pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0030686**
Facility Type	**Non-Municipal**	APS ID	**1038190**
Major / Minor	**Minor**	Authorization ID	**1353653**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Cross Creek Resort, Inc.**	Facility Name	**Cross Creek Resort**
Applicant Address	3815 State Route 8	Facility Address	3815 State Route 8
	Titusville, PA 16354		Titusville, PA 16354
Applicant Contact	Kim Wagner, General Manager	Facility Contact	Kim Wagner, General Manager
Applicant Phone	(814) 827-9611	Facility Phone	(814) 827-9611
Client ID	26199	Site ID	243702
Ch 94 Load Status	Not Overloaded	Municipality	Cherrytree Township
Connection Status	No Limitations	County	Venango County
Date Application Received	April 20, 2021	EPA Waived?	Yes
Date Application Accepted	May 11, 2021	If No, Reason	-
Purpose of Application	Renewal of an NPDES Permit for an existing discharge of treated sanitary wastewater from an STP serving a hotel/restaurant/golf course.		

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

SPECIAL CONDITIONS:

II. Solids Management

There are no open violations in efacts associated with the subject Client ID (26199) as of 2/15/2022.

Approve	Deny	Signatures	Date
X		Stephen A. McCauley Stephen A. McCauley, E.I.T. / Environmental Engineering Specialist	2/15/2022
X		Justin C. Dickey Justin C. Dickey, P.E. / Environmental Engineer Manager	2/18/2022

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.027
Latitude	41º 34' 0.00"	Longitude	-79º 42' 5.00"
Quad Name	-	Quad Code	-
Wastewater Description:	Sewage Effluent		

Receiving Waters	Cherrytree Run (CWF)	Stream Code	54149
NHD Com ID	100474187	RMI	7.26
Drainage Area	1.35	Yield (cfs/mi^2)	0.1
Q_{7-10} Flow (cfs)	0.135	Q_{7-10} Basis	calculated
Elevation (ft)	1437	Slope (ft/ft)	0.0151
Watershed No.	16-E	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	Aqua Pennsylvania, Inc. - Emlenton		
PWS Waters	Allegheny River	Flow at Intake (cfs)	1,376
PWS RMI	90.0	Distance from Outfall (mi)	37.0

Sludge use and disposal description and location(s): All sludge is hauled by Heffern Septic Service to the City of Franklin WWTP where it is ultimately disposed of at an approved landfill.

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 0.027 MGD of treated sewage from an existing hotel/restaurant/golf course in Cherrytree Township, Venango County.

Existing treatment consists of: (WQM Permit 6176403) Two package plants in parallel each consisting of a 15,000 gallon aeration tank and a 2,500 gallon settling tank, with the newer plant also having a 2,244 gallon aerated sludge holding tank. A dosing tank feeds two intermittent 1,152 square foot (24' x 48') surface sand filters. Gas chlorine is applied before and after the sand filters for odor control and disinfection, followed by two 471 gallon chlorine contact tanks, and a cascade aerator.

1. Streamflow:

Oil Creek at Rouseville, PA - USGS Stream Gage 03020500 (1934–2008):

Q_{7-10}:	30.1	cfs	(USGS StreamStats)
Drainage Area:	283	sq. mi.	(USGS StreamStats)
Yieldrate:	0.1	cfsm	calculated

Cherrytree Run at Outfall 001:

Yieldrate:	0.1	cfsm	calculated above
Drainage Area:	1.35	sq. mi.	(USGS StreamStats)
% of stream allocated:	100%	Basis:	No nearby discharges
Q_{7-10}:	0.135	cfs	calculated

2. Wasteflow:

Maximum discharge: 0.027 MGD = 0.041 cfs

Runoff flow period: 16 hours Basis: Runoff flow for a hotel/restaurant/golf course STP

24 hour flow: 0.027 MGD x 24/16 = 0.040 MGD = 0.062 cfs

In accordance with the SOP, since there is less than 3 parts stream flow (Q7-10) to 1 part effluent (design flow), the treatment requirements in document number 391-2000-014, titled, "Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers", dated April 12, 2008, were evaluated for this NPDES Permit renewal. Based on the eDMR data, this facility would not be able to meet all of the treatment requirements in document number 391-2000-014, so no additional requirements will be added with 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 was previously set to 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), which will be retained.

b. Total Suspended Solids

Limits are 10.0 mg/l as a monthly average and 20.0 as an instantaneous maximum.

Basis: Since the previous limits are attainable, they will be retained with this renewal.

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. Phosphorus

☐ Limit necessary due to:

☐ Discharge to lake, pond, or impoundment
☐ Discharge to stream

Basis: N/A

☒ Limit not necessary

Basis: Chapter 96.5 does not apply. However, the previous monitoring for Total Phosphorus will be retained in accordance with the SOP, based on Chapter 92a.61.

f. Total Nitrogen

The previous monitoring for Total Nitrogen will be retained in accordance with the SOP, based on Chapter 92a.61.

g. Ammonia-Nitrogen (NH_3-N)

Median discharge pH to be used:	6.7	Standard Units (S.U.)
		Basis: Average of last 12 months of eDMR data
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:	7.1	mg/l (monthly average)
	14.2	mg/l (instantaneous maximum)

Calculated NH_3-N Winter limits: 21.3 mg/l (monthly average)
42.6 mg/l (instantaneous maximum)

Result: WQ modeling resulted in the summer limits above (see Attachment 1). The winter limits are calculated as three times the summer limits. However, since the previous NH3-N limits of 3.0 mg/l monthly average (summer) and 9.0 mg/l monthly average (winter) are attainable, they will be retained with this renewal.

h. $CBOD_5$

Median discharge pH to be used: 6.7 Standard Units (S.U.)

Basis: Average of last 12 months of eDMR data

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

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

Result: WQ modeling resulted in the summer limits above (see Attachment 1). The winter limits are calculated as three times the summer limits, but since the technology-based limits would govern, they will be used. However, since the previous CBOD5 technology-based limits of 10.0 mg/l average monthly and 20.0 mg/l instantaneous maximum are attainable, they will be retained with this renewal.

j. Dissolved Oxygen (DO)

- ☒ 4.0 mg/l - minimum desired in effluent to protect all aquatic life
- ☐ 5.0 mg/l - desired in effluent for CWF, WWF, or TSF
- ☐ 6.0 mg/l - minimum required due to discharge falling under guidance document 391-2000-014
- ☐ 8.0 mg/l - required due to discharge going to a naturally reproducing salmonid stream

Discussion: The Dissolved Oxygen minimum of 4.0 mg/l will be retained with this renewal. 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.

The measurement frequency was previously set to 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), which will be retained.

k. Total Residual Chlorine (TRC)

☐ No limit necessary

Basis: N/A

☒ TRC limits: 0.5 mg/l (monthly average)
1.6 mg/l (instantaneous maximum)

Basis: The technology-based TRC limits above will be retained from the previous permit since the discharge flows to a pond prior to entering the receiving stream.

The measurement frequency was previously set to 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), which will be retained.

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): Aqua Pennsylvania, Inc. - Emlenton

Distance downstream from the point of discharge: 37.0 miles (approximate)

☒ No limits necessary
☐ Limits needed

Basis: Significant dilution available

6. Anti-Backsliding:

Since all the permit limits in this renewal are the same or more restrictive than the previous NPDES Permit, anti-backsliding is not applicable.

7. Attachment List:

Attachment 1 - WQ Modeling Printouts

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

Compliance History

DMR Data for Outfall 001 (from January 1, 2021 to December 31, 2021)

Parameter	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21
Flow (MGD) Average Monthly	0.01	0.01	0.01	0.01	0.01	0.011	0.011	0.011	0.010	0.009	0.009	0.009
Flow (MGD) Daily Maximum	0.01	0.01	0.01	0.01	0.01	0.012	0.013	0.012	0.011	0.010	0.010	0.010
pH (S.U.) Minimum	6.57	6.6	6.6	6.6	6.6	6.69	6.1	6.62	6.67	6.68	6.65	7.65
pH (S.U.) Maximum	6.71	7.0	6.7	6.6	6.7	6.82	6.67	6.68	6.61	6.61	6.70	6.65
DO (mg/L) Minimum	5.8	5.2	5.8	6.0	6.0	6.0	6.1	6.1	6.1	6.1	6.1	4.0
TRC (mg/L) Average Monthly	0.3	0.3	0.3	0.3	0.3	0.34	0.36	0.34	0.34	0.32	0.31	0.31
TRC (mg/L) Instantaneous Maximum	0.4	0.4	0.4	0.4	0.4	0.37	0.38	0.37	0.37	0.36	0.33	0.39
CBOD5 (mg/L) Average Monthly	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	4.25	< 4.0
TSS (mg/L) Average Monthly	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.25	< 5.0	< 5.0	< 5.0	< 5.0	5.0	< 5.0
Fecal Coliform (CFU/100 ml) Geometric Mean	< 1	< 1	< 1	< 1	< 1	< 1	7	< 1	< 1	< 1	< 1	< 1
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	< 1	< 1	< 1	1	< 1	< 1	48	< 1	< 1	1	< 1	< 1
Total Nitrogen (mg/L) Average Quarterly	< 7.65			9.73			< 1.25			2.00		
Ammonia (mg/L) Average Monthly	< 0.3	< 0.3	< 0.3	< 0.3	< 0.93	4.83	< 0.81	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30
Total Phosphorus (mg/L) Average Quarterly	1.89			4.23			1.35			1.26		

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	Report Daily Max	XXX	XXX	XXX	XXX	1/week	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	4.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	XXX	XXX	XXX	10.0	XXX	20	2/month	8-Hr Composite
TSS	XXX	XXX	XXX	10.0	XXX	20	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 Avg Qrtly	XXX	XXX	1/quarter	8-Hr Composite
Ammonia-Nitrogen Nov 1 - Apr 30	XXX	XXX	XXX	9.0	XXX	18	2/month	8-Hr Composite
Ammonia-Nitrogen May 1 - Oct 31	XXX	XXX	XXX	3.0	XXX	6	2/month	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	8-Hr Composite

Compliance Sampling Location: at Outfall 001, after disinfection.

Flow is monitor only based on Chapter 92a.61. The limits for pH and Dissolved Oxygen are technology-based on Chapter 93.7. The Total Residual Chlorine (TRC) limits are technology-based on Chapter 92a.48. The limits for $CBOD_5$, Total Suspended Solids, and Ammonia-Nitrogen are technology-based using an older Dry Streams Guidance. The limits for Fecal Coliforms are technology-based on Chapter 92a.47. Monitoring for E. Coli, Total Nitrogen, and Total Phosphorus is based on Chapter 92a.61.

Attachment 1

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
16E	54149	CHERRYTREE 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)
7.260	Cross Creek	PA0030686	0.040	CBOD5	25		
				NH3-N	7.14	14.28	
				Dissolved Oxygen			4

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
16E	54149	CHERRYTREE RUN

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
7.260	0.040	21.572	6.882
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
5.830	0.389	14.983	0.087
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
9.23	1.009	2.24	0.790
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.909	25.111	Owens	6
Reach Travel Time (days)			
1.204			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.120	8.10	2.04	8.00
0.241	7.11	1.86	8.01
0.361	6.24	1.69	8.01
0.482	5.47	1.53	8.01
0.602	4.80	1.39	8.01
0.722	4.21	1.27	8.01
0.843	3.70	1.15	8.01
0.963	3.25	1.05	8.01
1.084	2.85	0.95	8.01
1.204	2.50	0.87	8.01

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
16E	54149	CHERRYTREE RUN	**7.260**	1437.00	1.35	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.100	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	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
Cross Creek	PA0030686	0.0400	0.0000	0.0000	0.000	25.00	6.70

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	4.00	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
16E	54149	CHERRYTREE RUN	5.550	1300.00	4.04	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.100	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	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
16E	54149	CHERRYTREE 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
7.260	Cross Creek	15.87	38.03	15.87	38.03	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
7.260	Cross Creek	1.8	7.14	1.8	7.14	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)		
7.26	Cross Creek	25	25	7.14	7.14	4	4	0	0

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
16E	54149	CHERRYTREE 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												
7.260	0.14	0.00	0.14	.0619	0.01517	.389	5.83	14.98	0.09	1.204	21.57	6.88
Q1-10 Flow												
7.260	0.09	0.00	0.09	.0619	0.01517	NA	NA	NA	0.07	1.411	22.09	6.85
Q30-10 Flow												
7.260	0.18	0.00	0.18	.0619	0.01517	NA	NA	NA	0.10	1.064	21.26	6.90