Pennsylvania Department of Environmental Protection

Southcentral Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0087742**
Facility Type	**Non-Municipal**	APS ID	**15679**
Major / Minor	**Minor**	Authorization ID	**1461593**

Applicant and Facility Information

Applicant Name	**Eagles Peak Campground Inc.**	Facility Name	**Eagles Peak Campground**
Applicant Address	905 16th Place	Facility Address	397 Eagles Peak Road
	Vero Beach, FL 32960-5526		Robesonia, PA 19551-9225
Applicant Contact	Wayne Klekamp	Facility Contact	Brian Norris
Applicant Phone	(772) 584-3628	Facility Phone	(610) 633-8009
Client ID	59392	Site ID	442083
Ch 94 Load Status	Not Overloaded	Municipality	Millcreek Township
Connection Status		County	Lebanon
Date Application Received	November 13, 2023	EPA Waived?	Yes
Date Application Accepted	December 12, 2023	If No, Reason	

Purpose of Application: NPDES permit Renewal

Summary of Review

1.0 General Discussion

This fact sheet supports the renewal of an existing NPDES permit for discharge of treated domestic wastewater from Eagle's Peak Campground wastewater treatment plant located in Millcreek Township, Lebanon County. The treatment system is package plant with a hydraulic design capacity of 0.025MGD. The facility provides sanitary services for the campground on seasonal basis from April to October when the campground is opened. The campground is closed the rest of the year and all treatment tanks are emptied. The tanks are reseeded in the spring ready for the next camping season. The discharge goes to UNT Furnace Creek which is classified for Cold Water Fishes (CWF). The existing NPDES permit was issued on May 30, 2019 with an effective date of June 1, 2019 and expiration date of May 31, 2024. The applicant submitted a timely permit renewal application to the Department and currently operating under the terms and conditions in the existing permit under administrative extension provisions pending Department action on the renewal application. A topographic map showing the discharge location is presented in attachment A

1.1 Sludge use and disposal description and location(s):

Sludge is hold up in a sludge holding tank and hauled out by a licensed hauler periodically.

Approve	Deny	Signatures	Date
X		*J. Pascal Kwedza* J. Pascal Kwedza, P.E. / Environmental Engineer	November 19, 2024
X		*Maria D. Bebenek for* Daniel W. Martin, P.E. / Environmental Engineer Manager	November 26, 2024
X		*Maria D. Bebenek* Maria D. Bebenek, P.E./ Program Manager	November 26, 2024

Summary of Review

1.2 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.

1.3.0 Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.025
Latitude	40º 19' 59.50"	Longitude	-76º 10' 27.76"
Quad Name		Quad Code	
Wastewater Description:	Sewage Effluent		
Receiving Waters	Unnamed Tributary to Furnace Creek (CWF)	Stream Code	01895
NHD Com ID	26003918	RMI	2.05
Drainage Area	0.21 sq mi	Yield (cfs/mi^2)	0.011
Q_{7-10} Flow (cfs)	0.023	Q_{7-10} Basis	StreamStats
Elevation (ft)	930	Slope (ft/ft)	
Watershed No.	3-C	Chapter 93 Class.	CWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status		Name	

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

Nearest Downstream Public Water Supply Intake		Western Berks Water Authority	
PWS Waters	Tulpehocken Creek	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	15.47

Changes Since Last Permit Issuance: None

1.3.1 Water Supply Intake

The nearest downstream water supply intake is approximately 15.47 miles downstream by Western Berks Water Authority on Tulpehocken Creek. No impact is expected from this discharge on the intake.

2.0 Treatment Facility Summary

Treatment Facility Name: Eagle'S Peak Campground

WQM Permit No.	Issuance Date
3898402	6/16/1998

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary With Ammonia And Phosphorus	Extended Aeration	Hypochlorite	0.025

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.025		Not Overloaded	Concentration	Other WWTP

Changes Since Last Permit Issuance: None

2.1 Treatment Facility

The treatment plant consists of 3 bar screens, 2 EQ tanks with lift pumps, 4 aeration tanks, one final clarifier, a chlorine contact tank and 2 sludge holding tanks. Effluent is disinfected with chlorine tabs and de-chlorinated before continuously discharged to UNT Furnace Creek. The following chemicals are in use at the facility: calcium chloride (for disinfection), sodium bisulfite (for disinfection), ferric chloride (for phosphorus removal), and soda ash (for pH control).

3.0 Existing Effluent Limitations and Monitoring Requirements

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0 Daily Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.10	XXX	0.31	1/day	Grab
CBOD5	XXX	XXX	XXX	25	XXX	50	2/month	8-Hr Composite
TSS	XXX	XXX	XXX	30	XXX	60	2/month	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
Nitrate-Nitrite	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	8-Hr Composite
Total Nitrogen	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Calculation
Ammonia Nov 1 - Apr 30	XXX	XXX	XXX	6.0	XXX	12	2/month	8-Hr Composite
Ammonia May 1 - Oct 31	XXX	XXX	XXX	2.0	XXX	4	2/month	8-Hr Composite
TKN	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	8-Hr Composite
Total Phosphorus	Report	XXX	XXX	1.0	XXX	2	2/month	8-Hr Composite

3.1 Compliance History

3.1.1 DMR Data for Outfall 001 (from October 1, 2023 to September 30, 2024)

Parameter	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24	MAR-24	FEB-24	JAN-24	DEC-23	NOV-23	OCT-23
Flow (MGD) Average Monthly	0.00597	0.00804	0.00629	0.00482	0.00312	0.00385	0.00456					0.00601
Flow (MGD) Daily Maximum	0.01230	0.01250	0.02030	0.01170	0.01210	0.01910	0.0076					0.01280
pH (S.U.) Daily Minimum	6.69	6.25	6.43	6.30	6.50	6.74	7.99					7.86
pH (S.U.) Daily Maximum	7.57	7.62	7.57	8.30	7.80	7.94	8.59					8.49
DO (mg/L) Daily Minimum	6.7	7.0	6.8	6.8	6.5	6.8	7.0					6.8
TRC (mg/L) Average Monthly	0.034	0.050	0.038	0.037	0.033	0.031	0.031					0.033
TRC (mg/L) Instant. Maximum	0.09	0.09	0.09	0.07	0.08	0.09	0.05					0.07
CBOD5 (mg/L) Average Monthly	< 2	< 2	< 2	< 2	< 2	< 2	< 2					< 2
TSS (mg/L) Average Monthly	3	< 2.5	1.5	< 1	< 3	1	< 1					3
Fecal Coliform (No./100 ml) Geometric Mean	< 3.2	< 2	< 6.3	< 2	< 5.1	< 3.7	< 2					< 2.45
Fecal Coliform (No./100 ml) Instant. Maximum	5	< 2	20	< 2	13	7	< 2					3
Nitrate-Nitrite (mg/L) Daily Maximum										57.7		
Total Nitrogen (mg/L) Daily Maximum										< 58.2		
Ammonia (mg/L) Average Monthly	< 0.03	< 0.03	0.055	< 0.09	< 0.49	< 0.035	0.04					0.045
TKN (mg/L) Daily Maximum										< 0.5		
Total Phosphorus (lbs/day) Ave. Monthly	0.014	0.008	0.025	0.016	0.008	0.027	0.013					0.014
Total Phosphorus (mg/L) Average Monthly	0.76	0.22	0.42	0.47	0.49	0.47	0.21					0.56

3.1.2 Summary of DMRs:

Discharge Monitoring Reports (DMRs) review for the facility for the last 12 months of operation presented on the table 3.1.1 above indicate permit limits have been met consistently. No permit violation noted on DMRs during the period reviewed.

3.1.3 Summary of Inspections

The facility was inspected 6 times during the past permit cycle. Inspection reports review for the facility during the period indicate permit limits have been met satisfactorily. The reports indicate good operation and maintenance of the facility. It is recommended to the permittee to follow record keeping requirement of the permit. The facility has good compliance record.

4.0 Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .025
Latitude 40º 19' 59.19" **Longitude** -76º 10' 27.60"
Wastewater Description: Sewage Effluent

4.1 Basis for Effluent Limitations

In general, the Clean Water Act (CWA) requires that the effluent limits for a particular pollutant be the more stringent of either technology-based limits or water quality-based limits. Technology-based limits are set according to the level of treatment that is achievable using available technology. A water quality-based effluent limit is designed to ensure that the water quality standards applicable to a waterbody are being met and may be more stringent than technology-based effluent limits

4.1.1 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	133.102(c)	95.2(1)
Fecal Coliform (5/1 – 9/30)	200 / 100 ml	Geo Mean	-	92a.47(a)(4)
Fecal Coliform (5/1 – 9/30)	1,000 / 100 ml	IMAX	-	92a.47(a)(4)
Fecal Coliform (10/1 – 4/30)	2,000 / 100 ml	Geo Mean	-	92a.47(a)(5)
Fecal Coliform (10/1 – 4/30)	10,000 / 100 ml	IMAX	-	92a.47(a)(5)
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)

Comments: Average weekly limitations are not applicable to this discharge

4.2 Water Quality-Based Limitations

4.2.1 WQM 7.0 Stream Model

WQM 7.0 is a steady state model that simplifies many natural processes into a reach-by-reach simulation is used for water quality analysis. DEP utilizes the model to establish appropriate effluent limits for $CBOD_5$, NH_3-N and DO in permits. The model simulates mixing and degradation of NH_3-N in the stream and compares calculated instream NH_3-N concentrations to NH_3-N water quality criteria and also simulates mixing and consumption of D.O. in the stream due to the degradation of $CBOD_5$ and NH_3N and compares calculated instream D.O. concentrations to D.O. water quality criteria and recommends effluent limits

4.2.2 Receiving Stream

The receiving stream is UNT Furnace Creek. According to 25 PA § 93.9f, this stream is protected for Cold Water Fishes (CWF). It is located in Drainage List f and State Watershed 3-C. It has been assigned stream

code 01895. According to the Department's *Integrated Water Quality Monitoring and Assessment Report*, this stream is attaining its designated uses

4.2.3 Streamflows

Streamflows for the water quality analysis were determined by correlating with the yield of USGS gauging station No. 01470853 located on Furnace Creek just before its confluence with UNT 01895, which Eagle's Peak discharges to just over two miles upstream. This stream gage gives a low flow yield of 0.067 cfs/mi^2 (0.28 cfs / 4.18 mi^2). StreamStats was also used for the stream flow determination. According to StreamStats, the area at the discharge point was not large enough to provide an accurate low flow estimate. Therefore, the point on UNT 01895 just before its confluence with Furnace Creek was used to estimate low flows for a basin that was sufficiently large enough and analogous to the actual basin at the outfall. At this point, StreamStats calculated a Q_{7-10} of 0.2 cfs and a drainage area of 1.77 mi^2, resulting in a Q_{7-10} low flow yield of 0.11 cfs/mi^2, which was closed to the yield of the gage station and was used for the water quality analysis. This information is used to obtain a chronic or 30 day Q_{30-10} and an acute or 1 day Q_{1-10} as 1.36 x Q_{7-10} and 0.64 x Q_{7-10} respectively following DEP Guidance document No. 391-2000-023. The resulting yields are as follows:

- Low flow yield = 0.2 cfs / 1.77 mi^2 ≈ 0.11 cfs/mi^2
- Q_{30-10} / Q_{7-10} = 1.36
- Q_{1-10} / Q_{7-10} = 0.64

The drainage area at discharge taken from previous report = 0.21 mi^2

The Q_{7-10} at discharge = 0.21mi^2 x 0.11 ft^3/s/mi^2 = 0.023 ft^3/s.

4.2.4 NH_3N Calculations

NH_3N calculations will be based on the Department's Implementation Guidance of Section 93.7 Ammonia Criteria, dated 11/4/97 (ID No. 391-2000-013). The following data is necessary to determine the instream NH_3N criteria used in modelling the stream:

- Discharge pH = 7.0 (DMR median from Jul. to Sept.)
- Discharge Temperature = 25 ^{o} C (Default)
- Stream pH = 7.0 (Default)
- Stream Temperature = 20^{o}C (Default))
- Background NH_3-N = 0.0 (Default)
- Discharge flow =0.025MGD

4.2.5 $CBOD_5$:

The attached results of the WQM 7.0 stream model (attachment B indicates that, for discharge of 0.025MGD from Eagle's Peak Campground wastewater treatment facility, a limitation of 25 mg/l $CBOD_5$ as a monthly average limit (AML) and 50 mg/l as instantaneous maximum (IMAX) is adequate to protect the water quality of the stream. This limit is consistent with the existing permit and the facility has been complying with this limitation. Therefore, a limit of 25mg/l AML, and 50 mg/l IMAX is again recommended for this permit cycle.

4.2.6 NH_3-N:

The attached results of the WQM 7.0 stream model (attachment B also indicates that a summer monthly average limitation 2.8mg/l on NH_3 is necessary to protect the aquatic life from toxicity effects. However, due to anti-backsliding restriction, the existing limitation of 2.0mg/l and 4.0 IMAX will remain in the permit.

4.2.7 Dissolved Oxygen

The existing permit contains a limit of 5 mg/l for Dissolved Oxygen (DO). DEP's Technical Guidance for the Development and Specification of Effluent Limitations (362-0400-001, 10/97) suggests that either the adopted minimum stream D.O. criteria for the receiving stream or the effluent level determined through water quality modeling be used for the limit. Since the WQM 7.0 model was run using a minimum D.O. of 5.0 mg/l, this limit will be continued in the renewed permit with a daily monitoring requirement.

4.2.8 Total Suspended Solids (TSS):

There is no water quality criterion for TSS. The existing limit of 30 mg/l AML based on the minimum level of effluent quality attainable by secondary treatment as defined in 40 CFR 133.102b(1) and 25 PA § 92a.47(a)(1) will remain in the permit.

4.2.9 Total Residual Chlorine:

The attached TRC calculation results presented in attachment C utilizes the equations and calculations as presented in the Department's 2003 Implementation Guidance for Residual Chlorine (TRC) (ID # 391-2000-015) for developing chlorine limitations. The results presented in attachment C indicates that a water quality limit of 0.10 mg/l monthly average and IMAX of 0.31 mg/l would be needed to prevent toxicity concerns. The limitation recommended is consistent with the existing. DMR and inspection report indicate the facility is meeting the permit requirement.

4.2.10 Toxics

A reasonable potential (RP) analysis was done for pollutants in the discharge. The discharge consists entirely of domestic wastewater with no pollutants of concern that need further analysis.

4.2.11 Total Phosphorus:

The facility has existing phosphorus limits of 1.0 mg/L monthly average and 2.0 mg/L instantaneous maximum due to its location being upstream of the Blue Marsh Reservoir. The previous protection report stated that, due to a study of the reservoir, a recommendation was made that all discharges upstream of the reservoir be assigned the above phosphorus limits. The facility has been consistently achieving concentrations below these limits.

4.2.12 Chesapeake Bay Strategy:

The Department formulated a strategy to comply with the EPA and Chesapeake Bay Foundation requirements by reducing point source loadings of Total Nitrogen (TN) and Total Phosphorus (TP). Sewage discharges have been prioritized based on their delivered TN and TP loadings to the Bay. The highest priority (Phases 1, 2, and 3) dischargers will receive annual loading caps based on their design flow on August 29, 2005 and concentrations of 6 mg/l TN and 0.8 mg/l TP. These limits may be achieved through a combination of treatment technology, credits, or offsets if approved by DEP. Phase 4 (0.2 -0.4mgd) and Phase 5(below 0.2mdg) will be required to monitor and report TN and TP during permit renewal. Any facility in Phases 4 and 5 that undergoes expansion is subjected to cap load right away. This facility is, classified as a phase 5, and has been monitoring nutrients in the past but will be required to continue monitoring of Nitrate-Nitrite as N, Total Kjeldahl Nitrogen and Total Nitrogen annually throughout the next permit cycle. Due to the limitation on Total Phosphorus no monitoring is required

4.2.13 Fecal Coliform and E. Coli

The existing Fecal Coliform limit is consistent with the technology limits recommended in 92a.47(a)(4) and (a)(5) and will remain in the permit. In March of 2021, EPA approved DEP's Triennial Review of Water Quality Standards, which included a new swimming season criterion for E. coli. As a result, DEP is including monitoring requirements for E. Coli in new and renewed sewage permits above 2000gpd. Monitoring frequency is based on annual average flow as follows: 1/month for design flows >= 1 MGD, 1/quarter for design flows >= 0.05 and < 1 MGD and 1/year for design flows of 0.002 – 0.05 MGD. Your discharge of 0.025 MGD requires 1/year monitoring as included in the permit

4.2.14 Special Permit Conditions

The permit will contain the following special conditions:

Stormwater Prohibition, Approval Contingencies, Management of collected screenings, slurries, sludges and other solids, Requirement to connect if a public sewer becomes available in the area, Chlorine minimization and Solids Management.

5.0 Other Requirements

5.1 Anti-backsliding

Not applicable to this permit

5.2 Stormwater:

No storm water outfall is associated with this facility

5.3 Anti-Degradation (93.4)

The effluent limits for this discharge have been developed to ensure that existing instream water uses and the level of water quality necessary to protect the existing uses are maintained and protected. No High-Quality Waters are impacted by this discharge. No Exceptional Value Waters are impacted by this discharge.

5.4 Class A Wild Trout Fisheries

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

5.5 303d Listed Streams:

The discharge is not located on a 303d listed stream segment.

5.6 Basis for Effluent and Surface Water Monitoring

Section 308 of the CWA and federal regulation 40 CFR 122.44(i) require monitoring in permits to determine compliance with effluent limitations. Monitoring may also be required to gather effluent and surface water data to determine if additional effluent limitations are required and/or to monitor effluent impacts on receiving water quality. The permittee is responsible for conducting the monitoring and for reporting results on Discharge Monitoring Reports (DMRs).

5.7 Effluent Monitoring

Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. Permittees have the option of taking more frequent samples than are required under the permit. These samples can be used for averaging if they are conducted using EPA-approved test methods (generally found in 40 CFR 136) and if the Method Detection Limits are less than the effluent limits. The sampling location must be after the last treatment unit and prior to discharge to the receiving water. If no discharge occurs during the reporting period, "no discharge" shall be reported on the DMR.

6.0 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" (386-0400-001), SOPs and/or BPJ.

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0 Daily Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.10	XXX	0.31	1/day	Grab
CBOD5	XXX	XXX	XXX	25	XXX	50	2/month	8-Hr Composite
TSS	XXX	XXX	XXX	30	XXX	60	2/month	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
Nitrate-Nitrite	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	8-Hr Composite
Total Nitrogen	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Calculation
Ammonia Nov 1 - Apr 30	XXX	XXX	XXX	6.0	XXX	12	2/month	8-Hr Composite
Ammonia May 1 - Oct 31	XXX	XXX	XXX	2.0	XXX	4	2/month	8-Hr Composite

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
TKN	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	8-Hr Composite
Total Phosphorus	Report	XXX	XXX	1.0	XXX	2	2/month	8-Hr Composite

Compliance Sampling Location: At Outfall 001

7.0 Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment **B**)
☐	Toxics Management Spreadsheet (see Attachment)
☒	TRC Model Spreadsheet (see Attachment **C**)
☐	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, 386-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 386-2000-019, 3/98.
☒	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 386-2000-018, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 386-2183-001, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 386-2183-002, 12/97.
☐	Pennsylvania CSO Policy, 386-2000-002, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 386-2000-008, 4/97.
☒	Determining Water Quality-Based Effluent Limits, 386-2000-004, 12/97.
☐	Implementation Guidance Design Conditions, 386-2000-007, 9/97.
☒	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 386-2000-016, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 386-2000-012, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 386-2000-009, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 386-2000-015, 5/2004.
☒	Implementation Guidance for Section 93.7 Ammonia Criteria, 386-2000-022, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 386-2000-013, 4/2008.
☒	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 386-2000-011, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 386-2000-001, 4/09.
☒	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 386-2000-021, 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, 386-2000-020, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 386-2000-005, 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, 386-2000-010, 3/1999.
☐	Design Stream Flows, 386-2000-003, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 386-2000-006, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 386-3200-001, 6/97.
☒	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☒	SOP: Establishing effluent limitation for individual sewage permit.
☐	Other:

8. ATTACHMENTS

A. Topographical Map

B. WQM Model Results

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
03C	1895	Trib 01895 to Furnace Creek

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
2.050	Eagle's Peak	PA0087742	0.025	CBOD5	25		
				NH3-N	2.86	5.72	
				Dissolved Oxygen			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
03C	1895	Trib 01895 to Furnace Creek	**2.050**	930.00	0.21	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	0.110	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	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
Eagle's Peak	PA0087742	0.0250	0.0250	0.0250	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	5.00	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
03C	1895	Trib 01895 to Furnace Creek	1.380	748.00	0.58	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	0.110	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	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	5.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
03C	1895	Trib 01895 to Furnace Creek

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
2.050	0.02	0.00	0.02	.0387	0.05145	.348	2.35	6.74	0.08	0.542	23.13	7.00
Q1-10 Flow												
2.050	0.01	0.00	0.01	.0387	0.05145	NA	NA	NA	0.07	0.587	23.62	7.00
Q30-10 Flow												
2.050	0.03	0.00	0.03	.0387	0.05145	NA	NA	NA	0.08	0.505	22.76	7.00

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	0.64	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	6		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
03C	1895	Trib 01895 to Furnace Creek

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
2.050	Eagle's Peak	12.42	17.17	12.42	17.17	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
2.050	Eagle's Peak	1.58	2.86	1.58	2.86	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
2.05	Eagle's Peak	25	25	2.86	2.86	5	5	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
03C	1895	Trib 01895 to Furnace Creek

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
2.050	0.025	23.130	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
2.346	0.348	6.735	0.076
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
16.40	1.390	1.79	0.891
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.213	29.139	Owens	6
Reach Travel Time (days)			
0.542			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.054	15.03	1.71	6.94
0.108	13.78	1.63	7.18
0.163	12.63	1.55	7.32
0.217	11.58	1.48	7.43
0.271	10.62	1.41	7.52
0.325	9.73	1.34	7.61
0.379	8.92	1.28	7.69
0.433	8.18	1.22	7.76
0.488	7.50	1.16	7.79
0.542	6.87	1.11	7.79

C. TRC Calculations

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

0.023	= Q stream (cfs)	0.5	= CV Daily
0.025	= 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)	0	=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 0.209	1.3.2.iii	WLA cfc = 0.196
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 0.078	5.1d	LTA_cfc = 0.114

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.096	AFC
		INST MAX LIMIT (mg/l) = 0.313	

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)**