.17		
2/3/2011	2011	2	4.51	1,209	1,209	238	532	122	3.34	188.0	287
2/4/2011	2011	2	4.56		N				3.76		
2/5/2011	2011	2	5.14		N				4.24		
2/6/2011	2011	2	5.92	627	627	578	113	114	3.63	136.0	225
2/7/2011	2011	2	5.56	783	783				3.65		
2/8/2011	2011	2	6.09	1,104	1,104	308	480	116	3.69	152.0	202
2/9/2011	2011	2	5.66	1,089	1,089				3.96		
2/10/2011	2011	2	5.41	771	771	172	385	138	4.01	292.0	237
2/11/2011	2011	2	5.24		N				4.18		
2/12/2011	2011	2	4.67		N				3.11		
2/13/2011	2011	2	4.89	1,018	1,018	412	327	92	2.71		
2/14/2011	2011	2	6.07	1,246	1,246	301			3.72		
2/15/2011	2011	2	5.59	654	654	355	419	134	4.32	123.0	270
2/16/2011	2011	2	5.49	750	750	177			4.08		
2/17/2011	2011	2	5.83	520	520	147	325	74	3.43	156.0	165
2/18/2011	2011	2	6.78	520	520	290			3.65		
2/19/2011	2011	2	7.82	310	310	180			4.87		
2/20/2011	2011	2	6.59	421	421	252	220	188	4.50	364.0	318
2/21/2011	2011	2	6.51		N				3.73		
2/22/2011	2011	2	5.55	647	647	153	335	204	2.88	448.0	326
2/23/2011	2011	2	6.76		N				4.19		
2/24/2011	2011	2	6.44	705	705	114	401	128	4.05	180.0	153
2/25/2011	2011	2	9.91		N				4.08		
2/26/2011	2011	2	9.84		N				3.99		
2/27/2011	2011	2	10.07	162	N	265	86	204	4.79	460.0	339
2/28/2011	2011	2	10.98		N				4.68		
3/1/2011	2011	3	10.67	362	N	168	292	126	5.44	236.0	252
3/2/2011	2011	3	10.83		N				4.99		
3/3/2011	2011	3	9.97	453	N	110	262	82	4.83	628.0	320
3/4/2011	2011	3	9.53		N				4.19		
3/5/2011	2011	3	10.15		N				4.47		
3/6/2011	2011	3	11.97	375	N	554	156	156	4.13	468.0	222
3/7/2011	2011	3	16.73		N				3.58		
3/8/2011	2011	3	14.89	598	N	162	309	102	5.19	724.0	563
3/9/2011	2011	3	13.55		N				5.31		
3/10/2011	2011	3	12.92	375	N	90	359	112	5.21	796.0	724
3/11/2011	2011	3	13.79		N				5.17		
3/12/2011	2011	3	12.76		N				5.67		

Date	7dFlow, MGD	30dFlow, MGD	BOD Raw (lbs/d)	30dBODRaw Unclean (lbs/d)	BOD Raw Cleaned (lbs/d)	7dBOD Raw (lbs/d)	30dBODRaw (lbs/d)	TSS Raw (lbs/d)	7dTSS Raw (lbs/d)	30dTSSRaw (lbs/d)	BOD Recycle (lbs/d)	7dBOD Recycle (lbs/d)	30dBODRecycle (lbs/d)	TSS Recycle (lbs/d)	30dTSSRecycle unclean (lbs/d)	TSS Recycle Cleaned (lbs/d)	7dTSS Recycle (lbs/d)	30dTSSRecycle (lbs/d)
11/24/2010	5.4	5.1		20,128	N	N	N		9,521	11,936		9,501	9,152		12,132		6,907	12,132
11/25/2010	5.3	5.1	11,285	19,382	11,285	N	N	9,304	8,837	11,466	8,653	9,621	9,247	10,035	11,699	10,035	8,578	11,699
11/26/2010	5.3	5.1		19,382	N	N	N		8,837	11,466		9,621	9,247		11,699		8,578	11,699
11/27/2010	5.1	5.1		19,727	N	N	N		8,837	11,700		9,621	9,270		11,748		8,578	11,748
11/28/2010	5.1	5.1	10,075	18,984	10,075	N	N	7,107	8,244	11,347	12,615	10,933	9,527	10,217	11,631	10,217	9,864	11,631
11/29/2010	4.9	5.1		18,984	N	N	N		8,244	11,347		10,933	9,527		11,631		9,864	11,631
11/30/2010	4.9	5.1	25,084	20,258	N	N	N	7,839	8,083	10,866	11,298	10,855	9,780	15,999	12,115	15,999	12,084	12,115
12/1/2010	5.0	5.2		20,258	N	N	N		8,083	10,866		10,855	9,780		12,115		12,084	12,115
12/2/2010	5.0	5.2	17,456	20,117	17,456	N	N	10,629	8,525	10,174	16,011	13,308	10,429	39,424	13,488			11,326
12/3/2010	5.1	5.2		20,117	N	N	N		8,525	10,174		13,308	10,429		13,488			11,326
12/4/2010	5.0	5.2		19,827	N	N	N		8,525	10,235		13,308	10,402		13,871			11,548
12/5/2010	5.0	5.2	10,500	19,110	10,500	N	N	12,893	10,454	10,439	7,244	11,518	10,159	3,220	13,052	3,220		10,854
12/6/2010	5.0	5.2		19,110	N	N	N		10,454	10,439		11,518	10,159		13,052			10,854
12/7/2010	4.8	5.1	49,519	21,994	49,519	25,825	N	32,950	18,824	11,956	4,947	9,400	10,164	6,955	12,870	6,955		10,657
12/8/2010	4.6	5.1		21,994	N	25,825	N		18,824	11,956		9,400	10,164		12,870			10,657
12/9/2010	4.5	5.1	25,878	20,499	N	N	N	4,319	16,721	11,389	8,249	6,813	9,384	46,197	13,898			8,641
12/10/2010	4.4	5.0		20,499	N	N	N		16,721	11,389		6,813	9,384		13,898			8,641
12/11/2010	4.4	5.0		20,369	N	N	N		16,721	11,617		6,813	9,399		14,006			
12/12/2010	4.8	5.1	14,224	19,896	14,224	N	N	8,218	15,162	11,356	4,745	5,980	9,041	5,902	13,382	5,902		8,032
12/13/2010	5.8	5.3		19,896	N	N	N		15,162	11,356		5,980	9,041		13,382			8,032
12/14/2010	6.5	5.4	37,417	21,500	N	N	N	8,235	6,924	11,253	9,071	7,355	9,299	15,286	14,122	15,286		8,906
12/15/2010	6.9	5.5		21,500	N	N	N		6,924	11,253		7,355	9,299		14,122			8,906
12/16/2010	7.3	5.6	43,014	23,545	43,014	N	N	43,198	19,884	13,327	17,480	10,432	9,909	30,134	15,699	30,134	17,107	10,770
12/17/2010	7.7	5.6		23,545	N	N	N		19,884	13,327		10,432	9,909		15,699		17,107	10,770
12/18/2010	8.0	5.6		23,109	N	N	N		19,884	13,492		10,432	10,044		16,589		17,107	
12/19/2010	7.9	5.7	22,585	23,069	N	N	N	4,441	18,625	12,795	9,125	11,892	9,973	17,842	16,685	17,842	21,087	11,935
12/20/2010	7.1	5.7		23,069	N	N	N		18,625	12,795		11,892	9,973		16,685		21,087	11,935
12/21/2010	6.8	5.7	12,646	22,961	12,646	N	N	17,401	21,680	13,451	5,025	10,544	9,692	9,148	16,900	9,148	19,041	12,189
12/22/2010	6.5	5.7		22,961	N	N	N		21,680	13,451		10,544	9,692		16,900		19,041	12,189
12/23/2010	6.3	5.7	21,329	23,155	N	N	N	5,467	9,103	13,231	7,619	7,257	9,391	15,298	17,358	15,298	14,096	12,730
12/24/2010	6.1	5.8		23,155	N	N	N		9,103	13,231		7,257	9,391		17,358		14,096	12,730
12/25/2010	5.9	5.8		24,144	N	N	N		9,103	13,558		7,257	9,453		17,968		14,096	
12/26/2010	5.7	5.8	19,206	23,764	N	N	N	6,167	9,678	12,990	6,898	6,514	9,256	11,518	17,472	11,518	11,988	12,865
12/27/2010	5.6	5.8		23,764	N	N	N		9,678	12,990		6,514	9,256		17,472		11,988	12,865
12/28/2010	5.5	5.8	31,162	25,386	N	N	N	11,404	7,679	13,320	8,784	7,767	8,961	16,340	17,943	16,340	14,385	13,422
12/29/2010	5.3	5.8		25,386	N	N	N		7,679	13,320		7,767	8,961		17,943		14,385	13,422
12/30/2010	5.2	5.8	18,345	24,868	N	N	N	5,626	7,732	13,150	8,086	7,923	8,714	8,499	17,366	8,499	12,119	12,740
12/31/2010	5.1	5.8		24,868	N	N	N		7,732	13,150		7,923	8,714		17,366		12,119	12,740
1/1/2011	5.1	5.8		25,486	N	N	N		7,732	13,360		7,923	8,106		15,528		12,119	12,740
1/2/2011	5.2	5.8	26,932	25,597	N	N	N	8,884	8,638	13,016	13,955	10,275	8,556	7,377	14,901	7,377	10,739	12,293
1/3/2011	5.2	5.8		25,597	N	N	N		8,638	13,016		10,275	8,556		14,901		10,739	12,293
1/4/2011	5.2	5.8	27,966	26,940	N	N	N	9,021	7,844	12,718	10,567	10,870	8,812	16,064	15,889	16,064	10,647	13,364
1/5/2011	5.2	5.9		26,940	N	N	N		7,844	12,718		10,870	8,812		15,889		10,647	13,364
1/6/2011	5.2	5.9	20,285	24,692	N	N	N	8,712	8,872	10,853	9,125	11,216	9,133	31,763	17,797	31,763	18,401	15,431
1/7/2011	5.3	5.9		24,692	N	N	N		8,872	10,853		11,216	9,133		17,797		18,401	15,431
1/8/2011	5.3	6.0		24,593	N	N	N		8,872	11,398		11,216	9,207		15,431		18,401	15,431
1/9/2011	5.2	6.0	28,211	24,871	N	N	N	4,940	7,558	10,901		9,846	9,207		15,431			15,431
1/10/2011	5.1	6.0		24,871	N	N	N		7,558	10,901		9,846	9,207		15,431			15,431
1/11/2011	5.0	5.9	44,770	27,221	N	N	N	2,311	5,321	10,447	9,839	9,482	9,631	3,864	15,261	3,864		15,261
1/12/2011	5.0	5.7		27,221	N	N	N		5,321	10,447		9,482	9,631		15,261			15,261
1/13/2011	5.0	5.6	24,838	26,253	N	N	N	8,490	5,247	10,466	12,482	11,160	9,916	8,078	14,660	8,078		14,660
1/14/2011	4.9	5.5		26,253	N	N	N		5,247	10,466		11,160	9,916		14,660			14,660
1/15/2011	4.8	5.4		24,856	N	N	N		5,247	7,739		11,160	9,228		13,254			13,254
1/16/2011	4.8	5.3	11,149	23,802	N	N	N	5,401	5,401	7,559	10,499	10,940	9,334	9,415	12,934	9,415	7,119	12,934
1/17/2011	4.7	5.2		23,802	N	N	N		5,401	7,559		10,940	9,334		12,934		7,119	12,934
1/18/2011	4.8	5.2	16,151	23,307	16,151	N	N	22,039	11,977	8,912	10,480	11,154	9,447	13,857	12,602	13,857	10,450	12,602
1/19/2011	4.8	5.2		23,307	N	N	N		11,977	8,912		11,154	9,447		12,602		10,450	12,602
1/20/2011	4.9	5.1	68,726	27,621	N	N	N	7,536	11,659	8,154	10,313	10,430	9,887	12,471	12,879	12,471	11,914	12,879
1/21/2011	5.0	5.1		27,621	N	N	N		11,659	8,154		10,430	9,887		12,879		11,914	12,879
1/22/2011	5.0	5.1		28,145	N	N	N		11,659	8,378		10,430	10,093		12,659		11,914	12,659
1/23/2011	5.0	5.0	36,826	28,813	36,826	N	N	39,330	22,968	10,759		10,396	10,093		12,659			12,659
1/24/2011	5.0	5.0	134,564	36,367	N	N	N	10,017	19,731	10,706		10,396	10,093		12,659			12,659
1/25/2011	5.0	5.0	35,388	37,522	N	N	N	8,234	16,279	10,853	14,063	12,188	10,745	6,875	12,237	6,875		12,237
1/26/2011	4.9	5.0	39,733	37,670	N	N	N	9,842	14,992	10,786		12,188	10,745		12,237			12,237
1/27/2011	4.8	5.0	28,041	37,462	N	N	N	11,298	15,744	10,779	18,417	16,240	11,620	42,952	14,656			
1/28/2011	4.7	5.0		37,462	N	N	N		15,744	10,779		16,240	11,620		14,656			
1/29/2011	4.8	5.0		38,827	N	N	N		15,744	11,147		16,240	11,974					
1/30/2011	4.7	5.0	16,039	37,308	16,039	N	N	10,311	9,940	11,091	5,354	12,611	11,372	5,574	14,390	5,574		
1/31/2011	4.7	4.9	48,546	38,010	N	N	N		9,921	11,091		12,611	11,372		14,390			
2/1/2011	4.7	4.9	56,601	39,865	N	N	N	13,537	11,247	11,401		11,886	11,114					
2/2/2011	4.7	4.9	43,349	40,070	N	N	N	7,614	10,690	11,165		11,886	11,114					
2/3/2011	4.6	4.9	45,497	41,101	N	N	N	8,956	10,104	11,160	8,003	6,679	10,857	5,243		5,243		
2/4/2011	4.6	4.8		41,101	N	N	N		10,104	11,160		6,679	10,857					
2/5/2011	4.7	4.8		42,402	N	N	N		10,104	11,324		6,679	11,050					
2/6/2011	4.9	4.9	30,959	41,729	30,959	N	N	28,540	14,662	12,400	6,809	7,406	10,626	4,116		4,116		
2/7/2011	5.0	4.9	36,347	41,430	N	N	N		14,662	12,400		7,406	10,626					
2/8/2011	5.2	4.9	56,086	42,978	N	N	N	15,647	15,189	13,069	6,212	7,008	10,225	4,675	10,647	4,675	4,678	
2/9/2011	5.3	4.9	51,462	43,425	N	N	N		17,714	13,069		7,008	10,225		10,647		4,678	
2/10/2011	5.5	5.0	34,832	42,902	N	N	N	7,771	17,319	13,410	7,929	6,984	10,051	9,769	11,184	9,769	6,186	
2/11/2011	5.6	5.0		42,902	N	N	N		17,319	13,410		6,984	10,051		11,184		6,186	
2/12/2011	5.5	5.0		43,905	N	N	N		17,319	13,738		6,984	9,808				6,186	
2/13/2011	5.4	5.0	41,502	43,779	N	N	N	16,797	13,405	13,929		7,071	9,808					
2/14/2011	5.4	5.0	63,129	44,746	N	N	N	15,250	13,866	14,007		7,071	9,808					
2/15/2011	5.4	5.0	30,501	45,714	30,501	N	N	16,556	14,093	14,663	9,743	8,836	9,732	4,438		4,438		
2/16/2011	5.3	5.1	34,390	45,175	N	N	N	8,116	12,898	14,299		8,836	9,732					
2/17/2011	5.4	5.1	25,288	45,610	N	N	N	7,149	12,774	13,472	4,719	7,231	9,156	4,461		4,461		
2/18/2011	5.6	5.1	29,410	44,874	29,410	N	N	16,402	13,378	13,626		7,231	9,156					
2/19/2011	6.1	5.2	20,243	42,670	20,243	26,718	N	11,754	13,146	13,848		7,231	9,028					
2/20/2011	6.3	5.3	23,154	41,821	23,154	25,827	N	13,859	12,727	13,849	11,939	8,800	9,319	13,666		13,666	7,522	
2/21/2011	6.4	5.3		41,821	N	25,827	N		12,306	13,849		8,800	9,319				7,522	
2/22/2011	6.4	5.4	29,939	41,522	N	24,269	N	7,080	10,727	12,236	7,838	8,165	9,184	10,771	10,231	10,771	9,633	
2/23/2011	6.5	5.4		37,293	N	24,269	N		11,249	12,353		8,165	9,184		10,231		9,633	
2/24/2011	6.6	5.5	37,870	37,405	N	24,269	N	6,124	11,044	12,242	5,172	8,316	8,376	6,085	10,159	6,085	10,174	
2/25/2011	7.1	5.7		37,295	N	N	N		9,704	12,376		8,316	8,376		10,159		10,174	
2/26/2011	7.4	5.8		37,757	N	N	N		9,021	12,439		8,316	7,372				10,174	
2/27/2011	7.9	6.0	13,618	36,608	13,618	N	N	22,277	11,827	12,985	13,561	8,857	7,935	18,402	7,927	18,402	11,752	7,927
2/28/2011	8.5	6.2		36,608	N	N	N		11,827	12,985		8,857	7,935		7,927		11,752	7,927
3/1/2011	9.2	6.4	32,238	37,379	N	N	N	14,961	14,454	13,244	11,447	10,060	8,488	10,720	8,395	10,720	11,736	8,395
3/2/2011	9.8	6.6		36,821	N	N	N		14,454	13,244		10,060	8,488		8,395		11,736	8,395
3/3/2011	10.3	6.8	37,695	35,875	N	N	N	9,153	15,464	13,000	12,891	12,633	8,855	25,299	9,804	25,299	18,140	9,804
3/4/2011	10.3	7.0		35,482	N	N	N		15,464	13,317		12,633	8,855		9,804		18,140	9,804
3/5/2011	10.3	7.2		34,926	N	N	N		15,464	13,590		12,633	8,933		10,218		18,140	10,218
3/6/2011	10.6	7.4	37,462	35,059	37,462	N	N	55,344	26,486	16,046	7,647	10,662	8,826	16,121	10,710	16,121	17,380	10,710
3/7/2011	11.4	7.8		35,059	N	N	N		26,486	16,046		10,662	8,826		10,710		17,380	10,710
3/8/2011	12.0	8.1	74,294	37,340	N	N	N	20,126	28,208	15,551	24,394	14,977	10,291	31,369	12,981	31,369	24,263	12,981
3/9/2011	12.4	8.3		37,395	N	N	N		28,208	15,551		14,977	10,291		12,981		24,263	12,981
3/10/2011	12.8	8.6	40,431	36,525	N	N	N	9,703	28,391	15,201	31,452	21,164	12,394	34,580	15,473	34,580	27,357	15,473
3/11/2011	13.4	8.8		35,647	N	N	N		28,391	15,201		21,164	12,394		15,473		27,357	15,473
3/12/2011	13.8	9.1		35,698	N	N	N		28,391	15,666		21,164	12,800		15,992		27,357	15,992

Date	BOD/TSS	BOD Cleaned R&R (lbs/d)	7dBOD Cleaned R&R (lbs/d)	30dBOD Cleaned R&R (lbs/d)	TSS Cleaned R&R (lbs/d)	7dTSS Cleaned R&R (lbs/d)	30dTSS Cleaned R&R (lbs/d)	Recycles Flow, MGD	7d Recycles Flow, MGD	30d Recycles Flow, MGD
11/24/2010		N	N	N	N	16,428	24,068	6.25	5.54	5.37
11/25/2010	1.2	19,938	N	N	19,339	17,415	23,165	6.14	5.65	5.41
11/26/2010		N	N	N	N	17,415	23,165	5.82	5.69	5.43
11/27/2010		N	N	N	N	17,415	23,449	5.98	5.77	5.46
11/28/2010	1.4	22,690	N	N	17,325	18,108	22,978	6.25	5.88	5.49
11/29/2010		N	N	N	N	18,108	22,978	5.59	5.96	5.50
11/30/2010	3.2	N	N	N	23,837	20,167	22,982	4.94	5.85	5.50
12/1/2010		N	N	N	N	20,167	22,982	4.76	5.64	5.47
12/2/2010	1.6	33,467	N	N	N	N	21,462	5.34	5.53	5.50
12/3/2010		N	N	N	N	N	21,462	4.01	5.27	5.45
12/4/2010		N	N	N	N	N	21,747	3.39	4.90	5.37
12/5/2010	0.8	17,744	N	N	16,113	N	21,278	3.33	4.48	5.30
12/6/2010		N	N	N	N	N	21,278	3.38	4.16	5.23
12/7/2010	1.5	54,466	35,226	N	39,905	N	22,724	2.93	3.88	5.15
12/8/2010		N	35,226	N	N	N	22,724	3.70	3.73	5.10
12/9/2010	6.0	N	N	N	N	N	20,742	3.73	3.50	5.05
12/10/2010		N	N	N	N	N	20,742	3.82	3.47	5.00
12/11/2010		N	N	N	N	N	N	3.96	3.55	4.93
12/12/2010	1.7	18,969	N	N	14,120	N	20,093	3.47	3.57	4.87
12/13/2010		N	N	N	N	N	20,093	3.95	3.65	4.81
12/14/2010	4.5	N	N	N	23,521	N	20,846	4.63	3.89	4.78
12/15/2010		N	N	N	N	N	20,846	4.42	4.00	4.75
12/16/2010	1.0	60,494	N	N	73,332	36,991	25,162	4.38	4.09	4.73
12/17/2010		N	N	N	N	36,991	25,162	4.71	4.22	4.71
12/18/2010		N	N	N	N	36,991	N	4.11	4.24	4.67
12/19/2010	5.1	N	N	N	22,283	39,712	25,698	3.49	4.24	4.60
12/20/2010		N	N	N	N	39,712	25,698	3.95	4.24	4.55
12/21/2010	0.7	17,671	N	N	26,549	40,721	26,726	3.61	4.10	4.49
12/22/2010		N	N	N	N	40,721	26,726	3.62	3.98	4.45
12/23/2010	3.9	N	N	N	20,764	23,199	27,008	3.58	3.87	4.37
12/24/2010		N	N	N	N	23,199	27,008	3.88	3.75	4.30
12/25/2010		N	N	N	N	23,199	N	3.37	3.64	4.20
12/26/2010	3.1	N	N	N	17,685	21,666	26,858	3.79	3.69	4.14
12/27/2010		N	N	N	N	21,666	26,858	4.12	3.71	4.07
12/28/2010	2.7	N	N	N	27,744	22,064	27,805	3.68	3.72	3.99
12/29/2010		N	N	N	N	22,064	27,805	3.41	3.69	3.92
12/30/2010	3.3	N	N	N	14,124	19,851	26,922	3.80	3.72	3.88
12/31/2010		N	N	N	N	19,851	26,922	3.41	3.66	3.83
1/1/2011		N	N	N	N	19,851	26,922	3.27	3.64	3.76
1/2/2011	3.0	N	N	N	16,261	19,376	26,033	3.30	3.57	3.74
1/3/2011		N	N	N	N	19,376	26,033	3.76	3.52	3.75
1/4/2011	3.1	N	N	N	25,086	18,490	26,781	3.66	3.51	3.76
1/5/2011		N	N	N	N	18,490	26,781	4.06	3.61	3.79
1/6/2011	2.3	N	N	N	40,475	27,274	26,829	4.17	3.66	3.83
1/7/2011		N	N	N	N	27,274	26,829	4.02	3.75	3.84
1/8/2011		N	N	N	N	27,274	26,829	4.05	3.86	3.85
1/9/2011	5.7	N	N	N	N	N	26,829	3.60	3.90	3.84
1/10/2011		N	N	N	N	N	26,829	3.43	3.86	3.82
1/11/2011	19.4	N	N	N	6,175	N	26,167	4.29	3.95	3.85
1/12/2011		N	N	N	N	N	26,167	3.61	3.88	3.84
1/13/2011	2.9	N	N	N	16,568	N	25,587	3.97	3.85	3.82
1/14/2011		N	N	N	N	N	25,587	3.93	3.84	3.80
1/15/2011		N	N	N	N	N	21,247	4.10	3.85	3.79
1/16/2011	2.1	N	N	N	14,816	12,520	20,711	3.71	3.86	3.76
1/17/2011		N	N	N	N	12,520	20,711	4.10	3.96	3.76
1/18/2011	0.7	26,631	N	N	35,896	22,427	21,845	3.49	3.84	3.76
1/19/2011		N	N	N	N	22,427	21,845	3.62	3.84	3.75
1/20/2011	9.1	N	N	N	20,007	23,573	21,300	4.11	3.86	3.76
1/21/2011		N	N	N	N	23,573	21,300	3.90	3.86	3.77
1/22/2011		N	N	N	N	23,573	21,349	4.38	3.90	3.80
1/23/2011	0.9	N	N	N	N	N	21,349	4.36	3.99	3.82
1/24/2011	13.4	N	N	N	N	N	21,349	4.16	4.00	3.84
1/25/2011	4.3	N	N	N	15,109	N	21,115	3.74	4.04	3.84
1/26/2011	4.0	N	N	N	N	N	21,115	3.76	4.06	3.83
1/27/2011	2.5	N	N	N	N	N	N	3.67	4.00	3.83
1/28/2011		N	N	N	N	N	N	3.78	3.98	3.84
1/29/2011		N	N	N	N	N	N	4.11	3.94	3.85
1/30/2011	1.6	21,394	N	N	15,885	N	N	4.39	3.95	3.88
1/31/2011		N	N	N	N	N	N	3.84	3.90	3.90
2/1/2011	4.2	N	N	N	N	N	N	3.18	3.82	3.90
2/2/2011	5.7	N	N	N	N	N	N	3.17	3.73	3.88
2/3/2011	5.1	N	N	N	14,199	N	N	3.34	3.69	3.87
2/4/2011		N	N	N	N	N	N	3.76	3.68	3.86
2/5/2011		N	N	N	N	N	N	4.24	3.70	3.86
2/6/2011	1.1	37,768	N	N	32,656	N	N	3.63	3.59	3.85
2/7/2011		N	N	N	N	N	N	3.65	3.57	3.83
2/8/2011	3.6	N	N	N	20,322	22,392	N	3.69	3.64	3.84
2/9/2011		N	N	N	N	22,392	N	3.96	3.75	3.85
2/10/2011	4.5	N	N	N	17,539	23,506	N	4.01	3.85	3.84
2/11/2011		N	N	N	N	23,506	N	4.18	3.91	3.86
2/12/2011		N	N	N	N	23,506	N	3.11	3.75	3.84
2/13/2011	2.5	N	N	N	N	N	N	2.71	3.62	3.79
2/14/2011	4.1	N	N	N	N	N	N	3.72	3.63	3.78
2/15/2011	1.8	40,244	N	N	20,995	N	N	4.32	3.72	3.80
2/16/2011	4.2	N	N	N	N	N	N	4.08	3.73	3.80
2/17/2011	3.5	N	N	N	11,610	N	N	3.43	3.65	3.80
2/18/2011	1.8	N	N	N	N	N	N	3.65	3.57	3.80
2/19/2011	1.7	N	N	N	N	N	N	4.87	3.83	3.83
2/20/2011	1.7	35,093	N	N	27,525	20,043	N	4.50	4.08	3.85
2/21/2011		N	N	N	N	20,043	N	3.73	4.08	3.82
2/22/2011	4.2	N	N	N	17,851	18,995	N	2.88	3.88	3.78
2/23/2011		N	N	N	N	18,995	N	4.19	3.89	3.78
2/24/2011	6.2	N	N	N	12,209	19,195	N	4.05	3.98	3.79
2/25/2011		N	N	N	N	19,195	N	4.08	4.04	3.80
2/26/2011		N	N	N	N	19,195	N	3.99	3.92	3.81
2/27/2011	0.6	27,179	N	N	40,678	23,579	21,043	4.79	3.96	3.84
2/28/2011		N	N	N	N	23,579	21,043	4.68	4.09	3.86
3/1/2011	2.2	N	N	N	25,681	26,189	21,933	5.44	4.46	3.90
3/2/2011		N	N	N	N	26,189	21,933	4.99	4.58	3.93
3/3/2011	4.1	N	N	N	34,452	33,604	22,976	4.83	4.69	3.99
3/4/2011		N	N	N	N	33,604	22,976	4.19	4.70	4.02
3/5/2011		N	N	N	N	33,604	23,774	4.47	4.77	4.06
3/6/2011	0.7	45,110	N	N	71,466	43,866	27,749	4.13	4.68	4.07
3/7/2011		N	N	N	N	43,866	27,749	3.58	4.52	4.05
3/8/2011	3.7	N	N	N	51,496	52,471	29,319	5.19	4.48	4.10
3/9/2011		N	N	N	N	52,471	29,319	5.31	4.53	4.16
3/10/2011	4.2	N	N	N	44,283	55,748	31,315	5.21	4.58	4.21
3/11/2011		N	N	N	N	55,748	31,315	5.17	4.72	4.25
3/12/2011		N	N	N	N	55,748	32,568	5.67	4.89	4.30

Date	Year	Month	Flow Effluent (MGD)	BOD RAW INF. (mg/l)		TSS RAW INF. (mg/l)	BOD PRIM. EFF. (mg/l)	TSS PRIM. EFF. (mg/l)	Plant Drain Flow (MGD)	TSS DRAIN (mg/l)	BOD Drain (mg/l)
3/13/2011	2011	3	12.04	358	N	255	141	194	5.43	320.0	264
3/14/2011	2011	3	11.06						5.47		
3/15/2011	2011	3	10.50	538	N	160	428	254	5.40	404.0	359
3/16/2011	2011	3	10.92		N				4.49		
3/17/2011	2011	3	10.02	612	N	78	310	140	4.40	364.0	250
3/18/2011	2011	3	10.21		N				4.65		
3/19/2011	2011	3	9.41		N				4.30		
3/20/2011	2011	3	8.59	333	N	440	188	218	4.57	320.0	297
3/21/2011	2011	3	8.81		N				3.61		
3/22/2011	2011	3	8.76	413	N	120	251	106	4.27	368.0	185
3/23/2011	2011	3	8.15		N				4.73		
3/24/2011	2011	3	7.92	365	365	148	200	108	4.06	588.0	314
3/25/2011	2011	3	7.39		N				4.04		
3/26/2011	2011	3	7.14		N				3.88		
3/27/2011	2011	3	7.02	243	243	328	121	122	3.74	528.0	214
3/28/2011	2011	3	6.73		N				3.78		
3/29/2011	2011	3	6.64	573	573	280	318	138	3.83	608.0	443
3/30/2011	2011	3	6.38		N				3.88		
3/31/2011	2011	3	6.61	335	335	190	264	106	3.65	1,600.0	1,056
4/1/2011	2011	4	7.46		N				3.73		
4/2/2011	2011	4	7.03		N				3.66		
4/3/2011	2011	4	6.71	461	461	263	329	168	3.51	3,370.0	1,596
4/4/2011	2011	4	7.05		N				3.30		
4/5/2011	2011	4	7.40	237	237	272	199	124	3.07	340.0	486
4/6/2011	2011	4	6.60		N				3.49		
4/7/2011	2011	4	6.18	529	529	142	352	92	3.75	192.0	476
4/8/2011	2011	4	6.07		N				3.93		
4/9/2011	2011	4	6.23		N				3.63		
4/10/2011	2011	4	6.14	345	345	388	329	102	3.31	2,352.0	1,092
4/11/2011	2011	4	6.52		N				3.14		
4/12/2011	2011	4	6.27	560	560	246	226	142	3.21	164.0	176
4/13/2011	2011	4	7.71		N				3.39		
4/14/2011	2011	4	7.13	1,314	1,314	130	434	118	4.13	272.0	368
4/15/2011	2011	4	6.52		N				4.21		
4/16/2011	2011	4	7.05		N				3.46		
4/17/2011	2011	4	11.14	157	N	86	82	68	4.27	164.0	130
4/18/2011	2011	4	10.26		N				4.22		
4/19/2011	2011	4	9.47	350	N	145	255	98	4.74	224.0	128
4/20/2011	2011	4	9.31		N				4.26		
4/21/2011	2011	4	8.88	470	N	126	270	86	4.06	216.0	192
4/22/2011	2011	4	8.19		N				4.07		
4/23/2011	2011	4	8.89		N				4.02		
4/24/2011	2011	4	8.41	255	N	154	253	88	3.64	276.0	148
4/25/2011	2011	4	7.91		N				3.58		
4/26/2011	2011	4	8.22	572	N	163	265	92	4.42	664.0	316
4/27/2011	2011	4	8.07		N				4.40		
4/28/2011	2011	4	8.01	612	N	158	345	100	4.30	552.0	199
4/29/2011	2011	4	7.20		N				3.97		
4/30/2011	2011	4	6.73		N				3.90		
5/1/2011	2011	5	6.49	162	162	138	162	98	3.94	728.0	305
5/2/2011	2011	5	6.41		N				3.98		
5/3/2011	2011	5	6.71	519	519	164	563	154	3.66	608.0	381
5/4/2011	2011	5	6.91		N				3.54		
5/5/2011	2011	5	6.42	222	222	147	368	108	3.87	616.0	554
5/6/2011	2011	5	6.26		N				3.57		
5/7/2011	2011	5	6.22		N				3.25		
5/8/2011	2011	5	6.01	154	154	172	561	94	3.46	1,032.0	676
5/9/2011	2011	5	6.04		N				3.82		
5/10/2011	2011	5	6.01	350	350	242	291	108	3.38	144.0	293
5/11/2011	2011	5	6.09		N				3.55		
5/12/2011	2011	5	5.75	465	465	188	329	130	3.93	452.0	574
5/13/2011	2011	5	5.51		N				3.69		
5/14/2011	2011	5	5.79		N				3.60		
5/15/2011	2011	5	5.94	198	198	198	259	138	6.44	292.0	262
5/16/2011	2011	5	5.89		N				3.95		
5/17/2011	2011	5	6.19	529	529	214	400	128	4.87	212.0	282
5/18/2011	2011	5	6.11		N				3.64		
5/19/2011	2011	5	6.35	677	677	180	460	78	4.01	256.0	217
5/20/2011	2011	5	6.32		N				4.35		
5/21/2011	2011	5	6.00		N				4.45		
5/22/2011	2011	5	5.75	273	273	334	321	104	5.77	300.0	321
5/23/2011	2011	5	6.19		N				3.48		
5/24/2011	2011	5	6.52	855	855	648	627	124	3.52	96.0	246
5/25/2011	2011	5	6.00		N				3.68		
5/26/2011	2011	5	6.01	361	361	204	272	92	3.23	552.0	355
5/27/2011	2011	5	5.87		N				3.15		
5/28/2011	2011	5	5.64		N				3.02		
5/29/2011	2011	5	5.39	469	469	458	278	100	2.84	336.0	368
5/30/2011	2011	5	5.67		N				3.11		
5/31/2011	2011	5	5.45	720	720	808	480	152	3.72	760.0	573
6/1/2011	2011	6	5.57		N				2.94		
6/2/2011	2011	6	5.39	418	418	243	313	114	3.24	368.0	331
6/3/2011	2011	6	5.01		N				3.30		
6/4/2011	2011	6	4.88		N				3.10		
6/5/2011	2011	6	4.91	235	235	566	146	98	3.13	508.0	185
6/6/2011	2011	6	4.93		N				3.03		
6/7/2011	2011	6	5.01	342	342	482	210	142	2.92	616.0	395
6/8/2011	2011	6	5.19		N				2.58		
6/9/2011	2011	6	5.59	269	269	332	172	104	2.37	688.0	386
6/10/2011	2011	6	5.21		N				2.57		
6/11/2011	2011	6	5.35		N				2.60		
6/12/2011	2011	6	6.14	384	384	576	157	114	2.74	756.0	405
6/13/2011	2011	6	5.47		N				2.63		
6/14/2011	2011	6	5.35	605	605	596	334	174	2.77	1,344.0	598
6/15/2011	2011	6	5.27		N				2.81		
6/16/2011	2011	6	5.17	681	681	196	357	102	2.83	600.0	479
6/17/2011	2011	6	5.59		N				2.46		
6/18/2011	2011	6	5.13		N				2.83		
6/19/2011	2011	6	4.87	293	293	340	200	120	3.02	668.0	354
6/20/2011	2011	6	4.78		N				2.78		
6/21/2011	2011	6	4.81	553	553	186	257	184	2.86	804.0	258
6/22/2011	2011	6	5.65		N				2.72		
6/23/2011	2011	6	5.76	239	239	166	156	94	2.80	496.0	299
6/24/2011	2011	6	5.42		N				2.64		
6/25/2011	2011	6	5.60		N				2.92		
6/26/2011	2011	6	5.85	263	263	304	104	61	2.78	148.0	249
6/27/2011	2011	6	5.53		N				2.97		
6/28/2011	2011	6	5.41	466	466	476	157	116	2.74	516.0	
6/29/2011	2011	6	5.37		N				2.64		

Date	7dFlow, MGD	30dFlow, MGD	BOD Raw (lbs/d)	30dBODRaw Unclean (lbs/d)	BOD Raw Cleaned (lbs/d)	7dBOD Raw (lbs/d)	30dBODRaw (lbs/d)	TSS Raw (lbs/d)	7dTSS Raw (lbs/d)	30dTSSRaw (lbs/d)	BOD Recycle (lbs/d)	7dBOD Recycle (lbs/d)	30dBODRecycle (lbs/d)	TSS Recycle (lbs/d)	30dTSSRecycle unclean (lbs/d)	TSS Recycle Cleaned (lbs/d)	7dTSS Recycle (lbs/d)	30dTSSRecycle (lbs/d)
3/13/2011	13.8	9.3	35,965	35,713	35,965	N	N	25,618	18,482	16,251	11,970	22,605	12,731	14,509	15,868	14,509	26,819	15,868
3/14/2011	13.0	9.5		35,713	N	N	N		18,482	16,251		22,605	12,731		15,868		26,819	15,868
3/15/2011	12.4	9.7	47,158	36,046	N	N	N	14,025	16,449	16,088	16,168	19,863	12,995	18,194	16,047	18,194	22,427	16,047
3/16/2011	12.0	9.9		34,353	N	N	N		16,449	16,140		19,863	12,995		16,047		22,427	16,047
3/17/2011	11.6	10.0	51,168	35,645	N	N	N	6,521	15,388	15,513	9,187	12,441	12,953	13,376	16,735	13,376	15,360	16,735
3/18/2011	11.1	10.2		35,729	N	N	N		15,388	16,006		12,441	12,953		16,735		15,360	16,735
3/19/2011	10.6	10.3		36,475	N	N	N		15,388	16,639		12,441	13,639		17,758		15,360	17,758
3/20/2011	10.1	10.4	23,866	36,079	23,866	N	N	31,535	17,360	17,720	11,331	12,228	13,461	12,208	17,331	12,208	14,593	17,331
3/21/2011	9.8	10.4		37,297	N	N	N		17,360	18,179		12,228	13,461		17,331		14,593	17,331
3/22/2011	9.5	10.5	30,201	37,839	N	N	N	8,775	15,610	17,788	6,595	9,037	13,050	13,119	17,289	13,119	12,901	17,289
3/23/2011	9.1	10.5		37,839	N	N	N		15,610	17,788		9,037	13,050		17,289		12,901	17,289
3/24/2011	8.8	10.6	24,117	37,391	N	N	N	9,779	16,696	17,995	10,641	9,522	13,266	19,927	17,993	19,927	15,085	17,993
3/25/2011	8.4	10.6		37,391	N	N	N		16,696	17,995		9,522	13,266		17,993		15,085	17,993
3/26/2011	8.1	10.6		37,351	N	N	N		16,696	18,985		9,522	13,940		18,985		15,085	18,985
3/27/2011	7.9	10.6	14,233	35,573	14,233	N	N	19,211	12,588	19,002	6,687	7,974	13,382	16,498	18,794	16,498	16,515	18,794
3/28/2011	7.6	10.4		35,573	N	N	N		12,588	19,002		7,974	13,382		18,794		16,515	18,794
3/29/2011	7.3	10.3	31,733	36,966	N	N	N	15,507	14,832	18,481	14,144	10,491	13,427	19,412	18,872	19,412	18,612	18,872
3/30/2011	7.0	10.2		36,966	N	N	N		14,832	18,481		10,491	13,427		18,872		18,612	18,872
3/31/2011	6.8	10.0	18,486	35,908	18,486	N	N	10,484	15,067	18,137	32,155	17,662	15,020	48,719	21,795			19,551
4/1/2011	6.9	9.9		35,908	N	N	N		15,067	18,137		17,662	15,020		21,795			19,551
4/2/2011	6.8	9.8		35,759	N	N	N		15,067	18,886		17,662	15,197		21,503			19,029
4/3/2011	6.8	9.7	25,830	34,996	25,830	N	N	14,736	13,576	18,567	46,783	31,027	17,627	98,784	27,447			19,029
4/4/2011	6.8	9.6		34,996	N	N	N		13,576	18,567		31,027	17,627		27,447			19,029
4/5/2011	6.9	9.5	14,627	33,239	14,627	19,648	N	16,788	14,003	15,601	12,457	30,465	17,997	8,715	26,878	8,715		18,355
4/6/2011	7.0	9.1		33,239	N	19,648	N		14,003	15,601		30,465	17,997		26,878			18,355
4/7/2011	6.9	8.9	27,287	29,623	N	N	N	7,325	12,949	14,616	14,898	24,713	17,267	6,009	24,927	6,009		16,050
4/8/2011	6.7	8.6		29,623	N	N	N		12,949	14,616		24,713	17,267		24,927			16,050
4/9/2011	6.6	8.4		28,723	N	N	N		12,949	15,025		24,713	16,085		24,123			
4/10/2011	6.5	8.1	17,680	27,873	17,680	N	N	19,884	14,665	15,399	30,203	19,186	17,171	65,052	27,271			
4/11/2011	6.4	7.9		27,873	N	N	N		14,665	15,399		19,186	17,171		27,271			
4/12/2011	6.3	7.7	29,286	27,359	N	N	N	12,865	13,358	14,418	4,708	16,603	16,612	4,387	26,492	4,387		
4/13/2011	6.4	7.6		27,359	N	N	N		13,358	14,418		16,603	16,612		26,492			
4/14/2011	6.6	7.5	78,137	29,742	N	N	N	7,730	13,493	13,934	12,697	15,869	16,345	9,385	25,815	9,385		
4/15/2011	6.6	7.4		29,742	N	N	N		13,493	13,934		15,869	16,345		25,815			
4/16/2011	6.8	7.3		27,957	N	N	N		13,493	14,552		15,869	16,942		26,851			
4/17/2011	7.5	7.3	14,589	26,929	14,589	N	N	7,991	9,529	14,047	4,636	7,347	15,995	5,849	25,236	5,849	6,540	
4/18/2011	8.0	7.3		26,929	N	N	N		9,529	14,047		7,347	15,995		25,236		6,540	
4/19/2011	8.5	7.3	27,647	27,219	N	N	N	11,454	9,058	12,502	5,068	7,467	15,513	8,869	24,979	8,869	8,034	
4/20/2011	8.7	7.4		27,219	N	N	N		9,058	12,502		7,467	15,513		24,979		8,034	
4/21/2011	8.9	7.4	34,823	27,575	N	N	N	9,336	9,594	12,545	6,509	5,404	15,507	7,322	24,533	7,322	7,347	
4/22/2011	9.2	7.4		27,575	N	N	N		9,594	12,545		5,404	15,507		24,533		7,347	
4/23/2011	9.4	7.4		27,863	N	N	N		9,594	12,776		5,404	15,912		24,917		7,347	
4/24/2011	9.1	7.4	17,895	27,096	17,895	N	N	10,807	10,532	12,624	4,493	5,357	15,034	8,379	23,645	8,379	8,190	
4/25/2011	8.7	7.5		27,096	N	N	N		10,532	12,624		5,357	15,034		23,645		8,190	
4/26/2011	8.5	7.5	39,249	29,021	N	N	N	11,185	10,442	12,007	11,647	7,549	15,415	24,472	24,258	24,472	13,391	
4/27/2011	8.4	7.5		29,021	N	N	N		10,442	12,007		7,549	15,415		24,258		13,391	
4/28/2011	8.2	7.6	40,885	29,725	N	N	N	10,555	10,849	11,626	7,138	7,759	14,876	19,801	24,288	19,801	17,551	
4/29/2011	8.1	7.6		29,725	N	N	N		10,849	11,626		7,759	14,876		24,288		17,551	
4/30/2011	7.8	7.6		30,661	N	N	N		10,849	11,721		7,759	13,436		22,252		17,551	
5/1/2011	7.5	7.6	8,778	28,978	8,778	N	N	7,477	9,739	11,395	10,019	9,601	13,173	23,914	22,380	23,914	22,729	11,555
5/2/2011	7.3	7.6		28,978	N	N	N		9,739	11,395		9,601	13,173		22,380		22,729	11,555
5/3/2011	7.1	7.6	29,046	29,225	N	N	N	9,178	9,070	10,967	11,624	9,594	10,469	18,550	16,208	18,550	20,755	12,138
5/4/2011	6.9	7.6		29,225	N	N	N		9,070	10,967		9,594	10,469		16,208		20,755	12,138
5/5/2011	6.7	7.5	11,886	29,014	11,886	N	N	7,870	8,175	10,281	17,910	13,184	10,888	19,915	17,069	19,915	20,793	13,071
5/6/2011	6.6	7.5		29,014	N	N	N		8,175	10,281		13,184	10,888		17,069		20,793	13,071
5/7/2011	6.5	7.5		29,158	N	N	N		8,175	10,528		13,184	10,554		17,991		20,793	13,713
5/8/2011	6.4	7.5	7,727	27,510	7,727	N	N	8,630	8,560	10,382	19,522	16,352	11,244	29,803	18,900	29,803	22,756	15,054
5/9/2011	6.4	7.5		27,510	N	N	N		8,560	10,382		16,352	11,244		18,900		22,756	15,054
5/10/2011	6.3	7.5	17,562	27,501	17,562	12,392	N	12,143	9,548	9,786	8,255	15,229	9,556	4,057	14,208	4,057	17,925	14,208
5/11/2011	6.1	7.5		27,501	N	12,392	N		9,548	9,786		15,229	9,556		14,208		17,925	14,208
5/12/2011	6.1	7.5	22,301	26,963	N	N	N	9,016	9,930	9,490	18,831	15,536	10,642	14,828	15,011	14,828	16,229	15,011
5/13/2011	5.9	7.4		26,963	N	N	N		9,930	9,490		15,536	10,642		15,011		16,229	15,011
5/14/2011	5.9	7.4		22,699	N	N	N		9,930	9,637		15,536	10,471		15,480		16,229	15,480
5/15/2011	5.9	7.3	9,810	21,707	9,810	N	N	9,810	10,323	9,650	14,085	13,723	10,749	15,698	15,497	15,698	11,528	15,497
5/16/2011	5.9	7.3		21,707	N	N	N		10,323	9,650		13,723	10,749		15,497		11,528	15,497
5/17/2011	5.9	7.1	27,347	22,689	N	N	N	11,063	9,963	9,886	11,463	14,793	11,274	8,618	15,710	8,618	13,048	15,710
5/18/2011	5.9	7.0		22,689	N	N	N		9,963	9,886		14,793	11,274		15,710		13,048	15,710
5/19/2011	6.0	6.9	35,887	23,323	N	N	N	9,541	10,138	9,739	7,259	10,936	11,443	8,564	15,686	8,564	10,960	15,686
5/20/2011	6.1	6.8		23,323	N	N	N		10,138	9,739		10,936	11,443		15,686		10,960	15,686
5/21/2011	6.1	6.7		22,364	N	N	N		10,138	9,773		10,936	11,854		16,383		10,960	16,383
5/22/2011	6.1	6.6	13,097	21,651	13,097	N	N	16,023	12,209	10,254	15,449	11,390	12,130	14,438	16,234	14,438	10,540	16,234
5/23/2011	6.1	6.5		21,651	N	N	N		12,209	10,254		11,390	12,130		16,234		10,540	16,234
5/24/2011	6.2	6.5	46,517	23,853	46,517	N	N	35,255	20,273	12,134	7,227	9,978	12,341	2,820	15,806	2,820	8,607	15,806
5/25/2011	6.2	6.4		23,853	N	N	N		20,273	12,134		9,978	12,341		15,806		8,607	15,806
5/26/2011	6.1	6.3	18,095	22,226	18,095	25,903	N	10,225	20,501	12,061	9,561	10,746	12,180	14,867	15,067	14,867	10,709	15,067
5/27/2011	6.0	6.3		22,226	N	25,903	N		20,501	12,061		10,746	12,180		15,067		10,709	15,067
5/28/2011	6.0	6.2		20,671	N	25,903	N		20,501	12,186		10,746	12,600		14,673		10,709	14,673
5/29/2011	5.9	6.1	21,100	20,704	21,100	28,571	N	20,605	22,029	12,834	8,723	8,504	12,302	7,965	14,157	7,965	8,551	14,157
5/30/2011	5.9	6.1		20,704	N	28,571	N		22,029	12,834		8,504	12,302		14,157		8,551	14,157
5/31/2011	5.7	6.0	32,761	22,549	32,761	23,985	N	36,766	22,532	15,087	17,773	12,019	12,899	23,573	14,130	23,573	15,468	14,130
6/1/2011	5.7	6.0		22,549	N	23,985	N		22,532	15,087		12,019	12,899		14,130		15,468	14,130
6/2/2011	5.6	6.0	18,796	21,760	18,796	24,219	N	10,927	22,766	15,221	8,942	11,813	12,692	9,942	13,468	9,942	13,827	13,468
6/3/2011	5.4	5.9		21,760	N	24,219	N		22,766	15,221		11,813	12,692		13,468		13,827	13,468
6/4/2011	5.3	5.9		22,583	N	24,219	N		22,766	15,834		11,813	12,258		12,931		13,827	12,931
6/5/2011	5.3	5.8	9,624	21,586	9,624	20,394	N	23,180	23,624	16,399	4,838	10,518	11,687	13,285	12,958	13,285	15,600	12,958
6/6/2011	5.2	5.8		21,586	N	20,394	N		23,624	16,399		10,518	11,687		12,958		15,600	12,958
6/7/2011	5.1	5.7	14,302	22,092	14,302	14,241	N	20,156	18,088	17,286	9,626	7,802	10,926	15,012	11,820	15,012	12,746	11,820
6/8/2011	5.0	5.7		22,092	N	14,241	N		18,088	17,286		7,802	10,926		11,820		12,746	11,820
6/9/2011	5.1	5.7	12,546	21,706	12,546	12,157	N	15,484	19,607	17,542	7,628	7,364	10,877	13,596	12,554	13,596	13,964	12,554
6/10/2011	5.1	5.7		21,706	N	12,157	N		19,607	17,542		7,364	10,877		12,554		13,964	12,554
6/11/2011	5.2	5.7		21,657	N	12,157	N		19,607	18,253		7,364	10,215		12,365		13,964	12,365
6/12/2011	5.3	5.7	19,684	21,505	19,684	15,511	19,667	29,526	21,722	19,120	9,257	8,837	10,141	17,280	12,743	17,280	15,296	12,743
6/13/2011	5.4	5.7		21,505	N	15,511	19,667		21,722	19,120		8,837	10,141		12,743		15,296	12,743
6/14/2011	5.5	5.6	26,996	22,827	26,996	19,742	21,229	26,594	23,868	20,411	13,843	10,243	10,122	31,111	13,929	31,111	20,663	13,929
6/15/2011	5.5	5.6		22,827	N	19,742	21,229		23,868	20,411		10,243	10,122		13,929		20,663	13,929
6/16/2011	5.4	5.6	29,379	22,983	N	N	21,229	8,456	21,525	20,211	11,300	11,467	10,110	14,155	14,354	14,155	20,849	14,354
6/17/2011	5.5	5.6		22,983	N	N	21,229		21,525	20,211		11,467	10,110		14,354		20,849	14,354
6/18/2011	5.4	5.5		21,908	N	N	21,229		21,525	21,100		11,467	10,347		14,837		20,849	14,837
6/19/2011	5.3	5.5	11,895	21,138	11,895	N	20,451	13,803	16,284	20,539	8,934	11,359	10,239	16,859	14,993	16,859	20,709	14,993
6/20/2011	5.2	5.4		21,138	N	N	20,451		16,284	20,539		11,359	10,239		14,993		20,709	14,993
6/21/2011	5.1	5.4	22,217	21,839	N	N	21,120	7,473	9,911	19,881	6,166	8,800	9,525	19,214	15,360	19,214	16,743	15,360
6/22/2011	5.1	5.4		21,839	N	N	21,120		9,911	19,881		8,800	9,525		15,360		16,743	15,360
6/23/2011	5.2	5.4	11,489	19,145	11,489	N	17,935	7,980	9,752	17,783	6,991	7,364	9,506	11,598	16,035	11,598	15,890	16,035
6/24/2011	5.2	5.3		19,145	N	N	17,935		9,752	17,783		7,364	9,506		16,035		15,890	16,035
6/25/2011	5.3	5.3		19,232	N	N	N		9,752	18,413		7,364	9,502		16,132		15,890	16,132
6/26/2011	5.4	5.3	12,835	18,740	12,835	N	17,457	14,835	10,096	18,137	5,766	6,308	9,215	3,427	15,155	3,427	11,413	15,155
6/27/2011	5.5	5.3		18,740	N	N	17,457		10,096	18,137		6,308	9,215		15,155		11,413	15,155
6/28/2011	5.6	5.3	21,049	18,736	21,049	15,124	17,452	21,501	14,772	18,206		6,379	9,255	11,802	15,450	11,802	8,942	15,450
6/29/2011	5.6	5.3		18,736	N	15,124	17,452		14,772	18,206		6,379	9,255		15,450		8,942	15,450

Date	BOD/TSS	BOD Cleaned R&R (lbs/d)	7dBOD Cleaned R&R (lbs/d)	30dBOD Cleaned R&R (lbs/d)	TSS Cleaned R&R (lbs/d)	7dTSS Cleaned R&R (lbs/d)	30dTSS Cleaned R&R (lbs/d)	Recycles Flow, MGD	7d Recycles Flow, MGD	30d Recycles Flow, MGD
3/13/2011	1.4	47,935	N	N	40,126	45,302	33,198	5.43	5.08	4.35
3/14/2011		N	N	N	N	45,302	33,198	5.47	5.35	4.43
3/15/2011	3.4	N	N	N	32,219	38,876	33,122	5.40	5.38	4.51
3/16/2011		N	N	N	N	38,876	33,122	4.49	5.26	4.54
3/17/2011	7.8	N	N	N	19,897	30,747	33,038	4.40	5.15	4.54
3/18/2011		N	N	N	N	30,747	33,038	4.65	5.07	4.56
3/19/2011		N	N	N	N	30,747	34,824	4.30	4.88	4.59
3/20/2011	0.8	35,197	N	N	43,743	31,953	35,510	4.57	4.76	4.62
3/21/2011		N	N	N	N	31,953	35,510	3.61	4.49	4.58
3/22/2011	3.4	N	N	N	21,894	28,511	35,076	4.27	4.33	4.57
3/23/2011		N	N	N	N	28,511	35,076	4.73	4.36	4.61
3/24/2011	2.5	N	N	N	29,706	31,781	35,988	4.06	4.31	4.65
3/25/2011		N	N	N	N	31,781	35,988	4.04	4.23	4.64
3/26/2011		N	N	N	N	31,781	37,970	3.88	4.17	4.63
3/27/2011	0.7	20,919	N	N	35,709	29,103	37,796	3.74	4.05	4.62
3/28/2011		N	N	N	N	29,103	37,796	3.78	4.07	4.62
3/29/2011	2.0	N	N	N	34,919	33,445	37,353	3.83	4.01	4.58
3/30/2011		N	N	N	N	33,445	37,353	3.88	3.89	4.56
3/31/2011	1.8	50,640	N	N	N	N	38,326	3.65	3.83	4.50
4/1/2011		N	N	N	N	N	38,326	3.73	3.78	4.46
4/2/2011		N	N	N	N	N	38,678	3.66	3.75	4.42
4/3/2011	1.8	72,614	N	N	N	N	38,678	3.51	3.72	4.39
4/4/2011		N	N	N	N	N	38,678	3.30	3.65	4.35
4/5/2011	0.9	27,085	50,113	N	25,503	N	34,500	3.07	3.54	4.32
4/6/2011		N	50,113	N	N	N	34,500	3.49	3.49	4.32
4/7/2011	3.7	N	N	N	13,334	N	31,030	3.75	3.50	4.27
4/8/2011		N	N	N	N	N	31,030	3.93	3.53	4.22
4/9/2011		N	N	N	N	N	N	3.63	3.53	4.17
4/10/2011	0.9	47,883	N	N	N	N	N	3.31	3.50	4.11
4/11/2011		N	N	N	N	N	N	3.14	3.48	4.02
4/12/2011	2.3	N	N	N	17,251	N	N	3.21	3.49	3.95
4/13/2011		N	N	N	N	N	N	3.39	3.48	3.88
4/14/2011	10.1	N	N	N	17,115	N	N	4.13	3.54	3.84
4/15/2011		N	N	N	N	N	N	4.21	3.57	3.83
4/16/2011		N	N	N	N	N	N	3.46	3.55	3.80
4/17/2011	1.8	19,225	N	N	13,840	16,069	N	4.27	3.69	3.78
4/18/2011		N	N	N	N	16,069	N	4.22	3.84	3.78
4/19/2011	2.4	N	N	N	20,322	17,093	N	4.74	4.06	3.79
4/20/2011		N	N	N	N	17,093	N	4.26	4.19	3.81
4/21/2011	3.7	N	N	N	16,658	16,940	N	4.06	4.18	3.80
4/22/2011		N	N	N	N	16,940	N	4.07	4.16	3.78
4/23/2011		N	N	N	N	16,940	N	4.02	4.24	3.78
4/24/2011	1.7	22,388	N	N	19,186	18,722	N	3.64	4.14	3.77
4/25/2011		N	N	N	N	18,722	N	3.58	4.05	3.76
4/26/2011	3.5	N	N	N	35,657	23,834	N	4.42	4.01	3.78
4/27/2011		N	N	N	N	23,834	N	4.40	4.02	3.80
4/28/2011	3.9	N	N	N	30,356	28,400	N	4.30	4.06	3.81
4/29/2011		N	N	N	N	28,400	N	3.97	4.04	3.82
4/30/2011		N	N	N	N	28,400	N	3.90	4.03	3.83
5/1/2011	1.2	18,796	N	N	31,391	32,468	21,874	3.94	4.07	3.83
5/2/2011		N	N	N	N	32,468	21,874	3.98	4.13	3.84
5/3/2011	3.2	N	N	N	27,728	29,825	22,362	3.66	4.02	3.85
5/4/2011		N	N	N	N	29,825	22,362	3.54	3.90	3.86
5/5/2011	1.5	29,796	N	N	27,785	28,968	22,552	3.87	3.84	3.88
5/6/2011		N	N	N	N	28,968	22,552	3.57	3.78	3.89
5/7/2011		N	N	N	N	28,968	23,390	3.25	3.69	3.87
5/8/2011	0.9	27,249	N	N	38,433	31,315	24,644	3.46	3.62	3.85
5/9/2011		N	N	N	N	31,315	24,644	3.82	3.60	3.86
5/10/2011	1.4	25,817	27,621	N	16,200	27,473	23,994	3.38	3.56	3.86
5/11/2011		N	27,621	N	N	27,473	23,994	3.55	3.56	3.88
5/12/2011	2.5	N	N	N	23,844	26,159	24,501	3.93	3.57	3.90
5/13/2011		N	N	N	N	26,159	24,501	3.69	3.58	3.91
5/14/2011		N	N	N	N	26,159	25,117	3.60	3.63	3.89
5/15/2011	1.0	23,895	N	N	25,508	21,851	25,147	6.44	4.06	3.97
5/16/2011		N	N	N	N	21,851	25,147	3.95	4.08	3.98
5/17/2011	2.5	N	N	N	19,680	23,011	25,596	4.87	4.29	4.00
5/18/2011		N	N	N	N	23,011	25,596	3.64	4.30	3.98
5/19/2011	3.8	N	N	N	18,105	21,098	25,426	4.01	4.31	3.96
5/20/2011		N	N	N	N	21,098	25,426	4.35	4.41	3.96
5/21/2011		N	N	N	N	21,098	26,156	4.45	4.53	3.97
5/22/2011	0.8	28,546	N	N	30,461	22,749	26,487	5.77	4.43	4.03
5/23/2011		N	N	N	N	22,749	26,487	3.48	4.37	4.01
5/24/2011	1.3	53,745	N	N	38,076	28,881	27,940	3.52	4.17	4.01
5/25/2011		N	N	N	N	28,881	27,940	3.68	4.18	4.01
5/26/2011	1.8	27,656	36,649	N	25,093	31,210	27,128	3.23	4.07	3.97
5/27/2011		N	36,649	N	N	31,210	27,128	3.15	3.90	3.93
5/28/2011		N	36,649	N	N	31,210	26,859	3.02	3.69	3.89
5/29/2011	1.0	29,823	37,075	N	28,570	30,579	26,990	2.84	3.27	3.85
5/30/2011		N	37,075	N	N	30,579	26,990	3.11	3.22	3.82
5/31/2011	0.9	50,534	36,005	N	60,339	38,000	29,217	3.72	3.25	3.82
6/1/2011		N	36,005	N	N	38,000	29,217	2.94	3.14	3.78
6/2/2011	1.7	27,738	36,032	N	20,869	36,592	28,689	3.24	3.14	3.77
6/3/2011		N	36,032	N	N	36,592	28,689	3.30	3.17	3.76
6/4/2011		N	36,032	N	N	36,592	28,765	3.10	3.18	3.74
6/5/2011	0.4	14,462	30,912	N	36,465	39,224	29,357	3.13	3.22	3.72
6/6/2011		N	30,912	N	N	39,224	29,357	3.03	3.21	3.71
6/7/2011	0.7	23,928	22,043	N	35,169	30,834	29,106	2.92	3.09	3.70
6/8/2011		N	22,043	N	N	30,834	29,106	2.58	3.04	3.65
6/9/2011	0.8	20,174	19,521	N	29,080	33,571	30,097	2.37	2.92	3.62
6/10/2011		N	19,521	N	N	33,571	30,097	2.57	2.82	3.59
6/11/2011		N	19,521	N	N	33,571	30,618	2.60	2.74	3.54
6/12/2011	0.7	28,941	24,348	29,949	46,807	37,018	31,863	2.74	2.69	3.51
6/13/2011		N	24,348	29,949	N	37,018	31,863	2.63	2.63	3.48
6/14/2011	1.0	40,838	29,984	31,490	57,705	44,531	34,340	2.77	2.61	3.36
6/15/2011		N	29,984	31,490	N	44,531	34,340	2.81	2.64	3.32
6/16/2011	3.5	N	N	31,490	22,610	42,374	34,565	2.83	2.71	3.25
6/17/2011		N	N	31,490	N	42,374	34,565	2.46	2.69	3.21
6/18/2011		N	N	31,490	N	42,374	35,937	2.83	2.72	3.17
6/19/2011	0.9	20,830	N	30,601	30,663	36,993	35,531	3.02	2.76	3.13
6/20/2011		N	N	30,601	N	36,993	35,531	2.78	2.79	3.07
6/21/2011	3.0	N	N	30,788	26,686	26,653	35,241	2.86	2.80	2.98
6/22/2011		N	N	30,788	N	26,653	35,241	2.72	2.79	2.95
6/23/2011	1.4	18,481	N	27,582	19,578	25,642	33,818	2.80	2.78	2.93
6/24/2011		N	N	27,582	N	25,642	33,818	2.64	2.81	2.89
6/25/2011		N	N	N	N	25,642	34,545	2.92	2.82	2.88
6/26/2011	0.9	18,601	N	26,759	18,263	21,509	33,293	2.78	2.79	2.87
6/27/2011		N	N	26,759	N	21,509	33,293	2.97	2.81	2.87
6/28/2011	1.0	N	N	N	33,302	23,714	33,657	2.74	2.80	2.86
6/29/2011		N	N	N	N	23,714	33,657	2.64	2.78	2.85

Date	Year	Month	Flow Effluent (MGD)	BOD RAW INF. (mg/l)		TSS RAW INF. (mg/l)	BOD PRIM. EFF. (mg/l)	TSS PRIM. EFF. (mg/l)	Plant Drain Flow (MGD)	TSS DRAIN (mg/l)	BOD Drain (mg/l)	7dFlow, MGD	30dFlow, MGD
6/30/2011	2011	6	4.85	192	192	161	182	86	0.43	326.0		5.4	5.3
7/1/2011	2011	7	4.78		N				2.80			5.3	5.3
7/2/2011	2011	7	4.86		N				3.17			5.2	5.3
7/3/2011	2011	7	4.92	165	165	316	141	44	2.97	352.0	338	5.1	5.3
7/4/2011	2011	7	4.70		N				3.05			5.0	5.2
7/5/2011	2011	7	4.64	322	322	496	197	180	3.33	232.0	242	4.9	5.2
7/6/2011	2011	7	4.82		N				3.30			4.8	5.2
7/7/2011	2011	7	4.74	332	332	146	335	138	3.29	2,960.0	295	4.8	5.2
7/8/2011	2011	7	5.77		N				3.29			4.9	5.2
7/9/2011	2011	7	5.35		N				3.27			5.0	5.2
7/10/2011	2011	7	4.73	275	275	462	173	128	3.34	1,460.0	520	5.0	5.2
7/11/2011	2011	7	4.93		N				3.21			5.0	5.2
7/12/2011	2011	7	4.97	347	347	250	241	142	3.04	588.0	382	5.0	5.2
7/13/2011	2011	7	5.10		N				2.95			5.1	5.2
7/14/2011	2011	7	4.95	356	356	229	312	98	1.77	336.0	810	5.1	5.1
7/15/2011	2011	7	4.53		N				1.60			4.9	5.1
7/16/2011	2011	7	4.19		N				1.47			4.8	5.1
7/17/2011	2011	7	4.49	175	175	141	164	126	2.64	1,840.0	647	4.7	5.0
7/18/2011	2011	7	4.71		N				2.62			4.7	5.0
7/19/2011	2011	7	4.64	315	315	144	332	110	2.93	784.0	578	4.7	5.0
7/20/2011	2011	7	4.58		N				2.77			4.6	5.0
7/21/2011	2011	7	4.69	426	426	108	360	84	2.49	484.0	493	4.5	5.0
7/22/2011	2011	7	4.71		N				2.09			4.6	5.0
7/23/2011	2011	7	4.33		N				1.89			4.6	4.9
7/24/2011	2011	7	4.51	168	168	189	220	108	1.95	2,430.0	897	4.6	4.9
7/25/2011	2011	7	4.48	399	399				2.13			4.6	4.9
7/26/2011	2011	7	4.98	363	363	244	356	86	2.75	908.0	589	4.6	4.8
7/27/2011	2011	7	4.55		N				2.50			4.6	4.8
7/28/2011	2011	7	4.39	745	745	200	432	98	2.17	432.0	454	4.6	4.8
7/29/2011	2011	7	4.85		N				2.29			4.6	4.8
7/30/2011	2011	7	4.48		N				1.88			4.6	4.7
7/31/2011	2011	7	4.04	201	201	182	152	60	1.98	688.0	349	4.5	4.7
8/1/2011	2011	8	4.50		N				1.96			4.5	4.7
8/2/2011	2011	8	4.79	534	534	216	316	98	1.85	720.0	277	4.5	4.7
8/3/2011	2011	8	4.42	371	371				2.12			4.5	4.7
8/4/2011	2011	8	4.19	593	593	237	392	84	2.07	508.0	326	4.5	4.7
8/5/2011	2011	8	4.19		N				2.05			4.4	4.7
8/6/2011	2011	8	4.23		N				2.08			4.3	4.6
8/7/2011	2011	8	6.04	190	190	271	105	76	2.23	108.0	120	4.6	4.7
8/8/2011	2011	8	4.92		N				2.03			4.7	4.6
8/9/2011	2011	8	5.27	435	435	322	420	96	0.91	828.0	771	4.8	4.7
8/10/2011	2011	8	5.67	345	345				1.02			4.9	4.7
8/11/2011	2011	8	4.98	284	284	158	244	82	1.97	1,070.0	603	5.0	4.7
8/12/2011	2011	8	4.60		N				2.19			5.1	4.7
8/13/2011	2011	8	4.51		N				2.31			5.1	4.6
8/14/2011	2011	8	4.97	172	172	254	151	108	1.97	1,810.0	648	5.0	4.7
8/15/2011	2011	8	7.18		N				2.12			5.3	4.8
8/16/2011	2011	8	6.19	154	154	176	184	84	2.58	332.0	239	5.4	4.8
8/17/2011	2011	8	5.65	197	197				2.54			5.4	4.9
8/18/2011	2011	8	5.45	405	405	222	468	102	2.31	336.0	470	5.5	4.9
8/19/2011	2011	8	5.49		N				2.02			5.6	4.9
8/20/2011	2011	8	5.26		N				1.98			5.7	4.9
8/21/2011	2011	8	5.26	272	272	246		302	2.02	256.0	270	5.8	4.9
8/22/2011	2011	8	5.52	327	327				2.49			5.5	5.0
8/23/2011	2011	8	4.86	386	386	208	462	128	2.41	352.0	318	5.4	5.0
8/24/2011	2011	8	4.64		N				2.03			5.2	5.0
8/25/2011	2011	8	5.22	321	321	344	394	116	2.14	1,620.0	1,440	5.2	5.0
8/26/2011	2011	8	4.84		N				2.47			5.1	5.0
8/27/2011	2011	8	5.42		N				2.30			5.1	5.1
8/28/2011	2011	8	8.62	174	N	284	73	74	2.01	308.0	116	5.6	5.2
8/29/2011	2011	8	7.24	113	113	172	107	80	2.29	216.0	74	5.8	5.3
8/30/2011	2011	8	6.79	103	103	158	69	70	1.97	192.0	107	6.1	5.4
8/31/2011	2011	8	6.79	569	569				2.52			6.4	5.4
9/1/2011	2011	9	6.52	509	509	258	272	96	2.56	668.0	525	6.6	5.5
9/2/2011	2011	9	5.77		N				2.13			6.7	5.5
9/3/2011	2011	9	5.91		N				2.34			6.8	5.6
9/4/2011	2011	9	5.80	177	177	206	143	62	2.17	276.0	206	6.4	5.7
9/5/2011	2011	9	5.75		N				2.18			6.2	5.7
9/6/2011	2011	9	6.61	203	203	198	181	90	2.77	1,090.0	464	6.2	5.7
9/7/2011	2011	9	7.10		N				3.23			6.2	5.8
9/8/2011	2011	9	11.48	226	N	216	212	108	3.90	544.0	266	6.9	6.0
9/9/2011	2011	9	10.58		N				4.00			7.6	6.2
9/10/2011	2011	9	9.20		N				3.80			8.1	6.3
9/11/2011	2011	9	8.46	83	N	120	85	56	3.34	836.0	136	8.5	6.4
9/12/2011	2011	9	7.80		N				3.38			8.7	6.5
9/13/2011	2011	9	7.45	197	197	242	149	76	3.43	396.0	130	8.9	6.6
9/14/2011	2011	9	7.27		N				3.24			8.9	6.6
9/15/2011	2011	9	6.91	243	243	224	223	94	3.27	332.0	290	8.2	6.7
9/16/2011	2011	9	6.07		N				3.63			7.6	6.7
9/17/2011	2011	9	6.00		N				3.34			7.1	6.7
9/18/2011	2011	9	5.81	183	183	218	79	112	3.33	352.0	219	6.8	6.7
9/19/2011	2011	9	5.75		N				3.41			6.5	6.7
9/20/2011	2011	9	6.19	223	223	274	134	86	3.25	424.0	219	6.3	6.7
9/21/2011	2011	9	5.76		N				3.24			6.1	6.8
9/22/2011	2011	9	6.20	326	326	255	178	96	3.43	596.0	355	6.0	6.8
9/23/2011	2011	9	6.97		N				3.98			6.1	6.9
9/24/2011	2011	9	7.10		N				3.69			6.3	6.9
9/25/2011	2011	9	6.35	139	139	258	60	136	3.41	1,016.0	314	6.3	7.0
9/26/2011	2011	9	5.91		N				3.56			6.4	7.0
9/27/2011	2011	9	6.51	351	351	168	209	94	4.20	404.0	271	6.4	6.9
9/28/2011	2011	9	5.74		N				4.13			6.4	6.9
9/29/2011	2011	9	7.36	308	308	262	202	74	4.04	228.0	350	6.6	6.9
9/30/2011	2011	9	6.62		N				3.72			6.5	6.9
10/1/2011	2011	10	6.88		N				3.13			6.5	6.9
10/2/2011	2011	10	6.70	168	168	134	183	58	3.03	228.0	266	6.5	6.9
10/3/2011	2011	10	6.33		N				3.22			6.6	7.0
10/4/2011	2011	10	7.44	364	364	174	298	78	3.39	472.0	374	6.7	7.0
10/5/2011	2011	10	6.88		N				3.34			6.9	7.0
10/6/2011	2011	10	6.35	304	304	203	302	82	3.68	560.0	590	6.7	7.0
10/7/2011	2011	10	5.96		N				3.64			6.6	7.0
10/8/2011	2011	10	6.03		N				3.49			6.5	6.8
10/9/2011	2011	10	5.73	136	136	318	75	78	3.16	376.0	177	6.4	6.7
10/10/2011	2011	10	5.82		N				3.14			6.3	6.5
10/11/2011	2011	10	5.66	265	265	148	168	68	3.64	482.0	336	6.1	6.5
10/12/2011	2011	10	5.86		N				3.53			5.9	6.4
10/13/2011	2011	10	7.28	308	308	294	232	62	3.57	160.0	234	6.0	6.4
10/14/2011	2011	10	8.09		N				3.75			6.4	6.4
10/15/2011	2011	10	7.24		N				4.10			6.5	6.4
10/16/2011	2011	10	7.17	133	133	210	100	74	4.18	220.0	186	6.7	6.5

Date	BOD Raw (lbs/d)	30dBODRaw Unclean (lbs/d)	BOD Raw Cleaned (lbs/d)	7dBOD Raw (lbs/d)	30dBODRaw (lbs/d)	TSS Raw (lbs/d)	7dTSS Raw (lbs/d)	30dTSSRaw (lbs/d)	BOD Recycle (lbs/d)	7dBOD Recycle (lbs/d)	30dBODRecycle (lbs/d)	TSS Recycle (lbs/d)	30dTSSRecycle unclean (lbs/d)	TSS Recycle Cleaned (lbs/d)	7dTSS Recycle (lbs/d)	30dTSSRecycle (lbs/d)
6/30/2011	7,764	16,814	7,764	13,883	15,180	6,511	14,282	15,879			8,481	1,182	13,728	1,182	5,470	13,728
7/1/2011		16,814	N	13,883	15,180		14,282	15,879			8,481		13,728		5,470	13,728
7/2/2011		16,648	N	13,883	N		14,282	16,292			8,435		14,043		5,470	14,043
7/3/2011	6,769	15,888	6,769	11,861	14,087	12,963	13,658	16,036	8,386		8,431	8,733	13,635	8,733	7,239	13,635
7/4/2011		15,888	N	11,861	14,087		13,658	16,036			8,431		13,635		7,239	13,635
7/5/2011	12,479	16,108	12,479	9,004	14,346	19,222	12,899	15,731	6,717	7,551	8,601	6,440	13,108	6,440	5,452	13,108
7/6/2011		16,108	N	9,004	14,346		12,899	15,731		7,551	8,601		13,108		5,452	13,108
7/7/2011	13,134	16,018	N	N	N	5,776	12,654	14,625	8,111	7,738	8,464	81,382	18,214			12,950
7/8/2011		16,018	N	N	N		12,654	14,625		7,738	8,464		18,214			12,950
7/9/2011		16,308	N	N	N		12,654	14,553		7,738	8,547		18,599			12,891
7/10/2011	10,850	15,888	10,850	N	N	18,229	14,409	14,836	14,490	9,773	9,087	40,684	20,297			12,891
7/11/2011		15,888	N	N	N		14,409	14,836		9,773	9,087		20,297			12,891
7/12/2011	14,377	15,480	14,377	N	N	10,358	11,454	13,362	9,695	10,765	9,127	14,923	20,116	14,923		12,677
7/13/2011		15,480	N	N	N		11,454	13,362		10,765	9,127		20,116			12,677
7/14/2011	14,694	14,533	14,694	13,307	N	9,452	12,680	12,043	11,983	12,056	8,958	4,971	18,105	4,971		10,300
7/15/2011		14,533	N	13,307	N		12,680	12,043		12,056	8,958		18,105			10,300
7/16/2011		13,296	N	13,307	N		12,680	12,342		12,056	8,724		18,435			
7/17/2011	6,563	12,778	6,563	11,878	11,888	5,288	8,366	11,799	14,269	11,982	9,228	40,580	20,138			
7/18/2011		12,778	N	11,878	11,888		8,366	11,799		11,982	9,228		20,138			
7/19/2011	12,192	12,801	N	N	N	5,573	6,771	11,166	14,134	13,462	9,701	19,172	20,316	19,172		
7/20/2011		12,801	N	N	N		6,771	11,166		13,462	9,701		20,316			
7/21/2011	16,672	12,374	N	N	N	4,227	5,029	10,917	10,259	12,887	10,073	10,071	19,613	10,071		
7/22/2011		12,374	N	N	N		5,029	10,917		12,887	10,073		19,613			
7/23/2011		12,448	N	N	N		5,029	11,161		12,887	10,381		20,281			
7/24/2011	6,328	11,977	6,328	N	N	7,119	5,640	10,850	14,626	13,006	10,767	39,622	21,768			
7/25/2011	14,907	12,187	N	N	N		5,640	10,850		13,006	10,767		21,768			
7/26/2011	15,092	12,348	15,092	N	N	10,144	7,163	10,489	13,528	12,804	11,473	20,855	23,109	20,855		
7/27/2011		12,348	N	N	N		7,163	10,489		12,804	11,473		23,109			
7/28/2011	27,316	12,795	N	N	N	7,333	8,199	9,400	8,237	12,130	11,203	7,837	22,804	7,837		
7/29/2011		12,795	N	N	N		8,199	9,400		12,130	11,203		22,804			
7/30/2011		13,182	N	N	N		8,199	9,640		12,130	11,203		24,606			
7/31/2011	6,768	12,724	6,768	N	N	6,128	7,869	9,370	5,772	9,179	10,785	11,378	23,588	11,378	13,357	
8/1/2011		12,724	N	N	N		7,869	9,370		9,179	10,785		23,588		13,357	
8/2/2011	21,353	13,766	N	N	N	8,637	7,366	9,037	4,276	6,095	10,469	11,115	23,771	11,115	10,110	
8/3/2011	13,670	13,760	N	N	N		7,366	9,037		6,095	10,469		23,771		10,110	
8/4/2011	20,727	14,309	N	N	N	8,284	7,683	8,196	5,637	5,228	10,386	8,783	23,952	8,783	10,425	
8/5/2011		14,309	N	N	N		7,683	8,196		5,228	10,386		23,952		10,425	
8/6/2011		14,393	N	N	N		7,683	8,398		5,228	10,575		19,166		10,425	
8/7/2011	9,584	14,073	9,584	N	N	13,671	10,197	8,803	2,230	4,048	9,933	2,007	17,846	2,007	7,302	
8/8/2011		14,073	N	N	N		10,197	8,803		4,048	9,933		17,846		7,302	
8/9/2011	19,138	14,625	19,138	N	N	14,166	12,040	8,491	5,824	4,564	9,267	6,255	15,198	6,255	5,682	10,670
8/10/2011	16,331	14,732	N	N	N		12,040	8,491		4,564	9,267		15,198		5,682	10,670
8/11/2011	11,793	14,570	11,793	13,505	N	6,561	11,466	8,199	9,907	5,987	9,283	17,579	15,402	17,579	8,614	10,911
8/12/2011		14,570	N	13,505	N		11,466	8,199		5,987	9,283		15,402		8,614	10,911
8/13/2011		14,562	N	13,505	N		11,466	8,094		5,987	9,058		16,271		8,614	
8/14/2011	7,128	14,098	7,128	12,687	N	10,527	10,418	8,281	10,651	8,794	9,181	29,751	17,308	29,751	17,862	13,164
8/15/2011		14,098	N	12,687	N		10,418	8,281		8,794	9,181		17,308		17,862	13,164
8/16/2011	7,953	14,184	7,953	8,958	N	9,089	8,726	8,574	5,138	8,565	8,478	7,137	14,736	7,137	18,156	12,662
8/17/2011	9,286	13,896	N	8,958	N		8,726	8,574		8,565	8,478		14,736		18,156	12,662
8/18/2011	18,431	14,263	18,431	11,171	N	10,103	9,906	8,922	9,077	8,289	8,089	6,489	13,760	6,489	14,459	11,605
8/19/2011		14,263	N	11,171	N		9,906	8,922		8,289	8,089		13,760		14,459	11,605
8/20/2011		14,113	N	11,171	N		9,906	9,314		8,289	7,909		14,067		14,459	11,744
8/21/2011	11,931	13,984	11,931	12,772	N	10,791	9,994	9,427	4,556	6,257	7,651	4,320	13,318	4,320	5,982	11,126
8/22/2011	15,072	14,045	N	12,772	N		9,994	9,427		6,257	7,651		13,318		5,982	11,126
8/23/2011	15,659	14,563	15,659	15,340	N	8,438	9,777	9,529	6,384	6,672	7,017	7,066	10,813	7,066	5,958	10,813
8/24/2011		14,543	N	15,340	N		9,777	9,529		6,672	7,017		10,813		5,958	10,813
8/25/2011	13,990	14,478	13,990	13,860	N	14,992	11,407	9,902	25,674	12,204	7,951	28,883	11,431	28,883	13,423	11,431
8/26/2011		14,478	N	13,860	N		11,407	9,902		12,204	7,951		11,431		13,423	11,431
8/27/2011		13,676	N	13,860	N		11,407	10,116		12,204	7,927		11,730		13,423	11,730
8/28/2011	12,514	13,608	12,514	14,054	12,263	20,425	14,618	10,909	1,943	11,333	7,467	5,158	11,225	5,158	13,702	11,225
8/29/2011	6,828	13,231	6,828	12,248	11,810	10,393	13,562	10,872	1,417	8,854	7,035	4,135	10,718	4,135	11,310	10,718
8/30/2011	5,833	13,179	5,833	9,791	11,732	8,947	13,689	11,073	1,756	7,697	6,748	3,151	10,131	3,151	10,332	10,131
8/31/2011	32,258	14,183	N	9,791	11,732		13,689	11,073		7,697	6,748		10,131		10,332	10,131
9/1/2011	27,712	14,518	27,712	13,222	12,961	14,047	13,453	11,460	11,217	4,083	7,244	14,272	10,356	14,272	6,679	10,356
9/2/2011		14,565	N	13,222	12,961		13,453	11,460		4,083	7,244		10,356		6,679	10,356
9/3/2011		14,202	N	13,222	12,961		13,453	11,704		4,083	7,367		10,477		6,679	10,477
9/4/2011	8,565	13,889	8,565	12,235	12,647	9,969	10,839	11,580	3,736	4,531	7,108	5,005	10,086	5,005	6,641	10,086
9/5/2011		13,889	N	14,037	12,647		10,988	11,580		5,570	7,108		10,086		7,476	10,086
9/6/2011	11,191	13,979	11,191	15,823	12,762	10,915	11,644	11,383	10,712	8,555	7,714	25,165	11,740	25,165	14,814	11,740
9/7/2011		13,979	N	15,823	12,762		11,644	11,383		8,555	7,714		11,740		14,814	11,740
9/8/2011	21,646	14,118	21,646	13,801	12,941	20,688	13,857	11,849	8,648	7,699	7,915	17,686	12,557	17,686	15,952	12,557
9/9/2011		13,988	N	13,801	12,941		13,857	11,849		7,699	7,915		12,557		15,952	12,557
9/10/2011		14,125	N	13,801	13,029		13,857	12,256		7,699	7,762		12,171		15,952	12,171
9/11/2011	5,860	13,639	5,860	12,899	12,517	8,473	13,359	11,985	3,785	7,715	7,478	23,268	12,963	23,268	22,039	12,963
9/12/2011		13,639	N	12,899	12,517		13,359	11,985		7,715	7,478		12,963		22,039	12,963
9/13/2011	12,242	13,939	12,242	13,249	12,883	15,039	14,733	12,308	3,716	5,383	6,983	11,319	11,647	11,319	17,424	11,647
9/14/2011		13,939	N	13,249	12,883		14,733	12,308		5,383	6,983		11,647		17,424	11,647
9/15/2011	14,016	14,296	14,016	10,706	13,316	12,920	12,144	12,581	7,910	5,137	7,181	9,056	11,784	9,056	14,548	11,784
9/16/2011		14,609	N	10,706	13,316		12,144	12,581		5,137	7,181		11,784		14,548	11,784
9/17/2011		14,354	N	10,706	12,922		12,144	12,772		5,137	7,035		12,191		14,548	12,191
9/18/2011	8,870	14,012	8,870	11,709	12,633	10,567	12,842	12,615	6,092	5,906	6,967	9,791	12,020	9,791	10,055	12,020
9/19/2011		14,012	N	11,709	12,633		12,842	12,615		5,906	6,967		12,020		10,055	12,020
9/20/2011	11,517	13,986	11,517	11,468	12,603	14,151	12,546	12,855	5,945	6,649	7,067	11,510	12,533	11,510	10,119	12,533
9/21/2011		13,913	N	11,468	12,603		12,546	12,855		6,649	7,067		12,533		10,119	12,533
9/22/2011	16,876	13,995	16,876	12,421	12,690	13,200	12,640	13,195	10,147	7,395	7,335	17,036	13,245	17,036	12,779	13,245
9/23/2011		13,995	N	12,421	12,690		12,640	13,195		7,395	7,335		13,245		12,779	13,245
9/24/2011		13,995	N	12,421	12,590		12,640	13,056		7,395	5,925		12,042		12,779	12,042
9/25/2011	7,361	13,553	7,361	11,918	12,217	13,663	13,672	13,100	8,926	8,340	6,139	28,883	13,245	28,883	19,143	13,245
9/26/2011		13,553	N	11,918	12,217		13,672	13,100		8,340	6,139		13,245		19,143	13,245
9/27/2011	19,071	13,990	N	N	12,194	9,128	11,997	12,293	9,493	9,522	6,679	14,153	13,888	14,153	20,024	13,888
9/28/2011		14,501	N	N	12,641		11,997	12,439		9,522	7,083		14,638		20,024	14,638
9/29/2011	18,924	15,436	18,924	N	13,732	16,098	12,963	12,989	11,786	10,069	7,855	7,678	14,986	7,678	16,904	14,986
9/30/2011		14,142	N	N	13,732		12,963	12,989		10,069	7,855		14,986		16,904	14,986
10/1/2011		13,012	N	N	12,461		12,963	12,901		10,069	7,575		15,046		16,904	15,046
10/2/2011	9,397	12,734	9,397	N	12,206	7,495	10,907	12,485	6,719	9,333	7,509	5,760	14,331	5,760	9,197	14,331
10/3/2011		12,734	N	N	12,206		10,907	12,485		9,333	7,509		14,331		9,197	14,331
10/4/2011	22,597	13,813	N	N	12,536	10,802	11,465	12,549	10,590	9,699	8,036	13,365	14,974	13,365	8,934	14,974
10/5/2011		13,813	N	N	12,536		11,465	12,549		9,699	8,036		14,974		8,934	14,974
10/6/2011	16,104	14,191	16,104	N	12,983	10,754	9,684	12,537	18,106	11,805	8,605	17,185	14,361	17,185	12,103	14,361
10/7/2011		14,191	N	N	12,983		9,684	12,537		11,805	8,605		14,361		12,103	14,361
10/8/2011		13,570	N	N	N		9,684	11,857		11,805	8,601		14,084		12,103	14,084
10/9/2011	6,503	13,026	6,503	N	11,606	15,205	12,254	12,115	4,666	11,121	8,299	9,912	13,763	9,912	13,487	13,763
10/10/2011		13,026	N	N	11,606		12,254	12,115		11,121	8,299		13,763		13,487	13,763
10/11/2011	12,506	13,537	12,506	11,704	12,211	6,984	10,981	12,001	10,196	10,989	8,792	14,626	13,098	14,626	13,908	13,098
10/12/2011		13,537	N	11,704	12,211		10,981	12,001		10,989	8,792		13,098		13,908	13,098
10/13/2011	18,699	14,034	18,699	12,569	12,798	17,849	13,346	12,217	6,979	7,280	9,043	4,772	12,594	4,772	9,770	12,594
10/14/2011		14,034	N	12,569	12,798		13,346	12,217		7,280	9,043		12,594		9,770	12,594
10/15/2011		14,036	N	12,569	N		13,346	12,158		7,280	9,137		12,889		9,770	12,889
10/16/2011	7,956	13,568	7,956	13,054	12,247	12,561	12,465	12,189	6,485	7,887	8,933	7,671	12,488	7,671	9,023	12,488

Date	BOD/TSS	BOD Cleaned R&R (lbs/d)	7dBOD Cleaned R&R (lbs/d)	30dBOD Cleaned R&R (lbs/d)	TSS Cleaned R&R (lbs/d)	7dTSS Cleaned R&R (lbs/d)	30dTSS Cleaned R&R (lbs/d)	Recycles Flow, MGD	7d Recycles Flow, MGD	30d Recycles Flow, MGD
6/30/2011	1.2	N	N	N	7,693	19,753	29,607	0.43	2.45	2.74
7/1/2011		N	N	N	N	19,753	29,607	2.80	2.47	2.73
7/2/2011		N	N	N	N	19,753	30,335	3.17	2.50	2.73
7/3/2011	0.5	15,155	N	N	21,696	20,897	29,671	2.97	2.53	2.72
7/4/2011		N	N	N	N	20,897	29,671	3.05	2.54	2.72
7/5/2011	0.6	19,196	N	N	25,662	18,350	28,840	3.33	2.63	2.73
7/6/2011		N	N	N	N	18,350	28,840	3.30	2.72	2.73
7/7/2011	2.3	N	N	N	N	N	28,312	3.29	3.13	2.75
7/8/2011		N	N	N	N	N	28,312	3.29	3.20	2.77
7/9/2011		N	N	N	N	N	28,242	3.27	3.21	2.80
7/10/2011	0.6	25,341	N	N	N	N	28,242	3.34	3.27	2.83
7/11/2011		N	N	N	N	N	28,242	3.21	3.29	2.85
7/12/2011	1.4	24,072	N	N	25,281	N	26,285	3.04	3.25	2.86
7/13/2011		N	N	N	N	N	26,285	2.95	3.20	2.87
7/14/2011	1.6	26,676	25,363	N	14,422	N	22,351	1.77	2.98	2.83
7/15/2011		N	25,363	N	N	N	22,351	1.60	2.74	2.79
7/16/2011		N	25,363	N	N	N	N	1.47	2.48	2.75
7/17/2011	1.2	20,832	23,860	N	N	N	N	2.64	2.38	2.75
7/18/2011		N	23,860	N	N	N	N	2.62	2.30	2.75
7/19/2011	2.2	N	N	N	24,745	N	N	2.93	2.28	2.74
7/20/2011		N	N	N	N	N	N	2.77	2.26	2.74
7/21/2011	3.9	N	N	N	14,298	N	N	2.49	2.36	2.73
7/22/2011		N	N	N	N	N	N	2.09	2.43	2.71
7/23/2011		N	N	N	N	N	N	1.89	2.49	2.68
7/24/2011	0.9	20,954	N	N	N	N	N	1.95	2.39	2.66
7/25/2011		N	N	N	N	N	N	2.13	2.32	2.63
7/26/2011	1.5	28,620	N	N	31,000	N	N	2.75	2.30	2.63
7/27/2011		N	N	N	N	N	N	2.50	2.26	2.61
7/28/2011	3.7	N	N	N	15,171	N	N	2.17	2.21	2.60
7/29/2011		N	N	N	N	N	N	2.29	2.24	2.58
7/30/2011		N	N	N	N	N	N	1.88	2.24	2.63
7/31/2011	1.1	12,540	N	N	17,506	21,225	N	1.98	2.24	2.60
8/1/2011		N	N	N	N	21,225	N	1.96	2.22	2.56
8/2/2011	2.5	N	N	N	19,752	17,476	N	1.85	2.09	2.53
8/3/2011		N	N	N	N	17,476	N	2.12	2.04	2.50
8/4/2011	2.5	N	N	N	17,067	18,108	N	2.07	2.02	2.45
8/5/2011		N	N	N	N	18,108	N	2.05	1.99	2.41
8/6/2011		N	N	N	N	18,108	N	2.08	2.02	2.37
8/7/2011	0.7	11,814	N	N	15,677	17,499	N	2.23	2.05	2.34
8/8/2011		N	N	N	N	17,499	N	2.03	2.06	2.29
8/9/2011	1.4	24,962	N	N	20,421	17,722	19,576	0.91	1.93	2.21
8/10/2011		N	N	N	N	17,722	19,576	1.02	1.77	2.14
8/11/2011	1.8	21,700	19,492	N	24,141	20,080	19,473	1.97	1.75	2.11
8/12/2011		N	19,492	N	N	20,080	19,473	2.19	1.77	2.08
8/13/2011		N	19,492	N	N	20,080	N	2.31	1.81	2.10
8/14/2011	0.7	17,780	21,481	N	40,278	28,280	21,823	1.97	1.77	2.11
8/15/2011		N	21,481	N	N	28,280	21,823	2.12	1.78	2.13
8/16/2011	0.9	13,091	17,524	N	16,226	26,882	21,357	2.58	2.02	2.13
8/17/2011		N	17,524	N	N	26,882	21,357	2.54	2.24	2.13
8/18/2011	1.8	27,508	19,460	N	16,592	24,365	20,677	2.31	2.29	2.11
8/19/2011		N	19,460	N	N	24,365	20,677	2.02	2.26	2.08
8/20/2011		N	19,460	N	N	24,365	21,257	1.98	2.22	2.06
8/21/2011	1.1	16,487	19,029	N	15,111	15,976	20,745	2.02	2.23	2.06
8/22/2011		N	19,029	N	N	15,976	20,745	2.49	2.28	2.08
8/23/2011	1.9	22,043	22,013	N	15,504	15,736	20,342	2.41	2.25	2.10
8/24/2011		N	22,013	N	N	15,736	20,342	2.03	2.18	2.09
8/25/2011	0.9	39,664	26,064	N	43,875	24,830	21,332	2.14	2.16	2.07
8/26/2011		N	26,064	N	N	24,830	21,332	2.47	2.22	2.07
8/27/2011		N	26,064	N	N	24,830	21,846	2.30	2.26	2.08
8/28/2011	0.6	14,456	25,387	20,186	25,583	28,321	22,133	2.01	2.26	2.07
8/29/2011	0.7	8,245	21,102	19,191	14,528	24,873	21,590	2.29	2.23	2.08
8/30/2011	0.7	7,589	17,488	18,778	12,098	24,021	21,204	1.97	2.17	2.08
8/31/2011		N	17,488	18,778	N	24,021	21,204	2.52	2.24	2.10
9/1/2011	2.0	38,929	17,305	20,328	28,319	20,132	21,816	2.56	2.30	2.12
9/2/2011		N	17,305	20,328	N	20,132	21,816	2.13	2.25	2.12
9/3/2011		N	17,305	20,328	N	20,132	22,181	2.34	2.26	2.13
9/4/2011	0.9	12,301	16,766	19,755	14,974	17,480	21,666	2.17	2.28	2.14
9/5/2011		N	19,606	19,755	N	18,464	21,666	2.18	2.27	2.14
9/6/2011	1.0	21,903	24,378	20,476	36,080	26,458	23,124	2.77	2.38	2.16
9/7/2011		N	24,378	20,476	N	26,458	23,124	3.23	2.48	2.20
9/8/2011	1.0	30,293	21,499	20,856	38,374	29,809	24,406	3.90	2.67	2.30
9/9/2011		N	21,499	20,856	N	29,809	24,406	4.00	2.94	2.40
9/10/2011		N	21,499	20,791	N	29,809	24,426	3.80	3.15	2.46
9/11/2011	0.7	9,646	20,614	19,995	31,741	35,398	24,949	3.34	3.32	2.50
9/12/2011		N	20,614	19,995	N	35,398	24,949	3.38	3.49	2.53
9/13/2011	0.8	15,958	18,632	19,865	26,357	32,157	23,954	3.43	3.58	2.58
9/14/2011		N	18,632	19,865	N	32,157	23,954	3.24	3.58	2.62
9/15/2011	1.1	21,926	15,843	20,496	21,976	26,691	24,365	3.27	3.49	2.64
9/16/2011		N	15,843	20,496	N	26,691	24,365	3.63	3.44	2.68
9/17/2011		N	15,843	19,957	N	26,691	24,963	3.34	3.38	2.71
9/18/2011	0.8	14,962	17,615	19,600	20,358	22,897	24,634	3.33	3.38	2.76
9/19/2011		N	17,615	19,600	N	22,897	24,634	3.41	3.38	2.80
9/20/2011	0.8	17,462	18,117	19,670	25,661	22,665	25,388	3.25	3.35	2.84
9/21/2011		N	18,117	19,670	N	22,665	25,388	3.24	3.35	2.87
9/22/2011	1.3	27,023	19,816	20,026	30,237	25,419	26,440	3.43	3.38	2.90
9/23/2011		N	19,816	20,026	N	25,419	26,440	3.98	3.43	2.97
9/24/2011		N	19,816	18,515	N	25,419	25,099	3.69	3.48	3.02
9/25/2011	0.5	16,288	20,258	18,356	42,546	32,815	26,345	3.41	3.49	3.05
9/26/2011		N	20,258	18,356	N	32,815	26,345	3.56	3.51	3.09
9/27/2011	2.1	N	N	18,656	23,280	32,021	26,181	4.20	3.64	3.17
9/28/2011		N	N	19,523	N	32,021	27,077	4.13	3.77	3.23
9/29/2011	1.2	30,710	N	21,450	23,776	29,867	27,975	4.04	3.86	3.30
9/30/2011		N	N	21,450	N	29,867	27,975	3.72	3.82	3.34
10/1/2011		N	N	19,861	N	29,867	27,947	3.13	3.74	3.35
10/2/2011	1.3	16,116	N	19,549	13,255	20,104	26,816	3.03	3.68	3.38
10/3/2011		N	N	19,549	N	20,104	26,816	3.22	3.64	3.41
10/4/2011	2.1	N	N	20,208	24,167	20,399	27,524	3.39	3.52	3.45
10/5/2011		N	N	20,208	N	20,399	27,524	3.34	3.41	3.49
10/6/2011	1.5	34,210	N	21,327	27,939	21,787	26,897	3.68	3.36	3.52
10/7/2011		N	N	21,327	N	21,787	26,897	3.64	3.35	3.54
10/8/2011		N	N	N	N	21,787	25,941	3.49	3.40	3.52
10/9/2011	0.4	11,169	N	19,588	25,117	25,741	25,878	3.16	3.42	3.50
10/10/2011		N	N	19,588	N	25,741	25,878	3.14	3.41	3.47
10/11/2011	1.8	22,701	22,693	20,775	21,610	24,889	25,098	3.64	3.44	3.48
10/12/2011		N	22,693	20,775	N	24,889	25,098	3.53	3.47	3.49
10/13/2011	1.0	25,678	19,849	21,659	22,621	23,116	24,811	3.57	3.45	3.49
10/14/2011		N	19,849	21,659	N	23,116	24,811	3.75	3.47	3.51
10/15/2011		N	19,849	N	N	23,116	25,047	4.10	3.56	3.54
10/16/2011	0.6	14,441	20,940	20,978	20,232	21,488	24,677	4.18	3.70	3.56

Date	Year	Month	Flow Effluent (MGD)	BOD RAW INF. (mg/l)		TSS RAW INF. (mg/l)	BOD PRIM. EFF. (mg/l)	TSS PRIM. EFF. (mg/l)	Plant Drain Flow (MGD)	TSS DRAIN (mg/l)	BOD Drain (mg/l)	7dFlow, MGD	30dFlow, MGD	BOD Raw (lbs/d)	30dBODRaw Unclean (lbs/d)	BOD Raw Cleaned (lbs/d)	7dBOD Raw (lbs/d)	30dBODRaw (lbs/d)	TSS Raw (lbs/d)	7dTSS Raw (lbs/d)	30dTSSRaw (lbs/d)
10/17/2011	2011	10	6.97		N				4.42			6.9	6.5		13,568	N	13,054	12,247		12,465	12,189
10/18/2011	2011	10	6.51	221	221	186	140	84	4.24	215.0	215	7.0	6.5	12,010	13,809	12,010	12,888	12,532	10,108	13,506	12,154
10/19/2011	2011	10	7.96		N				3.80			7.3	6.6		13,809	N	12,888	12,532		13,506	12,154
10/20/2011	2011	10	9.55	128	N	162	71	76	3.92	204.0	137	7.6	6.7	10,205	13,708	10,205	10,057	12,413	12,915	11,862	12,059
10/21/2011	2011	10	8.44		N				4.23			7.7	6.8		13,708	N	10,057	12,413		11,862	12,059
10/22/2011	2011	10	8.08		N				4.26			7.8	6.8		13,444	N	10,057	N		11,862	11,964
10/23/2011	2011	10	7.68	118	118	120	60	56	4.03	1,824.0	672	7.9	6.9	7,561	12,992	7,561	9,925	11,566	7,689	10,237	11,635
10/24/2011	2011	10	7.11		N				4.16			7.9	6.9		12,992	N	9,925	11,566		10,237	11,635
10/25/2011	2011	10	7.29	163	163	161	105	96	3.71	238.0	128	8.0	6.9	9,909	13,188	9,909	9,225	11,798	9,788	10,131	11,337
10/26/2011	2011	10	7.19		N				3.48			7.9	6.9		13,188	N	9,225	11,798		10,131	11,337
10/27/2011	2011	10	7.86	167	167	170	81	112	3.63	1,008.0	620	7.7	7.0	10,960	12,564	10,960	9,477	11,728	11,157	9,544	11,493
10/28/2011	2011	10	7.98		N				4.09			7.6	7.1		12,564	N	9,477	11,728		9,544	11,493
10/29/2011	2011	10	8.27		N				3.72			7.6	7.1		12,034	N	9,477	11,074		9,544	11,109
10/30/2011	2011	10	9.29	111	N	190	50	128	4.71	668.0	311	7.9	7.2	8,610	11,771	8,610	9,826	10,868	14,737	11,894	11,388
10/31/2011	2011	10	9.54		N				4.66			8.2	7.3		11,771	N	9,826	10,868		11,894	11,388
11/1/2011	2011	11	9.81	178	N	128	125	92	4.72	660.0	523	8.6	7.4	14,578	12,169	14,578	11,382	11,300	10,483	12,126	11,618
11/2/2011	2011	11	9.01		N				4.28			8.8	7.5		12,169	N	11,382	11,300		12,126	11,618
11/3/2011	2011	11	8.56	160	N	139	108	78	4.07	752.0	472	8.9	7.5	11,424	11,310	11,424	11,537	11,310	9,925	11,715	11,550
11/4/2011	2011	11	8.33		N				4.19			9.0	7.6		11,310	N	11,537	11,310		11,715	11,550
11/5/2011	2011	11	7.52		N				4.32			8.9	7.6		10,910	N	11,537	10,910		11,715	11,617
11/6/2011	2011	11	7.34	131	131	160	146	104	4.16	924.0	580	8.6	7.6	8,023	10,688	8,023	11,342	10,688	9,799	10,069	11,477
11/7/2011	2011	11	7.64		N				4.18			8.3	7.7		10,688	N	11,342	10,688		10,069	11,477
11/8/2011	2011	11	7.21	179	179	180	127	142	3.98	260.0	127	7.9	7.7	10,776	11,017	10,776	10,075	11,017	10,836	10,187	11,141
11/9/2011	2011	11	7.08		N				3.66			7.7	7.8		11,017	N	10,075	11,017		10,187	11,141
11/10/2011	2011	11	6.85	147	147	148	102	108	3.81	280.0	178	7.4	7.8	8,404	10,701	8,404	9,068	10,701	8,461	9,699	11,255
11/11/2011	2011	11	7.72		N				3.37			7.3	7.9		10,701	N	9,068	10,701		9,699	11,255
11/12/2011	2011	11	6.79		N				3.85			7.2	7.9		10,035	N	9,068	10,035		9,699	10,705
11/13/2011	2011	11	6.70	175	175	159	128	166	3.59	280.0	167	7.1	7.8	9,782	10,015	9,782	9,654	10,015	8,888	9,395	10,565
11/14/2011	2011	11	6.99		N				3.59			7.0	7.8		10,015	N	9,654	10,015		9,395	10,565
11/15/2011	2011	11	6.92	256	256	166	126	124	3.24	268.0	127	7.0	7.8	14,775	10,540	14,775	10,987	10,540	9,581	8,976	10,336
11/16/2011	2011	11	6.81		N				3.21			7.0	7.8		10,540	N	10,987	10,540		8,976	10,336
11/17/2011	2011	11	8.14	148	N	136	101	82	4.36			7.2	7.9	10,054	10,389	10,054	11,537	10,389	9,239	9,236	10,269
11/18/2011	2011	11	6.85		N				4.12			7.0	7.8		10,389	N	11,537	10,389		9,236	10,269
11/19/2011	2011	11	7.12		N				3.91			7.1	7.7		10,405	N	11,537	10,405		9,236	10,049
11/20/2011	2011	11	7.12	177	177	142	125	114	3.51	516.0	125	7.1	7.7	10,521	10,414	10,521	11,783	10,414	8,441	9,087	9,925
11/21/2011	2011	11	7.32		N				3.74			7.2	7.7		10,414	N	11,783	10,414		9,087	9,925
11/22/2011	2011	11	6.47	199	199	178	127	78	3.79	516.0	359	7.1	7.6	10,743	10,658	10,743	10,439	10,658	9,609	9,096	10,073
11/23/2011	2011	11	9.53		N				4.22			7.5	7.7		10,658	N	10,439	10,658		9,096	10,073
11/24/2011	2011	11	8.20	189	N	124	121	84	4.43	320.0	245	7.5	7.7	12,929	10,891	12,929	11,398	10,891	8,482	8,844	9,972
11/25/2011	2011	11	8.12		N				4.13			7.7	7.8		10,891	N	11,398	10,891		8,844	9,972
11/26/2011	2011	11	7.90		N				4.02			7.8	7.8		10,885	N	11,398	10,885		8,844	9,873
11/27/2011	2011	11	7.85	102	102	138	92	86	3.78	276.0	139	7.9	7.8	6,683	10,562	6,683	10,118	10,562	9,042	9,044	9,809
11/28/2011	2011	11	8.04		N				3.31			8.0	7.8		10,562	N	10,118	10,562		9,044	9,809
11/29/2011	2011	11	7.89	180	180	124	165	72	3.46	292.0	262	8.2	7.7	11,854	10,811	11,854	10,488	10,811	8,166	8,563	9,304
11/30/2011	2011	11	8.74		N				3.82			8.1	7.7		10,811	N	10,488	10,811		8,563	9,304
12/1/2011	2011	12	7.56	179	179	146	132	80	3.94	424.0	231	8.0	7.6	11,289	10,558	11,289	9,942	10,558	9,208	8,805	9,206
12/2/2011	2011	12	7.20		N				3.93			7.9	7.6		10,558	N	9,942	10,558		8,805	9,206
12/3/2011	2011	12	7.06		N				4.02			7.8	7.5		10,486	N	9,942	10,486		8,805	9,146
12/4/2011	2011	12	7.24	183	183	154	127	80	3.93	344.0	228	7.7	7.5	11,057	10,530	11,057	11,400	10,530	9,305	8,893	9,158
12/5/2011	2011	12	7.26		N				3.69			7.6	7.5		10,530	N	11,400	10,530		8,893	9,158
12/6/2011	2011	12	7.50	182	182	114	169	70	3.22	408.0	420	7.5	7.5	11,389	10,789	11,389	11,245	10,789	7,134	8,549	8,953
12/7/2011	2011	12	8.84		N				3.79			7.5	7.5		10,789	N	11,245	10,789		8,549	8,953
12/8/2011	2011	12	13.94	176	N	149	146	90	5.17	552.0	532	8.4	7.7	20,475	11,535	20,475	14,307	11,535	17,334	11,258	9,453
12/9/2011	2011	12	12.70		N				5.02			9.2	7.9		11,535	N	14,307	11,535		11,258	9,453
12/10/2011	2011	12	11.81		N				4.82			9.9	8.1		11,796	N	14,307	11,796		11,258	9,536
12/11/2011	2011	12	10.46	110	N	138	154	80	5.01	276.0	301	10.4	8.2	9,602	11,627	9,602	13,822	11,627	12,047	12,171	9,729
12/12/2011	2011	12	9.82		N				4.59			10.7	8.3		11,627	N	13,822	11,627		12,171	9,729
12/13/2011	2011	12	8.71	175	N	134	181	70	4.75			10.9	8.3	12,725	11,854	12,725	14,267	11,854	9,744	13,041	9,795
12/14/2011	2011	12	9.06		N				3.54			10.9	8.4		11,854	N	14,267	11,854		13,041	9,795
12/15/2011	2011	12	9.30	180	N	155	175	78	3.00	628.0	444	10.3	8.5	13,967	11,791	13,967	12,098	11,791	12,028	11,273	9,983
12/16/2011	2011	12	8.51		N				3.29			9.7	8.5		11,791	N	12,098	11,791		11,273	9,983
12/17/2011	2011	12	7.88		N				4.18			9.1	8.5		11,936	N	12,098	11,936		11,273	10,045
12/18/2011	2011	12	7.15	126	126	136	122	80	4.53	672.0	188	8.6	8.5	7,515	11,596	7,515	11,403	11,596	8,112	9,961	9,896
12/19/2011	2011	12	7.96		N				3.99			8.4	8.6		11,596	N	11,403	11,596		9,961	9,896
12/20/2011	2011	12	7.13	118	118	170	110	64	3.56	1,060.0	275	8.1	8.6	7,021	11,327	7,021	9,501	11,327	10,114	10,085	10,025
12/21/2011	2011	12	7.43		N				3.19			7.9	8.6		11,327	N	9,501	11,327		10,085	10,025
12/22/2011	2011	12	7.03	168	168	163	137	80	3.46	748.0	338	7.6	8.6	9,859	11,259	9,859	8,132	11,259	9,566	9,264	10,022
12/23/2011	2011	12	7.52		N				3.41			7.4	8.5		11,259	N	8,132	11,259		9,264	10,022
12/24/2011	2011	12	6.63		N				4.07			7.3	8.5		11,120	N	8,132	11,120		9,264	10,150
12/25/2011	2011	12	6.45	191	191	206	118	70	3.72	1,084.0	285	7.2	8.4	10,280	11,055	10,280	9,053	11,055	11,087	10,256	10,222
12/26/2011	2011	12	6.23		N				3.71			6.9	8.4		11,055	N	9,053	11,055		10,256	10,222
12/27/2011	2011	12	7.07	135	135	192	87	58	3.40	496.0	150	6.9	8.3	7,964	11,154	7,964	9,368	11,154	11,327	10,660	10,398
12/28/2011	2011	12	7.38		N				4.00			6.9	8.3		11,154	N	9,368	11,154		10,660	10,398
12/29/2011	2011	12	6.45	226	226	248	174	84	4.76	1,340.0	267	6.8	8.3	12,165	11,178	12,165	10,136	11,178	13,349	11,921	10,796
12/30/2011	2011	12	6.51		N				4.63			6.7	8.2		11,178	N	10,136	11,178		11,921	10,796
12/31/2011	2011	12	6.66		N				4.27			6.7	8.2		11,168	N	10,136	11,168		11,921	10,929
1/1/2012	2012	1							4.31	364.0	203			10,414	11,110	10,414	10,181	11,110	8,106	10,927	10,712
1/2/2012	2012	1							4.18						11,110	N	10,181	11,110		10,927	10,712
1/3/2012	2012	1							4.10	1,380.0	365			12,752	11,241	12,752	11,777	11,241	10,085	10,513	10,772
1/4/2012	2012	1							3.66						11,241	N	11,777	11,241		10,513	10,772
1/5/2012	2012	1							3.47	436.0	248			9,315	11,081	9,315	10,827	11,081	10,646	9,612	11,042
1/6/2012	2012	1							3.24						11,081	N	10,827	11,081		9,612	11,042
1/7/2012	2012	1							3.28						10,298	N	10,827	10,298		9,612	10,517
1/8/2012	2012	1							3.38	1,064.0	246			11,146	10,363	11,146	11,071	10,363	7,802	9,511	10,309
1/9/2012	2012	1							3.29						10,363	N	11,071	10,363		9,511	10,309
1/10/2012	2012	1							3.22	624.0	398			9,461	10,353	9,461	9,974	10,353	8,337	8,928	10,023
1/11/2012	2012	1							3.31						10,353	N	9,974	10,353		8,928	10,023
1/12/2012	2012	1							3.23					12,208	10,313	12,208	10,938	10,313	13,274	9,804	10,295
1/13/2012	2012	1							3.59						10,313	N	10,938	10,313		9,804	10,295
1/14/2012	2012	1							3.74						10,008	N	10,938	10,008		9,804	10,150
1/15/2012	2012	1							4.04	80.0	60			14,886	10,383	14,886	12,185	10,383	14,551	12,054	10,489
1/16/2012	2012	1							3.91						10,383	N	12,185	10,383		12,054	10,489
1/17/2012	2012	1							3.58	120.0	139			9,652	10,548	9,652	12,249	10,548	9,652	12,492	10,607
1/18/2012	2012	1							4.01						10,548	N	12,249	10,548		12,492	10,607
1/19/2012	2012	1							4.22	604.0	452			9,652	10,750	9,652	11,397	10,750	10,030	11,411	10,601
1/20/2012	2012	1							4.17						10,750	N	11,397	10,750		11,411	10,601
1/21/2012	2012	1							4.08						10,825	N	11,397	10,825		11,411	10,687
1/22/2012	2012	1							4.00	336.0	251			15,331	11,171	N	N	10,825	5,955	8,546	10,323
1/23/2012	2012	1							4.51						11,171	N	N	10,825		8,546	10,323
1/24/2012	2012	1							3.63	316.0	401			13,364	11,408	13,364	N	11,082	9,606	8,530	10,209
1/25/2012	2012	1							3.91						11,408	N	N	11,082		8,530	10,209
1/26/2012	2012	1							3.67	356.0	195			6,561	11,301	6,561	N	10,965	7,791	7,784	9,937
1/27/2012	2012	1							3.29						11,301	N	N	10,965		7,784	9,937
1/28/2012	2012	1							3.48						11,229	N	N	10,856		7,784	9,653
1/29/2012	2012	1							3.61	140.0	107			8,232	10,998	8,232	9,386	10,637	9,153	8,850	9,614
1/30/2012	2012	1							4.10						10,998	N	9,386	10,637		8,850	9,614
1/31/2012	2012	1							4.03	380.0	202			6,835	10,723	6,835	7,209	10,339	10,113	9,019	9,769
2/1/2012	2012	2													10,723	N	7,209	10,339		9,019	9,769
2/2/2012	2012	2													10,554	N	N	10,119		N	9,743

Date	BOD Recycle (lbs/d)	7dBOD Recycle (lbs/d)	30dBODRecycle (lbs/d)	TSS Recycle (lbs/d)	30dTSSRecycle unclean (lbs/d)	TSS Recycle Cleaned (lbs/d)	7dTSS Recycle (lbs/d)	30dTSSRecycle (lbs/d)	BOD/TSS	BOD Cleaned R&R (lbs/d)	7dBOD Cleaned R&R (lbs/d)	30dBOD Cleaned R&R (lbs/d)	TSS Cleaned R&R (lbs/d)	7dTSS Cleaned R&R (lbs/d)	30dTSS Cleaned R&R (lbs/d)	Recycles Flow, MGD	7d Recycles Flow, MGD	30d Recycles Flow, MGD
10/17/2011		7,887	8,933		12,488		9,023	12,488		N	20,940	20,978	N	21,488	24,677	4.42	3.88	3.59
10/18/2011	7,612	7,025	9,050	7,612	12,320	7,612	6,685	12,320	1.2	19,622	19,914	21,402	17,720	20,191	24,474	4.24	3.97	3.62
10/19/2011		7,025	9,050		12,320		6,685	12,320		N	19,914	21,402	N	20,191	24,474	3.80	4.01	3.64
10/20/2011	4,484	6,194	8,938	6,676	11,948	6,676	7,320	11,948	0.8	14,688	16,250	21,150	19,592	19,181	24,007	3.92	4.06	3.66
10/21/2011		6,194	8,938		11,948		7,320	11,948		N	16,250	21,150	N	19,181	24,007	4.23	4.13	3.69
10/22/2011		6,194	8,837		11,524		7,320	11,524		N	16,250	N	N	19,181	23,488	4.26	4.15	3.72
10/23/2011	22,582	11,559	9,894	61,295	15,353			11,524	1.0	30,143	21,484	21,433	N	N	23,488	4.03	4.13	3.72
10/24/2011		11,559	9,894		15,353			11,524		N	21,484	21,433	N	N	23,488	4.16	4.09	3.74
10/25/2011	3,965	10,344	9,513	7,373	13,698	7,373		9,732	1.0	13,875	19,569	21,214	17,161	N	21,373	3.71	4.02	3.75
10/26/2011		10,344	9,513		13,698			9,732		N	19,569	21,214	N	N	21,373	3.48	3.97	3.74
10/27/2011	18,760	15,103	10,225	30,500	14,956	30,500		11,094	1.0	29,720	24,579	21,923	41,657	N	22,904	3.63	3.93	3.73
10/28/2011		15,103	10,225		14,956			11,094		N	24,579	21,923	N	N	22,904	4.09	3.91	3.72
10/29/2011		15,103	10,095		15,562			11,405		N	24,579	21,124	N	N	22,825	3.72	3.83	3.71
10/30/2011	12,227	11,651	10,259	26,262	16,385	26,262	21,378	12,643	0.6	20,836	21,477	21,100	40,999	33,272	24,339	4.71	3.93	3.75
10/31/2011		11,651	10,259		16,385		21,378	12,643		N	21,477	21,100	N	33,272	24,339	4.66	4.00	3.80
11/1/2011	20,601	17,196	11,327	25,997	17,942	25,997	27,586	14,329	1.4	35,179	28,578	22,689	36,480	39,712	26,275	4.72	4.15	3.85
11/2/2011		17,196	11,327		17,942		27,586	14,329		N	28,578	22,689	N	39,712	26,275	4.28	4.26	3.89
11/3/2011	16,038	16,289	11,746	25,552	18,879	25,552	25,937	15,345	1.2	27,462	27,826	23,056	35,477	37,652	27,217	4.07	4.32	3.91
11/4/2011		16,289	11,746		18,879		25,937	15,345		N	27,826	23,056	N	37,652	27,217	4.19	4.34	3.94
11/5/2011		16,289	11,216		19,021		25,937	15,178		N	27,826	22,126	N	37,652	27,151	4.32	4.42	3.96
11/6/2011	20,151	18,930	11,903	32,103	20,027	32,103	27,884	16,588	0.8	28,174	30,272	22,591	41,902	37,953	28,381	4.16	4.34	3.98
11/7/2011		18,930	11,903		20,027		27,884	16,588		N	30,272	22,591	N	37,953	28,381	4.18	4.27	4.00
11/8/2011	4,219	13,469	11,869	8,637	19,929	8,637	22,097	16,482	1.0	14,995	23,544	22,886	19,473	32,284	27,910	3.98	4.17	4.03
11/9/2011		13,469	11,869		19,929		22,097	16,482		N	23,544	22,886	N	32,284	27,910	3.66	4.08	4.05
11/10/2011	5,662	10,011	11,520	8,907	19,489	8,907	16,549	16,005	1.0	14,066	19,078	22,221	17,367	26,248	27,557	3.81	4.04	4.05
11/11/2011		10,011	11,520		19,489		16,549	16,005		N	19,078	22,221	N	26,248	27,557	3.37	3.93	4.05
11/12/2011		10,011	11,899		20,715		16,549	17,026		N	19,078	21,933	N	26,248	28,005	3.85	3.86	4.06
11/13/2011	4,997	4,959	11,368	8,378	19,766	8,378	8,641	16,306	1.1	14,779	14,613	21,383	17,266	18,036	27,111	3.59	3.78	4.05
11/14/2011		4,959	11,368		19,766		8,641	16,306		N	14,613	21,383	N	18,036	27,111	3.59	3.69	4.03
11/15/2011	3,436	4,698	11,133	7,250	19,734	7,250	8,178	16,271	1.5	18,210	15,685	21,673	16,830	17,155	26,827	3.24	3.59	4.00
11/16/2011		4,698	11,133		19,734		8,178	16,271		N	15,685	21,673	N	17,155	26,827	3.21	3.52	3.96
11/17/2011		4,216	11,427		20,744			17,058	1.1	N	N	21,844	N	N	27,655	4.36	3.60	3.97
11/18/2011		4,216	11,427		20,744			17,058		N	N	21,844	N	N	27,655	4.12	3.71	3.98
11/19/2011		4,216	12,058		22,023					N	N	22,494	N	N	N	3.91	3.72	3.98
11/20/2011	3,666	3,551	11,359	15,135	21,449	15,135		17,827	1.2	14,188	N	21,802	23,576	N	28,017	3.51	3.71	3.95
11/21/2011		3,551	11,359		21,449			17,827		N	N	21,802	N	N	28,017	3.74	3.73	3.94
11/22/2011	11,348	7,507	10,422	16,310	17,700	16,310		17,700	1.1	22,090	N	21,131	25,919	N	27,842	3.79	3.81	3.93
11/23/2011		7,507	10,422		17,700			17,700		N	N	21,131	N	N	27,842	4.22	3.95	3.93
11/24/2011	9,058	8,024	10,847	11,830	18,072	11,830	14,425	18,072	1.5	21,986	19,421	21,807	20,313	23,269	28,105	4.43	3.96	3.95
11/25/2011		8,024	10,847		18,072		14,425	18,072		N	19,421	21,807	N	23,269	28,105	4.13	3.96	3.97
11/26/2011		8,024	10,127		16,942		14,425	16,942		N	19,421	21,088	N	23,269	26,873	4.02	3.98	3.99
11/27/2011	4,388	8,264	9,649	8,713	16,256	8,713	12,285	16,256	0.7	11,071	18,383	20,253	17,755	21,329	26,113	3.78	4.02	3.98
11/28/2011		8,264	9,649		16,256		12,285	16,256		N	18,383	20,253	N	21,329	26,113	3.31	3.95	3.96
11/29/2011	7,575	7,007	9,262	8,443	14,771	8,443	9,662	14,771	1.5	19,429	17,495	20,136	16,609	18,225	24,081	3.46	3.91	3.92
11/30/2011		7,007	9,262		14,771		9,662	14,771		N	17,495	20,136	N	18,225	24,081	3.82	3.85	3.89
12/1/2011	7,586	6,516	8,177	13,924	13,765	13,924	10,360	13,765	1.2	18,875	16,458	18,777	23,132	19,165	22,968	3.94	3.78	3.87
12/2/2011		6,516	8,177		13,765		10,360	13,765		N	16,458	18,777	N	19,165	22,968	3.93	3.75	3.86
12/3/2011		6,516	7,462		12,694		10,360	12,694		N	16,458	17,988	N	19,165	21,831	4.02	3.75	3.85
12/4/2011	7,470	7,544	7,463	11,270	12,575	11,270	11,212	12,575	1.2	18,527	18,944	18,033	20,575	20,105	21,726	3.93	3.77	3.85
12/5/2011		7,544	7,463		12,575		11,212	12,575		N	18,944	18,033	N	20,105	21,726	3.69	3.83	3.83
12/6/2011	11,302	8,786	6,726	10,979	10,815	10,979	12,058	10,815	1.6	22,692	20,031	17,576	18,113	20,607	19,744	3.22	3.79	3.79
12/7/2011		8,786	6,726		10,815		12,058	10,815		N	20,031	17,576	N	20,607	19,744	3.79	3.79	3.78
12/8/2011	22,969	13,913	8,288	23,832	12,081	23,832	15,360	12,081	1.2	43,444	28,221	19,946	41,166	26,618	21,552	5.17	3.97	3.82
12/9/2011		13,913	8,288		12,081		15,360	12,081		N	28,221	19,946	N	26,618	21,552	5.02	4.12	3.87
12/10/2011		13,913	8,527		12,369		15,360	12,369		N	28,221	20,481	N	26,618	21,932	4.82	4.23	3.90
12/11/2011	12,572	15,614	8,864	11,528	12,299	11,528	15,446	12,299	0.8	22,175	29,437	20,622	23,575	27,618	22,069	5.01	4.39	3.95
12/12/2011		15,614	8,864		12,299		15,446	12,299		N	29,437	20,622	N	27,618	22,069	4.59	4.52	3.98
12/13/2011		17,770	9,215		12,656			12,656	1.3	N	N	21,153	N	N	22,506	4.75	4.74	4.02
12/14/2011		17,770	9,215		12,656			12,656		N	N	21,153	N	N	22,506	3.54	4.70	4.02
12/15/2011	11,101	11,836	9,912	15,701	13,424	15,701		13,424	1.2	25,068	N	21,777	27,728	N	23,496	3.00	4.39	4.01
12/16/2011		11,836	9,912		13,424			13,424		N	N	21,777	N	N	23,496	3.29	4.14	4.01
12/17/2011		11,836	9,912		13,424			13,424		N	N	21,777	N	N	23,496	4.18	4.05	4.00
12/18/2011	7,108	9,104	9,679	25,407	14,423	25,407		14,423	0.9	14,623	N	21,181	33,519	N	24,332	4.53	3.98	4.02
12/19/2011		9,104	9,679		14,423			14,423		N	N	21,181	N	N	24,332	3.99	3.89	4.02
12/20/2011	8,160	8,789	10,053	31,452	15,782	31,452	24,187	15,782	0.7	15,180	18,291	21,263	41,566	34,271	25,831	3.56	3.72	4.02
12/21/2011		8,789	10,053		15,782		24,187	15,782		N	18,291	21,263	N	34,271	25,831	3.19	3.67	4.00
12/22/2011	9,746	8,338	9,919	21,568	16,221	21,568	26,142	16,221	1.0	19,605	16,469	21,056	31,134	35,406	26,265	3.46	3.74	3.99
12/23/2011		8,338	9,919		16,221		26,142	16,221		N	16,469	21,056	N	35,406	26,265	3.41	3.76	3.97
12/24/2011		8,338	9,998		16,620		26,142	16,620		N	16,469	20,972	N	35,406	26,806	4.07	3.74	3.95
12/25/2011	8,851	8,919	9,902	33,663	18,040	33,663	28,894	18,040	0.9	19,130	17,972	20,818	44,750	39,150	28,302	3.72	3.63	3.94
12/26/2011		8,919	9,902		18,040		28,894	18,040		N	17,972	20,818	N	39,150	28,302	3.71	3.59	3.93
12/27/2011	4,258	7,618	9,891	14,079	18,487	14,079	23,103	18,487	0.7	12,222	16,986	20,914	25,405	33,763	28,939	3.40	3.57	3.92
12/28/2011		7,618	9,891		18,487		23,103	18,487	N	N	16,986	20,914	N	33,763	28,939	4.00	3.68	3.94
12/29/2011	10,600	7,903	10,143	53,201	22,217		N	19,400	0.9	22,765	18,039	21,192	N	N	30,060	4.76	3.87	3.98
12/30/2011					22,217		N	19,400	N	N	18,039	21,192	N	N	30,060	4.63	4.04	4.01
12/31/2011					22,971		N	N	N	N	18,039	21,403	N	N	N	4.27	4.07	4.02
1/1/2012	7,301	7,386	10,120	13,092	22,148	13,092	N	19,325	1.3	17,715	17,567	21,095	21,198	N	29,885	4.31	4.15	4.03
1/2/2012	N	7,386	10,120	N	22,148		N	19,325	N	N	17,567	21,095	N	N	29,885	4.18	4.22	4.04
1/3/2012	12,488	10,130	10,538	47,216	25,143		N	N	1.3	25,240	21,907	21,655	N	N	N	4.10	4.32	4.05
1/4/2012	N	10,130	10,538	N	25,143		N	N	N	N	21,907	21,655	N	N	N	3.66	4.27	4.04
1/5/2012	7,181	8,990	10,195	12,625	25,280	12,625	N	N	0.9	16,496	19,817	21,139	23,271	N	N	3.47	4.09	4.05
1/6/2012	N	8,990	10,195	N	25,280		N	N	N	N	19,817	21,139	N	N	N	3.24	3.89	4.03
1/7/2012	N	8,990	9,033	N	25,412		N	N	N	N	19,817	19,111	N	N	N	3.28	3.75	3.97
1/8/2012	6,939	8,869	8,859	30,011	25,795	30,011	N	N	1.4	18,085	19,940	19,025	37,813	N	N	3.38	3.62	3.92
1/9/2012	N	8,869	8,859	N	25,795		N	N	N	N	19,940	19,025	N	N	N	3.29	3.49	3.87
1/10/2012	10,695	8,272	8,702	16,767	26,232	16,767	19,801	N	1.1	20,156	18,246	18,857	25,104	28,730	N	3.22	3.36	3.81
1/11/2012	N	8,272	8,702	N	26,232		19,801	N	N	N	18,246	18,857	N	28,730	N	3.31	3.31	3.76
1/12/2012	N	N	8,702	N	26,232		N	N	0.9	N	N	18,857	N	N	N	3.23	3.28	3.71
1/13/2012	N	N	8,702	N	26,232		N	N	N	N	N	18,857	N	N	N	3.59	3.33	3.71
1/14/2012	N	N	8,484	N	27,189		N	N	N	N	N	18,293	N	N	N	3.74	3.39	3.74
1/15/2012	2,023	N	7,946	2,697	25,148	2,697	N	N	1.0	16,909	N	18,177	17,248	N	N	4.04	3.49	3.76
1/16/2012	N	N	7,946	N	25,148		N	N	N	N	N	18,177	N	N	N	3.91	3.58	3.75
1/17/2012	4,153	N	7,700	3,585	23,330	3,585	N	N	1.0	13,805	N	18,109	13,237	N	N	3.58	3.63	3.72
1/18/2012	N	N	7,700	N	23,330		N	N	N	N	N	18,109	N	N	N	4.01	3.73	3.72
1/19/2012	15,918	7,364	8,346	21,270	22,481	21,270	9,184	N	1.0	25,570	18,761	18,975	31,300	20,595	N	4.22	3.87	3.75
1/20/2012	N	7,364	8,346	N	22,481		9,184	N	N	N	18,761	18,975	N	20,595	N	4.17	3.95	3.78
1/21/2012	N	7,364	8,219	N	22,564		9,184	N	N	N	18,761	18,917	N	20,595	N	4.08	4.00	3.80
1/22/2012	8,378	9,483	8,232	11,216	21,619	11,216	12,024	N	2.6	N	N	18,917	17,171	20,569	N	4.00	4.00	3.82
1/23/2012	N	9,483	8,232	N	21,619		12,024	N	N	N	N	18,917	N	20,569	N	4.51	4.08	3.83
1/24/2012	12,147	12,148	8,507	9,572	19,611	9,572	14,019	N	1.4	25,511	N	19,498	19,178	22,550	N	3.63	4.09	3.83
1/25/2012	N	12,148	8,507	N	19,611		14,019	N	N	N	N	19,498	N	22,550	N	3.91	4.07	3.84
1/26/2012	5,972	8,833	8,650	10,903	19,346	10,903	10,564	N	0.8	12,533	N	19,526	18,694	18,348	N	3.67	4.00	3.85
1/27/2012	N	8,833	8,650	N	19,346		10,564	N	N	N	N	19,526	N	18,348	N	3.29	3.87	3.82
1/28/2012	N	8,833	8,472	N	16,269		10,564	N	N	N	N	N	N	18,348	N	3.48	3.78	3.78
1/29/2012	3,223	7,114	8,035	4,218	15,264	4,218	8,231	12,360	0.9	11,455	16,500	18,498	13,371	17,081	21,599	3.61	3.73	3.75
1/30/2012	N	7,114	8,035	N	15,264		8,231	12,360	N	N	16,500	18,498	N	17,081	21,599	4.10	3.67	3.74
1/31/2012	6,793	5,330	7,993	12,780	15,238	12,780	9,300	12,331	0.7	13,628	12,539	18,126	22,893	18,319	21,753	4.03	3.73	3.73
2/1/2012	N	5,330	7,993	N	15,238		9,300	12,331	N	N	12,539	18,126	N	18,319	21,753			
2/2/2012	N	N	7,584	N	12,331		N	12,331	N	N	N	N	N	N	21,753			

Date	Year	Month	Flow Effluent (MGD)	BOD RAW INF. (mg/l)		TSS RAW INF. (mg/l)	BOD PRIM. EFF. (mg/l)	TSS PRIM. EFF. (mg/l)	Plant Drain Flow (MGD)	TSS DRAIN (mg/l)	BOD Drain (mg/l)	7dFlow, MGD	30dFlow, MGD	BOD Raw (lbs/d)	30dBODRaw Unclean (lbs/d)	BOD Raw Cleaned (lbs/d)	7dBOD Raw (lbs/d)	30dBODRaw (lbs/d)	TSS Raw (lbs/d)	7dTSS Raw (lbs/d)	30dTSSRaw (lbs/d)	BOD Recycle (lbs/d)	7dBOD Recycle (lbs/d)	30dBODRecycle (lbs/d)	TSS Recycle (lbs/d)	30dTSSRecycle unclean (lbs/d)	TSS Recycle Cleaned (lbs/d)	7dTSS Recycle (lbs/d)	30dTSSRecycle (lbs/d)		BOD/TSS		BOD Cleaned R&R (lbs/d)	7dBOD Cleaned R&R (lbs/d)	30dBOD Cleaned R&R (lbs/d)	TSS Cleaned R&R (lbs/d)	7dTSS Cleaned R&R (lbs/d)	30dTSS Cleaned R&R (lbs/d)		Recycles Flow, MGD	7d Recycles Flow, MGD	30d Recycles Flow, MGD
2/3/2012	2012	2													10,554 N	N	N	10,119	N	N	9,743 N	N	N	7,584 N		12,331	N	12,331	N		N	N	N	N	N	21,753				
2/4/2012	2012	2													10,666 N	N	N	N	N	N	9,660 N	N	N	N	N	N	N	N	N		N	N	N	N	N	N				
2/5/2012	2012	2													10,666 N	N	N	N	N	N	9,660 N	N	N	N	N	N	N	N	N		N	N	N	N	N	N				
2/6/2012	2012	2													10,666 N	N	N	N	N	N	9,660 N	N	N	N	N	N	N	N	N		N	N	N	N	N	N				
2/7/2012	2012	2												N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		N	N	N	N	N	N				
2/8/2012	2012	2												N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		N	N	N	N	N	N				
2/9/2012	2012	2												N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		N	N	N	N	N	N				
2/10/2012	2012	2												N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		N	N	N	N	N	N				
2/11/2012	2012	2												N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		N	N	N	N	N	N				
2/12/2012	2012	2												N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		N	N	N	N	N	N				
2/13/2012	2012	2												N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		N	N	N	N	N	N				
2/14/2012	2012	2												N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		N	N	N	N	N	N				
2/15/2012	2012	2												N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		N	N	N	N	N	N				
2/16/2012	2012	2												N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		N	N	N	N	N	N				
2/17/2012	2012	2												N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		N	N	N	N	N	N				
2/18/2012	2012	2												N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		N	N	N	N	N	N				
2/19/2012	2012	2												N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		N	N	N	N	N	N				
2/20/2012	2012	2												N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		N	N	N	N	N	N				
2/21/2012	2012	2												N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		N	N	N	N	N	N				
2/22/2012	2012	2												N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		N	N	N	N	N	N				
2/23/2012	2012	2												N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		N	N	N	N	N	N				
2/24/2012	2012	2												N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		N	N	N	N	N	N				
2/25/2012	2012	2												N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		N	N	N	N	N	N				
2/26/2012	2012	2												N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		N	N	N	N	N	N				
2/27/2012	2012	2												N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		N	N	N	N	N	N				
2/28/2012	2012	2												N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		N	N	N	N	N	N				
2/29/2012	2012	2												N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		N	N	N	N	N	N				
3/1/2012	2012	3							2.99	184.0	131			15,626	N	15,626	N	N	10,832	N	N	3,269	N	N	4,591	N	4,591	N	N	1.4	18,895	N	N	15,423	N	N		2.99		
3/2/2012	2012	3							3.09						N	N	N	N		N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		3.09		
3/3/2012	2012	3							2.84						N	N	N	N		N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		2.84		
3/4/2012	2012	3							3.03	412.0	386			8,899	N	8,899	N	N	8,603	N	N	9,760	N	N	10,418	N	10,418	N	N	1.0	18,659	N	N	19,021	N	N		3.03	2.99	
3/5/2012	2012	3							3.99						N	N	N	N		N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		3.99	3.19	
3/6/2012	2012	3							4.54	256.0	207			15,284	N	N	N	N	6,984	8,806	N	7,842	6,957	N	9,699	N	9,699	8,236	N	2.2	N	N	N	16,683	17,042	N		4.54	3.41	
3/7/2012	2012	3							3.93						N	N	N	N		8,806	N		6,957	N	N			8,236	N	N	N	N	N		17,042	N		3.93	3.49	
3/8/2012	2012	3							3.38	172.0	210			15,159	N	15,159	N	N	13,767	9,785	N	5,923	7,842	N	4,851	N	4,851	8,323	N	1.1	21,082	N	N	18,618	18,107	N		3.38	3.54	
3/9/2012	2012	3							3.45						N	N	N	N		9,785	N		7,842	N	N			8,323	N	N	N	N	N		18,107	N		3.45	3.59	
3/10/2012	2012	3							3.54						N	N	N	N		9,785	N		7,842	N	N			8,323	N	N	N	N	N		18,107	N		3.54	3.69	
3/11/2012	2012	3							3.29	144.0	148			9,469	N	9,469	N	N	7,930	9,560	N	4,063	5,943	N	3,954	N	3,954	6,168	N	1.2	13,532	N	N	11,884	15,728	N		3.29	3.73	
3/12/2012	2012	3							3.01						N	N	N	N		9,560	N		5,943	N	N			6,168	N	N	N	N	N		15,728	N		3.01	3.59	
3/13/2012	2012	3							3.37	352.0	307			11,647	N	11,647	12,092	N	8,747	10,148	N	8,634	6,207	N	9,899	N	9,899	6,235	N	1.3	20,281	18,298	N	18,646	16,383	N		3.37	3.42	
3/14/2012	2012	3							3.73						N	N	12,092	N		10,148	N		6,207	N	N			6,235	N	N	N	18,298	N		16,383	N		3.73	3.40	
3/15/2012	2012	3							4.08	128.0	132			7,027	N	7,027	9,381	N	5,604	7,427	N	4,494	5,730	N	4,358	N	4,358	6,070	N	1.3	11,521	15,111	N	9,962	13,497	N		4.08	3.50	
3/16/2012	2012	3							3.63						N	N	9,381	N		7,427	N		5,730	N	N			6,070	N	N	N	15,111	N		13,497	N		3.63	3.52	3.49
3/17/2012	2012	3							3.73						N	N	9,381	N		7,427	N		5,730	N	N			6,070	N	N	N	15,111	N		13,497	N		3.73	3.55	3.51
3/18/2012	2012	3							3.65	236.0	336			8,174	N	8,174	8,949	N	7,652	7,334	N	10,234	7,787	N	7,188	N	7,188	7,149	N	1.1	18,408	16,737	N	14,840	14,483	N		3.65	3.60	3.52
3/19/2012	2012	3							3.99						N	N	8,949	N		7,334	N		7,787	N	N			7,149	N	N	N	16,737	N		14,483	N		3.99	3.74	3.54
3/20/2012	2012	3							4.22	232.0	214			12,213	N	12,213	9,138	N	8,670	7,309	N	7,536	7,422	N	8,170	N	8,170	6,572	N	1.4	19,749	16,560	N	16,840	13,881	N		4.22	3.86	3.57
3/21/2012	2012	3							3.61						N	N	9,138	N		7,309	N		7,422	N	N			6,572	N	N	N	16,560	N		13,881	N		3.61	3.84	3.58
3/22/2012	2012	3							3.45	420.0	319			12,196	N	12,196	10,861	N	9,601	8,641	N	9,184	8,985	N	12,092	N	12,092	9,150	N	1.3	21,380	19,846	N	21,693	17,791	N		3.45	3.75	3.57
3/23/2012	2012	3							3.60						N	N	10,861	N		8,641	N		8,985	N	N			9,150	N	N	N	19,846	N		17,791	N		3.60	3.75	3.57
3/24/2012	2012	3							3.75						N	N	10,861	N		8,641	N		8,985	N	N			9,150	N	N	N	19,846	N		17,791	N		3.75	3.75	3.58
3/25/2012	2012	3							3.66	1,144.0	476			8,906	11,327	8,906	11,105	N	8,579	8,950	8,815	14,538	10,420	7,771	34,941	10,015	34,941	18,401	10,015	1.0	23,444	21,525	N	43,520	27,351	18,830		3.66	3.75	3.58
3/26/2012	2012	3							3.82						11,327	N	11,105	N		8,950	8,815	N	10,420	7,771	N	10,015		18,401	10,015	N	N	21,525	N	N	27,351	18,830		3.82	3.73	3.59
3/27/2012	2012	3							4.04	656.0	395			15,463	11,672	N	N	N	7,049	8,410	8,668	13,317	12,346	8,233	22,116	11,023	22,116	23,050	11,023	2.2	N	N	N	29,165	31,459	19,691		4.04	3.70	3.61
3/28/2012	2012	3							3.56						11,672	N	N	N		8,410	8,668	N	12,346	8,233	N	11,023		23,050	11,023	N	N	N	N	N	31,459	19,691		3.56	3.70	3.61
3/29/2012	2012	3							3.68	272.0	218			14,419	11,883	14,419	N	11,249	7,330	7,653	8,565	6,695	11,517	8,115	8,353	10,818	8,353	21,803	10,818	2.0	21,114	N	18,915	15,683	29,456	19,383		3.68	3.73	3.61
3/30/2012	2012	3							4.11						11,883	N	N	11,249		7,653	8,565	N	11,517	8,115	N	10,818		21,803	10,818	N	N	N	18,915	N	29,456	19,383		4.11	3.80	3.63
3/31/2012	2012	3							4.04						11,571	N	N	N		7,653	8,376	N	11,517	8,518	N	11,337		21,803	11,337	N	N	N	N	N	29,456	19,713		4.04	3.84	3.66
4/1/2012	2012	4							3.68	164.0	182				11,571	N	N	N	7,012	7,130	8,271	5,589	8,534	8,293	5,036	10,852	5,036	11,835	10,852	N	N	N	N	12,048	18,966	19,123		3.68	3.85	3.68
4/2/2012	2012	4							3.65						11,571	N	N	N		7,130	8,271	N	8,534	8,293	N	10,852		11,835	10,852	N	N	N	N	N	18,966	19,123		3.65	3.82	3.71
4/3/2012	2012	4							3.73	276.0	288				11,814	N	N	N	6,776	7,039	8,131	8,965	7,083	8,232	8,591	10,711	8,591	7,327	10,711	N	N	N	N	15,367	14,366	18,842		3.73	3.78	3.73
4/4/2012	2012	4							4.14						11,814	N	N	N		7,039	8,131	N	7,083	8,232	N	10,711		7,327	10,711	N	N	N	N	N	14,366	18,842		4.14	3.86	3.74
4/5/2012	2012	4							5.00	304.0	341				N	N	N	N	6,746	6,845	8,113	14,228	9,594	8,723	12,684	10,941	12,684	8,771	10,941	N	N	N	N	19,430	15,615	19,054		5.00	4.05	3.75
4/6/2012	2012	4							4.07						N	N	N	N		6,845	8,113	N	9,594	8,723	N	10,941		8,771	10,941	N	N	N	N	N	15,615	19,054		4.07	4.04	3.76
4/7/2012	2012	4							3.67						N	N	N	N		6,845	7,641	N	9,594	8,956	N	11,449		8,771	11,449	N	N	N	N	N	15,615	19,090		3.67	3.99	3.77
4/8/2012	2012	4							3.61	224.0	197				N	N	N	N	9,189	7,570	7,760	5,935	9,709	8,724	6,748	11,087	6,748	9,341	11,087	N	N	N	N	15,937	16,912	18,847		3.61	3.98	3.77
4/9/2012	2012	4							3.58						N	N	N	N		7,570	7,760	N	9,709	8,724	N	11,087		9,341	11,087	N	N	N	N	N	16,912	18,847		3.58	3.97	3.77
4/10/2012	2012	4							3.51	240.0	237				N	N	N	N	15,233	10,389	8,322	6,942	9,035	8,945	7,030	11,324	7,030	8,821	11,324	N	N	N	N	22,263	19,210	19,646		3.51	3.94	3.78
4/11/2012	2012	4							3.65						N	N	N	N		10,389	8,322	N	9,035	8,945	N	11,324		8,821	11,324	N	N	N	N	N	19,210	19,646		3.65	3.87	3.80
4/12/2012	2012	4							4.20	268.0	210				N	N	N	N	14,292	12,905	8,749	7,360	6,746	8,848	9,393	11,285	9,393	7,724	11,285	N	N	N	N	23,685	20,628	20,033		4.20	3.76	3.83
4/13/2012	2012	4							3.79						N	N	N	N		12,905	8,749	N	6,746	8,848	N	11,285		7,724	11,285	N	N	N	N	N	20,628	20,033		3.79	3.72	3.83
4/14/2012	2012	4							3.57						N	N	N	N		12,905	9,011	N	6,746	9,210	N	11,862		7,724	11,862	N	N	N	N	N	20,628	20,873		3.57	3.70	3.81
4/15/2012	2012	4							3.49	323.0	156				N	N	N	N	12,428	13,984	9,274	4,543	6,282	8,851	9,407	11,673	9,407	8,610	11,673	N	N	N	N	21,835	22,594	20,947		3.49	3.68	3.81
4/16/2012	2012	4							2.84						N	N	N	N		13,984	9,274	N	6,282	8,851	N	11,673		8,610	11,673	N	N	N	N	N	22,594	20,947		2.84	3.58	3.78
4/17/2012	2012	4							3.87	336.0	385				N	N	N	N	8,627	11,782	9,349	12,434	8,112	9,020	10,851	11,955	10,851	9,884	11,955	N	N	N	N	19,478	21,666	21,303		3.87	3.63	3.79
4/18/2012	2012	4							3.68						N	N	N	N		11,782	9,349	N	8,112	9,020	N	11,955		9,884	11,955	N	N	N	N	N	21,666	21,303		3.68	3.63	3.78
4/19/2012	2012	4							3.34	524.0	401				N	N	N	N	11,611	10,889	9,575	11,177	9,385	9,301	14,605	12,450	14,605	11,621	12,450	N	N	N	N	26,216	22,510	22,025		3.34	3.51	3.75
4/20/2012	2012	4							3.11						N	N	N	N		10,889	9,575	N	9,385	9,301	N	12,450		11,621	12,450	N	N	N	N	N	22,510	22,025		3.11	3.41	3.73
4/21/2012	2012	4							2.85						N	N	N	N		10,889	9,573	N	9,385	9,310	N	12,480		11,621	12,480	N	N	N	N	N	22,510	22,052		2.85	3.31	3.71
4/22/2012	2012	4							3.10	216.0	194				N	N	N	N	21,861	14,033	10,518	5,019	9,543	8,980	5,588	11,950	5,588	10,348	11,950	N	N	N	N	27,449	24,381	22,467		3.10	3.26	3.69
4/23/2012	2012	4							3.48						N	N	N	N		14,033	10,518	N	9,543	8,980	N	11,950		10,348	11,950	N	N	N	N	N	24,381	22,467		3.48	3.35	3.68
4/24/2012	2012	4							3.72	168.0	170				N	N	N	N	9,711	14,394	10,605	5,277	7,158	8,268	5,215	9,663	5,215	8,469	9,663	N	N	N	N	14,926	22,864	20,268		3.72	3.33	3.69
4/25/2012	2012	4							3.63						N	N	N	N		14,394	10,605	N	7,158	8,268	N	9,663		8,469	9,663	N	N	N	N	N	22,864	20,268		3.63	3.32	3.68
4/26/2012	2012	4							3.08	232.0	219				N	N	N	N	9,403	13,658	10,786	5,629	5,308	7,676	5,963	8,420	5,963	5,589	8,420	N	N	N	N	15,366	19,247	19,206		3.08	3.28	3.65
4/27/2012	2012	4							3.43						N	N	N	N		13,658	10,786	N	5,308	7,676	N	8,420		5,589	8,420	N	N	N	N	N	19,247	19,206		3.43	3.33	3.64
4/28/2012	2012	4							3.50						N	N	N	N		13,658	11,074	N	5,308	7,758	N	8,426		5,589	8,426	N	N	N	N	N	19,247	19,500		3.50	3.42	3.64
4/29/2012	2012	4							3.42	272.0	196				N	N	N	N	11,609	10,241	11,115	5,594	5,500	7,592	7,763	8,375	7,763	6,314	8,375	N	N	N	N	19,372	16,555	19,490		3.42	3.47	3.61
4/30/2012	2012	4							3.99						N	N	N	N		10,241	11,115	N	5,500	7,592	N	8,375		6,314	8,375	N	N	N	N	N	16,555	19,490		3.99	3.54	3.61
5/1/2012	2012	5							3.81	248.0	336			13,548	N	13,548	N	N	11,263	10,758	11,442	10,683	7,302	7,983	7,885	8,594	7,885	7,204	8,594		1.2	24,231	N	N	19,148	17,962	20,036		3.81	3.55	3.62
5/2/2012	2012	5							3.98						N	N	N	N		10,758	11,442	N	7,302	7,983	N	8,594		7,204	8,594	N	N	N	N	N	17,962	20,036		3.98	3.60	3.63
5/3/2012	2012	5							3.52	416.0	392				N	N	N	N	9,244	10,705	11,632	11,515	9,264	8,180	12,220	8,873	12,220	9,289	8,873	N	N	N	N	21,464	19,995	20,505		3.52	3.66	3.62
5/4/2012	2012	5							3.11					21,374	N	N	N	N		10,705	11,632	N	9,264	8,180	N	8,873		9,289	8,873	N	N	N	N	N	19,995	20,505		3.11	3.62	3.59
5/5/2012	2012	5							3.22						N	N	N	N		10,705	12,039	N	9,264	7,676	N	8,556		9,289	8,556	N	N	N	N	N	19,995	20,595		3.22	3.58	3.53
5/6/2012	2012	5							3.30	344.0	239			10,138	N	10,138	N	N	8,626	9,711	11,777	6,582	9,593	7,591	9,473	8,626	9,473	9,859	8,626		1.2	16,720	N	N	18,099	19,570	20,403		3.30	3.56	3.50
5/7/2012	2012	5							3.43						N	N	N	N		9,711	11,777	N	9,593	7,591	N	8,626		9,859	8,626	N	N	N	N	N	19,570	20,403		3.43	3.48	3.49
5/8/2012	2012	5							3.23	1,024.0	488			20,089	N	20,089	N	N	16,016	11,295	12,302	13,154	10,417	8,147	27,601	10,230	27,601	16,431	10,230		1.3	33,243	N	N	43,617	27,727	22,532		3.23	3.40	3.48
5/9/2012	2012	5							3.11						N	N	N	N		11,295	12,302	N	10,417	8,147	N	10,230		16,431	10,230	N	N	N	N	N	27,727	22,532		3.11	3.27	3.47
5/10/2012	2012	5							3.57	876.0	581			17,867	N	17,867	16,031	N	13,849	12,830	12,195	17,309	12,348	8,944	26,097	11,697	26,097	21,057	11,697		1.3	35,176	28,379	N	39,946	33,888	23,892		3.57	3.28	3.47
5/11/2012	2012	5							3.76						N	N	16,031	N		12,830	12,195	N	12,348	8,944	N	11,697		21,057	11,697	N	N	N	28,379	N	N	33,888	23,892		3.76	3.37	3.47
5/12/2012	2012	5							3.61						N	N	16,031	N		12,830	12,021	N	12,348	9,076	N	11,889		21,057	11,889	N	N	N	28,379	N	N	33,888	23,910		3.61	3.43	3.45
5/13/2012	2012	5							3.39	624.0	326			9,255	N	9,255	15,737	N	6,852	12,239	11,623	9,222	13,228	9,087	17,653	12,332	17,653	23,784	12,332		1.4	18,477	28,965	N	24,505	36,023	23,956		3.39	3.44	3.44
5/14/2012	2012	5							3.40						N	N	15,737	N		12,239	11,623	N	13,228	9,087	N	12,332		23,784	12,332	N	N	N	28,965	N	N	36,023	23,956		3.40	3.44	3.43
5/15/2012	2012	5							3.30	892.0	448			16,187	N	16,187	14,436	N	11,659	10,787	11,564	12,337	12,956	9,687	24,564	13,498	24,564	22,772	13,498		1.4	28,524	27,393	N	36,223	33,558	25,062		3.30	3.45	3.43
5/16/2012	2012	5							3.50						N	N	14,436	N		10,787	11,564	N	12,956	9,687	N	13,498		22,772	13,498	N	N	N	27,393	N	N	33,558	25,062		3.50	3.50	3.45
5/17/2012	2012	5							3.80	872.0	568			18,741	N	N	N	N	8,983	9,165	11,591	18,012	13,190	10,116	27,652	14,791	27,652	23,290	14,791		2.1	N	N	N	36,635	32,454	26,382		3.80	3.54	3.45
5/18/2012	2012	5							3.66						N	N	N	N		9,165	11,591	N	13,190	10,116	N	14,791		23,290	14,791	N	N	N	N	N	N	32,454	26,382		3.66	3.52	3.45
5/19/2012	2012	5							3.57						N	N	N	N		9,165	11,590	N	13,190	10,028	N	14,806		23,290	14,806	N	N	N	N	N	N	32,454	26,396		3.57	3.52	3.45
5/20/2012	2012	5							3.43	660.0	208			8,709	N	8,709	N	N	14,338	11,660	11,801	5,954	12,101	9,714	18,891	15,120	18,891	23,703	15,120		0.6	14,663	N	N	33,229	35,363	26,922		3.43	3.52	3.46
5/21/2012	2012	5							3.69						N	N	N	N		11,660	11,801	N	12,101	9,714	N	15,120		23,703	15,120	N	N	N	N	N	35,363	26,922		3.69	3.56	3.49

Date	Year	Month	Flow Effluent (MGD)	BOD RAW INF. (mg/l)		TSS RAW INF. (mg/l)	BOD PRIM. EFF. (mg/l)	TSS PRIM. EFF. (mg/l)	Plant Drain Flow (MGD)	TSS DRAIN (mg/l)	BOD Drain (mg/l)	7dFlow, MGD	30dFlow, MGD	BOD Raw (lbs/d)	30dBODRaw Unclean (lbs/d)	BOD Raw Cleaned (lbs/d)	7dBOD Raw (lbs/d)	30dBODRaw (lbs/d)	TSS Raw (lbs/d)	7dTSS Raw (lbs/d)	30dTSSRaw (lbs/d)	BOD Recycle (lbs/d)	7dBOD Recycle (lbs/d)	30dBODRecycle (lbs/d)	TSS Recycle (lbs/d)	30dTSSRecycle unclean (lbs/d)	TSS Recycle Cleaned (lbs/d)	7dTSS Recycle (lbs/d)	30dTSSRecycle (lbs/d)	BOD/TSS	BOD Cleaned R&R (lbs/d)	7dBOD Cleaned R&R (lbs/d)	30dBOD Cleaned R&R (lbs/d)	TSS Cleaned R&R (lbs/d)	7dTSS Cleaned R&R (lbs/d)	30dTSS Cleaned R&R (lbs/d)	Recycles Flow, MGD	7d Recycles Flow, MGD	30d Recycles Flow, MGD
5/22/2012	2012	5							3.53	308.0	243			17,711	N	17,711	N	N	12,666	11,996	11,094	7,158	10,375	9,879	9,073	15,389	9,073	18,539	15,389	1.4	24,869	N	N	21,739	30,534	26,482	3.53	3.60	3.51
5/23/2012	2012	5							4.02						N	N	N	N		11,996	11,094	N	10,375	9,879	N	15,389		18,539	15,389	N	N	N	N	N	30,534	26,482	4.02	3.67	3.52
5/24/2012	2012	5							3.86	548.0	385			14,295	15,265	14,295	13,572	N	9,367	12,124	11,067	12,402	8,504	10,427	17,652	16,345	17,652	15,205	16,345	1.5	26,697	22,076	N	27,019	27,329	27,413	3.86	3.68	3.53
5/25/2012	2012	5							3.80						15,265	N	13,572	N		12,124	11,067	N	8,504	10,427	N	16,345		15,205	16,345	N	N	22,076	N		27,329	27,413	3.80	3.70	3.53
5/26/2012	2012	5							3.40						15,265	N	13,572	N		12,124	11,206	N	8,504	10,827	N	17,210		15,205	17,210	N	N	22,076	N		27,329	28,416	3.40	3.68	3.54
5/27/2012	2012	5							3.66	335.0	608			9,807	14,810	9,807	13,938	N	12,762	11,598	11,326	18,570	12,710	11,422	10,232	16,674	10,232	12,319	16,674	0.8	28,377	26,648	N	22,994	23,917	27,999	3.66	3.71	3.55
5/28/2012	2012	5							3.49						14,810	N	13,938	N		11,598	11,326	N	12,710	11,422	N	16,674		12,319	16,674	N	N	26,648	N	N	23,917	27,999	3.49	3.68	3.55
5/29/2012	2012	5							3.47	240.0	436			16,227	14,919	16,227	13,443	13,985	28,386	16,838	12,616	12,625	14,532	11,963	6,950	16,611	6,950	11,611	16,611	0.6	28,852	27,975	25,439	35,336	28,450	29,227	3.47	3.67	3.55
5/30/2012	2012	5							3.43						14,919	N	13,443	13,985		16,838	12,616	N	14,532	11,963	N	16,611		11,611	16,611	N	N	27,975	25,439	N	28,450	29,227	3.43	3.59	3.54
5/31/2012	2012	5							3.66	361.0	384			15,999	15,108	15,999	14,011	14,208	10,308	17,152	12,543	11,728	14,308	12,044	11,026	16,853	11,026	9,402	16,853	1.6	27,727	28,319	25,757	21,334	26,554	29,395	3.66	3.56	3.53
6/1/2012	2012	6							3.54						15,108	N	14,011	14,208		17,152	12,543	N	14,308	12,044	N	16,853		9,402	16,853	N	N	28,319	25,757	N	26,554	29,395	3.54	3.52	3.52
6/2/2012	2012	6							3.26						15,108	N	14,011	14,208		17,152	12,818	N	14,308	12,088	N	17,239		9,402	17,239	N	N	28,319	25,757	N	26,554	30,056	3.26	3.50	3.51
6/3/2012	2012	6							3.49	296.0	194			8,997	14,156	8,997	13,741	13,773	13,001	17,232	12,832	5,650	10,001	11,593	8,621	16,576	8,621	8,865	16,576	0.7	14,647	23,742	24,831	21,622	26,097	29,408	3.49	3.48	3.52
6/4/2012	2012	6							3.48						14,156	N	13,741	13,773		17,232	12,832	N	10,001	11,593	N	16,576		8,865	16,576	N	N	23,742	24,831	N	26,097	29,408	3.48	3.48	3.53
6/5/2012	2012	6							3.51	852.0	367			12,893	14,367	12,893	12,630	14,003	14,388	12,566	13,275	10,750	9,376	11,913	24,956	17,767	24,956	14,868	17,767	0.9	23,643	22,006	25,408	39,344	27,433	31,042	3.51	3.48	3.54
6/6/2012	2012	6							3.48						14,367	N	12,630	14,003		12,566	13,275	N	9,376	11,913	N	17,767		14,868	17,767	N	N	22,006	25,408	N	27,433	31,042	3.48	3.49	3.54
6/7/2012	2012	6							3.51	560.0	299			13,044	13,826	13,044	11,645	13,416	24,298	17,229	13,912	8,758	8,386	11,575	16,403	16,905	16,403	16,660	16,905	0.5	21,802	20,031	24,455	40,701	33,889	30,817	3.51	3.47	3.55
6/8/2012	2012	6							3.51						13,826	N	11,645	13,416		17,229	13,912	N	8,386	11,575	N	16,905		16,660	16,905	N	N	20,031	24,455	N	33,889	30,817	3.51	3.46	3.56
6/9/2012	2012	6							3.53						13,489	N	11,645	13,011		17,229	13,917	N	8,386	11,097	N	16,139		16,660	16,139	N	N	20,031	23,480	N	33,889	30,057	3.53	3.50	3.56
6/10/2012	2012	6							3.53	648.0	154			8,414	13,098	8,414	11,450	12,628	12,144	16,943	13,781	4,537	8,015	10,593	19,089	16,366	19,089	20,149	16,366	0.7	12,951	19,465	22,602	31,233	37,093	30,147	3.53	3.51	3.55
6/11/2012	2012	6							3.42						13,098	N	11,450	12,628		16,943	13,781	N	8,015	10,593	N	16,366		20,149	16,366	N	N	19,465	22,602	N	37,093	30,147	3.42	3.50	3.54
6/12/2012	2012	6							3.57	380.0	322			14,628	13,512	14,628	12,029	13,076	20,620	19,021	14,840	9,593	7,629	10,621	11,321	15,879	11,321	15,604	15,879	0.7	24,221	19,658	23,081	31,941	34,625	30,719	3.57	3.51	3.55
6/13/2012	2012	6							3.60						13,512	N	12,029	13,076		19,021	14,840	N	7,629	10,621	N	15,879		15,604	15,879	N	N	19,658	23,081	N	34,625	30,719	3.60	3.52	3.56
6/14/2012	2012	6							3.73	928.0	450			8,481	12,919	8,481	10,508	12,434	12,038	14,934	14,869	14,007	9,379	10,749	28,886	16,212	28,886	19,765	16,212	0.7	22,488	19,887	22,578	40,924	34,699	31,081	3.73	3.56	3.57
6/15/2012	2012	6							3.64						12,919	N	10,508	12,434		14,934	14,869	N	9,379	10,749	N	16,212		19,765	16,212	N	N	19,887	22,578	N	34,699	31,081	3.64	3.57	3.58
6/16/2012	2012	6							3.86						12,434	N	10,508	12,434		14,934	15,360	N	9,379	10,144	N	15,258		19,765	15,258	N	N	19,887	22,578	N	34,699	30,618	3.86	3.62	3.58
6/17/2012	2012	6							3.45	708.0	435			9,625	12,218	9,625	10,911	12,218	11,300	14,653	15,047	12,524	12,041	10,327	20,383	15,652	20,383	20,197	15,652	0.9	22,149	22,953	22,545	31,683	34,849	30,700	3.45	3.61	3.57
6/18/2012	2012	6							3.72						12,218	N	10,911	12,218		14,653	15,047	N	12,041	10,327	N	15,652		20,197	15,652	N	N	22,953	22,545	N	34,849	30,700	3.72	3.65	3.58
6/19/2012	2012	6							3.72	812.0	679			11,526	12,434	11,526	9,877	12,434	13,847	12,395	15,010	21,078	15,870	11,491	25,207	16,138	25,207	24,825	16,138	0.8	32,604	25,747	23,925	39,054	37,220	31,148	3.72	3.67	3.59
6/20/2012	2012	6							3.52						12,434	N	9,877	12,434		12,395	15,010	N	15,870	11,491	N	16,138		24,825	16,138	N	N	25,747	23,925	N	37,220	31,148	3.52	3.66	3.58
6/21/2012	2012	6							3.87	784.0	466			14,796	12,210	14,796	11,982	12,210	13,421	12,856	15,068	15,050	16,217	12,098	25,319	17,388	25,319	23,637	17,388	1.1	29,846	28,200	24,308	38,740	36,493	32,456	3.87	3.68	3.59
6/22/2012	2012	6							3.68						12,210	N	11,982	12,210		12,856	15,068	N	16,217	12,098	N	17,388		23,637	17,388	N	N	28,200	24,308	N	36,493	32,456	3.68	3.69	3.58
6/23/2012	2012	6							3.70						12,036	N	11,982	12,036		12,856	15,543	N	16,217	12,072	N	17,366		23,637	17,366	N	N	28,200	24,109	N	36,493	32,909	3.70	3.67	3.57
6/24/2012	2012	6							3.21	320.0	295			7,057	11,653	7,057	11,126	11,653	7,799	11,689	14,947	7,902	14,677	11,752	8,572	16,690	8,572	19,700	16,690	0.9	14,959	25,803	23,405	16,371	31,389	31,637	3.21	3.63	3.55
6/25/2012	2012	6							3.07						11,653	N	11,126	11,653		11,689	14,947	N	14,677	11,752	N	16,690		19,700	16,690	N	N	25,803	23,405	N	31,389	31,637	3.07	3.54	3.54
6/26/2012	2012	6							3.17	676.0	384			6,012	11,361	6,012	9,288	11,361	12,104	11,108	14,896	10,158	11,037	11,105	17,883	17,278	17,883	17,258	17,278	0.5	16,170	20,325	22,466	29,987	28,366	32,175	3.17	3.46	3.53
6/27/2012	2012	6							3.25						11,361	N	9,288	11,361		11,108	14,896	N	11,037	11,105	N	17,278		17,258	17,278	N	N	20,325	22,466	N	28,366	32,175	3.25	3.42	3.52
6/28/2012	2012	6							3.34	1,380.0	855			9,447	10,840	9,447	7,505	10,840	15,719	11,874	13,922	23,831	13,964	11,967	38,464	19,702	N		18,139	0.6	33,278	21,469	22,807	N		31,911	3.34	3.35	3.52
6/29/2012	2012	6							3.12						10,840	N	7,505	10,840		11,874	13,922	N	13,964	11,967	N	19,702	N		18,139	N	N	21,469	22,807	N		31,911	3.12	3.27	3.50
6/30/2012	2012	7							3.06						10,410	N	7,505	10,410		11,874	14,223	N	13,964	11,986	N	20,425	N		18,785	N	N	21,469	22,396	N		32,873	3.06	3.17	3.48
7/1/2012	2012	7							3.02	1,200.0	633			5,363	10,022	5,363	6,941	10,022	9,109	12,311	13,830	15,953	16,647	12,292	30,242	21,180	30,242	N	19,740	0.6	21,316	23,588	22,313	39,351	N	33,413	3.02	3.15	3.47
7/2/2012	2012	7							3.05						10,022	N	6,941	10,022		12,311	13,830	N	16,647	12,292	N	21,180	N		19,740	N	N	23,588	22,313	N		33,413	3.05	3.14	3.46
7/3/2012	2012	7							2.98	286.0	410			6,742	9,848	6,742	7,184	9,848	10,787	11,872	13,660	10,196	16,660	12,641	7,112	21,064	7,112	N	19,614	0.6	16,938	23,844	22,490	17,899	N	33,102	2.98	3.12	3.44
7/4/2012	2012	7							2.87						9,848	N	7,184	9,848		11,872	13,660	N	16,660	12,641	N	21,064	N		19,614	N	N	23,844	22,490	N		33,102	2.87	3.06	3.42
7/5/2012	2012	7							2.93	424.0	490			9,215	9,565	9,215	7,107	9,565	9,643	9,846	13,295	11,981	12,710	12,736	10,367	19,942	10,367	15,907	18,399	1.0	21,196	19,817	22,301	20,010	25,754	31,491	2.93	3.00	3.40
7/6/2012	2012	7							2.45						9,565	N	7,107	9,565		9,846	13,295	N	12,710	12,736	N	19,942		15,907	18,399	N	N	19,817	22,301	N	25,754	31,491	2.45	2.91	3.37
7/7/2012	2012	7							2.08						9,276	N	7,107	9,276		9,846	12,378	N	12,710	13,067	N	20,237		15,907	18,580	N	N	19,817	22,343	N	25,754	30,654	2.08	2.77	3.32
7/8/2012	2012	7							2.26	668.0	280			9,267	9,275	9,267	8,408	9,275	9,720	10,050	12,173	5,281	9,153	12,468	12,598	19,650	12,598	10,026	18,082	1.0	14,548	17,561	21,743	22,318	20,076	29,959	2.26	2.66	3.28
7/9/2012	2012	7							2.58						9,275	N	8,408	9,275		10,050	12,173	N	9,153	12,468	N	19,650		10,026	18,082	N	N	17,561	21,743	N	20,076	29,959	2.58	2.59	3.25
7/10/2012	2012	7							2.37	588.0	426			11,078	9,480	11,078	9,853	9,480	9,032	9,465	11,934	8,425	8,562	12,768	11,629	19,076	11,629	11,532	17,460	1.2	19,503	18,416	22,247	20,661	20,997	29,078	2.37	2.51	3.21
7/11/2012	2012	7							1.98						9,480	N	9,853	9,480		9,465	11,934	N	8,562	12,768	N	19,076		11,532	17,460	N	N	18,416	22,247	N	20,997	29,078	1.98	2.38	3.16
7/12/2012	2012	7							2.02	552.0	476			10,181	9,138	10,181	10,175	9,138	10,431	9,728	11,150	8,024	7,243	12,647	9,305	18,921	9,305	11,178	17,292	1.0	18,205	17,419	21,785	19,736	20,905	28,061	2.02	2.25	3.11
7/13/2012	2012	7							1.95						9,138	N	10,175	9,138		9,728	11,150	N	7,243	12,647	N	18,921		11,178	17,292	N	N	17,419	21,785	N	20,905	28,061	1.95	2.18	3.06
7/14/2012	2012	7							2.28						9,192	N	10,175	9,192		9,728	11,076	N	7,243	12,534	N	18,090		11,178	16,238	N	N	17,419	21,726	N	20,905	26,892	2.28	2.21	3.01
7/15/2012	2012	7							2.31	388.0	243			10,480	9,291	10,480	10,580	9,291	11,853	10,439	11,136	4,684	7,044	11,930	7,479	17,274	7,479	9,471	15,508	0.9	15,164	17,624	21,221	19,332	19,910	26,262	2.31	2.21	2.96
7/16/2012	2012	7							2.06						9,291	N	10,580	9,291		10,439	11,136	N	7,044	11,930	N	17,274		9,471	15,508	N	N	17,624	21,221	N	19,910	26,262	2.06	2.14	2.90
7/17/2012	2012	7							1.78	356.0	241			12,782	9,534	12,782	11,148	9,534	11,925	11,403	11,184	3,580	5,429	11,242	5,288	16,113	5,288	7,358	14,250	1.1	16,362	16,577	20,776	17,213	18,761	25,056	1.78	2.05	2.85
7/18/2012	2012	7							1.54						9,534	N	11,148	9,534		11,403	11,184	N	5,429	11,242	N	16,113		7,358	14,250	N	N	16,577	20,776	N	18,761	25,056	1.54	1.99	2.77
7/19/2012	2012	7							1.85	720.0	280			10,441	9,451	10,441	11,234	9,451	13,042	12,273	11,122	4,323	4,196	9,953	11,116	15,029	11,116	7,961	13,076	0.8	14,764	15,430	19,404	24,158	20,234	23,815	1.85	1.97	2.71
7/20/2012	2012	7							1.85						9,451	N	11,234	9,451		12,273	11,122	N	4,196	9,953	N	15,029		7,961	13,076	N	N	15,430	19,404	N	20,234	23,815	1.85	1.95	2.66
7/21/2012	2012	7							2.04						9,005	N	11,234	9,005		12,273	10,930	N	4,196	9,528	N	14,171		7,961	11,963	N	N	15,430	18,534	N	20,234	22,458	2.04	1.92	2.60
7/22/2012	2012	7							2.01	324.0	120			5,751	8,755	5,751	9,658	8,755	14,105	13,024	11,175	2,013	3,305	8,950	5,435	13,499	5,435	7,279	11,419	0.4	7,764	12,963	17,705	19,540	20,303	22,215	2.01	1.88	2.54
7/23/2012	2012	7							0.72						8,755	N	9,658	8,755		13,024	11,175	N	3,305	8,950	N	13,499		7,279	11,419	N	N	12,963	17,705	N	20,303	22,215	0.72	1.68	2.44
7/24/2012	2012	7							1.44	336.0	460			12,682	9,188	12,682	9,625	9,188	18,060	15,069	11,964	5,528	3,954	8,767	4,038	13,150	4,038	6,863	11,041	0.7	18,210	13,579	17,955	22,098	21,932	22,692	1.44	1.64	2.38
7/25/2012	2012	7							2.01						9,188	N	9,625	9,188		15,069	11,964	N	3,954	8,767	N	13,150		6,863	11,041	N	N	13,579	17,955	N	21,932	22,692	2.01	1.70	2.35
7/26/2012	2012	7							1.95	428.0	222			10,229	9,512	10,229	9,554	9,512	9,067	13,744	11,730	3,613	3,718	8,264	6,965	12,311	6,965	5,479	10,131	1.1	13,842	13,272	17,776	16,032	19,223	21,529	1.95	1.72	2.31
7/27/2012	2012	7							2.06						9,512	N	9,554	9,512		13,744	11,730	N	3,718	8,264	N	12,311		5,479	10,131	N	N	13,272	17,776	N	19,223	21,529	2.06	1.75	2.27
7/28/2012	2012	7							2.30						9,518	N	9,554	9,518		13,744	11,398	N	3,718	6,967	N	10,131		5,479	10,131	N	N	13,272	16,484	N	19,223	21,529	2.30	1.78	2.23
7/29/2012	2012	7							1.93	388.0	185			8,846	9,466	8,846	10,586	9,466	11,360	12,829	11,395	2,980	4,040	6,660	6,249	9,833	6,249	5,750	9,833	0.8	11,826	14,626	16,126	17,609	18,579	21,227	1.93	1.77	2.19
7/30/2012	2012	7							1.96						9,466	N	10,586	9,466		12,829	11,395	N	4,040	6,660	N	9,833		5,750	9,833	N	N	14,626	16,126	N	18,579	21,227	1.96	1.95	2.15
7/31/2012	2012	7							1.84	424.0	407			14,437	10,164	14,437	11,171	10,164	11,703	10,710	11,594	6,249	4,281	5,914	6,510	8,007	6,510	6,575	8,007	1.2	20,686	15,451	16,077	18,213	17,285	19,602	1.84	2.01	2.12

Raw Date	Flow mgd	Ammonia mg/l	Ammonia Pounds	Nitrate mg/l	Nitrate Pounds	Nitrite mg/l	Nitrite Pounds	TKN mg/l	TKN Pounds	Nitrogen mg/l	Nitrogen Pounds	Total Phos mg/l	Total Phos Pounds	BOD mg/l	BOD Pounds	COD mg/l	COD Pounds
9/28/2011	5.7381	42	2010	17	814	3.9	187	60	2871	80.9	3872	5.9	282	600	28,713	1400	66,998
9/29/2011	7.3628	23	1412	0.01	1	1.9	117	38	2333	39.91	2451	3.8	233	340	20,878	730	44,826
9/30/2011	6.615	20	1103	5.6	309	1.9	105	30	1655	37.5	2069	2.7	149	260	14,344	500	27,585
10/3/2011	6.3301	23	1214	2.4	127	1.1	58	32	1689	35.5	1874	4.2	222	190	10,031	650	34,315
10/4/2011	7.4392	33	2047	8	496	2.2	136	46	2854	56.2	3487	3.4	211	350	21,715	760	47,153
10/5/2011	6.8795	29	1664	4.1	235	1.7	98	40	2295	45.8	2628	2.7	155	180	10,328	860	49,343
10/6/2011	6.3481	33	1747	3.4	180	1.1	58	40	2118	44.5	2356	3	159	270	14,295	530	28,060
10/7/2011	5.9596	21	1044	1.7	84	1	50	39	1938	41.7	2073	2.6	129	170	8,450	420	20,875
10/11/2011	5.655	30	1415	1.1	52	2.1	99	34	1604	37.2	1754	3.3	156	310	14,620	520	24,525
10/12/2011	5.8605	45	2199	2.6	127	3.4	166	68	3324	74	3617	2.9	142	370	18,084	680	33,236
10/13/2011	7.2753	22	1335	0.54	33	2	121	40	2427	42.54	2581	3.4	206	330	20,023	620	37,619
10/14/2011	8.0909	33	2227	2.6	175	1.6	108	48	3239	52.2	3522	2.4	162	290	19,569	750	50,609
10/17/2011	6.9704	25	1453	0.01	1	0.01	1	40	2325	40.02	2326	3	174	360	20,928	460	26,741
10/18/2011	6.5123	35	1901	0.15	8	2	109	54	2933	56.15	3050	2.6	141	350	19,009	620	33,674
10/19/2011	7.9576	29	1925	1	66	1.4	93	37	2456	39.4	2615	2.3	153	220	14,601	750	49,775
10/20/2011	9.5536	17	1355	0.01	1	0.01	1	26	2072	26.02	2073	1.3	104	180	14,342	260	20,716
10/21/2011	8.4404	17	1197	0.44	31	0.01	1	26	1830	26.45	1862	1.8	127	320	22,526	430	30,269

PI

Date	Flow mgd	Ammonia mg/l	Ammonia Pounds	Nitrate mg/l	Nitrate Pounds	Nitrite mg/l	Nitrite Pounds	TKN mg/l	TKN Pounds	Nitrogen mg/l	Nitrogen Pounds	Total Phos mg/l	Total Phos Pounds
9/28/2011	9.86338	29	2,757	0	1	1	79	59	4,853	60	4,933	12	987
9/29/2011	11.3981	18	1,711	0	1	0.5	49	36	3,422	37	3,473	9.8	932
9/30/2011	10.33827	13	1,121	0	2	0.2	17	26	2,242	26	2,261	7.9	681
10/3/2011	9.54683	7.1	565	0	1	1.3	104	35	2,787	36	2,891	3.9	311
10/4/2011	10.83231	27	2,439	0	1	0.7	66	44	3,975	45	4,042	2.2	199
10/5/2011	10.22183	17	1,449	0	1	0.6	53	33	2,813	34	2,867	10	853
10/6/2011	10.02548	22	1,839	0	1	1	81	42	3,512	43	3,594	11	920
10/7/2011	9.59606	11	880	0	1	0.6	51	34	2,721	35	2,773	5.6	448
10/11/2011	9.29119	20	1,550	0	1	0.2	12	34	2,635	34	2,647	12	930
10/12/2011	9.39492	31	2,429	0	1	0.3	21	39	3,056	39	3,078	7.6	595
10/13/2011	10.84913	18	1,629	0	1	0.7	63	33	2,986	34	3,050	6.9	624
10/14/2011	11.84546	27	2,667	0	1	0.7	64	48	4,742	49	4,807	8.3	820
10/17/2011	11.38587	19	1,804	0	2	0.6	57	29	2,754	30	2,813	5.5	522
10/18/2011	10.75465	24	2,153	0	1	0.2	15	51	4,574	51	4,591	5.3	475
10/19/2011	11.76252	20	1,962	0	1	1.9	186	32	3,139	34	3,327	5.3	520
10/20/2011	13.47542	15	1,686	0	1	0.3	29	26	2,922	26	2,952	5.2	584
10/21/2011	12.66583	16	1,690	0	1	0.2	23	37	3,908	37	3,933	8.1	856

PE

Date	Flow mgd	Ammonia mg/l	Ammonia Pounds	Nitrate mg/l	Nitrate Pounds	Nitrite mg/l	Nitrite Pounds	TKN mg/l	TKN Pounds	Nitrogen mg/l	Nitrogen Pounds	Total Phos mg/l	Total Phos Pounds
10/29/2011	11.3981	17	1,616	0.01	1	0.43	41	29	2,757	29	2,799	5.2	494
10/30/2011	10.33827	15	1,293	0.01	1	0.96	83	17	1,466	18	1,549	4.6	397
10/3/2011	9.54683	19	1,513	0.01	1	0.98	78	28	2,229	29	2,308	4.5	358
10/4/2011	10.83231	30	2,710	0.01	1	1.6	145	47	4,246	49	4,391	10	903
10/5/2011	10.22183	22	1,876	0.01	1	1.2	102	33	2,813	34	2,916	3.6	307
10/6/2011	10.02548	25	2,090	0.01	1	1.5	125	32	2,676	34	2,802	4.8	401
10/7/2011	9.59606	19	1,521	0.01	1	1.2	96	30	2,401	31	2,498	3.7	296
10/11/2011	9.29119	19	1,472	0.08	6	0.01	1	34	2,635	34	2,642	2.6	201
10/12/2011	9.39492	27	2,116	0.01	1	0.38	30	40	3,134	40	3,165	3.3	259
10/13/2011	10.84913	20	1,810	0.01	1	0.62	56	29	2,624	30	2,681	2.8	253
10/14/2011	11.84546	25	2,470	0.02	2	0.53	52	35	3,458	36	3,512	2.9	286
10/17/2011	11.38587	19	1,804	0.01	1	0.14	13	26	2,469	26	2,483	3.3	313
10/18/2011	10.75465	22	1,973	0.01	1	0.01	1	31	2,781	31	2,782	3.1	278
10/19/2011	11.76252	17	1,668	0.01	1	0.01	1	25	2,452	25	2,454	5.4	530
10/20/2011	13.47542	14	1,573	0.01	1	0.01	1	19	2,135	19	2,138	3.4	382
10/21/2011	12.66583	13	1,373	0.01	1	0.01	1	24	2,535	24	2,537	3.3	349

Synagro Combined Flow

Date	Flow mgd	Ammonia mg/l	Ammonia Pounds	Nitrate mg/l	Nitrate Pounds	Nitrite mg/l	Nitrite Pounds	TKN mg/l	TKN Pounds	Nitrogen mg/l	Nitrogen Pounds	Total Phos mg/l	Total Phos Pounds
9/29/2011	2.1207	3.2	57	5.2	92	0.01	0	4.3	76	9.51	168	5.4	96
9/30/2011	2.096	1.3	23	4.2	73	0.01	0	2.1	37	6.31	110	4.1	72
10/3/2011	2.116	1.7	30	4.6	81	0.18	3	2.7	48	7.48	132	0.53	9
10/4/2011	2.119	2	35	6.1	108	0.33	6	3	53	9.43	167	1.2	21
10/5/2011	2.118	0.89	16	5.5	97	0.01	0	2.9	51	8.41	149	6.9	122
10/6/2011	2.124	1.2	21	6.1	108	0.01	0	5.8	103	11.91	211	6.2	110
10/7/2011	2.1185	1.8	32	5.8	102	0.18	3	9.9	175	15.88	281	3.8	67
10/11/2011	2.1318	0.83	15	7.6	135	0.01	0	3.1	55	10.71	190	5.8	103
10/12/2011	2.1678	1.1	20	6.9	125	0.01	0	2	36	8.91	161	6.6	119
10/13/2011	2.0013	13	217	4.9	82	0.01	0	16	267	20.91	349	6.2	103
10/14/2011	2.1164	2.1	37	5.9	104	0.32	6	4	71	10.22	180	4.7	83
10/17/2011	2.147	2	36	5.5	98	0.01	0	2.1	38	7.61	136	4.6	82
10/18/2011	2.1347	1.2	21	3.8	68	0.01	0	6.8	121	10.61	189	3.4	61
10/19/2011	2.1755				0		0		0	0	0		0
10/20/2011	2.1124	1.7	30	5.4	95	0.01	0	2.5	44	7.91	139	5.7	100
10/21/2011	2.2045	1.3	24	5.8	107	0.01	0	2.7	50	8.51	156	6.3	116