

Application Type Renewal
Facility Type Municipal
Major / Minor Minor

**NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE**

Application No. PA0223107
APS ID 1040756
Authorization ID 1357699

Applicant and Facility Information

Applicant Name	<u>Big Run Area Municipal Authority</u>	Facility Name	<u>Big Run Area WWTP</u>
Applicant Address	<u>PO Box 477</u> <u>Big Run, PA 15715-0477</u>	Facility Address	<u>Route 119</u> <u>Big Run, PA 15715</u>
Applicant Contact	<u>George Bedell</u>	Facility Contact	<u></u>
Applicant Phone	<u>(814) 427-5091</u>	Facility Phone	<u></u>
Applicant E Mail	<u>brama01@yahoo.com</u>	Facility E Mail	<u></u>
Client ID	<u>144025</u>	Site ID	<u>535825</u>
Municipality	<u>Big Run Borough</u>	County	<u>Jefferson</u>
Connection Status	<u>No Limitations</u>	Ch 94 Load Status	<u>Not Overloaded</u>
Application Received	<u>May 28, 2021</u>	EPA Waived?	<u>Yes</u>
Application Accepted	<u>June 24, 2021</u>	If No, Reason	<u></u>
Application Purpose	<u>NPDES discharge permit renewal.</u>		

Summary of Review

No current violations on file.

Sludge use and disposal description and location(s): 4.71 dry tons removed to the Punxsutawney STP.

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.

Approve	Deny	Signatures	Date
X		<i>William H. Mentzer</i> William H. Mentzer, P.E. Environmental Engineering Specialist	January 5, 2022
X		Justin C. Dickey Justin C. Dickey, P.E. Environmental Engineer Manager	January 13, 2022

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	<u>001</u>	Design Flow (MGD)	<u>0.11</u>
Latitude DP	<u>40° 57' 58.07"</u>	Longitude DP	<u>-78° 53' 29.51"</u>
Latitude NHD	<u>40° 57' 56.64"</u>	Longitude NHD	<u>-78° 53' 30.52"</u>
Quad Name	<u>Punxsutawney</u>	Quad Code	<u>1114</u>
Wastewater:	<u>Treated municipal sanitary sewer wastes.</u>		
Receiving Waters	<u>Mahoning Creek</u>	Stream Code	<u>47252</u>
NHD Com ID	<u>123852432</u>	RMI	<u>62.32</u>
Drainage Area	<u>70.1</u>	Yield (cfs/mi ²)	<u>0103</u>
Q ₇₋₁₀ Flow (cfs)	<u>7,22</u>	Q ₇₋₁₀ Basis	<u>Mahoning Creek</u>
Elevation (ft)	<u>1269.25</u>	Slope (ft/ft)	<u>0.00108</u>
Watershed No.	<u>17-D</u>	Chapter 93 Class.	<u>WWF</u>
Existing Use	<u>statewide</u>	Existing Use Qualifier	<u>none</u>
Exceptions to Use	<u>none</u>	Exceptions to Criteria	<u>none</u>
Comments	<u>Discharge at stream node RMI 0.57.</u>		
Assessment Status	<u>Attaining Use(s)</u>		
Cause(s) of Impairment	_____		
Source(s) of Impairment	_____		
TMDL Status	_____	Name	_____
Background/Ambient Data	Data Source		
pH (SU)	_____	_____	
Temperature (°F)	_____	_____	
Hardness (mg/L)	<u>100</u>	<u>default</u>	
Other:	_____	_____	
Nearest Downstream Public Water Supply Intake	<u>Kittanning Suburban Joint Water Authority</u>		
PWS Waters	<u>Allegheny River</u>	Flow at Intake (cfs)	<u>160`1</u>
PWS RMI	<u>48.3</u>	Distance from Outfall (mi)	<u>70</u>

Changes Since Last Permit Issuance: none

Other Comments: none

Treatment Facility Summary				
Treatment Facility Name: Big Run Area WWTP				
WQM Permit No.	Issuance Date	Comments		
3301402	April 1, 2003	Gravity and pressure sewers, 2 pump stations, extended aeration with anoxic tanks and up flow clarifiers, aerobic sludge digestion and chlorination.		
3301402 A1	April 12, 2005	Disinfection change to UV light and pump station relocation.		
3301402 A2	November 23, 2015	No 2 Unit diffuser drops, blower capacity modifications, flow control box, piping changes and a 30 000-gallon sludge holding tank.		
Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Activated Sludge	Hypochlorite	0.11
Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.33	224	Not Overloaded	Aerobic Digestion	Other WWTP

Other Comments:

This is a biological nutrient reduction facility based on activated sludge extended aeration with an anoxic zone to reduce nutrients. One train was heavily modified by 2012 without prior authorization as noted below for Amendment 2.

The revised operation was approved in November 23, 2015 with the following facility and equipment addition: 30 000-gallon sludge holding tank, additional treatment unit #2 drop diffusers, increased blower capacity, flow control box, and piping changes. The proposal is consistent with an undated Enhanced Technical Assistance Evaluation and inspection report recommendations.

A Purestream 30 000-gallon aerated sludge holding tank is authorized for parallel operation with a pumped decant to the head-works.

The three aeration blowers were to be re-sheaved and belted to change capacity from 60-cfm to 120-cfm each.

Additional drop diffusers were to be added to the Aeration Tank #2 anoxic zone to enable tank equalization use. When Tank #2 is not used for equalization the aeration is to be reduced to create an anoxic zone as originally permitted for parallel waste treatment systems operation.

Due to the normal low waste flows and occasional waste flow surges flow control changes are proposed based on current operations using Aeration Tank #2 as an equalization basin. The first control box will split the waste flows between the two waste treatment trains with Aeration Tank #2 used either for parallel treatment or equalization. The second control box will equalize the Aeration Tank #2 discharge to Aeration Tank #1 returning any excess flows.

According to an Enhanced Technical Assistance Evaluation this waste treatment facility is a sludge denitrification extended aeration treatment system. This report recommended additional sludge holding capacity with skimmer and return sludge line rerouting. Also reported was that the Aeration Tank #2 use as an equalization basin required additional blower capacity.

The WQM permit is 3301402 based on a December 14, 2000 application that was revised on March 24, 2003 and issued on April 1, 2003 for 31 000-foot gravity sewer, 2 700-foot pressure sewer, two pump stations (160 and 230-gpm), (common comminution with bypass bar screen), two parallel waste water treatment plants consisting of 2 anoxic tanks, two aeration tanks, 2 final clarifiers, two aerobic sludge digesters, and chlorination disinfection. The permit only listed the 0.11-MGD design hydraulic load.

It was modified for pump station relocation to north of Rte 119 near Smyers Street and UV radiation disinfection. The revision is dated October 7, 2004, revised on December 13, 2004 and March 29, 2005. The amendment was issued on April 12, 2005. The design is based on 936 people in 2020. The application design organic load was 210-PPD in 2000 and is expected to be 224.32-PPD in 2020. The permit only listed the 0.11-MGD annual average, 0.11-MGD maximum monthly and 0.275-MGD peak flows.

Application Data

Big Run 90% separate sewers 700 people
 Foxburg 10% separate sewers 78 people
 Total 100% separate sewers 778 people

	Month	Year	Min	Ave	Max	#	Min	Ave	Max	#	Min	Ave	Max	#
Annual Average Design				0.11										
Hydraulic Design				0.11										
Organic Design				224.0										
Annual Average		2020		0.039										
		2019		0.040										
		2018		0.044										
	Jan/Mar			0.046										
pH							7.33		7.6	12	6.52		8.18	24
DO											4.1	5.81		12
F Coliform											1	59.6	987	12
BOD5				84.2			184	251.2	300	6				
CBOD5											3	7.7	45.7	12
TSS			25.1	33.7	38.4	6	86	102.2	118	6	5	9.13	23	12
N			5.3	5.3	5.3	1	19.1	19.1	19.1	1	2.51	9.98	33.6	12
P			1.1	1.1	1.1	1	3.9	3.9	3.9	1	0.1	3.1	5.8	12
T											8.7	13	21.7	6
TKN											1.5	3.28	9.22	11
Am			17.2	17.2	17.2	1	62.7	62.7	62.7	1	0.8	5.79	37.1	12
TDS			93.5	93.5	93.5	1	340	340	340	1	337	337	337	1
NO2NO3							0.14	0.14	0.14	1	0.104	2.37	5.53	11
Chloride											73	73	73	1
Bromide											1.63	1.63	1.63	1
Sulfate											92.9	92.9	92.9	1
O&G											< 1.4	< 1.4	< 1.4	1
Cu											0.011	0.011	0.11	1
Lead											<0.001	<0.001	<0.001	1
Zinc											0.084	0.084	0.084	1

Parameter criteria does not seem to be exceeded. The Toxic Management Spreadsheet does not recommend TDS, Chloride, Sulfide, and metal limitations based on the discharge not expected to exceed threshold requirements or not detected.

Compliance History

DMR Data for Outfall 001 (from May 1, 2020 to April 30, 2021)

Parameter	APR-21	MAR-21	FEB-21	JAN-21	DEC-20	NOV-20	OCT-20	SEP-20	AUG-20	JUL-20	JUN-20	MAY-20
Flow (MGD) Average Monthly	0.037	0.042	0.041	0.043	0.044	0.041	0.044	0.035	0.032	0.030	0.030	0.039
Flow (MGD) Daily Maximum	0.043	0.097	0.066	0.060	0.068	0.063	0.065	0.064	0.067	0.051	0.059	0.068
pH (S.U.) Minimum	6.6	6.8	6.8	6.2	6.6	6.7	6.8	6.6	6.7	6.9	6.8	6.52
pH (S.U.) Maximum	7.3	7.1	7.3	7.2	7.1	7.6	7.5	7.6	7.2	7.6	7.6	7.75
DO (mg/L) Minimum	5.83	5.8	5.3	5.7	8.6	4.7	4.7	4.2	4.7	4.1	4.2	4.19
CBOD5 (lbs/day) Average Monthly	2.0	6.5	1.97	2.7	2.0	8.7	1.1	1.4	0.80	1.1	1.1	1.7
CBOD5 (lbs/day) Weekly Average	2.4	11.0	2.3	2.8	2.1	15.2	1.1	1.8	0.83	1.3	1.2	2.3
CBOD5 (mg/L) Average Monthly	6.82	9.57	6.4	7.0	5.5	25.0	< 3.0	4.6	3.0	4.83	5.5	5.32
CBOD5 (mg/L) Weekly Average	8.06	13.6	7.2	8.1	5.7	45.7	< 3.0	5.3	3.0	5.82	5.8	6.96
BOD5 (mg/L) Influent Average Monthly	329	237.0	230	288	272	300.0	118	237	353	184	180	240
TSS (lbs/day) Average Monthly	1.8	3.3	2.8	2.5	2.5	5.0	2.9	1.5	1.4	3.1	1.1	4.1
TSS (lbs/day) Weekly Average	2.1	4.85	3.9	2.8	2.6	7.7	3.5	1.7	1.4	3.3	1.3	4.22
TSS (mg/L) Average Monthly	6.0	5.5	8.0	6.5	7.0	14.0	7.5	5.0	5.0	13.5	5.5	12.5
TSS (mg/L) Influent Average Monthly	80.0	154.0	86.0	200	154	102.0	120	86.0	382	104	112	118
TSS (mg/L) Weekly Average	7.0	6.0	11.0	8.0	8.0	23.0	9.0	5.0	5.0	14.0	6.0	13.0
F Coliform (#/100 ml) Geometric Mean	46.1	< 10.0	< 492	151	3.2	14.1	< 120	3.2	1.7	< 5.5	10.3	< 10
UV Intensity (mW/cm ²) Average Monthly	13.9	13.2	12.7	12.5	11.9	12.8	13.2	13.6	13.7	13.4	12.7	11.6
Total Nitrogen (mg/L) Average Monthly	9.3	8.10	6.27	11.54	8.85	15.9	8.37	5.0	5.86	4.91	9.08	15.45
Ammonia (mg/L) Average Monthly	3.7	4.07	1.74	6.37	2.5	9.4	0.80	0.8	0.82	1.27	5.2	14.95
T Phosphorus (mg/L) Average Monthly	2.65	1.22	0.47	1.2	2.9	1.4	3.80	1.7	3.25	2.35	3.75	2.95

Compliance History

Effluent Violations for Outfall 001, from: June 1, 2020 To: April 30, 2021

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
CBOD5	11/30/20	Wkly Avg	45.7	mg/L	40.0	mg/L

Other Comments

The November BOD5 mean was 25.0-mg/L and the weekly average reported was 15.2-PPD that is less than the 36.7-PPD weekly average mass limitation. Also, the exceedance is slightly over 10% of the required value.

Development of Effluent Limitations

Outfall No. <u>001</u>	Design Flow (MGD) <u>0.11</u>
Latitude <u>40° 57' 58.07"</u>	Longitude <u>-78° 53' 29.51"</u>
Wastewater Description: <u>Sewage Effluent</u>	

Technology-Based Limitations

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

Pollutant	Limit (mg/l)	SBC	Federal Regulation	State Regulation
CBOD ₅	25	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Fecal Coliform (5/1 – 9/30)	200 / 100 ml	Geo Mean	-	92a.47(a)(4)
Fecal Coliform (5/1 – 9/30)	1,000 / 100 ml	IMAX	-	92a.47(a)(4)
Fecal Coliform (10/1 – 4/30)	2,000 / 100 ml	Geo Mean	-	92a.47(a)(5)
Fecal Coliform (10/1 – 4/30)	10,000 / 100 ml	IMAX	-	92a.47(a)(5)
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)
E Coli	Report	Geo Mean		92a.47(a)
DO	4.0	Daily Minimum		BPJ

Comments: E Coli is a new parameter with monitoring recommended.

Water Quality-Based Limitations

A sewerage program based “Reasonable Potential Analysis” determined the following parameters were candidates for limitations: CBOD₅, BOD₅, TSS, phosphorus, nitrogen, ammonia, chlorine, dissolved oxygen fecal coliform, e coli and pH.

Influent BOD₅ and TSS are to be monitored. E coli is a new parameter for monitoring. Chlorine is not use and does not need monitoring. Nitrogen will be monitored through ammonia. No stream study has been performed to determine if phosphorus requirements are necessary.

UV radiation disinfection is in place with UV radiation intensity being monitored.

The following limitations were determined through water quality modeling (output files attached):

Parameter	Period	Limit (mg/l)			SBC	Model (mg/L)		
		Minimum	Average	Maximum		Minimum	Average	Maximum
Ammonia	Summer		25	50			25	50
DO		4.0				4.0		

Comments: No ammonia requirements are necessary as the discharge is not expected to exceed the assumed 25-mg/L raw waste concentration. The DO limit is a continuation of the current BPJ requirement.

Best Professional Judgment (BPJ) Limitations

Comments: DO is the only BPJ limitation.

Anti-Backsliding

As the facility is in general compliance backsliding is not appropriate.

Proposed Effluent Limitations and Monitoring Requirements

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

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) ⁽¹⁾		Concentrations (mg/L)				Minimum ⁽²⁾ Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	4.0 Daily Min	XXX	XXX	XXX	1/day	Grab
CBOD5	22.9	36.7	XXX	25.0	40.0	50.0	2/month	24-Hr Composite
TSS	27.5	41.3	XXX	30.0	45.0	60.0	2/month	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	XXX	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	XXX	2/month	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab
UV Intensity (mW/cm ²)	XXX	XXX	XXX	Report	XXX	XXX	1/day	Measured
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	2/month	24-Hr Composite
Ammonia	XXX	XXX	XXX	Report	XXX	XXX	2/month	24-Hr Composite
Total Phosphorus	XXX	XXX	XXX	Report	XXX	XXX	2/month	24-Hr Composite

Compliance Sampling Location: Outfall 001 after disinfection