pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

SOUTHCENTRAL REGIONAL OFFICE
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0037141**
Facility Type	**Industrial**	APS ID	**329677**
Major / Minor	**Minor**	Authorization ID	**834171**

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

Applicant and Facility Information

Applicant Name	**PA Fish & Boat Commission Fisheries Bureau**	Facility Name	**Huntsdale Fish Hatchery**
Applicant Address	1735 Shiloh Road	Facility Address	195 Lebo Road
	State College, PA 16801-8495		Carlisle, PA 17015-9362
Applicant Contact	Mindy Cressley	Facility Contact	James Wetherill
Applicant Phone	(814) 353-2229	Facility Phone	(717) 486-3419
Client ID	135455	Site ID	251142
SIC Code	0921	Municipality	Penn Township
SIC Description	Agriculture - Fish Hatcheries And Preserves	County	Cumberland
Date Application Received	May 10, 2010	EPA Waived?	Yes
Date Application Accepted	May 12, 2010	If No, Reason	
Purpose of Application	NPDES RENEWAL.		

Summary of Review

Maintain and implement a Manure Management Plan - BMP

Conduct fish tissue analysis for PCBs every other year

Chesapeake Bay monitoring according to PAG11 General permit for aquaculture, require all monthly phosphorus data be used for Bay reporting

Annual TSS load limit for production year from May to April, add note with TSS limits for 2 other scenarios

Report all hatchery biomass quarterly

Net limit are written for $CBOD_5$, TSS and TN with source water sampling. Affirmative defense not written

Since listed in application, prohibit use of Diquat Dibromide, indicate Aquashade is regulated as a pesticide and PFBC must obtain an individual pesticide permit to use Aquashade.

PART C chemical additive language, report therapeutic chemical usage on supplement forms, hatchery staff will treat raceways simultaneously as needed, list number of raceways that may be treated simultaneously for each chemical

PART C BMPs & additional definitions for aquatic permit

Approve	Return	Deny	Signatures	Date
X			Martin L. Ferry, P.E. / Environmental Engineer	July 2, 2014
			Jay E. Patel, P.E. / Environmental Engineer Manager	

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	varies
Latitude	40° 6’ 20”	Longitude	77° 18’ 00”
Quad Name	Dickinson	Quad Code	1827
Wastewater Description:	Treated wastewater from fish hatchery		
Receiving Waters	Yellow Breeches Creek	Stream Code	10121
NHD Com ID	56408479	RMI	43.7
Drainage Area	40.4	Yield (cfs/mi^2)	0.3159
Q_{7-10} Flow (cfs)	12.65	Q_{7-10} Basis	USGS gage 01571500
Elevation (ft)		Slope (ft/ft)	
Watershed No.	7-E	Chapter 93 Class.	HQ-CWF, MF
Existing Use	HQ-CWF, MF	Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	PCB, Pathogens		
Source(s) of Impairment	Industrial Point Source, Agriculture		
TMDL Status	Pending	Name	
Nearest Downstream Public Water Supply Intake	United Water Company		
PWS Waters	Yellow Breeches Creek	Flow at Intake (cfs)	80.5
PWS RMI	7.42	Distance from Outfall (mi)	33

Changes Since Last Permit Issuance: Construction of treatment facilities consisting of new basin receiving overtopping water, clarifier effluent & hatch house water; microscreens and associated diversion boxes, piping, and flow metering.

Facility Description

The facility is located on approximately 176 acres of which 80 acres are developed. Water supply is from multiple springs for coldwater culture (trout) and from Irishtown Run for cool/warmwater culture. Concrete raceways (Series A of 72 unit @ 6 units per channel and 12 channels, and Series C of 20 units @ 10 units per channel and 2 channels totaling 92 units) are available for production. Earthen ponds adjacent to Series C are used for warmwater production. The Series C raceways may also be used for cool/warmwater production. Series C raceways and cool/warmwater ponds adjacent to Series C raceways have not been used for several years. Series C is being used this year.

Series B raceways (72 @ 6 raceways per channel and 12 channels) are no longer used because of PCBs were found in the concrete. . Warmwater ponds below Series B raceways have not been used for production for several years.

Rectangular and circular indoor tanks are used for fish rearing in the hatch houses.

Raceways are cleaned by opening drains to remove solids collected at the ends of the raceways for drainage to clarifier.

Hatchery staff is 15 during peak periods with some staff part time during remainder of year. Visitors per day average 5 or less. A small group occasionally tours the hatchery.

Stream Flow

USGS gauge 01571500 on Yellow Breeches Creek 3.1 miles above mouth also measures the hatchery flow resulting in a greater yield rate in the basin than actually exists. The proposed monthly hatchery discharge is 12.384 MGD during September when a monthly analysis of stream flows for Yellow Breeches Creek indicates Q7-10 flow is most likely to occur and the gage flow should be adjusted by subtracting the hatchery discharge.

Gage flow = 86.8 – 12.384(1.547) = 67.64 cfs
Q7-10 runoff rate = (67.64)/ 216 = 0.3131 cfs/sq.mi.
Q30-10:Q7-10 = 94/86.8 = 1.106:1
Q1-10:Q7-10 = 81.6/86.8 = 0.9404:1
Q7-10 = 40.4(.3131) = 12.65 cfs

Stream Characteristics

The stream width is about 32' and depth is about 16" in discharge area from Bill Bott's field data during previous renewal. At WQN0212 at Bridge Street in New Cumberland, the median temperature is 20.4^{o} C and pH is 7.87 from July through September. A temperature of 20^{0} C will be used in the model since the stream is narrow and more shaded compared to network station.

Wastewater Characteristics

The overtopping water and discharge varies depending on the biomass in raceways and was reported to be represented by three periods during the previous renewal.

13.824 MGD	January thru April
11.232 MGD	May thru August
12.384 MGD	September thru December

A temperature of 20^{o} C and July through September pH of 7.14 from DMRs will be used.

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	002	Design Flow (MGD)	0.72
Latitude	40° 6' 7"	Longitude	77° 18' 39"
Quad Name	Dickinson	Quad Code	1827
Wastewater Description:	Overtopping water from Series C hatchery raceways		
Receiving Waters	Unnamed Tributary of Yellow Breeches Creek	Stream Code	63210
NHD Com ID	56408597	RMI	0.23
Drainage Area	3.2	Yield (cfs/mi^2)	0.10
Q_{7-10} Flow (cfs)	0.32	Q_{7-10} Basis	Default
Elevation (ft)		Slope (ft/ft)	
Watershed No.	7-E	Chapter 93 Class.	HQ-CWF, MF
Existing Use	HQ-CWF, MF	Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	pH		
Source(s) of Impairment	Atmospheric Deposition		
TMDL Status	Pending	Name	
Nearest Downstream Public Water Supply Intake	United Water Company		
PWS Waters	Yellow Breeches Creek	Flow at Intake (cfs)	80.5
PWS RMI	7.42	Distance from Outfall (mi)	33

Changes Since Last Permit Issuance:

Other Comments:

Stream Flow

The tributary in Irishtown Hollow Gap is not spring fed as Yellow Breeches Creek in this area as evidenced by low flows noted during previous permit renewal. A default runoff rate of 0.10 cfs/mi.^{2} yielding a flow of 0.32 cfs will be used instead of the Yellow Breeches Creek gage station.

Wastewater Characteristics

Reported that Series C racways have not been used for 5 years but is using them this year. PFBC cannot say if use will continue since they are being used for Tiger Muskelunge and need at Huntsdale is year by year. Trout are only fish with consistent production levels.

Series C Concrete raceways (20 units@ 10 runits per channel and 1 channels due to limited cold water) are used for trout production. Earthen ponds adjacent to Series C are used for warmwater production. The Series C raceways may also be used for cool/warmwater production. If warm/cool water fish are raised in Series C, overtopping water is discharged through Outfall 002. If trout are raised, overtopping water is diverted to Series A.

The application lists a maximum day design flow of 0.720 MGD however this represents 2 raceways while it was reported during previous renewal that only one raceway could be used due to limited water sources. Trout production is limited to one channel. Terry Overly reported that 2 channels are currently being used for muskies. Discharge will be evaluated using flow of 0.72 MGD.

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	003	Design Flow (MGD)	0.0003
Latitude	40° 6’ 13.00”	Longitude	77° 18’ 22.00”
Quad Name	Dickinson	Quad Code	1827
Wastewater Description:	Sewage effluent		
Receiving Waters	Yellow Breeches Creek	Stream Code	10121
NHD Com ID	56408501	RMI	44.1
Drainage Area	38.4	Yield (cfs/mi^2)	0.313
Q_{7-10} Flow (cfs)	12.02	Q_{7-10} Basis	USGS gage 01571500
Elevation (ft)		Slope (ft/ft)	
Watershed No.	7-E	Chapter 93 Class.	HQ-CWF, MF
Existing Use	HQ-CWF, MF	Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	PCB, Pathogens		
Source(s) of Impairment	Industrial Point Source, Agriculture		
TMDL Status	Pending	Name	
Nearest Downstream Public Water Supply Intake	United Water Company		
PWS Waters	Yellow Breeches Creek	Flow at Intake (cfs)	80.5
PWS RMI	7.42	Distance from Outfall (mi)	33

Changes Since Last Permit Issuance: Design flow reduced from 1500 gpd to 300 gpd with installation of new STP with septic tank and free access sand filter.

Other Comments:

Treatment Facility Summary

Treatment Facility Name: PA Fish & Boat Commission Huntsdale

Outfall 001 IW Plant

WQM Permit No.	Issuance Date
2107201	May 7, 2008

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Industrial	Tertiary	20 micron Microscreen	NA	varies

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
13.824		Not Overloaded	Holding Tank	Land Application

Changes Since Last Permit Issuance: Construction of treatment units permitted by WQM 2107201 consisting of a' polishing pond microscreen disc filters, distribution chambers to control flow direction and pump stations.

Clarifier receives raceway cleaning, filter backwash and screening building drains. Effluent flows to new duplex clarifier pump station and then to polishing pond. Clarifier is manually cleaned and solids are pumped to sludge storage tank. Previous permits required monthly cleaning of the clarifier. Solids are applied to farms listed in a Manure Management Plan. Include a condition in Part C to maintain and implement the NMP.

Overtopping water from Series A raceways and hatch house is piped to polishing pond. The new polishing pond is 100' x 440' x 4' to 5' deep. Over/under baffles are installed crosswise in pond directing water. The pond has a 60 mil HDPE liner protected by geotextile material. An underdrain system with an 8" perforated pipe is installed the length of the pond draining to a simplex pump station pumping to the old effluent channel and old pond.

The screening building contains 5 – 20 micron Hydrotech Model HSF 2112 1A microscreen disc filters receiving wastewater from the polishing pond. The filter screens are removable for cleaning, repair or changing screen micron size. Disc filters are used instead of drum filters to increase filtration area. Filters receive wastewater from an influent channel and can be isolated by slide gates. The individual filter influent channels contain overflow pipes with wing wall weirs to allow overflow to basin if problems occur with filters. Filtered water discharges to a common sump draining to the effluent pump wet well where effluent is pumped to the 30" line for metering by a parshall flume and discharge. Screens are backwashed with a spray system. Filter backwash and basin drains are pumped to clarifier or alternately to the pond.

Treatment Facility Summary

Treatment Facility Name: PA Fish & Boat Commission Huntsdale

Outfall 003 SFTP

WQM Permit No.	Issuance Date
WQG01210703	May 7, 2008

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Tertiary	Septic Tank Sand Filter W/Sol Removal	Tablet chlorinator	0.000300

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.0003		Not Overloaded		

Changes Since Last Permit Issuance: A small flow system was installed. Design capacity of the treatment system was reduced from 1500 gpd in the previous NPDES permit to 300 gpd.

Compliance History

DMR Data for Outfall 001 (from May 1, 2012 to April 30, 2013)

Parameter	May 12	Jun 12	Jul 12	Aug 12	Sep 12	Oct 12	Nov 12	Dec 12	Jan 13	Feb 13	Mar 13	Apr 13
Flow (MGD) Average Monthly	10.4752	10.5846	10.7622	10.5814	10.1530	10.0766	10.7561	10.5123	10.7046	10.8041	10.9351	11.4936
Flow (MGD) Daily Maximum	10.8721	10.9769	10.9019	11.1237	10.4368	10.3580	10.8366	10.5688	10.8440	10.8041	10.9814	12.6181
pH (S.U.) Maximum	7.8	7.7	7.7	7.6	7.5	7.4	7.5	7.2	7.2	7.2	7.1	7.2
pH (S.U.) Minimum	7.6	7.7	7.5	7.4	7.3	7.3	7.2	7.2	6.9	6.9	6.9	6.9
DO (mg/L) Instantaneous Minimum	10.5	11.2	10.7	10.5	10.3	10.4	10.3	10.7	10.3	10.4	10.3	10.2
CBOD5 (lbs/day) Average Monthly	175	177	184	176	169	168	179	184	182	183	187	193
CBOD5 (lbs/day) Daily Maximum	181	183	193	186	174	173	180	211	199	192	201	221
CBOD5 (mg/L) Average Monthly	< 2.0	< 2.0	< 2.1	< 2.0	< 2.0	< 2.0	< 2.0	< 2.1	< 2.0	< 2.0	< 2.1	< 2.0
CBOD5 (mg/L) Daily Maximum	< 2.0	< 2.0	2.2	2.0	< 2.0	< 2.0	2.0	2.4	2.2	2.1	2.2	2.1
TSS (lbs/day) Average Monthly	65	80	38	64	46	92	85	105	84	83	98	130
TSS (lbs/day) Daily Maximum	109	101	54	102	83	126	117	183	195	144	110	181
TSS (mg/L) Average Monthly	0.7	0.9	0.4	0.7	0.6	1.1	1.0	1.2	0.9	0.9	1.1	1.4
TSS (mg/L) Daily Maximum	1.2	1.1	0.6	1.1	1.0	1.5	1.3	2.1	2.2	1.6	1.2	2.0
Total Suspended Solids (lbs) Total Annual	27734	27609	26150	24196	22438	22649	23643	25903	26509	26734	27809	29556
Total Suspended Solids (lbs) Total Monthly	2006	2391	1186	1980	1369	2857	2557	3254	2590	2419	3039	3908
Nitrate-Nitrite (mg/L) Average Monthly	< 1.160	< 1.1875	< 1.157	< 1.179	< 1.201	0.94	1.04	1.015	0.68	1.303	1.2215	1.2665
Nitrate-Nitrite (lbs) Total Monthly	3188	3114	104	3292	3125	2502	2795	2762	1890	3437	3447	3432
Total Nitrogen (mg/L) Average Monthly	< 1.5860	< 1.6235	< 2.235	< 1.601	< 1.950	< 1.94	2.085	< 2.015	< 1.68	1.913	1.7775	< 1.9915

Parameter	May 12	Jun 12	Jul 12	Aug 12	Sep 12	Oct 12	Nov 12	Dec 12	Jan 13	Feb 13	Mar 13	Apr 13
Total Nitrogen (lbs) Total Annual	50590	51023	52338	53380	55818	57492	57414	57521	56802	57875	59092	60818
Total Nitrogen (lbs) Total Monthly	4359	4257	6251	4469	5076	5163	5632	5482	4666	5048	5017	5398
Ammonia (lbs/day) Average Monthly	9	10	9	19	14	30	28	43	58	28	31	23
Ammonia (lbs/day) Daily Maximum	9	11	9	24	15	41	33	47	59	31	35	30
Ammonia (mg/L) Average Monthly	< 0.1	< 0.1	< 0.1	0.2	0.2	0.4	0.3	0.5	0.6	0.3	0.3	0.3
Ammonia (mg/L) Daily Maximum	< 0.1	0.1	< 0.1	0.3	0.2	0.5	0.4	0.5	0.7	0.3	0.4	0.3
Ammonia (lbs) Total Monthly	275	292	281	578	416	933	852	1333	1786	801	957	694
TKN (mg/L) Average Monthly	< 0.426	< 0.4360	< 1.078	< 0.4220	< 0.7490	< 1.0	1.05	< 1.0	< 1.00	0.6100	0.5560	< 0.725
TKN (lbs) Total Monthly	1171	1143	3020	1176	1951	2661	2838	2720	2776	1611	1570	1967
Total Phosphorus (lbs/day) Average Monthly	4	4	3	4	5	4	5	9	9	5	6	6
Total Phosphorus (lbs/day) Daily Maximum	4	4	3	4	5	4	5	9	9	5	6	7
Total Phosphorus (mg/L) Average Monthly	0.04	0.04	0.03	0.04	0.06	0.05	0.06	0.1	0.1	0.05	0.07	0.07
Total Phosphorus (mg/L) Daily Maximum	0.04	0.04	0.03	0.04	0.06	0.05	0.06	0.1	0.1	0.06	0.07	0.08
Total Phosphorus (lbs) Total Annual	2443	2284	2147	1883	1821	1752	1766	1869	1879	1851	1852	1891
Total Phosphorus (lbs) Total Monthly	110	105	84	112	143	120	162	272	278	132	183	190
Formaldehyde (lbs/day) Average Monthly	GG	3	4	1	0.4	0.9	< 2	0.4	GG	GG	GG	GG
Formaldehyde (lbs/day) Daily Maximum	GG	3	4	2	0.9	0.9	4	1	GG	GG	GG	GG
Formaldehyde (mg/L) Average Monthly	GG	0.04	0.03	0.02	0.01	0.01	< 0.02	< 0.005	GG	GG	GG	GG
Formaldehyde (mg/L) Daily Maximum	GG	0.04	0.04	0.02	0.01	0.01	0.04	0.01	GG	GG	GG	GG

DMR Data for Outfall 002 (from May 1, 2012 to April 30, 2013)

Parameter	May 12	Jun 12	Jul 12	Aug 12	Sep 12	Oct 12	Nov 12	Dec 12	Jan 13	Feb 13	Mar 13	Apr 13
No discharge in past year.												

DMR Data for Outfall 003 (from May 1, 2012 to April 30, 2013)

Parameter	May 12	Jun 12	Jul 12	Aug 12	Sep 12	Oct 12	Nov 12	Dec 12	Jan 13	Feb 13	Mar 13	Apr 13
Flow (MGD) Average Monthly	0.000605	0.000994	0.000994	0.000994	0.0006	0.000605	0.000605	0.0006	0.0006	0.00060	0.0006	0.0006
Flow (MGD) Daily Maximum	0.000605	0.000994	0.000994	0.000994	0.0006	0.000605	0.000605	0.0006	0.0006	0.00060	0.0006	0.0006
pH (S.U.) Maximum	6.4	6.4	6.5	6.4	6.4	6.4	6.4	6.4	6.5	6.6	6.4	6.2
pH (S.U.) Minimum	6.4	6.4	6.5	6.4	6.4	6.4	6.4	6.4	6.5	6.6	6.4	6.2
TRC (mg/L) Average Monthly	8.51	9.27	5.83	10.0	0.18	> 10.0	0.15	9.38	> 10.0	> 10.0	> 10.0	> 10.0
CBOD5 (mg/L) Average Monthly	7	3	3	< 2	3	9	< 2	2	< 2	4	< 2	4
TSS (mg/L) Average Monthly	4	1	1	3	3	1	1	2	2	2	2	5.0
Fecal Coliform (CFU/100 ml) Average Monthly	< 2	< 2.0	< 2	< 2.0	< 2.0	< 1	< 10	< 1	< 1	< 2.0	< 2.0	< 2.0

ompliance History

Effluent Violations for Outfall 001 (from May 1, 2012 to April 30, 2013)

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
No violations to report						

Summary of Inspections:
1/8/13 – Effluent clear, met field limits, sludge hauled 1 to 3 times per year, pond cleaned annually, 1 microscreen being repaired
1/14/12 – Effluent clear, effluent met field limits, retention pond cleaned Sept 2011, has to bypass microscreens during heavy rains, bypasses reported to DEP
12/14/10 – treatment facility upgraded, pond cleaned Sept 2010, effluent met field limits

Other Comments:

Effluent Violations for Outfall 002 (from May 1, 2012 to April 30, 2013)

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
No violations to report						

Summary of Inspections:

Other Comments:

Effluent Violations for Outfall 003 (from May 1, 2012 to April 30, 2013)

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
No violations to report						

Summary of Inspections:
1/8/13 – sampled from CCT, met field limits
1/4/12 - sampled from CCT, met field limits
12/14/10 - sampled from CCT, met field limits

Other Comments:

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 13.824
Latitude 40° 6' 18.00" **Longitude** 77° 18' 1.00"
Wastewater Description: Treated wastewater from fish hatchery

Technology-Based Limitations

The following technology-based 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) (1)
TSS	30	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1) (1)
$CBOD_5$	10	Daily Maximum		PAG-11
TSS (net)	20	Daily Maximum		PAG-11
TN (net)	20	Daily Maximum		PAG-11
Dissolved Oxygen	6.0	Minimum		PAG-11

(1) Fish waste characteristics are similar to sewage

Comments:

Water Quality-Based Limitations

A "Reasonable Potential Analysis" determined the following parameters were candidates for limitations:

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

Parameter	Limit (mg/l)	SBC	Model
$CBOD_5$	23	Average Monthly	WQM 7.0
NH_3-N	2.2	Average Monthly	WQM 7.0
Dissolved Oxygen	6.5	Minimum	WQM 7.0

Comments:

Stream Surveys

Surveys conducted on 7/20/99 and 11/16/00 found the stream adversely affected by the Huntsdale FCS discharge. The first survey found hatchery solids and a moderate to heavy growth of aquatic vegetation below the discharge and classified the station as slightly impacted using the RBP method. The second survey found fewer solids, elevated $CBOD_5$, moderate to heavy growth of aquatic vegetation, and a small amount of filamentous algae. Scoring indexes indicated a greater shift toward pollution tolerant macroinvertabrates. The station was severely impacted using the RBP method and the impacted condition was attributed to the instream $CBOD_5$ level of 3.3 mg/l but therapeutic chemicals cannot be eliminated as contributing to impairment. A third survey was conducted on April 26, 2001 showing results similar to the previous surveys although the water chemistry did not show elevated levels of pollutants. This report states that about 1.26 miles of Yellow Breeches Creek are impacted by the hatchery discharge.

A survey was conducted on June 18, 2003 by Robert Schott to determine if the pond improvements and raceway baffles had eliminated the impact to Yellow Breeches Creek. This survey reported the stream was severely impacted at stations 2 & 3 and moderately impacted at station 4. Station 2 is about 160 meters downstream of the discharge, station 3 is about 10 meters upstream of Enck's Mill Road Bridge and station 4 is about 10 meters downstream from the Montsera Road Bridge. While the stream remains impaired, the survey showed smaller numbers of pollution tolerant species. The recovery of Big Spring Creek following hatchery closing has been slow indicating that recovery will be a slow process and that this survey may have been conducted too soon to fully document the benefit of the hatchery improvements.

Best Professional Judgement (BPJ) Limitations

TSS

The numerical limits of 3.0 and 3.5 mg/l for $CBOD_5$ and TSS respectively were set to maintain existing performance, compliance about 90% of the time when they were developed during previous permit renewal, and require optimized operations regarding raceway cleaning and minimizing feed waste. To minimize feed waste, PFBC assigned one person with responsibility for feeding. These limits should be continued to maintain monthly plant performance even though effluent limits are easily met with microscreens operating.

Because TSS were believed to be the major cause of impairment, analyses of effluent TSS and stream conditions were conducted to determine a TSS loading that would eliminate stream impairment. The analyses determined that an Index of Biological Integrity (IBI) of 50% would be maintained at a TSS loading of 5.96 pounds per million gallons of combined stream flow and waste water. Because of the uncertainties of the analyses, it was decided to use the 80% confidence interval resulting in a loading of 8.68 #/million gallons. The graph is attached. The impact of TSS is not immediate and the TSS limit based on this analysis will be an annual loading limit as applied to pollutants acting similarly such as total nitrogen and total phosphorus for the Chesapeake Bay permitting. The total annual TSS load limit is not a net limit. The loading analysis was of the total load consisting of effluent and stream background levels. Since the resulting annual TSS limit incudes the source water TSS, the source water TSS must not be subtracted from the effluent TSS.

When Outfall 001 is the only discharge, the annual mass loading is 65,348 pounds. When Outfall 002 discharges during April through September because of trout production as reported the wastewater will receive treatment through the pond and filter, the TSS load from both outfalls must be combined resulting in an annual TSS mass loading of 65,920 pounds. If production in Series C is other than trout the overtopping water will discharge from Outfall 002 and the allowable loading from Outfall 002 is 3,846 lbs/yr. @ 3.5 mg/l & 0.72 MGD (2 raceways) from April through September for a total of 69,194 lbs/year. The loading from outfall 002 is increased from previous renewal because the SOP applicable to IW dischargers directs use of maximum day flow for developing effluent limits. A spreadsheet with TSS loading calculations is attached.

If PFBC exceeds the annual loading limit, PFBC will reduce the fish production biomass by 1900 lbs for every 1000 lbs of annual TSS exceedance for the next production year. The reduction is based on the slope of the regression analyses determining the TSS loading in pounds per million gallons during previous renewal. Continue the current PART C condition for TSS annual load limit updated for discharge and stream flows.

WQM 7.0 Modeling

The discharge was modeled using WQM7.0 to determine WQBELs for $CBOD_5$, NH_3-N and Dissolved Oxygen. A printout is attached listing the effluent limits as shown in the Water Quality Based Limitations table above. The limits are less stringent than those in the existing permit but the existing limits are met and will be continued due to antibacksliding requirements of Clean Water Act §402(o)(2)(B)(i) and also because the modeled limits do not protect the stream. The existing TSS and $CBOD_5$ were written because the previous TSS and modeled $CBOD_5$ limits resulted in an impaired receiving stream. The TSS and $CBOD_5$ limits were statistically developed such that Huntsdale would not be in immediate in immediate violation while requiring them to optimize treatment. The same concentrations and mass loads will be written: TSS of 3.5 mg/l, $CBOD_5$ of 3.0 mg/l and NH_3-N of 1.4 mg/l.

Additional Considerations

Chesapeake Bay

The hatchery is a non-significant IW. The SOP states that monitoring should generally be written for TN and TP where there is the possibility of a net increase in comparison to source waters in accordance with the Chesapeake Bay Phase II WIP Supplement. The Chesapeake Bay Watershed Implementation Plan (WIP) requires these facilities to monitor Bay nutrients throughout the permit term. The WIP does not specifically mention this category when indicating sampling frequencies.

PAG-11 and draft PAG-14 (HQ receiving stream) set the sampling frequency at 1/quarter with reporting for ammonia and phosphorus and a 20 mg/l net TN. All requirements are maximum daily. Annual reporting of an average or other loading is not required. List 1/quarter reporting requirements for TN, NO_3-NO_2, TKN, NH_3-N & TP. All monthly phosphorus data from weekly sampling to demonstrate compliance with 2 mg/l effluent limit must be used for Bay reporting.

Phosphorus

The present limit of 2 mg/l is based on the Department's implementation guidance for phosphorus and will continue until a TMDL is developed allocating phosphorus loadings per Chapter 96.5I or a water quality standard is developed.

Sampling Frequencies

$CBOD_5$, TSS & phosphorus – 1/week per the Permit Writers Manual
D.O. & pH – 1/week because of consistent levels and as written in PAG-11.
Bay TN, NO_3-N and NO_2-N – 1/quarter as written in PAG-11

Net Limits

PAG11 specifies net limits for BOD_5, TSS and TN. Include net limits for TKN, NO_2-N and NO_3-N as components of TN.

Biomass Reporting

Continue requirement to report fish biomass in writing on a quarterly basis for Series A and Series C raceways. Submit report with DMR for last month of calendar quarter.

Affirmative Defense

A PART C condition in previous permit provided affirmative defense of effluent limit non-compliance of TSS and $CBOD_5$ resulting from high source water concentrations. Permittee would maintain a sufficient database on which to characterize typical background concentraitons. After documenting with DEP approval that facility was properly operated at time of violation and that source concentration was cause of violation, the annual total load could be adjusted.

Recent permit(s) have been issued with net limits for $CBOD_5$ and TSS with no need for an affirmative defense written in the permit. Recommend writing net limits without an affirmative defense.

PCBs

During previous renewal process, Huntsdale hatchery was considered a likely source of PCBs and extensive work was done that resulted in finding PCBs in Raceway B concrete. Consequently, production ceased in Raceway B and the raceways were coated to seal the PCBs in the concrete. The previous permit contained *Biological Monitoring Requirements for PCBs* consisting of analyzing fish tissue for the following specific Aroclors: 1221, 1232, 1242, 1248, 1254 and 1260. Recommend continuing analyses of upstream and downstream white sucker tissue because the PCB based fish consumption advisory remains in effect. Recommend analysis frequency be reduced from annual to every 2 years.

Therapeutic Chemicals

Bioassay

Many of the chemicals used by PFBC do not have criteria and there is reasonable concern regarding their toxicity so DEP and PFBC developed a bioassay procedure to evaluate hydrogen peroxide, Diquat, Roccal II and Chloramine-T. Two hatcheries were selected to represent different alkalinity levels; Oswayo @ <100 mg/l and Benner Spring @ > 100 mg/l. Ceriodaphnia dubia, Pimephales promelas and Selanastrum capricornutum species were tested. A revised "Results of Acute Toxicity Tests" was received on 10/29/03. The report lists acute toxicity results for the subject therapeutic chemicals tested using the hatchery effluents and receiving streams. The LC50s or IC25s for the most sensitive species are used to determine effluent levels by developing the safe instream levels at each hatchery by mass balancing the Report LC50s for the effluent and stream and applying the 0.3 application factor from EPA's *Technical Support Document for Water Quality-based Toxics Control* (1991). This safe instream level is used to develop the allowable application rate by mass balancing the stream at zero concentration and the discharge. A spreadsheet printout presenting the bioassay the results is attached.

Drug/Chemical	Application Rate (lbs./day)	In System (mg/l)	Label Rate (mg/l)	Bioassay/Pentoxsd (mg/l)
Fomalin Formaldehyde	1.4 avg 7.5 max	66-667	250 mg/l fish** 2,000 mg/l eggs**	3.5***
35% Perox-Aid Hydrogen Peroxide	40 avg 92 max	250-300	50-200**	58
Terramycin TM 200F	2.0 avg 4.0 max	16.35 gm/100 lbs. fish	10 gm/100 lbs. fish*	
Terrmaycin 343	2.2 avg 3.6 max	18	20**	
Professional Lysol	0.4 avg 0.9 max	0.25 to 1.0	2*	
Chloramine T	6.2 avg 10.5 max	16 to 20	20*	26
Diquat Dibromide	2.9 avg 4.0 max	8 to 16	2 to 28*	
Romet TC	2.6 avg/max	10 gm/100 lbs. fish	23 mg/lb fish**	
Aquaflor Florfenical	0.04 avg 0.08 max	10 mg/kg fish		
Slime & Grime	8 avg/max	1 lb/3 gal water		
Aquashade	16 avg 18 max	0.25 gal/acre foot		
Sodium Chloride	300 avg 500 max	0.0023% water volume		

* INAD
** Veterinary Medical Doctor
*** Based on AFC

The bioassays results for Chloramine T, hydrogen peroxide and Professional Brand Lysol will be used to evaluate those chemicals. Other therapeutics will be evaluated using the INAD or VMD (veterinary doctor) levels with exception of Formalin that will include formaldehyde WQBEL. I discussed some differences among PFBC dosages and INAD or VMD dosages with Coja Yamashida specifically Romet TC which is significant. He said PFBC will only apply therapeutics up to the INAD or VMD approvals. He will look into why they are different.

Chloramine T
The application reports a dosage rate of 16 to 20 mg/l. The recently submitted INAD for Chloramine T continues the same dosage of 20 mg/l reported during the last renewal. The raceway concentrations evaluated during this renewal range from 26.2 to 30.5 mg/l depending on raceway flows. Chloramine T may be applied as reported in the renewal application to 1 raceway at a time.

Hydrogen Peroxide (PeroxAid 35%)
The application reports a dosage rate of 250 to 300 mg/l. The recently submitted VMD dosage for hydrogen peroxide is 50 to 500 mg/l depending on disease or other problem. The raceway concentrations evaluated during this renewal range from 58.5 to 63.0 mg/l depending on raceway flows. PFBC conducted a decay study in 2004 of H_2O_2 through the hatchery to determine how quickly it decayed. A raceway concentration of 200 mg/l decayed to meet the 2004 bioassay limit of about 5 mg/l. Terry Overly and Coja Yamashita both stated that application dosage at Huntsdale did not exceed 100 and possibly 120 mg/l because of increased mortality. Hydrogen peroxide can be applied at these levels to 2 raceways simultaneously.

Professional Lysol Brand No-Rinse Sanitizer
The application reports a dosage rate of 0.25 to 1.0 mg/l. The recently submitted INAD dosage is 2 mg/l. The raceway concentrations evaluated during this renewal range from 8.4 to 9.1 mg/l depending on raceway flows. Professional Lysol may be applied as reported in the renewal application to 4 raceway simultaneously.

Terramycin TM 200F
The application reports a dosage rate of 16.35 gm/100 lbs. fish applied via feed. The recently submitted INAD dosage is 10 gm/100 lbs fish. Terramycin TM 200F may be applied as reported in the INAD to 1 raceway at a time.

Terramycin 343
The application reports a dosage rate of 18 mg/l. The recently submitted VMD dosage is 20 mg/l. Terramycin 343 may be applied as reported in the NPDES renewal applicaiton to 1 raceway at a time.

Diquat Dibromide
Diquat Dibromide was not evaluated since Terry Overly reported it is not used at Huntsdale because of the over application or spill by B&W Growers impacting Letort Spring Run in the early 80's causing a fish and plant kill. Since it is listed in the renewal application, write condition in permit prohibiting use of Diquat Dibromide

Romet TC
The application reports a dosage rate of 10 gm/100 lbs. fish applied via feed. The recently submitted VMD dosage is 23 mg/1 lb fish or 2.3 gm/100 lbs fish. Coja Yamashida explained the difference is due to the VMD rate being for the active ingredient instead of the entire product. He did the conversion from active ingredient to total product allowing a dosage of 11.5 gm/100 lbs fish. Romet TC may be applied as reported 1 raceway at a time.

Epsom Salts
PFBC will no longer use Epsom salts in its hatcheries. Central Office was working on a list of therapeutic chemicals used at hatcheries and noticed Epsom salts does not have FDA or INAD approval by ingestion. A February 24, 2014 email to Coja Yamashita from Alfred Montgomery, FDA Center for Veterinary Medicine, stated Epsom salts could not be used on fish consumed by humans.

Florfenical
Central Office reviewed PFBC request ot use Florfenicol to treat bacterial infections. Florfenicol may be used provided the maximum dosage rate results in a nondetect effluent level using a method reporting limit of 150 µg/l. Central Office sent a December 13, 2010 email to the regions reporting the dosage rates at the hatcheries so the effluent levels were < 0.150 µg/l when averaged over the daily flow rates of the facilities. Approved Huntsdale dosages are 0.02 lb/day average and 0.40 lb/day maximum; the average is provided for information only. The reported maximum dosage in the application is 0.08 lbs/day so the effluent level will be less than the target 150 µg/l. Florfenicol may be applied as listed in the application.

Formalin
Formalin is 37% formaldehyde which is a gas at room temperture. The existing permit contained formaldehyde limits. The reported application rates are 1.4 lbs/day average and 7.5 lbs/day maximum with treatment concentrations of 68 to 667 mg/l. Formalin use is limited to treating eggs (667 mg/l) and fry in the hatch houses. Pentoxsd modeling results in a formaldehyde limit of 0.70 mg/l at 13.824 MGD based on CFC. For a brief discharge, if AFC is considered the limit is 3.5 mg/l. The coldwater hatch house flow is 50 gpm. Coja Yamashita said treatment lasted 15 minutes. At a 667 mg/l dosage rate and 50 gpm the effluent level is 4.27 mg/l without consideration of off gassing and additional mixing of the discharge as the 15 minute slug flows through the clarifier, polishing pond and microscreens. eDMRS from Jan 2011 through December 2013 show a maximum formaldehyde level of 0.28 mg/l. Formalin may be used in the hatch house without further monitoring or limits in the permit.

Aquashade
Aquashade is a dye stored at Huntsdale used to prevent light penetration and reduce algae growth in ponds. It can't be used in ponds in the Raceway C area because it colored wells adjacent to the ponds. When asked if PFBC would remove Aquashade, Terry Overly said it could be used in ponds adjacent ot the new polishing pond if those ponds are returned to production. Pentoxsd shows a CFC based limit of 2.9 mg/l and an AFC based limit of 26 mg/l if discharged at the maximum hatchery flow of 13.28 MGD. The renewal application reports Aquashade dosage at 0.25 gallons per acre foot. An acre foot is 325,828 gallons so the resultant concentration is 0.77 mg/l. Aquashade intended to remain in the pond and will not be discharged unless the pond is drained. Add note to permit that Aquashade is regulated as a pesticide and PFBC must obtain an individual pesticide permit to use Aquashade.

Slime & Grime
Lime & Grime is used to remove biofilm from the disc screens in the microscreens. The cleaner is mixed at rate of 1 lb. per gallon of water and applied using a tank sprayer or pressure washer to the plates while installed in the microscreens. If additional cleaning is required, screen plates are removed from the microsreens and cleaned in a basin. Maximum use is reported as 8 lbs./day resulting in an effluent concentration of 0.08 mg/l; well less than the THH criterion of 14.3 mg/l and aquatic criterion of <1000 mg/l.

Simultaneous Raceway Applications

Huntsdale staff will apply therapeutics to raceways simultaneously as needed although some should not be applied simultaneously. List the number of raceways that may be treated simultaneously for each chemical.

Therapeutic	No. of Raceways
Chloramine T	1
Hydrogen Peroxide (Peroxaid 35%)	2
Professional Lysol	4
Terramycin TM 200F	1
Terramycin 343	1
Romet TC	1
Florfenical	4
Formalin	NA
Slime & Grime	NA

Report therapeutic chemical usage on supplemental forms.

Development of Effluent Limitations

Outfall No. 002 **Design Flow (MGD)** 0.576 avg (0.72 max day)
Latitude 40° 6' 7.00" **Longitude** 77° 18' 38.00"
Wastewater Description: Wastewater from Series C hatchery raceways

Technology-Based Limitations

The following technology-based 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) (1)

(1) - Fish waste characteristics are similar to sewage

Water Quality-Based Limitations

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

Parameter	Limit (mg/l)	SBC	Model
$CBOD_5$	16	Average Monthly	WQM 7.0
NH_3-N	0.9	Average Monthly	WQM 7.0
Dissolved Oxygen	7.0	Minimum	WQM 7.0

Additional Considerations

Discussed operation of Series C raceways and cool/warm water ponds adjacent to Series C with Terry Overly. Series C raceways and cool/warm water ponds were not used in last five years however, Terry Overly said Series C production would restart this year because of a short term need. If PFBC scheduled production at Huntsdale, Tiger muskellunge could be raised in raceways and striped bass could be raised in ponds. Tiger muskellunge would be raised from June through September. During previous renewal, DEP confirmed that all water from ponds drained to Series C drains going to clarifier and none was discharged through outfall 002.

Trout production in Series C raceways is restricted to one raceway by limited water source resulting in a discharge of 0.288 MGD (0.576/2). If trout are raised in raceway, overtopping water is diverted to Series A raceways. If other fish are raised, overtopping water is discharged through outfall 002. Application lists a max day discharge of 0.720 MGD and a mon avg discharge of 0.576 MGD. The existing permit limitations were based on a desing flow of 0.288 MGD. SOP Establishing Effluent Limitations for Individual Industrial Permits states the design flow for modeling is the maximum daily flow. Terry Overly confirmed by email dated June 27 that cool/warm water production in Series C raceways uses both raceways so modeling will be done at the 0.72 MGD maximum day discharge.

Because of the known problems in Yellow Breeches Creek during previous renewal, the effluent limitations for $CBOD_5$ and TSS in the previous permit were set matching outfall 001 before BMPs took effect. The previous WQM7.0 model result for NH_3-N of 0.6 mg/l limit was more stringent than the modeled 001 limit so 0.6 mg/l was written. The discharge was modeled using WQM7.0 resulting in the WQBEL limits listed in above table. The existing limit of 0.6 mg/l remains more stringent than the present modeled limit of 0.9 mg/l and will be continued. The existing limits were written the same as 001 because of impaired stream status. Recommend writing the same limits; TSS is 3.5 mg/l, $CBOD_5$ is 3.0 mg/l, phosphorus is 2.0 mg/l and NH_3-N is 0.60 mg/l.

Therapeutic Chemicals

Report therapeutic chemical usage using supplemental forms.

Development of Effluent Limitations

Outfall No.	003	**Design Flow (MGD)**	0.0003
Latitude	40° 6' 13.00"	**Longitude**	77° 18' 22.00"

Wastewater Description: Sewage effluent

Technology-Based Limitations

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

Pollutant	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	133.102I	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)

Water Quality-Based Limitations

If modeled, WQM 7.0 model results would be secondary treatment based on small discharge of 0.0003 MGD and the stream flow of 12.02 cfs at 003. The discharge from Outfall 003 existed prior to the classification of Yellow Breeches Creek as HQ-CWF. The existing limits have been written through several permit cycles based on antibacksliding requirements of Clean Water Act Section 402(o)(1) and are continued with addition of TRC limits and fecal coliform IMAX.

Recommend continuing existing limits of average monthly 20 mg/l for TSS & $CBOD_5$, year round monthly average 200 for fecal coliform, pH of 6 to 9, and add TRC limit of 0.5 mg/l. All sampling frequencies are 1/month by grab sample.

Total Residual Chlorine

Disinfection is by tablet chlorinator with pumped influent. TRC is sampled 1/month with a report requirement in the permit. In the last 12 months, TRC was <0.2 mg/l two months, >10 mg/l 6 months and between 5.8 and 9.8 mg/l remaining months. Talked to Terry Overly about high TRC levels. June and July 2013 TRC levels were <0.2 mg/l. He said they cut back to four tablets in two tubes for aobut a year and levels are still variable and high. Fecal coliform levels during this period were 4, 10 and the rest <1 or <2 mg/l. Before calling, I thought the pump rate may be great enough to severely erode tablets and the low TRC levels resulted from sufficient time between pump feed and sample time for TRC to be reduced by chlorine demand. During WQM permit review, the pump was changed to a smaller pump with a design flow of 20,000 gpd or 13.6 gpm compared to the tablet chlorinator design flow of 13.9 gpm and a maximum flow of 100,000 gpd or 69.4 gpm. Terry Overly did not know if the pump eroded the tablets quickly although he reported tablets last a month or so.

Options are to check operation of pump and possible installation of valve to reduce flow or installation of tablet dechlorinator which may be the better option. Recommend writing interim reporting and a final limit of 0.5 mg/l allowing nine months to meet limit.

Sewage Flow

Potable water source is a spring that is chlorinated. The system is not metered. Staff varies with some part time during the year and extremely variable visitor numbers with some tours boosting a day's total. Additonal wastewater source are basins, etc. in which equipment may be cleaned. I mentioned there are inexpensive water meters and asked if more

water might be used for uses such as washing, etc. not going to sewage. Terry Overly said that was correct minimizing metering usefulness. A meter could be added between the pump and the tablet chlorinator although will continue to accept estimated flows.

Chesapeake Bay Requirements

Chesapeake Bay requirements do not apply to facilities =< 2,000 gpd.

PART C Minimum BMPs

The permittee must implement the following BMPs, at a minimum.

A. All Facilities

1. Non-Native Species

   Measures must be taken to prevent the escape of non-native species to the receiving waters. The BMP Plan must include a schedule for preventative maintenance and inspection of the containment system, escape recovery protocols, and fish transfer procedures during stocking and grading.

2. Agricultural Waste Management

   Agricultural waste material (manure) removed from the facility must be disposed of or utilized in accordance with applicable Pennsylvania law and regulations. If land application of manure is utilized, management must be done in accordance with DEP's Manure Management for Environmental Protection (361-0300-001) and Land Application of Manure (361-0300-002). The BMP Plan shall identify the location(s) of disposal or land application, land application rates, and methods for determining land application rates, including the Nitrogen and Phosphorus content of the manure. If land application is used, include a map identifying the location(s) and delineating the field boundaries.

3. Training

   a. In order to ensure the proper clean-up and disposal of spilled material adequately train all relevant facility personnel in spill prevention and how to respond in the event of a spill.

   b. Train staff on the proper operation and cleaning of production and wastewater treatment systems including training in feeding procedures and proper use of equipment.

B. Flow-Through and Recirculating Systems

1. Solids Control

   a. Employ efficient feed management and feeding strategies that limit feed input to the minimum amount reasonably necessary to achieve production goals and sustain targeted rates of aquatic animal growth in order to minimize potential discharges of uneaten feed and waste products to waters of the Commonwealth.

   b. In order to minimize the discharge of accumulated solids from settling ponds and basins and production systems, identify and implement procedures for routine cleaning of rearing units and off-line settling basins, and procedures to minimize any discharge of accumulated solids during the inventorying, grading and harvesting aquatic animals in the production system.

   c. Remove and dispose of aquatic animal mortalities properly on a regular basis to prevent discharge to waters of the Commonwealth.

2. Materials Storage

   a. Ensure proper storage of drugs, pesticides, and feed in a manner designed to prevent spills that may result in the discharge of drugs, pesticides or feed to waters of the Commonwealth.

b. Implement procedures for properly containing, cleaning, and disposing of any spilled material.

3. Structural Maintenance

a. Inspect the production system and the wastewater treatment system on a routine basis in order to identify and promptly repair any damage.

b. Conduct regular maintenance of the production system and the wastewater treatment system in order to ensure that they are properly functioning.

4. Recordkeeping

a. In order to calculate representative feed conversion ratios, maintain records for aquatic animal rearing units documenting the feed amounts and estimates of the numbers and weight of aquatic animals.

b. Keep records documenting the frequency of cleaning, inspections, maintenance and repairs.

PART C Additional Definitions

Additional Definitions for Aquatic Animal Production:

Approved dosage means the dose of a drug that has been found to be safe and effective under the conditions of a new animal drug application. (40 CFR 451.2(b))

Aquatic animal containment system means a culture or rearing unit such as a raceway, pond, tank, net or other structure used to contain, hold or produce aquatic animals. The containment system includes structures designed to hold sediments and other materials that are part of a wastewater treatment system. (40 CFR 451.2(c))

Aquatic animal production facility means a hatchery, fish farm or other facility that produces harvestable freshwater, estuarine, or marine animals, whether or not it meets the criteria for a CAAP in 40 CFR Part 122, Appendix C or has been designated as a CAAP in accordance with 40 CFR Part 122.24(c).

BOD_5 means 5 day biochemical oxygen demand.

Concentrated Aquatic Animal Production (CAAP) Facility means a hatchery, fish farm or other facility which meets the criteria in 40 CFR Part 122, Appendix C, or which the Department designates under the criteria in 40 CFR 122.24(c). A facility is defined as a CAAP facility by 40 CFR Part 122, Appendix C if it: (1) contains, grows or holds fish in raceways, ponds and other similar structures; (2) discharges pollutants to surface waters during at least thirty (30) days per year; and (3) meets either of the following criteria for production or feeding:

- Produces 20,000 pounds or more of cold water fish per year or feeds 5,000 pounds or more of food in the calendar month of maximum feeding; OR
- Produces more than 100,000 pounds of warm water fish per year.

Chemical means any substance that is added to the aquatic animal production facility to maintain or restore water quality for aquatic animal production and that may be discharged to waters of the Commonwealth.

Drug means any substance defined as a drug in Section 201(g)(1) of the Federal Food, Drug and Cosmetic Act (21 U.S.C. 321). (40 CFR 451.2(e)) For the purposes of this General Permit, the term applies to substances that are introduced to the facility to maintain or restore aquatic animal health or to affect the structure or any function of an aquatic animal, and that may be discharged to waters of the Commonwealth, but does not include substances injected directly into aquatic animals or used in immersion baths that are not discharged to waters of the Commonwealth.

Extra-label drug use means a drug approved under the Federal Food, Drug and Cosmetic Act that is not used in accordance with the approved label directions (see 21 CFR Part 530). (40 CFR 451.2(f))

Flow-through system means a system designed to provide a continuous water flow to waters of the Commonwealth through chambers used to produce aquatic animals. Flow-through systems typically use rearing units that are either

raceways or tank systems. Rearing units referred to as raceways are typically long, rectangular chambers at or below grade, constructed of earth, concrete, plastic, or metal to which water is supplied by nearby rivers or springs. Rearing units comprised of tank systems use circular or rectangular tanks and are similarly supplied with water to raise aquatic animals. The term does not include net pens. (40 CFR 451.2(g))

Investigational new animal drug (INAD) means a drug for which there is a valid exemption in effect under section 512(j) of the Federal Food, Drug, and Cosmetic Act, 21 U.S.C. 360b(j), to conduct experiments. (40 CFR 451.2(h))

Net means the difference between influent and effluent concentrations and mass loads.

Net pen system means a stationary, suspended or floating system of nets, screens, or cages in open waters of the Commonwealth. Net pen systems typically are located along a shore or pier or may be anchored and floating offshore. Net pens and submerged cages rely on tides and currents to provide a continual supply of high-quality water to the animals in production.

Non-native species means an individual, group or population of an aquatic animal species: (1) that is introduced into an area or ecosystem outside its historic or native geographic range; and (2) that has been determined and identified by the appropriate state or federal authority to threaten native aquatic biota. The term excludes species raised for stocking by public agencies.

Pesticide means any substance defined as a "pesticide" in section 2(u) of the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. 136(u)). (40 CFR 451.2(l))

Point Source - Any discernable, confined and discrete conveyance from which pollutants are or may be discharged. (CWA Section 502(14))

Real-time feed monitoring means a system designed to track the rate of feed consumption and to detect uneaten feed passing through the nets at a net pen facility. These systems may rely on a combination of visual observation and hardware, including, but not limited to, devices such as video cameras, digital scanning sonar, or upweller systems that allow facilities to determine when to cease feeding the aquatic animals. Visual observation alone from above the pens does not constitute real-time monitoring. (40 CFR 451.2(m))

Recirculating system means a system that filters and reuses water in which the aquatic animals are produced prior to discharge. Recirculating systems typically use tanks, biological or mechanical filtration, and mechanical support equipment to maintain high quality water to produce aquatic animals.

TDS, Sulfate, Chloride, Bromide, & 1,4-Dioaxane

An email form Sean Furjanic dated January 23, 2014 indicates concerns about these pollutants and sets effluent levels that trigger monitoring. The application received in May 2010 did not analyze TDS or bromide. The source water is springs with no or insignificant additions of these pollutants from hatchery operations. Consequently, no monitoring is required.

Biomass Reporting

Continue requirement to report fish biomass in writing on a quarterly basis for Series A and Series C raceways. Submit report with DMR for last month of calendar quarter.

Antidegradation (93.4a)
The discharge is to a High Quality Cold Water stream. No Exceptional Value Waters are impacted by this discharge. The effluent requirements for this discharge have been developed to ensure that anti-degradation requirements have been met. The facility existed prior to the HQ-CWF classification.

Class A Wild Trouth Streams
Yellow Breeches Creek is not a Class A Wild Trout stream.

303d listed Streams

The discharge is located in a 303d listed stream segment (Assessment ID 20020111-1245-FIT) of Yellow Breeches Creek for impairment due to PCBs for 3.6 miles. The previous permit contained a TRE for PCBs to eliminate the hatchery as a source of PCBs. The stream is organically impaired by the hatchery and is listed (Assessment ID 20030101-0001-RAK). Also listed as impaired by agricultural pathogens. TRE found PCBs in raceway concrete; Series B raceways were then removed from production. Microscreens installed and operating to reduce organic load.

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) and/or BPJ.

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	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	XXX	9.0	1/week	Grab
Dissolved Oxygen	XXX	XXX	6.5	XXX	XXX	XXX	1/week	Grab
CBOD5	Report	Report	XXX	Report	Report	7.5	1/week	24-Hr Composite
CBOD5 Intake	Report	Report	XXX	Report	Report	XXX	1/week	24-Hr Composite
CBOD5 Effluent Net Jan 1 - Apr 30	346	692	XXX	3.0	6.0	XXX	1/week	24-Hr Composite
CBOD5 Effluent Net May 1 - Aug 31	281	562	XXX	3.0	6.0	XXX	1/week	24-Hr Composite
CBOD5 Effluent Net Sep 1 - Dec 31	310	619	XXX	3.0	6.0	XXX	1/week	24-Hr Composite
Total Suspended Solids Intake	Report	Report	XXX	Report	Report	XXX	1/week	24-Hr Composite

Outfall 001, Continued (from Permit Effective Date through Permit Expiration Date)

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Total Suspended Solids	Report	Report	XXX	Report	Report	8.7	1/week	24-Hr Composite
Total Suspended Solids Effluent Net Jan 1 - Apr 30	403	807	XXX	3.5	7.0	XXX	1/week	24-Hr Composite
Total Suspended Solids Effluent Net May 1 - Aug 31	328	656	XXX	3.5	7.0	XXX	1/week	24-Hr Composite
Total Suspended Solids Effluent Net Sep 1 - Dec 31	361	723	XXX	3.5	7.0	XXX	1/week	24-Hr Composite
Total Suspended Solids	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Suspended Solids	XXX	65,348 Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Nitrate-Nitrite as N	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	24-Hr Composite
Nitrate-Nitrite as N Intake	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	24-Hr Composite
Nitrate-Nitrite as N Effluent Net	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	24-Hr Composite
Total Nitrogen Effluent Net	XXX	XXX	XXX	XXX	20	XXX	1/quarter	Calculation
Total Nitrogen	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Calculation
Total Nitrogen Intake	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Calculation

Outfall 001, Continued (from Permit Effective Date through Permit Expiration Date)

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Ammonia-Nitrogen Jan 1 - Apr 30	161	323	XXX	1.4	2.8	3.5	1/week	24-Hr Composite
Ammonia-Nitrogen May 1 - Aug 31	131	262	XXX	1.4	2.8	3.5	1/week	24-Hr Composite
Ammonia-Nitrogen Sep 1 - Dec 31	144	289	XXX	1.4	2.8	3.5	1/week	24-Hr Composite
Total Kjeldahl Nitrogen Effluent Net	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	24-Hr Composite
Total Kjeldahl Nitrogen Intake	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	24-Hr Composite
Total Kjeldahl Nitrogen	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	24-Hr Composite
Total Phosphorus Jan 1 - Apr 30	230	461	XXX	2.0	4.0	5.0	1/week	24-Hr Composite
Total Phosphorus May 1 - Aug 31	187	374	XXX	2.0	4.0	5.0	1/week	24-Hr Composite
Total Phosphorus Sep 1 - Dec 31	206	413	XXX	2.0	4.0	5.0	1/week	24-Hr Composite

Compliance Sampling Location: 001

Other Comments:

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) and/or BPJ.

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD) Apr 1 - Sep 30	Report	Report	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.) Apr 1 - Sep 30	XXX	XXX	6.0	XXX	XXX	9.0	1/week	Grab
Dissolved Oxygen Apr 1 - Sep 30	XXX	XXX	7.0	XXX	XXX	XXX	1/week	Grab
CBOD5 Apr 1 - Sep 30	Report	Report	XXX	Report	Report	7.5	1/week	24-Hr Composite
CBOD5 Intake Apr 1 - Sep 30	Report	Report	XXX	Report	Report	XXX	1/week	24-Hr Composite
CBOD5 Effluent Net Apr 1 - Sep 30	18	36	XXX	3.0	6.0	XXX	1/week	24-Hr Composite
Total Suspended Solids Effluent Net Apr 1 - Sep 30	21	42	XXX	3.5	7.0	XXX	1/week	24-Hr Composite
Total Suspended Solids Intake Apr 1 - Sep 30	Report	Report	XXX	Report	Report	XXX	1/week	24-Hr Composite
Total Suspended Solids Apr 1 - Sep 30	Report	Report	XXX	Report	Report	8.7	1/week	24-Hr Composite
Total Suspended Solids Apr 1 - Sep 30	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Suspended Solids Apr 1 - Sep 30	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation

Outfall 002, Continued (from Permit Effective Date through Permit Expiration Date)

Parameter	Effluent Limitations						Effluent Limitations	
	Mass Units (lbs/day)		Mass Units (lbs/day)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Nitrate-Nitrite as N Apr 1 - Sep 30	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	24-Hr Composite
Nitrate-Nitrite as N Intake Apr 1 - Sep 30	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	24-Hr Composite
Nitrate-Nitrite as N Effluent Net Apr 1 - Sep 30	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	24-Hr Composite
Total Nitrogen Apr 1 - Sep 30	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Calculation
Total Nitrogen Intake Apr 1 - Sep 30	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Calculation
Total Nitrogen Effluent Net Apr 1 - Sep 30	XXX	XXX	XXX	XXX	20	XXX	1/quarter	Calculation
Ammonia-Nitrogen Apr 1 - Sep 30	3.6	7.2	XXX	0.6	1.2	1.5	1/week	24-Hr Composite
Total Kjeldahl Nitrogen Apr 1 - Sep 30	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	24-Hr Composite
Total Kjeldahl Nitrogen Intake Apr 1 - Sep 30	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	24-Hr Composite
Total Kjeldahl Nitrogen Effluent Net Apr 1 - Sep 30	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	24-Hr Composite
Total Phosphorus Apr 1 - Sep 30	12	24	XXX	2.0	4.0	5.0	1/week	24-Hr Composite

Compliance Sampling Location: 002

Other Comments:

Proposed Effluent Limitations and Monitoring Requirements

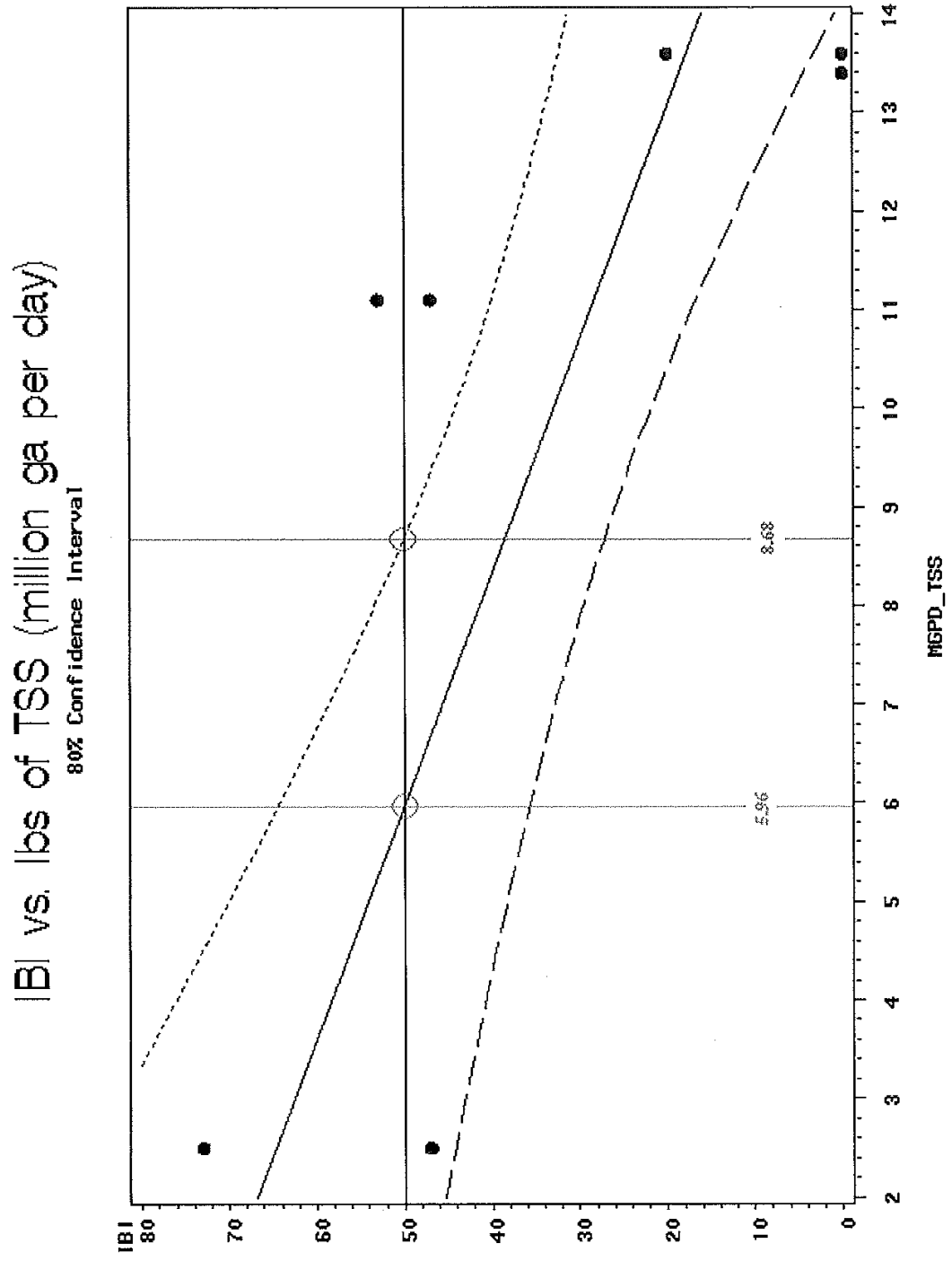
The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants).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

Outfall 003, Effective Period: Permit Effective Date through Permit Expiration Date

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	1/month	Estimate
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/month	Grab
Total Residual Chlorine (interim)	XXX	XXX	XXX	Report	XXX	XXX	1/month	Grab
Total Residual Chlorine (final)	XXX	XXX	XXX	0.5	XXX	1.6	1/month	Grad
CBOD5	XXX	XXX	XXX	20	XXX	40	1/month	Grab
Total Suspended Solids	XXX	XXX	XXX	20	XXX	40	1/month	Grab
Fecal Coliform (CFU/100 ml)	XXX	XXX	XXX	200 Geo Mean	XXX	XXX	1/month	Grab

TRC interim limit for 9 months

ools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment)
☒	PENTOXSD for Windows Model (see Attachment)
☐	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment)
☐	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☒	Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
☐	Pennsylvania CSO Policy, 385-2000-011, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.
☒	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
☒	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
☒	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 391-2000-007, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
☒	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
☐	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
☐	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 10/97.
☐	Implementation Guidance for Application of Section 93.5(e) for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 391-2000-019, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 3/99.
☐	Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 391-2000-022, 3/1999.
☒	Design Stream Flows, 391-2000-023, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 391-2000-024, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
☒	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☒	Other: SOP Establishing Effluent Limitations for Individual Industrial Permits
☐	


IBI vs. lbs of TSS (million ga per day)
80% Confidence Interval
IBI
MGPD_TSS
3.68
5.96

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
07E	10121	YELLOW BREECHES 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)
40.750	PFBC 001	PA0037141	0.000	CBOD5	23.41		
				NH3-N	2.22	4.44	
				Dissolved Oxygen			6.5

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
07E	10121	YELLOW BREECHES CREEK	**40.750**	601.00	40.40	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	0.313	0.00	0.00	0.000	0.000	0.0	32.00	1.40	20.50	7.78	0.00	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
PFBC 001	PA0037141	0.0000	13.8240	0.0000	0.000	20.00	7.50

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	6.50	8.24	0.00	0.00
NH3-N	25.00	0.00	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
07E	10121	YELLOW BREECHES CREEK	39.750	578.00	43.00	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	0.313	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.50	7.78	0.00	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 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☐
Q1-10/Q7-10 Ratio	0.94	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.106	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	7		

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
07E	63210	"IRISHTOWN GAP HOLLOW"

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)
0.230	PFBC 002	PA0037141a	0.000	CBOD5	16.6		
				NH3-N	0.93	1.86	
				Dissolved Oxygen			7

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
07E	63210	"IRISHTOWN GAP HOLLOW"	**0.230**	613.80	3.30	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	0.100	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	8.05	0.00	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
PFBC 002	PA0037141a	0.0000	0.7200	0.0000	0.000	25.00	7.80

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	6.50	8.24	0.00	0.00
NH3-N	25.00	0.00	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
07E	63210	"IRISHTOWN GAP HOLLOW"	0.000	605.00	3.40	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	0.100	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	8.05	0.00	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	25.00	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 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☐
Q1-10/Q7-10 Ratio	0.939	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.084	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	7		

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
07E	63210	"IRISHTOWN GAP HOLLOW"

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
0.230	0.720	23.857	7.846
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
13.350	0.528	25.262	0.205
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
13.27	0.961	0.72	0.942
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.284	15.442	Tsivoglou	7
Reach Travel Time (days)			
0.069			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.007	13.16	0.71	7.24
0.014	13.06	0.71	7.21
0.021	12.96	0.70	7.18
0.027	12.86	0.70	7.15
0.034	12.75	0.69	7.13
0.041	12.65	0.69	7.11
0.048	12.55	0.69	7.09
0.055	12.46	0.68	7.08
0.062	12.36	0.68	7.07
0.069	12.26	0.67	7.06

HUNTSDALE TSS MASS LOADING

Disch 001	MGD	Disch 002	MGD	Q7-10
Jan - April	13.824	April-Sept	0.72	12.65 cfs
May - Aug	11.232		max.	8.177 MGD
Sept - Dec	12.324			

Loading Rate = 8.68 lbs/MG total flow

	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Days	31	28	31	30	31	30	31	31	30	31	30	31
Outfall 001	13.824	13.824	13.824	13.824	11.232	11.232	11.232	11.232	12.324	12.324	12.324	12.324
Outfall 002				0.36	0.36	0.36	0.36	0.36	0.36			
Total Disch	13.824	13.824	13.824	14.184	11.592	11.592	11.592	11.592	12.684	12.324	12.324	12.324
Stream	8.177	8.177	8.177	8.177	8.177	8.177	8.177	8.177	8.177	8.177	8.177	8.177
Total Flow	22.001	22.001	22.001	22.361	19.769	19.769	19.769	19.769	20.861	20.501	20.501	20.501
Outfall 001 alone												
Load #/mo.	5,920.1	5,347.2	5,920.1	5,729.1	5,222.6	5,054.1	5,222.6	5,222.6	5,338.5	5,516.4	5,338.5	5,516.4
Load #/yr	65,348.2											
TSS Conc.	1.66	1.66	1.66	1.66	1.80	1.80	1.80	1.80	1.73	1.73	1.73	1.73
001 & 002 (0.36 MGD,trout)												
Load #/mo.	5,920.1	5,347.2	5,920.1	5,822.8	5,319.5	5,147.9	5,319.5	5,319.5	5,432.2	5,516.4	5,338.5	5,516.4
Load #/yr	65,920.0											
TSS Conc.*	1.66	1.66	1.66	1.64	1.77	1.77	1.77	1.77	1.71	1.73	1.73	1.73

*The TSS Conc. is the effluent conc. at Outfall 001 at combined flow of raceways A & C

001 & 002 (0.72 MGD, non-trout)												
Load #/mo.	5,920.1	5,347.2	5,920.1	6,359.6	5,874.1	5,684.6	5,874.1	5,874.1	5,969.0	5,516.4	5,338.5	5,516.4
Load #/yr	69,194.3											

THERAPEUTIC CHEMICAL EVALUATION
Huntsdale Fish Culture Station
Series A & B Raceways
Flows are MGD
Concentrations are mg/l

Flows	MGD	1000 gpm
Qs=	8.177	
Qd =	11.232	7.800
	12.384	8.600
	13.824	9.600

	Chloramine T LC50	
	C.dubia	Fathead
Stream	8.75	6.16
Effluent	2.12	10.1
Qd	Mix LC50	
11.232	4.91	8.44
12.384	4.76	8.53
13.824	4.58	8.64

C. dubia is the more sensitive species for Chloramine T at this low alkalinity site

Chloramine T *Ceriodaphnia dubia*

Qd	Stream LC50	Discharge LC50	Mix LC50	Instream Target	Effluent Limit	Mass Limit	Raceway Conc.	
11.232	8.75	2.12	4.91	1.47	2.55	238.59	30.56	Bioassy
12.384	8.75	2.12	4.76	1.43	2.37	244.70	28.43	Bioassy
13.824	8.75	2.12	4.58	1.38	2.19	252.34	26.26	Bioassy
13.824	8.75	2.12	4.58		1.67	192.15	20.00	INAD

Hydrogen Peroxide (35%) *(Ceriodaphnia dubia)*

Qd	Stream LC50	Discharge LC50	Mix LC50	Instream Target	Effluent Limit	Mass Limit	Raceway Conc.	
11.232	9.23	10.8	10.14	3.04	5.26	492.34	63.07	Bioassy
12.384	9.23	10.8	10.18	3.05	5.07	523.47	60.82	Bioassy
13.824	9.23	10.8	10.22	3.06	4.88	562.38	58.53	Bioassy
13.824	9.23	10.8	10.22		16.67	1921.54	200	VMD

Professional Lysol Brand No Rinse Sanitizer (formerly Rocall II) *(Ceriodaphnia dubia)*

Qd	Stream LC50	Discharge LC50	Mix LC50	Instream Target	Effluent Limit	Mass Limit	Raceway Conc.	
11.232	1.41	1.5	1.46	0.44	0.76	71.00	9.10	Bioassy
12.384	1.41	1.5	1.46	0.44	0.73	75.32	8.75	Bioassy
13.824	1.41	1.5	1.47	0.44	0.70	80.73	8.40	Bioassy
13.824	1.41	1.5	1.47		0.17	19.22	2.00	INAD

Diquat *(Selenastrum capricornutum)*

Qd	Stream IC25	Discharge IC24	Mix IC25	Instream Target	Effluent Limit	Mass Limit	Raceway Conc.	
11.232	0.14	0.103	0.12	0.04	0.06	5.76	0.74	Bioassy
12.384	0.14	0.103	0.12	0.04	0.06	6.06	0.70	Bioassy
13.824	0.14	0.103	0.12	0.04	0.06	6.43	0.67	Bioassy
13.824	0.14	0.103	0.12		2.33	269.02	28.00	INAD

No longer tested

Diquat *(Ceriodaphnia dubia)*

Qd	Stream LC50	Discharge LC50	Mix LC50	Instream Target	Effluent Limit	Mass Limit	Raceway Conc.	
11.232	1.11	1.04	1.07	0.32	0.55	51.94	6.65	Bioassy
12.384	1.11	1.04	1.07	0.32	0.53	54.93	6.38	Bioassy
13.824	1.11	1.04	1.07	0.32	0.51	58.68	6.11	Bioassy
13.824	1.11	1.04	1.07		2.33	269.02	28	INAD

PENTOXSD Analysis Results

Recommended Effluent Limitations

SWP Basin	Stream Code:	Stream Name:
07E	10121	YELLOW BREECHES CREEK

RMI	Name	Permit Number	Disc Flow (mgd)
40.75	PFBC 001	PA0037141	13.8240

Parameter	Effluent Limit (µg/L)	Governing Criterion	Max. Daily Limit (µg/L)	Most Stringent WQBEL (µg/L)	Most Stringent WQBEL Criterion
FORMALDEHYDE	700.168	CFC	1092.375	700.168	CFC

PENTOXSD Analysis Results

Wasteload Allocations

RMI	Name	Permit Number
40.75	PFBC 001	PA0037141

AFC

Q7-10: CCT (min) 1.772 PMF 1 Analysis pH 7.584 Analysis Hardness 100

Parameter	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)
FORMALDEHYDE	0	0	0	0	2200	2200	3500.841

CFC

Q7-10: CCT (min) 1.772 PMF 1 Analysis pH 7.584 Analysis Hardness 100

Parameter	Stream Conc. (µg/L)	Stream CV	Trib Conc. (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)
FORMALDEHYDE	0	0	0	0	440	440	700.168

THH

Q7-10: CCT (min) 1.772 PMF 1 Analysis pH NA Analysis Hardness NA

Parameter	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)
FORMALDEHYDE	0	0	0	0	700	700	1113.904

CRL

Qh: CCT (min) 3.927 PMF 1

Parameter	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)
FORMALDEHYDE	0	0	0	0	NA	NA	NA

PENTOXSD

Modeling Input Data

Stream Code	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope	PWS With (mgd)	Apply FC
10121	40.75	601.00	40.40	0.00000	0.00	☑

Stream Data

	LFY	Trib Flow	Stream Flow	WD Ratio	Rch Width	Rch Depth	Rch Velocity	Rch Trav Time	Tributary Hard	Tributary pH	Stream Hard	Stream pH	Analysis Hard	Analysis pH
	(cfsm)	(cfs)	(cfs)		(ft)	(ft)	(fps)	(days)	(mg/L)		(mg/L)		(mg/L)	
Q7-10	0.313	0	0	0	32	1.4	0	0	100	7.78	100	0	0	0
Qh		0	0	0	0	0	0	0	100	7	0	0	0	0

Discharge Data

Name	Permit Number	Existing Disc Flow	Permitted Disc Flow	Design Disc Flow	Reserve Factor	AFC PMF	CFC PMF	THH PMF	CRL PMF	Disc Hard	Disc pH
		(mgd)	(mgd)	(mgd)						(mg/L)	
PFBC 001	PA0037141	0	13.824	0	0	0	0	0	0	100	7.5

Parameter Data

Parameter Name	Disc Conc (µg/L)	Trib Conc (µg/L)	Disc Daily CV	Disc Hourly CV	Steam Conc (µg/L)	Stream CV	Fate Coef	FOS	Crit Mod	Max Disc Conc (µg/L)
FORMALDEHYDE	66000	0	0.5	0.5	0	0	0	0	1	0

Stream Code	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope	PWS With (mgd)	Apply FC
10121	39.75	578.00	43.00	0.00000	0.00	☑

Stream Data

	LFY	Trib Flow	Stream Flow	WD Ratio	Rch Width	Rch Depth	Rch Velocity	Rch Trav Time	Tributary Hard	Tributary pH	Stream Hard	Stream pH	Analysis Hard	Analysis pH
	(cfsm)	(cfs)	(cfs)		(ft)	(ft)	(fps)	(days)	(mg/L)		(mg/L)		(mg/L)	
Q7-10	0.313	0	0	0	0	0	0	0	100	7.78	100	0	0	0
Qh		0	0	0	0	0	0	0	100	7	0	0	0	0

Discharge Data

Name	Permit Number	Existing Disc Flow	Permitted Disc Flow	Design Disc Flow	Reserve Factor	AFC PMF	CFC PMF	THH PMF	CRL PMF	Disc Hard	Disc pH
		(mgd)	(mgd)	(mgd)						(mg/L)	
		0	0	0	0	0	0	0	0	100	7

Parameter Data

Parameter Name	Disc Conc (µg/L)	Trib Conc (µg/L)	Disc Daily CV	Disc Hourly CV	Steam Conc (µg/L)	Stream CV	Fate Coef	FOS	Crit Mod	Max Disc Conc (µg/L)
FORMALDEHYDE	0	0	0.5	0.5	0	0	0	0	1	0

PENTOXSD Analysis Results

Hydrodynamics

SWP Basin	Stream Code:	Stream Name:
07E	10121	YELLOW BREECHES CREEK

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope	Depth (ft)	Width (ft)	WD Ratio	Velocity (fps)	Reach Trav Time (days)	CMT (min)
Q7-10 Hydrodynamics											
40.750	12.645	0	12.645	21.38572	0.0044	1.4	32	22.857	0.7596	0.0804	1.772
39.750	13.459	0	13.459	NA	0	0	0	0	0	0	NA
Qh Hydrodynamics											
40.750	68.245	0	68.245	21.38572	0.0044	2.1438	32	14.927	1.3065	0.0468	3.927
39.750	72.069	0	72.069	NA	0	0	0	0	0	0	NA

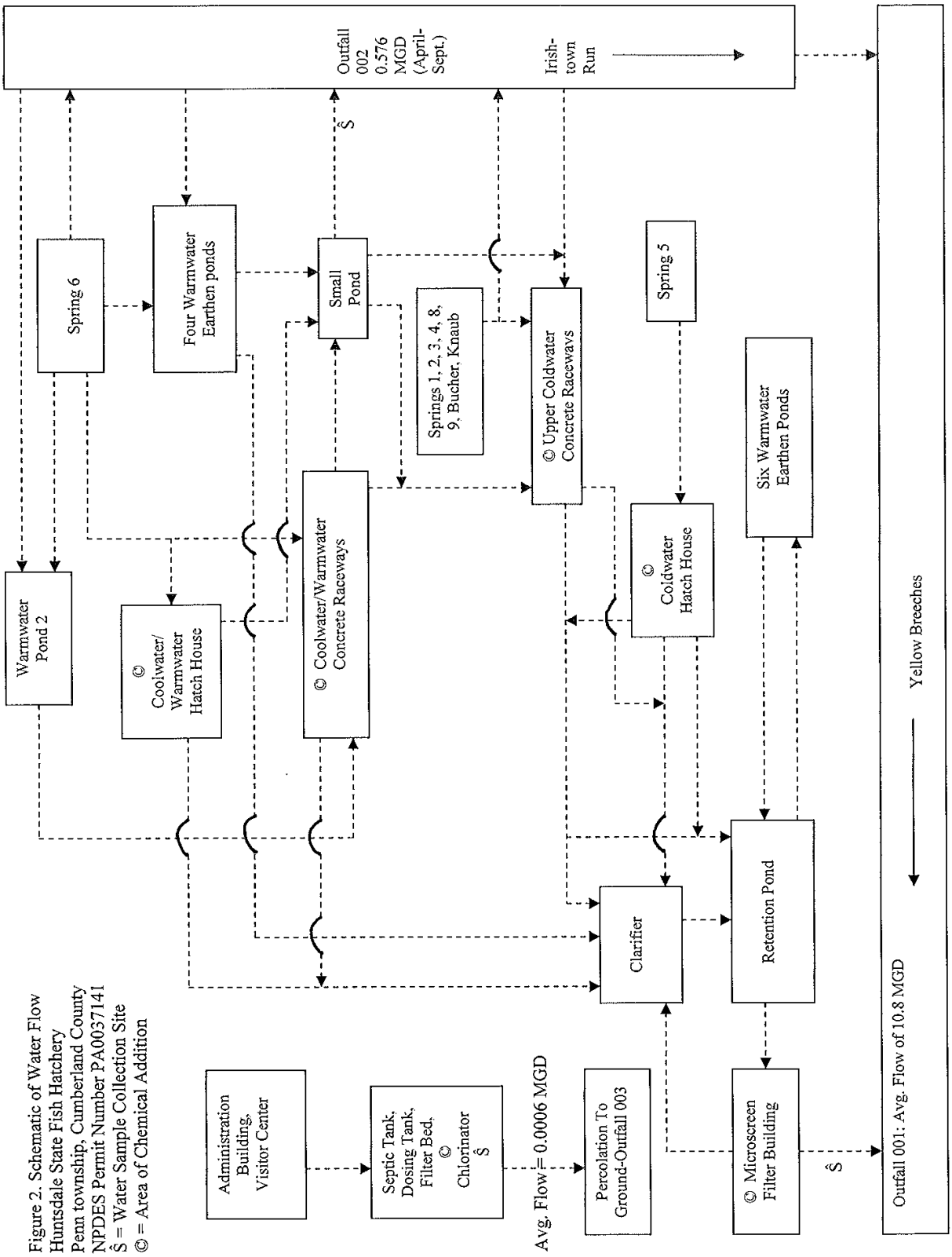


Figure 2. Schematic of Water Flow
Huntsdale State Fish Hatchery
Penn township, Cumberland County
NPDES Permit Number PA0037141
Ŝ = Water Sample Collection Site
© = Area of Chemical Addition

Figure 1. Topographic Map

Huntsdale State Fish Hatchery
NPDES Permit Number PA0037141
Cumberland County, Penn Township

Surface Water Flow
Facility Boundary
Outfall 001
Outfall 002
Outfall 003
Hatchery Springs
Domestic Wells