pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

North West Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0103381**
Facility Type	**Industrial**	APS ID	**957140**
Major / Minor	**Minor**	Authorization ID	**1210202**

NPDES PERMIT FACT SHEET INDIVIDUAL INDUSTRIAL WASTE (IW) AND IW STORMWATER

Applicant and Facility Information

Applicant Name	**Sasol Chemicals USA LLC**	Facility Name	**Sasol Chemicals USA Oil City Plant**
Applicant Address	292 State Route 8	Facility Address	292 State Route 8
	Oil City, PA 16301-5626		Oil City, PA 16301-5626
Applicant Contact	David McFetridge, Plant Manager	Facility Contact	Lee E. Wilson, Manager SHES
Applicant Phone	(814) 677-2028	Facility Phone	
Applicants E-Mail	David.mcfetridge@us.sasol.com	Facility E-Mail	lee.wilson@us.sasol.com
Client ID	313587	Site ID	241645
Municipality	Cornplanter Township	County	Venango
SIC Code	2869		2865
SIC Description	Mfg - Industrial Organic Chemicals, NEC		Mfg - Cyclic Crudes And Intermediates
Application Received	December 1, 2017	EPA Waived?	Yes
Application Accepted	December 15, 2017	If No, Reason	
Application Purpose	NPDES permit renewal		

Summary of Review

No listed violations

The storm water discharges were previously classified as un-contaminated. With the storm water program adoption, they are reclassified for no exposure.

Proposed is chlorine limitation because of chlorine algae control and effluent chlorine presence and nutrient monitoring to determine treatability.

The subject facility is subject to an ELG - Organic Chemicals, Plastics, and Synthetic Fibers §414 Subparts G (Bulk Organic Chemicals), H (Specialty Organic Chemicals) and I (Direct Discharge End-of-Pipe Treatment)

Public Participation

DEP will publish notice of the receipt of the NPDES permit application and a tentative decision to issue the individual NPDES permit in the *Pennsylvania Bulletin* in accordance with 25 Pa. Code § 92a.82. Upon publication in the *Pennsylvania Bulletin*, DEP will accept written comments from interested persons for a 30-day period (which may be extended for one additional 15-day period at DEP's discretion), which will be considered in making a final decision on the application. Any person may request or petition for a public hearing with respect to the application. A public hearing may be held if DEP determines that there is significant public interest in holding a hearing. If a hearing is held, notice of the hearing will be published in the *Pennsylvania Bulletin* at least 30 days prior to the hearing and in at least one newspaper of general circulation within the geographical area of the discharge.

Approve	Deny	Signatures	Date
X		William H. Mentzer William H. Mentzer, P.E. Environmental Engineering Specialist	April 15, 2021
X		Justin C. Dickey Justin C. Dickey, P.E. Environmental Engineer Manager	April 15, 2021

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.028 *
Latitude NHD	41º 27' 10.07"	Longitude NHD	-79º 41' 15.84"
Latitude DP	41º 27' 9.34"	Longitude DP	-79º 41' 17.55"
Quad Name	Oil City	Quad Code	0708
Wastewater:	Process and miscellaneous wastewaters, ground water infiltration, de-icing and storm water		
Wastewater details	Process wastewater, boiler blow down, steam condensate, water softener regeneration, cooling water blow down, ground water infiltration, de-icing and storm water.		

Receiving Waters	Oil Creek	Stream Code	54128
NHD Com ID	100476029	RMI	2.25
Drainage Area	314.95	Yield (cfs/mi^2)	0.107
Q_{7-10} Flow (cfs)	33.7	Q_{7-10} Basis	Oil Creek
Elevation (ft)	985.56	Slope (ft/ft)	0.00213
Watershed No.	16-E	Chapter 93 Class.	WWF
Existing Use	Statewide	Existing Use Qualifier	none
Exceptions to Use	none	Exceptions to Criteria	none
Comments	Common outfall with 002. Node RMI 0.96		

Assessment Status	Impaired		
Impairment Cause(s)	Mercury		
Impairment Source(s)	Source Unknown		
TMDL Status	**pending**	Name	
Comments	Previous review determined upstream mercury level was controlling		

Low Flow Reference	Oil Creek at Rouseville	Sta	3021000	RMI	
	Low Flow (cfs) 33.7	Drainage (sq-mi)	315	Yield (cfs/sq-mi)	0.107

Background/Ambient Data		Data Source
pH (SU)	6.1, 7.8	pH 7.93 SU. DO goal 5 mg/L.
Temperature (°F)	68	CWF default
Hardness (mg/L)	57	Application (STORET Average 2015-2017)
Stream Width (feet):	195.0	
Stream Depth (feet):	3.0	

Nearest Downstream Public Water Supply Intake		Emlenton Water Co (Aqua Pa Inc)	
PWS Waters	Allegheny River	Flow at Intake (cfs)	252.31
PWS RMI	90.57	Distance from Outfall (mi)	44

Changes Since Last Permit Issuance: none

Other Comments: * The design flow of 0.28 MGD will continue to be used for this permit cycle for the purposes of modelling and determining mass loading limitations. The long-term average flow for Outfall 001 is 0.023 MGD based the past 5-years of effluent data with an average maximum monthly average of 0.032 MGD. In consideration of the variability of the flow, the 0.028 MGD design flow appears to still be appropriate in lieu of the 0.023 MGD long-term average.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	002	Design Flow (MGD)	.029
Latitude NHD	41º 27' 10.07"	Longitude NHD	-79º 41' 15.84"
Latitude DP	41º 27' 9.82"	Longitude FP	-79º 41' 17.45"
Quad Name	Oil City	Quad Code	0708
Wastewater Description:	Noncontact Cooling Water (NCCW),		

Receiving Waters	Oil Creek	Stream Code	54128
NHD Com ID	100476029	RMI	2.25
Drainage Area	314.95	Yield (cfs/mi^2)	0.107
Q_{7-10} Flow (cfs)	33.7	Q_{7-10} Basis	Oil Creek
Elevation (ft)	985.56	Slope (ft/ft)	0.00213
Watershed No.	16-E	Chapter 93 Class.	WWF
Existing Use	Statewide	Existing Use Qualifier	none
Exceptions to Use	none	Exceptions to Criteria	none
Comments	Common with Outfall 001		

Discharge, Receiving Waters and Water Supply Information

Outfall No.	003	Design Flow (MGD)	0
Latitude NHD	41º 27' 16.69"	Longitude NHD	-79º 41' 17.72"
Latitude DP	41º 27' 14.48"	Longitude DP	-79º 41' 23.25"
Quad Name	Oil City	Quad Code	0708
Wastewater Description:	Non contaminated stormwater		

Receiving Waters	Oil Creek	Stream Code	54128
NHD Com ID	100476029	RMI	2.36
Drainage Area	314.95	Yield (cfs/mi^2)	0.107
Q_{7-10} Flow (cfs)	33.7	Q_{7-10} Basis	Oil Creek
Elevation (ft)	986.09	Slope (ft/ft)	0.00091
Watershed No.	16-E	Chapter 93 Class.	WWF
Existing Use	**statewide**	Existing Use Qualifier	none
Exceptions to Use	none	Exceptions to Criteria	none
Comments	This outfall is located between Rte 8 and the plant building. The discharge crosses other property prior to Oil Creek. Node RMI 1.09		

Discharge, Receiving Waters and Water Supply Information

Outfall No.	004	Design Flow (MGD)	0
Latitude NHD	41º 27' 3.19"	Longitude NHD	-79º 41' 16.56"
Latitude DP	41º 27'4.00"	Longitude DP	-79º 41' 17.57"
Quad Name	Oil City	Quad Code	0708
Wastewater Description:	Stormwater		

Receiving Waters	Oil Creek	Stream Code	54128
NHD Com ID	100476029	RMI	2.1
Drainage Area	315.23	Yield (cfs/mi^2)	0.107
Q_{7-10} Flow (cfs)	33.72	Q_{7-10} Basis	Oil Creek
Elevation (ft)	984.96	Slope (ft/ft)	0.00091
Watershed No.	16-E	Chapter 93 Class.	WWF
Existing Use	**statewide**	Existing Use Qualifier	none
Exceptions to Use	none	Exceptions to Criteria	none
Comments DP	This is a non-contaminated storm water discharge with no monitoring requirements at node RMI 0.83		

Treatment Facility Summary

Treatment Facility Name: Sasol Chemicals USA Oil City Plant

WQM Permit No.	Issuance Date	MGD	PPD
6188201 T2	4 February 1999	0.029	
6188201 T2	20 October 2014	0.03	75
6188201 A1	7 August 2013	0.03	

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Industrial	Physical (Industrial Waste)	Activated Sludge	No Disinfection	0.03

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.03	75	Not Overloaded	Aerobic Digestion	landfill

Changes Since Last Permit Issuance: none

Other Comments: 0.084-mgd claimed design.

The transferred permit is for 0.029-MGD using an oil water separator, equalization, biological treatment, and settling.

Treatment

10,000-gallon equalization tank equipped with diffused aeration, an influent bar screen and heater, 37,450-gallon extended aeration tank fitted with chemical (ethanol & flocculant) addition, Two, 5,000-gallon final clarifiers, 3,750-gallon aerobic digester (aerated sludge holding tank) and an effluent flow chamber with a v-notch weir and ultrasonic flow meter.

Maximum design flow 0.075-mgd

Compliance History

DMR Data for Outfall 001 (from December 1, 2016 to November 30, 2017)

Parameter	NOV-17	OCT-17	SEP-17	AUG-17	JUL-17	JUN-17	MAY-17	APR-17	MAR-17	FEB-17	JAN-17	DEC-16
Flow (MGD) Average Monthly	0.0273	0.0163	0.0132	0.0137	0.0338	0.0314	0.0262	0.0277	0.0228	0.0270	0.0316	0.0241
Flow (MGD) Daily Maximum	0.0373	0.0275	0.0214	0.0283	0.0548	0.0541	0.0388	0.0459	0.0334	0.0350	0.0376	0.0320
pH (S.U.) Minimum	6.5	7.1	6.7	6.4	6.3	6.5	6.9	6.3	6.6	7.4	7.1	7.3
pH (S.U.) Maximum	7.9	8.0	7.6	9.7	7.8	8.3	7.8	8.0	7.9	7.8	7.9	7.7
BOD5 (lbs/day) Average Monthly	< 1.1	< 0.5	0.3	< 0.5	1.1	1.4	0.5	2.5	0.8	0.7	0.8	0.6
BOD5 (lbs/day) Daily Maximum	1.8	< 0.7	0.7	< 0.6	1.9	4.6	1.1	7.2	1.1	1.1	1.2	0.9
BOD5 (mg/L) Average Monthly	< 4.5	< 3.1	3.0	< 3.0	3.3	4.28	2.25	9.6	3.8	3.0	3.1	2.6
TSS (lbs/day) Average Monthly	< 5.0	< 2.5	2.0	3.9	8.7	3.8	2.8	3.6	2.1	3.1	4.4	3.1
TSS (lbs/day) Daily Maximum	7.2	3.6	2.2	8.3	13.5	9.4	4.2	9.3	4.4	4.8	7.1	4.2
TSS (mg/L) Average Monthly	< 21.2	< 18.3	16.0	24.2	26.5	16.2	11.8	14.3	9.3	12.8	17.3	14.8

DMR Data for Outfall 002 (from December 1, 2016 to November 30, 2017)

Parameter	NOV-17	OCT-17	SEP-17	AUG-17	JUL-17	JUN-17	MAY-17	APR-17	MAR-17	FEB-17	JAN-17	DEC-16
Flow (MGD) Average Monthly	0.0641	0.0456	0.0698	0.0969	0.1516	0.0942	0.0979	0.0958	0.0604	0.0799	0.1125	0.0440
Flow (MGD) Daily Maximum	0.2422	0.1270	0.1187	0.1305	0.4317	0.6636	0.2524	0.2478	0.3132	0.3359	0.3386	0.3308
pH (S.U.) Minimum	7.8	7.1	7.1	6.8	6.7	6.4	6.7	7.1	7.8	7.2	7.7	7.6
pH (S.U.) Maximum	8.1	8.2	7.5	7.8	7.7	7.7	7.9	7.9	8.1	8.1	8.2	8.0
Oil and Grease (mg/L) Average Monthly	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	2.8	< 5.0	3.0	< 5.0	5.2	< 5.0

Compliance History

Effluent Violations for Outfall 001, from: January 1, 2017 To: November 30, 2017

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
pH	08/31/17	Max	9.7	S.U.	9.0	S.U.

DMR Data for Outfall 001 (from August 1, 2019 to July 31, 2020)

Parameter	JUL-20	JUN-20	MAY-20	APR-20	MAR-20	FEB-20	JAN-20	DEC-19	NOV-19	OCT-19	SEP-19	AUG-19
Flow (MGD) Average Monthly	0.0119	0.0162	0.0228	0.0265	0.0280	0.0294	0.0250	0.0215	0.0243	0.0194	0.0212	0.0226
Flow (MGD) Daily Maximum	0.0239	0.0274	0.0385	0.0432	0.0449	0.0515	0.0367	0.0349	0.0363	0.0457	0.0422	0.0308
pH (S.U.) Minimum	7.0	7.2	6.8	7.2	6.7	6.9	6.5	6.9	7.0	6.7	7.1	7.1
pH (S.U.) Maximum	8.2	8.0	8.1	8.0	7.8	7.8	8.2	8.0	8.2	8.1	8.1	7.9
BOD5 (ppd) Average Monthly	< 0.4	< 0.5	< 0.7	1.8	2.5	< 1.9	3.0	1.6	< 1.1	< 1.8	1.8	1.2
BOD5 (ppd) Daily Maximum	0.5	0.9	1.0	2.2	4.0	3.3	5.3	2.0	1.9	3.3	3.2	1.5
BOD5 (mg/L) Average Monthly	< 3.7	< 4.2	< 4.1	6.7	10.5	< 6.4	17.3	8.7	< 5.5	< 10.3	9.0	6.1
TSS (lbs/day) Average Monthly	0.9	1.3	1.4	6.1	6.1	3.2	6.6	3.4	1.9	< 5.5	5.8	5.5
TSS (lbs/day) Daily Maximum	2.1	2.0	2.0	8.2	8.2	5.3	13.1	5.9	2.7	10.1	9.6	7.8
TSS (mg/L) Average Monthly	8.6	8.8	9.0	21.6	26.3	11.8	39	19.4	10.0	< 27.0	28.3	29.0
Total Chromium (ppd) Ave Mon								0.00003				
Total Chromium (ppd) Daily Max								0.00003				
Total Chromium (mg/L) Ave Mon								0.0004				
Total Copper (ppd) Ave Monthly								0.0003				
Total Copper (ppd) Daily Max								0.0003				
Total Copper (mg/L) Ave Monthly								0.0030				
Total Copper (mg/L) Daily Max								0.0030				
Total Cyanide (ppd) Ave Monthly								0.0021				
Total Cyanide (ppd) Daily Max								0.0021				
Total Cyanide (mg/L) Ave Mon								0.0250				
Total Lead (ppd) Average Mon								< 0.0004				
Total Lead (ppd) Daily Maximum								< 0.0004				
Total Lead (mg/L) Ave Monthly								< 0.0050				
Total Nickel (ppd) Ave Monthly								< 0.0004				
Total Nickel (ppd) Daily Maximum								< 0.0004				
Total Nickel (mg/L) Ave Monthly								< 0.0050				
Total Zinc (ppd) Average Monthly								< 0.0008				
Total Zinc (ppd) Daily Maximum								< 0.0008				
Total Zinc (mg/L) Ave Monthly								< 0.0100				
2-Chlorophenol (ppd) Ave Mon								< 0.0004				
2-Chlorophenol (ppd) Daily Max								< 0.0004				
2-Chlorophenol (mg/L) Ave Mon								< 0.0050				
2,4-Dichlorophenol (ppd) A Mon								< 0.0004				
2,4-Dichlorophenol (ppd) D Max								< 0.0004				

2,4-Dichlorophenol (mg/L) A Mon								< 0.0050				
2,4-Dimethylphenol (ppd) A Mon								< 0.0004				
2,4-Dimethylphenol (ppd) D Max								< 0.0004				
2,4-Dimethylphenol (mg/L) A Mon								< 0.0050				
Fluorene (ppd) Average Monthly								< 0.0004				
Fluorene (ppd) Daily Maximum								< 0.0004				
Fluorene (mg/L) Average Monthly								< 0.0050				
2,4-Dinitrophenol (ppd) Ave Mon								< 0.0008				
2,4-Dinitrophenol (ppd) D Max								< 0.0008				
2,4-Dinitrophenol (mg/L) A Mon								< 0.0100				
2,4-Dinitrotoluene (ppd) A Mon								< 0.0004				
2,4-Dinitrotoluene (ppd) D Max								< 0.0004				
2,4-Dinitrotoluene (mg/L) A Mon								< 0.0050				
2,6-Dinitrotoluene (ppd) A Mon								< 0.0004				
2,6-Dinitrotoluene (ppd) D Max								< 0.0004				
2,6-Dinitrotoluene (mg/L) A Mon								< 0.0050				
4,6-dinitro-o-cresol (ppd) A Mon								< 0.0008				
4,6-dinitro-o-cresol (ppd) D Max								< 0.0008				
4,6-dinitro-o-cresol (mg/L) A Mon								< 0.0100				
2-Nitrophenol (ppd) Ave Monthly								< 0.0004				
2-Nitrophenol (ppd) Daily Max								< 0.0004				
2-Nitrophenol (mg/L) Ave Monthly								< 0.0050				
4-Nitrophenol (ppd) Ave Monthly								< 0.0008				
4-Nitrophenol (ppd) Daily Max								< 0.0008				
4-Nitrophenol (mg/L) Ave Monthly								< 0.0100				
Phenol (ppd) Average Monthly								< 0.0004				
Phenol (ppd) Daily Maximum								< 0.0004				
Phenol (mg/L) Average Monthly								< 0.0050				
Acenaphthene (ppd) Ave Monthly								< 0.0004				
Acenaphthene (ppd) Daily Max								< 0.0004				
Acenaphthene (mg/L) Ave Mon								< 0.0050				
Acenaphthylene (ppd) Ave Mon								< 0.0004				
Acenaphthylene (ppd) Daily Max								< 0.0004				
Acenaphthylene (mg/L) Ave Mon								< 0.0050				
Acrylonitrile (ppd) Ave Monthly								< 0.0004				
Acrylonitrile (ppd) Daily Maximum								< 0.0004				
Acrylonitrile (mg/L) Ave Monthly								< 0.0050				
Anthracene (ppd) Ave Monthly								< 0.0004				
Anthracene (ppd) Daily Maximum								< 0.0004				
Anthracene (mg/L) Ave Monthly								< 0.0050				
Chlorobenzene (ppd) Ave Mon								< 0.0001				
Chlorobenzene (ppd) Daily Max								< 0.0001				
Chlorobenzene (mg/L) Ave Mon								< 0.0010				
1,2-Dichlorobenzene (ppd) A Mon								< 0.0001				
1,2-Dichlorobenzene (ppd) D Max								< 0.0001				

1,2-Dichlorobenzene (mg/L) A Mon								< 0.0010				
1,3-Dichloro--benzene (ppd) Ave Mon								< 0.0001				
1,3-Dichloro-benzene (ppd) D Max								< 0.0001				
1,3-Dichloro-benzene (mg/L) A Mon								< 0.0010				
1,4-Dichloro-benzene (ppd) A Mon								< 0.0001				
1,4-Dichloro-benzene (ppd) D Max								< 0.0001				
1,4-Dichloro-benzene (mg/L) Ave Mon								< 0.0010				
1,3-Dichloro-propylene (ppd) A Mon								< 0.0002				
1,3-Dichloro-propylene (ppd) D Max								< 0.0002				
-1,3-Dichloro-propylene (mg/L)								< 0.0020				
1,2,4-Trichloro-benzene (ppd) A Mon								< 0.0004				
1,2,4-Trichloro-benzene (ppd) D Max								< 0.0004				
1,2,4-Trichlorobenzene (mg/L) A Mon								< 0.0050				
Ethylbenzene (ppd) Ave Monthly								< 0.0001				
Ethylbenzene (ppd) Daily Max								< 0.0001				
Ethylbenzene (mg/L) Ave Mon								< 0.0010				
Hexachloro-benzene (ppd) A Mon								< 0.0002				
Hexachloro-benzene (ppd) D Max								< 0.0002				
Hexachloro-benzene (mg/L) A Mon								< 0.0019				
Hexachloro-benzene (mg/L) D Max								< 0.0019				
Nitrobenzene (ppd) Ave Monthly								< 0.0004				
Nitrobenzene (ppd) Daily Max								< 0.0004				
Nitrobenzene (mg/L) Ave Monthly								< 0.0050				
Benzene (ppd) Average Monthly								< 0.0001				
Benzene (ppd) Daily Maximum								< 0.0001				
Benzene (mg/L) Average Monthly								< 0.0010				
Benzo(a)-Anthracene (ppdy) A Mon								< 0.0004				
Benzo(a)-Anthracene (ppd) D Max								< 0.0004				
Benzo(a)-Anthracene (mg/L) A Mon								< 0.0050				
Benzo(a)-Anthracene (mg/L) D Max								< 0.0050				
Benzo(a)Pyrene (ppd) Ave Mon								< 0.0004				
Benzo(a)Pyrene (lbs/day) D Max								< 0.0004				
Benzo(a)Pyrene (mg/L) A Mon								< 0.0050				
Benzo(a)Pyrene (mg/L) D Max								< 0.0050				
Benzo(k)Fluoranthene (ppd) A Mon								< 0.0004				
Benzo(k)Fluoranthene (ppd) D Max								< 0.0004				
Benzo(k)Fluoranthene (mg/L) A Mon								< 0.0050				
Benzo(k)Fluoranthene (mg/L) D Max								< 0.005				
3,4-Benzo-fluoranthene (ppd) A Mon								< 0.0004				
3,4-Benzo-fluoranthene (ppd) D Max								< 0.0004				
3,4-Benzo-fluoranthene (mg/L) A Mon								< 0.0050				
3,4-Benzo-fluoranthene (mg/L) D Max								< 0.0050				
Carbon Tetrachloride (ppd)A Mon								< 0.0001				
Carbon Tetrachloride (ppd) D Max								< 0.0001				
Carbon Tetrachloride (mg/L) A Mon								< 0.0010				

Chloroethane (ppd) Ave Monthly								< 0.0002				
Chloroethane (ppd) Daily Max								< 0.0002				
Chloroethane (mg/L) Ave Monthly								< 0.0020				
1,1,1-Trichloroethane (ppd) A Mon								< 0.0001				
1,1,1-Trichloroethane (ppd) D Max								< 0.0001				
1,1,1-Trichloroethane (mg/L) A Mon								< 0.0010				
1,1,2-Trichloroethane (ppd) A Mon								< 0.0001				
1,1,2-Trichloroethane (ppd) D Max								< 0.0001				
1,1,2-Trichloroethane (mg/L) A Mon								< 0.0010				
1,1-Dichloroethane (ppd) Ave Mon								< 0.0001				
1,1-Dichloroethane (ppd) D Max								< 0.0001				
1,1-Dichloroethane (mg/L) A Monthly								< 0.0010				
1,2-Dichloroethane (ppd) A Mon								< 0.0001				
1,2-Dichloroethane (ppd) D Max								< 0.0001				
1,2-Dichloroethane (mg/L) A Mon								< 0.0010				
1,2-Dichloropropane (ppd) A Mon								< 0.0001				
1,2-Dichloropropane (ppd) D Max								< 0.0001				
1,2-Dichloropropane (mg/L) A Mon								< 0.0010				
Bis(2-Ethylhexyl)Phthalate (ppd) A Mn								< 0.0004				
Bis(2-Ethylhexyl)Phthalate (ppd) D Mx								< 0.0004				
Bis(2-Ethylhexyl)Phthalate (mg/L) A Mn								< 0.0050				
Chloroform (ppd) Ave Monthly								< 0.0001				
Chloroform (ppd) Daily Maximum								< 0.0001				
Chloroform (mg/L) Ave Monthly								< 0.0010				
Chrysene (ppd) Average Monthly								< 0.0004				
Chrysene (ppd) Daily Maximum								< 0.0004				
Chrysene (mg/L) Ave Monthly								< 0.0050				
Diethyl Phthalate (ppd) Ave Mon								< 0.0004				
Diethyl Phthalate (ppd) D Max								< 0.0004				
Diethyl Phthalate (mg/L) Ave Mon								< 0.0050				
Dimethyl Phthalate (ppd) A Mon								< 0.0004				
Dimethyl Phthalate (ppd) D Max								< 0.0004				
Dimethyl Phthalate (mg/L) A Mon								< 0.0050				
Di-n-Butyl Phthalate (ppd) A Mon								< 0.0004				
Di-n-Butyl Phthalate (ppd) D Max								< 0.0004				
Di-n-Butyl Phthalate (mg/L) A Mon								< 0.0050				
Fluoranthene (ppd) Ave Monthly								< 0.0004				
Fluoranthene (ppd) Daily Max								< 0.0004				
Fluoranthene (mg/L) Ave Monthly								< 0.0050				
Hexachloro-butadiene (ppd) A Mon								< 0.0004				
Hexachloro-butadiene (ppd) D Max								< 0.0004				
Hexachloro-butadiene (mg/L) A Mon								< 0.0050				
Hexachloroethane (ppd) A Mon								< 0.0004				
Hexachloroethane (ppd) D Max								< 0.0004				
Hexachloroethane (mg/L) Ave Mon								< 0.0050				

Methyl Chloride (ppd) Ave Mon								< 0.0002				
Methyl Chloride (ppd) Daily Max								< 0.0002				
Methyl Chloride (mg/L) Ave Mon								< 0.0020				
Methylene Chloride (ppd) Ave Mon								< 0.0001				
Methylene Chloride (ppd) Daily Max								< 0.0001				
Methylene Chloride (mg/L) A Mon								< 0.0010				
Naphthalene (ppd) Ave Monthly								< 0.0001				
Naphthalene (ppd) Daily Max								< 0.0001				
Naphthalene (mg/L) Ave Monthly								< 0.0010				
Phenanthrene (ppd) Ave Monthly								< 0.0004				
Phenanthrene (ppd) Daily Max								< 0.0004				
Phenanthrene (mg/L) Ave Mon								< 0.0050				
Pyrene (ppd) Average Monthly								< 0.0004				
Pyrene (lbs/day) Daily Maximum								< 0.0004				
Pyrene (mg/L) Average Monthly								< 0.0050				
1,1-Dichloroethylene (ppd) A Mon								< 0.0001				
1,1-Dichloroethylene (ppd) Daily Max								< 0.0001				
1,1-Dichloroethylene (mg/L) A Mon								< 0.0010				
trans-1,2-Dichloroethylene (ppd) A Mn								< 0.0001				
trans-1,2-Dichloroethylene (ppd) D Mx								< 0.0001				
t-1,2-Dichloroethylene (mg/L) A Mn								< 0.0010				
Tetrachloro-ethylene (ppd) A Mon								< 0.0001				
Tetrachloro-ethylene (ppd) D Max								< 0.0001				
Tetrachloro-ethylene (mg/L) A Mon								< 0.0010				
Toluene (ppd) Average Monthly								< 0.0001				
Toluene (ppd) Daily Maximum								< 0.0001				
Toluene (mg/L) Average Monthly								< 0.0010				
Trichloroethylene (ppd) Ave Mon								< 0.0001				
Trichloroethylene (ppd) D Max								< 0.0001				
Trichloroethylene (mg/L) A Mon								< 0.0010				
Vinyl Chloride (ppd) Ave Monthly								< 0.0002				
Vinyl Chloride (ppd) D Maximum							Ave	< 0.0002				
Vinyl Chloride (mg/L) A Monthly								< 0.0020				

DMR Data for Outfall 002 (from August 1, 2019 to July 31, 2020)

Parameter	JUL-20	JUN-20	MAY-20	APR-20	MAR-20	FEB-20	JAN-20	DEC-19	NOV-19	OCT-19	SEP-19	AUG-19
Flow (MGD) Average Monthly	0.0703	0.0544	0.0340	0.0396	0.1545	0.0657	0.0420	0.0289	0.0223	0.0438	0.0660	0.0763
Flow (MGD) Daily Maximum	0.1143	0.0781	0.0559	0.2347	0.9625	0.5105	0.1610	0.1107	0.0541	0.1754	0.1292	0.1138
pH (S.U.) \Minimum	7.6	7.0	7.8	7.7	7.7	7.4	7.2	6.8	7.1	7.1	7.8	7.5
pH (S.U.) Maximum	8.2	8.1	8.2	8.2	8.1	8.1	8.0	7.8	8.0	8.0	8.1	8.0
Oil & Grease (mg/L) Ave Mon	< 5.0	< 5.0	< 5.0	< 5.0	< 4.9	< 5.0	< 5.0	< 5.0	< 5.1	< 5.0	< 5.1	< 5.1

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .028
Latitude 41º 27' 9.34" **Longitude** -79º 41' 17.55"
Wastewater Description: IW Process Effluent with ELG

Technology-Based Limitations

The following technology-based secondary treatment limitations apply, subject to water quality analysis and BPJ where applicable:

Parameter	Limit (mg/l)	SBC	Federal Regulation	State Regulation
$CBOD_5$	25	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Fecal Coliform (5/1 – 9/30)	200 / 100 ml	Geo Mean	-	92a.47(a)(4)
Fecal Coliform (5/1 – 9/30)	1,000 / 100 ml	IMAX	-	92a.47(a)(4)
Fecal Coliform (10/1 – 4/30)	2,000 / 100 ml	Geo Mean	-	92a.47(a)(5)
Fecal Coliform (10/1 – 4/30)	10,000 / 100 ml	IMAX	-	92a.47(a)(5)
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)

Comments: The subject facility is subject to an ELG - §414 (Organic Chemicals, Plastics, and Synthetic Fibers) Subpart G (Bulk Organic Chemicals), SUBPART H (Specialty Organic Chemicals) and Subpart I (Direct Discharge Point Sources that use End-of-Pipe Biological Treatment. The provisions of this subpart are applicable to the process wastewater discharges resulting from the manufacture of the following SIC 2865 and 2869 bulk organic chemicals and bulk organic chemical groups.

Except for chlorine the above requirements are superseded. In accordance with 40 CFR §414.70, §414.71, §414.81 and §414.90-91 (Subpart I), the following effluent limitations were calculated:

1) BOD5, Total Suspended Solids & pH

The application reports the following production:
Subpart G (m-cresol) 5-year average production: 2,8000,000 lbs/year
Subpart H (BHT, MBMC, & co-products) 5-year average production: 9,000,000 lbs/year

A weighted average of the production rates was utilized, and the calculations are provided in the attached "Calculation of Technology Based Effluent Limitations" spreadsheet

	Effluent Limitations		
	Allowable Mass Loadings (lbs/day)		Allowable Concentrations (mg/l)
Parameter	Daily Maximum	Average Monthly	Instantaneous Maximum
BOD5	26.3	9.8	113
TSS	41.3	12.8	177
pH	6 to 9 SU		

2) Calculated toxic pollutant BAT is as follows:

Parameter	Effluent Limitations		
	Allowable Mass Loadings (lbs/day)		Allowable Concentrations (mg/l)
	Daily Maximum	Average Monthly	Instantaneous Maximum
Acenaphthene	0.014	0.005	0.059
Acenaphthylene	0.014	0.005	0.059
Acrylonitrile	0.057	0.022	0.242
Anthracene	0.014	0.005	0.059
Benzene	0.032	0.009	0.136
Benzo(a)anthracene	0.014	0.005	0.059
3,4-Benzofluoranthene	0.014	0.005	0.061
Benzo(k)fluoranthene	0.014	0.005	0.059
Benzo(a)pyrene	0.014	0.005	0.061
Bis(2-ethylhexyl) phthalate	0.065	0.024	0.279
Carbon Tetrachloride	0.009	0.004	0.038
Chlorobenzene	0.007	0.004	0.028
Chloroethane	0.063	0.024	0.268
Chloroform	0.011	0.005	0.046
2-Chlorophenol	0.023	0.007	0.098
Chrysene	0.014	0.005	0.059
Di-n-butyl phthalate	0.013	0.006	0.057
1,2-Dichlorobenzene	0.038	0.018	0.163
1,3-Dichlorobenzene	0.01	0.007	0.044
1,4-Dichlorobenzene	0.007	0.004	0.028
1,1-Dichloroethane	0.014	0.005	0.059
1,2-Dichloroethane	0.049	0.016	0.211
1,1-Dichloroethylene	0.006	0.004	0.025
1,2-trans-Dichloroethylene	0.013	0.005	0.054
2,4-Dichlorophenol	0.026	0.009	0.112
1,2-Dichloropropane	0.054	0.036	0.23
1,3-Dichloropropylene	0.01	0.007	0.044
Diethyl phthalate	0.047	0.019	0.203
2,4-Dimethylphenol	0.008	0.004	0.036
Dimethyl phthalate	0.011	0.004	0.047
4,6-Dinitro-o-cresol	0.065	0.018	0.277
2,4-Dinitrophenol	0.029	0.017	0.123
2,4-Dinitrotoluene	0.067	0.026	0.285
2,6-Dinitrotoluene	0.15	0.06	0.641
Ethylbenzene	0.025	0.007	0.108
Fluoranthene	0.016	0.006	0.068
Fluorene	0.014	0.005	0.059
Hexachlorobenzene	0.007	0.004	0.028
Hexachlorobutadiene	0.011	0.005	0.049
Hexachloroethane	0.013	0.005	0.054
Methyl Chloride	0.044	0.02	0.19
Methylene Chloride	0.021	0.009	0.089
Naphthalene	0.014	0.005	0.059
Nitrobenzene	0.016	0.006	0.068
2-Nitrophenol	0.016	0.01	0.069
4-Nitrophenol	0.029	0.017	0.124

Phenanthrene	0.014	0.005	0.059
Phenol	0.006	0.004	0.026
Pyrene	0.016	0.006	0.067
Tetrachloroethylene	0.013	0.005	0.056
Toluene	0.019	0.006	0.08
Total Chromium	0.647	0.259	2.77
Total Copper	0.789	0.339	3.38
Total Cyanide	0.28	0.098	1.2
Total Lead	0.161	0.075	0.69
Total Nickel	0.929	0.395	3.98
Total Zinc2	0.609	0.245	2.61
1,2,4-Trichlorobenzene	0.033	0.016	0.14
1,1,1-Trichloroethane	0.013	0.005	0.054
1,1,2-Trichloroethane	0.013	0.005	0.054
Trichloroethylene	0.013	0.005	0.054
Vinyl Chloride	0.063	0.024	0.268

Water Quality-Based Limitations

The following limitations were determined through water quality modeling (output files attached):

Parameter	Limit (mg/l)	SBC	Model
Acrolein	0.299	AML	Toxics Management Spreadsheet
Acrolein	0.467	MDL	Toxics Management Spreadsheet
Acrolein	0.748	IMAX	Toxics Management Spreadsheet
Acrylonitrile	0.178	AML	Toxics Management Spreadsheet
Acrylonitrile	0.278	MDL	Toxics Management Spreadsheet
Acrylonitrile	0.446	IMAX	Toxics Management Spreadsheet
Toxaphene	0.00015	AML	Toxics Management Spreadsheet
Toxaphene	0.00023	MDL	Toxics Management Spreadsheet
Toxaphene	0.00036	IMAX	

Comments:

1) The application reported concentrations for Acrolein, Acrylonitrile, and Toxaphene were all non-detect in both the influent and effluent. The model is recommending an effluent limitation because the QL utilized was not low enough. The application requirements as well as the model have changed since the application was prepared and submitted. In consideration of the reported non-detect values, the pollutants are not believed to be present and no water quality based effluent limitations will be established. Acrylonitrile does have a technology based effluent limitation and that effluent limitation is more stringent than the calculated WQBEL.

2) The mass limitation for BOD5 is also controlling in the WQM 7.0 model. Therefore, no WQBEL is necessary.

Anti-Backsliding

The only changes to effluent limitations is some minor updating/correcting of the technology based effluent limitations to be consistent with the ELG calculations.

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001), SOPs and/or BPJ.

Outfall 001, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Instant. Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	9.0	XXX	Continuous	Measured
BOD5	9.8	26.3	XXX	Report	XXX	113	1/week	24-Hr Composite
TSS	12.8	41.3	XXX	Report	XXX	177	1/week	24-Hr Composite
Ammonia	XXX	XXX	XXX	Report	XXX	XXX	1/year	24-Hr Composite
Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/year	24-Hr Composite
Phosphorus	XXX	XXX	XXX	Report	XXX	XXX	1/year	24-Hr Composite
Total Chromium	0.259	0.647	XXX	Report	XXX	2.77	1/year	24-Hr Composite
Total Copper	0.339	0.790	XXX	Report	XXX	3.38	1/year	24-Hr Composite
Total Cyanide	0.098	0.280	XXX	Report	XXX	1.2	1/year	24-Hr Composite
Total Lead	0.075	0.161	XXX	Report	XXX	0.69	1/year	24-Hr Composite
Total Nickel	0.395	0.930	XXX	Report	XXX	3.98	1/year	24-Hr Composite
Total Zinc	0.245	0.610	XXX	Report	XXX	2.61	1/year	24-Hr Composite
2-Chlorophenol	0.007	0.023	XXX	Report	XXX	0.098	1/year	24-Hr Composite
2,4-Dichlorophenol	0.009	0.026	XXX	Report	XXX	0.112	1/year	24-Hr Composite

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Instant. Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
2,4-Dimethylphenol	0.004	0.008	XXX	Report	XXX	0.036	1/year	24-Hr Composite
Fluorene	0.005	0.014	XXX	Report	XXX	0.059	1/year	24-Hr Composite
2,4-Dinitrophenol	0.017	0.029	XXX	Report	XXX	0.123	1/year	24-Hr Composite
2,4-Dinitrotoluene	0.026	0.067	XXX	Report	XXX	0.285	1/year	24-Hr Composite
2,6-Dinitrotoluene	0.060	0.150	XXX	Report	XXX	0.641	1/year	24-Hr Composite
4,6-dinitro-o-cresol	0.018	0.065	XXX	Report	XXX	0.277	1/year	24-Hr Composite
2-Nitrophenol	0.010	0.016	XXX	Report	XXX	0.069	1/year	24-Hr Composite
4-Nitrophenol	0.017	0.029	XXX	Report	XXX	0.124	1/year	24-Hr Composite
Phenol	0.004	0.006	XXX	Report	XXX	0.026	1/year	24-Hr Composite
Acenaphthene	0.005	0.014	XXX	Report	XXX	0.059	1/year	24-Hr Composite
Acenaphthylene	0.005	0.014	XXX	Report	XXX	0.059	1/year	24-Hr Composite
Acrylonitrile	0.022	0.057	XXX	Report	XXX	0.242	1/year	24-Hr Composite
Anthracene	0.005	0.014	XXX	Report	XXX	0.059	1/year	24-Hr Composite
Chlorobenzene	0.004	0.007	XXX	Report	XXX	0.028	1/year	24-Hr Composite
1,2-Dichlorobenzene	0.018	0.038	XXX	Report	XXX	0.163	1/year	24-Hr Composite
1,3-Dichlorobenzene	0.007	0.010	XXX	Report	XXX	0.044	1/year	24-Hr Composite
1,4-Dichlorobenzene	0.004	0.007	XXX	Report	XXX	0.028	1/year	24-Hr Composite
1,3-Dichloropropylene	0.007	0.010	XXX	Report	XXX	0.044	1/year	24-Hr Composite
1,2,4-Trichlorobenzene	0.016	0.033	XXX	Report	XXX	0.14	1/year	24-Hr Composite

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Instant. Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Ethylbenzene	0.007	0.025	XXX	Report	XXX	0.108	1/year	24-Hr Composite
Hexachlorobenzene	0.004	0.007	XXX	Report	XXX	0.028	1/year	24-Hr Composite
Nitrobenzene	0.006	0.016	XXX	Report	XXX	0.068	1/year	24-Hr Composite
Benzene	0.009	0.032	XXX	Report	XXX	0.136	1/year	24-Hr Composite
Benzo(a)-Anthracene	0.005	0.014	XXX	Report	XXX	0.059	1/year	24-Hr Composite
Benzo(a)Pyrene	0.005	0.014	XXX	Report	XXX	0.061	1/year	24-Hr Composite
Benzo(k)Fluoranthene	0.005	0.014	XXX	Report	XXX	0.059	1/year	24-Hr Composite
3,4-Benzofluoranthene	0.005	0.014	XXX	Report	XXX	0.061	1/year	24-Hr Composite
Carbon Tetrachloride	0.004	0.009	XXX	Report	XXX	0.038	1/year	24-Hr Composite
Chloroethane	0.024	0.063	XXX	Report	XXX	0.268	1/year	24-Hr Composite
1,1,1-Trichloroethane	0.005	0.013	XXX	Report	XXX	0.054	1/year	24-Hr Composite
1,1,2-Trichloroethane	0.005	0.013	XXX	Report	XXX	0.054	1/year	24-Hr Composite
1,1-Dichloroethane	0.005	0.014	XXX	Report	XXX	0.059	1/year	24-Hr Composite
1,2-Dichloroethane	0.016	0.049	XXX	Report	XXX	0.211	1/year	24-Hr Composite
1,2-Dichloropropane	0.036	0.054	XXX	Report	XXX	0.23	1/year	24-Hr Composite
Bis(2-Ethyl-hexyl)Phthalate	0.024	0.065	XXX	Report	XXX	0.279	1/year	24-Hr Composite
Chloroform	0.005	0.011	XXX	Report	XXX	0.046	1/year	24-Hr Composite
Chrysene	0.005	0.014	XXX	Report	XXX	0.059	1/year	24-Hr Composite
Diethyl Phthalate	0.019	0.047	XXX	Report	XXX	0.203	1/year	24-Hr Composite

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2)	Required
	Average Monthly	Daily Maximum	Instant. Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Measurement Frequency	Sample Type
Dimethyl Phthalate	0.004	0.011	XXX	Report	XXX	0.047	1/year	24-Hr Composite
Di-n-Butyl Phthalate	0.006	0.013	XXX	Report	XXX	0.057	1/year	24-Hr Composite
Fluoranthene	0.006	0.016	XXX	Report	XXX	0.068	1/year	24-Hr Composite
Hexachlorobutadiene	0.005	0.011	XXX	Report	XXX	0.049	1/year	24-Hr Composite
Hexachloroethane	0.005	0.013	XXX	Report	XXX	0.054	1/year	24-Hr Composite
Methyl Chloride	0.020	0.044	XXX	Report	XXX	0.19	1/year	24-Hr Composite
Methylene Chloride	0.009	0.021	XXX	Report	XXX	0.089	1/year	24-Hr Composite
Naphthalene	0.005	0.014	XXX	Report	XXX	0.059	1/year	24-Hr Composite
Phenanthrene	0.005	0.014	XXX	Report	XXX	0.059	1/year	24-Hr Composite
Pyrene	0.006	0.016	XXX	Report	XXX	0.067	1/year	24-Hr Composite
1,1-Dichloroethylene	0.004	0.006	XXX	Report	XXX	0.025	1/year	24-Hr Composite
trans-1,2-Dichloroethylene	0.005	0.013	XXX	Report	XXX	0.054	1/year	24-Hr Composite
Tetrachloroethylene	0.005	0.013	XXX	Report	XXX	0.056	1/year	24-Hr Composite
Toluene	0.006	0.019	XXX	Report	XXX	0.08	1/year	24-Hr Composite
Trichloroethylene	0.005	0.013	XXX	Report	XXX	0.054	1/year	24-Hr Composite
Vinyl Chloride	0.024	0.063	XXX	Report	XXX	0.268	1/year	24-Hr Composite
Total Residual Chlorine	XXX	XXX	XXX	0.5	XXX	1.6	1/week	3 Grab/24 Hours

Compliance Sampling Location Outfall 001 and prior to mixing with other wastes

Proposed Effluent Limitations and Monitoring Requirements

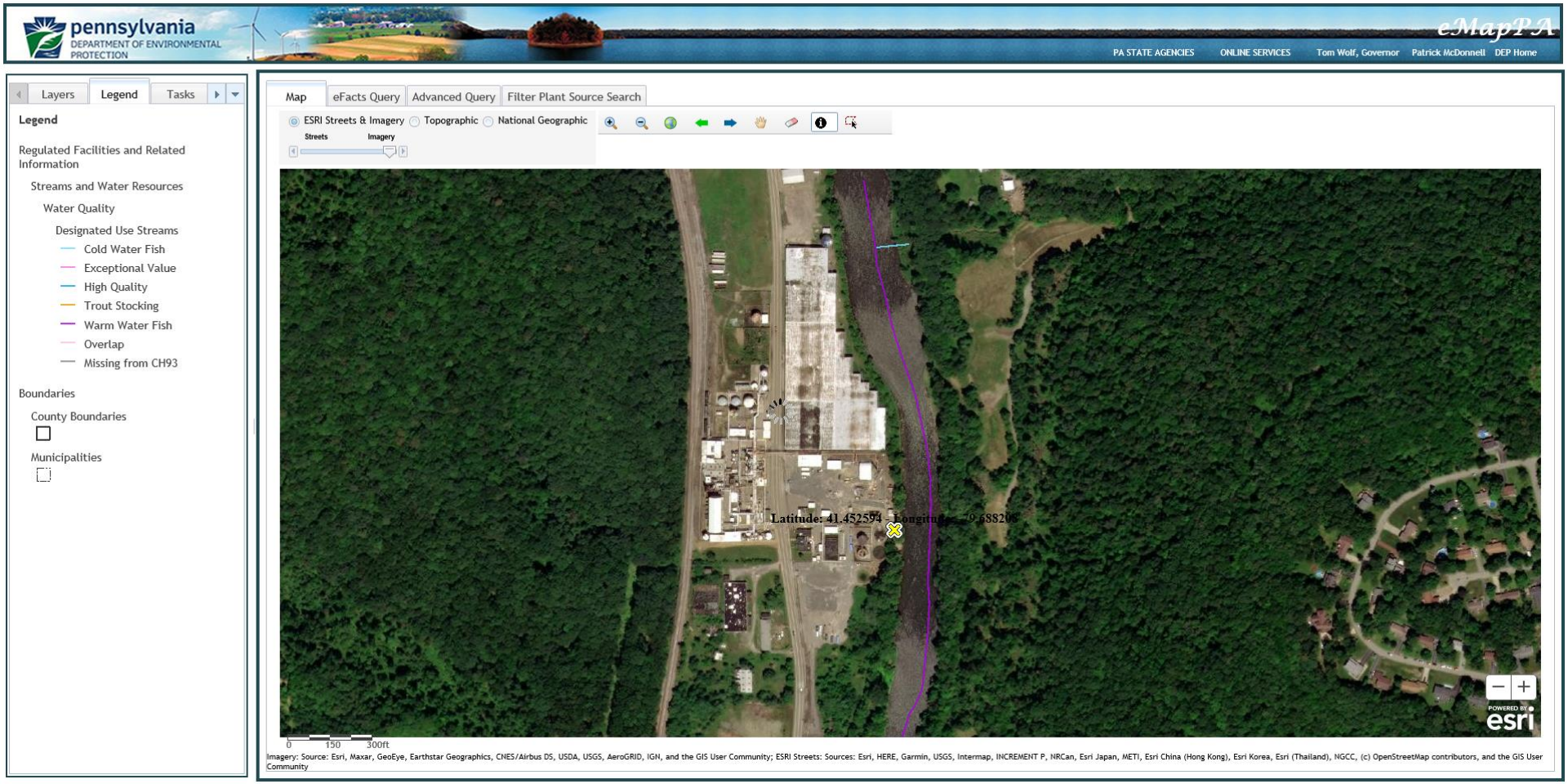
The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001), SOPs and/or BPJ.

Outfall 002, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Instant. Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	5/week	Grab
Oil and Grease	XXX	XXX	XXX	15.0	XXX	30.0	1/week	3 Grabs/24 Hours

Compliance Sampling Location: Outfall 002 and prior to mixing with other wastes

ATTACHMENT 1 – eMAP with Stream Designation



ATTACHMENT 2 – Sampling Data Summary

OUTFALL 001		DMR REPORTING - LAST 3-YEARS		2017 DATA (EMAIL)		2017 APPLICATION	
		MAXIMUM			MAX		MAX
POLLUTANT GROUP 1	BOD5 (mg/L)						25.7
	COD (mg/L)				85		85.1
	TOC (mg/L)				6.76		6.76
	TSS (mg/L)						59
	Ammonia-Nitrogen (mg/L)			<	0.8	<	0.8
	Temperature (Winter) (°F)						64/75
	Temperature (Summer) (°F)						80/82
	pH – Minimum (S.U.)						6.3
	pH – Maximum (S.U.)						9.7
	Fecal Coliform (No./100 mL)						261
	Oil and Grease (mg/L)			<	5	<	5
	TRC (mg/L)				0.11		0.11
	Total Phosphorus (mg/L)				1.6		1.6
	TKN (mg/L)				3		3
	Nitrite + Nitrate-Nitrogen (mg/L)				12		12
	Total Dissolved Solids (mg/L)				1210		1210
	Color (Pt-Co Units)				120		120
	Bromide (mg/L)				6		6
	Chloride (mg/L)				554		554
	Sulfate (mg/L)				30		30
	Sulfide (mg/L)			<	10	<	10
	Surfactants (mg/L)				0.45		0.45
	Fluoride (mg/L)			<	0.5	<	0.5
	Total Hardness (mg/L)						190

OUTFALL 001		DMR REPORTING - LAST 3-YEARS								2017 DATA (EMAIL)		2017 APPLICATION	
								MAXIMUM			MAX		MAX
POLLUTANT GROUP 2	Aluminum, Total (µg/L)										3910		3910
	Antimony, Total (µg/L)									<	1.5		1.5
	Arsenic, Total (µg/L)									<	1.9		1.9
	Barium, Total (µg/L)										82		82
	Beryllium, Total (µg/L)									<	5	<	5
	Boron, Total (µg/L)									<	250	<	250
	Cadmium, Total (µg/L)									<	0.2	<	0.2
	Chromium, Total (µg/L)		2		0	<	5	<	5	<	8		8
	Chromium, Hexavalent (µg/L)									<	50	<	50
	Cobalt, Total (µg/L)									<	5	<	5
	Copper, Total (µg/L)		18		3		6		18		22		22
	Cyanide, Total (µg/L)	<	10		25	<	10		25			<	50
	Iron, Total (µg/L)										830		830
	Iron, Dissolved (µg/L)									<	20	<	20
	Lead, Total (µg/L)	<	5	<	5	<	5	<	5	<	1.8		1.8
	Manganese, Total (µg/L)										164		164
	Mercury, Total (µg/L)									<	0.2	<	0.2
	Molybdenum, Total (µg/L)									<	5	<	5
	Nickel, Total (µg/L)		2	<	5	<	5	<	5	<	7		7
	Phenols, Total (µg/L)												250
	Selenium, Total (µg/L)									<	2	<	2
	Silver, Total (µg/L)									<	0.5	<	0.5
	Thallium, Total (µg/L)									<	0.5	<	0.5
	Zinc, Total (µg/L)		34	<	10		6		34		163		163

OUTFALL 001		DMR REPORTING - LAST 3-YEARS								2017 DATA (EMAIL)		2017 APPLICATION	
								MAXIMUM			MAX		MAX
POLLUTANT GROUP 3	Acrolein (µg/L)											<	200
	Acrylonitrile (µg/L)	<	5	<	5	<	5	<	5			<	100
	Benzene (µg/L)	<	1	<	1	<	1	<	1			<	20
	Bromoform (µg/L)											<	20
	Carbon Tetrachloride (µg/L)	<	1	<	1	<	1	<	1			<	20
	Chlorobenzene (µg/L)	<	1	<	1	<	1	<	1			<	20
	Chlorodibromo-methane (µg/L)											<	20
	Chloroethane (µg/L)	<	2	<	2	<	2	<	2			<	20
	2-Chloroethylvinyl Ether (µg/L)											<	40
	Chloroform (µg/L)	<	1	<	1	<	1	<	1			<	20
	Dichlorobromo-methane (µg/L)											<	20
	1,1-Dichloro-ethane (µg/L)	<	1	<	1	<	1	<	1			<	20
	1,2-Dichloro-ethane (µg/L)	<	1	<	1	<	1	<	1			<	20
	1,1-Dichloro-ethylene (µg/L)	<	1	<	1	<	1	<	1			<	20
	1,2 Dichloropropane (µg/L)	<	1	<	1	<	1	<	1			<	20
	1,3-Dichloro-propylene (µg/L)	<	2	<	2	<	2	<	2			<	40
	1,4-Dioxane (µg/L)											<	3
	Ethylbenzene (µg/L)	<	1	<	1	<	1	<	1			<	20
	Methyl Bromide (µg/L)											<	20
	Methyl Chloride (µg/L)	<	2	<	2	<	2	<	2			<	20
	Methylene Chloride (µg/L)	<	1	<	1	<	1	<	1			<	20
	1,1,2,2-Tetrachloroethane (µg/L)											<	20
	Tetrachloro-ethylene (µg/L)	<	1	<	1	<	1	<	1			<	20
	Toluene (µg/L)	<	1	<	1	<	1	<	1			<	20
	1,2-Trans-Dichloroethylene (µg/L)	<	1	<	1	<	1	<	1			<	20
	1,1,1-Trichloro-ethane (µg/L)	<	1	<	1	<	1	<	1			<	20
	1,1,2-Trichloro-ethane (µg/L)	<	1	<	1	<	1	<	1			<	20
	Trichloro-ethylene (µg/L)	<	1	<	1	<	1	<	1			<	20
	Vinyl Chloride (µg/L)	<	2	<	2	<	2	<	2			<	20

OUTFALL 001		DMR REPORTING - LAST 3-YEARS								2017 DATA (EMAIL)		2017 APPLICATION	
								MAXIMUM			MAX		MAX
POLLUTANT GROUP 4	2-Chlorophenol (µg/L)	<	5	<	5	<	5	<	5			<	3
	2,4-Dichloro-phenol (µg/L)	<	5	<	5	<	5	<	5			<	3
	2,4-Dimethyl-phenol (µg/L)	<	5	<	5	<	5	<	5			<	3
	4,6-Dinitro-o-Cresol (µg/L)	<	10	<	10	<	10	<	10			<	6.1
	2,4-Dinitro-phenol (µg/L)	<	10	<	10	<	10	<	10			<	6.1
	2-Nitrophenol (µg/L)	<	5	<	5	<	5	<	5			<	3
	4-Nitrophenol (µg/L)	<	10	<	10	<	10	<	10			<	3
	P-Chloro-m-Cresol (µg/L)											<	3
	Pentachloro-phenol (µg/L)											<	6.1
	Phenol (µg/L)	<	5	<	5	<	5	<	5			<	8.1
	2,4,6-Trichloro-phenol (µg/L)											<	3
POLLUTANT GROUP 5	Acenaphthene (µg/L)	<	5	<	5	<	5	<	5			<	1.5
	Acenaphthylene (µg/L)	<	5	<	5	<	5	<	5			<	1.5
	Acrylamide (µg/L)												
	Anthracene (µg/L)	<	5	<	5	<	5		5			<	1.5
	Benzidine (µg/L)											<	8.1
	Benzo(a)Anthracene (µg/L)	<	5	<	5	<	5	<	5			<	1.5
	Benzo(a)Pyrene (µg/L)	<	5	<	5	<	5	<	5			<	1.5
	3,4-Benzo-fluoranthene (µg/L)	<	5	<	5	<	5	<	5			<	1.5
	Benzo(ghi)Perylene (µg/L)											<	1.5
	Benzo(k)Fluoranthene (µg/L)	<	5	<	5	<	5	<	5			<	1.5
	Bis(2-Chloro-ethoxy)Methane (µg/L)											<	3
	Bis(2-Chloro-ethyl)Ether (µg/L)											<	3
	Bis(2-Chloro-isopropyl)Ether (µg/L)											<	3
	Bis(2-Ethyl-hexyl)Phthalate (µg/L)	<	5	<	5		57.4		57.4			<	3
	4-Bromophenyl Phenyl Ether (µg/L)											<	3
	Butyl Benzyl Phthalate (µg/L)											<	3
	2-Chloronaphthalene (µg/L)											<	3
	4-Chlorophenyl Phenyl Ether (µg/L)											<	3
	Chrysene (µg/L)	<	5	<	5	<	5	<	5			<	1.5
	Dibenzo(a,h)Anthracene (µg/L)											<	1.5
	1,2-Dichlorobenzene (µg/L)	<	1	<	1	<	1	<	1			<	20
	1,3- Dichlorobenzene (µg/L)	<	1	<	1	<	1	<	1			<	20
	1,4- Dichlorobenzene (µg/L)	<	1	<	1	<	1	<	1			<	20
	3,3'-Dichlorobenzidine (µg/L)											<	3
	Diethyl Phthalate (µg/L)	<	5	<	5	<	5	<	5			<	3
	Dimethyl Phthalate (µg/L)	<	5	<	5	<	5	<	5			<	3
	Di-n-Butyl Phthalate (µg/L)	<	5	<	5	<	5	<	5			<	3
	2,4-Dinitrotoluene (µg/L)	<	5	<	5	<	5	<	5			<	3
	2,6-Dinitrotoluene (µg/L)	<	5	<	5	<	5	<	5			<	3
	Di-n-Octyl Phthalate (µg/L)											<	3
	1,2-Diphenylhydrazine (as Azobenzene) (µg/L)											<	3
	Fluoranthene (µg/L)	<	5	<	5	<	5	<	5			<	1.5
	Fluorene (µg/L)	<	5	<	5	<	5	<	5			<	1.5
	Hexachlorobenzene (µg/L)	<	2	<	2	<	1.9	<	1.9			<	3
	Hexechlorobutadiene (µg/L)	<	5	<	5	<	5	<	5			<	3
	Hexachlorocyclopentadiene (µg/L)											<	3
	Hexachloroethane (µg/L)	<	5	<	5	<	5	<	5			<	3
	Indeno(1,2,3-cd)Pyrene (µg/L)											<	1.5
	Isophorone (µg/L)											<	3
	Naphthalene (µg/L)	<	1	<	1	<	1	<	1			<	1.5
	Nitrobenzene (µg/L)	<	5	<	5	<	5	<	5			<	3
	N-Nitroso-di-methylamine (µg/L)											<	3
	N-Nitroso-di-n-p-propylamine (µg/L)											<	3
	N-Nitroso-di-n-phenylamine (µg/L)											<	3
	Phenanthrene (µg/L)	<	5	<	5	<	5	<	5			<	1.5
	Pyrene (µg/L)	<	5	<	5	<	5	<	5			<	1.5
	1,2,4-Trichlorobenzene (µg/L)	<	5	<	5	<	5	<	5			<	3

OUTFALL 001		DMR REPORTING - LAST 3-YEARS		2017 DATA (EMAIL)		2017 APPLICATION	
		MAXIMUM		MAX		MAX	
POLLUTANT GROUP 6	Aldrin (µg/L)				<	0.02	
	Alpha BHC (µg/L)				<	0.02	
	Beta BHC (µg/L)				<	0.02	
	Gamma BHC (µg/L)				<	0.02	
	Delta BHC (µg/L)				<	0.02	
	Chlordane (µg/L)				<	0.5	
	4,4'-DDT (µg/L)				<	0.02	
	4,4'-DDE (µg/L)				<	0.02	
	4,4'-DDD (µg/L)				<	0.02	
	Dieldrin (µg/L)				<	0.02	
	Alpha- Endosulfan (µg/L)				<	0.02	
	Beta-Endosulfan (µg/L)				<	0.02	
	Endosulfan Sulfate (µg/L)				<	0.02	
	Endrin (µg/L)				<	0.02	
	Endrin Aldehyde (µg/L)				<	0.02	
	Heptachlor (µg/L)				<	0.02	
	Heptachlor Epoxide (µg/L)				<	0.02	
	PCB -1242 (µg/L)				<	0.5	
	PCB -1254 (µg/L)				<	0.5	
	PCB-1221 (µg/L)				<	0.5	
	PCB-1232 (µg/L)				<	0.5	
	PCB-1248 (µg/L)				<	0.5	
	PCB-1260 (µg/L)				<	0.5	
	PCB-1016 (µg/L)				<	0.5	
	Toxaphene (µg/L)				<	1	
POLLUTANT GROUP 7	Gross Alpha (pCi/L)						
	Beta, Total (pCi/L)						
	Radium 226/228, Total (pCi/L)						
	Strontium, Total (µg/L)						
	Uranium, Total (µg/L)						
	Osmotic Pressure (mOsm/kg)						

ATTACHMENT 3 – Toxics Management Spreadsheet

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.2, February 2021

Discharge Information

Instructions | Discharge | Stream

Facility: SASOL | NPDES Permit No.: PA0103381 | Outfall No.: 001

Evaluation Type: Major Sewage / Industrial Waste | Wastewater Description: IW

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q_{7-10}	Q_h
0.028	165	7.4						

					0 if left blank		*0.5 if left blank*		*0 if left blank*			*1 if left blank*	
	Discharge Pollutant	Units	Max Discharge Conc		Trib Conc	Stream Conc	Daily CV	Hourly CV	Stream CV	Fate Coeff	FOS	Criteria Mod	Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L		1210									
	Chloride (PWS)	mg/L		554									
	Bromide	mg/L		6									
	Sulfate (PWS)	mg/L		30									
	Fluoride (PWS)	mg/L		0.45									
Group 2	Total Aluminum	µg/L		3910									
	Total Antimony	µg/L	<	1.5									
	Total Arsenic	µg/L	<	1.9									
	Total Barium	µg/L		82									
	Total Beryllium	µg/L	<	5									
	Total Boron	µg/L	<	250									
	Total Cadmium	µg/L	<	0.2									
	Total Chromium (III)	µg/L		8									
	Hexavalent Chromium	µg/L	<	50									
	Total Cobalt	µg/L	<	5									
	Total Copper	µg/L		22									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L	<	50									
	Dissolved Iron	µg/L	<	20									
	Total Iron	µg/L		830									
	Total Lead	µg/L	<	1.8									
	Total Manganese	µg/L		164									
	Total Mercury	µg/L	<	0.2									
	Total Nickel	µg/L	<	7									
	Total Phenols (Phenolics) (PWS)	µg/L	<	250									
	Total Selenium	µg/L	<	2									
	Total Silver	µg/L	<	0.5									
	Total Thallium	µg/L	<	0.5									
	Total Zinc	µg/L		163									
	Total Molybdenum	µg/L	<	5									
	Acrolein	µg/L	<	200									
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<	100									
	Benzene	µg/L	<	20									
	Bromoform	µg/L	<	20									

Group 3	Carbon Tetrachloride	µg/L	<	20									
	Chlorobenzene	µg/L	<	20									
	Chlorodibromomethane	µg/L	<	20									
	Chloroethane	µg/L	<	20									
	2-Chloroethyl Vinyl Ether	µg/L	<	40									
	Chloroform	µg/L	<	20									
	Dichlorobromomethane	µg/L	<	20									
	1,1-Dichloroethane	µg/L	<	20									
	1,2-Dichloroethane	µg/L	<	20									
	1,1-Dichloroethylene	µg/L	<	20									
	1,2-Dichloropropane	µg/L	<	20									
	1,3-Dichloropropylene	µg/L	<	40									
	1,4-Dioxane	µg/L	<	3									
	Ethylbenzene	µg/L	<	20									
	Methyl Bromide	µg/L	<	20									
	Methyl Chloride	µg/L	<	20									
	Methylene Chloride	µg/L	<	20									
	1,1,2,2-Tetrachloroethane	µg/L	<	20									
	Tetrachloroethylene	µg/L	<	20									
	Toluene	µg/L	<	20									
	1,2-trans-Dichloroethylene	µg/L	<	20									
	1,1,1-Trichloroethane	µg/L	<	20									
	1,1,2-Trichloroethane	µg/L	<	20									
	Trichloroethylene	µg/L	<	20									
	Vinyl Chloride	µg/L	<	20									
Group 4	2-Chlorophenol	µg/L	<	3									
	2,4-Dichlorophenol	µg/L	<	3									
	2,4-Dimethylphenol	µg/L	<	3									
	4,6-Dinitro-o-Cresol	µg/L	<	6.1									
	2,4-Dinitrophenol	µg/L	<	6.1									
	2-Nitrophenol	µg/L	<	3									
	4-Nitrophenol	µg/L	<	3									
	p-Chloro-m-Cresol	µg/L	<	3									
	Pentachlorophenol	µg/L	<	6.1									
	Phenol	µg/L	<	8.1									
	2,4,6-Trichlorophenol	µg/L	<	3									
Group 5	Acenaphthene	µg/L	<	1.5									
	Acenaphthylene	µg/L	<	1.5									
	Anthracene	µg/L	<	1.5									
	Benzidine	µg/L	<	8.1									
	Benzo(a)Anthracene	µg/L	<	1.5									
	Benzo(a)Pyrene	µg/L	<	1.5									
	3,4-Benzofluoranthene	µg/L	<	1.5									
	Benzo(ghi)Perylene	µg/L	<	1.5									
	Benzo(k)Fluoranthene	µg/L	<	1.5									
	Bis(2-Chloroethoxy)Methane	µg/L	<	3									
	Bis(2-Chloroethyl)Ether	µg/L	<	3									
	Bis(2-Chloroisopropyl)Ether	µg/L	<	3									
	Bis(2-Ethylhexyl)Phthalate	µg/L	<	3									
	4-Bromophenyl Phenyl Ether	µg/L	<	3									
	Butyl Benzyl Phthalate	µg/L	<	3									
	2-Chloronaphthalene	µg/L	<	3									
	4-Chlorophenyl Phenyl Ether	µg/L	<	3									
	Chrysene	µg/L	<	1.5									
	Dibenzo(a,h)Anthrancene	µg/L	<	1.5									
	1,2-Dichlorobenzene	µg/L	<	20									
	1,3-Dichlorobenzene	µg/L	<	20									
	1,4-Dichlorobenzene	µg/L	<	20									
	3,3-Dichlorobenzidine	µg/L	<	3									
	Diethyl Phthalate	µg/L	<	3									
	Dimethyl Phthalate	µg/L	<	3									
	Di-n-Butyl Phthalate	µg/L	<	3									
	2,4-Dinitrotoluene	µg/L	<	3									

	2,6-Dinitrotoluene	µg/L	<	3									
	Di-n-Octyl Phthalate	µg/L	<	3									
	1,2-Diphenylhydrazine	µg/L	<	3									
	Fluoranthene	µg/L	<	1.5									
	Fluorene	µg/L	<	1.5									
	Hexachlorobenzene	µg/L	<	3									
	Hexachlorobutadiene	µg/L	<	3									
	Hexachlorocyclopentadiene	µg/L	<	3									
	Hexachloroethane	µg/L	<	3									
	Indeno(1,2,3-cd)Pyrene	µg/L	<	1.5									
	Isophorone	µg/L	<	3									
	Naphthalene	µg/L	<	1.5									
	Nitrobenzene	µg/L	<	3									
	n-Nitrosodimethylamine	µg/L	<	3									
	n-Nitrosodi-n-Propylamine	µg/L	<	3									
	n-Nitrosodiphenylamine	µg/L	<	3									
	Phenanthrene	µg/L	<	1.5									
	Pyrene	µg/L	<	1.5									
	1,2,4-Trichlorobenzene	µg/L	<	3									
Group 6	Aldrin	µg/L	<	0.02									
	alpha-BHC	µg/L	<	0.02									
	beta-BHC	µg/L	<	0.02									
	gamma-BHC	µg/L	<	0.02									
	delta BHC	µg/L	<	0.02									
	Chlordane	µg/L	<	0.5									
	4,4-DDT	µg/L	<	0.02									
	4,4-DDE	µg/L	<	0.02									
	4,4-DDD	µg/L	<	0.02									
	Dieldrin	µg/L	<	0.02									
	alpha-Endosulfan	µg/L	<	0.02									
	beta-Endosulfan	µg/L	<	0.02									
	Endosulfan Sulfate	µg/L	<	0.02									
	Endrin	µg/L	<	0.02									
	Endrin Aldehyde	µg/L	<	0.02									
	Heptachlor	µg/L	<	0.02									
	Heptachlor Epoxide	µg/L	<	0.02									
	PCB-1016	µg/L	<	0.5									
	PCB-1221	µg/L	<	0.5									
	PCB-1232	µg/L	<	0.5									
	PCB-1242	µg/L	<	0.5									
	PCB-1248	µg/L	<	0.5									
	PCB-1254	µg/L	<	0.5									
	PCB-1260	µg/L	<	0.5									
	PCBs, Total	µg/L											
	Toxaphene	µg/L	<	1									
	2,3,7,8-TCDD	ng/L	<										
Group 7	Gross Alpha	pCi/L											
	Total Beta	pCi/L	<										
	Radium 226/228	pCi/L	<										
	Total Strontium	µg/L	<										
	Total Uranium	µg/L	<										
	Osmotic Pressure	mOs/kg											

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Toxics Management Spreadsheet
Version 1.2, February 2021

Stream / Surface Water Information

SASOL, NPDES Permit No. PA0103381, Outfall 001

Instructions | Discharge | Stream

Receiving Surface Water Name: **Oil Creek**

No. Reaches to Model: **1**

- (●) Statewide Criteria
- ( ) Great Lakes Criteria
- ( ) ORSANCO Criteria

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi^2)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	054128	2.25	985.56	314.95	0.00091		Yes
End of Reach 1	054128	0	965.95	319.82	0.00091		Yes

$Q_{7\text{-}10}$

Location	RMI	LFY (cfs/mi^2)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	2.25	0.1				195	3					57	7		
End of Reach 1	0	0.1													

Q_h

Location	RMI	LFY (cfs/mi^2)	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	2.25											57	7		
End of Reach 1	0														

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Toxics Management Spreadsheet
Version 1.2, February 2021

Model Results

SASOL, NPDES Permit No. PA0103381, Outfall 001

Instructions | Results | RETURN TO INPUTS | SAVE AS PDF | PRINT | ◉ All ○ Inputs ○ Results ○ Limits

☑ ***Hydrodynamics***

$Q_{7\text{-}10}$

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
2.25	31.50		31.50	0.043	0.00091	3.	195.	65.	0.054	2.55	331.589
0	31.98		31.982								

Q_h

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
2.25	151.51		151.51	0.043	0.00091	5.985	195.	32.58	0.13	1.059	117.923
0	153.559		153.56								

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.213 Analysis Hardness (mg/l): 57.694 Analysis pH: 7.00

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	750	750	116,734	
Total Antimony	0	0		0	1,100	1,100	171,211	
Total Arsenic	0	0		0	340	340	52,920	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	3,268,566	
Total Boron	0	0		0	8,100	8,100	1,260,733	
Total Cadmium	0	0		0	1.179	1.22	190	Chem Translator of 0.967 applied
Total Chromium (III)	0	0		0	363.128	1,149	178,859	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	2,536	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	14,786	
Total Copper	0	0		0	8.004	8.34	1,298	Chem Translator of 0.96 applied

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Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	35.313	40.5	6,309	Chem Translator of 0.871 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	256	Chem Translator of 0.85 applied
Total Nickel	0	0		0	294.022	295	45,855	Chem Translator of 0.998 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	Chem Translator of 0.922 applied
Total Silver	0	0		0	1.249	1.47	229	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	10,117	
Total Zinc	0	0		0	73.529	75.2	11,702	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	467	
Acrylonitrile	0	0		0	650	650	101,170	
Benzene	0	0		0	640	640	99,613	
Bromoform	0	0		0	1,800	1,800	280,163	
Carbon Tetrachloride	0	0		0	2,800	2,800	435,809	
Chlorobenzene	0	0		0	1,200	1,200	186,775	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	2,801,628	
Chloroform	0	0		0	1,900	1,900	295,727	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	2,334,690	
1,1-Dichloroethylene	0	0		0	7,500	7,500	1,167,345	
1,2-Dichloropropane	0	0		0	11,000	11,000	1,712,106	
1,3-Dichloropropylene	0	0		0	310	310	48,250	
Ethylbenzene	0	0		0	2,900	2,900	451,373	
Methyl Bromide	0	0		0	550	550	85,605	
Methyl Chloride	0	0		0	28,000	28,000	4,358,088	
Methylene Chloride	0	0		0	12,000	12,000	1,867,752	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	155,646	
Tetrachloroethylene	0	0		0	700	700	108,952	
Toluene	0	0		0	1,700	1,700	264,598	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	1,058,393	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	466,938	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	529,196	
Trichloroethylene	0	0		0	2,300	2,300	357,986	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	87,162	
2,4-Dichlorophenol	0	0		0	1,700	1,700	264,598	
2,4-Dimethylphenol	0	0		0	660	660	102,726	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	12,452	
2,4-Dinitrophenol	0	0		0	660	660	102,726	
2-Nitrophenol	0	0		0	8,000	8,000	1,245,168	
4-Nitrophenol	0	0		0	2,300	2,300	357,986	
p-Chloro-m-Cresol	0	0		0	160	160	24,903	
Pentachlorophenol	0	0		0	8.738	8.74	1,360	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	460	460	71,597	

Acenaphthene	0	0		0	83	83.0	12,919	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	300	300	46,694	
Benzo(a)Anthracene	0	0		0	0.5	0.5	77.8	
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A	
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A	
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroethyl)Ether	0	0		0	30,000	30,000	4,669,380	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	700,407	
4-Bromophenyl Phenyl Ether	0	0		0	270	270	42,024	
Butyl Benzyl Phthalate	0	0		0	140	140	21,790	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	820	820	127,630	
1,3-Dichlorobenzene	0	0		0	350	350	54,476	
1,4-Dichlorobenzene	0	0		0	730	730	113,622	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	622,584	
Dimethyl Phthalate	0	0		0	2,500	2,500	389,115	
Di-n-Butyl Phthalate	0	0		0	110	110	17,121	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	249,034	
2,6-Dinitrotoluene	0	0		0	990	990	154,090	
1,2-Diphenylhydrazine	0	0		0	15	15.0	2,335	
Fluoranthene	0	0		0	200	200	31,129	
Fluorene	0	0		0	N/A	N/A	N/A	
Hexachlorobenzene	0	0		0	N/A	N/A	N/A	
Hexachlorobutadiene	0	0		0	10	10.0	1,556	
Hexachlorocyclopentadiene	0	0		0	5	5.0	778	
Hexachloroethane	0	0		0	60	60.0	9,339	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	1,556,460	
Naphthalene	0	0		0	140	140	21,790	
Nitrobenzene	0	0		0	4,000	4,000	622,584	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	2,645,982	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	46,694	
Phenanthrene	0	0		0	5	5.0	778	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	20,234	
Aldrin	0	0		0	3	3.0	467	
alpha-BHC	0	0		0	N/A	N/A	N/A	
beta-BHC	0	0		0	N/A	N/A	N/A	
gamma-BHC	0	0		0	0.95	0.95	148	
Chlordane	0	0		0	2.4	2.4	374	
4,4-DDT	0	0		0	1.1	1.1	171	
4,4-DDE	0	0		0	1.1	1.1	171	

4,4-DDD	0	0		0	1.1	1.1	171	
Dieldrin	0	0		0	0.24	0.24	37.4	
alpha-Endosulfan	0	0		0	0.22	0.22	34.2	
beta-Endosulfan	0	0		0	0.22	0.22	34.2	
Endrin	0	0		0	0.086	0.086	13.4	
Endrin Aldehyde	0	0		0	N/A	N/A	N/A	
Heptachlor	0	0		0	0.52	0.52	80.9	
Heptachlor Epoxide	0	0		0	0.5	0.5	77.8	
Toxaphene	0	0		0	0.73	0.73	114	

☑ ***CFC*** CCT (min): ###### PMF: 1 Analysis Hardness (mg/l): 57.148 Analysis pH: 7.00

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	220	220	160,182	
Total Arsenic	0	0		0	150	150	109,215	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	2,985,204	
Total Boron	0	0		0	1,600	1,600	1,164,958	
Total Cadmium	0	0		0	0.167	0.18	130	Chem Translator of 0.932 applied
Total Chromium (III)	0	0		0	46.869	54.5	39,681	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	7,569	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	13,834	
Total Copper	0	0		0	5.552	5.78	4,211	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	1,092,148	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	1.362	1.56	1,136	Chem Translator of 0.873 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	660	Chem Translator of 0.85 applied
Total Nickel	0	0		0	32.395	32.5	23,658	Chem Translator of 0.997 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	4.600	4.99	3,633	Chem Translator of 0.922 applied
Total Silver	0	0		0	N/A	N/A	N/A	Chem Translator of 1 applied
Total Thallium	0	0		0	13	13.0	9,465	
Total Zinc	0	0		0	73.536	74.6	54,302	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	2,184	
Acrylonitrile	0	0		0	130	130	94,653	
Benzene	0	0		0	130	130	94,653	
Bromoform	0	0		0	370	370	269,396	
Carbon Tetrachloride	0	0		0	560	560	407,735	
Chlorobenzene	0	0		0	240	240	174,744	

Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	2,548,345	
Chloroform	0	0		0	390	390	283,958	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	2,257,105	
1,1-Dichloroethylene	0	0		0	1,500	1,500	1,092,148	
1,2-Dichloropropane	0	0		0	2,200	2,200	1,601,817	
1,3-Dichloropropylene	0	0		0	61	61.0	44,414	
Ethylbenzene	0	0		0	580	580	422,297	
Methyl Bromide	0	0		0	110	110	80,091	
Methyl Chloride	0	0		0	5,500	5,500	4,004,542	
Methylene Chloride	0	0		0	2,400	2,400	1,747,436	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	152,901	
Tetrachloroethylene	0	0		0	140	140	101,934	
Toluene	0	0		0	330	330	240,273	
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	1,019,338	
1,1,1-Trichloroethane	0	0		0	610	610	444,140	
1,1,2-Trichloroethane	0	0		0	680	680	495,107	
Trichloroethylene	0	0		0	450	450	327,644	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	80,091	
2,4-Dichlorophenol	0	0		0	340	340	247,554	
2,4-Dimethylphenol	0	0		0	130	130	94,653	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	11,650	
2,4-Dinitrophenol	0	0		0	130	130	94,653	
2-Nitrophenol	0	0		0	1,600	1,600	1,164,958	
4-Nitrophenol	0	0		0	470	470	342,206	
p-Chloro-m-Cresol	0	0		0	30	30.0	21,843	
Pentachlorophenol	0	0		0	6.704	6.7	4,881	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	91	91.0	66,257	
Acenaphthene	0	0		0	17	17.0	12,378	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	59	59.0	42,958	
Benzo(a)Anthracene	0	0		0	0.1	0.1	72.8	
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A	
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A	
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroethyl)Ether	0	0		0	6,000	6,000	4,368,591	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	662,570	
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	39,317	
Butyl Benzyl Phthalate	0	0		0	35	35.0	25,483	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	N/A	N/A	N/A	

Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	160	160	116,496	
1,3-Dichlorobenzene	0	0		0	69	69.0	50,239	
1,4-Dichlorobenzene	0	0		0	150	150	109,215	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	800	800	582,479	
Dimethyl Phthalate	0	0		0	500	500	364,049	
Di-n-Butyl Phthalate	0	0		0	21	21.0	15,290	
2,4-Dinitrotoluene	0	0		0	320	320	232,992	
2,6-Dinitrotoluene	0	0		0	200	200	145,620	
1,2-Diphenylhydrazine	0	0		0	3	3.0	2,184	
Fluoranthene	0	0		0	40	40.0	29,124	
Fluorene	0	0		0	N/A	N/A	N/A	
Hexachlorobenzene	0	0		0	N/A	N/A	N/A	
Hexachlorobutadiene	0	0		0	2	2.0	1,456	
Hexachlorocyclopentadiene	0	0		0	1	1.0	728	
Hexachloroethane	0	0		0	12	12.0	8,737	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	1,529,007	
Naphthalene	0	0		0	43	43.0	31,308	
Nitrobenzene	0	0		0	810	810	589,760	
n-Nitrosodimethylamine	0	0		0	3,400	3,400	2,475,535	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	42,958	
Phenanthrene	0	0		0	1	1.0	728	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	26	26.0	18,931	
Aldrin	0	0		0	0.1	0.1	72.8	
alpha-BHC	0	0		0	N/A	N/A	N/A	
beta-BHC	0	0		0	N/A	N/A	N/A	
gamma-BHC	0	0		0	N/A	N/A	N/A	
Chlordane	0	0		0	0.0043	0.004	3.13	
4,4-DDT	0	0		0	0.001	0.001	0.73	
4,4-DDE	0	0		0	0.001	0.001	0.73	
4,4-DDD	0	0		0	0.001	0.001	0.73	
Dieldrin	0	0		0	0.056	0.056	40.8	
alpha-Endosulfan	0	0		0	0.056	0.056	40.8	
beta-Endosulfan	0	0		0	0.056	0.056	40.8	
Endrin	0	0		0	0.036	0.036	26.2	
Endrin Aldehyde	0	0		0	N/A	N/A	N/A	
Heptachlor	0	0		0	0.0038	0.004	2.77	
Heptachlor Epoxide	0	0		0	0.0038	0.004	2.77	
Toxaphene	0	0		0	0.0002	0.0002	0.15	

☑ ***THH*** CCT (min): ###### PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	500,000	500,000	N/A	
Chloride (PWS)	0	0		0	250,000	250,000	N/A	
Sulfate (PWS)	0	0		0	250,000	250,000	N/A	
Fluoride (PWS)	0	0		0	2,000	2,000	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	4,077	
Total Arsenic	0	0		0	10	10.0	7,281	
Total Barium	0	0		0	2,400	2,400	1,747,436	
Total Boron	0	0		0	3,100	3,100	2,257,105	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Dissolved Iron	0	0		0	300	300	218,430	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	1,000	1,000	728,099	
Total Mercury	0	0		0	0.050	0.05	36.4	
Total Nickel	0	0		0	610	610	444,140	
Total Phenols (Phenolics) (PWS)	0	0		0	5	5.0	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	0.24	0.24	175	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	6	6.0	4,369	
Acrylonitrile	0	0		0	N/A	N/A	N/A	
Benzene	0	0		0	N/A	N/A	N/A	
Bromoform	0	0		0	N/A	N/A	N/A	
Carbon Tetrachloride	0	0		0	N/A	N/A	N/A	
Chlorobenzene	0	0		0	130	130	94,653	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	N/A	N/A	N/A	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	N/A	N/A	N/A	
1,1-Dichloroethylene	0	0		0	33	33.0	24,027	
1,2-Dichloropropane	0	0		0	N/A	N/A	N/A	
1,3-Dichloropropylene	0	0		0	N/A	N/A	N/A	
Ethylbenzene	0	0		0	530	530	385,892	
Methyl Bromide	0	0		0	47	47.0	34,221	

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Methyl Chloride	0	0		0	N/A	N/A	N/A	
Methylene Chloride	0	0		0	N/A	N/A	N/A	
1,1,2,2-Tetrachloroethane	0	0		0	N/A	N/A	N/A	
Tetrachloroethylene	0	0		0	N/A	N/A	N/A	
Toluene	0	0		0	1,300	1,300	946,528	
1,2-trans-Dichloroethylene	0	0		0	140	140	101,934	
1,1,1-Trichloroethane	0	0		0	N/A	N/A	N/A	
1,1,2-Trichloroethane	0	0		0	N/A	N/A	N/A	
Trichloroethylene	0	0		0	N/A	N/A	N/A	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	81	81.0	58,976	
2,4-Dichlorophenol	0	0		0	77	77.0	56,064	
2,4-Dimethylphenol	0	0		0	380	380	276,677	
4,6-Dinitro-o-Cresol	0	0		0	13	13.0	9,465	
2,4-Dinitrophenol	0	0		0	69	69.0	50,239	
2-Nitrophenol	0	0		0	N/A	N/A	N/A	
4-Nitrophenol	0	0		0	N/A	N/A	N/A	
p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A	
Pentachlorophenol	0	0		0	N/A	N/A	N/A	
Phenol	0	0		0	10,400	10,400	7,572,225	
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	670	670	487,826	
Anthracene	0	0		0	8,300	8,300	6,043,218	
Benzidine	0	0		0	N/A	N/A	N/A	
Benzo(a)Anthracene	0	0		0	N/A	N/A	N/A	
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A	
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A	
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroethyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroisopropyl)Ether	0	0		0	1,400	1,400	1,019,338	
Bis(2-Ethylhexyl)Phthalate	0	0		0	N/A	N/A	N/A	
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A	
Butyl Benzyl Phthalate	0	0		0	150	150	109,215	
2-Chloronaphthalene	0	0		0	1,000	1,000	728,099	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	420	420	305,801	
1,3-Dichlorobenzene	0	0		0	420	420	305,801	
1,4-Dichlorobenzene	0	0		0	420	420	305,801	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	17,000	17,000	12,377,675	
Dimethyl Phthalate	0	0		0	270,000	270,000	#########	
Di-n-Butyl Phthalate	0	0		0	2,000	2,000	1,456,197	
2,4-Dinitrotoluene	0	0		0	N/A	N/A	N/A	
2,6-Dinitrotoluene	0	0		0	N/A	N/A	N/A	

1,2-Diphenylhydrazine	0	0		0	N/A	N/A	N/A	
Fluoranthene	0	0		0	130	130	94,653	
Fluorene	0	0		0	1,100	1,100	800,908	
Hexachlorobenzene	0	0		0	N/A	N/A	N/A	
Hexachlorobutadiene	0	0		0	N/A	N/A	N/A	
Hexachlorocyclopentadiene	0	0		0	40	40.0	29,124	
Hexachloroethane	0	0		0	N/A	N/A	N/A	
Indeno(1,2,3-cd)Pyrene	0	0		0	0.0038	0.004	2.77	
Isophorone	0	0		0	35	35.0	25,483	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	17	17.0	12,378	
n-Nitrosodimethylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	N/A	N/A	N/A	
Phenanthrene	0	0		0	N/A	N/A	N/A	
Pyrene	0	0		0	830	830	604,322	
1,2,4-Trichlorobenzene	0	0		0	35	35.0	25,483	
Aldrin	0	0		0	N/A	N/A	N/A	
alpha-BHC	0	0		0	N/A	N/A	N/A	
beta-BHC	0	0		0	N/A	N/A	N/A	
gamma-BHC	0	0		0	0.098	0.098	71.4	
Chlordane	0	0		0	N/A	N/A	N/A	
4,4-DDT	0	0		0	N/A	N/A	N/A	
4,4-DDE	0	0		0	N/A	N/A	N/A	
4,4-DDD	0	0		0	N/A	N/A	N/A	
Dieldrin	0	0		0	N/A	N/A	N/A	
alpha-Endosulfan	0	0		0	62	62.0	45,142	
beta-Endosulfan	0	0		0	62	62.0	45,142	
Endrin	0	0		0	0.059	0.059	43.0	
Endrin Aldehyde	0	0		0	0.29	0.29	211	
Heptachlor	0	0		0	N/A	N/A	N/A	
Heptachlor Epoxide	0	0		0	N/A	N/A	N/A	
Toxaphene	0	0		0	0.00028	0.0003	0.2	

☑ ***CRL*** CCT (min): ###### PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	N/A	N/A	N/A	

Total Arsenic	0	0		0	N/A	N/A	N/A	
Total Barium	0	0		0	N/A	N/A	N/A	
Total Boron	0	0		0	N/A	N/A	N/A	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	N/A	N/A	N/A	
Total Nickel	0	0		0	N/A	N/A	N/A	
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	N/A	N/A	N/A	
Acrylonitrile	0	0		0	0.051	0.051	178	
Benzene	0	0		0	1.2	1.2	4,199	
Bromoform	0	0		0	4.3	4.3	15,045	
Carbon Tetrachloride	0	0		0	0.23	0.23	805	
Chlorobenzene	0	0		0	N/A	N/A	N/A	
Chlorodibromomethane	0	0		0	0.4	0.4	1,400	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	5.7	5.7	19,944	
Dichlorobromomethane	0	0		0	0.55	0.55	1,924	
1,2-Dichloroethane	0	0		0	0.38	0.38	1,330	
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,2-Dichloropropane	0	0		0	N/A	N/A	N/A	
1,3-Dichloropropylene	0	0		0	0.34	0.34	1,190	
Ethylbenzene	0	0		0	N/A	N/A	N/A	
Methyl Bromide	0	0		0	N/A	N/A	N/A	
Methyl Chloride	0	0		0	N/A	N/A	N/A	
Methylene Chloride	0	0		0	4.6	4.6	16,095	
1,1,2,2-Tetrachloroethane	0	0		0	0.17	0.17	595	
Tetrachloroethylene	0	0		0	0.69	0.69	2,414	
Toluene	0	0		0	N/A	N/A	N/A	
1,2-trans-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,1,1-Trichloroethane	0	0		0	N/A	N/A	N/A	
1,1,2-Trichloroethane	0	0		0	0.59	0.59	2,064	
Trichloroethylene	0	0		0	2.5	2.5	8,747	
Vinyl Chloride	0	0		0	0.025	0.025	87.5	

2-Chlorophenol	0	0		0	N/A	N/A	N/A	
2,4-Dichlorophenol	0	0		0	N/A	N/A	N/A	
2,4-Dimethylphenol	0	0		0	N/A	N/A	N/A	
4,6-Dinitro-o-Cresol	0	0		0	N/A	N/A	N/A	
2,4-Dinitrophenol	0	0		0	N/A	N/A	N/A	
2-Nitrophenol	0	0		0	N/A	N/A	N/A	
4-Nitrophenol	0	0		0	N/A	N/A	N/A	
p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A	
Pentachlorophenol	0	0		0	0.270	0.27	945	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	1.4	1.4	4,898	
Acenaphthene	0	0		0	N/A	N/A	N/A	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	0.000086	0.00009	0.3	
Benzo(a)Anthracene	0	0		0	0.0038	0.004	13.3	
Benzo(a)Pyrene	0	0		0	0.0038	0.004	13.3	
3,4-Benzofluoranthene	0	0		0	0.0038	0.004	13.3	
Benzo(k)Fluoranthene	0	0		0	0.0038	0.004	13.3	
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	105	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	1.2	1.2	4,199	
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A	
Butyl Benzyl Phthalate	0	0		0	N/A	N/A	N/A	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	0.0038	0.004	13.3	
Dibenzo(a,h)Anthrancene	0	0		0	0.0038	0.004	13.3	
1,2-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
1,3-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
1,4-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
3,3-Dichlorobenzidine	0	0		0	0.021	0.021	73.5	
Diethyl Phthalate	0	0		0	N/A	N/A	N/A	
Dimethyl Phthalate	0	0		0	N/A	N/A	N/A	
Di-n-Butyl Phthalate	0	0		0	N/A	N/A	N/A	
2,4-Dinitrotoluene	0	0		0	0.05	0.05	175	
2,6-Dinitrotoluene	0	0		0	0.05	0.05	175	
1,2-Diphenylhydrazine	0	0		0	0.036	0.036	126	
Fluoranthene	0	0		0	N/A	N/A	N/A	
Fluorene	0	0		0	N/A	N/A	N/A	
Hexachlorobenzene	0	0		0	0.00028	0.0003	0.98	
Hexachlorobutadiene	0	0		0	0.44	0.44	1,540	
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A	
Hexachloroethane	0	0		0	1.4	1.4	4,898	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	N/A	N/A	N/A	
Naphthalene	0	0		0	N/A	N/A	N/A	

Nitrobenzene	0	0		0	N/A	N/A	N/A	
n-Nitrosodimethylamine	0	0		0	0.00069	0.0007	2.41	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	17.5	
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	11,546	
Phenanthrene	0	0		0	N/A	N/A	N/A	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	N/A	N/A	N/A	
Aldrin	0	0		0	0.000049	0.00005	0.17	
alpha-BHC	0	0		0	0.0026	0.003	9.1	
beta-BHC	0	0		0	0.0091	0.009	31.8	
gamma-BHC	0	0		0	N/A	N/A	N/A	
Chlordane	0	0		0	0.0008	0.0008	2.8	
4,4-DDT	0	0		0	0.00022	0.0002	0.77	
4,4-DDE	0	0		0	0.00022	0.0002	0.77	
4,4-DDD	0	0		0	0.00031	0.0003	1.08	
Dieldrin	0	0		0	0.000052	0.00005	0.18	
alpha-Endosulfan	0	0		0	N/A	N/A	N/A	
beta-Endosulfan	0	0		0	N/A	N/A	N/A	
Endrin	0	0		0	N/A	N/A	N/A	
Endrin Aldehyde	0	0		0	N/A	N/A	N/A	
Heptachlor	0	0		0	0.000079	0.00008	0.28	
Heptachlor Epoxide	0	0		0	0.000039	0.00004	0.14	
Toxaphene	0	0		0	0.00028	0.0003	0.98	

☑ ***Recommended WQBELs & Monitoring Requirements***

No. Samples/Month: 4

	Mass Limits		*Concentration Limits*						
Pollutants	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units	Governing WQBEL	WQBEL Basis	Comments
Acrolein	0.07	0.11	299	467	748	µg/L	299	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Acrylonitrile	0.042	0.065	178	278	446	µg/L	178	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Toxaphene	0.00003	0.00005	0.15	0.23	0.36	µg/L	0.15	CFC	Discharge Conc ≥ 50% WQBEL (RP)

☑ ***Other Pollutants without Limits or Monitoring***

The following pollutants do not require effluent limits or monitoring based on water quality because reasonable potential to exceed water quality criteria was not determined and the discharge concentration was less than thresholds for monitoring, or the pollutant was not detected and a sufficiently sensitive analytical method was used (e.g., <= Target QL).

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable

Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Fluoride (PWS)	N/A	N/A	PWS Not Applicable
Total Aluminum	74,822	µg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	N/A	N/A	Discharge Conc < TQL
Total Arsenic	N/A	N/A	Discharge Conc < TQL
Total Barium	1,747,436	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	808,079	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	122	µg/L	Discharge Conc < TQL
Total Chromium (III)	39,681	µg/L	Discharge Conc ≤ 10% WQBEL
Hexavalent Chromium	1,625	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	9,477	µg/L	Discharge Conc ≤ 10% WQBEL
Total Copper	832	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	218,430	µg/L	Discharge Conc < TQL
Total Iron	1,092,148	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	1,136	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	728,099	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	36.4	µg/L	Discharge Conc < TQL
Total Nickel	23,658	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	PWS Not Applicable
Total Selenium	3,633	µg/L	Discharge Conc < TQL
Total Silver	147	µg/L	Discharge Conc ≤ 10% WQBEL
Total Thallium	175	µg/L	Discharge Conc < TQL
Total Zinc	7,500	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS
Benzene	4,199	µg/L	Discharge Conc ≤ 25% WQBEL
Bromoform	15,045	µg/L	Discharge Conc ≤ 25% WQBEL
Carbon Tetrachloride	805	µg/L	Discharge Conc ≤ 25% WQBEL
Chlorobenzene	94,653	µg/L	Discharge Conc ≤ 25% WQBEL
Chlorodibromomethane	1,400	µg/L	Discharge Conc ≤ 25% WQBEL
Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	1,795,730	µg/L	Discharge Conc ≤ 25% WQBEL
Chloroform	19,944	µg/L	Discharge Conc ≤ 25% WQBEL
Dichlorobromomethane	1,924	µg/L	Discharge Conc ≤ 25% WQBEL
1,1-Dichloroethane	N/A	N/A	No WQS
1,2-Dichloroethane	1,330	µg/L	Discharge Conc ≤ 25% WQBEL
1,1-Dichloroethylene	24,027	µg/L	Discharge Conc ≤ 25% WQBEL
1,2-Dichloropropane	1,097,391	µg/L	Discharge Conc ≤ 25% WQBEL
1,3-Dichloropropylene	1,190	µg/L	Discharge Conc ≤ 25% WQBEL
1,4-Dioxane	N/A	N/A	No WQS
Ethylbenzene	289,312	µg/L	Discharge Conc ≤ 25% WQBEL
Methyl Bromide	34,221	µg/L	Discharge Conc ≤ 25% WQBEL
Methyl Chloride	2,793,358	µg/L	Discharge Conc ≤ 25% WQBEL

Methylene Chloride	16,095	µg/L	Discharge Conc ≤ 25% WQBEL
1,1,2,2-Tetrachloroethane	595	µg/L	Discharge Conc ≤ 25% WQBEL
Tetrachloroethylene	2,414	µg/L	Discharge Conc ≤ 25% WQBEL
Toluene	169,597	µg/L	Discharge Conc ≤ 25% WQBEL
1,2-trans-Dichloroethylene	101,934	µg/L	Discharge Conc ≤ 25% WQBEL
1,1,1-Trichloroethane	299,288	µg/L	Discharge Conc ≤ 25% WQBEL
1,1,2-Trichloroethane	2,064	µg/L	Discharge Conc ≤ 25% WQBEL
Trichloroethylene	8,747	µg/L	Discharge Conc ≤ 25% WQBEL
Vinyl Chloride	87.5	µg/L	Discharge Conc ≤ 25% WQBEL
2-Chlorophenol	55,867	µg/L	Discharge Conc < TQL
2,4-Dichlorophenol	56,064	µg/L	Discharge Conc < TQL
2,4-Dimethylphenol	65,843	µg/L	Discharge Conc < TQL
4,6-Dinitro-o-Cresol	7,981	µg/L	Discharge Conc < TQL
2,4-Dinitrophenol	50,239	µg/L	Discharge Conc < TQL
2-Nitrophenol	798,102	µg/L	Discharge Conc < TQL
4-Nitrophenol	229,454	µg/L	Discharge Conc < TQL
p-Chloro-m-Cresol	15,962	µg/L	Discharge Conc < TQL
Pentachlorophenol	872	µg/L	Discharge Conc < TQL
Phenol	7,572,225	µg/L	Discharge Conc < TQL
2,4,6-Trichlorophenol	4,898	µg/L	Discharge Conc < TQL
Acenaphthene	8,280	µg/L	Discharge Conc < TQL
Acenaphthylene	N/A	N/A	No WQS
Anthracene	6,043,218	µg/L	Discharge Conc < TQL
Benzidine	0.3	µg/L	Discharge Conc < TQL
Benzo(a)Anthracene	13.3	µg/L	Discharge Conc < TQL
Benzo(a)Pyrene	13.3	µg/L	Discharge Conc < TQL
3,4-Benzofluoranthene	13.3	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Benzo(k)Fluoranthene	13.3	µg/L	Discharge Conc < TQL
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	105	µg/L	Discharge Conc < TQL
Bis(2-Chloroisopropyl)Ether	1,019,338	µg/L	Discharge Conc < TQL
Bis(2-Ethylhexyl)Phthalate	4,199	µg/L	Discharge Conc < TQL
4-Bromophenyl Phenyl Ether	26,936	µg/L	Discharge Conc < TQL
Butyl Benzyl Phthalate	13,967	µg/L	Discharge Conc < TQL
2-Chloronaphthalene	728,099	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
Chrysene	13.3	µg/L	Discharge Conc < TQL
Dibenzo(a,h)Anthrancene	13.3	µg/L	Discharge Conc < TQL
1,2-Dichlorobenzene	81,805	µg/L	Discharge Conc ≤ 25% WQBEL
1,3-Dichlorobenzene	34,917	µg/L	Discharge Conc ≤ 25% WQBEL
1,4-Dichlorobenzene	72,827	µg/L	Discharge Conc ≤ 25% WQBEL
3,3-Dichlorobenzidine	73.5	µg/L	Discharge Conc < TQL
Diethyl Phthalate	399,051	µg/L	Discharge Conc < TQL
Dimethyl Phthalate	249,407	µg/L	Discharge Conc < TQL

Di-n-Butyl Phthalate	10,974	µg/L	Discharge Conc < TQL
2,4-Dinitrotoluene	175	µg/L	Discharge Conc < TQL
2,6-Dinitrotoluene	175	µg/L	Discharge Conc < TQL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	126	µg/L	Discharge Conc < TQL
Fluoranthene	19,953	µg/L	Discharge Conc < TQL
Fluorene	800,908	µg/L	Discharge Conc < TQL
Hexachlorobenzene	0.98	µg/L	Discharge Conc < TQL
Hexachlorobutadiene	998	µg/L	Discharge Conc ≤ 25% WQBEL
Hexachlorocyclopentadiene	499	µg/L	Discharge Conc < TQL
Hexachloroethane	4,898	µg/L	Discharge Conc < TQL
Indeno(1,2,3-cd)Pyrene	2.77	µg/L	Discharge Conc < TQL
Isophorone	25,483	µg/L	Discharge Conc < TQL
Naphthalene	13,967	µg/L	Discharge Conc ≤ 25% WQBEL
Nitrobenzene	12,378	µg/L	Discharge Conc < TQL
n-Nitrosodimethylamine	2.41	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	17.5	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	11,546	µg/L	Discharge Conc < TQL
Phenanthrene	499	µg/L	Discharge Conc < TQL
Pyrene	604,322	µg/L	Discharge Conc < TQL
1,2,4-Trichlorobenzene	12,969	µg/L	Discharge Conc ≤ 25% WQBEL
Aldrin	0.17	µg/L	Discharge Conc < TQL
alpha-BHC	9.1	µg/L	Discharge Conc < TQL
beta-BHC	31.8	µg/L	Discharge Conc < TQL
gamma-BHC	71.4	µg/L	Discharge Conc < TQL
delta BHC	N/A	N/A	No WQS
Chlordane	2.8	µg/L	Discharge Conc < TQL
4,4-DDT	0.73	µg/L	Discharge Conc < TQL
4,4-DDE	0.73	µg/L	Discharge Conc < TQL
4,4-DDD	0.73	µg/L	Discharge Conc < TQL
Dieldrin	0.18	µg/L	Discharge Conc < TQL
alpha-Endosulfan	21.9	µg/L	Discharge Conc < TQL
beta-Endosulfan	21.9	µg/L	Discharge Conc < TQL
Endosulfan Sulfate	N/A	N/A	No WQS
Endrin	8.58	µg/L	Discharge Conc < TQL
Endrin Aldehyde	211	µg/L	Discharge Conc < TQL
Heptachlor	0.28	µg/L	Discharge Conc < TQL
Heptachlor Epoxide	0.14	µg/L	Discharge Conc < TQL
PCB-1016	N/A	N/A	No WQS
PCB-1221	N/A	N/A	No WQS
PCB-1232	N/A	N/A	No WQS
PCB-1242	N/A	N/A	No WQS
PCB-1248	N/A	N/A	No WQS
PCB-1254	N/A	N/A	No WQS
PCB-1260	N/A	N/A	No WQS

ATTACHMENT 4 – WQM 7.0 Model

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
16E	54128	OIL CREEK	2.250	985.56	314.95	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.107	70.00	0.00	0.000	0.000	0.0	195.00	3.00	20.00	7.00	20.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
SASOL 001	PA0103381	0.0280	0.0280	0.0280	0.000	20.00	7.40

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	42.00	2.00	0.00	1.50
Dissolved Oxygen	3.00	8.24	0.00	0.00
NH3-N	1.00	0.10	0.00	0.70

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
16E	54128	OIL CREEK	**0.000**	965.95	319.82	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.107	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	20.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
		0.0000	0.0000	0.0000	0.000	0.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	3.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
16E	54128	OIL CREEK

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
2.250	70.00	0.00	70.00	.0433	0.00165	3	195	65	0.12	1.148	20.00	7.00
Q1-10 Flow												
2.250	44.80	0.00	44.80	.0433	0.00165	NA	NA	NA	0.08	1.794	20.00	7.00
Q30-10 Flow												
2.250	95.20	0.00	95.20	.0433	0.00165	NA	NA	NA	0.16	0.845	20.00	7.00

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WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	Uniform Treatme	Use Inputted W/D Ratio	☑
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	☑
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	☐
D.O. Saturation	90.00%	Use Balanced Technology	☐
D.O. Goal	5		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
16E	54128	OIL CREEK

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
2.250	SASOL 001	NA	2	9.67	2	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
2.250	SASOL 001	NA	1	1.92	1	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
2.25	SASOL 001	42	42	1	1	3	3	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
16E	54128	OIL CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
2.250	0.028	20.000	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
195.000	3.000	65.000	0.120
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.02	0.009	0.10	0.700
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.240	0.859	O'Connor	5
Reach Travel Time (days)			
1.148			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.115	2.02	0.10	8.24
0.230	2.02	0.10	8.24
0.345	2.02	0.10	8.24
0.459	2.02	0.10	8.24
0.574	2.01	0.10	8.24
0.689	2.01	0.10	8.24
0.804	2.01	0.10	8.24
0.919	2.01	0.10	8.24
1.034	2.01	0.10	8.24
1.148	2.00	0.10	8.24

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WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
16E	54128	OIL CREEK

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
2.250	SASOL 001	PA0103381	0.028	CBOD5	42		
				NH3-N	1	2	
				Dissolved Oxygen			3

ATTACHMENT 5 – TRC Evaluation Spreadsheet

1A	B	C	D	E	F	G	H	I	J	K	L	M
	Discharger		SASOL						Tuesday, September 29, 2020			
	Site		SASOL					Revised	Thursday, April 8, 2021			
	Municipality		Cornplanter Township									
	County		Venango									
	NPDES Permit		PA0103381									
2	**TRC EVALUATION**											
3	Input appropriate values in B4:B8 and E4:E7											
4	33.6957		**= Q stream (cfs)**			**0.5**	**= CV Daily**					
5	0.0290		**= Q discharge (MGD)**			**0.5**	**= CV Hourly**					
6	30		**= no. samples**			**1**	**= AFC_Partial Mix Factor**					
7	0.4		**= Chlorine Demand of Stream**			**1**	**= CFC_Partial Mix Factor**					
8	0		**= Chlorine Demand of Discharge**			**15**	**= AFC_Criteria Compliance Time (min)**					
9	**0.5**		**= BAT/BPJ Value**			**720**	**= CFC_Criteria Compliance Time (min)**					
	0		**= % Factor of Safety (FOS)**				**=Decay Coefficient (K)**					
10	Source		Reference	AFC Calculations			Reference		CFC Calculations			
11	TRC		**1.3.2.iii**	WLA afc = 314.722			**1.3.2.iii**		WLA cfc = 308.705			
12	PENTOXSD TRG		**5.1a**	LTAMULT afc = 0.373			**5.1c**		LTAMULT cfc = 0.581			
13	PENTOXSD TRG		**5.1b**	LTA_afc= 117.273			**5.1d**		LTA_cfc = 179.467			
14												
15	Source			Effluent Limit Calculations								
16	PENTOXSD TRG		5.1f	AML MULT = 1.231								
17	PENTOXSD TRG		5.1g	↓ LIMIT (mg/l) = 0.500			BAT/BPJ					
18				(LIMIT (mg/l) = 1.635								

WLA afc	**(.019/e(-k*AFC_tc)) + [(AFC_Yc*Qs*.019/Qd*e(-k*AFC_tc))...** **...+ Xd + (AFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)**
LTAMULT afc	EXP((0.5*LN(cvh^2+1))-2.326*LN(cvh^2+1)^0.5)
LTA_afc	wla_afc*LTAMULT_afc
WLA_cfc	**(.011/e(-k*CFC_tc) + [(CFC_Yc*Qs*.011/Qd*e(-k*CFC_tc))...** **...+ Xd + (CFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)**
LTAMULT_cfc	EXP((0.5*LN(cvd^2/no_samples+1))-2.326*LN(cvd^2/no_samples+1)^0.5)
LTA_cfc	wla_cfc*LTAMULT_cfc
AML MULT	EXP(2.326*LN((cvd^2/no_samples+1)^0.5)-0.5*LN(cvd^2/no_samples+1))
AVG MON LIMIT	MIN(BAT_BPJ,MIN(LTA_afc,LTA_cfc)*AML_MULT)
INST MAX LIMIT	**1.5*((av_mon_limit/AML_MULT)/LTAMULT_afc)**

(0.011/EXP(-K*CFC_tc/1440))+(((CFC_Yc*Qs*0.011)/(1.547*Qd)....
....*EXP(-K*CFC_tc/1440)))+Xd+(CFC_Yc*Qs*Xs/1.547*Qd))*(1-FOS/100)

	Chlorine Required			=	perennial	Chlorine Demand	+ Chlorine Residual
Stream	Reach/Node			2	1	2	
Stream	Flow	Conditions			perennial	perennial	
Stream	Code				54128	54128	
	Function					unknown	
Samples					30	30	
reach	outfall		RMI		2.25	2.24	
	Reach End		RMI		2.24	2.13	
reach			feet		52.8	580.8	
drainage			sq miles		314.95	314.96	
TRC	limitation	average	mg/L		0.500	0.500	
		maximum	mg/L		1.635	1.635	
elevation		modelled	feet		985.56	985.55	
elevation		modelled	feet		985.55	984.96	
slope		modelled	foot/foot		0.000	0.001	
low flow			cfs/sq mi		0.107	0.107	
discharge			mgd		0.0280	0.0290	
Runoff	Period		hours		24.000	24.000	
No wate4r quality requirements needed.							
stream	flow		cfs		33.69465	33.69572	
stream	flow		MGD		21.777426	21.778117	
stream	flow	total	MGD		21.805426	21.807117	
stream	chlorine	demand	mg/L		0.4	0.4	
discharge	discharge	demand	mg/L				
stream	Total Stream/Waste		ratio		778.8	752.0	
permitted	TRC	mean		BAT	0.5	0.5	
permitted	TRC	maximum		BAT	1.6	1.6	

ATTACHMENT 6 – DMR Flow Data for the Previous 5-Years

DMR FLOW DATA FOR THE PREVIOUS 5-YEARS

		JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	ANNUAL AVERAGE	MAXIMUM MONTHLY AVERAGE
		MGD	MGD	MGD	MGD	MGD	MGD	MGD	MGD	MGD	MGD	MGD	MGD	MGD	MGD
2016	AVERAGE MONTHLY	0.0249	0.0229	0.0304	0.0251	0.0187	0.0234	0.0167	0.0211	0.0207	0.0223	0.0186	0.0241	0.0224083	0.0304
	MAXIMUM DAILY	0.0327	0.0323	0.0401	0.0437	0.0276	0.0442	0.0344	0.0374	0.0320	0.0442	0.0420	0.0320	0.0368833	
2017	AVERAGE MONTHLY	0.0316	0.027	0.0228	0.0277	0.0262	0.0314	0.0338	0.0137	0.0132	0.0163	0.0273	0.0169	0.0239917	0.0338
	MAXIMUM DAILY	0.0376	0.0350	0.0334	0.0459	0.0388	0.0541	0.0548	0.0283	0.0214	0.0275	0.0373	0.0252	0.0366083	
2018	AVERAGE MONTHLY	0.0246	0.0308	0.0318	0.0221	0.019	0.0241	0.0184	0.0137	0.0301	0.0216	0.029	0.0244	0.0241333	0.0318
	MAXIMUM DAILY	0.0349	0.0509	0.0642	0.3330	0.0355	0.0378	0.0305	0.0262	0.0391	0.0346	0.0360	0.0343	0.0630833	
2019	AVERAGE MONTHLY	0.0246	0.033	0.0215	0.0243	0.0236	0.036	0.0263	0.0226	0.0212	0.0194	0.0243	0.0215	0.0248583	0.036
	MAXIMUM DAILY	0.0347	0.0465	0.0399	0.0325	0.0412	0.0477	0.0495	0.0308	0.0422	0.0457	0.0363	0.0349	0.0401583	
2020	AVERAGE MONTHLY	0.025	0.0294	0.028	0.0265	0.0228	0.0162	0.0119	0.0147	0.0134	0.0139	0.0254	0.0248	0.021	0.0294
	MAXIMUM DAILY	0.0367	0.0515	0.0449	0.0432	0.0385	0.0274	0.0239	0.0248	0.0238	0.0272	0.0395	0.0405	0.0351583	

AVERAGE MAX MONTHLY FOR EACH YEAR = 0.03228 MGD
DAILY MAXIMUM AVERAGE = 0.211891667 MGD
LONG TERM AVERAGE MONTHLY FLOW = 0.023278333 MGD

ATTACHMENT 7 – ELG Calculations

Calculation of Technology Based Effluent Limitations

Case **Sasol** NPDES # **PA0103381**
Outfall **001** Wasteflow **0.028** mgd
Industry Category and Subcategory: **Organic Chemicals** **Subpart G - Bulk Organic Chemicals**
Subpart H - Specialty Organic Chemicals
Subpart I - Direct Discharge EOP Biological Trmt
Applicable ELG: 40 CFR **414.70, 414.71, 414.81, 414.91**
Production Rate Used and Basis for Selection: **Application**
Subpart G (m-cresol) 5-year average production:
lbs/year **2,800,000**
Subpart H (BHT, MBMC, & co-products) 5-year average production:
lbs/year **9,100,000**

Parameter	ELG Information			Limitations				
				Allowable Mass Loadings (lbs/day)		Allowable Concentrations (mg/l)		
	Max 1-day	Avg 30-day	Units	Max Daily	Avg Monthly	Avg Monthly	Max Daily	Inst Max
SUBPART G - Bulk Organic Chemicals								
BOD_5	92	34	mg/l					
TSS	159	49	mg/l					
pH	6 to 9 S.U.							
SUBPART H - Specialty Organic Chemicals								
BOD_5	120	45	mg/l					
TSS	183	57	mg/l					
pH	6 to 9 S.U.							
SUBPARTS G & H COMBINED (Weighted Average)								
BOD_5	113	42	mg/l	26.3	9.8			113
TSS	177	55	mg/l	41.3	12.8			177
pH	6 to 9 S.U.					6 to 9 S.U.		
SUBPART I - Direct Discharge Point Sources that use End-of-Pipe Biological Treatment								
Acenaphthene	59	22	µg/l	0.014	0.005			0.059
Acenaphthylene	59	22	µg/l	0.014	0.005			0.059
Acrylonitrile	242	96	µg/l	0.057	0.022			0.242
Anthracene	59	22	µg/l	0.014	0.005			0.059
Benzene	136	37	µg/l	0.032	0.009			0.136
Benzo(a)anthracene	59	22	µg/l	0.014	0.005			0.059
3,4-Benzofluoranthene	61	23	µg/l	0.014	0.005			0.061
Benzo(k)fluoranthene	59	22	µg/l	0.014	0.005			0.059
Benzo(a)pyrene	61	23	µg/l	0.014	0.005			0.061
Bis(2-ethylhexyl) phthalate	279	103	µg/l	0.065	0.024			0.279
Carbon Tetrachloride	38	18	µg/l	0.009	0.004			0.038
Chlorobenzene	28	15	µg/l	0.007	0.004			0.028
Chloroethane	268	104	µg/l	0.063	0.024			0.268
Chloroform	46	21	µg/l	0.011	0.005			0.046
2-Chlorophenol	98	31	µg/l	0.023	0.007			0.098
Chrysene	59	22	µg/l	0.014	0.005			0.059
Di-n-butyl phthalate	57	27	µg/l	0.013	0.006			0.057
1,2-Dichlorobenzene	163	77	µg/l	0.038	0.018			0.163
1,3-Dichlorobenzene	44	31	µg/l	0.01	0.007			0.044
1,4-Dichlorobenzene	28	15	µg/l	0.007	0.004			0.028
1,1-Dichloroethane	59	22	µg/l	0.014	0.005			0.059
1,2-Dichloroethane	211	68	µg/l	0.049	0.016			0.211
1,1-Dichloroethylene	25	16	µg/l	0.006	0.004			0.025
1,2-trans-Dichloroethylene	54	21	µg/l	0.013	0.005			0.054
2,4-Dichlorophenol	112	39	µg/l	0.026	0.009			0.112

Parameter	ELG Information			Limitations				
				Allowable Mass Loadings (lbs/day)		Allowable Concentrations (mg/l)		
	Max 1-day	Avg 30-day	Units	Max Daily	Avg Monthly	Avg Monthly	Max Daily	Inst Max
1,2-Dichloropropane	230	153	µg/l	0.054	0.036			0.23
1,3-Dichloropropylene	44	29	µg/l	0.01	0.007			0.044
Diethyl phthalate	203	81	µg/l	0.047	0.019			0.203
2,4-Dimethylphenol	36	18	µg/l	0.008	0.004			0.036
Dimethyl phthalate	47	19	µg/l	0.011	0.004			0.047
4,6-Dinitro-o-cresol	277	78	µg/l	0.065	0.018			0.277
2,4-Dinitrophenol	123	71	µg/l	0.029	0.017			0.123
2,4-Dinitrotoluene	285	113	µg/l	0.067	0.026			0.285
2,6-Dinitrotoluene	641	255	µg/l	0.15	0.06			0.641
Ethylbenzene	108	32	µg/l	0.025	0.007			0.108
Fluoranthene	68	25	µg/l	0.016	0.006			0.068
Fluorene	59	22	µg/l	0.014	0.005			0.059
Hexachlorobenzene	28	15	µg/l	0.007	0.004			0.028
Hexachlorobutadiene	49	20	µg/l	0.011	0.005			0.049
Hexachloroethane	54	21	µg/l	0.013	0.005			0.054
Methyl Chloride	190	86	µg/l	0.044	0.02			0.19
Methylene Chloride	89	40	µg/l	0.021	0.009			0.089
Naphthalene	59	22	µg/l	0.014	0.005			0.059
Nitrobenzene	68	27	µg/l	0.016	0.006			0.068
2-Nitrophenol	69	41	µg/l	0.016	0.01			0.069
4-Nitrophenol	124	72	µg/l	0.029	0.017			0.124
Phenanthrene	59	22	µg/l	0.014	0.005			0.059
Phenol	26	15	µg/l	0.006	0.004			0.026
Pyrene	67	25	µg/l	0.016	0.006			0.067
Tetrachloroethylene	56	22	µg/l	0.013	0.005			0.056
Toluene	80	26	µg/l	0.019	0.006			0.08
Total Chromium	2770	1110	µg/l	0.647	0.259			2.77
Total Copper	3380	1450	µg/l	0.789	0.339			3.38
Total Cyanide	1200	420	µg/l	0.28	0.098			1.2
Total Lead	690	320	µg/l	0.161	0.075			0.69
Total Nickel	3980	1690	µg/l	0.929	0.395			3.98
Total Zinc2	2610	1050	µg/l	0.609	0.245			2.61
1,2,4-Trichlorobenzene	140	68	µg/l	0.033	0.016			0.14
1,1,1-Trichloroethane	54	21	µg/l	0.013	0.005			0.054
1,1,2-Trichloroethane	54	21	µg/l	0.013	0.005			0.054
Trichloroethylene	54	21	µg/l	0.013	0.005			0.054
Vinyl Chloride	268	104	µg/l	0.063	0.024			0.268