pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0090328**
Facility Type	**Industrial**	APS ID	**1080342**
Major / Minor	**Minor**	Authorization ID	**1425963**

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

Applicant and Facility Information

Applicant Name	**Green Valley Packing Inc.**	Facility Name	**Green Valley Packing**
Applicant Address	2992 Green Valley Road	Facility Address	2992 Green Valley Road
	Claysville, PA 15323-1360		Claysville, PA 15323-1360
Applicant Contact	George Weiss	Facility Contact	Same as Applicant
Applicant Phone	724-948-3321	Facility Phone	Same as Applicant
Client ID	63380	Site ID	253509
SIC Code	2011	Municipality	Buffalo Township
SIC Description	Manufacturing - Meat Packing Plants	County	Washington
Date Application Received	February 1, 2023	EPA Waived?	Yes
Date Application Accepted	February 7, 2023	If No, Reason	

Purpose of Application: NPDES Permit Coverage Renewal

Summary of Review

The Department received a renewal NPDES permit application on February 1, 2023 from Green Valley Packing Inc for coverage of their site in Buffalo Township. The site is a meat packaging and processing facility with SIC codes of 2011 (Meat Packing Plant/Meat Processed from Carcass) and 2013 (Sausage and Other Prepared Meat Products/Renderings and Meat Byproduct Processing).

The site is subject to Federal Effluent Limitation Guidelines (ELGs), 40 CFR 432 (Meat and Poultry Products) based on the SIC codes. The site is subject to 40 CFR 432 subparts G (Sausage and Luncheon Meats Processors), H (Ham Processors), and L (Poultry Further Processors).

Wastewater is generated from general housekeeping activities including process area floor washing, equipment washing, meat rinsing / washing, cooked product chilling with cold water, waste trimming wash down and grease or brine drippings from cooked or processed meat products. Sanitary sewage generated from building employees is also treated within the system. Treatment at Green Valley Packing, Inc. is achieved through a series of effectively managed stages.

The waste generated at the facility is sanitary and process waste from meatpacking processes. The site has a treatment facility on site that process the wastewater generated at the facility. The raw wastewater passes through a rotary screen, followed by flow equalization, and then primary clarification. The primary effluent passes through three geo-bio reactors prior to secondary clarification, moving bed sand filtration and disinfection. Solids are discharged from the primary and secondary clarifiers to aerated sludge holding and decanted back to the equalization tanks. The site use chlorine for disinfection. A further breakdown of the treatment system is described below.

1). Initially, wastewater is routed through a Rotary Screen which removes any larger pieces of bone and gristle, which cannot be broken down by the typical treatment system.

Approve	Deny	Signatures	Date
X		Adam Olesnanik, P.E. / Environmental Engineer	May 8, 2023
X		Michael E. Fifth, P.E. / Environmental Engineer Manager	June 9, 2023

Summary of Review

2). Next, grease is removed by Induced Air Flotation. This unit adds air to promote fat and grease flotation which can then be removed by mechanical skimming for disposal at a rendering facility.

3). Wastewater moves to the Equalization Tank. The equalization tank serves to moderate the flow, prevent wastewater surges within the system and to ensure that the biological organisms within the system are not deprived of nutrients.

4). Following equalization, the wastewater is pumped to the Primary Clarifier to allow for the settling of solids. Settled sludge is removed from the system and pumped into the aerated sludge holding tank. Some of the aerated sludge is returned to the equalization tank; the rest is removed. The solids are processed in a solids press and hauled to Arden Landfill.

5). Water exiting the primary clarifier enters the three (3) Geo-Bio Reactors. The geo-bio reactors are rotating cylinders filled with plastic, tumbling media. The plastic media serve as a support structure for the growth of bacterial colonies which serve to consume and break down nutrients within the wastewater.

7). Polymer is added to promote Flocculation of the remaining impurities and the wastewater enters the Secondary Clarifier. The secondary clarifier serves to polish the effluent by allowing for settling of the flocculent and colloidal solids. Any sludge that can be gathered in this process is pumped into the aerated sludge holding tank. Some of the aerated sludge is returned to the equalization tank; the rest is removed. The solids are processed in a solids press and hauled to Arden Landfill.

8). The remaining effluent is treated by Moving Bed Sand Filter. The sand filter removes any remaining particulate matter that has made it through all of the previous processes. Sand filter backwash is fed back into the equalization tank.

9). The final step in the process is Disinfection. The filtered effluent is routed through a chlorine contact tank and discharged through a v-notch weir into an Unnamed tributary to Buffalo Creek. The discharge is equipped with a transducer for the purpose of recording the flow rate.

The site has one outfall that discharges to an unnamed tributary to Buffalo Creek, designated in 25 PA Code Chapter 93 as a High-Quality Warm Water Fishery. The discharges from Green Valley Packaging existed prior to the receiving stream classification as high-quality water, therefore anti-degradation does not need to be considered.

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)	0.01
Latitude	40º 8' 50"	Longitude	-80º 21' 23"
Quad Name	Washington West	Quad Code	1703

Wastewater Description: Treated process wastewater generated during meat rinsing and washing, grease and brine drippings, equipment and process area wash water, cooked product cooling water, waste trimming wash water, and sewage.

Receiving Waters	UNT of Buffalo Creek	Stream Code	32949
NHD Com ID	73865770	RMI	0.03
Drainage Area	5.98	Yield (cfs/mi^2)	0.0127
Q_{7-10} Flow (cfs)	0.0757	Q_{7-10} Basis	USGS Streamstats
Elevation (ft)	999	Slope (ft/ft)	0.0001
Watershed No.	20-E	Chapter 93 Class.	HQ-WWF
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	

Nearest Downstream Public Water Supply Intake	Ohio River in West Virginia (PA-OH Border)		
PWS Waters	Ohio River	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	>30

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.01
Latitude 40º 8' 50.00" **Longitude** -80º 21' 23.00"
Wastewater Description: IW Process Effluent with ELG

Technology-Based Limitations

Federal Effluent Limitation Guidelines (ELGs)

The site is subject to Federal Effluent Limitation Guidelines (ELGs) under 40 CFR 432 (Meat and Poultry Products) subparts G (Sausage and Luncheon Meats Processors), H (Ham Processors), and L (Poultry Further Processors) and must achieve the limits below. Some limits in the ELG are determined through production data of each subpart. The limits were derived using the building block approach, taking in consideration each subpart that applies to the facility.

Subpart G (Sausage and Luncheon Meats Processors) Effluent Limitations are displayed below in Table 1.

Table 1: 40 CFR 432 Subpart G Effluent Limitations

Parameter	Maximum Daily	Maximum Monthly Average
BOD_5	0.56(1)	0.28(1)
Fecal Coliform	400 CFU / 100 mL	
Oil & Grease	0.20(1)	0.10(1)
Total Suspended Solids	0.68(1)	0.34(1)
Ammonia (as N)	8.0 mg/L	4.0 mg/L

[1]Pounds per 1000 lbs (or g/kg) of finished product.

After applying the production data from the permit application, with an average annual production of 3,134 lb/day from the past five years, the effluent limits from Subpart G are below in Table 2.

Table 2: 40 CFR 432 Subpart G Effluent Limitations with Production

Parameter	Maximum Daily	Maximum Monthly Average
BOD_5	1.76 lbs/day	0.878 lbs/day
Fecal Coliform	400 CFU / 100 mL	
Oil & Grease	0.627 lbs/day	0.313 lbs/day
Total Suspended Solids	2.13 lbs/day	1.07 lbs/day
Ammonia (as N)	8.0 mg/L	4.0 mg/L

Subpart H (Ham Processors) Effluent Limitations are displayed below in Table 3.

Table 3: 40 CFR 432 Subpart H Effluent Limitations

Parameter	Maximum Daily	Maximum Monthly Average
BOD_5	0.62(1)	0.31(1)
Fecal Coliform	400 CFU / 100 mL	
Oil & Grease	0.22(1)	0.11(1)
Total Suspended Solids	0.74(1)	0.37(1)
Ammonia (as N)	8.0 mg/L	4.0 mg/L

[1]Pounds per 1000 lbs (or g/kg) of finished product.

After applying the production data from the permit application, with an average annual production of 1,875 lb/day from the past five years, the effluent limits from Subpart H are below in Table 4.

Table 4: 40 CFR 432 Subpart H Effluent Limitations with Production

Parameter	Maximum Daily	Maximum Monthly Average
BOD_5	1.16 lbs/day	0.581 lbs/day
Fecal Coliform	400 CFU / 100 mL	
Oil & Grease	0.413 lbs/day	0.206 lbs/day
Total Suspended Solids	1.39 lbs/day	0.964 lbs/day
Ammonia (as N)	8.0 mg/L	4.0 mg/L

Subpart L (Poultry Further Processing) Effluent Limitations are displayed below in Table 5.

Table 5: 40 CFR 432 Subpart L Effluent Limitations

Parameter	Maximum Daily	Maximum Monthly Average
BOD_5	26 mg/L	16 mg/L
Fecal Coliform	400 CFU / 100 mL	
Oil & Grease	14 mg/L	8.0 mg/L
Total Suspended Solids	30 mg/L	20 mg/L
Ammonia (as N)	8.0 mg/L	4.0 mg/L

The concentrations of BOD_5, Oil & Grease, and Total Suspended Solids will need to be converted to loadings, so all of the subpart loadings can be added together to get the total loading for the facility. The concentration for Ammonia and Fecal Coliform are the same in all of the subcategory, therefore these parameters will not need to be evaluated per production data to determine the limitations. Loading rates for Subpart L are below in Table 6. The loading rates were determined by taking the flow (0.000418MGD) multiplying it by the concentration (mg/L) and by a conversion factor (8.34 lbs/gal). The flow of the specific waste stream was determined by using the industry average wastewater generation value of 315.7gal/1000 lbs of finish product and the site specific average annual poultry production value of 1,323 lbs/ day.

Table 6: 40 CFR 432 Subpart L Effluent Limitations/ site specific loading

Parameter	Maximum Daily	Maximum Monthly Average
BOD_5	0.091 lbs/day	0.056 lbs/day
Oil & Grease	0.049 lbs/day	0.028 lbs/day
Total Suspended Solids	0.105 lbs/day	0.070 lbs/day

The summation of effluent limitations from the ELG subparts are displayed below in Table 7.

Table 7: 40 CFR 432 Final Effluent Limitations

Parameter	Mass Based (lbs/day)	
	Maximum Daily	Maximum Monthly Average
BOD_5	3.0	1.5
Fecal Coliform	400 CFU / 100 mL *	-
Oil & Grease	1.1	0.55
Total Suspended Solids	3.6	2.10
Ammonia (as N)	8.0 (mg/L)	4.0 (mg/L)

*Maximum of 400 most probable number (MPN) or colony forming units (CFU) per 100 mL at any time.

Regulatory Effluent Standards and Monitoring Requirements

Flow monitoring is required pursuant to 25 Pa. Code § 92a.61(d)(1)

As oil-bearing wastewaters, discharges from Outfall 001 are subject to effluent standards for oil and grease from 25 Pa. Code § 95.2(2)

Waste may not contain more than 7 milligrams per liter of dissolved iron per 25 Pa. Code § 95.2(4).

Effluent standards for pH are also imposed on industrial wastes by 25 Pa. Code § 95.2(1) as indicated in Table 8.

Pennsylvania regulations at 25 Pa. Code § 92a.48(b) require the imposition of technology-based TRC limits for facilities that use chlorination and that are not already subject to TRC limits based on applicable federal ELGs or a facility-specific BPJ evaluation

Table 8: Regulatory Effluent Standards and Monitoring Requirements for Outfall 001

Parameter	Monthly Average	Daily Maximum	Units
Flow	Monitor and Report		MGD
Iron, Dissolved	-	7.0	mg/L
Oil & Grease	15	30	mg/L
Total Residual Chlorine (TRC)	0.5	1.0	mg/L
pH	Not less than 6.0 nor greater than 9.0		S.U.

Sewage Minimum Technology and BPJ Standards

The following are minimum technology based and BPJ standards for sewage discharges.

Table 9. Standard Sewage Tech Limits

Parameter	Minimum	Average Monthly	Average Weekly	IMAX	Basis
Flow (MGD)	XXX	Report	Report Max Daily	XXX	92a.27, 92a.61
BOD5 (mg/L)	XXX	30	45*	60	92a.47
TSS (mg/L)	XXX	30	45*	60	92a.47
TRC (mg/L)	XXX	0.5	XXX	1.6	92a.47 & 48
NH3-N (mg/L)	XXX	25	XXX	50	BPJ
D.O. (mg/L)	4.0	XXX	XXX	XXX	BPJ
pH (SU)	6.0	XXX	XXX	9.0	92a.47, 95.2
Total N (mg/L)	XXX	Report	XXX	XXX	92a.61
Total P (mg/L)	XXX	Report	XXX	XXX	92a.61
Fecal Coliform May-Sept (no./100 ml)	XXX	200 Geo Mean	XXX	1,000	92a.47
Fecal Coliform Oct-April (no./100 ml)	XXX	2,000 Geo Mean	XXX	10,000	92a.47
E. Coli (No./100mL)	XXX	XXX	XXX	Report	92a.61

*Weekly average limits for CBOD5 and TSS will not be imposed where the sampling frequency is less than 1/week.

Water Quality-Based Limitations

Toxics Management Spread Sheet

The Department of Environmental Protection (DEP) has developed the DEP Toxics Management Spreadsheet (“TMS”) to facilitate calculations necessary for completing a reasonable potential (RP) analysis and determining water quality-based effluent limitations for discharges of toxic pollutants. The Toxics Management Spreadsheet is a macro-enabled Excel binary file that combines the functions of the PENTOXSD model and the Toxics Screening Analysis spreadsheet to evaluate the reasonable potential for discharges to cause excursions above water quality standards and to determine WQBELs. The Toxics Management Spread Sheet is a single discharge, mass-balance water quality calculation spread sheet that includes consideration for mixing, first-order decay and other factors to determine recommended WQBELs for toxic substances and several non-toxic substances. Required input data including stream code, river mile index, elevation, drainage area, discharge name, NPDES permit number, discharge flow rate and the discharge concentrations for parameters in the permit application or in DMRs, which are entered into the spread sheet to establish site-specific discharge conditions. Other data such as low flow yield, reach dimensions and partial mix factors may also be entered to further characterize the conditions of the discharge and receiving water. Discharge concentrations for the parameters are chosen to represent the "worst case" quality of the discharge (i.e., maximum reported discharge concentrations). The spread sheet then evaluates each parameter by computing a Waste Load Allocation for each applicable criterion, determining a recommended maximum WQBEL and comparing that recommended WQBEL with the input discharge concentration to determine which is more stringent. Based on this evaluation, the Toxics Management Spread sheet recommends average monthly and maximum daily WQBELs.

Reasonable Potential Analysis and WQBEL Development for Outfall 001

Discharges from Outfall 001 are evaluated based on concentrations reported on the application and on DMRs; data from those sources are entered into the Toxics Management Spread Sheet. The maximum reported value of the parameters from the application form or from previous DMRs is used as the input concentration in the Toxics Management Spread Sheet. All toxic pollutants whose maximum concentrations, as reported in the permit application or on DMRs, are greater than the most stringent applicable water quality criterion are considered to be pollutants of concern. [This includes pollutants reported as "Not Detectable" or as "<MDL" where the method detection limit for the analytical method used by the applicant is greater than the most stringent water quality criterion]. The Toxics Management Spread Sheet is run with the discharge and receiving stream characteristics shown in Table 10; the characteristics used for the model is from the mouth of the tributary that Outfall 001 discharges to due to the outfall being 0.03 miles from the mouth of the stream and the mixing would occur in the mouth of the stream. For IW discharges, the design flow used in modeling is the average flow during production or operation taken from the permit application. Pollutants for which water quality standards have not been promulgated (e.g., TSS, oil and grease) are excluded from the analysis. All the parameters are evaluated using the model to determine the water quality-based effluent limits applicable to the discharge and the receiving stream. The spreadsheet then compares the reported discharge concentrations to the calculated water quality-based effluent limitations to determine if a reasonable potential exists to exceed the calculated WQBELs. Effluent limitations are established in the draft permit where a pollutant's maximum reported discharge concentration equals or exceeds 50% of the WQBEL. For non-conservative pollutants, monitoring requirements are established where the maximum reported concentration is between 25% - 50% of the WQBEL. For conservative pollutants, monitoring requirements are established where the maximum reported concentration is between 10% - 50% of the WQBEL. The information described above including the maximum reported discharge concentrations, the most stringent water quality criteria, the pollutant-of-concern (reasonable potential) determinations, the calculated WQBELs, and the WQBEL/monitoring recommendations are displayed in the Toxics Management Spread Sheet in Attachment C of this Fact Sheet. The Toxics Management Spread Sheet did not recommend any WQBELs for Outfall 001.

Table 10: TMS Inputs

Parameter	**Value**
River Mile Index	0.97
Discharge Flow (MGD)	0.004
Basin/Stream Characteristics	
Parameter	**Value**
Area in Square Miles	11.7
Q_{7-10} (cfs)	0.172
Low-flow yield (cfs/mi^2)	0.015
Elevation (ft)	997
Slope	0.0001

WQM 7.0 Water Quality Modeling Program

WQM 7.0 is a water quality modeling program for Windows that determines wasteload allocations and effluent limitations for carbonaceous biochemical oxygen demand (CBOD5), ammonia nitrogen (NH3-N), and dissolved oxygen (DO) for single and multiple point-source discharge scenarios. To accomplish this, the model simulates two basic processes. In the NH3-N module, the model simulates the mixing and degradation of NH3-N in the stream and compares calculated instream NH3-N concentrations to NH3-N water quality criteria. In the DO module the model simulates the mixing and consumption of DO in the stream due to the degradation of CBOD5 and NH3-N and compares calculated instream DO concentrations to DO water quality criteria. WQM 7.0 then determines the highest pollutant loadings that the stream can assimilate while still meeting water quality criteria under design conditions.

The IW Effluent Limit SOP recommends that permit writers run DEP's WQM 7.0 Model "if the maximum BOD5/CBOD5 concentration exceeds 30/25 mg/L in the permit application or DMRs or if the application manager believes that effluent NH3-N concentrations may need to be evaluated." BOD5 concentrations at Outfall 001 are not significant with a maximum concentration of only 9.28 mg/L reported on the application. However, WQM 7.0 will be run for Outfall 001 because ammonia-nitrogen is a pollutant of concern at Meat Packing facilities.

The WQM-7 model is run with the discharge and receiving stream characteristics shown in Table 10 above, (the characteristics used for the WQM-7 model is from the mouth of the tributary that Outfall 001 discharges to due to the outfall being 0.03 miles from the mouth of the stream and the mixing would occur in the mouth of the stream).

The modeling results (see Attachment C) indicate that no WQBELs are required for ammonia-nitrogen at Outfall 001.

Total Residual Chlorine

To determine if WQBELs are required for discharges containing total residual chlorine (TRC), a discharge evaluation is performed using a DEP program called TRC_CALC created with Microsoft Excel for Windows. TRC_CALC calculates TRC Waste Load Allocations (WLAs) through the application of a mass balance model which considers TRC losses due to stream and discharge chlorine demands and first-order chlorine decay. Input values for the program include flow rates and chlorine demands for the receiving stream and the discharge, the number of samples taken per month, coefficients of TRC variability, partial mix factors, and an optional factor of safety. The mass balance model calculates WLAs for acute and chronic criteria that are then converted to long term averages using calculated multipliers. The multipliers are functions of the number of samples taken per month and the TRC variability coefficients (normally kept at default values unless site specific information is available). The most stringent limitation between the acute and chronic long-term averages is converted to an average monthly limit for comparison to the BAT average monthly limit of 0.5 mg/l from 25 Pa. Code § 92a.48(b)(2). The more stringent of these average monthly TRC limitations is imposed in the permit. The results of the modeling, included in Attachment D, indicate that no WQBELs limits are required for TRC.

Anti-Degradation

Antidegradation regulations under Chapter 93.4c(a)(l)(i) require dischargers to protect the existing use of receiving waters. Chapter 93.4c(b) requires dischargers to consider non-discharge alternatives, public participation and social/economic justification when proposing new, additional or increased discharges to high quality or exceptional value streams. The discharges from Green Valley Packaging existed prior to the receiving stream classification as high-quality water and Green Valley Packaging is not proposing any new, additional or increases to its discharge to the receiving stream; therefore, the requirements under 25 PA Code Chapter 93.4c(b) do not need to be considered.

Anti-Backsliding

Previous limits can be used pursuant to EPA's anti-backsliding regulation, 40 CFR 122.44(l) and are displayed below in Table 11. The loading limits for $BOD_{5\text{-Day}}$ and TSS were calculate in previous permits by converting the concentration limits to loading limits using a discharge flow of 0.009 MGD and a conversion factor of 8.34. Based on DMR data, the discharge flow from Outfall 001 still has the potential to discharge at a rate of 0.009 MGD; therefore, these loading limits will remain in the permit renewal. The limitations for Fecal Coliform will be revised to be a daily maximum of 400 at all times per the ELG.

Table 11: Current Permit Effluent Limitations at Outfall 001

Parameter	Load ($^{lbs}/_{day}$)		Concentration ($^{mg}/_{L}$)			Monitoring Frequency	Sample Type
	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Inst. Max.		
Flow (MGD)	Monitor and Report		-	-	-	2/Month	Measure
$BOD_{5\text{-Day}}$	0.75	1.5	10	20	-	2/Month	Grab
TSS	0.75	1.5	10	20	-	2/Month	Grab
Fecal Coliform 5/1 – 9/30 10/1 – 4/30	 - -	 - -	 200 400	 400 1000	 - -	2/Month	Grab
Oil & Grease	0.88	1.76	10	20	-	2/Month	Grab
Iron, Dissolved				7.0		2/Month	Grab
TRC	-	-	0.5	1.6	3.3	2/Month	Grab

Ammonia (as N) 5/1 – 10/31 11/1 – 4/30	 - -	 - -	 1.5 4.0	 3.0 8.0	 - -	2/Month	Grab
pH (S.U.)	Not less than 6.0 nor greater than 9.0					2/Month	Grab

Final effluent limitations

The final effluent limitations for Outfall 001 are displayed in Table 12 below, they are the most stringent values from the above effluent limitation development.

Table 12: Proposed Permit Effluent Limitations at Outfall 001

Parameter	Load ($^{lbs}/_{day}$)		Concentration ($^{mg}/_{L}$)				Monitoring Frequency	Sample Type
	Monthly Avg.	Daily Max.	Inst. Minimum	Monthly Avg.	Daily Max.	Inst. Max.		
Flow (MGD)	Monitor and Report		XXX	XXX	XXX	XXX	2/Month	Measure
$BOD_{5\text{-}Day}$	0.75	1.5	XXX	10	20	XXX	2/Month	Grab
TSS	0.75	1.5	XXX	10	20	XXX	2/Month	Grab
Fecal Coliform (No./100mL) 5/1 – 9/30 10/1 – 4/30	 XXX XXX	 XXX XXX	 XXX XXX	 200 400	 400 400	 XXX XXX	2/Month	Grab
Oil & Grease	0.55	1.1	XXX	10	20	XXX	2/Month	Grab
Iron, Dissolved	XXX	XXX	XXX	XXX	7.0	XXX	2/Month	Grab
TRC	XXX	XXX	XXX	0.5	1.0	1.6	2/Month	Grab
Ammonia (as N) 5/1 – 10/31 11/1 – 4/30	 XXX XXX	 XXX XXX	 XXX XXX	 1.5 4.0	 3.0 8.0	 XXX XXX	2/Month	Grab
D.O.	XXX	XXX	4.0	XXX	XXX	XXX	2/Month	Grab
Total N	XXX	XXX	XXX	Report	XXX	XXX	2/Month	Grab
Total P	XXX	XXX	XXX	Report	XXX	XXX	2/Month	Grab
E. Coli (No./100mL)	XXX	XXX	XXX	XXX	XXX	Report	1/Year	Grab
pH	XXX	XXX	6.0	XXX	XXX	9.0	2/Month	Grab

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

Attachments

Attachment A: USGS Stream Stats Data for Outfall 001

Attachment B: Toxics Management Spreadsheet Results

Attachment C: WQM 7.0 Model Results

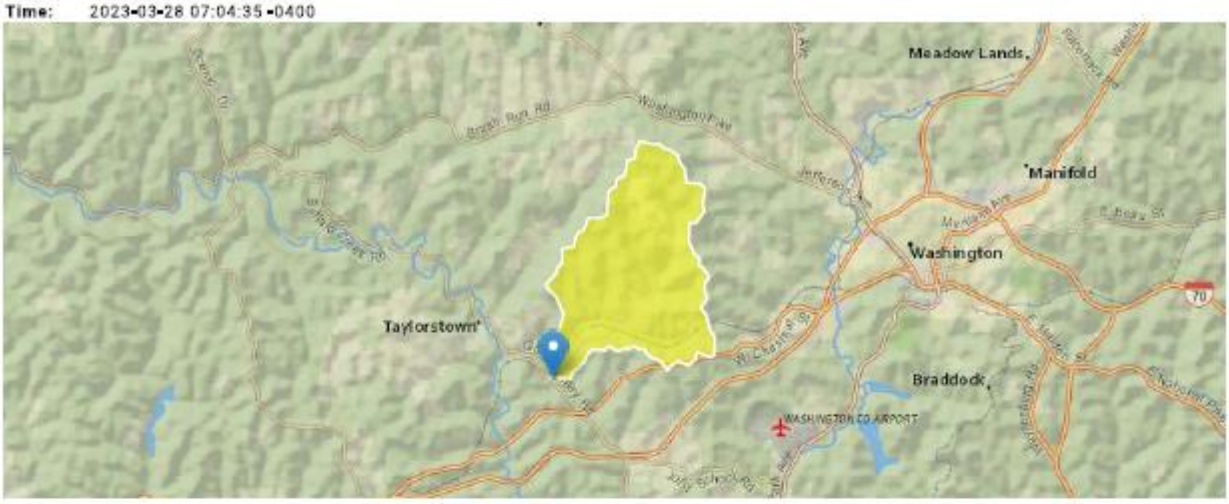
Attachment D: TRC Model Results

Attachment A:

USGS Stream Stats Data for Outfall 001

StreamStats Report

Region ID: PA
Workspace ID: PA20230328110408684000
Clicked Point (Latitude, Longitude): 40.14744, -80.35673
Time: 2023-03-28 07:04:35 -0400



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	5.98	square miles
ELEV	Mean Basin Elevation	1233	feet

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	5.98	square miles	2.26	1400
ELEV	Mean Basin Elevation	1233	feet	1050	2580

Low-Flow Statistics Flow Report [Low Flow Region 4]

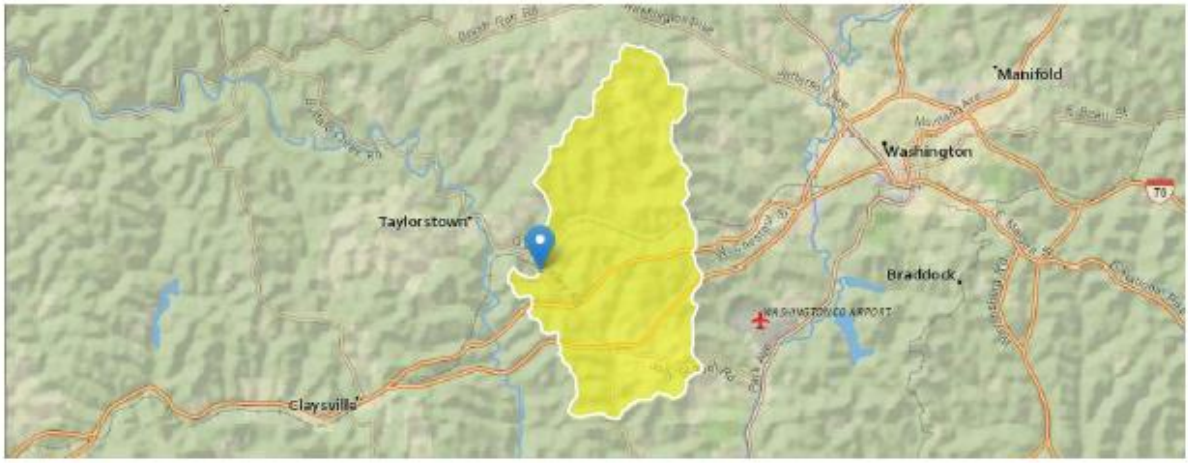
PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	0.22	ft^3/s	43	43
30 Day 2 Year Low Flow	0.392	ft^3/s	38	38
7 Day 10 Year Low Flow	0.0757	ft^3/s	66	66
30 Day 10 Year Low Flow	0.142	ft^3/s	54	54
90 Day 10 Year Low Flow	0.268	ft^3/s	41	41

Low-Flow Statistics Citations

StreamStats Report

Region ID: PA
Workspace ID: PA20230328113113829000
Clicked Point (Latitude, Longitude): 40.14722, -80.35722
Time: 2023-03-28 07:31:34 -0400



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	11.7	square miles
ELEV	Mean Basin Elevation	1221	feet

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	11.7	square miles	2.26	1400
ELEV	Mean Basin Elevation	1221	feet	1050	2580

Low-Flow Statistics Flow Report [Low Flow Region 4]

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

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	0.47	ft^3/s	43	43
30 Day 2 Year Low Flow	0.808	ft^3/s	38	38
7 Day 10 Year Low Flow	0.172	ft^3/s	66	66
30 Day 10 Year Low Flow	0.307	ft^3/s	54	54
90 Day 10 Year Low Flow	0.56	ft^3/s	41	41

Low-Flow Statistics Citations

Attachment B:

Toxics Management Spreadsheet Results

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions | Discharge | Stream

Facility: **Green Valley Packing** NPDES Permit No.: **PA0090328** Outfall No.: **001**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **Meat Processing Wastewater and Sewage**

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q_{7-10}	Q_h
0.004	78.4	7.5						

					0 if left blank		0.5 if left blank		0 if left blank			1 if left blank	
	Discharge Pollutant	Units	Max Discharge Conc		Trib Conc	Stream Conc	Daily CV	Hourly CV	Stream CV	Fate Coeff	FOS	Criteria Mod	Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L		4820									
	Chloride (PWS)	mg/L		2493									
	Bromide	mg/L		5.42									
	Sulfate (PWS)	mg/L		100.9									
	Fluoride (PWS)	mg/L		0.61									

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Stream / Surface Water Information

Green Valley Packing, NPDES Permit No. PA0090328, Outfall 001

Instructions | Discharge | Stream

Receiving Surface Water Name: **UNT to Buffalo Creek**

No. Reaches to Model: **1**

- (●) Statewide Criteria
- ( ) Great Lakes Criteria
- ( ) ORSANCO Criteria

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi²)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	032947	0.97	997	11.7			Yes
End of Reach 1	032947	0.1	987	12.5			Yes

$Q_{7\text{-}10}$

Location	RMI	LFY (cfs/mi²)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	0.97	0.1	0.172									100	7		
End of Reach 1	0.1	0.1	0.186												

Q_h

Location	RMI	LFY (cfs/mi²)	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	0.97														
End of Reach 1	0.1														

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Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

Green Valley Packing, NPDES Permit No. PA0090328, Outfall 001

Instructions | Results | RETURN TO INPUTS | SAVE AS PDF | PRINT | ◉ All ○ Inputs ○ Results ○ Limits

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 9.836 PMF: 1 Analysis Hardness (mg/l): 99.25 Analysis pH: 7.01

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	

☑ ***CFC*** CCT (min): 9.836 PMF: 1 Analysis Hardness (mg/l): 99.25 Analysis pH: 7.01

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	

☑ ***THH*** CCT (min): 9.836 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	500,000	500,000	N/A	
Chloride (PWS)	0	0		0	250,000	250,000	N/A	
Sulfate (PWS)	0	0		0	250,000	250,000	N/A	
Fluoride (PWS)	0	0		0	2,000	2,000	N/A	

☑ ***CRL*** CCT (min): 2.459 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	

☑ ***Recommended WQBELs & Monitoring Requirements***

No. Samples/Month: 4

	Mass Limits		*Concentration Limits*						
Pollutants	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units	Governing WQBEL	WQBEL Basis	Comments

☑ ***Other Pollutants without Limits or Monitoring***

The following pollutants do not require effluent limits or monitoring based on water quality because reasonable potential to exceed water quality criteria was not determined and the discharge concentration was less than thresholds for monitoring, or the pollutant was not detected and a sufficiently sensitive analytical method was used (e.g., <= Target QL).

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Fluoride (PWS)	N/A	N/A	PWS Not Applicable

Attachment C:

WQM 7.0 Model Results

(Summer)

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
20E	32947	Trib 32947 to Buffalo Creek	0.970	997.00	11.70	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	0.015	0.17	0.17	0.000	0.000	0.0	0.00	0.00	25.00	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
Green Valley	PA0090328	0.0040	0.0000	0.0000	0.000	20.00	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	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
20E	32947	Trib 32947 to Buffalo Creek	0.100	987.00	12.70	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	0.015	0.18	0.18	0.000	0.000	0.0	0.00	0.00	25.00	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 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
20E	32947	Trib 32947 to Buffalo 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												
0.970	0.17	0.00	0.17	.0062	0.00218	.417	9.84	23.59	0.04	1.224	24.83	7.00
Q1-10 Flow												
0.970	0.11	0.00	0.11	.0062	0.00218	NA	NA	NA	0.03	1.554	24.73	7.00
Q30-10 Flow												
0.970	0.23	0.00	0.23	.0062	0.00218	NA	NA	NA	0.05	1.036	24.87	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
20E	32947	Trib 32947 to Buffalo 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
0.970	Green Valley	11.32	50	11.32	50	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
0.970	Green Valley	1.38	25	1.38	25	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)		
0.97	Green Valley	25	25	25	25	4	4	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
20E	32947	Trib 32947 to Buffalo Creek

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
0.970	0.004	24.826	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
9.836	0.417	23.590	0.043
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.80	0.214	0.87	1.015
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.093	15.010	Owens	6
Reach Travel Time (days)			
1.224			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.122	2.71	0.77	7.56
0.245	2.62	0.68	7.56
0.367	2.54	0.60	7.56
0.490	2.46	0.53	7.56
0.612	2.38	0.47	7.56
0.734	2.30	0.41	7.56
0.857	2.23	0.36	7.56
0.979	2.15	0.32	7.56
1.101	2.09	0.28	7.56
1.224	2.02	0.25	7.56

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
20E	32947	Trib 32947 to Buffalo 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)
0.970	Green Valley	PA0090328	0.004	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			4

(Winter)

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
20E	32947	Trib 32947 to Buffalo Creek	**0.970**	997.00	11.70	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	0.030	0.17	0.00	0.000	0.000	0.0	0.00	0.00	5.00	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
Green Valley	PA0090328	0.0040	0.0000	0.0000	0.000	15.00	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	4.00	12.51	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
20E	32947	Trib 32947 to Buffalo Creek	**0.100**	987.00	12.70	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	0.030	0.18	0.00	0.000	0.000	0.0	0.00	0.00	5.00	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 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
20E	**32947**	**Trib 32947 to Buffalo 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												
0.970	0.17	0.00	0.17	.0062	0.00218	.417	9.84	23.59	0.04	1.224	5.35	7.00
Q1-10 Flow												
0.970	0.11	0.00	0.11	.0062	0.00218	NA	NA	NA	0.03	1.554	5.53	7.00
Q30-10 Flow												
0.970	0.23	0.00	0.23	.0062	0.00218	NA	NA	NA	0.05	1.036	5.26	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
20E	32947	Trib 32947 to Buffalo 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
0.970	Green Valley	24.1	50	24.1	50	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
0.970	Green Valley	4.36	25	4.36	25	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)		
0.97	Green Valley	25	25	25	25	4	4	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
20E	32947	Trib 32947 to Buffalo Creek

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
0.970	0.004	5.347	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
9.836	0.417	23.590	0.043
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.80	0.335	0.87	0.227
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
12.214	9.457	Owens	6
Reach Travel Time (days)			
1.224			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.122	2.74	0.84	11.35
0.245	2.68	0.82	11.35
0.367	2.63	0.80	11.35
0.490	2.57	0.78	11.35
0.612	2.52	0.76	11.35
0.734	2.47	0.74	11.35
0.857	2.42	0.71	11.35
0.979	2.37	0.70	11.35
1.101	2.32	0.68	11.35
1.224	2.27	0.66	11.35

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
20E	32947	Trib 32947 to Buffalo 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)
0.970	Green Valley	PA0090328	0.004	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			4

Attachment D:

TRC Model Results

TRC EVALUATION

0.172	= Q stream (cfs)	0.5	= CV Daily
0.004	= Q discharge (MGD)	0.5	= CV Hourly
4	= no. samples	0.995	= 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)
	= %Factor of Safety (FOS)		=Decay Coefficient (K)

Source	Reference	AFC Calculations		Reference	CFC Calculations	
TRC	**1.3.2.iii**	WLA afc =	8.842	**1.3.2.iii**	WLA cfc =	8.655
PENTOXSD TRG	**5.1a**	LTAMULT afc =	0.373	**5.1c**	LTAMULT cfc =	0.581
PENTOXSD TRG	**5.1b**	LTA_afc=	3.295	**5.1d**	LTA_cfc =	5.032

Source		Effluent Limit Calculations		
PENTOXSD TRG	5.1f	AML MULT =	1.720	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) =	0.500	BAT/BPJ
		INST MAX LIMIT (mg/l) =	1.170	

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)**