Pennsylvania Department of Environmental Protection

Northcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0110540**
Facility Type	**Industrial**	APS ID	**1075017**
Major / Minor	**Minor**	Authorization ID	**1416415**

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

Applicant and Facility Information

Applicant Name	**Furman Foods, Inc.**	Facility Name	**Northumberland Cannery**
Applicant Address	P.O. Box 500	Facility Address	770 Cannery Road
	Northumberland, PA 17857-0500		Northumberland, PA 17857-8615
Applicant Contact	Shawn Sassaman	Facility Contact	Shawn Sassaman
Applicant Phone	570-473-3516	Facility Phone	570-473-3516
Client ID	25270	Site ID	457596
SIC Code	2033	Municipality	Point Township
SIC Description	Manufacturing - Canned Fruits and Vegetables	County	Northumberland
Date Application Received	October 03, 2022	EPA Waived?	No
Date Application Accepted	November 14, 202	If No, Reason	Significant CB Discharge
Purpose of Application	Renewal of NPDES permit		

Summary of Review

INTRODUCTION

Furman Foods, Inc. (Furman) is a vegetable canning facility located in Point Township, Northumberland County. Furman has applied to renew its existing NPDES permit authorizing discharges of treated process wastewater, non-contact cooling water and stormwater.

APPLICATION

Furman submitted the *NPDES Application for Individual Permit to Discharge Industrial Wastewater* (DEP #3800-PM-BCW0008b). The application was received by the Department on October 03, 2022 and considered administratively complete on November 14, 2022. Shawn A. Sassaman, PE, Environmental Engineer with Furman, is both the client and site contacts. His additional contact information is (email) shawn.sassaman@furmanos.com.

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.

The case-file, permit application package and draft permit will be available for public review at Department's Northcentral Regional Office. The address for this office is 208 West Third Street, Suite 101, Williamsport, PA 17701. An appointment can be made to review these materials during the comment period by calling the file coordinator at 570-327-3636.

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Approve	Return	Deny	Signatures	Date
X			Jeffrey J. Gocek, EIT Project Manager	07/11/2025
X			Nicholas W. Hartranft, PE Environmental Engineer Manager	07/11/2025

INDUSTRIAL ACTIVITY

Vegetables canned include dry beans (kidney, butter, navy, etc.) which are received in bulk and processed year-round. Fresh vegetables including tomatoes and snap beans are processed in the warmer months.

The industrial wastewater includes process wastewater, housekeeping wastewater, non-contact cooling water and sanitary contributions. All wastewater is treated in an aerobic/anaerobic wastewater treatment plant prior to discharge to the West Branch of the Susquehanna River. Some non-contact cooling water is released to the Unnamed Tributary to the West Branch of the Susquehanna River adjacent to the production facility. The sludge generated from the wastewater treatment plant is land applied.

The existing NPDES permit for the facility expired on March 31, 2023, with an administrative extension in the interim. Furman Foods reports there have been no changes since last NPDES permit renewal.

The Standard Industrial Classification (SIC) code for this facility is 2033 - *Canned Fruits, Vegetables, Preserves, Jams, and Jellies*. This code is defined at https://www.osha.gov as *Establishments primarily engaged in canning fruits, vegetables and fruit and vegetable juices; and in manufacturing catsup and similar tomato sauces, or natural and imitation preserves, jams and jellies*. The associated North American Industry Classification System (NAICS) code is 311421 – *Fruit and Vegetable Canning*.

TREATMENT FACILITY SUMMARY

Furman, which sells tomatoes and beans under the *Furmano's* label, operates a vegetable processing facility with industrial wastewater treatment. Vegetables canned include dry beans (kidney, butter, navy, etc.) which are received in bulk and normally processed through the winter months. Fresh vegetables, including tomatoes, snap beans, peppers and peas, are processed in the warmer months.

See Attachment 01 for a map of the Furman location.

The characteristics of the facility's Industrial Waste Treatment Facility (IWTF) are as follows:

Waste Type	Degree of Treatment	Process Type	Disinfection	Average Annual Flow (MGD)
Industrial	Secondary	Activated Sludge	Ultraviolet	0.85
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.85	24,100	Not Applicable	Anaerobic Digestion	Land Application

The current wastewater treatment system was approved by Water Quality Management (WQM) permit #4910201. This permit, issued February 18, 2011, approved the upgrade and expansion of the IWTF. The IWTF currently consists of vegetable screening/strainer (at the point of vegetable waste generation), coarse bar screens, a grinder, a rotary drum screen, a raw wastewater pump station, equalization, anaerobic (low rate) pretreatment, flow distribution, activated sludge treatment with parallel aeration tanks (diffused aeration), pH/alkalinity adjustment, RAS/WAS pump stations, gas chlorine disinfection, sulfur dioxide dechlorination and flow metering. Both the solids from the initial screening and the solids from the anaerobic digestion are land applied on fields owned by Furman.

An amendment to the WQM permit, #4910201 A-1 was issued October 04, 2012. This amendment authorized the diversion of wastewater from the raw wastewater pump station during emergency power outages. A 450-foot, 12-inch diameter gravity PVC sewer was constructed from the raw wastewater pump station wet well to the sludge thickener, to provide storage in the event of a power outage.

See Attachment 02 for process wastewater flow at Furman. See Attachment 03 for an aerial photo of the IWTP.

OUTFALLS

Outfall 001 is a discharge of non-contact "cannery cooker" cooling water (NCCW) and spin cooling water to an Unnamed Tributary to West Branch Susquehanna River. This outfall is located at latitude 40º54'48.70" and longitude -76º48'40.10".

Outfall 002 is a discharge of stormwater from the site to the Unnamed Tributary to West Branch Susquehanna River. This outfall is located at latitude 40°54'43.00" and longitude -76°48'47.12". This outfall drains approximately 13 acres, which consists of both pervious and impervious surfaces.

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Outfall 003 is an emergency overflow discharge at the pump station where the Furman effluent was formerly combined with the Viking Energy effluent prior to being pumped to the West Branch Susquehanna River (via forcemain and Route 147 storm sewer). Viking Energy is no longer in operation and the facility was acquired by Furman. It is located at latitude 40°54"36.30" and longitude -76°48"49.40". From Furman, this pump station contains both treated sanitary and process wastewater. This discharge (overflow) can only be utilized in the event of a power or pump failure at the pump station.

Outfall 004 is where the pumped treated effluent, mentioned above, is discharged to the Route 147 stormwater conveyance for ultimate disposal in the West Branch Susquehanna River. It is located at latitude 40°54"11.90" and longitude -76°49'34.60". The effluent is conveyed through the storm sewer to the West Branch Susquehanna River at latitude 40°54"00.40" and longitude -76°49"46.60". This discharge contains both treated sanitary and process wastewater from Furman.

See Attachment 04 an outfall map.

COMPLIANCE HISTORY

Unresolved Violations

The WMS Query Open Violations by Client revealed no unresolved violations for Furman.

DMR Data

The following are recent (April 2024 to March 2025) discharge monitoring report (DMR) data for the Furman outfalls.

001 DMR Parameters	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24
Flow (MGD) Average Monthly	0.2582	0.2027	0.0572	0.0509	0.2355	0.2395	0.3605	0.3545	0.3341	0.3898	0.2925	0.1937
Flow (MGD) Daily Maximum	0.5676	0.5498	0.4873	0.1954	0.5809	0.5057	0.6608	0.6036	0.5766	0.6403	0.7033	0.6770
pH (S.U.) IMIN	7.46	7.25	7.24	7.25	7.58	7.26	7.22	7.19	7.4	6.28	7.17	7.15
pH (S.U.) IMAX	8.72	8.48	8.29	8.65	8.88	8.35	8.15	8.14	8.2	8.06	8.46	8.23
Total Residual Halogens (mg/L) Average Monthly	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2
Total Residual Halogens (mg/L) IMAX	0.4	0.2	0.16	0.4	1.46	0.4	0.3	0.3	0.35	0.44	0.26	0.7
Temperature (°F) Average Monthly	86.0	78.3	90	71	82.8	88	90.8	93.8	91	92	91	89
Temperature (°F) Daily Maximum	109.8	109.9	106	115	109.4	109	109.6	109.8	109	110	110	111
Oil and Grease (mg/L) Average Monthly	< 6	12	FF	8.0	11	25	12.0	19	6.0	7.0	6.0	< 7.0
Oil and Grease (mg/L) IMAX	11.6	18	FF	11	16	28	14.3	29	7.5	21	6.0	9.2
Total Iron (mg/L) Average Monthly	2.1	0.2	0.1	0.9	0.3	0.3	0.6	0.4	0.4	0.4	0.4	1.8
Total Iron (mg/L) Daily Maximum	10.4	0.2	0.1	1.7	0.4	0.5	1.5	0.9	0.5	0.5	0.84	3.9

002 DMR Parameters	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24
pH (S.U.) Daily Minimum				8.0						8.0		
pH (S.U.) Daily Maximum				8.0						8.0		
BOD5 (mg/L) Daily Maximum				4.5						< 25		
COD (mg/L) Daily Maximum				25.3						< 25		
TSS (mg/L) Daily Maximum				45						< 5.0		
Oil and Grease (mg/L) Daily Maximum				< 5.0						< 5.0		
Nitrate-Nitrite (mg/L) Daily Maximum				2.1						7.6		

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004 DMR Parameters	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24
Flow (MGD) Average Monthly	0.4759	0.5297	0.5728	0.4584	0.4694	0.6029	0.5525	0.6830	0.4880	0.4303	0.3860	0.3965
Flow (MGD) Daily Maximum	0.7843	0.8345	1.1238	0.7636	0.7802	0.9405	0.8152	1.0299	0.9719	0.7577	0.6473	0.6016
pH (S.U.) IMIN	7.26	6.85	7.24	7.24	7.3	7.42	7.53	7.39	6.8	7.44	6.55	7.35
pH (S.U.) IMAX	8.0	8.09	7.92	8.16	8.0	8.14	8.13	7.99	8.0	7.93	8.15	7.89
TRC (mg/L) Average Monthly	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.03
TRC (mg/L) IMIN	1.4	1.1	0.9	1.4	0.5	0.4	0.3	0.5	0.6	0.7	0.41	0.18
BOD5 (lbs/day) Average Monthly	27	132	66	14	20	40	63	52	< 18	10	< 13	22
BOD5 (lbs/day) Daily Maximum	40	233	134	69	34	64	73	67	35	16	21	36
BOD5 (mg/L) Average Monthly	4.9	22.9	12.6	3.2	4.3	6.9	11.7	8.6	< 3.8	3.2	< 3.8	4.6
BOD5 (mg/L) Daily Maximum	6.5	38.4	22.8	5.1	5.9	10.7	13.4	11.4	7.4	4.0	5.7	7.2
TSS (lbs/day) Average Monthly	107	353	14.6	35	39	55	62	< 43	75	44	< 39	262
TSS (lbs/day) Daily Maximum	165	867	23.0	69	73	70	81	73	112	59	67	457
TSS (mg/L) Average Monthly	19.5	61.3	72.0	8.0	8.8	9.6	11.5	< 6.5	14.4	14.0	< 10.8	54.5
TSS (mg/L) Weekly Average	34.0	143.0	146.0	14.0	14.0	13.0	15.0	10.0	23.0	19.0	18	91.0
Oil and Grease (mg/L) Average Monthly	< 5.0	< 5.0	< 5.3	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.1	< 5.0
Oil and Grease (mg/L) IMAX	< 5.0	< 5.0	< 5.3	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.2	< 5.0
Fecal Coliform (No./100 ml) Geometric Mean	< 392	> 312	296	65	77	25	40	14	8.0	1160	321	> 77
Fecal Coliform (No./100 ml) IMAX	6131	> 2419.6	2420	214	141	146	152.3	17.3	16	2420	2419.6	> 1600
Nitrate-Nitrite (mg/L) Average Monthly	5.9	< 1.85	< 2.1	19.7	19	11.2	10.7	15.2	124	111.1	79.5	69.5
Nitrate-Nitrite (lbs) Total Monthly	881	< 219	202	2320	2437	1652	1558	2272	13321	8833	6392	7094
Total Nitrogen (mg/L) Average Monthly	24.0	< 20	11.3	22.3	24.2	19.5	28.6	33.6	125.5	112.3	81.5	71.6
Total Nitrogen (lbs) Effluent Net Total Monthly	3522	< 2285	1465	2672	3067	2927	3992	4766	13513	8927	6522	7319
Total Nitrogen (lbs) Total Monthly	3522	< 2285	1465	2672	3067	2927	3992	4766	13513	8927	6522	7319
Total Nitrogen (lbs) Effluent Net Total Annual							44158					
Total Nitrogen (lbs) Total Annual							93638					
Ammonia (mg/L) Average Monthly	14.9	12.8	6.7	< 1.7	3.2	4.9	14.0	15.5	1.1	< 0.16	< 0.25	< 0.44
Ammonia (lbs) Total Monthly	2183	1594	945	< 257	397	783	1925	1901	146	13	< 12	< 47
Ammonia (lbs) Total Annual							5038					
TKN (mg/L) Average Monthly	18.1	18.1	9.2	< 2.6	< 4.7	8.3	17.9	18.5	< 1.6	< 1.2	< 2	< 2.2
TKN (lbs) Total Monthly	2640	2066	1465	< 352	< 574	1275	2433	2494	< 192	< 93	< 130	< 225
Total Phosphorus (lbs/day) Average Monthly	74	36	34	40	47	57	87	88	80	64	56	66
Total Phosphorus (mg/L) Average Monthly	13.0	8.2	8.3	10.4	11.4	11.9	18.7	19.0	23.0	24.1	23.8	22.2
Total Phosphorus (lbs) Effluent Net Total Monthly	1865	1016	1047	1238	1415	1761	2625	2729	2482	1912	1721	1993
Total Phosphorus (lbs) Total Monthly	1865	1016	1047	1238	1415	1761	2625	2729	2482	1912	1721	1993
Total Phosphorus (lbs) Effluent Net Total Annual							1620					
Total Phosphorus (lbs) Total Annual							27074					

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Recent Violations

The following are recent (April 2024 to March 2025) effluent violations for the Furman outfalls.

001 Parameters Violations	Date	SBC	DMR Value	Limit Value	Units
Total Residual Halogens	11/30/24	IMAX	1.46	0.5	mg/L
Temperature	12/31/24	Daily Max	115	110	°F
Oil and Grease	10/31/24	Avg Mo	25	15	mg/L
Oil and Grease	08/31/24	Avg Mo	19	15	mg/L
Total Iron	03/31/25	Avg Mo	2.1	1.5	mg/L
Total Iron	03/31/25	Daily Max	10.4	3.0	mg/L

004 Parameters Violations	Date	SBC	DMR Value	Limit Value	Units
TSS	02/28/25	Avg Mo	353	337	lbs/day
TSS	02/28/25	Daily Max	867	674	lbs/day
Fecal Coliform	05/31/24	Geo Mean	321	200	No./100 ml
Fecal Coliform	06/30/24	Geo Mean	1160	200	No./100 ml
Fecal Coliform	06/30/24	Geo Mean	1160	200	No./100 ml
Fecal Coliform	02/28/25	Geo Mean	> 312	2000	No./100 ml
Fecal Coliform	05/31/24	IMAX	2419.6	1000	No./100 ml
Fecal Coliform	06/30/24	IMAX	2420	1000	No./100 ml
Fecal Coliform	06/30/24	IMAX	2420	1000	No./100 ml
Fecal Coliform	02/28/25	IMAX	> 2419.6	10000	No./100 ml

Inspections

The most recent Department inspection, an incident inspection, was performed February 14, 2025. An unauthorized discharge of wastewater from the aeration tank occurred to both the ground surface and the nearby Unnamed Tributary to the West Branch Susquehanna River. The discharge was attributed to a flow control meter failure which left a valve open. The unauthorized discharge was documented as a violation of the Clean Streams Law.

A Chesapeake Bay Load Compliance Evaluation inspection was performed by the Department on December 20, 2024. Furman purchased both Nitrogen and Phosphorus credits in 2024 to comply with the nutrient caploads in the NPDES permit.

A Compliance Evaluation Inspection (CEI) by the Department was conducted August 07, 2024. Effluent limitation violations were documented, spanning from March 2024 through June 2024. These included 004 Total Residual Chlorine (TRC), 001 Total Residual Halogens, 001 Total Iron, 001 Daily Temperature and 004 Fecal Coliforms. Furman indicated they were working with a third-party consulting firm to determine cause of high nitrates and fecal coliforms.

Compliance Correspondence

A Notice of Violation (NOV) letter was sent to Furman on April 30, 2024. This letter documented 13 unauthorized discharges from 2019 through 2023 and 71 effluent limitation exceedances from 2019 through 2024. As a result of the violations, Furman was classified in a status of “Significant Non-Compliance (SNC)”.

To settle the status of SNC, the Department entered into a Consent Assessment of Civil Penalty (CACP) with Furman on July 16, 2024. The CACP again documented the non-compliance and collected a civil penalty of $17,000.

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EXISTING LIMITATIONS

Outfall 001

Discharge Parameter	Mass (lb/day)		Concentration (mg/L)				Monitoring	
	Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Instantaneous Maximum	Minimum Frequency	Sample Type
Flow (MGD)	Report	Report					Daily When Discharging	Meter
pH (SU)			6.0			9.0	Daily When Discharging	Grab
Total Iron				1.5	3	3.7	Weekly When Discharging	Grab
Oil & Grease				15		30	2/Month	Grab
Total Halogens				0.2		0.5	Weekly When Discharging	Grab
Temperature (°F)				Report	110		Daily When Discharging	IS

Outfall 002

Discharge Parameter	Mass (lb/day)		Concentration (mg/L)				Monitoring	
	Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Instantaneous Maximum	Minimum Frequency	Sample Type
pH (SU)				Report			1/6 Months	Grab
BOD5				Report			1/6 Months	Grab
Total Suspended Solids				Report			1/6 Months	Grab
Chemical Oxygen Demand				Report			1/6 Months	Grab
Nitrate-Nitrite Nitrogen				Report			1/6 Months	Grab
Oil and Grease				Report			1/6 Months	Grab

Outfall 003

Discharge Parameter	Mass (lb/day)		Concentration (mg/L)				Monitoring	
	Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	IMAX	Minimum Frequency	Sample Type
Flow (MGD)	Report	Report					Daily When Discharging	Meter
BOD_5				10	20	25	Daily When Discharging	Grab
TSS				10	20	25	Daily When Discharging	Grab
Total Nitrogen				5.0	10	12.5	Daily When Discharging	Grab
Phosphorus				0.5	1.0	1.25	Daily When Discharging	Grab
Dissolved Oxygen			6.0				Daily When Discharging	Grab
Oil & Grease				15	30	30	Daily When Discharging	Grab
pH (SU)			6.0			9.0	Daily When Discharging	Grab
TRC				0.5		1.6	Daily When Discharging	Grab
Fecal Coliforms (No./100mL)	200/100ml as a geometric mean						Daily When Discharging	Grab

Outfall 004

Discharge Parameter	Mass (lb/day)		Concentration (mg/L)			Monitoring	
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Instantaneous Maximum	Minimum Frequency	Sample Type
Flow (MGD)	Report	Report				Continuous	Meter
BOD_5	337	674	75	150	188	1/Week	24 Hour Comp
TSS	337	674	75	150	188	1/Week	24 Hour Comp
Oil & Grease			15		30	2/Month	Grab
TRC			0.5		1.6	1/Day	Grab
Fecal Coliforms 05/01-09/30 (No./100mL)			200/100mL Geo. Mean		1,000/100mL	1/Week	Grab
Fecal Coliforms 10/01-04/30 (No./100mL)			2,000/100mL Geo. Mean		10,000/100mL	1/Week	Grab
pH (SU)			6.0 to 9.0 at all times			1/Day	Grab

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Outfall 004 continued

Discharge Parameter	Mass Load (lb)		Concentration (mg/L)			Monitoring	
	Monthly	Annual	Minimum	Monthly Average	Maximum	Minimum Frequency	Sample Type
Ammonia-N	Report			Report		2/Week	Grab
Kjeldahl-N	Report			Report		2/Week	Grab
Nitrite/Nitrate-N	Report			Report		2/Week	Grab
Total Nitrogen	Report	Report		Report		1/Month	Calculate
Total Phosphorus	Report	Report		Report		2/Week	Grab
Net Total Nitrogen	Report	45,450				1/Month	Calculate
Net Total Phosphorus	Report	1,624				1/Month	Calculate

$Q_{7,10}$ DETERMINATION

The $Q_{7,10}$ is the lowest seven consecutive days of flow in a 10-year period and is used for modeling wastewater treatment plant discharges. 25 PA § 96.1 defines $Q_{7,10}$ as "*the actual or estimated lowest 7 consecutive day average flow that occurs once in 10 years for a stream with unregulated flow, or the estimated minimum flow for a stream with regulated flow*".

A stream gage upstream of the existing discharge, "West Branch Susquehanna River at Lewisburg, PA" (USGS #01553500) was selected as a reference gage. A $Q_{7,10}$ flow for that gage (838 CFS) was obtained from *Selected Streamflow Statistics for Streamgage Locations in and near Pennsylvania* (USGS Open Files Report 2011-1070). The drainage area at the point of discharge (6,951 mi^2) was calculated by the *USGS Pennsylvania StreamStats* application. Knowing the drainage area (6,951 mi^2) at the discharge and both the drainage area (6,847 mi^2) and $Q_{7,10}$ (838 CFS) at the reference gage, the $Q_{7,10}$ at the discharge was calculated to be 850.73 CFS.

See Attachment 05 for the $Q_{7,10}$ determination.

ADDITIONAL DISCHARGE DETAILS

The receiving stream for the process wastewater, the West Branch Susquehanna River, is identified by Department stream code 18668. The Furman discharge is located at river mile index 2.53 and in both the State Water Plan watershed 10D (Chillisquaque and Muncy Creeks) and the Chapter 93 drainage list L.

The nearest downstream public water supply intake is the Sunbury Municipal Authority, located 3.6 river miles downstream from Outfall 004. The West Branch Susquehanna River is the secondary source of potable water for Sunbury, PA and the surrounding area. This intake is on the Susquehanna River at river mile index of 124. The flow at the intake is 2,430 CFS.

DEVELOPMENT OF EFFLUENT LIMITATIONS (001 and 003)

Outfall 001

The NCCW discharged through this outfall is once-through cooling water. The Department considers the long-term average flow of this discharge to be 0.16 MGD. The temperature limitation of 110°F is based on the Department's *Implementation Guidance for Temperature Criteria* (DEP #391-2000-017). The Total Iron limitation is based on the 1.5 mg/L aquatic life specific water quality criteria specified in 25 PA § 93.7. The Oil & Grease limitation and the pH limitation are based on 25 PA § 95.2. The Total Halogens water quality based effluent limit was added in 2005 when Furman requested the use of a bromide-based FMC Cooker biocide (GE Spectrus OX1201).

Outfall 003

The limitations assigned to this outfall, with a 1/Event monitoring frequency, are based on the Department's *Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales and Storm Sewers* (DEP #391-2000-014). For a majority of the year, the only flow in this stream is the result of non-contact cooling water discharged from Outfall 001.

DEVELOPMENT OF EFFLUENT LIMITATIONS (004)

Outfall 004 is where the pumped effluent, mentioned above, is discharged to the Route 147 stormwater conveyance for ultimate disposal in the West Branch Susquehanna River. The effluent is conveyed through the storm sewer to the West Branch Susquehanna River.

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Technology-Based Limitations

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

Parameter	Limit (mg/l)	SBC	Federal Regulation	State Regulation
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Fecal Coliform (5/1 – 9/30)	200 / 100 ml	Geo Mean	-	92a.47(a)(4)
Fecal Coliform (5/1 – 9/30)	1,000 / 100 ml	IMAX	-	92a.47(a)(4)
Fecal Coliform (10/1 – 4/30)	2,000 / 100 ml	Geo Mean	-	92a.47(a)(5)
Fecal Coliform (10/1 – 4/30)	10,000 / 100 ml	IMAX	-	92a.47(a)(5)
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)

The production wastewater produced by Furman is subject to federal effluent limit guidelines (ELGs). ELGs are national regulations that control the discharge of pollutants to surface waters and to publicly owned treatment works (POTWs). Effluent guidelines, written by EPA for all types of industries, are specific to those particular industries.

The *Federal Water Pollution Control Act Amendments of 1972 (Clean Water Act (CWA))* established a comprehensive program to "restore and maintain the chemical, physical and biological integrity of the Nation's waters". In order to implement the CWA, EPA has issued effluent limitation guidelines (ELGs), pretreatment standards and new source performance standards for industrial dischargers. These guidelines and standards are comprised of:

1. Practicable Control Technology Currently Available (BPT)
2. Best Available Technology Economically Achievable (BAT)
3. Best Conventional Pollutant Control Technology (BCT)
4. New Source Performance Standards (NSPS)
5. Pretreatment Standards for Existing Sources (PSES)
6. Pretreatment Standards for New Sources (PSNS)

The applicable ELGs for Furman are found in 40 CFR § 407; the Canned and Preserved Fruits and Vegetables Processing Point Source Category. The Canned and Preserved Fruits and Vegetables Industry comprises facilities packing a wide variety of fruit and vegetable products, including apples, potatoes, citrus fruits, vegetables and specialty foods. Furman falls under both Subpart F, the Canned and Preserved Fruits Subcategory and Subpart G, the Canned and Preserved Vegetables Subcategory.

Since Furman was constructed prior to the promulgation of these requirements, it is not considered a new source. Therefore, only Best Practicable Control Technology Currently Available (BPT) and Best Conventional Control Technology (BCT) apply. In both Subpart F (Canned and Preserved Fruits Subcategory) and Subpart G (Canned and Preserved Vegetable Subcategory), the BCT requirements reference the BPT requirements .

Food Production

Current products include dry beans, snap beans and tomatoes.

Applicable Subcategories

Subpart F – Canned and Preserved Fruits Subcategory

According to 40 CFR § 407.61, the term *tomatoes* shall mean the processing of tomatoes into canned, peeled, whole, stewed, and related piece sizes; and processing of tomatoes into the following products and product styles: Canned, peeled and unpeeled paste, concentrate, puree, sauce, juice, catsup and other similar formulated items requiring various other pre-processed food ingredients.

Tomatoes (BPT, 40 CFR § 407.62)

Parameter (lb/1,000 lb raw material)	Maximum Daily	Monthly Average	Annual Average
BOD_5	1.21	shall not exceed 0.71	shall not exceed 0.94
TSS	2.15	shall not exceed 1.48	shall not exceed 0.90
pH	6.0 to 9.5		

Subpart G – Canned and Preserved Vegetables Subcategory

According to 40 CFR § 407.71, the term *dry beans* shall mean the production of canned pinto, kidney, navy, great northern, red, pink or related type, with and without formulated sauces, meats and gravies.

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Dry Beans (BPT, 40 CFR § 407.72)

Parameter (lb/1,000 lb raw material)	Maximum Daily	Monthly Average	Annual Average
BOD_5	2.50	shall not exceed 1.51	shall not exceed 1.07
TSS	4.48	shall not exceed 3.13	shall not exceed 1.97
pH	6.0 to 9.5		

According to 40 CFR § 407.71, the term *snap beans* shall mean the processing of snap beans into the following product styles: Canned and frozen green, Italian, wax, string, bush, and other related varieties, whole, French, fancy, Extra Standard, Standard and other cuts.

Snap Beans (BPT, 40 CFR § 407.72)

Parameter (lb/1,000 lb raw material)	Maximum Daily	Monthly Average	Annual Average
BOD_5	1.51	shall not exceed 0.87	shall not exceed 0.58
TSS	2.67	shall not exceed 1.80	shall not exceed 1.04
pH	6.0 to 9.5		

Long Term Average Wastewater Flows

The following is long term average influent (to the IWTP) process wastewater flows.

Year	2017	2018	2019	2020	2021	AVERAGE
Total Annual Flow (MGD)	0.418	0.474	0.503	0.494	0.580	**0.4938**

Production

The following is the historical annual production.

Year	2017	2018	2019	2020	2021	AVERAGE
Tomatoes (pounds)	98,160,000	90,720,000	102,480,000	106,800,000	85,680,000	**96,768,000**
Dry Beans (pounds)	233,280,000	258,960,000	265,200,000	208,800,000	228,000,000	**238,848,000**
Snap Beans (pounds)	7,920,000	5,064,000	9,648,000	6,024,000	7,488,000	**7,228,800**

The following are the historical annual production days.

Year	2017	2018	2019	2020	2021	AVERAGE
Tomatoes (pounds)	312	312	312	312	312	**312**
Dry Beans (pounds)	312	312	312	312	312	**312**
Snap Beans (pounds)	312	312	312	312	312	**312**

The following is the historical average production in pounds per production day (long term production, LTP).

Commodity	5 Year Average
Tomatoes	310,154
Dry Beans	765,538
Snap Beans	23,169

Raw Materials

Since the ELG treatment requirements are based the mass of raw materials, the following historical data is necessary for the limitation calculations. Data is presented in annual pounds.

Product	2022	2023	2024	AVERAGE
Tomatoes (pounds)	108,027,671	115,121,054	75,112,254	99,420,326
Dry Beans (pounds)	69,071,074	61,057,554	66,156,728	65,428,452
Snap Beans (pounds)	3,577,600	4,083,000	2,684,500	3,448,367

CONTINUED on the next page.

The adjusted historical raw material, in units of annual average pounds per production day.

Product	AVERAGE
Tomatoes	318,655
Dry Beans	209,707
Snap Beans	11,052

Estimated Future Production

Furman has provided the following estimated future annual average annual production in pounds (EFP), for the next five years (second column). This is based on a projected 3% increase from 2019. With the production days remaining the same (312), the estimated future production (EFP) in pounds per day is calculated (fourth column).

Product	PROJECTION	Production Days	EFP
Tomatoes	105,554,400	312	338,315
Dry Beans	273,156,000	312	875,500
Snap Beans	7,228,800	312	23,169

Estimated Future Raw Materials

The estimated future raw materials (EFRM) were calculated by adjusting the average of (historical) long term raw materials (LTRM) by the ratio of the (historical) long term production (LTP) to the estimated future production (EFP). The following table shows the calculated estimated future raw materials (in pounds per year) for the three products.

Product	LTP	LTRM	Ratio	EFP	EFRM	EFRM 10^3
Tomatoes	310,154	318,655	0.97	338,315	347,588	348
Dry Beans	765,538	209,707	3.65	875,500	239,829	240
Snap Beans	23,169	11,052	2.10	23,169	11,052	11

ELG-Based Limitations

As per both 40 CFR §§ 407.60 and 407.70 – "When a plant is subject to effluent limitations covering more than one commodity or subcategory, the plant discharge limitation shall be set by proration of limitations for each subcategory or commodity based on the total production covered by each commodity or subcategory." Weighted average, or proration, calculations were performed to calculate comprehensive BOD_5 and TSS limits. The raw material figures were prorated by both the ELGs and the production data.

Product	EFP	EFRM	% of Total EFRM	EFRM 10^3
Tomatoes	338,315	347,588	58	348
Dry Beans	875,500	239,829	40	240
Snap Beans	23,169	11,052	2	11
TOTAL	*1,236,985*	*598,469*	*100%*	*598*

The following effluent mass limitations were calculated based on the above data and rationale. The following effluent concentration limitations were calculated with a LTA flow of 0.4938 MGD.

Product	pounds/day			mg/L		
	Daily Maximum	Monthly Average	Annual Average	Daily Maximum	Monthly Average	Annual Average
BOD_5	*1,244*	*741*	*521*	*65.6*	*39.1*	*27.5*
TSS	*2,221*	*1,536*	*944*	*117.1*	*81.0*	*49.8*

See Attachment 06 for the spreadsheets used to calculate the limitations.

Total Residual Chlorine

The Department's *TRC_CALC spreadsheet* is a model used to evaluate Total Residual Chlorine (TRC) effluent limitations. This model determines applicable acute and chronic wasteload allocations (WLAs) for TRC based on the data supplied by the user and then compares the WLAs to the technology-based average monthly limit using the procedures described in the EPA Technical Support Document (for Water Quality-based Toxics Control).

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The Department's Total Residual Chlorine spreadsheet was used to calculate a monthly average effluent limitation of 0.5 mg/L and an instantaneous maximum effluent limitation of 1.6 mg/L. The 0.5 mg/L model input is based on 25 PA § 92a.48(b)(2) (formerly § 92.2d(3)ii), which states "for facilities where EPA has not promulgated a National ELG setting forth limits for TRC or free chlorine for an industry or activity, and the Department has not developed a facility-specific BAT effluent limitation for TRC under the factors in paragraph (1), an effluent limitation for TRC of 0.5 mg/L (30 day average) constitutes BAT".

See Attachment 07 for the TRC_CALC output.

Best Professional Judgment (BPJ) Limitations

The existing BOD_5 and TSS limitations are based on a 1988 Northcentral Regional Office memo, in which the then Regional Water Quality Manager decided that an aesthetic concentration policy would be applied to all industrial wastewater permits (including Furman). The 1988 memo states that TSS concentrations in excess of 200 mg/L are aesthetically displeasing while BOD_5 concentrations in excess of 200 mg/L may cause localized dissolved oxygen violations in stratified water bodies.

In a past application review, it was the best professional judgment (BPJ) of the then permit writer to assign the existing limitation of 75 mg/L as a monthly average, site-specific, technology–based limitation to both BOD_5 and TSS (without seasonal relaxation). This decision was based on 1. the consideration of the existing effluent limitations (2006 NPDES permit), 2. the performance of the existing IWTP (meeting these proposed limitations) and 3. the design of the recently upgraded IWTP, approved by the Department through a Water Quality Management (WQM) permit issued in 2011. Based on these factors, the Department was confident the upgraded facilities would meet these limitations.

A review of the recent DMR data show the IWTP can meet these limitations. This data is presented in an earlier section.

Water Quality-Based Limitations

As a *Fruits and Vegetables Processing Facility*, Furman is only required to provide data on Group 1 Pollutants. Toxics, including Metals, Volatiles, Acids, Bases, Pesticide or Others, should not be present in the wastewater effluent. Because of this, a Toxics Screening Analysis is not necessary.

Because the discharge of the process wastewater is to the West Branch Susquehanna River, high flows and the associated dilution will make Technology-Based Effluent Limitations (TBELS) or Best Professional Judgment (BPJ) limitations more stringent than Water Quality Based Effluent Limitations (WQBELs).

*WQM 7.0 for Win*dows is a DEP computer model used to determine wasteload allocations and effluent limitations for $CBOD_5$, NH_3-N and DO for single and multiple point source discharge scenarios. This model simulates two basic processes. The NH_3-N module simulates the mixing and degradation of NH_3-N in the stream and compares calculated instream NH_3-N concentrations to the water quality criteria. The DO module simulates the mixing and consumption of DO in the stream due to degradation of $CBOD_5$ and NH_3-N and compares the calculated instream DO concentrations to the water quality criteria. The model then determines the highest pollutant loading the stream can assimilate and still meet water quality criteria under the design conditions.

The model recommended the following:

Parameter	Effluent Limitations (mg/L)		
	30 Day Average	Maximum	Minimum
$CBOD_5$	39.1		
NH_3-N	25	50	
DO			3

The calculated monthly average ELG limit for BOD_5 was used as the model input. Since the model presented this number as the monthly average effluent limitation, it confirms the above statement that the BPJ/TBELs will be more stringent than WQBELs. The Department assumes that the BOD is composed entirely of CBOD for the purposes of modeling.

See Attachment 08 for the WQM model results.

Anti-Backsliding

To comply with 40 CFR § 122.44(l)(1) (anti-backsliding requirements), the Department must issue a renewed permit with limitations as stringent as that the of the previous permit. No less stringent limitations have been proposed for this draft.

CONTINUED on the next page.

CHESAPEAKE BAY TMDL

Background

Despite 25 years of extensive restoration efforts, the *Chesapeake Bay Total Maximum Daily Loa*d (TMDL) was prompted by insufficient progress and continued poor water quality in the Chesapeake Bay and its tidal tributaries. This TMDL, required by the Clean Water Act, is the largest ever developed by EPA. It identifies the necessary pollution reductions of nitrogen, phosphorus and sediment across Delaware, Maryland, New York, Virginia, West Virginia, District of Columbia and Pennsylvania. It also sets pollution limits necessary to meet applicable water quality standards in the Bay, tidal rivers and embayments.

WIP and Cap Loads

Pennsylvania explains how and when it will meet its pollution allocations in its *Watershed Implementation Plan* (WIP), which is incorporated into the TMDL. Pennsylvania's permitting strategy for significant sewage dischargers was outlined in the Phase I WIP and incorporated in the Phase II WIP by reference. This strategy originally imposed Total Nitrogen (TN) and Total Phosphorus (TP) cap loads. The Phase II WIP calls for the continued monitoring of Ammonia-N, Kjeldahl-N, Nitrate-Nitrite as well as TN and TP. The Phase II WIP also calls for the continued annual cap loads for TN and TP.

Furman is considered one of 23 Significant Industrial Dischargers (SIDs) which are within the Chesapeake Bay watershed in Pennsylvania. In accordance with the Department's Phase III Watershed Implementation Plan (WIP), last updated April 02, 2025, Furman has annual cap loads of 45,450 pounds per year TN and 1,624 pounds per year TP. These cap loads were established in the last issuance of this permit which occurred in 2011 and are based on the 2002 flow of 0.24 MGD.

The permit will contain a Part C condition for the Chesapeake Bay Nutrient Requirements. Also, in accordance with the latest WIP, the minimum monitoring of TN species and TP has been increased to 2/week from the previous 1/week.

STORMWATER

The facility has one stormwater outfall, identified in the application as SW-01. This outfall, which will be identified by the Department as Outfall 002, has a drainage area of approximately 13 acres, which consists of both pervious and impervious surfaces. Outfall 002 is located at latitude 40° 54' 43.00" and longitude -76° 48' 47.12". Outfall 002 discharges to the Unnamed Tributary to West Branch Susquehanna River identified by Department stream code 18675.

See Attachment 04 for the map of outfall locations.

Monitoring for Outfall 002 is based on Appendix I (*Food and Kindred Products*) of the Department's *NPDES General Permit for Discharges of Stormwater Associated with Industrial Activity (PAG-03)* (DEP #3850-PM-BCW0083d). The monitoring is as follows.

Parameter	Monitoring Requirements		Benchmark Values
	Minimum Measurement Frequency	Sample Type	
Total Nitrogen	1/6 Months	Calculation	XXX
Total Phosphorus	1/6 Months	Grab	XXX
pH (SU)	1/6 Months	Grab	9.0
BOD5 (mg/L)	1/6 Months	Grab	30
Total Suspended Solids (mg/L)	1/6 Months	Grab	100
Chemical Oxygen Demand (mg/L)	1/6 Months	Grab	120
Nitrate-Nitrite Nitrogen (mg/L)	1/6 Months	Grab	XXX
Oil and Grease (mg/L)	1/6 Months	Grab	30

The benchmark values are not effluent limitations, and exceedances do not constitute permit violations. If the sampling demonstrates exceedances of the benchmark values for two consecutive monitoring periods, the permittee shall submit a corrective action plan within 90 days of the end of the monitoring period triggering the plan.

The permit will contain a Part C condition for Industrial Stormwater Requirements. Best Management Practices (BMPs) from Appendix I have been included in this condition.

CONTINUED on the next page.

RECEIVING STREAMS

Stream(s) Characteristics

As indicated earlier, the receiving stream for the process wastewater (Outfall 004) from the Furman IWTP is the West Branch Susquehanna River, via a force main and the Route 147 storm sewer. Outfall 004 is located at latitude 40°54"11.9" and latitude -76°49"34.6", where the effluent is discharged to the Route 147 stormwater conveyance. This effluent is later discharged to the river at latitude 40°54"00.4" and longitude -76°49"46.6".

According to 25 PA § 93.9L, the West Branch Susquehanna River is protected for *Warm Water Fishes* (WWF) and *Migratory Fishes* (MF). These are the streams *Designated Uses*, which is defined in 25 PA § 93.1 as "those uses specified in §§ 93.9a – 93.9z for each waterbody or segment whether or not the use is being attained". Designated uses are regulations promulgated by the Environmental Quality Board (EQB) throughout the rulemaking process. This stream currently has no *Existing Use*, which is defined in 25 PA § 93.1 as "those uses actually attained in the waterbody on or after November 28, 1975 whether or not they are included in the water quality standards".

Outfalls 001 and 003 both discharge to an Unnamed Tributary to West Branch Susquehanna River (stream code 18675). This stream is intermittent. According to 25 PA § 93.9l, this tributary is protected for *Warm Water Fishes* (WWF) and *Migratory Fishes* (MF). This stream currently has no *Existing Use.* For most of the year, the only flow in this stream is the NCCW discharged from Outfall 001.

See Attachment 04 for the map of outfall locations.

Impairment/TMDL

The Unnamed Tributary to the West Branch Susquehanna River (stream code 18675) is tributary to another Unnamed Tributary to the West Branch Susquehanna River (stream code 18672). Both tributaries are impaired for aquatic life by 1. Thermal Modifications due to Industrial Point Source, 2. Flow Regime Modifications due to Industrial Point Source and 3. Siltation from an Unknown Source. There is no TMDL associated with these stream segments.

The West Branch Susquehanna River is supporting its uses for both Aquatic Life and Recreation. It is impaired for Fish Consumption by Mercury from an Unknown Source.

A TMDL to address aquatic life impairment due to metals (impairment cause) and low pH (impairment source) was established for the upstream West Branch Susquehanna River in 2009. This TMDL was also approved by EPA in 2009. The TMDL recommends the reduction in the discharge of metals and low pH in excess of the Department's water quality standards. The TMDL set allowable loadings at specified points in the West Branch Susquehanna River for iron, manganese, aluminum and acidity from both point and nonpoint sources. The effluent from the Furman IWTP has no reasonable potential to discharge metals.

A TMDL for Polychlorinated Biphenyls (PCBs) was established for the downstream Susquehanna River in 1999. This TMDL was also approved by EPA in 1999. The TMDL recommends fish consumption advisories due to concentrations of PCBs in the water column in excess of the Department's water quality and human health criteria for PCBs. The TMDL calculated a required reduction of 99.8% in order to achieve the reduction goal of the TMDL. The source of the PCB impairment is unknown. The effluent from the Furman IWTP has no reasonable potential to discharge PCBs.

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ADDITIONAL CONSIDERATIONS

Rounding of Limitations

Limitations have been rounded in accordance with the *Department's Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits* (#362-0400-001).

Limit Multipliers

The instantaneous maximum limitations have been calculated using multipliers of 2.0 (for conventional pollutants) and 2.5 (for toxic pollutants) times the monthly average. This is in accordance with the *Department's Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits* (#362-0400-001).

Mass Limitations

Mass Limitations have been calculated for the WQBELs using the long-term average flow multiplied by the concentration (mg/L) and the conversion (8.34).

Sample Frequencies and Types

The sample type and minimum measurement frequencies are in accordance with the *Department's Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits* (#362-0400-001).

Standard Operating Procedures

The review of this permit application was in accordance with the Department's *SOP for New and Reissuance Industrial Waste and Industrial Stormwater Individual NPDES Permit Applications* (SOP #BPNPSM-PMT-001) and the *SOP for Establishing Effluent Limitations for Individual Industrial Permits* (SOP #BPNPSM-PMT-032).

Special Permit Conditions

Chesapeake Bay Nutrient Requirements
Chemical Additives
Industrial Stormwater Requirements

Supplemental Discharge Monitoring Reports

Daily Effluent Monitoring
Non-Compliance Reporting
Lab Accreditation
Chemical Additives
Annual Stormwater Report

CONTINUED on the next page.

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) and/or BPJ.

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

Discharge Parameter	Mass (lb/day)		Concentration (mg/L)				Monitoring	
	Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Instantaneous Maximum	Minimum Frequency	Sample Type
Flow (MGD)	Report	Report					Daily When Discharging	Meter
pH (SU)			6.0 IMIN			9.0	Daily When Discharging	Grab
Total Iron				1.5	3.0	3.7	Weekly When Discharging	Grab
Oil & Grease				15		30	2/Month	Grab
Total Halogens				0.2		0.5	Weekly When Discharging	Grab
Temperature (°F)				Report	110		Daily When Discharging	IS

Outfall 002, Effective Period: Permit Effective Date through Permit Expiration Date

Discharge Parameter	Mass (lb/day)		Concentration (mg/L)				Monitoring	
	Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Instantaneous Maximum	Minimum Frequency	Sample Type
Total Nitrogen				Report			1/6 Months	Calculation
Total Phosphorus				Report			1/6 Months	Grab
pH (SU)				Report			1/6 Months	Grab
BOD5				Report			1/6 Months	Grab
Total Suspended Solids				Report			1/6 Months	Grab
Chemical Oxygen Demand				Report			1/6 Months	Grab
Nitrate-Nitrite Nitrogen				Report			1/6 Months	Grab
Oil and Grease				Report			1/6 Months	Grab

Outfall 003, Effective Period: Permit Effective Date through Permit Expiration Date

Discharge Parameter	Mass (lb/day)		Concentration (mg/L)				Monitoring	
	Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	IMAX	Minimum Frequency	Sample Type
Flow (MGD)	Report	Report					Daily When Discharging	Meter
pH (SU)			6.0 IMIN			9.0	Daily When Discharging	Grab
BOD_5				10	20	25	Daily When Discharging	Grab
TSS				10	20	25	Daily When Discharging	Grab
Total Nitrogen				5.0	10	12.5	Daily When Discharging	Grab
Total Phosphorus				0.5	1.0	1.25	Daily When Discharging	Grab
Dissolved Oxygen			6.0 IMIN				Daily When Discharging	Grab
Oil & Grease				15	30	30	Daily When Discharging	Grab
TRC				0.5		1.6	Daily When Discharging	Grab
Fecal Coliforms (No./100mL)				200 Geo Mean			Daily When Discharging	Grab

CONTINUED on the next page.

Outfall 004, Effective Period: Permit Effective Date through Permit Expiration Date

Discharge Parameter	Mass (lb/day)		Concentration (mg/L)				Monitoring	
	Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Instantaneous Maximum	Minimum Frequency	Sample Type
Flow (MGD)	Report	Report					Continuous	Meter
pH (SU)			6.0 IMIN			9.0	1/Day	Grab
BOD_5	160	270		39	65	78	1/Week	24 Hour Comp
TSS	305	615		75	150	188	1/Week	24 Hour Comp
Oil & Grease				15		30	2/Month	Grab
TRC				0.5		1.6	1/Day	Grab
Fecal Coliforms 05/01-09/30 (No./100mL)				200/100mL Geo. Mean		1,000/100mL	1/Week	Grab
Fecal Coliforms 10/01-04/30 (No./100mL)				2,000/100mL Geo. Mean		10,000/100mL	1/Week	Grab

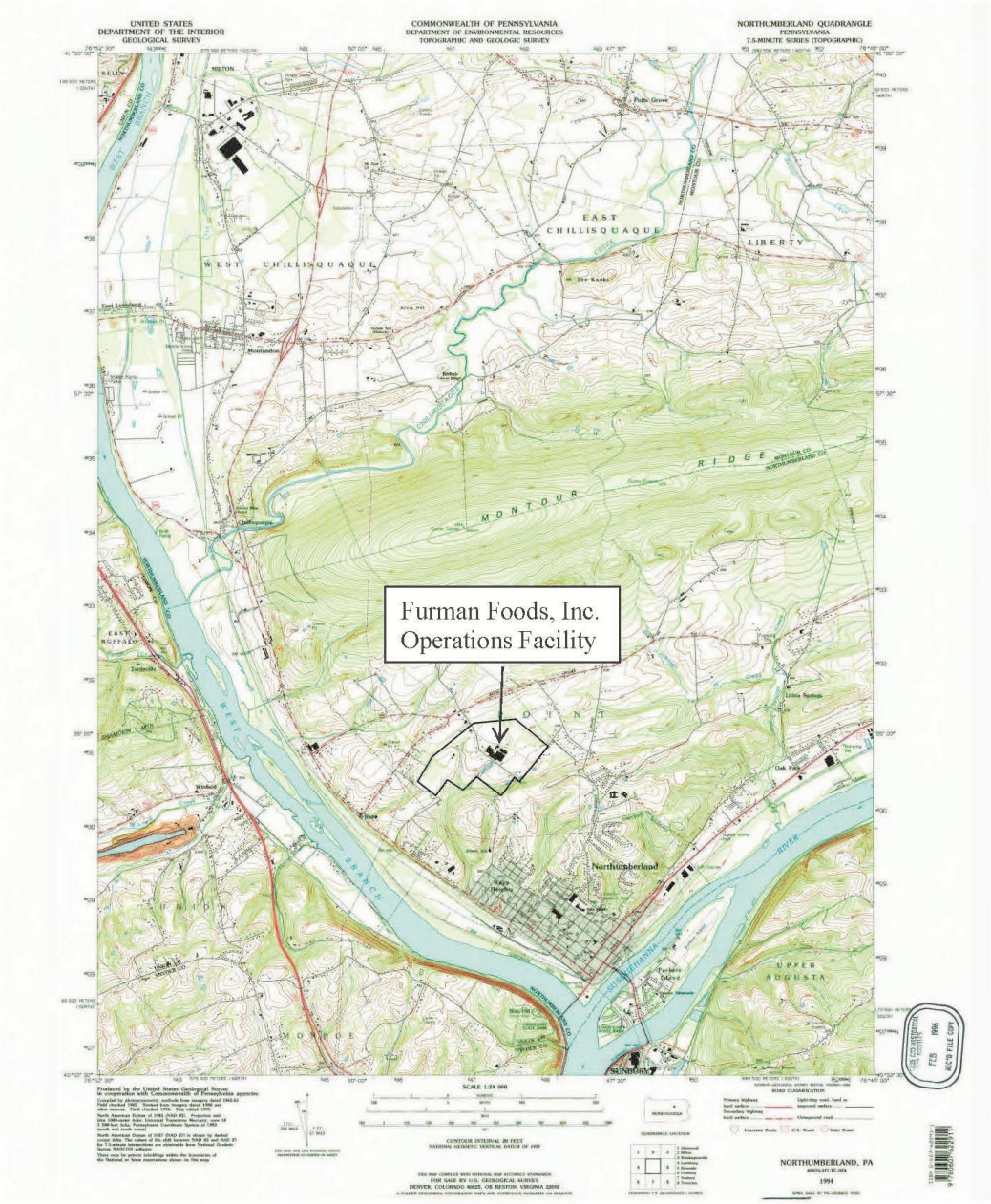
Discharge Parameter	Mass Load (lb)		Concentration (mg/L)			Monitoring	
	Monthly	Annual	Minimum	Monthly Average	Maximum	Minimum Frequency	Sample Type
Ammonia-N	Report			Report		2/Week	Grab
Kjeldahl-N	Report			Report		2/Week	Grab
Nitrite/Nitrate-N	Report			Report		2/Week	Grab
Total Nitrogen	Report	Report		Report		1/Month	Calculate
Total Phosphorus	Report	Report		Report		2/Week	Grab
Net Total Nitrogen	Report	45,450				1/Month	Calculate
Net Total Phosphorus	Report	1,624				1/Month	Calculate

END of Fact Sheet.

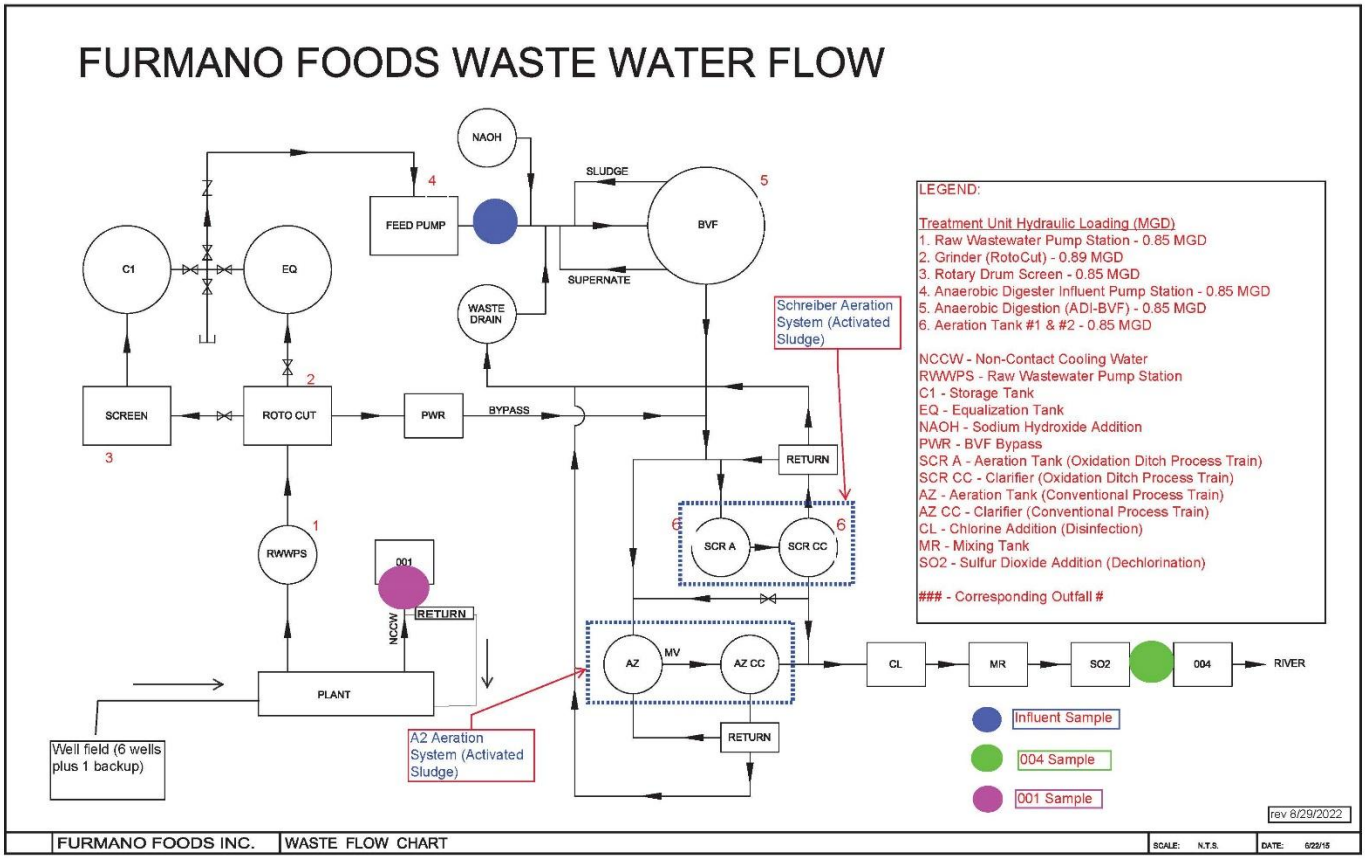
Furman Foods, Inc. **Northumberland, PA** **Preparedness, Prevention, and Contingency (PPC) Plan**	Date: 10/10/2021 Revised: n/a (Revision 0)

Appendix B

Facility Location Map



ATTACHMENT 02



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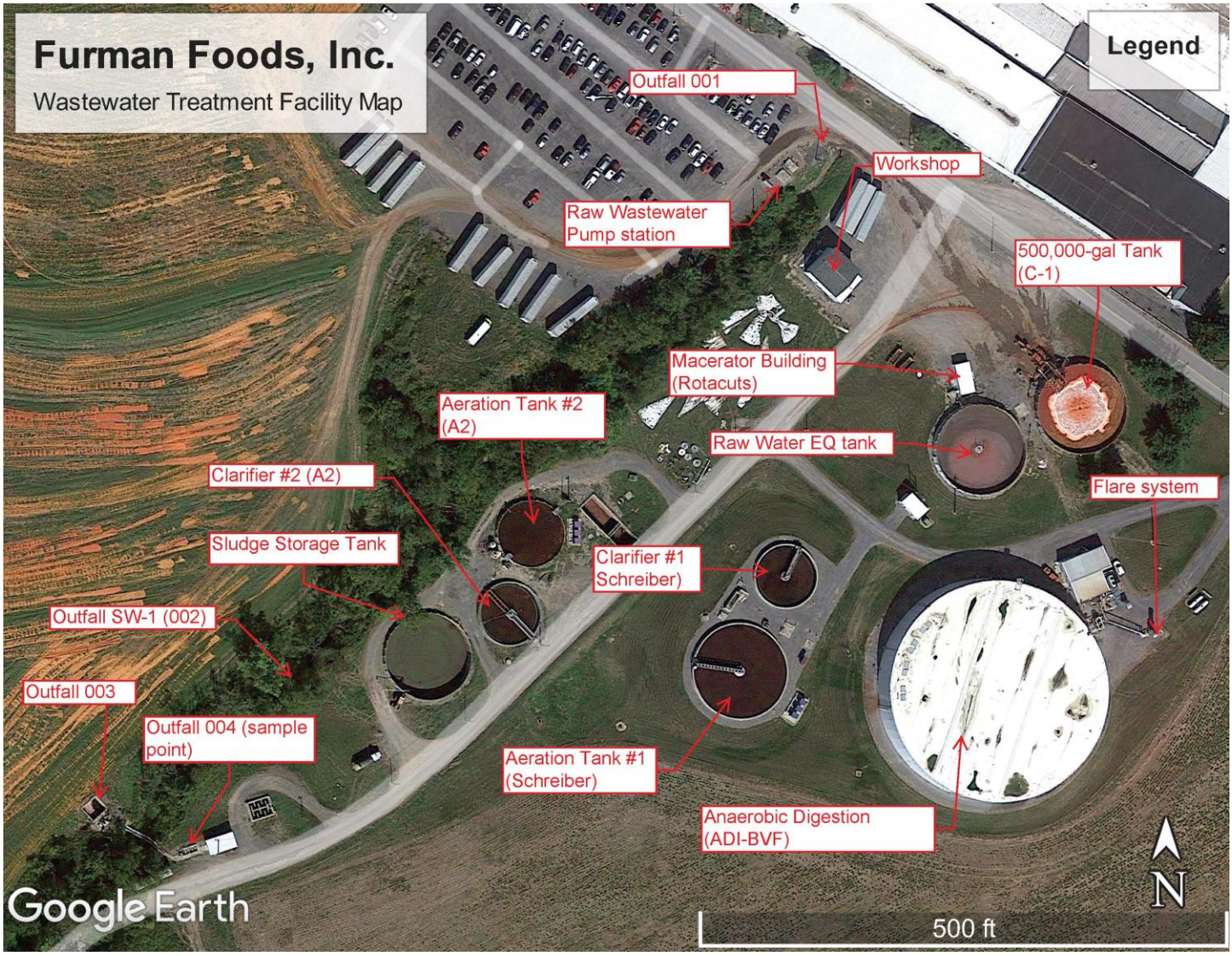
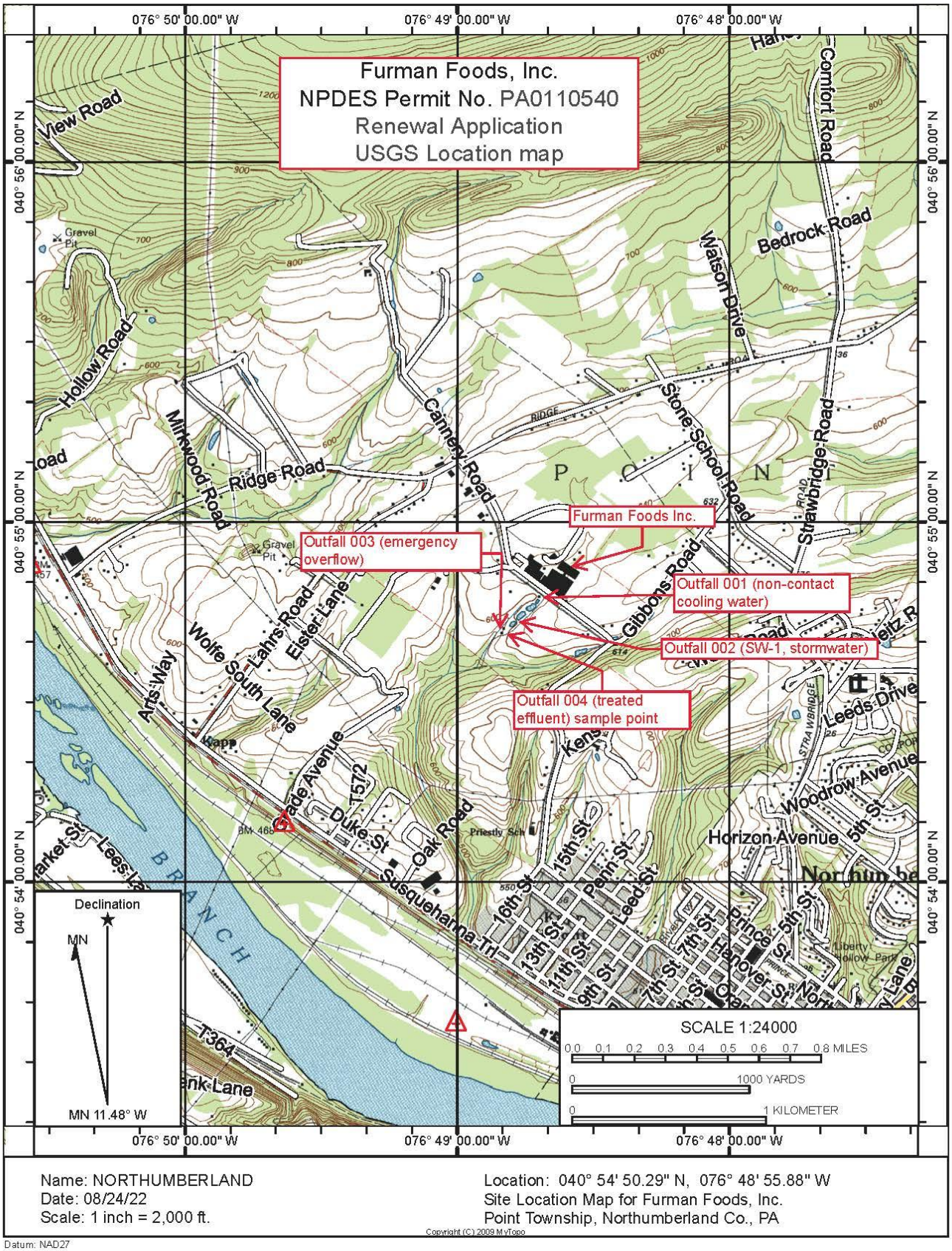


ATTACHMENT 04



ATTACHMENT 05

Q_{7-10} Analysis	
Facility:	Furman Foods, Inc.
Outfall:	004

NPDES Permit No.:	PA0110540
RMI at 004:	2.60 @ POFU

Reference Stream Gage Information	
Stream Name	West Branch Susquehanna River
Reference Gage	1553500
Station Name	West Branch Susquehanna River at Lewisburg, PA
Gage Drainage Area (sq. mi.)	6,847.00
Q_{7-10} at gage (cfs)	838.00
Yield Ratio (cfs/mi^2)	0.1224

Q7-10 at 001	
Drainage Area at 004 (sq. mi.)	6,951.00
Q7-10 at 004 (cfs)	850.728
Q7-10 at 004 (mgd)	549.8402

Table 2. Selected low-flow statistics for streamgage locations in and near Pennsylvania.—Continued

[ft³/s; cubic feet per second; —, statistic not computed; <, less than]

Streamgage number	Period of record used in analysis[1]	Number of years used in analysis	1-day, 10-year (ft³/s)	7-day, 10-year (ft³/s)	7-day, 2-year (ft³/s)	30-day, 10-year (ft³/s)	30-day, 2-year (ft³/s)	90-day, 10-year (ft³/s)
01546000	1912–1934	17	1.8	2.2	6.8	3.7	12.1	11.2
01546400	1986–2008	23	13.5	14.0	19.6	15.4	22.3	18.7
01546500	1942–2008	67	26.8	29.0	41.3	31.2	44.2	33.7
01547100	1969–2008	40	102	105	128	111	133	117
01547200	1957–2008	52	99.4	101	132	106	142	115
01547500	[2]1971–2008	38	28.2	109	151	131	172	153
01547500	[3]1956–1969	14	90.0	94.9	123	98.1	131	105
01547700	1957–2008	52	.5	.6	2.7	1.1	3.9	2.2
01547800	1971–1981	11	1.6	1.8	2.4	2.1	2.9	3.5
01547950	1970–2008	39	12.1	13.6	28.2	17.3	36.4	23.8
01548005	[2]1971–2000	25	142	151	206	178	241	223
01548005	[3]1912–1969	58	105	114	147	125	165	140
01548500	1920–2008	89	21.2	24.2	50.1	33.6	68.6	49.3
01549000	1910–1920	11	26.0	32.9	78.0	46.4	106	89.8
01549500	1942–2008	67	.6	.8	2.5	1.4	3.9	2.6
01549700	1959–2008	50	33.3	37.2	83.8	51.2	117	78.4
01550000	1915–2008	94	6.6	7.6	16.8	11.2	24.6	18.6
01551500	[2]1963–2008	46	520	578	1,020	678	1,330	919
01551500	[3]1901–1961	61	400	439	742	523	943	752
01552000	1927–2008	80	20.5	22.2	49.5	29.2	69.8	49.6
01552500	1942–2008	67	.9	1.2	3.1	1.7	4.4	3.3
01553130	1969–1981	13	1.0	1.1	1.5	1.3	1.8	1.7
01553500	[2]1968–2008	41	760	838	1,440	1,000	1,850	1,470
01553500	[3]1941–1966	26	562	619	880	690	1,090	881
01553700	1981–2008	28	9.1	10.9	15.0	12.6	17.1	15.2
01554000	[2]1981–2008	28	1,830	1,990	3,270	2,320	4,210	3,160
01554000	[3]1939–1979	41	1,560	1,630	2,870	1,880	3,620	2,570
01554500	1941–1993	53	16.2	22.0	31.2	25.9	35.7	31.4
01555000	1931–2008	78	33.5	37.6	58.8	43.4	69.6	54.6
01555500	1931–2008	78	4.9	6.5	18.0	9.4	24.3	16.6
01556000	1918–2008	91	43.3	47.8	66.0	55.1	75.0	63.7
01557500	1946–2008	63	2.8	3.2	6.3	4.2	8.1	5.8
01558000	1940–2008	69	56.3	59.0	79.8	65.7	86.2	73.7
01559000	1943–2008	66	104	177	249	198	279	227
01559500	1931–1958	28	9.3	10.5	15.0	12.4	17.8	15.8
01559700	1963–1978	16	.1	.1	.2	.1	.3	.2
01560000	1941–2008	68	8.5	9.4	15.6	12.0	20.2	16.2
01561000	1932–1958	27	.4	.5	1.6	.8	2.5	1.7
01562000	1913–2008	96	64.1	67.1	106	77.4	122	94.5
01562500	1931–1957	27	1.1	1.6	3.8	2.3	5.4	3.7
01563200	[2]1974–2008	35	—	—	—	112	266	129
01563200	[3]1948–1972	25	10.3	28.2	86.1	64.5	113	95.5
01563500	[2]1974–2008	35	384	415	519	441	580	493
01563500	[3]1939–1972	34	153	242	343	278	399	333
01564500	1940–2008	69	3.6	4.2	10.0	6.2	14.4	10.6

Table 1. List of U.S. Geological Survey streamgage locations in and near Pennsylvania with updated streamflow statistics.—Continued

[Latitude and Longitude in decimal degrees; mi², square miles]

Streamgage number	Streamgage name	Latitude	Longitude	Drainage area (mi²)	Regulated[1]
01541303	West Branch Susquehanna River at Hyde, Pa.	41.005	-78.457	474	Y
01541308	Bradley Run near Ashville, Pa.	40.509	-78.584	6.77	N
01541500	Clearfield Creek at Dimeling, Pa.	40.972	-78.406	371	Y
01542000	Moshannon Creek at Osceola Mills, Pa.	40.850	-78.268	68.8	N
01542500	WB Susquehanna River at Karthaus, Pa.	41.118	-78.109	1,462	Y
01542810	Waldy Run near Emporium, Pa.	41.579	-78.293	5.24	N
01543000	Driftwood Branch Sinnemahoning Creek at Sterling Run, Pa.	41.413	-78.197	272	N
01543500	Sinnemahoning Creek at Sinnemahoning, Pa.	41.317	-78.103	685	N
01544000	First Fork Sinnemahoning Creek near Sinnemahoning, Pa.	41.402	-78.024	245	Y
01544500	Kettle Creek at Cross Fork, Pa.	41.476	-77.826	136	N
01545000	Kettle Creek near Westport, Pa.	41.320	-77.874	233	Y
01545500	West Branch Susquehanna River at Renovo, Pa.	41.325	-77.751	2,975	Y
01545600	Young Womans Creek near Renovo, Pa.	41.390	-77.691	46.2	N
01546000	North Bald Eagle Creek at Milesburg, Pa.	40.942	-77.794	119	N
01546400	Spring Creek at Houserville, Pa.	40.834	-77.828	58.5	N
01546500	Spring Creek near Axemann, Pa.	40.890	-77.794	87.2	N
01547100	Spring Creek at Milesburg, Pa.	40.932	-77.786	142	N
01547200	Bald Eagle Creek below Spring Creek at Milesburg, Pa.	40.943	-77.786	265	N
01547500	Bald Eagle Creek at Blanchard, Pa.	41.052	-77.604	339	Y
01547700	Marsh Creek at Blanchard, Pa.	41.060	-77.606	44.1	N
01547800	South Fork Beech Creek near Snow Shoe, Pa.	41.024	-77.904	12.2	N
01547950	Beech Creek at Monument, Pa.	41.112	-77.702	152	N
01548005	Bald Eagle Creek near Beech Creek Station, Pa.	41.081	-77.549	562	Y
01548500	Pine Creek at Cedar Run, Pa.	41.522	-77.447	604	N
01549000	Pine Creek near Waterville, Pa.	41.313	-77.379	750	N
01549500	Blockhouse Creek near English Center, Pa.	41.474	-77.231	37.7	N
01549700	Pine Creek below Little Pine Creek near Waterville, Pa.	41.274	-77.324	944	Y
01550000	Lycoming Creek near Trout Run, Pa.	41.418	-77.033	173	N
01551500	WB Susquehanna River at Williamsport, Pa.	41.236	-76.997	5,682	Y
01552000	Loyalsock Creek at Loyalsockville, Pa.	41.325	-76.912	435	N
01552500	Muncy Creek near Sonestown, Pa.	41.357	-76.535	23.8	N
01553130	Sand Spring Run near White Deer, Pa.	41.059	-77.077	4.93	N
01553500	West Branch Susquehanna River at Lewisburg, Pa.	40.968	-76.876	6,847	Y
01553700	Chillisquaque Creek at Washingtonville, Pa.	41.062	-76.680	51.3	N
01554000	Susquehanna River at Sunbury, Pa.	40.835	-76.827	18,300	Y
01554500	Shamokin Creek near Shamokin, Pa.	40.810	-76.584	54.2	N
01555000	Penns Creek at Penns Creek, Pa.	40.867	-77.048	301	N
01555500	East Mahantango Creek near Dalmatia, Pa.	40.611	-76.912	162	N
01556000	Frankstown Branch Juniata River at Williamsburg, Pa.	40.463	-78.200	291	N
01557500	Bald Eagle Creek at Tyrone, Pa.	40.684	-78.234	44.1	N
01558000	Little Juniata River at Spruce Creek, Pa.	40.613	-78.141	220	N
01559000	Juniata River at Huntingdon, Pa.	40.485	-78.019	816	LF
01559500	Standing Stone Creek near Huntingdon, Pa.	40.524	-77.971	128	N
01559700	Sulphur Springs Creek near Manns Choice, Pa.	39.978	-78.619	5.28	N
01560000	Dunning Creek at Belden, Pa.	40.072	-78.493	172	N

ATTACHMENT 06

Furman Foods 2025 NPDES

FLOWS

Year	2017	2018	2019	2020	2021	AVERAGE
Flow (001+004)	0.571	0.697	0.723	0.642	0.678	0.6622
Flow (001 NCCW)	0.153	0.223	0.22	0.148	0.098	0.1684
004 Flow for Calcs	0.418	0.474	0.503	0.494	0.58	**0.4938**

PRODUCTION LTP POUNDS PER YEAR

Year	2017	2018	2019	2020	2021	AVERAGE
Tomatoes	98,160,000	90,720,000	102,480,000	106,800,000	85,680,000	96,768,000
Dry Beans	233,280,000	258,960,000	265,200,000	208,800,000	228,000,000	238,848,000
Snap Beans	7,920,000	5,064,000	9,648,000	6,024,000	7,488,000	7,228,800

PRODUCTION DAYS

312

PRODUCTION POUNDS PER DAY

Commodity	AVERAGE
Tomatoes	310,154
Dry Beans	765,538
Snap Beans	23,169

RAW MATERIALS POUNDS PER YEAR

Year	2022	2023	2024	AVERAGE
Tomatoes	108,027,671	115,121,054	75,112,254	99,420,326
Dry Beans	69,071,074	61,057,554	66,156,728	65,428,452
Snap Beans	3,577,600	4,083,000	2,684,500	3,448,367

RAW MATERIAL POUNDS PER DAY ADJUSTED

Commodity	AVERAGE
Tomatoes	318,655
Dry Beans	209,707
Snap Beans	11,052

ESTIMATED FUTURE PRODUCTION POUNDS PER DAY

Commodity	PROJECTION	Production Days	EFP
Tomatoes	105,554,400	312	338,315
Dry Beans	273,156,000	312	875,500
Snap Beans	7,228,800	312	23,169

EFRM RATIOS

Commodity	LTP	LTRM	Ratio	EFP	EFRM	EFRM 10^3
Tomatoes	310,154	318,655	0.97	338,315	347,588	348
Dry Beans	765,538	209,707	3.65	875,500	239,829	240
Snap Beans	23,169	11,052	2.10	23,169	11,052	11

PRORATION

Commodity	EFP	EFRM	% EFRM	EFRM 10^3
Tomatoes	338,315	347,588	58	348
Dry Beans	875,500	239,829	40	240
Snap Beans	23,169	11,052	2	11
TOTAL	**1,236,985**	**598,469**	**100**	**598**

Furman Foods
ELG Limits

Raw Materials = 5 Year Production Average * Adjustment Ratio

Flow = 0.4398 MGD

Raw Materials Estimated Future 3 Year Avg.	Product	Future		Production Estimated Future 3 Year Avg.
	Beans - Dry, Total	347,588	*348*	
	Beans - Snap	239,829	*240*	
	Tomatoes, Total	11,052	*11*	
		lb/day	10^3 lb/day	
	Total	598,469	*598*	

Mass § 407.72 Subpart G - Canned and Preserved Vegetables Subcategory
(ELG multiplier units are lb/1,000 lb raw material)

BOD_5	Commodity	Daily Max	Monthly Avg	Annual Avg
ELG	Dry Beans	2.50	1.51	1.07
TSS	Commodity	Daily Max	Monthly Avg	Annual Avg
ELG	Dry Beans	4.48	3.13	1.97

BOD_5	Commodity	Daily Max	Monthly Avg	Annual Avg
ELG	Snap Beans	1.51	0.87	0.58
TSS	Commodity	Daily Max	Monthly Avg	Annual Avg
ELG	Snap Beans	2.67	1.80	1.04

§ 407.62 Subpart F - Canned and Preserved Fruits Subcategory

BOD_5	Commodity	Daily Max	Monthly Avg	Annual Avg
ELG	Tomatoes	1.21	0.71	0.94
TSS	Commodity	Daily Max	Monthly Avg	Annual Avg
ELG	Tomatoes	2.15	1.48	0.90

Mass Limits

pounds/day	Daily Max	Monthly Avg	Annual Avg
BOD_5	*1,244*	*741*	*521*
TSS	*2,221*	*1,536*	*944*

Concentration Limits Flow = 0.4398 MGD

mg/L	Daily Max	Monthly Avg	Annual Avg
BOD_5	*65.6*	*39.1*	*27.5*
TSS	*117.1*	*81.0*	*49.8*

TRC_CALC

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

850.73	= Q stream (cfs)	0.5	= CV Daily
0.4938	= Q discharge (MGD)	0.5	= CV Hourly
30	= no. samples	1	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	1	= CFC_Partial Mix Factor
0	= Chlorine Demand of Discharge	15	= AFC_Criteria Compliance Time (min)
0.5	= BAT/BPJ Value	720	= CFC_Criteria Compliance Time (min)
0	= % Factor of Safety (FOS)		=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 355.275	1.3.2.iii	WLA cfc = 346.357
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 132.384	5.1d	LTA_cfc = 201.356

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.500	BAT/BPJ
		INST MAX LIMIT (mg/l) = 1.635	

WLA afc	**(.019/e(-k*AFC_tc)) + [(AFC_Yc*Qs*.019/Qd*e(-k*AFC_tc))...** **...+ Xd + (AFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)**
LTAMULT afc	EXP((0.5*LN(cvh^2+1))-2.326*LN(cvh^2+1)^0.5)
LTA_afc	wla_afc*LTAMULT_afc
WLA_cfc	**(.011/e(-k*CFC_tc) + [(CFC_Yc*Qs*.011/Qd*e(-k*CFC_tc))...** **...+ Xd + (CFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)**
LTAMULT_cfc	EXP((0.5*LN(cvd^2/no_samples+1))-2.326*LN(cvd^2/no_samples+1)^0.5)
LTA_cfc	wla_cfc*LTAMULT_cfc
AML MULT	EXP(2.326*LN((cvd^2/no_samples+1)^0.5)-0.5*LN(cvd^2/no_samples+1))
AVG MON LIMIT	MIN(BAT_BPJ,MIN(LTA_afc,LTA_cfc)*AML_MULT)
INST MAX LIMIT	**1.5*((av_mon_limit/AML_MULT)/LTAMULT_afc)**

ATTACHMENT 08

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
10D	18668	WEST BRANCH SUSQUEHANNA RIVER

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
2.530	Furman Foods	PA0110540	0.494	CBOD5	39.1		
				NH3-N	25	50	
				Dissolved Oxygen			3

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
10D	18668	WEST BRANCH SUSQUEHANNA RI	**2.530**	431.00	6951.00	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	850.73	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
Furman Foods	PA0110540	0.4938	0.4938	0.4938	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	39.10	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

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
10D	18668	WEST BRANCH SUSQUEHANNA RI	**0.100**	430.00	6955.00	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 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
10D	18668	WEST BRANCH SUSQUEHANNA RIVER

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												
2.530	850.73	0.00	850.73	.7639	0.00008	1.182	650.66	550.66	1.11	0.134	20.00	7.00
Q1-10 Flow												
2.530	544.47	0.00	544.47	.7639	0.00008	NA	NA	NA	0.86	0.172	20.01	7.00
Q30-10 Flow												
2.530	1156.99	0.00	1156.99	.7639	0.00008	NA	NA	NA	1.32	0.113	20.00	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
10D	18668	WEST BRANCH SUSQUEHANNA RIVER

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
2.530	Furman Foods	16.75	50	16.75	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
2.530	Furman Foods	1.89	25	1.89	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)		
2.53	Furman Foods	39.1	39.1	25	25	3	3	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
10D	18668	WEST BRANCH SUSQUEHANNA RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
2.530	0.494	20.004	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
650.663	1.182	550.659	1.108
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.03	0.023	0.02	0.700
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.238	0.403	Tsivoglou	6
Reach Travel Time (days)			
0.134			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.013	2.03	0.02	8.24
0.027	2.03	0.02	8.24
0.040	2.03	0.02	8.24
0.054	2.03	0.02	8.24
0.067	2.03	0.02	8.24
0.080	2.03	0.02	8.24
0.094	2.03	0.02	8.24
0.107	2.03	0.02	8.24
0.121	2.03	0.02	8.24
0.134	2.03	0.02	8.24