pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0223000**
Facility Type	**Non-Municipal**	APS ID	**1075228**
Major / Minor	**Minor**	Authorization ID	**1416808**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Kalyumet Campground, LLC**	Facility Name	**Kalyumet Campground**
Applicant Address	716 Waverly Street, Unit A	Facility Address	8630 Miola Road
	Houston, TX 77007		Lucinda, PA 16235
Applicant Contact	Ryan Magaziner (rmagaziner@atlanticrecreationgroup.com)	Facility Contact	Kerry Tyson, Century Engineering (ktyson@centuryeng.com)
Applicant Phone	(713) 304-9394	Facility Phone	(814) 364-2262
Client ID	373548	Site ID	449418
Ch 94 Load Status	Not Overloaded	Municipality	Highland Township
Connection Status	No Limitations	County	Clarion
Date Application Received	April 27, 2022	EPA Waived?	Yes
Date Application Accepted	April 29, 2022	If No, Reason	-
Purpose of Application	Renewal of an NPDES Permit for an existing discharge of treated sanitary wastewater from an STP. This application also transfers ownership from Mark Wineman to the Kalyumet Campground, LLC.		

Summary of Review

Act 14 - Proof of Notification was submitted and received.

A Part II Water Quality Management permit is not required at this time.

The applicant should be able to meet the limits of this permit, which will protect the uses of the receiving stream.

I. OTHER REQUIREMENTS:

A. Stormwater into Sewers
B. Right of Way
C. Solids Handling
D. Public Sewerage Availability
E. Effluent Chlorine Optimization and Minimization
F. Little Assimilative Capacity

SPECIAL CONDITIONS:

II. Solids Management

There are no open violations in efacts associated with the subject Client ID (373548) as of 3/22/2023. *There are 3 open violations in WMS under the Safe Drinking Water Program as of 4/18/2023 CWY. OK to issue draft per SDW 4/19/2023.*

Approve	Deny	Signatures	Date
X		Stephen A. McCauley Stephen A. McCauley, E.I.T. / Environmental Engineering Specialist	3/22/2023
X		Chad W. Yurisic Chad W. Yurisic, P.E. / Environmental Engineer Manager	4/19/2023

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.01
Latitude	41º 18' 25.00"	Longitude	-79º 17' 12.00"
Quad Name	-	Quad Code	-
Wastewater Description:	Sewage Effluent		

Receiving Waters	Callihan Run (CWF (existing use*))	Stream Code	49809
NHD Com ID	102669011	RMI	2.2
Drainage Area	0.26	Yield (cfs/mi^2)	0.07 (assumed)
Q_{7-10} Flow (cfs)	0.018	Q_{7-10} Basis	calculated
Elevation (ft)	1470	Slope (ft/ft)	0.031508
Watershed No.	17-B	Chapter 93 Class.	CWF
Existing Use	CWF (Cold Water Fishes)	Existing Use Qualifier	RBP - Antidegradation
Exceptions to Use	-	Exceptions to Criteria	-
Assessment Status	Impaired**		
Cause(s) of Impairment	Metals and pH		
Source(s) of Impairment	Acid Mine Drainage		
TMDL Status	-	Name	-

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

Nearest Downstream Public Water Supply Intake	PA American Water Company - Clarion		
PWS Waters	Clarion River	Flow at Intake (cfs)	90.7
PWS RMI	33.3	Distance from Outfall (mi)	10.0

* - DEP has evaluated information indicating that the existing use of the receiving waters is different than the designated use under 25 Pa. Code § 93.9. In developing the draft NPDES permit, DEP is proposing to protect the existing use of the receiving waters. Following DEP's notice of the receipt of the application and the draft permit in the Pennsylvania Bulletin, DEP will accept written comments during the public comment period regarding DEP's tentative determination to protect the existing use. DEP will make a final determination on existing use protection for the receiving waters as part of the final permit action.

** - This discharge flows to a stream impaired by AMD, monitoring was included in this renewal for Aluminum, Iron, and Manganese to provide data to determine if the discharge is having any impact on the stream. The monitoring frequency was reduced from 1/quarter to 1/year with this renewal.

Sludge use and disposal description and location(s): All sludge is removed and disposed of by Williams and Sons Services, Inc. (PAG-09-8301).

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.

Narrative: This Fact Sheet details the determination of draft NPDES permit limits for an existing discharge of 0.01 MGD of treated sewage from an existing campground in Highland Township, Clarion County.

Treatment permitted under Sewerage Permit No. 1600403 consists of the following: Three 5,000 gallon septic tanks in series, a 2,000 gallon dosing tank, two 3,600 square foot subsurface sand filters, and tablet chlorination with a 500 gallon contact tank.

1. Streamflow:

Calihan Run at Outfall 001:

Yieldrate:	0.07	cfsm	default for small streams
Drainage Area:	0.26	sq. mi.	(USGS StreamStats)
% of stream allocated:	100%	Basis:	No nearby discharges
Q_{7-10}:	0.018	cfs	calculated

2. Wasteflow:

Maximum discharge: 0.01 MGD = 0.015 cfs

Runoff flow period: 16 hours Basis: Campground flow

24 hour flow: 0.01 MGD x 24/16 = 0.015 MGD = 0.023 cfs

Based on DEP Biologist Jay Gerber in 2017, the receiving stream at the discharge point is dry, but aquatic life was found as far upstream as the Highland Drive Bridge, which is 1.87 miles upstream (0.33 miles downstream of the discharge).The calculated stream flow (Q7-10) is less than 3 times the permitted discharge flow.

The previous permit included all the treatment standards in DEP guidance number 391-2000-014. However, based on eDMR data, some of the parameter limits are not attainable by the treatment at this facility. Since the receiving stream is not impaired by nutrients (only AMD), the limits for Total Nitrogen and Total Phosphorus will be replaced with 1/year monitoring for this renewal. Also, the limits for Total Suspended Solids will be reduced to the Chapter 92a47 technology-based limits for this renewal.

Flow will be required to be monitored as authorized under Chapter 92a.61, and as recommended in the SOP.

3. Parameters:

The following parameters were evaluated: pH, Total Suspended Solids, Fecal Coliform, E. Coli, Total Phosphorus, Total Nitrogen, NH_3-N, $CBOD_5$, Dissolved Oxygen, and Total Residual Chlorine.

a. pH

Between 6.0 and 9.0 at all times

Basis: Application of Chapter 93.7 technology-based limits.

The measurement frequency will remain as 1/day as recommended in the SOP, based on Table 6-3 in the "Technical Guidance for the Development and Specification of Effluent Limitations" (362-0400-001).

b. Total Suspended Solids

Limits are 30.0 mg/l as a monthly average and 60.0 as an instantaneous maximum based on Chapter 92a47.

Basis: The previous limits based on DEP guidance number 391-2000-014 are being reduced to the limits above with this renewal since the limits are not attainable.

c. Fecal Coliform

05/01 - 09/30:	200/100ml	(monthly average geometric mean)
	1,000/100ml	(instantaneous maximum)
10/01 - 04/30:	2,000/100ml	(monthly average geometric mean)
	10,000/100ml	(instantaneous maximum)

Basis: Application of Chapter 92a47 technology-based limits

d. E. Coli

Monitoring was added for E. Coli at a frequency of 1/year.

Basis: Application of Chapter 92a.61 as recommended by the SOP for flows between 0.002 MGD and 0.05 MGD.

e. Total Phosphorus

The previous Total Phosphorus limits based on DEP guidance number 391-2000-014 are being reduced to monitoring with this renewal since the limits are not attainable. The monitoring frequency is also being reduced from 1/month to 1/year.

f. Total Nitrogen

The previous Total Nitrogen limits based on DEP guidance number 391-2000-014 are being reduced to monitoring with this renewal since the limits are not attainable. The monitoring frequency is also being reduced from 1/month to 1/year.

g. Ammonia-Nitrogen (NH_3-N)

Median discharge pH to be used:	7.1	Standard Units (S.U.)
	Basis:	eDMR data from previous 12 months
Discharge temperature:	25°C	(default value used in the absence of data)
Median stream pH to be used:	7.0	Standard Units (S.U.)
	Basis:	default value used in the absence of data
Stream Temperature:	20˚C	(default value used for CWF modeling)

Background NH_3-N concentration: 0.1 mg/l

Basis: Default value

Calculated NH_3-N Summer limits: 7.2 mg/l (monthly average)
14.4 mg/l (instantaneous maximum)

Calculated NH_3-N Winter limits: 21.6 mg/l (monthly average)
43.2 mg/l (instantaneous maximum)

Result: WQ modeling resulted in the calculated NH3-N summer limits above (see Attachment 1), which are the same as in the previous permit and will be retained. The winter limits are calculated as three times the summer limits.

h. $CBOD_5$

Median discharge pH to be used: 7.1 Standard Units (S.U.)

Basis: eDMR data from previous 12 months

Discharge temperature: 25°C (default value used in the absence of data)

Median stream pH to be used: 7.0 Standard Units (S.U.)

Basis: default value used in the absence of data

Stream Temperature: 20˚C (default value used for CWF modeling)

Background $CBOD_5$ concentration: 2.0 mg/l

Basis: Default value

Calculated $CBOD_5$ limits: 25.0 mg/l (monthly average)
50.0 mg/l (instantaneous maximum)

Result: WQ modeling resulted in the calculated CBOD5 limits above (see Attachment 1). However, the previous technology-based limits of 10.0 mg/l as a monthly average and 20.0 as an instantaneous maximum from DEP guidance number 391-2000-014 will be retained.

j. Dissolved Oxygen (DO)

The technology-based minimum of 4.0 mg/l is recommended by the WQ Model (see Attachment 1) and the SOP based on Chapter 93.7, under the authority of Chapter 92a.61. However, the previous technology-based limit of 6.0 mg/l from DEP guidance number 391-2000-014 will be retained.

The measurement frequency will remain as 1/day as recommended in the SOP, based on Table 6-3 in the "Technical Guidance for the Development and Specification of Effluent Limitations" (362-0400-001).

k. Disinfection

☐ Ultraviolet (UV) light

Basis: N/A

☒ TRC limits: 0.22 mg/l (monthly average)
0.72 mg/l (instantaneous maximum)

Basis: The TRC limits above were calculated using the Department's TRC Calculation Spreadsheet (see Attachment 2). The limits are the same as the previous NPDES Permit and will be retained.

The measurement frequency will remain as 1/day as recommended in the SOP, based on Table 6-3 in the "Technical Guidance for the Development and Specification of Effluent Limitations" (362-0400-001).

4. Reasonable Potential Analysis for Receiving Stream:

A Reasonable Potential Analysis was not performed in accordance with State practices using the Department's Toxics Management Spreadsheet since no sampling other than sewage-related parameters was performed for this facility with the renewal application.

5. Reasonable Potential for Downstream Public Water Supply (PWS):

The Department's Toxics Management Spreadsheet does not calculate limits for parameters that are based on PWS criteria (TDS, Chloride, Bromide, and Sulfate). However, since no sample data was provided, mass-balance calculations were not performed.

Nearest Downstream potable water supply (PWS): Pennsylvania American Water Company - Clarion
Distance downstream from the point of discharge: 10.0 miles

Result: No limits or monitoring is necessary as there is significant dilution available.

6. Anti-Backsliding:

Multiple changes were made to the previous permit to make the renewal permit consistent with the current SOP and other statewide non-municipal sewage permits. Based on 40 CFR §122.44(l)(i)(B)(1) and 40 CFR §122.44(l)(i)(B)(2), this permit can be renewed with modifications including the reduction in measurement frequencies for Total Nitrogen, Total Phosphorus, Total Aluminum, Total Iron, and Total Manganese and the reduction in limitations for Total Suspended Solids.

7. Attachment List:

Attachment 1 - WQ Modeling Printouts

Attachment 2 - TRC_Calc Spreadsheet

(The Attachments above can be found at the end of this document)

Compliance History

DMR Data for Outfall 001 (from February 1, 2022 to January 31, 2023)

Parameter	JAN-23	DEC-22	NOV-22	OCT-22	SEP-22	AUG-22	JUL-22	JUN-22	MAY-22	APR-22	MAR-22	FEB-22
Flow (MGD) Average Monthly				0.002	0.003	0.0004	0.004	0.003	0.003			
pH (S.U.) Instantaneous Minimum				7.0	6.9	7.0	7.0	7.0	6.9			
pH (S.U.) Instantaneous Maximum				7.3	7.3	7.3	7.3	7.3	7.2			
DO (mg/L) Instantaneous Minimum				6.03	6.04	6.02	6.02	6.05	6.10			
TRC (mg/L) Average Monthly				0.16	0.17	0.17	0.17	0.17	0.18			
TRC (mg/L) Instantaneous Maximum				0.20	0.20	0.21	0.20	0.20	0.20			
CBOD5 (mg/L) Average Monthly				< 3.0	< 3.0	< 4.9	3.2	< 3.0	< 1.0			
TSS (mg/L) Average Monthly				15.5	10.0	23.0	14.5	12.5	< 3.0			
Fecal Coliform (No./100 ml) Geometric Mean				22.24	28.30	48.63	25.47	1	< 1			
Fecal Coliform (No./100 ml) Instantaneous Maximum				99	89	55	649	1	< 1			
Total Nitrogen (mg/L) Average Monthly				54.2	60.3	54.4	39	16.0	18.7			
Ammonia (mg/L) Average Monthly				46.85	47.5	48.5	35.3	15.26	15.1			
Total Phosphorus (mg/L) Average Monthly				0.67	0.37	0.69	0.29	0.59	3.25			
Total Aluminum (mg/L) Average Quarterly		< 0.10			< 0.10			< 0.10				
Total Iron (mg/L) Average Quarterly		5.87			11.0			3.17				
Total Manganese (mg/L) Average Quarterly		4.42			4.28			2.38				

Proposed Effluent Limitations and Monitoring Requirements

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

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	XXX	XXX	XXX	XXX	XXX	1/month	Estimate
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	6.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.22	XXX	0.72	1/day	Grab
CBOD5	XXX	XXX	XXX	10.0	XXX	20	2/month	8-Hr Composite
TSS	XXX	XXX	XXX	30.0	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
Total Nitrogen	XXX	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	8-Hr Composite
Ammonia Nov 1 - Apr 30	XXX	XXX	XXX	21.6	XXX	43.2	2/month	8-Hr Composite
Ammonia May 1 - Oct 31	XXX	XXX	XXX	7.2	XXX	14.4	2/month	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	8-Hr Composite
Total Aluminum	XXX	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	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		
Total Iron	XXX	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	8-Hr Composite
Total Manganese	XXX	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	8-Hr Composite

Compliance Sampling Location: at Outfall 001, after disinfection.

Flow is monitor only based on Chapter 92a.61. The limits for pH are technology-based on Chapter 93.7. The limits for Dissolved Oxygen and $CBOD_5$ are technology-based on DEP guidance number 391-2000-014. The Total Residual Chlorine (TRC) limits are water quality-based on Chapter 92a.48. The limits for Total Suspended Solids (TSS) are technology-based on Chapter 92a47. The limits for Ammonia-Nitrogen are water quality-based on Chapter 93.7. Monitoring for Total Nitrogen, Total Phosphorus, Total Aluminum, Total Iron, and Total Manganese is based on Chapter 92a.61

Attachment 1

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
17B	49809	CALLIHAN RUN

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)
1.870	Kalyumet Camp	PA0223000a	0.015	CBOD5	9.17		
				NH3-N	4.97	9.94	
				Dissolved Oxygen			3

CBOD5 and DO are the same as the Dry Reach inputs, so the Dry Reach limits are protective.

For NH3-N, the limit can be back-calculated using the equation: Ct = (Co)e-(kt), where

Ct = 4.97 mg/l
k = 0.7 days-1 = constant for NH3-N
t = 0.531 days = Dry Reach Model travel time

Therefore, 6.46 mg/l = (Ct)e-(0.7 days-1)(0.052 days)

Ct = 7.207

NH3-N limit = 7.2 mg/l

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
17B	49809	CALLIHAN RUN

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
1.870	0.015	22.043	7.038
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
2.989	0.327	9.138	0.058
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
4.93	0.418	2.03	0.819
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.101	26.756	Owens	6
Reach Travel Time (days)			
1.967			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.197	4.50	1.73	7.94
0.393	4.12	1.47	7.94
0.590	3.76	1.25	7.94
0.787	3.44	1.06	7.94
0.983	3.14	0.91	7.94
1.180	2.87	0.77	7.94
1.377	2.62	0.66	7.94
1.573	2.40	0.56	7.94
1.770	2.19	0.48	7.94
1.967	2.00	0.41	7.94

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		

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
17B	49809	CALLIHAN RUN	**1.870**	1441.00	0.48	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	0.070	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
Kalyumet Camp	PA0223000a	0.0150	0.0000	0.0000	0.000	25.00	7.10

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	9.17	2.00	0.00	1.50
Dissolved Oxygen	2.00	8.24	0.00	0.00
NH3-N	14.47	0.00	0.00	0.70

(inputs from Dry Reach Model)

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
17B	49809	CALLIHAN RUN	**0.000**	1104.00	1.74	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	0.070	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	3.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
17B	49809	CALLIHAN RUN

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
1.870	Kalyumet Camp	12.93	24.91	12.93	24.91	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
1.870	Kalyumet Camp	1.67	4.97	1.67	4.97	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)		
1.87	Kalyumet Camp	9.17	9.17	4.97	4.97	3	3	0	0

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
17B	49809	CALLIHAN RUN

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												
1.870	0.03	0.00	0.03	.0232	0.03413	.327	2.99	9.14	0.06	1.967	22.04	7.04
Q1-10 Flow												
1.870	0.02	0.00	0.02	.0232	0.03413	NA	NA	NA	0.05	2.249	22.60	7.05
Q30-10 Flow												
1.870	0.05	0.00	0.05	.0232	0.03413	NA	NA	NA	0.06	1.765	21.68	7.03

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
17B	49809	CALLIHAN RUN

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
2.200	0.015	24.994	7.100
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
2.188	0.280	7.828	0.038
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
24.97	1.500	24.97	1.028
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
3.998	28.851	Owens	NA
Reach Travel Time (days)			
0.531			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.053	22.59	23.65	2.00
0.106	20.44	22.39	2.00
0.159	18.49	21.20	2.00
0.212	16.73	20.07	2.00
0.266	15.13	19.01	2.00
0.319	13.69	18.00	2.00
0.372	12.38	17.04	2.00
0.425	11.20	16.13	2.00
0.478	10.13	15.28	2.00
0.531	9.17	14.47	2.00

(input into perennial model)

WQM 7.0 Modeling Specifications

Parameters	D.O.	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	Simulation	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	2		

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
17B	49809	CALLIHAN RUN	**2.200**	1470.00	0.26	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	0.000	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
Dry Reach	PA0223000	0.0150	0.0000	0.0000	0.000	25.00	7.10

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	0.00	0.00	1.50
Dissolved Oxygen	4.00	2.00	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
17B	49809	CALLIHAN RUN	**1.870**	1441.00	0.48	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	0.000	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
Kalyumet Camp	PA0223000a	0.0150	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	7.27	2.00	0.00	1.50
Dissolved Oxygen	2.00	8.24	0.00	0.00
NH3-N	10.04	0.00	0.00	0.70

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
17B	49809	CALLIHAN RUN

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												
2.200	0.00	0.00	0.00	NA	0.01664	.28	2.19	7.83	0.04	0.531	24.99	7.10
Q1-10 Flow												
2.200	0.00	0.00	0.00	NA	0.01664	NA	NA	NA	0.00	0.000	0.00	0.00
Q30-10 Flow												
2.200	0.00	0.00	0.00	NA	0.01664	NA	NA	NA	0.00	0.000	0.00	0.00

Attachment 2

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

0.0336	= Q stream (cfs)	0.5	= CV Daily
0.015	= 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 = 0.481	1.3.2.iii	WLA cfc = 0.461
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 0.179	5.1d	LTA_cfc = 0.268

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.221	AFC
		INST MAX LIMIT (mg/l) = 0.721	

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)**