pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0086541**
Facility Type	**Industrial**	APS ID	**~~38771~~ 1028767**
Major / Minor	**Minor**	Authorization ID	**~~1017135~~ 1336675**

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

Applicant and Facility Information

Applicant Name	**Denver Cold Storage**	Facility Name	**Denver Cold Storage**
Applicant Address	555A Sandy Hill Road	Facility Address	555A Sandy Hill Road
	Denver, PA 17517		Denver, PA 17517
Applicant Contact	David Fisher	Facility Contact	Roman Rybaltouski
Applicant Phone	(717) 336-3900/ DaveF@denvercold.com	Facility Phone	(717)336-3900/ romanr@denvercold.com
Client ID	**360036**	Site ID	452621
SIC Code	4222	Municipality	West Cocalico Township
SIC Description	Trans. & Utilities - Refrigerated Warehousing And Storage	County	Lancaster
Date Application Received	March 6, 2014	EPA Waived?	Yes
Date Application Accepted	April 15, 2014	If No, Reason	

Purpose of Application: NPDES Renewal.

Summary of Review

The previous NPDES permit was issued September 28, 2009, with an expiration date of September 30, 2014. The permit was administratively extended. A renewal application was submitted on March 6, 2014. Several application addendums were subsequently submitted including a revised application that was received on May 24, 2016.

The facility is a frozen foods warehouse and trucking distribution site. Untreated non-contact cooling water from its refrigeration units and stormwater are discharged through outfall 001 to a drainage ditch that leads to an unnamed tributary of Indian Run. Sanitary wastewater from the warehouse's restrooms and from onsite trailers is collected in a pump station which is conveyed to a Small Flow Treatment Facility (SFTF)--consisting of 3 septic tanks, a sand filter, and chlorine disinfection--which discharges to the same drainage ditch. The drainage ditch is 140 feet in length according to the previous Fact Sheet/Protection Report. The 2009 Protection Report stated: "An evaluation of the site concludes that the discharges (001 and 002) would be considered under dry stream requirements since they flow into the drainage ditch. The point of first use [applicable for aquatic life criteria] would be considered at the confluence of the stream and the ditch."

In phone conversations with the applicant on December 7 and December 8, 2020, it was relayed that the SFTF has had operational issues and they intend to replace it within the next year or so. They were informed of the need for a WQM permit application to DEP before they do so and, if they intend to increase the design flow, sewage planning approval. This NPDES permit will provide the discharge limits that the new SFTF will be required to meet to help in its design. As long as the design flow for the new SFTF is not greater than 2000 gpd, the draft permit limits for outfall 002 will still be applicable without a new evaluation.

Approve	Deny	Signatures	Date
X		*Bonnie Boylan* Bonnie Boylan / Environmental Engineering Specialist	December 14, 2020
		Daniel W. Martin, P.E. / Environmental Engineer Manager	
		Maria D. Bebenek, P.E. / Environmental Program Manager	

Summary of Review

Also during those phone conversations, the permit writer asked if the design flows would change or if there were other changes to the application. The design flow for 001 is not changing. The design flow for 002 may change, but the new SFTF design has not been decided upon as yet.

The stormwater at the site is both surface runoff and roof drainage. A small amount of runoff enters the drainage ditch. Stormwater from roof drains is collected and discharged out 001 intermittently, mixing with the non-contact cooling water (thus cooling the non-contact cooling water which is beneficial to the downstream receiving water). All raw, intermediate, and final products are kept under roof such that the stormwater is not exposed to pollutant sources. Federal regulations at 40 CFR 122.26(b)(14) and 40 CFR 122.26(g) includes an exclusion from the requirements of "stormwater discharge associated with industrial activity" for a facility with a SIC code of 4222, like this facility, when the stormwater is not exposed to pollutant sources. Therefore, the draft renewal permit only includes a requirement for a Preparedness, Prevention and Contingency (PPC) Plan to address the stormwater, consistent with the DEP's general permit for stormwater (PAG-03)'s exemption for No Exposure situations.

This facility's water supply is from a well.

A site visit was made by DEP in 2015 when it was noticed that the flows reported on DMRs for 002 were higher than the flows indicated in the renewal application or in the design flow indicated in the previous permit. It was discovered that the facility had been routing some of their industrial wastewater into the SFTF inappropriately. DEP instructed them to discontinue sending industrial wastewater to the SFTF and advised them to seek DEP approval for their chemical additives. The 2016 revised application stated that the permittee had stopped using the chemical additives in the refrigeration cooling system and included MSDS's, New Chemical Additive Request forms, and Chemical Additive Notification forms for the additives they desired to use. It also included new effluent sampling results at 001 that were collected without any diversions to the SFTF.

Design Flows

The flows reported in eDMRs between January 1, 2017 and October 1, 2020 were reviewed: 1) the flows for 001 per the eDMRs are consistent with the design flow provided in the May 2016 permit application, 0.0505 MGD; 2) the flows for 002 per the eDMRs are consistent with the permit application, 0.0012 MGD.

Chesapeake Bay TMDL

The facility is within the Chesapeake Bay watershed but is not considered a significant industrial discharger. This renewal permit does not increase industrial wastewater flows or nutrient loading from outfall 001. The sewage discharge is less than 2000 gpd and is therefore exempt from the TMDL requirements according to the Phase 2 Supplement to the Chesapeake Bay Watershed Implementation Plan.

Open Violations

No open violations exist for this client according to the SSRS/WMS database records.

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.

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	.0505 (=0.078 cfs)
Latitude	40º 14' 45.8"	Longitude	-76º 11' 30.9"
Quad Name		Quad Code	
Wastewater Description:	Noncontact Cooling Water (NCCW), intermittently stormwater		
Receiving Waters	Unnamed Tributary to Indian Run *	Stream Code	07712
NHD Com ID	57461447	RMI	0.6
Drainage Area	0.7 sq. mi.	Yield (cfs/mi^2)	0.12 per gage correlation
Q_{7-10} Flow (cfs)	0.08 per gage correlation	Q_{7-10} Basis	Gage correlation using downstream gage
Elevation (ft)	435, approx.	Slope (ft/ft)	
Watershed No.	7-J	Chapter 93 Class.	TSF
Existing Use	-	Existing Use Qualifier	-
Exceptions to Use	-	Exceptions to Criteria	-
Assessment Status	Not Attaining Recreational Use - Assessment ID 18696, 10/2015		
Cause(s) of Impairment	Pathogens		
Source(s) of Impairment	Unknown		
TMDL Status	None	Name	
Background/Ambient Data – None available		Data Source	
pH (SU)			
Temperature (°F)			
Hardness (mg/L)			
Other:			
Nearest Downstream Public Water Supply Intake		Ephrata Area Joint Authority	
PWS Waters	Cocalico Creek	Flow at Intake (cfs)	
PWS RMI	10.5	Distance from Outfall (mi)	Approximately 6

*discharge is to a ditch to UNT (which is so small it does not show on eMapPA) which enters UNT 07712 at 0.6 RMI. The confluence of the ditch and the UNT is considered the "point of first use" for aquatic life water quality criteria, whereas human health criteria is applied at the discharge point (unless the property between the discharge and the perennial stream is inaccessible to the public and not impacting drinking wells)

Other Comments:

-Not a Class A water
-Not a Trout Natural Reproduction water
-UNT 07712 flows into Indian Run at 4.64 RMI which is also TSF and impaired for Recreational Use due to pathogens
-Indian Run flows into Cocalico Creek at 10.5 RMI which becomes WWF and flows into Conestoga River (at 32.9 RMI) then into Susquehanna River (at 16.9 RMI)
-No PADWIS wells in the vicinity per eMapPA
-No stream gages or Water Qlty Network stations in the area; closest gage is downstream, on the Conestoga River:USGS gage #1576500. LFY for gage = Q7-10 / Drainage Area =38.6 cfs / 324 sq.mi. Drainage Area = 0.12 cfs/sq.mi. Source for gage data: USGS Roland and Stuckey 2011 Report, Selected Streamflow Statistics for Streamgage Locations in and near PA. Q7-10 at site estimated as 0.08 cfs:
LFY gage * Drainage Area at discharge point = 0.12 cfs/sq.mi. * 0.7 sq.mi. = 0.08 cfs
-**Qs : Qd = 0.08 cfs : 0.078 cfs or 1 : 1**

Changes Since Last Permit Issuance:

1)The site Drainage Area used in 2009 (0.2 mi^2) was much smaller causing the site Q7-10 (0.032 cfs) to also be smaller; the LFY used was larger (0.16 cfs/mi2). The same downstream USGS gage was used in 2009 and for this Fact Sheet (#1576500), but with updated data from USGS. The Drainage Area used for this Fact Sheet came from Pa Stream Stats' online tool, by USGS, at UNT 07712.

2) 2009 PR considered Lancaster City the closest public water supply intake downstream, approximately 24 miles away

Discharge, Receiving Waters and Water Supply Information

Outfall No.	002	Design Flow (MGD)	.0012 (= 0.0019 cfs)
Latitude	40º 14' 45.8"	Longitude	-76º 11' 30.2"
Quad Name		Quad Code	
Wastewater Description:	Sewage Effluent		
Receiving Waters	Unnamed Tributary to Indian Run *	Stream Code	07712
NHD Com ID	57461447	RMI	0.6
Drainage Area	0.7 per PA StreamStats	Yield (cfs/mi^2)	0.12, gage
Q_{7-10} Flow (cfs)	0.08, estimated	Q_{7-10} Basis	PA StreamStats, USGS
Elevation (ft)	435, approximately	Slope (ft/ft)	
Watershed No.	7-J	Chapter 93 Class.	TSF
Existing Use	-	Existing Use Qualifier	-
Exceptions to Use	-	Exceptions to Criteria	-
Assessment Status	Not Attaining Recreational Use - Assessment ID 18696, 10/2015		
Cause(s) of Impairment	Pathogens		
Source(s) of Impairment	Unknown		
TMDL Status	None	Name	

Background/Ambient Data		Data Source
pH (SU)		
Temperature (°F)		
Hardness (mg/L)		
Other:		

Nearest Downstream Public Water Supply Intake	Ephrata Area Joint Authority		
PWS Waters	Cocalico Creek	Flow at Intake (cfs)	
PWS RMI	10.5	Distance from Outfall (mi)	Approximately 6

*discharge is to a ditch which enters the UNT at 0.6 RMI on the UNT 07712. The confluence of the ditch and the UNT is considered the “point of first use” for aquatic life water quality criteria, whereas human health criteria is applied at discharge point unless the property is inaccessible to the public and not impacting drinking wells

Other Comments, same as outfall 001 except:

-**Qs : Qd = 0.08 cfs : 0.0019 cfs or 42:1** for outfall 002

-Combined 001 and 002, Qs : Qd = 0.08 cfs : (0.078 + 0.0019) cfs = **1 : 1 (Dry stream condtns)**

Changes Since Last Permit Issuance:

Same as outfall 001

Treatment Facility Summary

Treatment Facility Name: Denver Cold Storage

WQM Permit No.	Issuance Date
*	*

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Tertiary	Septic Tank Sand Filter W/Sol Removal	Hypochlorite	0.00054

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.0012		Not Overloaded	Anaerobic Digestion	Other WWTP

*Not provided in the application and too old to be shown in DEP's computer database.

Compliance History

DMR Data for Outfall 001 (from October 1, 2019 to September 30, 2020)

Parameter	SEP-20	AUG-20	JUL-20	JUN-20	MAY-20	APR-20	MAR-20	FEB-20	JAN-20	DEC-19	NOV-19	OCT-19
Flow (MGD) Average Monthly	0.060493	0.057297	0.050194	0.055047	0.060474	0.053117	0.009542	0.000928	0.005800	0.003177	0.013113	0.055548
Flow (MGD) Daily Maximum	0.071900	0.067200	0.067000	0.069200	0.071600	0.062400	0.012400	0.010100	0.011100	0.005100	0.058800	0.063800
pH (S.U.) Minimum	6.9	7.1	7.1	7.0	7.1	7.1	7.5	7.4	7.2	7.1	7.0	7.0
pH (S.U.) Instantaneous Maximum	7.9	8.0	7.3	7.4	7.5	7.8	8.1	8.2	8.1	8.1	8.0	8.5
Temperature (ºF) Daily Average	77.57	79.90	81.84	79.17	75.74	70.47	51.52	50.79	50.03	48.16	57.63	68.46

DMR Data for Outfall 002 (from October 1, 2019 to September 30, 2020)

Parameter	SEP-20	AUG-20	JUL-20	JUN-20	MAY-20	APR-20	MAR-20	FEB-20	JAN-20	DEC-19	NOV-19	OCT-19
Flow (MGD) Average Monthly	0.000067	0.000496	0.000270	0.000411	0.000360	0.000343	0.000319	0.000333	0.000325	0.000337	0.000316	0.000879
Flow (MGD) Daily Maximum	0.000350	0.001462	0.000653	0.001268	0.000618	0.000648	0.000545	0.000564	0.000552	0.000562	0.000907	0.003841
pH (S.U.) Minimum	6.6	6.9	6.8	7.0	7.0	7.0	6.8	6.8	6.9	6.8	6.8	6.8
pH (S.U.) Instantaneous Maximum	7.5	7.7	7.1	7.3	7.2	8.5	7.5	8.1	7.5	7.7	7.1	7.2
TRC (mg/L) Average Monthly	0.10	0.11	0.21	0.22	0.18	0.09	0.13	0.11	0.10	0.06	0.06	0.09
TRC (mg/L) Instantaneous Maximum	0.24	0.28	0.58	1.5	2.2	0.20	0.26	0.24	0.90	0.16	0.2	0.43
CBOD5 (mg/L) Average Monthly	4.8	3.40	3.8	4.6	5.15	4.50	8.15	11.85	16.70	16.80	4.10	3.55
TSS (mg/L) Average Monthly	4	12.25	4	6	5.25	4	4.20	7.20	4	4	9.65	10.15
Fecal Coliform (CFU/100 ml) Average Monthly	5.20	27.28	6.56	8.25	1	2.24	1	1	1	1	1	67.65

Compliance History

Effluent Violations for Outfall 001, from November 1, 2018 to October 31, 2020: None.

Effluent Violations for Outfall 002, from November 1, 2018 to October 31, 2020:

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
TRC	05/31/20	IMAX	2.2	mg/L	1.6	mg/L
Fecal Coliform	07/31/19	Avg.Monthly	658.79	CFU/100 mL	200	CFU/100 mL

Most Recent Inspection:

7/2020 – Data audit - found flows at 001 were reported incorrectly- were not using meter #2 – instructed to do so

10/8/2019 – No violations given but septic tank alarm float had been removed in SFTF. Flow meter needed calibration. Full pipe ultrasonic meter with Totalizer.

DEP inspector collected effluent sample from 002 on 10/8/2019:

pH=7.08 s.u. Fecal Coliform = < 25 /100 mL. TRC = 0.007 mg/l. CBOD5 = 2.70 mg/l. TSS = < 5 mg/l. Temperature = 19.4^{o}C

PREVIOUS PERMIT LIMITS**:**

Outfall 001

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Daily Average	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	1/day	Estimated
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
Temperature (April-Oct)	XXX	XXX	XXX	84ºF	XXX	XXX	1/day	i-s
Temperature (Nov-March)	XXX	XXX	XXX	60ºF	XXX	XXX	1/day	i-s

Outfall 002

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	1/day	Estimated
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
Total Residual Chlorine	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	XXX	XXX	XXX	25	XXX	50	2/month	8-Hr Composite
Total Suspended Solids	XXX	XXX	XXX	30	XXX	60	2/month	8-Hr Composite
Fecal Coliform (CFU/100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000	XXX	XXX	2/month	Grab
Fecal Coliform (CFU/100 ml) May 1 - Sep 30	XXX	XXX	XXX	200	XXX	XXX	2/month	Grab

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .0505
Latitude 40º 14' 45.8" **Longitude** -76º 11' 30.9"
Wastewater Description: Noncontact Cooling Water (and intermittent stormwater)

Per the 2016 application, the blowdown portion is a batch discharge whereas the other non-contact cooling water is a continuous discharge.

Technology-Based Effluent Limitations (TBELs)

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

Parameter	Limit	SBC	Federal Regulation	State Regulation
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	Pa. Code Ch. 95.2(1)
Oil and Grease	15 mg/l	Monthly Average		Pa. Code Ch. 95.2(2)
Oil and Grease	30 mg/l	Daily Maximum		Pa. Code Ch. 95.2(2)
Dissolved Iron	7.0 mg/l	Maximum		Pa Code Ch. 95.2(4)
Total Residual Chlorine	0.5 mg/l	Monthly Average		Pa Code Ch 92a.48(b)

According to their May 9, 2014 application addendum**, Oil and Grease** was <5.0 mg/l and **Dissolved Iron** was <0.20 mg/l; therefore the above limits are not indicated to be needed and have not been added to the permit.

Total Residual Chlorine (TRC) is not expected to be a concern since the supply water is a well, with no chlorine added. The 2016 application indicated a maximum TRC concentration of 0.08 mg/l at 001, well below the State regulatory limit of 0.5 mg/l as a monthly average per Pa Code Ch 92a.48(b).

The application reported **Total Suspended Solids (TSS)** at 001 as <3.0 mg/l, indicating that no TSS limit is needed.

TBELs for **Total Dissolved Solids (TDS)** only applies to new dischargers and existing dischargers significantly increasing their TDS mass loadings as described in the Pa Code Chapter 95.10. That is not the case for this facility.

Water Quality-Based Effluent Limitations (WQBELs)

The previous permit's **Temperature** limits will be carried forward: 60ºF as the daily maximum during the months of November through March and 84ºF as the daily maximum during the months of April through October. These limits were the result of averaging together discharge limits for 19 reporting periods derived from DEP's thermal model according to the 2009 Protection Report with the previous permit. The model results were based on estimates of month-to-month stream flow calculated from the stream's Q7-10 and on default values for ambient stream temperatures. No new information is available for the ambient stream temperatures and monthly stream flows have not been measured or determined. The application did not include any data from a site-specific thermal study.

Note: the Statistical Base Code "Daily Average" that was included in the previous permit for reporting Temperature is no longer in use. The Statistical Base Code used instead in the renewal permit is "Daily Maximum" which the DEP software accepts. The Daily Maximum to be reported on the DMRs is the highest daily or highest daily average result for Temperature, consistent with DEP's Guidance on DMRs 3800-BK-DEP3047 (and the permit definitions for Daily Average Temperature, Daily Discharge, and Daily Maximum Discharge Limitation, together).

Because this discharge is comprised of non-contact cooling water, high concentrations of **CBOD5 and Ammonia** would not be expected and DEP's WQM model 7.0 for CBOD5 and Ammonia would not normally be run, consistent with DEP's SOP Establishing Effluent Limitations for Individual Industrial Permit. Indeed, the application reported BOD5 as <3.5 mg/l and Ammonia as 0.26 mg/l at outfall 001.

Toxics:

A "Reasonable Potential Analysis" (Attached at the end of the Fact Sheet, titled Toxics Screening Analysis) determined the following parameters were candidates for limitations: Total Dissolved Solids (TDS) and Dissolved Iron.

Comparing effluent sampling results to WQBELs calculated in models, no parameters demonstrated a Reasonable Potential to cause an in-stream exceedance of water quality criteria.

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

Parameter	Limit (mg/l)	SBC	Model
none	none	Not applicable	PENTOX and TRC

The only toxic pollutant for which the concentration in the discharge exceeded water quality criteria was for **TDS**. The application included sampling results showing TDS of 556 mg/l for outfall 001 compared to the TDS criterion of 500.0 mg/l. This criterion only applies if a Public Water Supply (PWS) is near enough to be impacted. Because there is a downstream PWS intake approximately 6 miles away, a PENTOX model was run including the PWS as the downstream node with the Drainage Area on the Cocalico Creek at that point and the pumping capacity of the PWS entered as model inputs: the results showed that no permit limits are needed for **TDS.** (The model pages are attached.)

Dissolved Iron was non-detect using a reporting level of 0.2 mg/l, which is under the criterion of 0.3 mg/l applicable if a PWS is near enough to be impacted, but still flagged by the Reasonable Potential Analysis/ Toxics Screening worksheet as a candidate for modeling due to the Qs:Qd ratio at this site. Dissolved Iron was included in the PENTOX model discussed above. The results showed that no permit limits are needed for **Dissolved Iron**. (The model pages are attached.)

Some model input values came from USGS sources, like the Low Flow Yield and Drainage Areas. The elevations, River Miles, and PWS withdrawal capacity came from DEP's eMapPA (and embedded layers). Some default input values were used in the PENTOX model: Hardness of stream (100 mg/l), pH of stream (7.0 s.u.), pH of discharge (7.0 s.u.). The discharge Hardness value (323 mg/l) came from the application. The model calculates the slope, width, depth, reach velocity, and reach travel time. (The model is restricted to a single stream for analysis, so 6 miles upstream from the PWS was the first node, as if the UNT, Indian Run, Cocalico Creek, and Conestoga River were all one stream.)

DEP's model for **TRC** was run and is attached at the end of the Fact Sheet. The model calculates a WQBEL for TRC if it is more stringent than the TBEL; the model defaults to the TBEL when the WQBEL is the same or less stringent than the TBEL. The model calculated a TRC WQBEL of 0.16 mg/l as a monthly average and 0.52 as an Instantaneous Maximum. The 2016 application reported an average TRC concentration of 0.05 mg/l (less than 50% of the monthly average WQBEL) and a maximum concentration of 0.08 mg/l (only 15% of the maximum WQBEL) for 001 based on 19 samples. For this reason, no permit limits for TRC have been added for 001.

Nutrients are not expected to be present in non-contact cooling water, so no monitoring for nutrients has been required at 001. The application reported the following concentrations for 001: TKN of < 1.0 mg/l, NO3-NO2 of 4.6 mg/l, Total Phosphorus of <0.010 mg/l . The Chesapeake Bay TMDL, applicable to waters within the Chesapeake Bay water basin, is only concerned with Nutrients (Total Nitrogen and Total Phosphorus).

Chemical Additives:

Chemical Additive requirements are now added as a Part C Condition for industrial NPDES permits having discharges that include chemical additives or which may begin to use chemical additives during the permit term. The DEP maintains in their eFacts database maximum usage rates approved per chemical additive per permit. A Supplemental DMR form for Chemical Additive Usage must be submitted each month in the eDMR system.

The application indicated four chemical additives desired to be used. (It also listed Sodium Hydroxide and Caustic but these chemicals are controlled by pH limits already in the permit.) DEP had alerted the facility that chemical additives had to be listed on DEP's Approved List for Chemical Additives and that their maximum usage rates could not cause an exceedance of developed WQBELs from DEP's PENTOX model. The facility suspended use of the chemical additives, at least temporarily. The four chemical additives are now listed on DEP's Approved List, with safe effect levels calculated according to EPA's accepted procedures. The facility submitted Chemical Additive Notification Forms for all four additives with a PENTOX model simulation and engineering calculations. DEP disagrees, however, with the WQBELs and maximum usage rates on all four Notification forms and with their PENTOX model simulation which used a stream low-flow of 0.66 cfs as an input value. This stream low-flow value is too high (and may have been a typo). The Q7-10 for the stream estimated from correlation with the closest downstream gage is 0.08 cfs (described on page 3 of the Fact Sheet).

Running the PENTOX model and using the procedures given in DEP's SOP for Chemical Additives yields the following results (there was no difference in the results whether the Width:Depth ratio used was 10 as in attached model pages taken from the 2009 Protection Report or the widths and depths provided in the PENTOX simulation in the 2016 application, 3.15' for width and 0.35' for depth):

Chemical Additive	WQBEL (mg/l) per Notification Form	WQBEL (mg/l) per PENTOX submitted with Notification Form	Max. Usage (gpd) per Notification Form	WQBEL (mg/l) Per DEP's PENTOX	Usage Rate (lb/day) per DEP's PENTOX*	Max. Usage (gpd) per DEP's PENTOX
Algaecide C	2221.1 [sic]	2.221	0.094	0.0054	0.0023	0.00027
Bellacide 301	51.3 [sic]	0.0513	0.0025	0.0000001	4.2×10^{-8}	5×10^{-9}
Bellacide 355	939.7 [sic]	0.940	0.047	0.0023	0.00097	0.00012
MBC 215	85,426 [sic]	0.854	2.81	0.0021	0.00088	0.00011

*calculated as WQBEL (mg/l) x 0.0505 MGD x 8.34 conversion factor as per DEP's SOP for Chemical Additives (which does not use the Specific Gravity of the additive)

The model results were checked for reasonableness by using a mass balance equation (which is a simplification but in this case the PENTOX model indicated full mixing; PMFacute =1, PMFchronic =1, PMF human health=1 per model output pages):

CdQd + CsQs = CtQt
Solve for Cd
Cd = (CtQt – CsQs) / Qd

Where,
Ct = most stringent effect level for chemical additive on Approved List (Algaecide C used for this example)
Qt = total flow = Qd + Qs
Cs = background concentration in stream
Qs = stream low-flow
Qd = discharge flow

Cd = [(0.0026 mg/l)(0.0505+0.052 MGD) – (0 mg/l)(0.052 MGD)] / 0.0505 MGD
Cd = 0.000267 / 0.0505 = 0.0053 mg

Because the additives are introduced only to the 500 gallons of blowdown, a second PENTOX model was run by DEP which used a Qd of 0.0005 MGD and the combination of the Q7-10 (0.08 cfs) and the dilution afforded by the other 50,000 gallons per day (equivalent of 0.077 cfs) of non-contact cooling water as the model override for stream flow: 0.08 cfs + 0.077 cfs = 0.157 cfs. This was done to see if the resultant usage rates would a) match the engineering calculations submitted in the 2016 application which were intended to support the usage rates on the Notification Forms, or b) allow a greater usage rate to be approved than in the above table using DEP's standard procedure. The results did not match the submitted Notification forms/engineering calculations. The usage rates were not any greater and have not been used:

Chemical Additive	WQBEL (mg/l) Per DEP's PENTOX	Usage Rate (lb/day) per DEP's PENTOX*	Max. Usage (gpd) per DEP's PENTOX
Algaecide C	0.530	0.0022	0.00023
Bellacide 301	0.00001	4.1×10^{-8}	4.1×10^{-9}
Bellacide 355	0.224	0.00093	0.00011
MBC 215	0.204	0.00085	0.00010

*calculated as WQBEL (mg/l) x 0.0005 MGD x 8.34 conversion factor because 0.0005 MGD is the discharge flow (Qd) used in the model to arrive at WQBELs

These results can also be checked for reasonableness by using a mass balance equation, again using Algaecide C for the example:

C1Q1 + C2Q2 + CsQs = CtQt

Where,
Q1 is the non-contact cooling water without additives
Q2 is the blowdown water with additives
Solve for C2, the concentration in the blowdown

(0 mg/l)(0.050 MGD)+(C2 mg/l)(0.0005 MGD)+(0 mg/l)(0.052 MGD) = (0.0026 mg/l)(0.050+0.0005+0.052 MGD)
C2 = (0.000267 – 0 – 0) / 0.0005 = 0.534 mg/l

Similarly, mass balance equations were used to test the permittee's proposed usage rates' acceptability, whether they were likely to cause an in-stream exceedance of the most stringent effect level for each chemical additive:

C1Q1 + C2Q2 + CsQs = CtQt
Where,
Q1 is the non-contact cooling water without additives
Q2 is the blowdown water with additives
C2 was supplied in the application's engineering calculations, 40 ppm added to blowdown of 500 gallons (2 times per week) for Algaecide C

(0 mg/l) (0.050 MGD) + (40 mg/l)(0.0005 MGD) + (0 mg/l)(0.052 MGD) $\leq$ (0.0026 mg/l)(0.050+0.0005+0.052 MGD) ?

0.02 gpd is NOT < 0.000267 gpd (regardless if S.G. is included)

Therefore, adding 40 ppm of Algaecide C would cause an in-stream exceedance of the calculated water effect level and cannot be approved. Adding 0.094 gpd of Algaecide C, per Notification Form, is worse and cannot be approved.

The PENTOX model results are attached. (The attached model pages include an error in the most stringent safe effect level for Bellacide 301: it should be 0.00006 mg/l or 0.06 ug/l. When the model was corrected and re-run, however, the WQBELs did not change from those shown in the tables on the previous page.)

Development of Effluent Limitations			
Outfall No.	002	**Design Flow (MGD)**	.0012
Latitude	40º 14' 45.8"	**Longitude**	-76º 11' 30.2"
Wastewater Description:	Sewage Effluent		

Technology-Based Effluent Limitations (TBELs)

The following minimum 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)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
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)

The existing permit limits are consistent with the above concentration limits and will be carried forward in the renewal permit **as interim limits** with the following exceptions:
1) the Statistical Base Code (SBC) in the previous permit for Fecal Coliform was Monthly Average and the minimum monitoring frequency was twice per month. When samples are only collected twice per month, the Monthly Average and the Geometric Mean yield the same result. If the permittee chooses to collect more samples than the minimum required, the regulatory limit of Geometric Mean would be more appropriate and so has been included in the renewal permit (as recommended in DEP's Standard Operating Procedure (SOP) for New and Reissuance Individual SFTF NPDES Permits, referred to henceforth in this Fact Sheet as the SOP for SFTFs.)
2) the above Fecal Coliform Instantaneous Maximum limits were not included in the previous permit but have been included in the draft renewal permit.

The minimum sampling frequency for Flow, pH, and TRC will be reduced from daily in the existing permit to twice per month thus matching the other parameters. (The SOP for SFTFs allows a minimum monitoring frequency of once per month for all parameters but it is based on the design features adhering to the SFTF Manual.) Grab samples will be allowed for all parameters in the renewal permit (except for flow) consistent with DEP's SOP for SFTFs.

This SFTF existed before the publication of DEP's Small Flow Treatment Facilities Manual [362-0300-002], before issuance of DEP's general permit for SFTFs (PAG-04) which includes more stringent limits than the above, and before DEP's Technical Guidance document titled Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, April 2008, although there was an earlier version of guidance document 391-2000-014. The 2009 Protection Report stated: "The drainage ditch is completely isolated on the property site and bordered downstream by the fences of the PA Turnpike." This was the basis for allowing a less stringent Fecal Coliform limit during the colder months, the discharge was believed inaccessible to the public.

In order to install a new SFTF to replace the aged one in existence now, as planned by the permittee, a WQM permit application is needed. That requirement is shown in the Part C conditions of the draft permit. If the proposed SFTF meets the minimum standards in DEP's SFTF Manual, DEP will issue a WQM permit for the new SFTF. The standards in the SFTF Manual include the effluent achieving less than or equal to 10 mg/l as monthly averages for BOD5 and for TSS. Similarly, the SOP for SFTFs also recommends permit limits of 10 mg/l as monthly averages for both BOD5 and TSS, and 20 mg/l as maximums for both BOD5 and TSS. For this reason, **the final limits** at outfall 002, to take effect following the installation of the new SFTF, will include these more stringent limits which are considered TBELs based on Best Professional Judgement because they are achievable by SFTFs and are considered Best Available Technology (BAT).
If the permittee chooses UV disinfection for the new SFTF, the NPDES permit limit for TRC would be dropped from the permit, probably during the next renewal or amendment. Until then, the DMRs could be coded 'GG' for TRC. The new SFTF would qualify for once per month monitoring instead of twice per month, consistent with the SOP for SFTFs. The Flow sample type will be 'Measured', consistent with the SOP for SFTFs.

DEP's SOP for SFTFs recommends 200 /100 mL as a year-round limit for Fecal Coliform. DEP's current Technical Guidance document titled Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, strongly recommends that dischargers to ditches meet Chapter 93 bacteria criteria at the point of discharge, 200/100 mL, with no relaxation of the limit for the colder months. The **final limits** for 002 will therefore be 200/100 mL as a monthly geometric mean, year-round, and 1000/100 mL as an Instantaneous Maximum. The Guidance document 391-2000-014 exempts SFTFs from having to meet Advanced Treatment limits for TN, TP, and DO.

Water Quality-Based Effluent Limitations (WQBELs)

TMDL:

The receiving stream is within the Chesapeake Bay watershed but the Chesapeake Bay TMDL does not include any Waste Load Allocation for this SFTF. In accordance with DEP's SOP for SFTFs, nothing else is needed at this time, including no monitoring for nutrients.

If the design flow were to increase to greater than 2000 gpd, however, the facility would be classified as a Phase 5 facility for which there are nutrient capload requirements for new and expanding facilities whose discharges contain Total Nitrogen and Total Phosphorus.

Other:

The **TRC** model was run for outfall 002 and is attached. The TBELs for TRC were determined to be protective and no WQBELs for TRC are imposed. The same TRC limits from the previous permit are in the renewal permit. Because the applicant could install a new SFTF with a larger design flow, the TRC model was also run for a flow of 2000 gpd, the upper limit for a "SFTF", with the same results: TBELs of 0.5 mg/l as a monthly average and 1.6 mg/l as an Instantaneous Maximum.

The SOP for SFTFs states that modeling, other than for TRC, is not necessary for SFTFs. The sampling results in their application did not indicate any need for modeling.

Class A Wild Trout Fisheries

No Class A Wild Trout Fisheries are impacted by this discharge.

Anti-Backsliding

No limits have been included in the renewal permit that are less stringent than in the previous permit.

Antidegradation (Chapter 93.4)

The effluent limits for this discharge have been developed to ensure that existing stream uses and the level of water quality necessary to protect the existing uses are maintained and protected. No High Quality (HQ) or Exceptional Value (EV) waters are impacted by this discharge.

CHANGES TO PERMIT:

-The required sample type for 001 is now “metered”, not estimated (and they have a meter per DEP Inspection Report).

-The Statistical Base Code for Temperature for 001 is now “Daily Maximum” because “Daily Average” is no longer a choice.

-Chemical Additive Requirements have been added in Part C of the permit, applicable to industrial discharges.

-Fecal Coliform units are now #/100 mL, rather than CFU/100 mL.

-Instantaneous Maximum limits for Fecal Coliform have been added to outfall 002 consistent with State regulations.

-The sample type for 002 is now Grab for all parameters (other than flow), consistent with DEP’s SOP for SFTFs.

-The Minimum sample frequency for pH, TRC, and estimated flow at 002 for the interim limits was reduced to twice/month from daily.

-DEP has included a Compliance Schedule for the proposed new SFTF in Part C of the draft permit; DEP proposes that the WQM permit application be submitted within two years of the final NPDES permit’s effective date and that the final limits for 002 take effect three years from the final NPDES permit’s effective date.

-The final limits at 002 includes more stringent limits for BOD5 and TSS and year-round limits for Fecal Coliform of 200/100 mL as a monthly average (geometric mean per monthly reporting period) and 1000/100 mL as an Instantaneous Maximum.

-The required sample type for flow for the final limits at 002 is “measured”, not estimated.

-The minimum monitoring frequency for all parameters at 002 in the final limits table is once per month, consistent with the SOP for SFTFs.

-New DEP software inserts decimal points in limits and requires significant digits, contrary to the previous permit.

-Updated Standard permit language.

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, as needed, and BPJ. Instantaneous Maximum (IMAX) limits are generally 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 (units)	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum 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	1/day	Metered
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
Temperature , April-Oct (°F)	XXX	XXX	XXX	XXX	84	XXX	1/day	i-s
Temperature, Nov-March (°F)	XXX	XXX	XXX	XXX	60	XXX	1/day	i-s

Compliance Sampling Location: at discharge from facility

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, as needed, and BPJ. Instantaneous Maximum (IMAX) limits are generally 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 (EDP) through Startup of new SFTF to be installed (EDP + 3 Years). INTERIM LIMITS

Parameter (units)	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Instant. Minimum	Average Monthly		Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	2/month	Estimated
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	2/month	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	2/month	Grab
CBOD5	XXX	XXX	XXX	25.0	XXX	50.0	2/month	Grab
TSS	XXX	XXX	XXX	30.0	XXX	60.0	2/month	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10,000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab

Compliance Sampling Location: at discharge from Outfall 002

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: Startup of new SFTF to be installed (EDP + 3 Years) through Permit Expiration Date. **FINAL LIMITS**

Parameter (units)	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Instant. Minimum	Average Monthly		Instant. Maximum		
Flow (MGD)	Report	XXX	XXX	XXX	XXX	XXX	1/month	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/month	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/month	Grab
BOD5	XXX	XXX	XXX	10.0	XXX	20.0	1/month	Grab
TSS	XXX	XXX	XXX	10.0	XXX	20.0	1/month	Grab
Fecal Coliform (No./100 ml)	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/month	Grab

Compliance Sampling Location: at discharge from Outfall 002

	Tools 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
☒	Toxics Screening Analysis 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.
☒	SOP: Chemical Additives
☒	SOP: New and Reissuance Individual Permits for Small Flow Treatment Facilities

TOXICS SCREENING ANALYSIS

WATER QUALITY POLLUTANTS OF CONCERN
VERSION 2.7

CLEAR FORM

Facility: **Denver Cold Storage**

NPDES Permit No.: **PA0086541**

Outfall: **001**

Analysis Hardness (mg/L): **323 (per application)**

Discharge Flow (MGD): **0.0505**

Analysis pH (SU): **7**

Stream Flow, Q_{7-10} (cfs): **0.08**

Parameter	Maximum Concentration in Application or DMRs (µg/L)		Most Stringent Criterion (µg/L)	Candidate for PENTOXSD Modeling?	Most Stringent WQBEL (µg/L)	Screening Recommendation
Total Dissolved Solids		556,000	500000	Yes	46,500,000	No Limit
Chloride			250000			
Bromide	<	2500	N/A	No		
Sulfate		19900	250000	No		
Fluoride			2000			
Total Aluminum	<	200	750	No		
Total Antimony			5.6			
Total Arsenic			10			
Total Barium	<	539	2400	No		
Total Beryllium			N/A			
Total Boron		50	1600	No		
Total Cadmium			0.271			
Total Chromium	<	15	N/A	No		
Hexavalent Chromium			10.4			
Total Cobalt	<	5	19	No		
Total Copper			9.3			
Total Cyanide			N/A			
Total Iron	<	200	1500	No		
Dissolved Iron	<	200	300	Yes	622.6	No Limit
Total Lead			3.2			
Total Manganese		5.7	1000	No		
Total Mercury			0.05			
Total Molybdenum	<	10	N/A	No		
Total Nickel			52.2			
Total Phenols (Phenolics)			5			

Total Selenium			5.0			
Total Silver			3.8			
Total Thallium			0.24			
Total Zinc			119.8			
Acrolein	<		3			
Acrylamide	<		0.07			
Acrylonitrile	<		0.051			
Benzene	<		1.2			
Bromoform	<		4.3			
Carbon Tetrachloride	<		0.23			
Chlorobenzene	<		130			
Chlorodibromomethane	<		0.4			
Chloroethane	<		N/A			
2-Chloroethyl Vinyl Ether	<		3500			
Chloroform	<		5.7			
Dichlorobromomethane	<		0.55			
1,1-Dichloroethane	<		N/A			
1,2-Dichloroethane	<		0.38			
1,1-Dichloroethylene	<		33			
1,2-Dichloropropane	<		2200			
1,3-Dichloropropylene	<		0.34			
Ethylbenzene	<		530			
Methyl Bromide	<		47			
Methyl Chloride	<		5500			
Methylene Chloride	<		4.6			
1,1,2,2-Tetrachloroethane	<		0.17			
Tetrachloroethylene	<		0.69			
Toluene	<		330			
1,2-trans-Dichloroethylene	<		140			
1,1,1-Trichloroethane	<		610			
1,1,2-Trichloroethane	<		0.59			
Trichloroethylene	<		2.5			
Vinyl Chloride	<		0.025			
2-Chlorophenol	<		81			
2,4-Dichlorophenol	<		77			
2,4-Dimethylphenol	<		130			
4,6-Dinitro-o-Cresol	<		13			
2,4-Dinitrophenol	<		69			
2-Nitrophenol	<		1600			

4-Nitrophenol	<		470			
p-Chloro-m-Cresol	<		30			
Pentachlorophenol	<		0.27			
Phenol	<		10400			
2,4,6-Trichlorophenol	<		1.4			
Acenaphthene	<		17			
Acenaphthylene	<		N/A			
Anthracene	<		8300			
Benzidine	<		0.000086			
Benzo(a)Anthracene	<		0.0038			
Benzo(a)Pyrene	<		0.0038			
3,4-Benzofluoranthene	<		0.0038			
Benzo(ghi)Perylene	<		N/A			
Benzo(k)Fluoranthene	<		0.0038			
Bis(2-Chloroethoxy)Methane	<		N/A			
Bis(2-Chloroethyl)Ether	<		0.03			
Bis(2-Chloroisopropyl)Ether	<		1400			
Bis(2-Ethylhexyl)Phthalate	<		1.2			
4-Bromophenyl Phenyl Ether	<		54			
Butyl Benzyl Phthalate	<		35			
2-Chloronaphthalene	<		1000			
4-Chlorophenyl Phenyl Ether	<		N/A			
Chrysene	<		0.0038			
Dibenzo(a,h)Anthrancene	<		0.0038			
1,2-Dichlorobenzene	<		160			
1,3-Dichlorobenzene	<		69			
1,4-Dichlorobenzene	<		150			
3,3-Dichlorobenzidine	<		0.021			
Diethyl Phthalate	<		800			
Dimethyl Phthalate	<		500			
Di-n-Butyl Phthalate	<		21			
2,4-Dinitrotoluene	<		0.05			
2,6-Dinitrotoluene	<		0.05			
1,4-Dioxane	<		N/A			
Di-n-Octyl Phthalate	<		N/A			
1,2-Diphenylhydrazine	<		0.036			
Fluoranthene	<		40			
Fluorene	<		1100			
Hexachlorobenzene	<		0.00028			

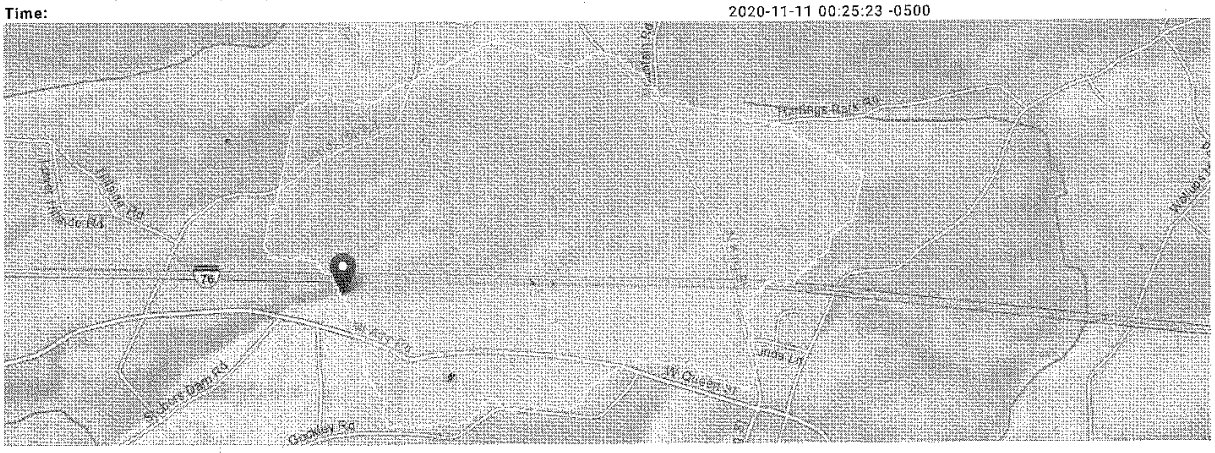
Hexachlorobutadiene	<		0.44			
Hexachlorocyclopentadiene	<		1			
Hexachloroethane	<		1.4			
Indeno(1,2,3-cd)Pyrene	<		0.0038			
Isophorone	<		35			
Naphthalene	<		43			
Nitrobenzene	<		17			
n-Nitrosodimethylamine	<		0.00069			
n-Nitrosodi-n-Propylamine	<		0.005			
n-Nitrosodiphenylamine	<		3.3			
Phenanthrene	<		1			
Pyrene	<		830			
1,2,4-Trichlorobenzene	<		26			
Aldrin	<		0.000049			
alpha-BHC	<		0.0026			
beta-BHC	<		0.0091			
gamma-BHC	<		0.098			
delta BHC	<		N/A			
Chlordane	<		0.0008			
4,4-DDT	<		0.00022			
4,4-DDE	<		0.00022			
4,4-DDD	<		0.00031			
Dieldrin	<		0.000052			
alpha-Endosulfan	<		0.056			
beta-Endosulfan	<		0.056			
Endosulfan Sulfate	<		N/A			
Endrin	<		0.036			
Endrin Aldehyde	<		0.29			
Heptachlor	<		0.000079			
Heptachlor Epoxide	<		0.000039			
PCB-1242	<		N/A			
PCB-1254	<		N/A			
PCB-1221	<		N/A			
PCB-1232	<		N/A			
PCB-1248	<		N/A			
PCB-1260	<		N/A			
PCB-1016	<		N/A			
Toxaphene	<		0.0002			
2,3,7,8-TCDD	<		0.000000005			

Gross Alpha (pCi/L)	<		N/A			
Total Beta (pCi/L)	<		N/A			
Radium 226/228 (pCi/L)	<		N/A			
Total Strontium	<		4000			
Total Uranium	<		N/A			

UNT 07712

StreamStats Report - Denver Cold Storage

Region ID:	PA
Workspace ID:	PA20201111052506708000
Clicked Point (Latitude, Longitude):	40.24514, -76.19263
Time:	2020-11-11 00:25:23 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	0.7	square miles
BSLOPD	Mean basin slope measured in degrees	5.5197	degrees
ROCKDEP	Depth to rock	3.3	feet
URBAN	Percentage of basin with urban development	9.3683	percent

Low-Flow Statistics Parameters[Low Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.7	square miles	4.78	1150
BSLOPD	Mean Basin Slope degrees	5.5197	degrees	1.7	6.4
ROCKDEP	Depth to Rock	3.3	feet	4.13	5.21
URBAN	Percent Urban	9.3683	percent	0	89

Low-Flow Statistics Disclaimers[Low Flow Region 1]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Low-Flow Statistics Flow Report[Low Flow Region 1]

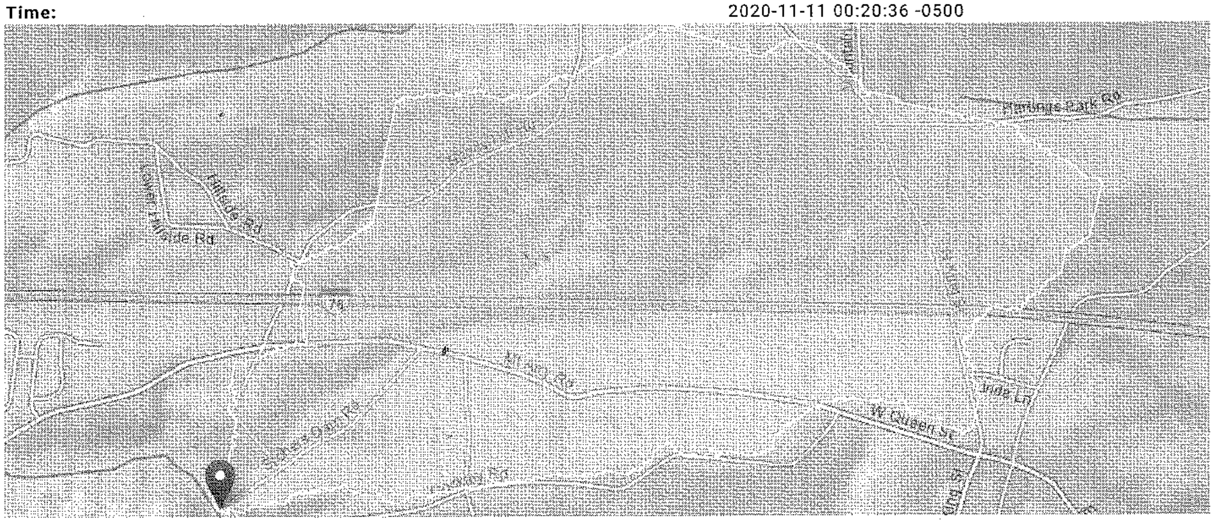
Statistic	Value	Unit
7 Day 2 Year Low Flow	0.0427	ft^3/s
30 Day 2 Year Low Flow	0.0671	ft^3/s
7 Day 10 Year Low Flow	0.0138	ft^3/s
30 Day 10 Year Low Flow	0.0239	ft^3/s
90 Day 10 Year Low Flow	0.0457	ft^3/s

Low-Flow Statistics Citations

Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (http://pubs.usgs.gov/sir/2006/5130/)

StreamStats Report - Confluence UNT 07712 with Indian Run

Region ID:	PA
Workspace ID:	PA20201111052020515000
Clicked Point (Latitude, Longitude):	40.24014, -76.20209
Time:	2020-11-11 00:20:36 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	0.92	square miles
BSLOPD	Mean basin slope measured in degrees	5.6879	degrees
ROCKDEP	Depth to rock	3.3	feet
URBAN	Percentage of basin with urban development	8.254	percent

Low-Flow Statistics Parameters[Low Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.92	square miles	4.78	1150
BSLOPD	Mean Basin Slope degrees	5.6879	degrees	1.7	6.4
ROCKDEP	Depth to Rock	3.3	feet	4.13	5.21
URBAN	Percent Urban	8.254	percent	0	89

Low-Flow Statistics Disclaimers[Low Flow Region 1]

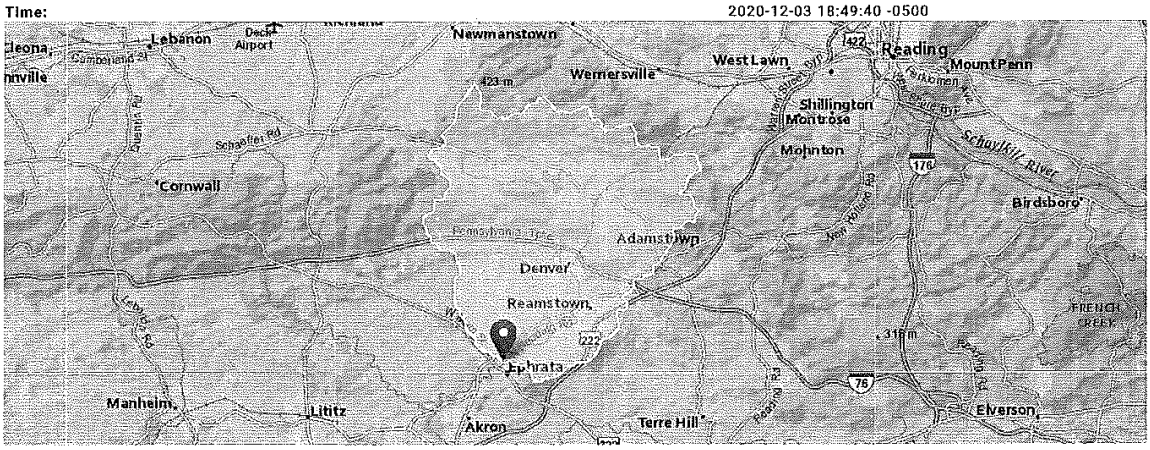
One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Low-Flow Statistics Flow Report[Low Flow Region 1]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.0572	ft^3/s
30 Day 2 Year Low Flow	0.0892	ft^3/s
7 Day 10 Year Low Flow	0.0189	ft^3/s

StreamStats Report - Ephrata PWS

Region ID:	PA
Workspace ID:	PA20201203234923334000
Clicked Point (Latitude, Longitude):	40.18491, -76.17959
Time:	2020-12-03 18:49:40 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	59.9	square miles
BSLOPD	Mean basin slope measured in degrees	5.011	degrees
ROCKDEP	Depth to rock	4.6	feet
URBAN	Percentage of basin with urban development	6.9523	percent

Low-Flow Statistics Parameters[100 Percent (59.9 square miles) Low Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	59.9	square miles	4.78	1150
BSLOPD	Mean Basin Slope degrees	5.011	degrees	1.7	6.4
ROCKDEP	Depth to Rock	4.6	feet	4.13	5.21
URBAN	Percent Urban	6.9523	percent	0	89

Low-Flow Statistics Flow Report[100 Percent (59.9 square miles) Low Flow Region 1]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	SEp
7 Day 2 Year Low Flow	13.2	ft^3/s	46	46
30 Day 2 Year Low Flow	16.8	ft^3/s	38	38
7 Day 10 Year Low Flow	6.83	ft^3/s	51	51
30 Day 10 Year Low Flow	8.82	ft^3/s	46	46
90 Day 10 Year Low Flow	13	ft^3/s	41	41

Low-Flow Statistics Citations

Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (http://pubs.usgs.gov/sir/2006/5130/)

PENTOXSD

Modeling Input Data

Stream Code	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope	PWS With (mgd)	Apply FC
7710	5.70	435.00	0.70	0.00000	0.00	☑

Stream Data

	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Rch Velocity (fps)	Rch Trav Time (days)	Tributary Hard (mg/L)	Tributary pH	Stream Hard (mg/L)	Stream pH	Analysis Hard (mg/L)	Analysis pH
Q7-10	0.12	0	0	0	0	0	0	0	100	7	0	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 (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	AFC PMF	CFC PMF	THH PMF	CRL PMF	Disc Hard (mg/L)	Disc pH
Denver Cold	PA0086541	0	0.0505	0	0	0	0	0	0	323	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)
DISSOLVED IRON	9999990	0	0.5	0.5	0	0	0	0	1	0
TOTAL DISSOLVED SOLIDS (PWS)	9999990	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
7710	0.00	320.00	59.90	0.00000	1.00	☑

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	0.12	0	0	0	0	0	0	0	100	7	0	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 (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	AFC PMF	CFC PMF	THH PMF	CRL PMF	Disc Hard (mg/L)	Disc pH
downstrm-PWS		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)
DISSOLVED IRON	0	0	0.5	0.5	0	0	0	0	1	0
TOTAL DISSOLVED SOLIDS (PWS)	0	0	0.5	0.5	0	0	0	0	1	0

PENTOXSD Analysis Results

Wasteload Allocations

RMI	Name	Permit Number
5.70	**Denver Cold**	**PA0086541**

AFC

Q7-10: **CCT (min)** 0.672 **PMF** 1 **Analysis pH** 7 **Analysis Hardness** 207.458

Parameter	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)
DISSOLVED IRON	0	0	0	0	NA	NA	NA
TOTAL DISSOLVED SOLIDS (PWS)	0	0	0	0	NA	NA	NA

CFC

Q7-10: **CCT (min)** 0.672 **PMF** 1 **Analysis pH** 7 **Analysis Hardness** 207.458

Parameter	Stream Conc. (µg/L)	Stream CV	Trib Conc. (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)
DISSOLVED IRON	0	0	0	0	NA	NA	NA
TOTAL DISSOLVED SOLIDS (PWS)	0	0	0	0	NA	NA	NA

THH

Q7-10: **CCT (min)** 0.672 **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)
DISSOLVED IRON	0	0	0	0	300	300	622.566
TOTAL DISSOLVED SOLIDS (PWS)	0	0	0	0	500000	500000	4.65E+07

WQC applied at RMI 0 with a design stream flow of 7.188.

CRL

Qh: **CCT (min)** 0.663 **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)
DISSOLVED IRON	0	0	0	0	NA	NA	NA
TOTAL DISSOLVED SOLIDS (PWS)	0	0	0	0	NA	NA	NA

PENTOXSD Analysis Results

Recommended Effluent Limitations

SWP Basin	Stream Code:	Stream Name:
07J	7710	INDIAN RUN

RMI	Name	Permit Number	Disc Flow (mgd)
5.70	Denver Cold	PA0086541	0.0505

Parameter	Effluent Limit (µg/L)	Governing Criterion	Max. Daily Limit (µg/L)	Most Stringent WQBEL (µg/L)	Most Stringent WQBEL Criterion
DISSOLVED IRON	622.566	THH	971.303	622.566	THH
TOTAL DISSOLVED SOLIDS (PWS	9990000	INPUT	1.56E+07	4.65E+07	THH

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

0.08	= Q stream (cfs)	0.5	= CV Daily
0.0505	= Q discharge (MGD)	0.5	= CV Hourly
30	= no. samples	1	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	1	= CFC_Partial Mix Factor
0	= Chlorine Demand of Discharge	15	= AFC_Criteria Compliance Time (min)
0.5	= BAT/BPJ Value	720	= CFC_Criteria Compliance Time (min)
0	= % Factor of Safety (FOS)		=Decay Coefficient (K)

Source	Reference	AFC Calculations		Reference	CFC Calculations	
TRC	1.3.2.iii	WLA afc =	0.346	1.3.2.iii	WLA cfc =	0.329
PENTOXSD TRG	5.1a	LTAMULT afc =	0.373	5.1c	LTAMULT cfc =	0.581
PENTOXSD TRG	5.1b	LTA_afc=	0.129	5.1d	LTA_cfc =	0.192

Source		Effluent Limit Calculations		
PENTOXSD TRG	5.1f	AML MULT =	1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) =	0.159	AFC
		INST MAX LIMIT (mg/l) =	0.518	

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)

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

0.08	= Q stream (cfs)	0.5	= CV Daily
0.0012	= Q discharge (MGD)	0.5	= CV Hourly
30	= no. samples	1	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	1	= CFC_Partial Mix Factor
0	= Chlorine Demand of Discharge	15	= AFC_Criteria Compliance Time (min)
0.5	= BAT/BPJ Value	720	= CFC_Criteria Compliance Time (min)
0	= % Factor of Safety (FOS)		=Decay Coefficient (K)

Source	Reference	AFC Calculations		Reference	CFC Calculations	
TRC	1.3.2.iii	WLA afc =	13.766	1.3.2.iii	WLA cfc =	13.413
PENTOXSD TRG	5.1a	LTAMULT afc =	0.373	5.1c	LTAMULT cfc =	0.581
PENTOXSD TRG	5.1b	LTA_afc=	5.130	5.1d	LTA_cfc =	7.798

Source		Effluent Limit Calculations		
PENTOXSD TRG	5.1f	AML MULT =	1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) =	0.500	BAT/BPJ
		INST MAX 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)

MONITORIN(	MONITORIN	DMR_	OUTFALL	PARAN	LOAD_	LOAD_1_V	LOAD_1	LOAD_1_SB(	LOAD_2_V	LOAD_2_	LOAD_2_SBC		AvgMo,Load 1	
		VERSION												
9/1/2018	9/30/2018	1	1	Flow	MGD	0.050238	Monitor	Average Mo	0.059724	Monitor a	Daily Maximum		0.050238	
10/1/2018	10/31/2018	1	1	Flow	MGD	0.053186	Monitor	Average Mo	0.07148	Monitor a	Daily Maximum		0.053186	
11/1/2018	11/30/2018	1	1	Flow	MGD	0.00762	Monitor	Average Mo	0.049887	Monitor a	Daily Maximum		0.00762	
12/1/2018	12/31/2018	1	1	Flow	MGD	0.008919	Monitor	Average Mo	0.015968	Monitor a	Daily Maximum		0.008919	
1/1/2019	1/31/2019	1	1	Flow	MGD	0.010713	Monitor	Average Mo	0.014768	Monitor a	Daily Maximum		0.010713	
2/1/2019	2/28/2019	1	1	Flow	MGD	0.012333	Monitor	Average Mo	0.024544	Monitor a	Daily Maximum		0.012333	
3/1/2019	3/31/2019	1	1	Flow	MGD	0.010499	Monitor	Average Mo	0.017375	Monitor a	Daily Maximum		0.010499	
4/1/2019	4/30/2019	1	1	Flow	MGD	0.042392	Monitor	Average Mo	0.065602	Monitor a	Daily Maximum		0.042392	
5/1/2019	5/31/2019	1	1	Flow	MGD	0.053309	Monitor	Average Mo	0.070042	Monitor a	Daily Maximum		0.053309	
6/1/2019	6/30/2019	2	1	Flow	MGD	0.055693	Monitor	Average Mo	0.0646	Monitor a	Daily Maximum		0.055693	
7/1/2019	7/31/2019	2	1	Flow	MGD	0.51319	Monitor	Average Mo	0.0814	Monitor a	Daily Maximum		0.051319	edit
8/1/2019	8/31/2019	2	1	Flow	MGD	0.049048	Monitor	Average Mo	0.0633	Monitor a	Daily Maximum		0.049048	
9/1/2019	9/30/2019	2	1	Flow	MGD	0.050763	Monitor	Average Mo	0.0693	Monitor a	Daily Maximum		0.050763	
10/1/2019	10/31/2019	2	1	Flow	MGD	0.055548	Monitor	Average Mo	0.0638	Monitor a	Daily Maximum		0.055548	
11/1/2019	11/30/2019	2	1	Flow	MGD	0.013113	Monitor	Average Mo	0.0588	Monitor a	Daily Maximum		0.013113	
12/1/2019	12/31/2019	2	1	Flow	MGD	0.003177	Monitor	Average Mo	0.0051	Monitor a	Daily Maximum		0.003177	
1/1/2020	1/31/2020	2	1	Flow	MGD	0.0058	Monitor	Average Mo	0.0111	Monitor a	Daily Maximum		0.0058	
2/1/2020	2/29/2020	2	1	Flow	MGD	0.000928	Monitor	Average Mo	0.0101	Monitor a	Daily Maximum		0.000928	
3/1/2020	3/31/2020	2	1	Flow	MGD	0.009542	Monitor	Average Mo	0.0124	Monitor a	Daily Maximum		0.009542	
4/1/2020	4/30/2020	2	1	Flow	MGD	0.053117	Monitor	Average Mo	0.0624	Monitor a	Daily Maximum		0.053117	
5/1/2020	5/31/2020	2	1	Flow	MGD	0.060474	Monitor	Average Mo	0.0716	Monitor a	Daily Maximum		0.060474	
6/1/2020	6/30/2020	2	1	Flow	MGD	0.055047	Monitor	Average Mo	0.0692	Monitor a	Daily Maximum		0.055047	
7/1/2020	7/31/2020	1	1	Flow	MGD	0.050194	Monitor	Average Mo	0.067	Monitor a	Daily Maximum		0.050194	
8/1/2020	8/31/2020	1	1	Flow	MGD	0.057297	Monitor	Average Mo	0.0672	Monitor a	Daily Maximum		0.057297	
9/1/2020	9/30/2020	1	1	Flow	MGD	0.060493	Monitor	Average Mo	0.0719	Monitor a	Daily Maximum		0.060493	
						0.053705	Avg		0.049544	Avg			0.035	Avg
						0.51319	Max,looks like error		0.071552	90th Percentile				

MONITORIN(	MONITORIN	DMR_	OUTFALL	PARAN	LOAD_	LOAD_1_V	LOAD_1	LOAD_1_SB(	LOAD_2_V	LOAD_2_	LOAD_2_SBC
9/1/2018	9/30/2018	1	2	Flow	MGD	0.000679	Monitor	Average Mo	0.00105	Monitor a	Daily Maximum
10/1/2018	10/31/2018	1	2	Flow	MGD	0.000527	Monitor	Average Mo	0.000802	Monitor a	Daily Maximum
11/1/2018	11/30/2018	1	2	Flow	MGD	0.00047	Monitor	Average Mo	0.000847	Monitor a	Daily Maximum
12/1/2018	12/31/2018	1	2	Flow	MGD	0.000461	Monitor	Average Mo	0.000744	Monitor a	Daily Maximum
1/1/2019	1/31/2019	1	2	Flow	MGD	0.000427	Monitor	Average Mo	0.000865	Monitor a	Daily Maximum
2/1/2019	2/28/2019	1	2	Flow	MGD	0.00036	Monitor	Average Mo	0.000656	Monitor a	Daily Maximum
3/1/2019	3/31/2019	1	2	Flow	MGD	0.000414	Monitor	Average Mo	0.001095	Monitor a	Daily Maximum
4/1/2019	4/30/2019	1	2	Flow	MGD	0.000555	Monitor	Average Mo	0.000919	Monitor a	Daily Maximum
5/1/2019	5/31/2019	1	2	Flow	MGD	0.000771	Monitor	Average Mo	0.001147	Monitor a	Daily Maximum
6/1/2019	6/30/2019	2	2	Flow	MGD	0.000746	Monitor	Average Mo	0.00211	Monitor a	Daily Maximum
7/1/2019	7/31/2019	2	2	Flow	MGD	0.000406	Monitor	Average Mo	0.00097	Monitor a	Daily Maximum
8/1/2019	8/31/2019	2	2	Flow	MGD	0.000642	Monitor	Average Mo	0.001287	Monitor a	Daily Maximum
9/1/2019	9/30/2019	2	2	Flow	MGD	0.001979	Monitor	Average Mo	0.004543	Monitor a	Daily Maximum
10/1/2019	10/31/2019	2	2	Flow	MGD	0.000879	Monitor	Average Mo	0.003841	Monitor a	Daily Maximum
11/1/2019	11/30/2019	2	2	Flow	MGD	0.000316	Monitor	Average Mo	0.000907	Monitor a	Daily Maximum
12/1/2019	12/31/2019	2	2	Flow	MGD	0.000337	Monitor	Average Mo	0.000562	Monitor a	Daily Maximum
1/1/2020	1/31/2020	2	2	Flow	MGD	0.000325	Monitor	Average Mo	0.000552	Monitor a	Daily Maximum
2/1/2020	2/29/2020	2	2	Flow	MGD	0.000333	Monitor	Average Mo	0.000564	Monitor a	Daily Maximum
3/1/2020	3/31/2020	2	2	Flow	MGD	0.000319	Monitor	Average Mo	0.000545	Monitor a	Daily Maximum
4/1/2020	4/30/2020	2	2	Flow	MGD	0.000343	Monitor	Average Mo	0.000648	Monitor a	Daily Maximum
5/1/2020	5/31/2020	2	2	Flow	MGD	0.00036	Monitor	Average Mo	0.000618	Monitor a	Daily Maximum
6/1/2020	6/30/2020	2	2	Flow	MGD	0.000411	Monitor	Average Mo	0.001268	Monitor a	Daily Maximum
7/1/2020	7/31/2020	1	2	Flow	MGD	0.00027	Monitor	Average Mo	0.000653	Monitor a	Daily Maximum
8/1/2020	8/31/2020	1	2	Flow	MGD	0.000496	Monitor	Average Mo	0.001462	Monitor a	Daily Maximum
9/1/2020	9/30/2020	1	2	Flow	MGD	0.000067	Monitor	Average Mo	0.00035	Monitor a	Daily Maximum
						0.000516	Avg		0.00116	Avg	
						0.000761	90th Percentile		0.001851	90th Percentile	

PENTOXSD

Modeling Input Data

Stream Code	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope	PWS With (mgd)	Apply FC
7712	0.60	435.00	0.70	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	0.12	0	0.157	9	3.15	0.35	0	0	100	7	0	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 (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	AFC PMF	CFC PMF	THH PMF	CRL PMF	Disc Hard (mg/L)	Disc pH
Denver Cold Sto	PA0086541	0	0.0005	0	0	0	0	0	0	323	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)
Algaecide C	9999990	0	0.5	0.5	0	0	0	0	1	0
Bellacide 301	9999990	0	0.5	0.5	0	0	0	0	1	0
Bellacide 355	9999990	0	0.5	0.5	0	0	0	0	1	0
MBC 215	9999990	0	0.5	0.5	0	0	0	0	1	0

PENTOXSD Analysis Results

Wasteload Allocations

RMI	Name	Permit Number
0.60	**Denver Cold Sto**	**PA0086541**

AFC

Q7-10: **CCT (min)** 0.945 **PMF** 1 **Analysis pH** 7 **Analysis Hardness** 101.093

Parameter	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)
Bellacide 301	0	0	0	0	0.6	0.6	122.384
MBC 215	0	0	0	0	11	11	2243.708
Bellacide 355	0	0	0	0	9.6	9.6	1958.146
Algaecide C	0	0	0	0	23.1	23.1	4711.788

CFC

Q7-10: **CCT (min)** 0.945 **PMF** 1 **Analysis pH** 7 **Analysis Hardness** 101.093

Parameter	Stream Conc. (µg/L)	Stream CV	Trib Conc. (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)
Bellacide 301	0	0	0	0	0.00005	0.00005	0.01
MBC 215	0	0	0	0	1	1	203.973
Bellacide 355	0	0	0	0	1.1	1.1	224.371
Algaecide C	0	0	0	0	2.6	2.6	530.331

THH

Q7-10: **CCT (min)** 0.945 **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)
Bellacide 301	0	0	0	0	311000	311000	6.343E+07
MBC 215	0	0	0	0	556000	556000	1.134E+08
Bellacide 355	0	0	0	0	12060000	12060000	2.45992E+09
Algaecide C	0	0	0	0	NA	NA	NA

CRL

Qh: **CCT (min)** 0.218 **PMF** 1

PENTOXSD Analysis Results

Recommended Effluent Limitations

SWP Basin	Stream Code:	Stream Name:
07J	7712	Trib 07712 to Indian Run

RMI	Name	Permit Number	Disc Flow (mgd)
0.60	Denver Cold Sto	PA0086541	0.0005

Parameter	Effluent Limit (µg/L)	Governing Criterion	Max. Daily Limit (µg/L)	Most Stringent WQBEL (µg/L)	Most Stringent WQBEL Criterion
Algaecide C	530.331	CFC	827.402	530.331	CFC
Bellacide 301	0.01	CFC	0.016	0.01	CFC
Bellacide 355	224.371	CFC	350.055	224.371	CFC
MBC 215	203.973	CFC	318.231	203.973	CFC

PENTOXSD Analysis Results

Recommended Effluent Limitations

SWP Basin	Stream Code:	Stream Name:
07J	7712	Trib 07712 to Indian Run

RMI	Name	Permit Number	Disc Flow (mgd)
0.60	Denver Cold Sto	PA0086541	0.0505

Parameter	Effluent Limit (µg/L)	Governing Criterion	Max. Daily Limit (µg/L)	Most Stringent WQBEL (µg/L)	Most Stringent WQBEL Criterion
Algaecide C	5.396	CFC	8.418	5.396	CFC
Bellacide 301	0.000104	CFC	0.000162	0.000104	CFC
Bellacide 355	2.283	CFC	3.561	2.283	CFC
MBC 215	2.075	CFC	3.238	2.075	CFC

PENTOXSD

Modeling Input Data

Stream Code	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope	PWS With (mgd)	Apply FC
7712	0.60	435.00	0.70	0.00000	0.00	☑

Stream Data

	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Rch Velocity (fps)	Rch Trav Time (days)	Tributary Hard (mg/L)	Tributary pH	Stream Hard (mg/L)	Stream pH	Analysis Hard (mg/L)	Analysis pH
Q7-10	0.12	0	0	10	0	0	0	0	100	7	0	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 (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	AFC PMF	CFC PMF	THH PMF	CRL PMF	Disc Hard (mg/L)	Disc pH
Denver Cold Sto	PA0086541	0	0.0505	0	0	0	0	0	0	323	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)
Algaecide C	9999990	0	0.5	0.5	0	0	0	0	1	0
Bellacide 301	9999990	0	0.5	0.5	0	0	0	0	1	0
Bellacide 355	9999990	0	0.5	0.5	0	0	0	0	1	0
MBC 215	9999990	0	0.5	0.5	0	0	0	0	1	0