pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**New**	Application No.	**PA0253570**
Facility Type	**Storm Water**	APS ID	**1030470**
Major / Minor	**Minor**	Authorization ID	**1339696**

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

Applicant and Facility Information

Applicant Name	**Glen-Gery Corporation**	Facility Name	**Harmar Plant**
Applicant Address	1166 Spring Street	Facility Address	230 Richhill Road
	Wyomissing, PA 19610-1721		Cheswick, PA 15024
Applicant Contact	Mike Krzyzanowski, Technical Svcs Mngr.	Facility Contact	Eric Brown, Environmental Coordinator
Applicant Phone	(610) 562-6422	Facility Phone	(610) 562-6420
Client ID	29414	Site ID	442881
SIC Code	3251, 3271	Municipality	Harmar Township
SIC Description	Brick and Structural Clay Tile Concrete Block and Brick	County	Allegheny
Date Application Received	June 14, 2007	EPA Waived?	Yes
Date Application Accepted		If No, Reason	

Purpose of Application: Issuance of an NPDES permit for discharges of storm water associated with industrial activities.

Summary of Review

Glen-Gery Corporation (Glen-Gery) operates a brick manufacturing facility (Harmar Plant) in Harmar Township, Allegheny County. The Harmar Plant encompasses three sites trisected by Deer Creek and Little Deer Creek and bordered to the south by the Pennsylvania Turnpike. The three sites include the main plant, the old plant, and a surface mine.

The main plant, located east of Deer Creek and Little Deer Creek, is where brick manufacturing takes place. Raw materials are prepared by crushing, grinding, and screening to generate a fine consistency material. This material is then mixed with water and clay conditioners and extruded through a die. The extruded brick is textured and coated as desired before being cut and stacked onto kiln cars for firing within a tunnel kiln. The fired bricks are packaged and stored outdoors until they are shipped. All processing operations are automated and occur indoors.

The old plant is located about 500 feet southwest of the main plant on the south side of a meander in Deer Creek. The old plant was converted into a maintenance, storage, and shipping area for quarry equipment and materials used in the manufacturing operations conducted at the main plant.

Primary materials used in the brickmaking process (clay and shale) are mined at a quarry located west of the old plant on the northwest side of Deer Creek. The quarry is permitted separately for surface mining operations (Surface Mining Permit 02010301) and for discharges of storm water runoff from Outfalls 001 and 002 (NPDES PA0202916). The quarry is accessible from the main plant by a bridge and access road over Little Deer Creek and from the old plant by a bridge and access road over Deer Creek. Raw materials not quarried onsite are shipped to and stored at the main plant.

There are six outfalls at the site: four that discharge to Deer Creek (Outfalls 005, 009, 010, and 011), one that discharges to an unnamed tributary to Deer Creek (Outfall 007), and one that discharges to Little Deer Creek (Outfall 008).

Outfalls 005 and 007 discharge storm water from the old plant including parking lots and roadways and paved brick storage areas. Outfalls 008, 009, 010 and 011 discharge storm water from the new plant including runoff from roadways (Outfalls 008, 009, and 011), brick storage areas (Outfalls 009, 010, and 011) and from the area around the plant's dry lime scrubber system

Approve	Deny	Signatures	Date
X		Ryan C. Decker, P.E. / Environmental Engineer	March 17, 2021
X		Michael E. Fifth, P.E. / Environmental Engineer Manager	March 19, 2021

Summary of Review

(Outfall 011). Outfall 011 discharges from an unlined storm water retention pond that collects runoff from the areas listed above.

On February 10, 2020, Brickworks Eddie Acquisition Corporation (Eddie Acquisition) purchased Redland Brick, Inc. including the Harmar Plant and associated surface mine. Eddie Acquisition is a subsidiary of Brickworks North America (Brickworks) and Brickworks is a holding Company for Eddie Acquisition and Glen-Gery Corporation. Brickworks intends to operate the facility under the Glen-Gery name as the "Glen-Gery Corporation – Harmar Plant". Glen-Gery submitted an application to transfer its various Department-issued permits on May 28, 2020. Since the NPDES permit for discharges from the Harmar Plant is currently pending issuance, the transfer will be processed when the final permit is issued.

Permitting Background

In November 2005, Redland applied to renew its coverage for the Harmar Plant's industrial storm water discharges under the Department's NPDES "General Permit for Discharges of Stormwater Associated with Industrial Activity" (PAG-03). In June 2007, Redland submitted an application for a new individual NPDES permit in response to the Department's October 17, 2006 decision to deny the Harmar Plant continuing coverage under its PAG-03 permit (PAR216140). The Department's decision to deny Redland coverage under the PAG-03 was based on the Department's observation of untreated wastewater discharges from the Harmar Plant along with sediment-laden storm water runoff. Those observations were made by the Department's Water Quality Specialist Homer Richey during site inspections conducted on December 6, 2005 and February 16, 2006.

The primary untreated wastewater discharges impacting the Harmar Plant consisted of artesian upwellings of acid mine drainage from Republic Steel Corporation's Indianola Deep Mine that operated from 1890 to 1957. Two foundation boreholes left open in the 1970s became natural outlets for water which collected in the Indianola Mine Pool. Over time, a steady flow of water caused the borehole openings to widen significantly and large amounts of water discharged continuously (at rates exceeding 1,000 gpm) through Redland Brick's old plant before flowing untreated into Deer Creek. Acid mine drainage is not an authorized non-storm water discharge under the PAG-03. The Clean Water Program did not take any action on either the 2005 renewal of PAR216140 or on the 2007 individual NPDES permit application because the Department's Bureau of Abandoned Mine Reclamation and other stakeholders, including Redland, were working on a plan to redirect and passively treat the mine drainage.

As part of an August 14, 2008 Consent Order and Agreement by and between the Department, Redland Brick, and the Clean Streams Foundation, Redland agreed to donate property and a road easement and to contribute to the Indianola Mine Trust for the purpose of establishing a passive treatment system to abate the mine drainage. During the spring and summer of 2013 an exploratory drilling project safely lowered the Indianola Mine Pool that was upwelling and discharging untreated to Deer Creek through the Redland Brick plant. Two boreholes were drilled at the new passive treatment system site located between Deer Creek and the Pennsylvania Turnpike and the existing boreholes causing mine drainage emanations across the Harmar Plant were sealed. The passive treatment system includes two iron oxide settling ponds to lessen the 1,200 gallon per minute acid mine drainage source contributing to impairment of Deer Creek. The Clean Streams Foundation owns and operates the treatment system using funds from the Indianola Mine Trust.

Pursuant to the Pennsylvania Environmental Good Samaritan Act, Redland's participation in the Indianola Mine Pool Project to reroute and passively treat mine drainage from the Indianola Mine Pool relieved the company of civil liability for those discharges—provided that the company does not conduct future activities that intercept the mine pool. The Clean Streams Foundation also benefits from the protections and immunities of the Environmental Good Samaritan Act.

Permitting Activities Post-Indianola Mine Pool Projection Completion

On July 18, 2018, the Department conducted an inspection of the Harmar Plant and requested, among other things, that Redland locate outfalls previously identified by the company on its permit application that could not be located during the July 2018 inspection (namely Outfalls 003, 004, 005, 006, and 008). In a December 11, 2019 email, the Department also requested updated analytical data for the site's outfalls. The purpose of those requests was to update the pending permit applications from 2005 and 2007 and to determine whether the Harmar Plant was eligible for coverage under the PAG-03 or whether conditions still required an individual permit despite the relocation of mine drainage discharges to an offsite location.

After purchase of the site, Glen-Gery submitted analytical data for Outfall 007 on March 11, 2020 and data for Outfalls 009 and 010 on May 22, 2020. Glen-Gery also reported on March 11, 2020 that it believed that Outfalls 003, 004, 005, 006, and 008 no longer existed. On March 12, 2020, the Department requested that Glen-Gery further investigate Outfall 005 because evidence suggested that Outfall 005 still existed despite no apparent discharge pipe on Deer Creek (a catch basin is located

Summary of Review

in the old plant's brick storage area and the basin does not flood during storms). The Department also requested that Glen-Gery sample Outfall 008 because it does exist.

The Clean Water Program accompanied District Mining Operations on another inspection of the Harmar Plant on August 27, 2020. Except for Outfalls 003, 004, 005, and 006, the Department and Glen-Gery reached consensus on outfall locations during that inspection. Glen-Gery and the Department concluded that Outfalls 003, 004, and 006 do not exist and that further investigation of Outfall 005 was appropriate. Glen-Gery performed a dye test on October 9, 2020 and concluded that Outfall 005 still exists and that storm water samples would be collected at the catch basin in the old plant's brick storage area since there is no discrete outfall pipe on the bank of Deer Creek. The final set of analytical results for Outfalls 005, 007, 008, 009, and 010 was submitted to the Department on January 7, 2021. Based on the elevated concentrations of iron in those results and due to the primarily iron-based impairment of Deer Creek, the Department determined that an individual NPDES permit would be required.

The existing NPDES permit for the Harmar Plant, PAR216140, will be terminated when the individual NPDES permit is issued.

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.	005	Design Flow (MGD)	Variable
Latitude	40° 33' 25.0"	Longitude	-79° 50' 28.0"
Quad Name	New Kensington West	Quad Code	1407
Wastewater Description:	Storm water runoff from the old plant's brick storage area		
Receiving Waters	Deer Creek (CWF)	Stream Code	42285
NHD Com ID	123972667	RMI	2.72
Drainage Area		Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)		Q_{7-10} Basis	
Elevation (ft)		Slope (ft/ft)	
Watershed No.	18-A	Chapter 93 Class.	CWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Causes of Impairment	Siltation; flow regime modification; turbidity; total dissolved solids (TDS); metals; nutrients		
Sources of Impairment	Construction (siltation, flow regime modification, turbidity); Subsurface Hardrock Mining (TDS); Acid Mine Drainage (metals and TDS); Source unknown (nutrients)		
TMDL Status	No TMDL	Name	
Nearest Downstream Public Water Supply Intake			
PWS Waters		Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	

Image Date: August 27, 2020 by R. Decker

Outfall 005 discharges storm water runoff from a catch basin in the brick storage area at the old plant. An outfall pipe is not visible on the eastern bank of Deer Creek. However, Glen-Gery conducted a dye test on October 9, 2020 using approximately 800 gallons of water from Deer Creek and three cups of non-toxic, biodegradable water tracing dye and observed dye along the east bank of Deer Creek during the test. It is likely there is a collapsed pipe that was damaged by flooding.

Since there is no observable outfall pipe, Glen-Gery collects samples of storm water entering the catch basin in the old plant's brick storage area.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	007	Design Flow (MGD)	Variable
Latitude	40° 33' 26.0"	Longitude	-79° 50' 22.0"
Quad Name	New Kensington West	Quad Code	1407
Wastewater Description:	Storm water runoff from the old plant		
Receiving Waters	Unnamed Tributary to Deer Creek (CWF) and Deer Creek (CWF)	Stream Code	42285 (Deer Creek)
NHD Com ID	123972667	RMI	0.02 (UNT); 2.61 (Deer Ck.)
Drainage Area		Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)		Q_{7-10} Basis	
Elevation (ft)		Slope (ft/ft)	
Watershed No.	18-A	Chapter 93 Class.	CWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s) (Unnamed Tributary); Impaired (Deer Creek)		
Cause(s) of Impairment	Deer Creek: Siltation; flow regime modification; turbidity; total dissolved solids (TDS); metals; nutrients		
Source(s) of Impairment	Deer Creek: Construction (siltation, flow regime modification, turbidity); Subsurface Hardrock Mining (TDS); Acid Mine Drainage (metals and TDS); Source unknown (nutrients)		
TMDL Status	No TMDL	Name	None
Nearest Downstream Public Water Supply Intake			
PWS Waters		Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	

Image Date: August 27, 2020 by R. Decker

Outfall 007 discharges storm water runoff from the old plant to an unnamed tributary to Deer Creek along Rich Hill Road. The outfall is co-located with deep mine discharge monitoring point “S1” of the Harmar Plant’s Surface Mining Permit 02010301.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	008	Design Flow (MGD)	Variable
Latitude	40° 33' 29.0"	Longitude	-79° 50' 20.0"
Quad Name	New Kensington West	Quad Code	1407
Wastewater Description:	Storm water runoff from the main plant entrance road		
Receiving Waters	Little Deer Creek (TSF)	Stream Code	42289
NHD Com ID	134460289	RMI	0.06
Drainage Area		Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)		Q_{7-10} Basis	
Elevation (ft)		Slope (ft/ft)	
Watershed No.	18-A	Chapter 93 Class.	TSF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	Siltation; flow regime modification; turbidity; total dissolved solids (TDS); metals		
Source(s) of Impairment	Construction (siltation, flow regime modification, turbidity); Subsurface Hardrock Mining (TDS); Acid Mine Drainage (metals and TDS)		
TMDL Status	Final (August 23, 2006)	Name	Little Deer Creek Watershed
Nearest Downstream Public Water Supply Intake			
PWS Waters		Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	

Image Date: June 2019 by Google Street View

Image Date: August 27, 2020 by R. Decker (Little Deer Creek visible at top)

Outfall 008 discharges storm water runoff from two catch basins on either side of the entrance road that leads to the main plant off Rich Hill Road. The left catch basin connects to the right catch basin, which discharges to Little Deer Creek along its western bank.

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	009	Design Flow (MGD)	Variable
Latitude	40° 33' 25.0"	Longitude	-79° 50' 18.0"
Quad Name	New Kensington West	Quad Code	1407
Wastewater Description:	Storm water runoff from the main plant entrance road		
Receiving Waters	Deer Creek (WWF)	Stream Code	42285
NHD Com ID	123972835	RMI	2.53
Drainage Area		Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)		Q_{7-10} Basis	
Elevation (ft)		Slope (ft/ft)	
Watershed No.	18-A	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	Siltation; flow regime modification; turbidity; total dissolved solids (TDS); metals; nutrients		
Source(s) of Impairment	Construction (siltation, flow regime modification, turbidity); Subsurface Hardrock Mining (TDS); Acid Mine Drainage (metals and TDS); Source unknown (nutrients)		
TMDL Status	No TMDL	Name	
Nearest Downstream Public Water Supply Intake			
PWS Waters		Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	

Image Date: August 27, 2020 by R. Decker

Image Date: August 27, 2020 by R. Decker (Deer Creek visible at top)

Outfall 009 discharges storm water runoff from a catch basin near the end of the entrance road to the main plant. The catch basin has a filter insert, which had tears in it at the time it was inspected.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	010	Design Flow (MGD)	Variable
Latitude	40° 33' 21.0"	Longitude	-79° 50' 12.0"
Quad Name	New Kensington West	Quad Code	1407
Wastewater Description:	Storm water runoff from the main plant brick storage area		
Receiving Waters	Deer Creek (WWF)	Stream Code	42285
NHD Com ID	123972835	RMI	2.40
Drainage Area		Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)		Q_{7-10} Basis	
Elevation (ft)		Slope (ft/ft)	
Watershed No.	18-A	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	Siltation; flow regime modification; turbidity; total dissolved solids (TDS); metals; nutrients		
Source(s) of Impairment	Construction (siltation, flow regime modification, turbidity); Subsurface Hardrock Mining (TDS); Acid Mine Drainage (metals and TDS); Source unknown (nutrients)		
TMDL Status	No TMDL	Name	
Nearest Downstream Public Water Supply Intake			
PWS Waters		Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	

Image Date: August 27, 2020 by R. Decker


Image Date: August 27, 2020 by R. Decker

Outfall 010 discharges storm water runoff from a catch basin in the main plant's brick storage area to a vegetated area approximately 120 feet from the east bank of Deer Creek.

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	011	Design Flow (MGD)	Variable
Latitude	40° 33' 24.0"	Longitude	-79° 50' 8.0"
Quad Name	New Kensington West	Quad Code	1407
Wastewater Description:	Storm water overflows from a storm water pond collecting runoff from southern and eastern parts of the main plant		
Receiving Waters	Deer Creek (WWF)	Stream Code	42285
NHD Com ID	123972835	RMI	2.23
Drainage Area		Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)		Q_{7-10} Basis	
Elevation (ft)		Slope (ft/ft)	
Watershed No.	18-A	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	Siltation; flow regime modification; turbidity; total dissolved solids (TDS); metals; nutrients		
Source(s) of Impairment	Construction (siltation, flow regime modification, turbidity); Subsurface Hardrock Mining (TDS); Acid Mine Drainage (metals and TDS); Source unknown (nutrients)		
TMDL Status	No TMDL	Name	
Nearest Downstream Public Water Supply Intake			
PWS Waters		Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	

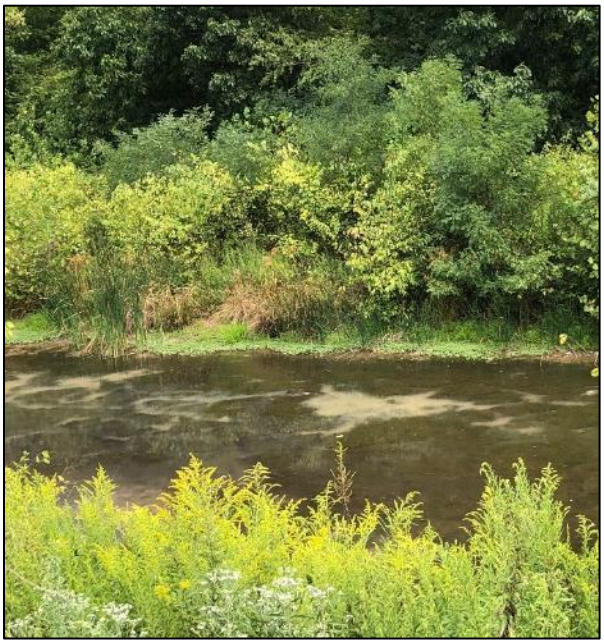


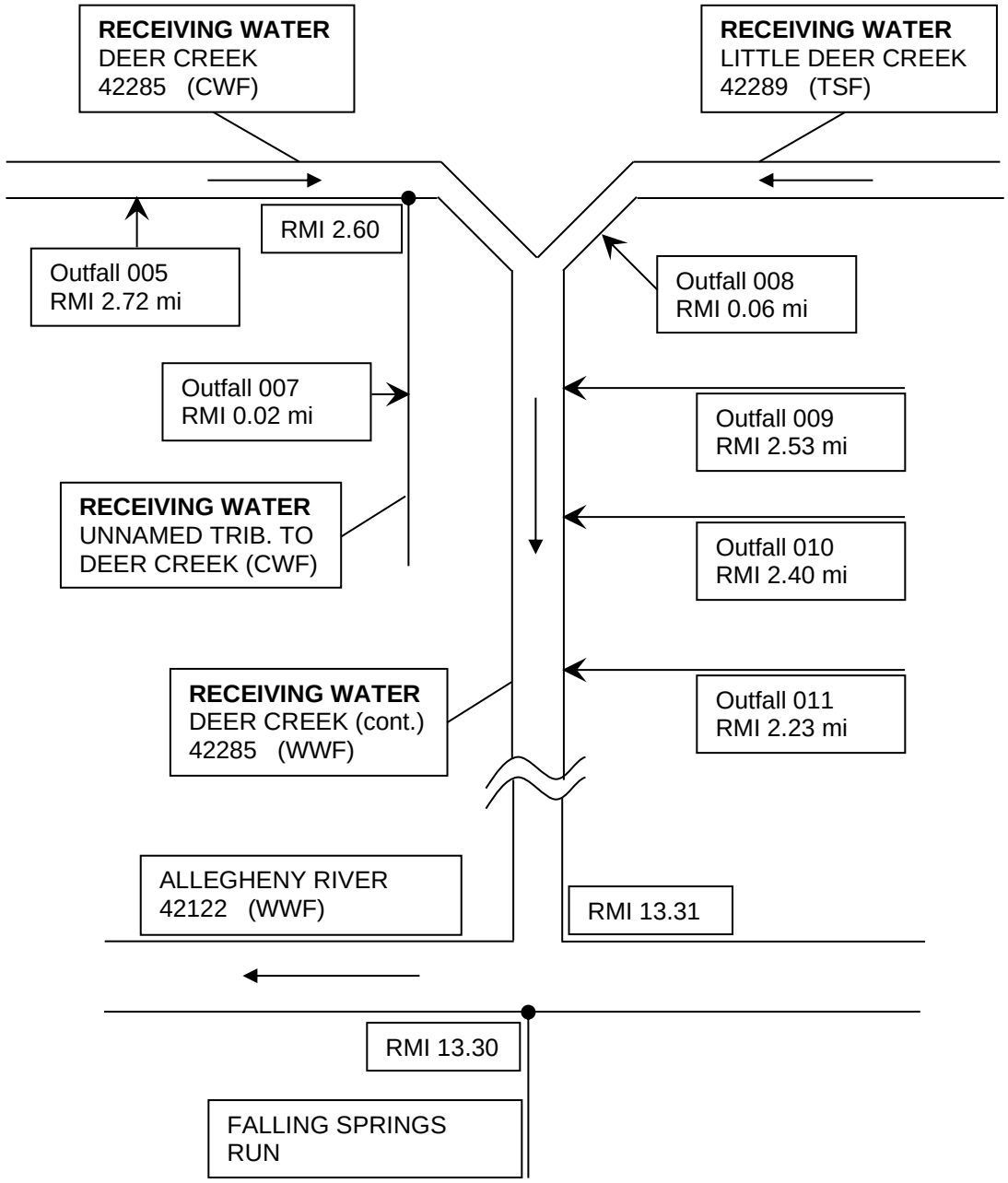
Image Date: August 27, 2020 by R. Decker

Image Date: August 27, 2020 by R. Decker

Outfall 011's discharges are overflows from a pond collecting storm water runoff from the southern and eastern areas of the main plant.

Figure 1. Aerial View of the Harmar Plant with PA0253570 Outfalls (Blue) & SMP 02010301/NPDES PA0202916 Monitoring Points/Outfalls (Yellow)

Image Source and Date: Google Earth Pro; 9/17/2019. Outfalls under NPDES PA0253570 (the subject of this Fact Sheet) are depicted with blue markers. Outfalls and monitoring points under SMP 02010301 and NPDES PA0202916 are depicted with yellow markers.


RECEIVING WATER
DEER CREEK
42285 (CWF)
RECEIVING WATER
LITTLE DEER CREEK
42289 (TSF)
RMI 2.60
Outfall 005
RMI 2.72 mi
Outfall 008
RMI 0.06 mi
Outfall 007
RMI 0.02 mi
Outfall 009
RMI 2.53 mi
RECEIVING WATER
UNNAMED TRIB. TO
DEER CREEK (CWF)
Outfall 010
RMI 2.40 mi
RECEIVING WATER
DEER CREEK (cont.)
42285 (WWF)
Outfall 011
RMI 2.23 mi
ALLEGHENY RIVER
42122 (WWF)
RMI 13.31
RMI 13.30
FALLING SPRINGS
RUN

Development of Effluent Limitations

Outfall Nos. 005, 007, 008, 009, 010, & 011 **Design Flow (MGD)** Variable
Latitude 40° 33' 41.00" **Longitude** -79° 50' 46.00"
Wastewater Description: Storm water

SWO.A. Technology-Based Effluent Limitations (TBELs)

Storm water discharged from the Harmar Plant is not subject to any Federal Effluent Limitations Guidelines. Therefore, effluent limits and/or monitoring requirements will be developed based on applicable state regulations and guidance.

Regulatory Monitoring Requirements

A reporting requirement for flow will be imposed in accordance with 25 Pa. Code § 92a.61(h).

Storm Water Monitoring Requirements

Pursuant to 25 Pa. Code § 92a.61(h) and DEP's policy for permitting storm water discharges associated with industrial activities described in Section III of DEP's "Standard Operating Procedure (SOP) for Clean Water Program – Establishing Effluent Limitations for Individual Industrial Permits", minimum monitoring requirements and Best Management Practices from DEP's NPDES General Permit for Discharges of Stormwater Associated with Industrial Activity (PAG-03) will be applied to the Harmar Plant's storm water discharges. Glen-Gery reported its NAICS Code as 327331 (Concrete Block and Brick Manufacturing), which corresponds to SIC Codes 3251 (Brick and Structural Clay Tile) and 3271 (Concrete Block and Brick). Both SIC Codes are classified under Appendix N – Glass, Clay, Cement, Concrete and Gypsum Products of the PAG-03 General Permit.[1] To ensure that there is baseline consistency across the state for all brick-making facilities that discharge storm water associated with their industrial activities, the monitoring requirements of Appendix N of the PAG-03 will be imposed at the Harmar Plant's storm water outfalls. The Appendix N monitoring requirements are shown in Table 1.

Table 1. PAG-03 Appendix N – Minimum Monitoring Requirements

Parameter	Measurement Frequency	Sample Type	Benchmark Values
pH (S.U.)	1 / 6 months	Grab	9.0
Total Suspended Solids (TSS)	1 / 6 months	Grab	100
Total Aluminum	1 / 6 months	Grab	XXX
Total Iron	1 / 6 months	Grab	XXX

The benchmark values listed in Table 1 are not effluent limitations and exceedances do not constitute permit violations. However, if the permittee's sampling demonstrates exceedances of benchmark values for two consecutive monitoring periods, the permittee must submit a corrective action plan within 90 days of the end of the monitoring period triggering the plan. That requirement and the benchmark values will be specified in a condition in Part C of the permit.

To the extent that effluent limits are necessary to ensure that storm water Best Management Practices (BMPs) are adequately implemented, DEP's Permit Writers' Manual recommends that effluent limits be developed for industrial storm water discharges based on a determination of Best Available Technology (BAT) using Best Professional Judgment (BPJ). BPJ of BAT typically involves the evaluation of end-of-pipe wastewater treatment technologies, but DEP considers the use of BMPs to be BAT for storm water outfalls unless effluent concentrations indicate that BMPs provide inadequate pollution control. Table 2 summarizes the existing effluent quality of storm water discharges from the plant.

Table 2. Storm Water Analytical Results for the Harmar Plant

Parameter	005 (12/28/2020)	007 (1/28/2020) (12/28/2020)	008 (12/28/2020)	009 (4/30/2020) (12/28/2020)	010 (4/30/2020) (12/28/2020)	No Exposure Thresholds	MSGP Benchmarks (mg/L)
Oil and Grease (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0	≤ 5.0 mg/L	N/A
Nitrate as N (mg/L)	<0.13	<0.03	<0.13	<0.13	<0.13	≤ 2.0 mg/L	0.68
Nitrite as N (mg/L)	<2.00	<0.40	<2.00	<2.00	<2.00	≤ 2.0 mg/L	0.68
Chemical Oxygen Demand	13.7	—	16.8	—	—	≤ 30.0 mg/L	120

[1] The determination of which of the PAG-03 General Permit's appendices applies to a facility is based on a facility's SIC Code.

Table 2 (continued). Storm Water Analytical Results for the Harmar Plant

Parameter	005 (12/28/2020)	007 (1/28/2020) (12/28/2020)	008 (12/28/2020)	009 (4/30/2020) (12/28/2020)	010 (4/30/2020) (12/28/2020)	No Exposure Thresholds	MSGP Benchmarks (mg/L)
Total Dissolved Solids (mg/L)	440	998	270	140	318	≤ 500.0 mg/L	N/A
TSS (mg/L)	116	15.0; 11.0	108	14.0; 11.5	<5.0; 21.3	≤ 30.0 mg/L	100
pH (s.u.)	8.7	7.9	8.2	7.3	7.5	6.0 – 9.0 s.u.	6.0 – 9.0 s.u.
Total Kjeldahl Nitrogen (mg/L)	<1.25	<1.25	<1.25	<1.25	<1.25	≤ 2.0 mg/L	N/A
Phosphorus, Total as P (mg/L)	0.068	0.025	<0.100	0.039	0.024	≤ 1.0 mg/L	2.0
BOD5	<20.0	<4	<20.0	<4.0	<4.0	N/A	30
Aluminum	**5.63**	0.234; 0.285	**9.64**	**2.09; 1.99**	<0.200; 1.30	≤ 0.75 mg/L	1.1
Iron	**6.00**	0.640; 0.480	**6.31**	1.01; 0.833	<0.200; 0.815	≤ 1.5 mg/L	N/A
Manganese	0.406	0.069	0.135	0.017	0.006	≤ 1.0 mg/L	N/A

Sampling dates are shown in column headings. Outfalls with more than one sample have multiple dates listed in column headings. Multiple results for parameters at the same outfall are listed in sequential order (corresponding to the listed sample dates) and are separated by a semi-colon.

Glen-Gery was unable to collect samples at Outfall 011, so the quality of Outfall 011's discharges remains unknown.

Based on the storm water analytical results in Table 2, aluminum and iron are pollutants of concern at Outfalls 005, 008, and Outfall 009 and may not be effectively controlled by Glen-Gery's BMPs. The monitoring requirements imposed pursuant to 25 Pa. Code § 92a.61(h) and Appendix N of the PAG-03 already include aluminum and iron, so no additional monitoring requirements are imposed based on the results in Table 2. However, additional requirements for aluminum and iron are considered below due to the aquatic life impairments of Little Deer Creek and Deer Creek.

SWO.B. <u>Water Quality-Based Effluent Limitations (WQBELs)</u>

Generally, DEP does not develop numerical WQBELs for storm water discharges. Pursuant to 25 Pa. Code § 96.4(g), mathematical modeling used to develop WQBELs must be performed at Q_{7-10} low flow conditions. Precipitation-induced discharges generally do not occur at Q_{7-10} design conditions because the precipitation that causes a storm water discharge also will increase the receiving stream's flow and that increased stream flow will provide additional assimilative capacity during a storm event. However, some circumstances do lead to the imposition of WQBELs on storm water discharges. For example, if a TMDL assigns waste load allocations to a storm water discharge, then WQBELs may be necessary to ensure that the permit is consistent with the TMDL. Alternatively, watersheds impaired by acid mine drainage may experience critical loading conditions during and after storm events due to increasing mine pool levels caused by storm water infiltration into the mine. Other storm water discharges during that time may contribute to excursions above water quality criteria. Requirements based on final TMDLs and stream impairments for the Harmar Plant's receiving waters are discussed below.

Even though no mathematical modeling is performed, conditions in Part C of the permit will ensure compliance with water quality standards through a combination of best management practices including pollution prevention and exposure minimization, good housekeeping, erosion and sediment control, and spill prevention and response.

<u>Little Deer Creek Watershed Total Maximum Daily Load (TMDL)</u>

On August 23, 2006, DEP finalized the Little Deer Creek Watershed TMDL for Acid Mine Drainage Affected Segments. Little Deer Creek was listed on the 1996 Pennsylvania Section 303(d) list of impaired waters. The cause of the impairment was identified as metals (aluminum, iron, and manganese) from abandoned coal mines.

Glen-Gery has one outfall that discharges into the Little Deer Creek watershed: Outfall 008. Outfall 008—located about 0.06 miles (approximately 300 feet) upstream of where Little Deer Creek empties into Deer Creek—discharges storm water runoff from the entrance road leading to the main facilities of the Harmar Plant.

Pursuant to 40 CFR § 122.44(d)(1)(vii)(B)[2], WQBELs must be consistent with available waste load allocations (WLAs) from a final TMDL. The Little Deer Creek Watershed TMDL developed WLAs and load allocations for point and non-point source

[2] "(vii) When developing water quality-based effluent limits under this paragraph the permitting authority shall ensure that: [cont'd…]

discharges in certain segments of the watershed. The TMDL's allocations are identified for stream segments and not specific discharges. Outfall 008 is in the farthest downstream segment of the watershed extending upstream from the mouth of Little Deer Creek (identified as Station LTDR01 in the TMDL) to the mouth of unnamed tributary 42290 where that tributary empties into Little Deer Creek at river mile index 0.60. The TMDL did not require any load reductions in that segment of the Little Deer Creek watershed and did not identify any WLAs or load allocations at LTDR01. Therefore, discharges in that segment of the river, including Outfall 008, are not subject to any TMDL WQBELs. It is apparent from the TMDL that the impairments of Little Deer Creek originate primarily from sources further upstream in the watershed.

Glen-Gery Corporation and its predecessor, Redland Brick, Inc., collect/collected stream data quarterly on Little Deer Creek and Deer Creek as a requirement of Surface Mining Permit (SMP) 02010301 for the Harmar Plant's nearby quarry. The TMDL for Little Deer Creek is from 2006, but recent surface water data from Redland Brick's and Glen-Gery's quarterly sampling are available to help determine whether the stream data used to develop the TMDL represent current stream conditions and to help evaluate the need for WQBELs or water quality-based requirements separate from the TMDL. A full summary of the permittees' recent data (1st Quarter 2018 through 2nd Quarter 2020) is included at the end of this Fact Sheet. SMP 02010301 monitoring point LD1 is located on Little Deer Creek just downstream of Outfall 008.

Table 3. In-steam Data for Little Deer Creek collected at SMP 02010301 Monitoring Point LD1

Date	Flow (gpm)	Field pH (S.U.)	Lab pH (S.U.)	Alkalinity (mg/L)	Acidity (mg/L)	Aluminum (mg/L)	Iron (mg/L)	Manganese (mg/L)
WQ Criterion	—	6.0 to 9.0	6.0 to 9.0	—	—	0.75	1.5	1.0
3/26/2018	1200	7.9	8.3	237	<7	0.058	0.095	0.124
6/21/2018	1350	8.1	8.32	250	<20	<0.1	0.0946	0.014
11/29/2018	1200	7.8	8.0	106	<7	<0.2	0.279	0.105
12/19/2018	1300	7.7	8.1	135	<7	<0.2	0.341	0.054
3/26/2019	1200	7.9	8.3	107	<7	<0.2	<0.2	0.107
6/27/2019	1200	8.0	8.2	118	<7	<0.2	0.243	0.027
9/30/2019	1200	8.0	8.0	97.7	<7	0.406	0.988	0.05
12/11/2019	1300	7.5	7.9	108	<7	<0.2	0.201	0.052
3/26/2020	—	—	8.00	107	<7.0	<0.2	0.24	0.06
6/30/2020	—	—	8.20	227	<7.0	<0.2	<2.00	0.02
Average/Median	1243.75	7.9	8.15	149.27	<7	0.232	0.3102	0.0613

Table 4. Water Quality Data at LTDR01 used in TMDL Calculations

Date	Flow (gpm)	Lab pH (S.U.)	Alkalinity (mg/L)	Acidity (mg/L)	Aluminum (mg/L)	Iron (mg/L)	Manganese (mg/L)
4/29/2003	4460	8.4	255.0	0.0	<0.5	<0.3	0.068
6/18/2003	10010	7.4	104.8	0.0	<0.5	0.56	0.078
8/6/2003	2446	8.3	136.0	0.0	<0.5	<0.3	<0.05
8/19/2003	1192	8.3	152.0	0.0	<0.5	<0.3	<0.05
10/6/2003	3130	8.1	133.4	0.0	<0.5	<0.3	0.073
Average	4247.6	8.1	156.24	0.0	<0.5	0.56	0.073
Std. Dev.	3430.8	0.406	57.76	0.0	N/A	N/A	0.005

Comparing the data collected by Glen-Gery/Redland Brick on Little Deer Creek to the data from the 2006 TMDL report indicates that the TMDL's conclusion that load reductions are not necessary for the furthest downstream segment of Little Deer Creek remain valid. In-stream concentrations of the TMDL's pollutants of concern (aluminum, iron, and manganese) are less than the most stringent water quality criteria, so assimilative capacity is available in Little Deer Creek. Note that, even if water chemistry data indicate that water quality criteria are achieved in-stream, impairments may still exist based on biological metrics such as the diversity of organisms in the stream and the prevalence of pollution-tolerant organisms.

(B) Effluent limits developed to protect a narrative water quality criterion, a numeric water quality criterion, or both, are consistent with the assumptions and requirements of any available wasteload allocation for the discharge prepared by the State and approved by EPA pursuant to 40 CFR 130.7."

Notwithstanding the availability of assimilative capacity in Little Deer Creek, BMPs should be able to reduce the concentrations of metals at Outfall 008. Therefore, benchmark values of 1.1 mg/L and 1.5 mg/L will apply for aluminum and iron at Outfall 008 based on EPA's aluminum benchmark value from the 2021 Multi-Sector General Permit and Pennsylvania's water quality criterion for total iron from 25 Pa. Code § 93.7(a), respectively. DEP notes that the iron criterion is a 30-day average, so its use here for a short-duration storm water discharge is conservative.

Even though manganese is generally associated with acid mine drainage, discharge and stream data indicate that manganese is not a pollutant of concern for either the Harmar Plant's discharges or for Little Deer Creek. Therefore, no requirements are imposed for manganese.

Deer Creek Impairment

Deer Creek's aquatic life use impairment is caused by a variety of sources (siltation, flow regime modification, and turbidity from construction; total dissolved solids from mining and mine drainage; metals from acid mine drainage; and nutrients from unknown sources), but the primary contributor to the impairment is the discharge from the Indianola Mine Pool. As explained at the beginning of this Fact Sheet, discharges from the Indianola Mine Pool were rerouted away from the Harmar Plant's site to a location further upstream on Deer Creek. The mine drainage is treated passively in two settling ponds, but the effluent still discharges to Deer Creek and still contains iron. Data collected on Deer Creek at monitoring point UD1 (downstream of the Indianola Mine Pool discharge) pursuant to SMP 02010301 indicate that, on average, iron concentrations in Deer Creek still exceed water quality criteria.

Indianola Mine Pool discharge. Ponds are fenced in the distance. Deer Creek is visible on the upper left of the right image.

Table 5. In-steam Data for Deer Creek collected at SMP 02010301 Monitoring Point UD1

Date	Flow (gpm)	Field pH (S.U.)	Lab pH (S.U.)	Alkalinity (mg/L)	Acidity (mg/L)	Aluminum (mg/L)	Iron (mg/L)	Manganese (mg/L)
WQ Criterion	—	6.0 to 9.0	6.0 to 9.0	—	—	0.75	1.5	1.0
3/26/2018	2700	7.3	7.6	297	<7	<0.05	1.9	0.193
6/21/2018	3000	7.5	7.79	318	<7	0.119	**1.87**	0.195
11/29/2018	3500	7.7	7.6	229	<7	<0.2	1.18	0.121
12/19/2018	3300	7.8	7.7	211	<7	0.2	1.15	0.115
3/26/2019	3000	7.7	7.5	295	<7	<0.2	**2.03**	0.17
6/27/2019	2500	7.8	7.7	247	<7	<0.2	1.43	0.134
9/30/2019	3000	7.7	7.6	189	<7	**2.0**	**3.22**	0.258
12/11/2019	3500	7.5	7.6	129	<7	<0.2	0.373	0.047
3/26/2020	—	—	7.50	165	<7.0	0.29	1.05	0.08
6/30/2020	—	—	7.40	370	<7.0	0.20	**4.16**	0.32
Average/Median	3062.5	7.7	7.6	245	<7	<0.3659	**1.8363**	0.1633

SMP 02010301 - Deer Creek Sampling Point UD1. Iron precipitate is visible in the stream.

Since there is no final TMDL for Deer Creek that assigns waste load allocations to Glen-Gery's discharges and since the aquatic life impairment is presumed to still exist based on recent water chemistry data and observations of the creek, Glen-Gery's storm water outfalls that discharge to Deer Creek will be subject to a benchmark value of 1.5 mg/L for total iron. The outfalls subject to the benchmark value are Outfalls 005, 007, 009, 010, 011.

Implementing BMPs to achieve a storm water effluent concentration goal of 1.5 mg/L for total iron will ensure that Glen-Gery's storm water discharges do not contribute to the impairment of Deer Creek.

Like Little Deer Creek, Deer Creek has assimilative capacity for aluminum as evidenced by the 'non-detect' data collected at monitoring point UD1. However, separate from water quality considerations, BMPs should be able to reduce the concentrations of aluminum in Glen-Gery's discharge to Deer Creek. Therefore, a benchmark value of 1.1 mg/L will apply to aluminum in Glen-Gery's Deer Creek outfalls based on the aluminum benchmark from EPA's 2021 Multi-Sector General Permit.

As with Outfall 008 and Little Deer Creek, data for Deer Creek and the Harmar Plant's discharges to Deer Creek indicate that manganese is not a pollutant of concern, so no monitoring requirements are imposed for manganese.

SWO.C. Effluent Limitations and Monitoring Requirements for Outfalls 005, 007, 008, 009, 010, and 011

In accordance with 25 Pa. Code §§ 92a.12 and 92a.61, effluent limits at Glen-Gery's storm water outfalls are the more stringent of TBELs, WQBELs, regulatory effluent standards, and monitoring requirements.

Table 6. Effluent Limits and Monitoring Requirements for Outfalls 005, 007, 008, 009, 010, and 011

Parameter	Mass (pounds/day)		Concentration (mg/L)			Basis
	Average Monthly	Daily Maximum	Average Monthly	Maximum Daily	Instant Maximum	
Flow (MGD)	—	Report	—	—	—	25 Pa. Code § 92a.61(h)
Total Suspended Solids	—	—	—	Report	—	25 Pa. Code § 92a.61(h); PAG-03, Appendix N
Aluminum, Total	—	—	—	Report	—	25 Pa. Code § 92a.61(h); PAG-03, Appendix N
Iron, Total	—	—	—	Report	—	25 Pa. Code § 92a.61(h); PAG-03, Appendix N
pH	—	—	—	Report	—	25 Pa. Code § 92a.61(h); PAG-03, Appendix N

The sampling frequency and type for all parameters will be 1/6 months grab samples as established in Appendix N of the PAG-03 General Permit on which the monitoring requirements are based. Flow should be estimated 1/6 months at the time of sampling. Benchmark values for TSS, aluminum, and iron (100 mg/L, 1.1 mg/L, and 1.5 mg/L) will be included in a condition in Part C of the permit. The benchmark values apply to all outfalls.

Tools and References Used to Develop Permit	
☐	WQM for Windows Model (see Attachment)
☐	PENTOXSD for Windows Model (see Attachment)
☐	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment)
☐	Toxics Screening Analysis 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:

TMDL Sample Points Map

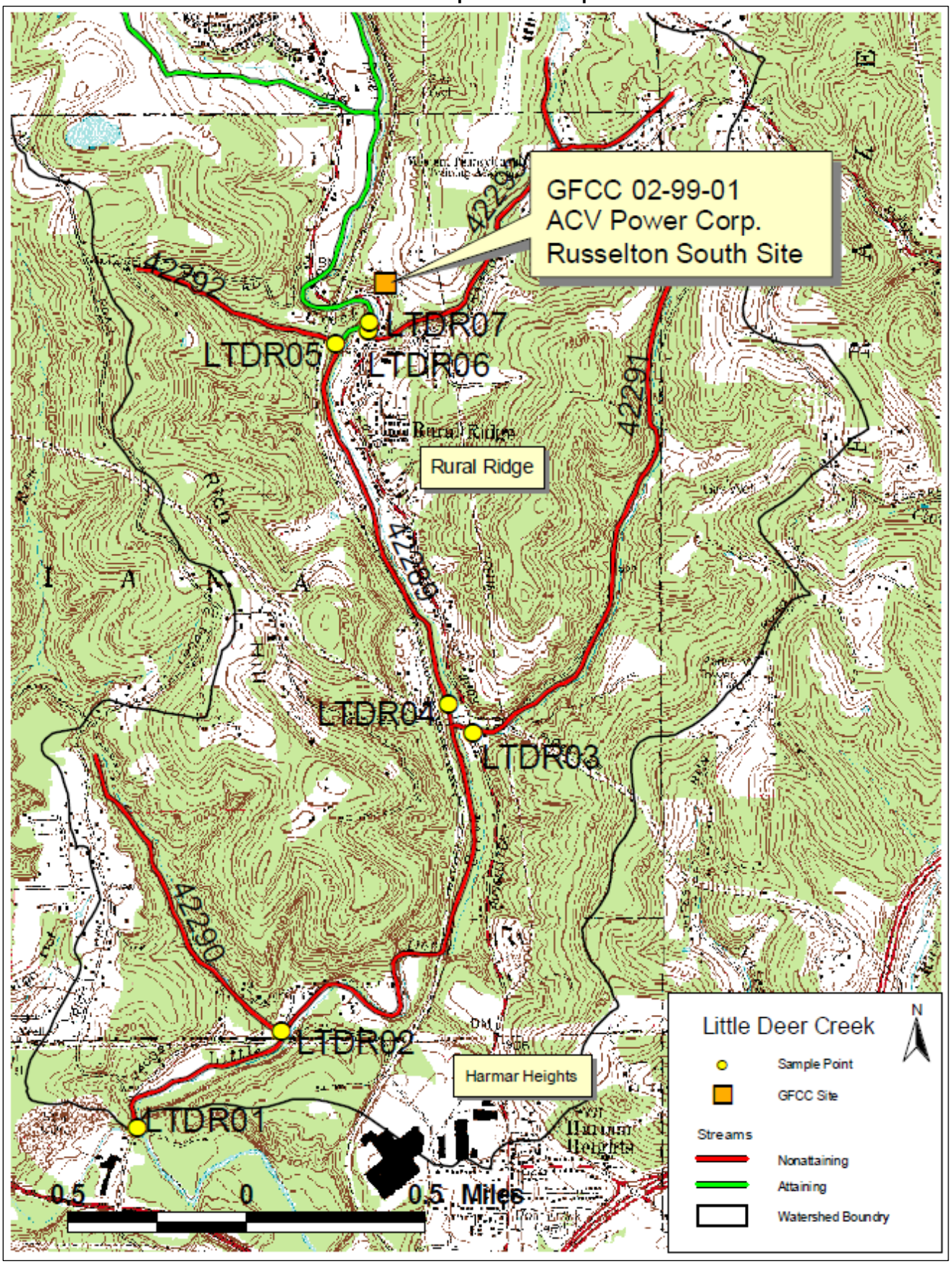


Table 3. TMDL Component Summary for the Little Deer Creek Watershed

Station	Parameter	Existing Load (lbs/day)	TMDL Allowable Load (lbs/day)	WLA (lbs/day)	LA (lbs/day)	Load Reduction (lbs/day)	Percent Reduction %
LTDR07	*Little Deer Creek, upstream of Unnamed Tributary 42293*						
	Al	<0.5	NA	NA	NA	0.0	0
	Fe	35.4	30.5	0.0	30.5	4.9	14
	Mn	19.6	11.8	0.0	11.8	7.8	40
	Acidity	0.0	0.0	NA	NA	0.0	0
LTDR06	*Mouth of Unnamed Tributary 42293*						
	Al	6.0	3.2	0.0	3.2	2.8	46
	Fe	6.9	6.9	NA	NA	0.0	0
	Mn	1.2	1.2	NA	NA	0.0	0
	Acidity	0.0	0.0	NA	NA	0.0	0
LTDR05	*Mouth of Unnamed Tributary 42292*						
	Al	10.9	2.5	0.0	2.5	8.4	77
	Fe	15.1	3.5	0.0	3.5	11.6	77
	Mn	6.6	3.6	0.0	3.6	3.0	46
	Acidity	0.0	0.0	NA	NA	0.0	0
LTDR04	*Little Deer Creek, upstream of Unnamed Tributary 42291*						
	Al	23.8	23.8	NA	NA	0.0	0
	Fe	21.2	21.2	NA	NA	0.0	0
	Mn	8.8	8.8	NA	NA	0.0	0
	Acidity	0.0	0.0	NA	NA	0.0	0
LTDR03	*Mouth of Unnamed Tributary 42291*						
	Al	<0.5	NA	NA	NA	0.0	0
	Fe	<0.3	NA	NA	NA	0.0	0
	Mn	<0.05	NA	NA	NA	0.0	0
	Acidity	0.0	0.0	NA	NA	0.0	0
LTDR02	*Mouth of Unnamed Tributary 42290*						
	Al	<0.5	NA	NA	NA	0.0	0
	Fe	0.9	0.9	NA	NA	0.0	0
	Mn	0.1	0.1	NA	NA	0.0	0
	Acidity	0.0	0.0	NA	NA	0.0	0
LTDR01	*Mouth of Little Deer Creek*						
	Al	<0.5	NA	NA	NA	0.0	0
	Fe	28.6	28.6	NA	NA	0.0	0
	Mn	3.7	3.7	NA	NA	0.0	0
	Acidity	0.0	0.0	NA	NA	0.0	0

NA, meets WQS. No TMDL necessary.

Redland Brick SMP 02010301 "Harmar Plant" Operator SMP Monitoring Data; Harmar Twp, Allegheny County

Monitoring Point	Description	Date*	Flow (gpm)	Field pH	Lab pH	SC	Temp (C)	Alk (mg/l)	Acidity (mg/l)	Fe (mg/l)	Mn (mg/l)	Al (mg/l)	SO4 (mg/l)	SS (mg/l)
UD1	Deer Creek, Up	3/26/2018	2700	7.3	7.6	797	8	297	<7	1.9	0.193	<0.05	177	<5
LD1	Little Deer Creek, Up	3/26/2018	1200	7.9	8.3	878	10	237	<7	0.095	0.124	0.058	284	7
DD2*	Deer Crk, Mid (above L. Deer/S1)	3/26/2018	3500	7.7	8.1	652	9	211	<7	0.651	0.086	0.050	114	<5
DD1	Deer Creek, Down	3/26/2018	4000	7.9	8.1	725	9	223	<7	0.586	0.113	<0.05	160	<5
S1	Deep Mine Discharge	3/26/2018	20	7.6	8.1	1110	11	493	<7	0.320	0.083	0.145	290	11.0
S2	DeepMineDisch./Delete frm Program	3/26/2018	NR (Indianola BAMR Project lowered mine pool in 2013 and discharge stopped)											
*1st sampled 1Q 18, should change to upstream of S1														
UD1	Deer Creek, Up	6/21/2018	3000	7.5	7.79	793	18	318	<7	1.87	0.195	0.119	202	10.0
LD1	Little Deer Creek, Up	6/21/2018	1350	8.1	8.32	862	22	250	<20	0.0946	0.014	<0.1	278	9
DD2*	Deer Crk, Mid (above L. Deer/S1)	6/21/2018	3800	7.9	8.0	686	21	250	<20	0.645	0.125	0.110	165	10.8
DD1	Deer Creek, Down	6/21/2018	4700	7.8	7.8	654	22	256	<20	0.819	0.116	0.117	141	10.6
S1	Deep Mine Discharge	6/21/2018	22	7.8	7.9	1000	23	420	<20	0.250	0.059	<0.1	258	6.18
S2	DeepMineDisch./Delete frm Program	6/21/2018	NR (Indianola BAMR Project lowered mine pool in 2013 and discharge stopped)											
*1st sampled 1Q 18, should change to upstream of S1														
		3Q 2018	NO DATA (Per letter Sept. stream/pond samples destroyed by UPS in transit to lab; assume 11/29/18 samples intended to replace)											
UD1	Deer Creek, Up	11/29/2018	3500	7.7	7.6	570	6	229	<7	1.18	0.121	<0.2	121	<5
LD1	Little Deer Creek, Up	11/29/2018	1200	7.8	8.0	281	3	106	<7	0.279	0.105	<0.2	58.5	<5
DD2*	Deer Crk, Mid (above L. Deer/S1)	11/29/2018	3600	7.6	7.8	701	3	147	<7	0.307	0.046	<0.2	59.5	<5
DD1/DDC	Deer Creek, Down	11/29/2018	4800	7.7	7.9	363	2	136	<7	0.257	0.059	<0.2	58.3	<5
S1	Deep Mine Discharge	11/29/2018	10	7.6	7.9	1040	4	492	<7	0.864	0.478	0.260	257	6.5
S2	DeepMineDisch./Delete frm Program	11/29/2018	NR (Indianola BAMR Project lowered mine pool in 2013 and discharge stopped)											
*1st sampled 1Q 18, should change to upstream of S1														
UD1	Deer Creek, Up	12/19/2018	3300	7.8	7.7	NR	6	211	<7	1.15	0.115	0.2	116	8.5
LD1	Little Deer Creek, Up	12/19/2018	1300	7.7	8.1	NR	2	135	<7	0.341	0.054	<0.2	103	<5
DD2*	Deer Crk, Mid (above L. Deer/S1)	12/19/2018	4000	7.8	7.8	NR	2	127	<7	0.334	0.044	<0.2	62.4	<5
DD1/DDC	Deer Creek, Down	12/19/2018	4800	7.8	7.9	NR	3	125	<7	0.142	0.082	<0.2	73.5	<5
S1	Deep Mine Discharge	12/19/2018	20	7.8	8.1	NR	3	485	<7	0.261	0.033	<0.2	259	13.0
S2	DeepMineDisch./Delete frm Program	12/19/2018	NR (Indianola BAMR Project lowered mine pool in 2013 and discharge stopped)											

Monitoring Point	Description	Date*	Flow (gpm)	Field pH	Lab pH	SC	Temp (C)	Alk (mg/l)	Acidity (mg/l)	Fe (mg/l)	Mn (mg/l)	Al (mg/l)	SO4 (mg/l)	SS (mg/l)
*1st sampled 1Q 18, should change to upstream of S1														
UD1	Deer Creek, Up	3/26/2019	3000	7.7	7.5	1195	6	295	<7	2.03	0.17	<0.2	174	7.5
LD1	Little Deer Creek, Up	3/26/2019	1200	7.9	8.3	649	7	107	<7	<0.2	0.107	<0.2	84.6	<5
DD2*	Deer Crk, Mid (above L. Deer/S1)	3/26/2019	4000	7.7	7.8	542	7	203	<7	0.642	0.081	<0.2	105	<5
DD1/DDC	Deer Creek, Down	3/26/2019	4800	7.8	7.9	894	7	185	<7	0.545	0.099	<0.2	100	<5
S1	Deep Mine Discharge	3/26/2019	5	7.7	8.0	1660	8	495	<7	2.27	0.152	0.625	282	56.5
S2	DeepMineDisch./Delete frm Program	3/26/2019	NR (Indianola BAMR Project lowered mine pool in 2013 and discharge stopped)											
*1st sampled 1Q 18, should change to upstream of S1														
UD1	Deer Creek, Up	6/27/2019	2500	7.8	7.7	895	12	247	<7	1.43	0.134	<0.2	125	7.5
LD1	Little Deer Creek, Up	6/27/2019	1200	8.0	8.2	416	13	118	<7	0.243	0.027	<0.2	108	<5
DD2*	Deer Crk, Mid (above L. Deer/S1)	6/27/2019	NO DATA (NOT SAMPLED)											
DD1/DDC	Deer Creek, Down	6/27/2019	4200	7.9	7.9	371	19	137	<7	0.414	0.041	<0.2	66.6	<5
S1	Deep Mine Discharge	6/27/2019	1	7.8	8.1	1652	14	518	<7	2.68	0.367	0.757	269	56.5
S2	DeepMineDisch./Delete frm Program	6/27/2019	NR (Indianola BAMR Project lowered mine pool in 2013 and discharge stopped)											
*1st sampled 1Q 18, should change to upstream of S1														
UD1	Deer Creek, Up	9/30/2019	3000	7.7	7.6	470	13	189	<7	3.22	0.258	2.0	82.6	44.5
LD1	Little Deer Creek, Up	9/30/2019	1200	8.0	8.0	466	11	97.7	<7	0.988	0.05	0.406	133	8.5
DD2*	Deer Crk, Mid (above L. Deer/S1)	9/30/2019	4000	8.0	7.9	877	12	421	<7	13.3	0.915	5.98	204	56.5
DD1/DDC	Deer Creek, Down	9/30/2019	4500	8.0	7.9	377	17	134	<7	3.73	0.251	2.21	56.8	71.0
S1	Deep Mine Discharge	9/30/2019	2	8.0	7.8	364	13	132	<7	2.32	0.207	2.32	46.2	71.5
S2	DeepMineDisch./Delete frm Program	9/30/2019	NR (Indianola BAMR Project lowered mine pool in 2013 and discharge stopped)											
*1st sampled 1Q 18, should change to upstream of S1														
UD1	Deer Creek, Up	12/11/2019	3500	7.5	7.6	456	2	129	<7	0.373	0.047	<0.2	62.6	601
LD1	Little Deer Creek, Up	12/11/2019	1300	7.5	7.9	480	2	108	<7	0.201	0.052	<0.2	86.8	<5
DD2*	Deer Crk, Mid (above L. Deer/S1)	12/11/2019	4000	7.5	7.7	559	1	127	<7	0.313	0.033	<0.2	55.1	7.0
DD1/DDC	Deer Creek, Down	12/11/2019	4800	7.5	7.7	564	1	123	<7	0.284	0.044	<0.2	59.3	71.0
S1	Deep Mine Discharge	12/11/2019	3	7.5	7.6	1516	1	469	<7	7.73	0.662	2.84	238	147
S2	DeepMineDisch./Delete frm Program	12/11/2019	NR (Indianola BAMR Project lowered mine pool in 2013 and discharge stopped)											
*1st sampled 1Q 18, should change to upstream of S1														
UD1	Deer Creek, Up	3/26/2020			7.50	376		165	<7.0	1.05	0.08	0.29	84.0	13.5
LD1	Little Deer Creek, Up	3/26/2020			8.00	286		107	<7.0	0.24	0.06	<0.2	235.0	<5.0

Monitoring Point	Description	Date*	Flow (gpm)	Field pH	Lab pH	SC	Temp (C)	Alk (mg/l)	Acidity (mg/l)	Fe (mg/l)	Mn (mg/l)	Al (mg/l)	SO4 (mg/l)	SS (mg/l)
DD2*	Deer Crk, Mid (above L. Deer/S1)	3/26/2020	NF	--	--	--	--	--	--	--	--	--	--	--
DD1/DDC	Deer Creek, Down	3/26/2020			7.80	337		128	<7.0	0.35	0.05	<0.2	71.1	<5.0
S1	Deep Mine Discharge	3/26/2020			7.80	912		477	<7.0	1.93	0.21	0.88	101.0	50
S2	DeepMineDisch./Delete frm Program	3/26/2020	NR (Indianola BAMR Project lowered mine pool in 2013 and discharge stopped)											
			In the 1st and 2nd Q 2020 only, total dissolved solids was provided											
UD1	Deer Creek, Up	6/30/2020			7.40	894		370	<7.0	4.16	0.32	0.20	231.0	87
LD1	Little Deer Creek, Up	6/30/2020			8.20	1060		227	<7.0	<2.00	0.02	<0.2	450.0	<5.0
DD2*	Deer Crk, Mid (above L. Deer/S1)	6/30/2020			7.80	880		393	<7.0	1.84	0.23	<0.2	218	15
DD1/DDC	Deer Creek, Down	6/30/2020			7.80	972		326	<7.0	1.04	0.16	<0.2	285.0	<5.0
S1	Deep Mine Discharge	6/30/2020	NF	--	--	--	--	--	--	--	--	--	--	--
S2	DeepMineDisch./Delete frm Program	6/30/2020	NR (Indianola BAMR Project lowered mine pool in 2013 and discharge stopped)											
			In the 1st and 2nd Q 2020 only, total dissolved solids was provided											

Data summary covers 2018 through 2Q 20; DDC should be DD1

NR = Not Reported

8.1(A)s checked did not indicate TDS vs. SC as required (but logged as SC since that was norm)

8.1(A)s do not include coordinates (or elevations)

August 27, 2020 Site Visit – Additional Photos

Deer Creek and Little Deer Creek (looking upstream from confluence)

Deer Creek (looking upstream from confluence with Little Deer Creek)

Little Deer Creek (looking upstream from confluence with Deer Creek)

Deer Creek (looking downstream from confluence with Little Deer Creek)

August 27, 2020 Site Visit – Additional Photos

SMP 02010301 – Little Deer Creek Sampling Point LD1 (looking upstream)

SMP 02010301 – Deer Creek Sampling Point DD1 (looking upstream)

Former Outfall 006

Catch basin to Outfall 009 with holes in the filter insert