

Application Type New
Facility Type Industrial
Major / Minor Minor

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

Application No. PA0253448
APS ID 600840
Authorization ID 656370

Applicant and Facility Information

Applicant Name	<u>Gavco Materials, Inc.</u>	Facility Name	<u>Charleroi Plant</u>
Applicant Address	<u>1739 Grange Road</u> <u>Charleroi, PA 15022-3429</u>	Facility Address	<u>1739 Grange Road</u> <u>Charleroi, PA 15022-3429</u>
Applicant Contact	<u>Jason Sherid</u>	Facility Contact	<u>***same as applicant***</u>
Applicant Email	<u>jsherid@gavcomaterials.com</u>	Facility Email	<u>***same as applicant***</u>
Client ID	<u>245214</u>	Site ID	<u>664973</u>
SIC Code	<u>3273</u>	Municipality	<u>Fallowfield Township</u>
SIC Description	<u>Manufacturing - Ready-Mixed Concrete</u>	County	<u>Washington</u>
Date Application Received	<u>November 27, 2006</u>	EPA Waived?	<u>Yes</u>
Date Application Accepted	<u>February 8, 2007</u>	If No, Reason	<u></u>
Purpose of Application	<u>Issuance of an NPDES permit for discharges of industrial waste and storm water associated with industrial activities.</u>		

Summary of Review

On November 28, 2005, Gavco Materials, Inc. (Gavco) submitted a Notice of Intent to cover discharges from Gavco's Charleroi Plant under the PAG-03 "General Permit for Discharges of Stormwater Associated with Industrial Activity". In a letter dated June 22, 2006, the Department of Environmental Protection (DEP) denied coverage for the Charleroi Plant under the PAG-03 because the plant discharges non-storm water sources that are not authorized by the PAG-03 General Permit.


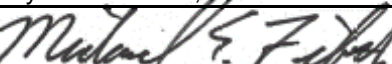
On November 22, 2006, Gavco submitted an application for a new individual NPDES permit for discharges of industrial waste and storm water associated with industrial activities from Gavco's Charleroi Plant. The application was received by DEP on November 27, 2006 and was accepted as administratively complete on February 8, 2007 after Gavco addressed administrative deficiencies by submitting proof of public notice of the application in a local newspaper and effluent analytical data, which were absent from the 2006 application.

For various reasons, including DEP's plan to develop a regional approach to regulate process wastewater discharges from concrete batch plants that were ineligible for coverage under the PAG-03, DEP did not act on Gavco's application. On March 2, 2020, DEP requested Gavco to submit an updated NPDES permit application reflecting the latest site conditions. On July 28, 2020, DEP conducted an inspection of the Charleroi Plant and confirmed the application items to be updated—primarily consisting of new effluent analytical results.

On October 26, 2020, Gavco submitted application updates, including analytical results for all outfalls that could be located and were discharging.

Facility Description

The Charleroi Plant is an existing ready-mixed concrete batch plant. The site is approximately 6.89 acres. In addition to ready-mixed concrete, the plant also manufactures pre-cast concrete structures and retail builders supply products. The facility has an office building, product storage areas, three-bay interior truck wash recycle system, and a maintenance garage. The site

Approve	Deny	Signatures	Date
✓		 Ryan C. Decker, P.E. / Environmental Engineer	April 12, 2023
X		 Michael E. Fifth, P.E. / Environmental Engineer Manager	April 20, 2023

Summary of Review

is separated into an upper portion and a lower portion by a steep hillside and the lower portion of the site is bisected by a stream. There is an access road from the lower area to the upper area on the west side of the site and a broad bridge connecting the two lower halves of the site with a culvert for the stream to pass through.

Raw materials for ready-mixed concrete are delivered to the site by truck and stored in outdoor bins. A front loader loads dry materials into the batch plant. Once the materials are mixed to the proper consistency, the dry materials are loaded into a mixing truck and then water is added to the truck. After loading, trucks pull forward to the side of the office building where the exterior of the trucks are washed with detergents. The wash water is part of a closed-loop system. Minimal amounts of water are obtained from the public water supply. There is no heat added to the water during the recycle process so thermal loading is not a concern. The product is delivered to the user in a non-hardened state.

During the July 28, 2020 inspection, DEP observed a pump in the stream running through the middle of the site and plumbed to piping—presumably for supplemental water supply. The pump was later removed.

Much of the petroleum and hazardous materials stored onsite are under roof and protected from storm water. Five-hundred-gallon heating oil tanks are located at the storage shed and maintenance garage. The plastic containers holding the fleet wash chemicals are situated outside near the office building. A 15,000-gallon aboveground steel diesel fuel tank has tertiary containment with a berm to prevent the collection of storm water in the containment area. Raw materials used to make concrete are stored in bins to reduce runoff potential. The interior of the concrete truck drums is washed out into pits. When the pits fill with sediment, the solids are removed and placed in an adjacent drying area. Dried material is used as clean fill.

The facility is currently idle.

Outfall Description

The facility has a total of eight outfalls that discharge directly or indirectly to an unnamed tributary of Pigeon Creek that runs through the middle portion of the lower plant area. The unnamed tributary of Pigeon Creek is designated in 25 Pa. Code § 93.9v for the protection of Warm Water Fishes (WWF).

Outfall 001 receives offsite storm water piped under Grange Road from a ditch running along the south side of the road, and runoff from a small drainage area along the site's southern boundary (north of Grange Road), which may include part of the access road to the lower plant. There is a catch basin on the northern side of Grange Road with an outlet pipe in the direction of the stream. The Outfall 001 discharge pipe has not been located. It is unknown if the connection to the stream is in a visible location or in the culvert beneath the bridge that connects the two halves of the lower plant area. No other inlets to Outfall 001 were identified during DEP's July 28, 2020 inspection.

Outfall 002 receives storm water from a catch basin located along Interstate 70 that transmits flow beneath the upper portion of the site to the hillside where, according to a site plan included with the application, the storm water cascades down the hill. The cascading storm water may flow into a catch basin on the lower portion of the site, but the catch basin shown on the site plan has not been located. The site plan also shows a discharge pipe from the catch basin to the unnamed tributary, but the outfall is in the culverted section of the stream and is not readily accessible.

Outfall 003 discharges storm water from a vegetated embankment northwest of the storage shed that flows into a catch basin outside the storage shed's garage door. The roof gutter drains from the shed flow by sheet flow to Outfall 008.

Outfall 004 discharges from a sediment trap that receives wash water and storm water runoff overflowing from a sump beneath a truck wash pad located next to the unnamed tributary on the tributary's south side. The lower plant area south of the unnamed tributary generally slopes toward the truck wash, so the outfall also appears to receive runoff from the batching facility and the aggregate storage bins.

Outfall 005 discharges storm water from a grassy area along Interstate 70 and a portion of the concrete parking lot on the northwest side of the road that connects the lower and upper portions of the site.

Outfall 006 may discharge storm water runoff from the vegetated hillside embankment in the middle of the site, and storm water runoff from the yard where concrete blocks are stored. Like Outfall 002, the site plan included with the application identifies a catch basin in the yard. DEP's understanding is that the catch basin was located during the July 28, 2020 inspection, but it is clogged with sediment and the outlet pipe from the catch basin could not be located.

Summary of Review

Outfall 008 was identified by DEP as a new outfall for existing overflow discharges from the truck washout recycle system. The outfall also receives roof drainage from the storage shed and any manual releases of storm water collected within the containment dike for the diesel fuel storage tank next to the shed.

Facility Improvements

Previously, Gavco would pour any leftover cement from a delivery into forms to make large concrete blocks. The forms were stored on concrete slabs east of the recycle system adjacent to the tributary. The trucks would first coat the forms with a mixture containing diesel fuel to prevent the cement from sticking to the form, but the mixture would leak from the bottom of the concrete forms. This led to staining and potential migration of the diesel fuel into the tributary and/or soil and groundwater. The facility no longer uses this practice and instead uses an environmentally safe form release agent. There were no signs of diesel fuel staining during the inspection on July 28, 2020.

The facility used to dump unused concrete above the concrete form area which formed a large, non-uniform pile of hardened concrete. Additionally, the facility used to dispose the unused concrete on the upper portion of the site in an earthen truck wash area which drained over the cliff onto the hardened concrete dump below. The cliff eroded and the eroded material migrated offsite towards the stream. Immediately following an inspection by DEP on February 7, 2006, Gavco installed super silt fence and hay bales along the edge of the erosion path to prevent the material from leaving the property and entering the stream. In 2020, the applicant stated "The hillside appears to be stable and growing vegetation, where there [are] soils available. The operator currently proposes to leave this area alone and not re-disturb it at this time."

In the 2020 application update, Gavco stated its intention to eliminate process wastewater discharges from Outfalls 004 and 008. The plan for Outfall 004 is to install a tank near the truck wash sump with a pump and float switch to collect and pump water to the truck washout basins on the northern side of the lower plant. Similarly, the plan for Outfall 008 was to install a tank adjacent to the truck washout basins with a pump and float switch to act as surge capacity for the basins and prevent overflows. The status of these projects is unknown, but DEP notes that Outfalls 004 and 008 will be identified in the permit regardless of whether the tanks have been installed because, due to the frequency, intensity, and duration of storm events, there is the potential for storm water runoff volumes to exceed the tanks' storage capacity and cause a discharge.

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.	<u>001</u>	Design Flow (MGD)	<u>Variable</u>
Latitude	<u>40° 7' 49.04"</u>	Longitude	<u>-79° 58' 21.35"</u>
Quad Name	<u>Monongahela</u>	Quad Code	<u>1706</u>
Wastewater Description:	<u>Storm water from one of Gavco's site entrances and offsite storm water from Grange Road and a grassy area along Grange Road</u>		
Receiving Waters	<u>Unnamed Tributary of Pigeon Creek (WWF)</u>	Stream Code	<u>39677</u>
NHD Com ID	<u>99410160</u>	RMI	<u>0.99</u>
Drainage Area		Yield (cfs/mi ²)	
Q ₇₋₁₀ Flow (cfs)		Q ₇₋₁₀ Basis	
Elevation (ft)		Slope (ft/ft)	
Watershed No.	<u>19-C</u>	Chapter 93 Class.	<u>WWF</u>
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
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>310</u>	<u>Gavco's updated NPDES permit application</u>	
Other:			
Nearest Downstream Public Water Supply Intake	<u>PA American Water Company – Aldrich</u>		
PWS ID	<u>5020039</u>	PWS Withdrawal (MGD)	<u>70.0</u>
PWS Waters	<u>Monongahela River</u>	Flow at Intake (cfs)	<u>550</u>
PWS RMI	<u>25.34</u>	Distance from Outfall (mi)	<u>approx. 17.8</u>

Changes Since Last Permit Issuance: None; permit is new.

Other Comments: Outfall pipe could not be located.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	<u>002</u>	Design Flow (MGD)	<u>Variable</u>
Latitude	<u>40° 7' 49.21"</u>	Longitude	<u>-79° 58' 22.64"</u>
Quad Name	<u>Monongahela</u>	Quad Code	<u>1706</u>

Wastewater Description: Storm water runoff from the lower support area; storm water runoff from the upper bench; and storm water runoff from Interstate 70

Receiving Waters	<u>Unnamed Tributary of Pigeon Creek (WWF)</u>	Stream Code	<u>39677</u>
NHD Com ID	<u>99410160</u>	RMI	<u>0.97</u>
Drainage Area	<u></u>	Yield (cfs/mi ²)	<u></u>
Q ₇₋₁₀ Flow (cfs)	<u></u>	Q ₇₋₁₀ Basis	<u></u>
Elevation (ft)	<u></u>	Slope (ft/ft)	<u></u>
Watershed No.	<u>19-C</u>	Chapter 93 Class.	<u>WWF</u>
Existing Use	<u></u>	Existing Use Qualifier	<u></u>
Exceptions to Use	<u></u>	Exceptions to Criteria	<u></u>

Assessment Status Attaining Use(s)

Cause(s) of Impairment

Source(s) of Impairment

TMDL Status Name

Background/Ambient Data	Data Source
pH (SU) <u></u>	<u></u>
Temperature (°F) <u></u>	<u></u>
Hardness (mg/L) <u>310</u>	<u>Gavco's updated NPDES permit application</u>
Other: <u></u>	<u></u>

Nearest Downstream Public Water Supply Intake	<u>PA American Water Company – Aldrich</u>
PWS ID <u>5020039</u>	PWS Withdrawal (MGD) <u>70.0</u>
PWS Waters <u>Monongahela River</u>	Flow at Intake (cfs) <u>550</u>
PWS RMI <u>25.34</u>	Distance from Outfall (mi) <u>approx. 17.8</u>

Changes Since Last Permit Issuance: None; permit is new.

Other Comments: Outfall pipe could not be located.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	<u>003</u>	Design Flow (MGD)	<u>Variable</u>
Latitude	<u>40° 07' 49.2"</u>	Longitude	<u>-79° 58' 24.7"</u>
Quad Name	<u>Monongahela</u>	Quad Code	<u>1706</u>
Wastewater Description: <u>Storm water from the lower support area</u>			
Receiving Waters	<u>Unnamed Tributary of Pigeon Creek (WWF)</u>	Stream Code	<u>39677</u>
NHD Com ID	<u>99410160</u>	RMI	<u>0.93</u>
Drainage Area	<u></u>	Yield (cfs/mi ²)	<u></u>
Q ₇₋₁₀ Flow (cfs)	<u></u>	Q ₇₋₁₀ Basis	<u></u>
Elevation (ft)	<u></u>	Slope (ft/ft)	<u></u>
Watershed No.	<u>19-C</u>	Chapter 93 Class.	<u>WWF</u>
Existing Use	<u></u>	Existing Use Qualifier	<u></u>
Exceptions to Use	<u></u>	Exceptions to Criteria	<u></u>
Assessment Status	<u>Attaining Use(s)</u>		
Cause(s) of Impairment	<u></u>		
Source(s) of Impairment	<u></u>		
TMDL Status	<u></u>	Name	<u></u>
Background/Ambient Data		Data Source	
pH (SU)	<u></u>		<u></u>
Temperature (°F)	<u></u>		<u></u>
Hardness (mg/L)	<u>310</u>		<u>Gavco's updated NPDES permit application</u>
Other:	<u></u>		<u></u>
Nearest Downstream Public Water Supply Intake	<u>PA American Water Company – Aldrich</u>		
PWS ID	<u>5020039</u>	PWS Withdrawal (MGD)	<u>70.0</u>
PWS Waters	<u>Monongahela River</u>	Flow at Intake (cfs)	<u>550</u>
PWS RMI	<u>25.34</u>	Distance from Outfall (mi)	<u>approx. 17.8</u>

Changes Since Last Permit Issuance: None; permit is new.

Other Comments:

Discharge, Receiving Waters and Water Supply Information

Outfall No.	<u>004</u>	Design Flow (MGD)	<u>0.0002</u>
Latitude	<u>40° 07' 49.0"</u>	Longitude	<u>-79° 58' 25.2"</u>
Quad Name	<u>Monongahela</u>	Quad Code	<u>1706</u>
Wastewater Description: <u>Effluent waste from the truck wash and storm water from the lower plant area</u>			
Receiving Waters	<u>Unnamed Tributary of Pigeon Creek (WWF)</u>	Stream Code	<u>39677</u>
NHD Com ID	<u>99410160</u>	RMI	<u>0.92</u>
Drainage Area	<u>1.04</u>	Yield (cfs/mi ²)	<u>0.0105</u>
Q ₇₋₁₀ Flow (cfs)	<u>0.01092</u>	Q ₇₋₁₀ Basis	<u>USGS StreamStats</u>
Elevation (ft)	<u>1,002</u>	Slope (ft/ft)	<u>0.013</u>
Watershed No.	<u>19-C</u>	Chapter 93 Class.	<u>WWF</u>
Existing Use	<u>Equal to Designated Use (WWF)</u>	Existing Use Qualifier	<u></u>
Exceptions to Use	<u></u>	Exceptions to Criteria	<u></u>
Assessment Status	<u>Attaining Use(s)</u>		
Cause(s) of Impairment	<u></u>		
Source(s) of Impairment	<u></u>		
TMDL Status	<u>N/A</u>	Name	<u>N/A</u>
Background/Ambient Data	Data Source		
pH (SU)	<u></u>	<u></u>	
Temperature (°F)	<u></u>	<u></u>	
Hardness (mg/L)	<u>310</u>	<u>Gavco's updated NPDES permit application</u>	
Other:	<u></u>	<u></u>	
Nearest Downstream Public Water Supply Intake	<u>PA American Water Company – Aldrich</u>		
PWS ID	<u>5020039</u>	PWS Withdrawal (MGD)	<u>70.0</u>
PWS Waters	<u>Monongahela River</u>	Flow at Intake (cfs)	<u>550</u>
PWS RMI	<u>25.34</u>	Distance from Outfall (mi)	<u>approx. 17.8</u>

Changes Since Last Permit Issuance: None; permit is new.

Other Comments:

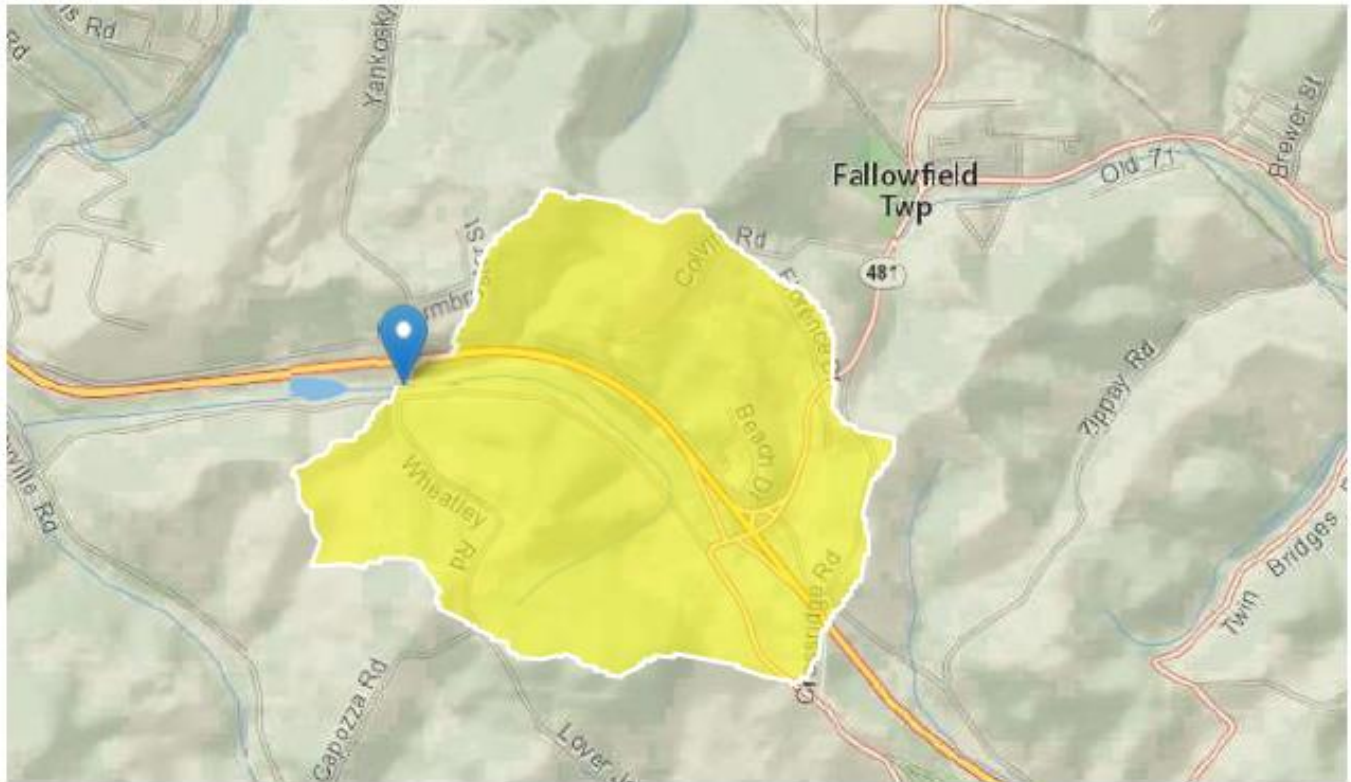
StreamStats Report

Region ID: PA

Workspace ID: PA20220517171808831000

Clicked Point (Latitude, Longitude): 40.13023, -79.97363

Time: 2022-05-17 13:18:30 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	1.04	square miles
ELEV	Mean Basin Elevation	1188	feet

Low-Flow Statistics Parameters [Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.04	square miles	2.26	1400

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
ELEV	Mean Basin Elevation	1188	feet	1050	2580

Low-Flow Statistics Disclaimers [Low Flow Region 4]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

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

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.0291	ft ³ /s
30 Day 2 Year Low Flow	0.056	ft ³ /s
7 Day 10 Year Low Flow	0.00857	ft ³ /s
30 Day 10 Year Low Flow	0.0183	ft ³ /s
90 Day 10 Year Low Flow	0.0373	ft ³ /s

Low-Flow Statistics Citations

Stuckey, M.H., 2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (<http://pubs.usgs.gov/sir/2006/5130/>)

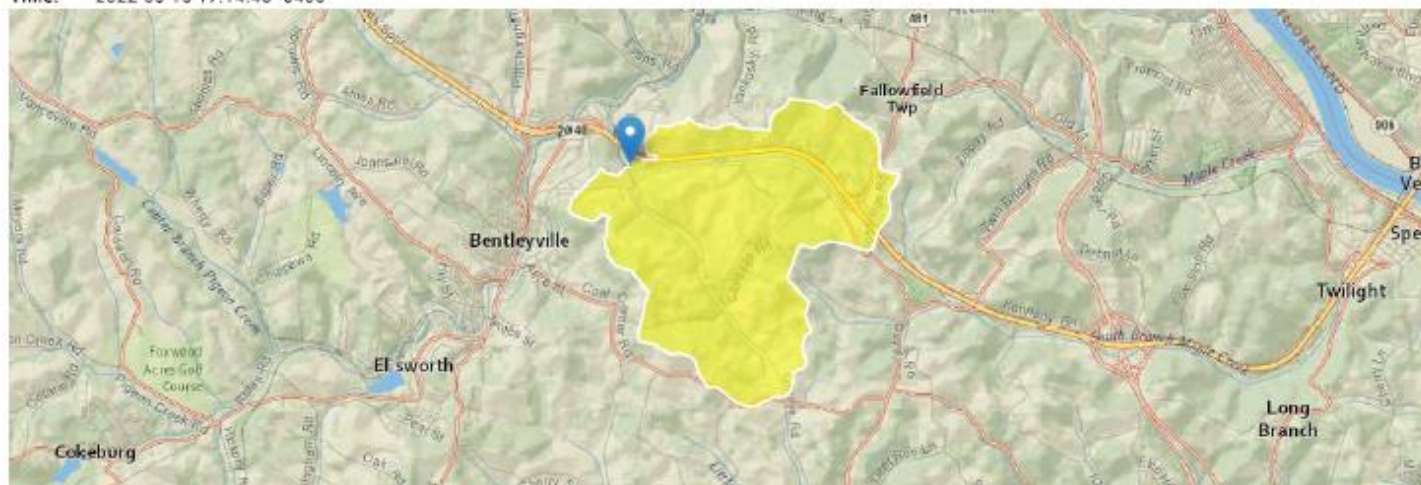
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Basin Delineation (minimum drainage area)

Region ID: PA
Workspace ID: PA20220815211424920000
Clicked Point (Latitude, Longitude): 40.12948, -79.99040
Time: 2022-08-15 17:14:45 -0400



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	3.22	square miles
ELEV	Mean Basin Elevation	1145	feet

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	3.22	square miles	2.26	1400
ELEV	Mean Basin Elevation	1145	feet	1050	2580

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

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

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	0.102	ft ³ /s	43	43
30 Day 2 Year Low Flow	0.186	ft ³ /s	38	38
7 Day 10 Year Low Flow	0.0338	ft ³ /s	66	66
30 Day 10 Year Low Flow	0.0661	ft ³ /s	54	54
90 Day 10 Year Low Flow	0.126	ft ³ /s	41	41

Low-Flow Statistics Citations

Stuckey, M.H., 2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (<http://pubs.usgs.gov/sir/2006/5130/>)

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Discharge, Receiving Waters and Water Supply Information

Outfall No.	<u>005</u>	Design Flow (MGD)	<u>Variable</u>
Latitude	<u>40° 07' 50.1"</u>	Longitude	<u>-79° 58' 25.7"</u>
Quad Name	<u>Monongahela</u>	Quad Code	<u>1706</u>
Wastewater Description: <u>Storm water from the upper parking/support area</u>			
Receiving Waters	<u>Unnamed Tributary of Pigeon Creek (WWF)</u>	Stream Code	<u>39677</u>
NHD Com ID	<u>99410160</u>	RMI	<u>0.91</u>
Drainage Area	<u></u>	Yield (cfs/mi ²)	<u></u>
Q ₇₋₁₀ Flow (cfs)	<u></u>	Q ₇₋₁₀ Basis	<u></u>
Elevation (ft)	<u></u>	Slope (ft/ft)	<u></u>
Watershed No.	<u>19-C</u>	Chapter 93 Class.	<u>WWF</u>
Existing Use	<u></u>	Existing Use Qualifier	<u></u>
Exceptions to Use	<u></u>	Exceptions to Criteria	<u></u>
Assessment Status	<u>Attaining Use(s)</u>		
Cause(s) of Impairment	<u></u>		
Source(s) of Impairment	<u></u>		
TMDL Status	<u></u>	Name	<u></u>
Background/Ambient Data		Data Source	
pH (SU)	<u></u>		<u></u>
Temperature (°F)	<u></u>		<u></u>
Hardness (mg/L)	<u>310</u>		<u>Gavco's updated NPDES permit application</u>
Other:	<u></u>		<u></u>
Nearest Downstream Public Water Supply Intake	<u>PA American Water Company – Aldrich</u>		
PWS ID	<u>5020039</u>	PWS Withdrawal (MGD)	<u>70.0</u>
PWS Waters	<u>Monongahela River</u>	Flow at Intake (cfs)	<u>550</u>
PWS RMI	<u>25.34</u>	Distance from Outfall (mi)	<u>approx. 17.8</u>

Changes Since Last Permit Issuance: None; permit is new.

Other Comments:

Discharge, Receiving Waters and Water Supply Information

Outfall No.	<u>006</u>	Design Flow (MGD)	<u>Variable</u>
Latitude	<u>40° 7' 49.25"</u>	Longitude	<u>-79° 58' 20.70"</u>
Quad Name	<u>Monongahela</u>	Quad Code	<u>1706</u>
Wastewater Description: <u>Storm water from the lower support area</u>			
Receiving Waters	<u>Unnamed Tributary of Pigeon Creek (WWF)</u>	Stream Code	<u>39677</u>
NHD Com ID	<u>99410160</u>	RMI	<u>1.00</u>
Drainage Area		Yield (cfs/mi ²)	
Q ₇₋₁₀ Flow (cfs)		Q ₇₋₁₀ Basis	
Elevation (ft)		Slope (ft/ft)	
Watershed No.	<u>19-C</u>	Chapter 93 Class.	<u>WWF</u>
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
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>310</u>	<u>Gavco's updated NPDES permit application</u>	
Other:			
Nearest Downstream Public Water Supply Intake	<u>PA American Water Company – Aldrich</u>		
PWS ID	<u>5020039</u>	PWS Withdrawal (MGD)	<u>70.0</u>
PWS Waters	<u>Monongahela River</u>	Flow at Intake (cfs)	<u>550</u>
PWS RMI	<u>25.34</u>	Distance from Outfall (mi)	<u>approx. 17.8</u>

Changes Since Last Permit Issuance: None; permit is new.

Other Comments: Outfall pipe could not be located.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	<u>007</u>	Design Flow (MGD)	<u>Variable</u>
Latitude	<u>40° 07' 49.1"</u>	Longitude	<u>-79° 58' 23.7"</u>
Quad Name	<u>Monongahela</u>	Quad Code	<u>1706</u>
Wastewater Description: <u>Storm water from the plant area</u>			
Receiving Waters	<u>Unnamed Tributary of Pigeon Creek (WWF)</u>	Stream Code	<u>39677</u>
NHD Com ID	<u>99410160</u>	RMI	<u>0.95</u>
Drainage Area		Yield (cfs/mi ²)	
Q ₇₋₁₀ Flow (cfs)		Q ₇₋₁₀ Basis	
Elevation (ft)		Slope (ft/ft)	
Watershed No.	<u>19-C</u>	Chapter 93 Class.	<u>WWF</u>
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
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>310</u>	<u>Gavco's updated NPDES permit application</u>	
Other:			
Nearest Downstream Public Water Supply Intake	<u>PA American Water Company – Aldrich</u>		
PWS ID	<u>5020039</u>	PWS Withdrawal (MGD)	<u>70.0</u>
PWS Waters	<u>Monongahela River</u>	Flow at Intake (cfs)	<u>550</u>
PWS RMI	<u>25.34</u>	Distance from Outfall (mi)	<u>approx. 17.8</u>

Changes Since Last Permit Issuance: None; permit is new.

Other Comments:

Discharge, Receiving Waters and Water Supply Information

Outfall No.	<u>008</u>	Design Flow (MGD)	<u>0.0002</u>
Latitude	<u>40° 07' 49.2"</u>	Longitude	<u>-79° 58' 24.4"</u>
Quad Name	<u>Monongahela</u>	Quad Code	<u>1706</u>
Wastewater Description:	<u>Effluent waste from the drum wash and storm water from the storage shed roof and diesel fuel storage tank containment dike</u>		
Receiving Waters	<u>Unnamed Tributary of Pigeon Creek (WWF)</u>	Stream Code	<u>39677</u>
NHD Com ID	<u>99410160</u>	RMI	<u>0.94</u>
Drainage Area	<u>0.86</u>	Yield (cfs/mi ²)	<u></u>
Q ₇₋₁₀ Flow (cfs)	<u></u>	Q ₇₋₁₀ Basis	<u></u>
Elevation (ft)	<u>1002.69</u>	Slope (ft/ft)	<u>0.013</u>
Watershed No.	<u>19-C</u>	Chapter 93 Class.	<u>WWF</u>
Existing Use	<u></u>	Existing Use Qualifier	<u></u>
Exceptions to Use	<u></u>	Exceptions to Criteria	<u></u>
Assessment Status	<u>Attaining Use(s)</u>		
Cause(s) of Impairment	<u></u>		
Source(s) of Impairment	<u></u>		
TMDL Status	<u></u>	Name	<u></u>
Background/Ambient Data	Data Source		
pH (SU)	<u></u>	<u></u>	
Temperature (°F)	<u></u>	<u></u>	
Hardness (mg/L)	<u>310</u>	<u>Gavco's updated NPDES permit application</u>	
Other:	<u></u>	<u></u>	
Nearest Downstream Public Water Supply Intake	<u>PA American Water Company – Aldrich</u>		
PWS ID	<u>5020039</u>	PWS Withdrawal (MGD)	<u>70.0</u>
PWS Waters	<u>Monongahela River</u>	Flow at Intake (cfs)	<u>550</u>
PWS RMI	<u>25.34</u>	Distance from Outfall (mi)	<u>approx. 17.8</u>

Changes Since Last Permit Issuance: None; permit is new.

Other Comments:

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
ELEV	Mean Basin Elevation	1195	feet	1050	2580

Low-Flow Statistics Disclaimers [Low Flow Region 4]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

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

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.0236	ft ³ /s
30 Day 2 Year Low Flow	0.0458	ft ³ /s
7 Day 10 Year Low Flow	0.0068	ft ³ /s
30 Day 10 Year Low Flow	0.0147	ft ³ /s
90 Day 10 Year Low Flow	0.0303	ft ³ /s

Low-Flow Statistics Citations

Stuckey, M.H., 2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (<http://pubs.usgs.gov/sir/2006/5130/>)

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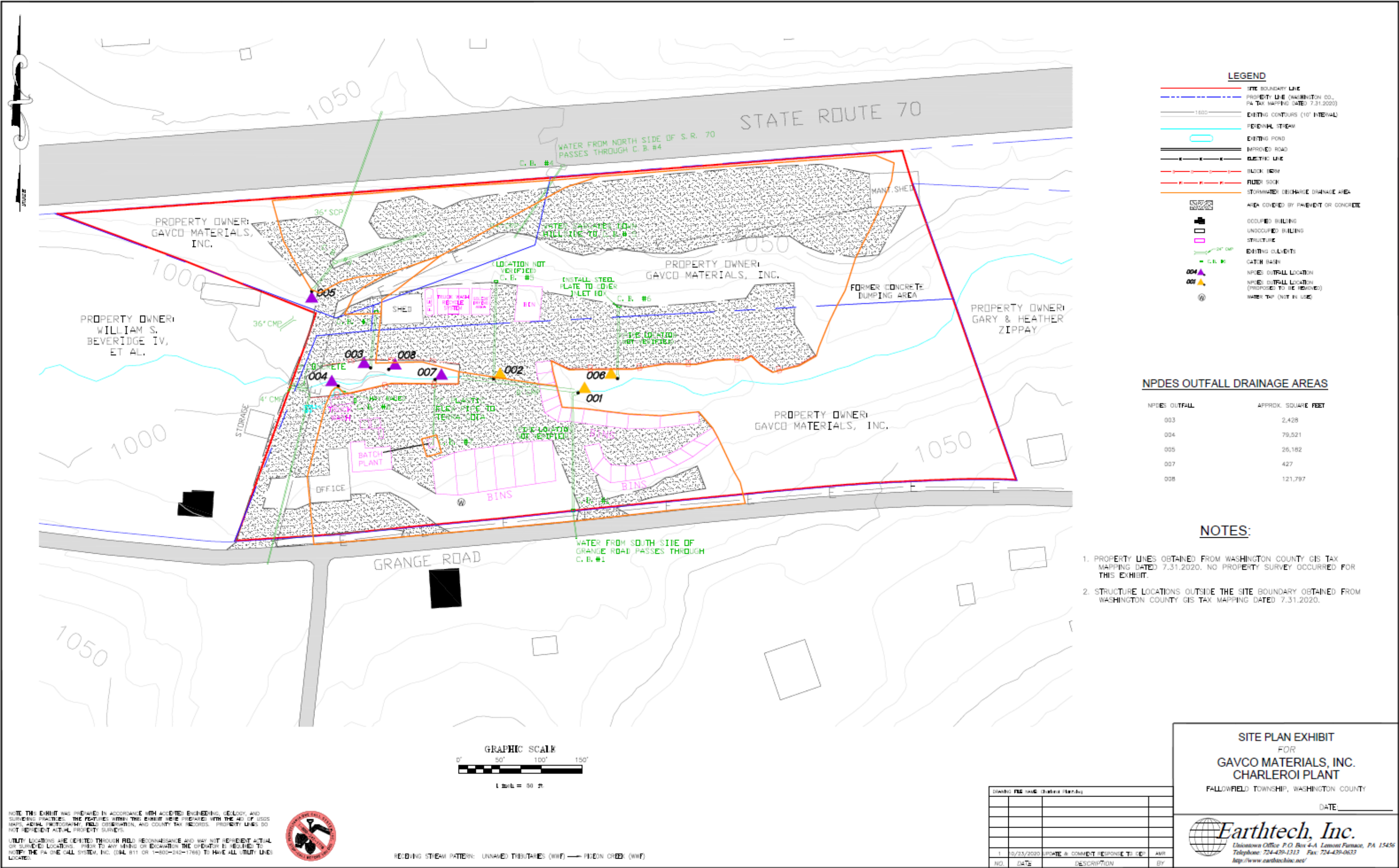
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Image Source and Date: Google Earth Pro, June 14, 2014.



Image Source and Date: Google Earth Pro, October 8, 2020.



Development of Effluent Limitations

Outfall No.	001	Design Flow (MGD)	Variable
Latitude	40° 7' 49.04"	Longitude	-79° 58' 21.35"
Wastewater Description: Storm water from one of Gavco's site entrances and offsite storm water from Grange Road and a grassy area along Grange Road			

Gavco excluded Outfall 001 from its updated NPDES permit application because the outfall "collects water from an area off-site in addition to the outlet not being found." However, neither of those reasons would lead DEP to recommend the exclusion of Outfall 001 from the permit.

Gavco conducted visual searches for the outfall but did not conduct dye testing to see if there is an outfall pipe that is covered or collapsed but still transmits flow. Based on site maps and site inspections, there is a catch basin on Gavco's property (see Image 1 below) that leads to a previously identified Outfall 001. There does not appear to be any ponding of water around the catch basin that indicates the outlet from the catch basin is blocked, so DEP's assessment is that an outfall still exists despite the lack of visual verification. Dye testing would be able to confirm the catch basin's discharge location.

The fact that Outfall 001 collects water from offsite does not lead DEP to recommend that Outfall 001 be excluded from the permit. The catch basin is located upgradient of the main industrial areas of the site, but there may be small contributions of storm water runoff from the site's access road off Grange Road and from the grassy area between Grange Road and Gavco's material storage bins. Some material spillage from the storage bins into the grassy area is visible in Image 1, so any runoff from that direction has the potential to exhibit industrial impacts. Gavco should ensure that the bins are not filled above the bins' sidewall elevations or the bins' sidewall elevations should be raised to accommodate higher material storage piles to prevent overtopping.

There are no known inlets between the catch basin and the previously identified outfall location shown on site maps, so the sources described above would be the only sources of industrial impacts to Outfall 001. Even if the outfall on Gavco's property only receives road runoff from Grange Road collected in a roadside ditch, the outfall still should be identified in the permit to document the existence of the outfall on Gavco's property and to document the source of discharge.

Image 1. Catch Basin to Outfall 001. Google Earth Pro, November 2021. Annotations by DEP.



With respect to offsite contributors, EPA explains how storm water run-on is handled in a regulatory setting in Table 2, Page 11 of EPA's "Industrial Stormwater Monitoring and Sampling Guide" [EPA 832-B-09-003, April 2021] reproduced below:

Table 2. Solutions to Typical Stormwater Sampling Problems

Problem	Solution
Run-on from Neighboring Properties	Ideally, your stormwater samples will contain only stormwater discharge from your site. However, stormwater from a neighboring facility can “run on” and commingle with your own regulated discharge, possibly adding contaminants not found at your facility. You are responsible for any and all pollutants discharged from your site irrespective of the pollutants’ origin and whether the other facility has permit coverage. This responsibility includes run-on discharges from neighboring properties if this discharge commingles with your own regulated discharge. To accommodate stormwater run-on, EPA requires as part of the SWPPP site description that you document the locations and sources of run-on. As part of this documentation, if you collect and analyze samples of the run-on, you will need to report all such findings in your SWPPP.

Since Gavco’s impacts to Outfall 001 are likely to be limited and controllable using Best Management Practices such as better management of material in the storage bins and limiting the tracking of materials onto the access road by vehicles, DEP is not proposing any monitoring requirements for Outfall 001. However, Outfall 001 and its effluent sources will be listed in the permit. DEP recommends that Gavco conduct dye testing to identify the discharge location for the catch basin.

Development of Effluent Limitations

Outfall No.	002	Design Flow (MGD)	Variable
Latitude	40° 7' 49.19"	Longitude	-79° 58' 22.64"
Wastewater Description: Storm water runoff from the lower support area; storm water runoff from the upper bench; and storm water runoff from Interstate 70			

Outfall 002 is similar to Outfall 001 in that the outfall primarily collects storm water runoff from offsite. A catch basin on the south side of Interstate 70 collects runoff from the interstate and pipes it to the edge of the upper bench of Gavco's site. The discharge from that pipe cascades down the hillside to another catch basin at the base of the hill northeast of the solids drying pad. Water entering that catch basin discharges to an Unnamed Tributary of Pigeon Creek in a culverted section of the tributary under Gavco's site. The outfall penetrates the culvert wall and is not readily accessible.

The catch basin shown at the base of the hill on site drawings was not readily located during site inspections. The catch basin may be behind the retaining wall of the hillside behind the property or it may be buried under materials.

Image 2. I-70 Catch Basin to Outfall 002. Google Earth Pro, November 2021. Annotations by DEP.



The fact that Outfall 002 collects storm water from offsite—and the potential presence of an unlocated catch basin that collects runoff impacted by Gavco's operations on the lower portion of the site—does not lead DEP to recommend that Outfall 002 be excluded from the permit. As described with Outfall 001, dischargers are responsible for all pollutants discharged from their site irrespective of the pollutants' origin.

However, DEP acknowledges that Outfall 002 is not readily accessible for sampling and that the onsite catch basin where sampling could be conducted may be buried. Therefore, DEP is not proposing any monitoring requirements for Outfall 002. However, Outfall 002 and its effluent sources will be listed in the permit in the absence of proof that the previously identified catch basin on the lower portion of the site no longer transmits flow. Other nearby outfalls will be used to gauge the effectiveness of Gavco's best management practices assuming the unlocated catch basin may receive and transmit storm water.

Development of Effluent Limitations

Outfall No. 003
Latitude 40° 07' 49.2"
Wastewater Description: Storm water from the lower support area
Design Flow (MGD) Variable
Longitude -79° 58' 24.7"

Image 3. Outfall 003 looking north. (July 28, 2020 by DEP).



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

There are no Federal Effluent Limitations Guidelines (ELGs) that apply to the storm water discharges at Outfall 003. In the absence of applicable ELGs, TBELs, if warranted, are developed based on Best Professional Judgment.

Consistent with 25 Pa. Code § 92a.61(h) and DEP's policy for permitting storm water discharges associated with industrial activities, minimum standards described in the PAG-03 will be applied to Gavco's storm water discharges. Based on Gavco's SIC Code of 3273, the facility would be 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 ready-mix concrete facilities that discharge storm water associated with their industrial activities, the monitoring requirements of Appendix N of the PAG-03 will be imposed at Outfall 003 and the Sector-Specific BMPs of Appendix N will be incorporated into the individual NPDES permit.

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

Discharge Parameter	Units	Appendix N Measurement Frequency	Sample Type	Benchmark Values
Total Nitrogen	mg/L	1 / 6 months	1 Grab	XXX
Total Phosphorus	mg/L	1 / 6 months	1 Grab	XXX
pH	S.U.	1 / 6 months	1 Grab	9.0
Total Suspended Solids	mg/L	1 / 6 months	1 Grab	100
Total Aluminum	mg/L	1 / 6 months	1 Grab	XXX
Total Iron	mg/L	1 / 6 months	1 Grab	XXX

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.

To the extent that effluent limits are necessary to ensure that storm water Best Management Practices (BMPs) are adequately implemented, effluent limits are 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.

Gavco reported in its October 2020 application update that it was unable to sample Outfall 003 due to an extended dry period, so the quality of Outfall 003's storm water discharges and the effectiveness of Gavco's BMPs within Outfall 003's drainage area are unknown. Consequently, no numerical TBELs are developed for this outfall.

TBELs may be warranted in the future if pollutant concentrations in storm water consistently exceed the benchmark values shown in **Table 1**. DEP uses benchmark monitoring in the PAG-03 as an indicator of the effectiveness of a facility's best management practices. The benchmark values for TSS and pH will be listed in Part C of the permit. The benchmark values are not effluent limitations and exceedances do not constitute permit violations. However, if sampling demonstrates exceedances of benchmark values for two consecutive monitoring periods, then Gavco must submit a corrective action plan within 90 days of the end of the monitoring period triggering the plan. The corrective action plan requirement and the benchmark values will be specified in a condition in Part C of the permit.

Estimates of the storm water discharge flow rate will be required pursuant to 25 Pa. Code § 92a.61(h).

003.B. Water Quality-Based Effluent Limitations (WQBELs)

No WQBELs are developed for discharges from Outfall 003. Generally, DEP does not develop numeric WQBELs for storm water discharges. Pursuant to 25 Pa. Code § 96.4(g), mathematical modeling used to develop WQBELs must be performed at Q₇₋₁₀ low-flow conditions. Precipitation-induced discharges generally do not occur at Q₇₋₁₀ 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.

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.

003.C. Effluent Limitations and Monitoring Requirements for Outfall 003

In accordance with 25 Pa. Code §§ 92a.12 and 92a.61, effluent limits at Outfall 003 are the more stringent of TBELs, WQBELs, regulatory effluent standards, and monitoring requirements.

Table 2. Effluent Limits and Monitoring Requirements for Outfall 003

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
Nitrogen, Total	—	—	—	Report	—	25 Pa. Code § 92a.61(h); PAG-03, Appendix N
Phosphorus, Total	—	—	—	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 at the time of sampling.

Development of Effluent Limitations

Outfall No.	004	Design Flow (MGD)	0.0002
Latitude	40° 07' 49.0"	Longitude	-79° 58' 25.2"
Wastewater Description: Effluent waste from the truck wash and storm water from the lower plant area			

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

Effluent Limitations Guidelines (ELGs) for Concrete Products

In February 1978, EPA published a "Guidance Development Document for Effluent Limitations Guidelines and New Source Performance Standards for the Concrete Products Point Source Category" [EPA 440/1-78/090]. The document presents the findings of an EPA study of the concrete products industry for the purpose of providing guidance to determine best practicable control technology currently available (BPT), best available demonstrated control technology, and best available technology economically achievable (BAT). The effluent guidelines in the document set forth the degree of effluent reduction attainable through the application of technologies available to the industry. EPA did not perform the statistically analyses it usually does to develop 30-day average and one-day maximum effluent limits for discharges within each sector of the concrete products industry, but the performance of treatment technologies at individual plants are summarized.

Although the document is comparable to the development documents used to develop and justify ELGs for other industrial point source categories, no ELGs for the Concrete Products Point Source Category have been finalized in the Code of Federal Regulations. Nevertheless, the 1978 Guidance Development Document provides guidance for regulating discharges from permanent ready-mixed concrete (RMC) plants like Gavco's Charleroi Plant.

In the 1978 Guidance Development Document, EPA discussed its conclusions for RMC plants (permanent and portable) as follows:

Data were obtained from plants with ages ranging from 1 to 43 years and productions ranging from 1,530 to 230,000 cubic meters per year (2,000 to 300,000 cubic yards per year).

The general process employed includes weighing, batching and mixing of cement, aggregates and water and delivery of ready-mixed concrete.

Treating raw wastes by ponding is currently used by approximately 94 percent of the plants contacted; most of these ponds (60%) are evaporation/percolation systems. The recycle of truck washout water is used by 38 percent of the plants; pH adjustment is currently used by approximately 2 percent of the plants contacted. Treatment of yard runoff is practiced by less than 1 percent of the industry. Settling of suspended solids, in ponds, sloped slab basins or mechanical clarifiers, recycle of clarified water for truck washout and pH adjustment prior to discharge is thus considered to be practicable for these subcategories. Current ASTM standards prevent the use of recycled washout water as mix water. Without a change in ASTM standards the ability of many plants to recycle washout water will be limited.

To implement this technology at plants not already using these control techniques would require the installation of settling ponds, sloped slab basins or mechanical clarification equipment, pumps and piping for recycle of washout water and pH control equipment. Some plants may require oil and grease removal equipment (skimmers). In addition, it is possible for yard runoff to be contaminated unless truck and mixer washoff and washout is adequately captured and the pH is neutralized. Runoff from batching operations and cement loading and unloading areas may also be similarly contaminated.

Fourteen permanent plants and eight portable plants achieve zero discharge. Eight permanent plants discharged waste water. The average performance of the plants with waste water discharges is TSS, 0.0013 kg/m³; oil and grease, 0.000084 kg/m³; and pH range from 5.7 to 11.8.

DEP notes that current ASTM standards (ASTM C1602/C1602M "Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete") allow for the reuse of process wastewaters as mixing water subject to certain conditions. That standard is discussed later in this Fact Sheet.

Related Effluent Guidelines

EPA has revisited requirements for concrete wash waters in rulemakings and publications since 1978.

On December 1, 2009, EPA promulgated 40 CFR part 450 – Construction and Development Point Source Category Effluent Limitations Guidelines. The ELGs were amended on March 6, 2014 to remove numerical effluent limits for turbidity and to make other minor revisions and clarifications. The regulations apply to discharges associated with construction activity. Gavco's Charleroi Plant is a permanent RMC plant that does not have discharges associated with construction activity. However, the regulation does regulate comparable discharges, including equipment and vehicle wash waters.

40 CFR § 450.21(d) requires facilities to design, install, implement, and maintain effective pollution prevention measures to minimize the discharge of pollutants. At a minimum, such measures must be designed, installed, implemented and maintained to:

- 1) Minimize the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other wash waters. Wash waters must be treated in a sediment basin or alternative control that provides equivalent or better treatment prior to discharge;
- 2) Minimize the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste and other materials present on the site to precipitation and to stormwater. Minimization of exposure is not required in cases where the exposure to precipitation and to stormwater will not result in a discharge of pollutants, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use); and
- 3) Minimize the discharge of pollutants from spills and leaks and implement chemical spill and leak prevention and response procedures.

Section 450.21(e)(1) prohibits discharges of wastewater from washout of concrete, unless managed by an appropriate control. EPA explains in the 2009 rulemaking (74 FR 63019) that the concrete washout provision is not an outright prohibition because there are technologies available to treat concrete washout. However, even with appropriate controls, discharging concrete washoff and washout is not the preferred method of process wastewater management at RMC plants, as demonstrated by EPA's 1978 Guidance Development Document in which EPA reported that a majority of the RMC plants it studied achieved zero discharge.

In the 2009 rulemaking (74 FR 63007), EPA also explained that the "unless managed by an appropriate control" provision was added specifically to address concerns from commenters that EPA did not propose to regulate other pollutants besides turbidity, such as pH (the turbidity limits were removed from Part 450 in 2014). EPA observed that many of the pollutants of concern are sediment bound pollutants, such as metals and nutrients, which could be controlled by non-numeric effluent limitations that limit the mobilization of sediment. Nevertheless, the "appropriate control" provision allows for discharges of concrete washout and related wash waters and permitting authorities could develop numerical effluent limits for specific pollutants in those discharges in accordance with permitting authorities' statutory and regulatory authority (see Section 402(a)(1) of the Clean Water Act and implementing regulations under 40 CFR § 125.3 and 25 Pa. Code §§ 92a.3(b)(4) and 92a.48(a)(3), which allow for the establishment of effluent limits on a case-by-case basis using Best Professional Judgment).

Industry Standards

The National Ready Mixed Concrete Association (NRMCA) and RMC Research & Education Foundation have published standards and guidance documents for environmental management at RMC plants. Pertinent documents include NRMCA's "Environmental Management for the RMC Industry" publication, which was developed with input from industry stakeholders, and the RMC Research & Education Foundation's "Sustainable Concrete Plant Guidelines" ², which summarize the main points of NRMCA's more comprehensive guidance. As guidelines developed by the industry for the industry, Gavco should be implementing the recommendations of those publications and, if Gavco is not, then DEP considers the recommendations in those publications to be reasonable for Gavco to implement.

The recommendations for water management at RMC plants in the Sustainable Concrete Plant Guidelines include the reduction of fresh water use in plant operations and batching, the collection and treatment of process water, and storm water management. The guidelines state the following:

At a ready mixed concrete facility, three categories of water must be addressed: fresh water, process water and stormwater. For the purposes of these Guidelines, the following definitions are provided for the three categories of water. Fresh water is water from a municipal source (tap), surface water or on-site wells that can be consumed as drinking water. Process water is water used directly or indirectly in the production of concrete such as batching

² The RMC Research & Education Foundation is now the Concrete Advancement Foundation. The Sustainable Concrete Plant Guidelines, Version 1.1 and other sustainability reports and guides are available here: <https://rmc-foundation.org/sustainability/>

concrete, washing activities and dust control. Stormwater is any precipitation from rain and snowmelt events that flow over land or impervious surfaces. Stormwater can become process water by coming into direct contact with source materials or commingling with process water. A successful water management program should:

- Minimize the use of fresh water.
- Limit the generation of process water.
- Collect, treat, and reuse as much process water as possible.
- Manage stormwater to prevent commingling with process water or otherwise becoming polluted.
- Collect and use stormwater for batching and other plant operations.

The amount of fresh water used at the plant can be significantly reduced through effective collection and recycling of process water and stormwater. Because the discharge of process water requires a permit and possibly treatment prior to discharge, recycling process water can be both environmentally and economically advantageous. Reducing stormwater runoff through infiltration and through stormwater harvesting can also provide significant environmental and economic benefit. In an effective water management strategy, fresh water, process water, and stormwater are each managed efficiently in daily operations and water disposal is minimal.

Credit 2.3, Credit 2.4, Credit 2.5, and Credit 2.6 in the "Sustainable Concrete Plant Guidelines" provide detailed information on structural and non-structural BMPs relating the reduction of fresh water use, collection and treatment of process water, and storm water management. As stated previously, Gavco should be implementing those BMPs in addition to other industry standards that minimize environmental impacts (e.g., dust control, proper chemical storage, material use optimization and recycling, etc.).

EPA's Storm Water BMPs for Concrete Washout

In February 2012, EPA published a Fact Sheet on Storm Water Best Management Practices for Concrete Washout (attached to this Fact Sheet for reference). The recommended BMPs are:

- 1) Collect and retain all the concrete washout water and solids in leak proof containers, so that this caustic material does not reach the soil surface and then migrate to surface waters or into the ground water
- 2) Recycle 100 percent of the collect concrete washout water and solids.

In addition to improving RMC plant efficiency, these BMPs support the diversion of recyclable materials from landfills. Table 1 in EPA's Fact Sheet is reproduced below and provides a summary of reuse opportunities for wash water, cement fines, aggregates, hardened concrete, and unused wet concrete.

Uses of Recycled Materials	Concrete Washout Materials					
	Washwater	Cement fines ^a	Fine aggregate	Coarse aggregate	Hardened concrete	Unused wet concrete
Reused to washout additional mixer truck chutes or drums	X					
Reused as a ready mixed concrete ingredient	X	X ^b	X	X		
Reused as an ingredient of precast concrete products, e.g., highway barriers, retaining wall blocks, riprap	X	X	X	X		X
Reused as crushed concrete products, e.g., road base or fill		X	X	X	X	
Reused to pave the yards of ready mixed concrete plants						X
Returned back to a surface water, e.g., river, lake, or estuary	X ^c					

a. Fine particles of cementitious material (e.g., Portland cement, slag cement, fly ash, silica fume)

b. Recyclable, if allowed by the concrete quality specifications

c. Treated to reduce the pH and remove metals, so it can be delivered to a municipal wastewater treatment plant, where it is treated further and then returned to a natural surface water

EPA again recognized the potential for wastewater discharges, but the discharges must be treated to remove sediments and metals and to neutralize caustic pH. For concrete washout, EPA states the following:

Washwater from concrete truck chutes, hand mixers, or other equipment can be passed through a system of weirs or filters to remove solids and then be reused to wash down more chutes and equipment at the construction site or

as an ingredient for making additional concrete. A three chamber washout filter is shown in Figure 3 [see **Attachment A** to this Fact Sheet]. The first stage collects the coarse aggregate. The middle stage filters out the small grit and sand. The third stage has an array of tablets that filter out fines and reduces the pH. The filtered washwater is then discharged through a filter sock. An alternative is to pump the washout water out of the washout container and treat the washwater off site to remove metals and reduce its pH...

Package concrete reclaimers paired with package pH adjustment and flocculant feed systems and multi-bay settling basins are commonly employed systems at RMC plants that enable 100% recycle of materials.

Sector-Specific BMPs

As explained in Section 003.A of this Fact Sheet, Appendix N of DEP's PAG-03 General Permit identifies monitoring requirements and BMPs that would apply to Gavco if it had no process wastewater discharges and was eligible for coverage under the PAG-03. The Sector-Specific BMPs of Appendix N that will be incorporated into Gavco's permit are listed below.

- Where applicable, the permittee shall install and maintain an adequately sized and impermeable retention structure(s) for the collection of truck barrel cleaning water and solids. Accumulated solids shall be removed and disposed of in accordance with applicable laws and regulations, as necessary. The permittee shall reuse collected washwater where determined to be feasible.
- Install and maintain runoff controls, as necessary, around truck wash off area(s). All wastewater collected in these area(s) shall be contained, reused, recycled on-site, or disposed of properly, as necessary.
- The permittee shall install and maintain berms, inlets, underground piping, or other runoff control devices in truck loading areas and other areas that have the potential to cause stormwater pollution, to divert uncontaminated stormwater away from such areas.
- Install and use dust control/collection systems around material handling, transfer, and mixing operations. Logs tracking dust control activities shall be maintained and kept on-site. All wastewater generated in these areas shall be reused/recycled on-site or otherwise disposed of in accordance with applicable laws and regulations.
- Store raw materials in permanent structures (enclosed silos, hoppers, buildings or under other structural covering) to contain the materials and prevent material contact with precipitation or runoff. This BMP does not apply to aggregate materials (e.g., stone, sand, etc.) that may be present on-site unless DEP determines that such materials are causing or contributing to pollution, in which case the BMP shall be implemented upon receipt of written notification from DEP in accordance with a schedule provided by DEP or an approved alternate schedule.
- Implement non-structural BMPs including, but not be limited to, routine housekeeping, dry clean-up of accumulated solids, and routine sweeping of impervious surfaces.
- Install and maintain silt sacks or other systems designed to collect solid materials in stormwater inlets to prevent the discharge of solids as part of any corrective action plan required by this ~~General~~ Permit or otherwise upon receipt of written notification from DEP.

Existing and Proposed Water Handling for Outfall 004

In its 2020 application update, Gavco proposed to install tanks to manage the discharge of process wastewaters. The tanks will provide extra water retention capacity and reduce the amount of water that discharges through process outfalls (004 and 008). Gavco explained its proposal for Outfall 004 from the truck wash as follows:

A tank is proposed to be placed adjacent to the existing concrete sump that collects surface runoff flow from site operations. Specifically, the process water entering this concrete sump comes from truck drivers hosing off the concrete truck after loading from the batch plant. Concrete dust and minor amounts of dripping will land on the exterior of the truck and thus this material is washed off to preserve the concrete truck condition. The 004 tributary area [is] paved with asphalt material where this washing occurs. The runoff water is contained with berms and ends up entering the concrete sump, then ultimately flowing into a small sediment trap and discharging from there into the stream. The proposed solution is to install a tank adjacent to the concrete sump and set up a pump with a float switch. [Therefore,] as water is generated, it will be pumped into the tank and contained. This water will be periodically transferred to the area where the concrete drum washout is located.

Images of the existing truck wash area and the sediment trap that discharges to Outfall 004 are shown on the following pages. The images were taken during DEP's July 2020 inspection of the facility. Based on Gavco's description, wash waters collected in the concrete sump are not reused for concrete batching. Also, it is evident that the sediment trap is not an engineered structure. The outlet from the sediment trap is lined with stones and covered with a filter sock.

Image 4. Truck wash and sediment trap (looking south). (July 28, 2020 by DEP)



Image 5. Overflow pipe to sediment trap. (July 28, 2020 by DEP)



Image 6. Outfall 004 sediment trap discharge to unnamed tributary of Pigeon Creek. (July 28, 2020 by DEP)



Regulatory Effluent Standards and Monitoring Requirements

Independent of any case-by-case TBELs, the following effluent standards and monitoring requirements apply to discharges of industrial waste from Outfall 004:

- Flow monitoring will be required in accordance with 25 Pa. Code § 92a.61(b).
- Limits for pH (6.0 minimum and 9.0 maximum) will be imposed at Outfall 001 based on 25 Pa. Code §§ 92a.48(a)(2) and § 95.2(1).
- Module 1 of the application states that oil and grease is a pollutant associated with RMC plant operations. Oil and grease was not present in Outfall 004's effluent samples. However, as potential oil-bearing wastewaters, discharges from Outfall 004 must meet the numeric and narrative oil and grease limitations specified in 25 Pa. Code § 95.2(2).
- A maximum limit of 7.0 mg/L is imposed for dissolved iron in accordance with 25 Pa. Code §§ 92a.48(a)(2) and § 95.2(4).

Best Available Technology (BAT)

Permanent RMC plants should be able to recycle 100% of their wash waters consistent with longstanding industry practices (dating to at least the 1970s as observed in EPA's 1978 Guidance Development Document). However, DEP recognizes that discharges may be necessary in some circumstances, such as when there are water reuse restrictions for certain customers' concrete specifications, which could lead to an excess of water that must be disposed. DEP's recognition is limited on that point because the same treatment technologies that would allow process wastewaters to be discharged to surface waters would allow process wastewaters to be reused instead of being discharged. Major concrete customers such

as PennDOT³ require mixing water to conform to ASTM C1602/C1602M (see Publication 408/2020, Sections 704.1(b) and 720.1). ASTM C1602/C1602M is the “Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete”, which recognizes the use of “water from concrete production operations” for mixing. “Water from concrete production operations” includes wash water from mixers or that was part of a concrete mixture; storm water runoff collected in a basin from concrete production facilities; and/or water that contains concrete ingredients. The use of water from concrete production operations for mixing is permissible subject to regular testing of the density of the reused water and testing to compare concrete made with water from concrete production operations to concrete made with potable water to determine compliance with minimum compressive strength and time of set requirements as specified in ASTM C1602/C1602M.

DEP also recognizes that there may be unavoidable contributions of contact storm water from uncovered process areas (i.e., unavoidable to the extent that the storm water is not intentionally added as a mixing water source).⁴ However, DEP’s recognition is limited to storm water runoff from rainfall in areas designated for washing and contact runoff from the yard (e.g., precipitation falling in the truck wash area) because structural BMPs allow RMC plants to redirect non-contact storm water away from areas that collect wash waters, thus preventing the contamination of storm water runoff and the need to manage contact storm water as process wastewater. Shelters also could be constructed to limit direct rainfall onto collection areas.

Numerical effluent limits are considered for any process wastewater discharges from Gavco’s Charleroi Plant that are necessitated by process wastewater reuse limitations. Section 402(a)(1) of the Clean Water Act allows for the establishment of effluent limits on a case-by-case basis using Best Professional Judgment (BPJ). DEP’s “Standard Operating Procedure (SOP) for Clean Water Program – Establishing Effluent Limitations for Individual Industrial Permits” states the following about BPJ evaluations:

Determine if any Best Professional Judgment (BPJ) technology-based effluent limits (TBELs) are appropriate for toxic pollutants. BPJ-based limits may be applicable if there is no applicable federal ELG, or there is an applicable ELG but there is an aspect, activity, or pollutant associated with the discharge that the ELG does not address. A BPJ-based TBEL should be considered for any pollutant that is present, or expected to be present, in the discharge in concentrations or amounts that can be treated or otherwise removed. Any BPJ-based determination must be performed consistent with the requirements of 40 CFR § 125.3.

40 CFR 125.3(d) requires that certain factors be considered when developing case-by-case TBELs using BPJ for the levels of technology-based control described in the Clean Water Act including: Best Practicable Control Technology Currently Available (BPT), Best Conventional Pollutant Control Technology (BCT), and Best Available Control Technology Economically Achievable. The required factors are described below.

General Considerations

- (i) The appropriate technology for the category or class of point sources of which the applicant is a member, based upon all available information
- (ii) Any unique factors relating to the applicant

Best Practicable Control Technology Currently Available (BPT); 40 CFR § 125.3(d)(1):

- (i) The total cost of application of technology in relation to the effluent reduction benefits to be achieved from such application;
- (ii) The age of equipment and facilities involved
- (iii) The process employed
- (iv) The engineering aspects of the application of various types of control techniques
- (v) Process changes
- (vi) Non-water quality environmental impact (including energy requirements)

³ Gavco is an approved concrete supplier to PennDOT as listed in Bulletin 42. Bulletin 42 is a list of producers that have demonstrated their capability to comply with the PennDOT’s specification (Pub 408 [M] Section 704) for the production of ready-mixed concrete as determined by inspection of their plants and facilities.

⁴ EPA’s 1978 Guidance Development Document indicated that many plants had achieved zero discharge and that 60% of the plants treating wastes by ponding used evaporation/percolation systems. DEP notes that evaporation ponds and percolation systems generally are not a reliable method for achieving zero discharge in Pennsylvania due to the high frequency, intensity, and duration of storms, which ultimately will cause evaporation ponds to discharge and/or percolation systems to backup due to saturated soils from storm water infiltration and high groundwater elevations.

Best Conventional Pollutant Control Technology (BCT); 40 CFR 125.3(d)(2):

- (i) The reasonableness of the relationship between the costs of attaining a reduction in effluent and the effluent reduction benefits derived
- (ii) The comparison of the cost and level of reduction of such pollutants from the discharge from publicly owned treatment works to the cost and level of reduction of such pollutants from a class or category of industrial sources
- (iii) The age of equipment and facilities involved
- (iv) The process employed
- (v) The engineering aspects of the application of various types of control techniques
- (vi) Process changes
- (vii) Non-water quality environmental impact (including energy requirements)

Best Available Technology Economically Achievable (BAT); 40 CFR § 125.3(d)(3):

- (i) The age of equipment and facilities involved
- (ii) The process employed
- (iii) The engineering aspects of the application of various types of control techniques
- (iv) Process changes
- (v) The cost of achieving such effluent reduction
- (vi) Non-water quality environmental impact (including energy requirements).

The factors common to each level of control technology include the following: the age of equipment and facilities involved, the process employed, the engineering aspects of the application of various types of control techniques, process changes and non-water quality environmental impacts (including energy requirements). Factors specific to each level of control technology include costs, pollutant reduction benefits, and economic achievability.

General Considerations: In the 1978 Guidance Development Document, EPA identified the following technologies as practicable technologies: settling of suspended solids, in ponds, sloped slab basins or mechanical clarifiers; recycle of clarified water for truck washout; pH adjustment prior to discharge; and oil skimmers, if necessary. As technologies that were practicable 45 years ago, they are appropriate (at a minimum) for modern RMC plants, including Gavco.

The NRMCA published guidelines directing RMC plants to employ a wide range of wastewater management practices including minimizing the use of fresh water; limiting the generation of process water; collecting, treating, and reusing as much process water as possible; managing storm water to prevent commingling with process water or otherwise prevent non-contact storm water from becoming polluted; and collecting and using storm water for batching and other plant operations. As BMPs developed by the industry for the industry, they are appropriate for RMC plants, including Gavco.

In 2012, EPA indicated in its Stormwater BMP Fact Sheet for Concrete Washout that wash waters could be returned to surface waters if concrete washout is passed through a system of weirs or filters to remove solids before discharging and if the wash waters are treated to reduce the pH and remove metals. As stated previously, concrete reclaimers paired with package pH adjustment units (some using acids and some using CO₂), flocculant feed systems, and multi-bay settling basins can accomplish total recycle, but even if there is an excess of water from those systems that must be disposed, those technologies will remove sediments, reduce suspended heavy metals, and neutralize caustic pH.

With respect to metals removal, when settling alone does not result in sufficient removal, other industries employ chemical precipitation with coagulation and flocculation and/or filtration. Depending on the metals present in the wastewater and the solubilities of those metals at certain pH values, a chemical precipitation system could require multiple pH adjustment and settling steps. Nevertheless, chemical precipitation with coagulation and flocculation are appropriate technologies for metals removal if metals are present in treatable concentrations. There are suppliers with flocculants and polymers specifically targeted for use in the treatment of concrete production wastewaters.

Equipment and Facility Age: Facility and equipment age impacts the feasibility, cost, and reasonableness of modifying existing systems to implement a technology. Older facilities may be subject to more costly modifications than new facilities (e.g., upgrading/replacing old treatment units to make them current or to make them compatible with new treatment systems). Gavco has been in operation since 2004 and the age of the facility is not a hindrance to the installation of new treatment systems. A pH adjustment unit would require only minor changes for piping and chemical addition. A total recycle system, including a concrete reclaimer, would be a significant capital expense, but commercial package systems and suppliers facilitate easier setup. Facility age has impacted the amount of space available for treatment systems due to

Gavco's onsite disposal of waste concrete and miscellaneous waste materials, but some of that space could be reclaimed through proper offsite disposal of those wastes or by reclaiming/reusing those waste materials for batching.

Processes Employed: This factor relates to the nature and capabilities of existing treatment processes. Gavco currently uses settling but does not reuse wash waters to reduce fresh water use or adjust effluent pH. Consequently, DEP observes that Gavco does not employ the most basic processes that EPA determined to be feasible 45 years ago.

Engineering Aspects of Control Techniques: Technology-based performance criteria must be limited to technologies or process modifications that are feasible from an engineering standpoint. Settling, wastewater reuse, pH adjustment, chemical precipitation, filtration, and material reclamation are all reasonable, mature technologies that are widely employed across multiple industries.

Process Changes: Consideration for process changes relates to the feasibility of any modifications that reduce the quantity or toxicity of a discharge. Gavco's proposed use of storage tanks would theoretically reduce the frequency of discharges from Outfalls 004 and 008 and facilitate the reuse of wash waters and storm water that becomes process wastewater by coming in direct contact with source materials or by commingling with process wastewater. However, the layout of Gavco's site does not promote the reuse of all wash waters because there is a tributary that passes through the middle of the site with the batch plant and truck wash on the south side of the stream and the drum washout bays on the north side of the stream with no existing infrastructure to transfer washout to the batch plant for reuse.

To the extent that Gavco is unable to recycle all process wastewaters—as limited by the batch plant's demand for mix water and not by the need for new infrastructure that allows for reuse—there are available and affordable technologies to treat process wastewaters to reduce effluent toxicity.

Non-Water Quality Environmental Impacts (Including Energy Requirements): Non-water quality environmental impacts associated with proposed treatment technologies that must be considered include air pollution, solid waste generation, radiation exposure, and energy requirements.

Air pollution would increase marginally with the use of additional treatment technologies due to the need for additional vehicles to transport treatment chemicals to the site and with increased energy demand from power generators associated with Gavco's use of pumps to store and reuse excess water.

Solid waste generation associated with settling and pH adjustment would not increase because there are opportunities to reuse all waste materials generated by those treatment technologies. As EPA explained in its 2012 Stormwater BMP Fact Sheet for Concrete Washout, wash water, cement fines, fine aggregate, coarse aggregate, hardened concrete, and unused wet concrete can all be reused and are reclaimable from the treatment facilities used by the industry. Chemical precipitation and filtration would increase solid waste generation due to excess sludge from the use of flocculants and coagulants and the need to replace used filters. Also, materials reclaimed from sludge precipitate might be inappropriate for reuse due to the presence of flocculants and coagulants that might not meet specifications for concrete as accepted admixtures.

Gavco's proposed use of pumps would increase energy requirements (and, marginally, air pollution from the increased energy demand on power generators). Increased energy usage would be offset by improved operational efficiency (e.g., the pumps would allow for wastewater reuse, thus reducing the need for municipal water). Radiation exposure is not a concern for the proposed treatment technologies.

Costs: The 1978 Guidance Development Document included an evaluation of costs for permanent RMC plants. EPA's discussion of costs in that document is incorporated by reference into this Fact Sheet.

Treatment technologies considered by EPA included—with and without pH adjustment—basic pond systems; sloped slab systems with aggregate recovery, partial recycle of wastewater, and no cement fines recovery; and mechanical clarification systems. EPA developed cost estimates for waste treatment facilities based on a waste-quantity-per-truck basis. EPA observed that wash water and solid waste volumes were more easily and accurately estimated from the number of operating trucks than from production figures. To establish a production conversion, EPA developed a correlation for the average amount of concrete hauled per day per truck. The correlation was primarily a function of the average number of trips per day taken by each truck. Based on EPA-collected data from 376 permanent RMC plants, the average number of trips per day per truck is 2.5 and the average truck capacity is 6 cubic meters (about 8 cubic yards). Therefore, on average, 15 cubic meters (19.62 cubic yards) of concrete are hauled per day per truck. Gavco reported in its PPC Plan that it operates a fleet of 14 mixer trucks at this plant, so the average daily and yearly production of concrete for Gavco are estimated as follows:

$$(15 \text{ m}^3 / \text{day} / \text{truck}) \times 14 \text{ trucks} = 210 \text{ m}^3 / \text{day} \quad (210 \text{ m}^3 / \text{day}) \times 260 \text{ operating days} / \text{year} = 54,810 \text{ m}^3 / \text{year}$$

Tables 17 and 18 in the 1978 Guidance Development Document provide cost summaries for two plant sizes. Those tables are reproduced below with cost adjustments to update the August 1972 prices reported in 1978 Guidance Development Document to March 2023 prices using ENR's Construction Cost Indices (CCIs).⁵

Table 3. Cost Analysis for a Permanent Ready-Mixed Concrete Plant – 39,300 Cubic Meters of Concrete per Year

Treatment Option: †		A	B	C	D	E	F	G	H	I
Invested Capital Costs										
Total		\$0	\$31,568	\$57,124	\$107,482	\$133,038	\$255,553	\$281,108	\$511,106	\$357,022
Annual Capital Recovery ‡		\$0	\$3,758	\$6,765	\$12,928	\$15,784	\$41,565	\$45,699	\$82,679	\$70,803
O&M Costs										
Annual O&M (Excluding Power and Energy)		\$0	\$25,555	\$30,817	\$27,960	\$28,712	\$25,179	\$26,457	\$76,365	\$175,054
Annual Power and Energy		\$0	\$752	\$752	\$1,954	\$2,706	\$1,203	\$2,706	\$54,718	\$50,960
Total Annual Costs		\$0	\$30,065	\$38,333	\$42,843	\$47,202	\$67,947	\$74,862	\$213,762	\$296,817
Cost per Cubic Meter of Concrete		\$0.00	\$0.77	\$0.98	\$1.09	\$1.20	\$1.73	\$1.90	\$5.44	\$7.55
Waste Load Parameters (kg/m ³ of concrete)	Raw Waste Load									
Suspended solids	35	35	0.001	0.001	0.001	0.001	0.001	0.001	0	0
pH	10 to 12	10 to 12	10 to 12	6 to 9	10 to 12	6 to 9	10 to 12	6 to 9	N/A	N/A

Table 4. Cost Analysis for a Permanent Ready-Mixed Concrete Plant – 75,000 Cubic Meters of Concrete per Year

Treatment Option: †		A	B	C	D	E	F	G	H	I
Invested Capital Costs										
Total		\$0	\$60,130	\$97,711	\$187,906	\$225,488	\$375,813	\$413,394	\$751,626	\$526,138
Annual Capital Recovery ‡		\$0	\$7,140	\$11,500	\$22,173	\$26,307	\$61,258	\$67,271	\$122,515	\$104,476
O&M Costs										
Annual O&M (Excluding Power and Energy)		\$0	\$48,856	\$56,372	\$52,990	\$54,117	\$37,205	\$39,085	\$112,744	\$258,183
Annual Power and Energy		\$0	\$0	\$752	\$3,758	\$5,261	\$3,758	\$5,261	\$78,921	\$75,163
Total Annual Costs		\$0	\$55,996	\$68,623	\$78,921	\$85,685	\$102,221	\$111,616	\$314,180	\$437,822
Cost per Cubic Meter of Concrete		\$0.00	\$0.75	\$0.91	\$1.05	\$1.14	\$1.36	\$1.49	\$4.19	\$5.84
Waste Load Parameters (kg/m ³ of concrete)	Raw Waste Load									
Suspended solids	35	35	0.001	0.001	0.001	0.001	0.001	0.001	0	0
pH	10 to 12	10 to 12	10 to 12	6 to 9	10 to 12	6 to 9	10 to 12	6 to 9	N/A	N/A

† TREATMENT OPTION DESCRIPTIONS:

- | | |
|---|---|
| <p>A – No Treatment</p> <p>B – Pond settling of suspended solids, no aggregate recovery, no pH adjustment</p> <p>C – Same as Option B plus pH adjustment</p> <p>D – Sloped slab system – recovery of aggregate, partial recycle of wastewater, no recovery of cement fines, and no pH adjustment</p> <p>E – Same as Option D plus pH adjustment</p> | <p>F – Mechanical clarification system, recovery of aggregate, partial recycle of wastewater, no recovery of cement fines, and no pH adjustment</p> <p>G – Same as Option F plus pH adjustment</p> <p>H – Same as Option F plus mechanical evaporation of excess wastewater</p> <p>I – Total recycle of wastewater with recovery and reuse of aggregates and cement</p> |
|---|---|

‡ Annual capital recovery represents straight line depreciation over *n* years of useful life (10 years for general process equipment; 20 years for lined and unlined ponds; and 5 years for trucks, bulldozers, loaders and other material handling and transporting equipment) as well as annualized capital costs using an interest rate of 10%, which is much higher than the current interest rate.

⁵ ENR's base year is 1913 with a CCI of 100. ENR's annual average CCI for 1972 is 1753. ENR's CCI for March 2023 is about 13176. 2023 costs are calculated as follows: 2023 Cost = 1972 Cost x (13176 ÷ 1753)

Table 4 shows that larger RMC plants can benefit from economies of scale with reduced treatment costs per m³ of concrete.

Cost-Benefit

Generally, the pollutant reduction benefits associated with all treatment levels are high because the treatment options either reduce suspended solids to negligible levels (i.e., 99.99% removal of suspended solids to 0.001 kg/m³ of concrete) or eliminate all discharges. Focusing solely on suspended solids skews the cost-benefit evaluation of the more sophisticated treatment options because a higher cost would appear to result in the same benefit. However, there are environmental benefits associated with neutralizing pH and reducing toxic heavy metals that EPA did not quantify. At the most basic level of treatment—Option B—the cost per kilogram of solids removed would be:

$$\frac{\left(\frac{\$0.77}{m^3 \text{ concrete}}\right)}{\left[\left(\frac{35 \text{ kg waste solids}}{m^3 \text{ concrete}}\right) - \left(\frac{0.001 \text{ kg waste solids}}{m^3 \text{ concrete}}\right)\right]} = \frac{\left(\frac{\$0.75}{m^3 \text{ concrete}}\right)}{\left(\frac{34.999 \text{ kg waste solids}}{m^3 \text{ concrete}}\right)} \approx \frac{\$0.02}{\text{kg waste solids}}$$

At the highest cost of treatment—Option I—the cost per kilogram of solids removed would be:

$$\frac{\left(\frac{\$7.55}{m^3 \text{ concrete}}\right)}{\left(\frac{35 \text{ kg waste solids}}{m^3 \text{ concrete}}\right)} \approx \frac{\$0.22}{\text{kg waste solids}}$$

The load of solids removed by Options B through G for a plant producing 54,810 m³ concrete per year would be:

$$\frac{54,810 \text{ m}^3 \text{ concrete}}{\text{year}} \times \left[\left(\frac{35 \text{ kg waste solids}}{m^3 \text{ concrete}}\right) - \left(\frac{0.001 \text{ kg waste solids}}{m^3 \text{ concrete}}\right)\right] = \frac{1,918,295 \text{ kg waste solids}}{\text{year}}$$

The load of solids removed by Options H and I are comparable to Options B through G because Options H and I eliminate the last 0.001 kg of solids per cubic meter of concrete by eliminating all discharges. All treatment options have reasonable cost-benefit ratios.

Economic Achievability

EPA's "Work Book for Determining Economic Achievability for National Pollutant Discharge Elimination System Permits" (August 1982) identifies a simple earnings test that can be used to evaluate economic achievability at the plant level. The costs of goods sold including the cost of materials, direct labor costs, and production overhead costs and, if applicable, corporate overhead, are subtracted from revenues to calculate earnings before taxes. If earnings before taxes are greater than zero after the annual cost of pollution control has been subtracted, then the technologies are economically achievable.

DEP notes that the plant level earnings test usually follows a corporate or "firm-level" test. Firm-level economic tests use publicly available information to evaluate economic achievability. If a company is generally financially healthy (i.e., profitable), then the tests usually show treatment technologies to be affordable. The combined revenue pool of multiple facilities would allow costs to be spread out with better performing facilities (with respect to profitability and environmental compliance) subsidizing upgrade costs at other facilities within the same corporation. However, cost spreading may not be an option for Gavco. Gavco appears to operate three RMC plants: one in Charleroi (Bentleyville), one in Carmichaels, and one east of Uniontown. The main office for Gavco is in Uniontown, separate from the Uniontown Plant. A fourth plant in New Stanton appears to have been sold and is now operated by Tresco Concrete Products. The Carmichaels and Uniontown plants do not have NPDES permits and aerial imagery suggests that they are operated in the same manner as the Charleroi Plant with a series of washout basins and some uncontrolled discharges (see Images 4 and 5). If all three of Gavco's plants require upgrades to their wastewater management practices, then the costs for treatment systems at the Charleroi Plant could not be spread out.

As a privately held company, financial information for Gavco Materials Inc. is not available either at the firm level or plant level. Dun and Bradstreet estimates Gavco's annual sales to be \$1.19 million, but that is a modeled figure and it is unclear if that is gross sales or net sales with the costs of goods sold included. An estimate of Gavco's annual revenue (limited just to the Charleroi Plant) can be estimated using DEP's estimate of Gavco's yearly production at the Charleroi Plant, 54,810 m³ / year or about 71,700 yd³ / year, and an average price of \$135 per cubic yard of concrete based on data from RSMeans, which yields a revenue of over \$9 million. Gross earnings are not preferred values for evaluating economic achievability because gross earnings exclude the cost of materials, direct labor costs, and production overhead. However, the

percentage of gross earnings that would be used for treatment is informative. **Table 5** summarizes the costs of treatment per cubic meter and cubic yard of concrete produced for each treatment option and the percentage of revenue that would be consumed by treatment costs (at a concrete price of \$135/yd³) for the plant sizes in **Tables 3 and 4**.

Image 7. Carmichaels Plant (Google Earth Pro, 3/21/2021)



Image 8. Uniontown Plant (Google Earth Pro, 10/18/2015)



Table 5. Percent of RMC Plant Revenue Used for Treatment

Treatment Option:	A	B	C	D	E	F	G	H	I
Plant Producing 39,300 m³ Concrete / Year									
Cost per Cubic Meter of Concrete	\$0.00	\$0.77	\$0.98	\$1.09	\$1.20	\$1.73	\$1.90	\$5.44	\$7.55
Cost per Cubic Yard of Concrete	\$0.00	\$0.58	\$0.75	\$0.83	\$0.92	\$1.32	\$1.46	\$4.16	\$5.77
Percentage of Revenue Used for Treatment †	0.00%	0.43%	0.55%	0.62%	0.68%	0.98%	1.08%	3.08%	4.28%
Plant Producing 75,000 m³ Concrete / Year									
Cost per Cubic Meter of Concrete	\$0.00	\$0.75	\$0.91	\$1.05	\$1.14	\$1.36	\$1.49	\$4.19	\$5.84
Cost per Cubic Yard of Concrete	\$0.00	\$0.57	\$0.70	\$0.80	\$0.87	\$1.04	\$1.14	\$3.20	\$4.46
Percentage of Revenue Used for Treatment †	0.00%	0.42%	0.52%	0.60%	0.65%	0.77%	0.84%	2.37%	3.31%

† Assumes a concrete price of \$135/yd³.

Table 5 shows that the costs for all treatment technologies from Options A through G (all of which were in use by the industry when EPA developed its 1978 Guidance Development Document), are about 1% or less of revenue generated based on average RMC prices.

Option H is a high cost, energy intensive technology. DEP is aware of various portable evaporation units that were deployed to manage flowback and produced water from unconventional oil and gas wells. Flowback and produced waters are generally managed at western oil fields using evaporation ponds (similar to how some RMC plants manage their wastewaters in western parts of the country). Mechanical evaporation, as opposed to passive evaporation from ponds, would be necessary in Pennsylvania because rainfall conditions in the state are not conducive to wastewater evaporation as a disposal method. Any open pond has the chance to discharge at some point. However, DEP's understanding is that mechanical evaporation generally is not used in the RMC industry and that the technology is best applied when wastewaters have very high TDS concentrations (>10,000 mg/L).

A brief review of available literature shows that concrete reclaimers used as part of a total recycle system (Option I) can range in costs from \$50,000 to over \$450,000 depending on size.⁶ DEP's understanding is that commercial concrete reclaimer packages with pH adjustment addons were not common in 1978 (EPA's guidance references home-made reclaimers), but the costs for commercial reclaimers are comparable to the inflation adjusted costs in **Tables 3 and 4** for Option I. For a medium-size RMC plant like Gavco's Charleroi Plant, reclaimer costs would fall in the middle of the \$50,000 to \$450,000 range. Despite high capital costs, plants operating total recycle systems can realize substantial returns on investment. Systems will often pay for themselves within a few years due to cost savings from reduced municipal water use, reduced waste disposal costs, and reduced costs of raw materials due to reclaimed material reuse. Gavco has already realized some cost savings by dumping excess waste concrete onsite, which avoids waste disposal costs.

DEP does not have information necessary to evaluate the economic achievability of all treatment options. However, at a minimum, the technologies already employed are economically achievable (if not properly operated). In addition, pH adjustment will be a necessary treatment step pursuant to 25 Pa. Code §§ 92a.48(a)(2) and § 95.2(1) because Gavco's effluent pH exceeds 9.0.

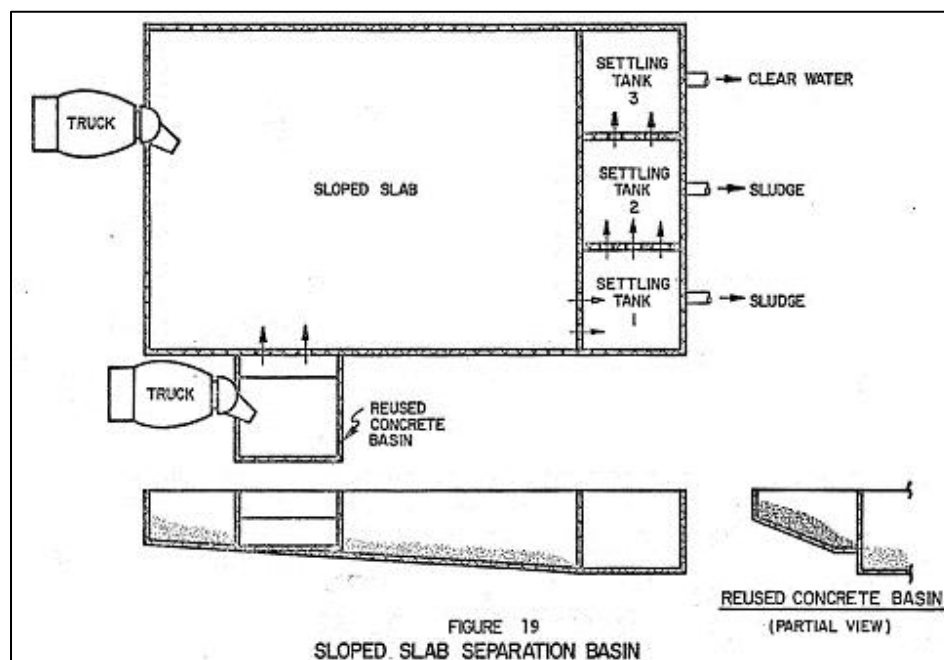
Pursuant to DEP's Best Professional Judgement (BPJ), the Sector-Specific BMPs from Appendix N of the PAG-03 will be supplemented with the following BMP based on industry guidance:

- Minimize the use of fresh water to the extent practicable by maximizing the reuse of wash waters and contaminated storm water and by employing water reduction techniques, which may include, but not be limited to, improving washing and washout efficiency by using multiple small volume rinses; heating small amounts of water to create steam to heat aggregates; installing flow-control nozzles and automated shut-off valves; using small diameter hoses; using or increasing the use of water reducing chemical admixtures; and collecting and reusing uncontaminated storm water as fresh water.

In addition, the following BMP from Appendix N of the PAG-03 is modified for inclusion in Gavco's permit as shown below:

- Install and maintain silt sacks or other systems designed to collect solid materials in stormwater inlets to prevent the discharge of solids ~~as part of any corrective action plan required by this General Permit or otherwise upon receipt of written notification from DEP.~~

Pursuant to DEP's BPJ and after considering the factors in 40 CFR 125.3(d), DEP identifies Option E as BAT for Gavco's process wastewaters from Outfall 004. Option E is a sloped slab system through which aggregates are recovered and wastewaters are partially recycled, but cement fines are not. A conceptual drawing of a sloped slab separation basin is provided as Figure 19 in EPA's 1978 Guidance Development Document (p.100). Adjustment of pH also is required by Option E and would be done to the "clear water" leaving Settling Tank 3 in the figure.



⁶ www.concretereclaiming.com; <https://concreteproducts.com/index.php/2020/09/15/mix-and-washout-recycling-equipment/>

Gavco's truck wash currently operates with Option B treatment. Gavco's proposed addition of a storage tank with periodic transfers of stored water to the concrete drum washout system would theoretically update treatment for the truck wash to Option D. The drum washout system already operates as a variation of the sloped slab system where there is not one large sloped slab, but three settling basins in series, each with sloped bottoms. The basins settle out solids. Water from the third basin is reused for drum washout. Gavco's procedure to transfer truck wash water to the drum washout basins is not specified in the permit application. If the transfers are initiated manually, then situations may arise where the storage tank for truck wash water is full and discharges continue to occur from the sediment trap.

Gavco's system may not be properly sized to handle the volume of washout generated and/or may not be maintained adequately (e.g., frequent enough solids removal) because the basins overflow to the stream (see Images 6 and 7). With respect to the costs for a sloped slab system, Gavco already constructed and operates a similar system, so pH adjustment and associated water transfer piping would be the only additions needed.

Image 9. Washout basin overflow. (7/28/2020 by DEP)



Image 10. Washout basin overflow to 008. (7/28/2020 by DEP)



Pollutants of Concern

According to EPA's and DEP's guidance, the selection of pollutants of concern for regulation and technology-based limitation is predicated on the presence of a pollutant in a wastewater in treatable concentrations.⁷ **Table 6** summarizes the quality of Outfall 004's discharges as reported on the updated NPDES permit application.

In the 1978 Guidance Development Document, EPA identified suspended solids and pH as pollutants of concern for the concrete products industry, so TSS and pH will be subject to TBELs. In that same guidance document, EPA eliminated pollutants considered for regulation for the following reasons:

- (1) Not harmful when selected parameters are controlled
- (2) Not present in significant quantities (i.e., not present in treatable concentrations)
- (3) Control substances are more harmful than the pollutant
- (4) Insufficient data available
- (5) Indirectly controlled when selected parameters are controlled
- (6) Not controllable

Other reasons EPA has removed pollutants from consideration for regulation in other ELGs are:

- (7) Not generated by the industry
- (8) May be present due to use as a wastewater treatment chemical (with regulation potentially hindering treatability)

The "not present in significant quantities" factor has been implemented by EPA for other Federal ELGs by removing from consideration pollutants that were not detected at greater than or equal to 10 times the quantitation limit in at least 10 percent of all samples. Applying that methodology to Gavco's effluent results for Outfall 004 eliminates the following

⁷ 2010 USEPA NPDES Permit Writers' Manual (p. 5-18) and DEP's *Standard Operating Procedure (SOP) for Clean Water Program – Establishing Effluent Limitations for Individual Industrial Permits*.

pollutants from consideration: Fecal Coliform, Oil and Grease, Total Residual Chlorine, Total Phosphorus, Color, Bromide, Sulfide, Fluoride, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Cobalt, Copper, Cyanide, Iron, Lead, Mercury, Molybdenum, Nickel, Phenols, Selenium, Silver, Thallium, and Zinc.

EPA eliminated COD because the presence of COD was mainly attributable to chemicals used in form release oils, which could be controlled by limiting Oil and Grease. EPA also stated that concrete admixtures could contribute COD, but not Oil and Grease. However, sufficient data were not available to indicate that specific control of COD was necessary due to the use of concrete admixtures. DEP is not proposing COD for technology-based regulation, but monitoring will be required pursuant to 25 Pa. Code § 92a.61(b) to collect more site-specific data on COD. Reporting of Oil and Grease also will be required due to the presence of sources of oils and greases onsite such as trucks and hydraulic equipment.

EPA stated that Total Dissolved Solids (TDS) such as cement fines could be present in significant amounts, but no treatment other than no discharge would practicably reduce TDS. Evaporation systems and total recycle systems with material reclamation would eliminate discharges of TDS and allow fine particles to be reclaimed and reused. DEP is not proposing TDS for technology-based regulation, but monitoring will be required pursuant to 25 Pa. Code § 92a.61(b) to collect more site-specific data on TDS.

Chloride and sulfate are components of TDS, so those pollutants will be indirectly measured through measurements of TDS. However, ASTM C1602/C1602M includes optional maximum concentration limits for chloride and sulfate in mixing water (e.g., if a customer determines that certain levels of chloride and sulfate in mixing water must be met for a particular batch of concrete), so reporting of chloride and sulfate concentrations will be required to inform the suitability of effluent reuse under that optional specification. If none of Gavco's customers require compliance with that optional specification, then DEP is amenable to not requiring reporting of chloride and sulfate concentrations since concentrations of chloride and sulfate in excess of ASTM C1602/C1602M's maximums would not inhibit reuse.

In the development document for a related industry—cement manufacturing—EPA eliminated BOD, Total Kjeldahl Nitrogen, and Total Organic Carbon because the presence of those pollutants was not associated with cement manufacturing operations.⁸ The additional manufacturing operations conducted by RMC plants like Gavco, which use cement for concrete batching, are not expected to introduce BOD, Total Kjeldahl Nitrogen, or Total Organic Carbon, so those pollutants are removed from consideration for technology-based regulation.

Ammonia-Nitrogen is not characteristic of RMC plants' process wastewaters and, to the extent that ammonia-nitrogen is present in Outfall 004's discharges, the maximum reported concentration is only marginally higher than 10 times the 0.10 mg/L quantitation limit (1.68 mg/L maximum versus a threshold of 1 mg/L). Therefore, ammonia-nitrogen is not selected for technology-based regulation.

Elevated hardness tends to decrease the toxicity of some metals, so total hardness is not selected for technology-based regulation.

Surfactants (Methylene Blue Active Substances or "MBAS") comprise a large class of chemicals with varying levels of aquatic toxicity. Surfactants may be present in Gavco's effluent from detergent use. Gavco did not report any detergents as chemical additives, but detergents are used to wash the exteriors of trucks after they are loaded at the batch plant. The average concentration of surfactants reported at Outfall 004 is not greater than ten times the quantitation level, but a maximum result of 83 mg/L was reported. That result appears to be an outlier, or perhaps erroneously reported. To the extent that any detergents used in truck washing may flow to waters of the Commonwealth through Outfall 004, Gavco should use products that comply with EPA's Safer Choice Criteria—see **Attachment B** to this Fact Sheet (<https://www.epa.gov/saferchoice/safer-choice-criteria-surfactants>).

DEP is not proposing surfactants for technology-based regulation because there is not enough information to determine whether surfactants are characteristic of the effluent (e.g., the maximum concentration is much different than the average concentration). However, monitoring for MBAS will be required to collect more information on the presence of surfactants.

Chromium is present in Outfall 004's effluent, but not at concentrations amenable to treatment. EPA's "Guidance for BAT-Equivalent Control of Selected Toxic Pollutants" (EPA-905/2-81-003. Patterson, J.W., May 1981) identifies 30-day average BAT-equivalent concentrations for hexavalent chromium and total chromium as 50 µg/L and 500 µg/L, respectively. The treatment technology for hexavalent chromium is acidic reduction to trivalent chromium or ion exchange at a pH below 6.0 (ideally at a pH between 2 and 3). Total chromium, composed primarily of trivalent chromium after any hexavalent chromium is reduced to trivalent chromium, is removed through hydroxide precipitation at a pH of about 8.5. At their maximum

⁸ "Development Document for Effluent Limitations Guidelines and New Source Performance Standards for the Cement Manufacturing Point Source Category", pp. 48-49, EPA 440/1-74/005a, January 1974.

concentrations, even if all the reported hexavalent chromium was converted to trivalent chromium, the combined concentrations would not exceed the BAT-equivalent concentration of 500 µg/L, so hexavalent chromium and total chromium are not selected for technology-based regulation at Outfall 004.

Table 6. Outfall 004 Effluent Concentrations

Parameter	Units	Avg. Conc.	Max Conc.	No. of "Non-Detect" Results	QL Used	Selected for TBELs?	Reason for Exclusion
BOD (5-day)	mg/L	21.33	39	0 of 3	2	No	(7)
Chemical Oxygen Demand	mg/L	85.67	130	0 of 3	10	No	(4)(5)
Total Organic Carbon	mg/L	35.37	44.5	0 of 3	1.0	No	(7)
Total Suspended Solids	mg/L	75.33	162	0 of 3	2	Yes	
Ammonia-Nitrogen	mg/L	0.91	1.68	0 of 3	0.10	No	(2)(7)
pH	S.U.	10.5 (Min)	11.4	—	—	Yes	
Fecal Coliform	No./100 mL	<1	1	2 of 2	—	No	(2)
Oil and Grease	mg/L	<5	5	3 of 3	5	No	(2)
Total Residual Chlorine	mg/L	0.20	0.21	2 of 3	0.2	No	(2)
Total Phosphorus	mg/L	0.04	0.07	0 of 3	0.01	No	(2)
Total Kjeldahl Nitrogen	mg/L	18.97	32.6	0 of 3	2.0	No	(7)
Nitrate + Nitrite Nitrogen	mg/L	7.61	19.8	0 of 3	0.05	No	(7)
Total Dissolved Solids	mg/L	558.67	780	0 of 3	100	No	(6)
Color	Pt-Co Units	10	10	0 of 3	5.0	No	(2)
Bromide	mg/L	0.53	1.0	1 of 3	0.2	No	(2)
Chloride	mg/L	64.3	110	0 of 3	0.2	No	(4)
Sulfate	mg/L	92.33	156	0 of 3	2.0	No	(4)
Sulfide	mg/L	0.10	0.1	0 of 3	0.1	No	(2)
Surfactants	mg/L	0.42	83	0 of 3	0.05	No	(4)
Fluoride	mg/L	0.43	0.5	1 of 3	0.1	No	(2)
Total Hardness	mg/L	303.67	388	0 of 3	1.0	No	(1)
Aluminum, Total	µg/L	792.0	1290	0 of 3	200	No	(2)
Antimony, Total	µg/L	1.0	1.0	3 of 3	1.0	No	(2)
Arsenic, Total	µg/L	1.0	1.0	3 of 3	1.0	No	(2)
Barium, Total	µg/L	163.5	257	0 of 3	25.0	No	(2)
Beryllium, Total	µg/L	1.0	1.0	3 of 3	1.0	No	(2)
Boron, Total	µg/L	53.3	60	2 of 3	50	No	(2)
Cadmium, Total	µg/L	0.2	0.2	3 of 3	0.2	No	(2)
Chromium, Total	µg/L	112.8	115	0 of 3	1.0	No	(2)
Chromium, Hexavalent	µg/L	96.0	180	0 of 3	1	No	(2)
Cobalt, Total	µg/L	0.6	0.7	1 of 3	0.5	No	(2)
Copper, Total	µg/L	6.0	0.7	0 of 3	1.0	No	(2)
Cyanide, Total	µg/L	28.0	37	1 of 3	20	No	(2)
Iron, Total	µg/L	670.0	1190	0 of 3	50	No	(2)
Iron, Dissolved	µg/L	73.3	90	0 of 3	50	No	(2)
Lead, Total	µg/L	1.0	1.0	3 of 3	1.0	No	(2)
Manganese, Total	µg/L	46.0	90.3	0 of 3	1.0	No	(2)
Mercury, Total	µg/L	0.2	0.2	3 of 3	0.20	No	(2)
Molybdenum, Total	µg/L	18.3	28.7	3 of 3	1.0	No	(2)
Nickel, Total	µg/L	2.2	3.0	0 of 3	0.5	No	(2)
Phenols, Total	µg/L	10.0	10.0	2 of 3	10.0	No	(2)
Selenium, Total	µg/L	1.1	1.4	2 of 3	1.0	No	(2)
Silver, Total	µg/L	0.2	0.2	2 of 3	0.2	No	(2)
Thallium, Total	µg/L	0.2	0.2	3 of 3	0.2	No	(2)
Zinc, Total	µg/L	11.9	21.5	0 of 3	5.0	No	(2)

- (1) Not harmful when selected parameters are controlled
- (2) Not present in significant quantities
- (3) Control substances are more harmful than the pollutant
- (4) Insufficient data available
- (5) Indirectly controlled when selected parameters are controlled
- (6) Not controllable
- (7) Not generated by the industry
- (8) May be present due to use as a wastewater treatment chemical

Similar to chromium, aluminum, iron, and manganese are present in Outfall 004's effluent in measurable concentrations, but the concentrations are less than 30-day average BAT-equivalent concentrations of 1 mg/L, 1.5 mg/L, and 2 mg/L,

respectively. Therefore, DEP is not selecting aluminum, iron, or manganese for technology-based regulation at Outfall 004. However, aluminum and iron will require reporting consistent with their identification as reportable pollutants at storm water outfalls from Gavco's facility and as the metals that are present in the most significant quantifies.

Treatability

As explained previously, pH effluent standards of 6.0 minimum and 9.0 maximum will be imposed at Outfall 004 pursuant to 25 Pa. Code §§ 92a.48(a)(2) and § 95.2(1). Adjusting pH to within that range is feasible with a simple acid drip system or with supplemental CO₂ addition.

Gavco's sloped slab basins are simple settling basins. DEP's "Technology-Based Control Requirements for Water Treatment Plant Wastes" states that TSS limits of 30 mg/L average monthly and 60 mg/L daily maximum are achievable by settling ponds. Gavco is not a water treatment plant, but effluent similarities make the transfer of treatability information feasible based on the concept of technology transfer. EPA explained the concept of technology transfer in the 2010 NPDES Permit Writers' Manual (p. 5-16):

For the direct discharge of toxic and non-conventional pollutants, EPA promulgates effluent guidelines based on BAT. The FWPCA amendments of 1972 require EPA to consider the cost of achieving effluent reductions when defining BAT; however, they do not specifically require EPA to balance the cost of implementation against the pollution reduction benefit. The technology selected for BAT must be economically achievable [CWA section 301(b)(2)(A)]. EPA generally defines BAT on the basis of the performance associated with the best control and treatment measures that facilities in an industrial category are capable of achieving. Like BPT and BCT, other factors EPA must consider in assessing BAT include the age of equipment and facilities involved, the process employed, process changes, non-water quality environmental impacts, including energy requirements, and other such factors as the EPA Administrator deems appropriate [CWA section 304(b)(2)(B)]. The Agency retains considerable discretion in assigning the weight accorded to these factors. BAT limitations may be based on effluent reductions attainable through changes in a facility's processes and operations. Where existing performance is uniformly inadequate, BAT may reflect a higher level of performance than is currently being achieved within a subcategory on the basis of technology transferred from a different subcategory or category. (emphasis added)

EPA has applied technology transfer as the basis for numerous Federal Effluent Limitations Guidelines. EPA did not propose any TBELs for RMC plants' process wastewaters in the 1978 Guidance Development Document and the treatability data EPA did report were limited. Therefore, given the similarity of water treatment plant wastes to Gavco's wastes—namely, the prevalence of suspended solids in the effluent and elevated concentrations of naturally occurring metals such as aluminum and iron—the treatability values for TSS reflecting the performance of settling basins/ponds for the treatment of water treatment plant wastes reported in DEP's "Technology-Based Control Requirements for Water Treatment Plant Wastes" are transferred to Outfall 004. Other RMC plants (e.g., PA0254720) have received the same limits for TSS, dissolved iron, and pH, so the TBELs are reasonable.

Table 7. TBELs and Monitoring Requirements for Outfall 004

Parameter	Average Monthly (mg/L)	Maximum Daily (mg/L)
Flow (MGD)	Report	Report
Total Suspended Solids	30.0	60.0
Total Dissolved Solids	—	Report
Chloride	—	Report
Sulfate	—	Report
Chemical Oxygen Demand	—	Report
Oil and Grease	—	Report
MBAS	—	Report
Aluminum	—	Report
Iron, Dissolved	Report	7.0
Iron, Total	—	Report
pH (S.U.)	6.0 (minimum)	9.0 (maximum)

Stream Withdrawal

Gavco previously used a pump to withdraw water from the unnamed tributary of Pigeon Creek. Pursuant to correspondence with Gavco's consultant, Earthtech, dated June 3, 2022 (see **Attachment C**), the pump has been removed and will not be used. Earthtech indicated that the facility is served by public water and that it was unclear why the pump was installed. DEP observes that water pumped from the tributary is not subject to charges by the local municipality for public water supply, so stream withdrawals may have been viewed as a cheaper alternative than potable water from the public supply. Although, there are still costs to run and maintain the pump and piping infrastructure.

While stream withdrawals are allowable, DEP must consider stream flow and water withdrawal rates before approving water withdrawals from streams to ensure that users cannot degrade a stream by removing too much water. Therefore, the permit will include a condition that prohibits withdrawals from the unnamed tributary of Pigeon Creek unless such withdrawals are approved in writing by DEP.

Image 11. Stream Withdrawal. (July 28, 2020 by DEP)



Storm Water

Outfall 004 discharges storm water in addition to truck wash water. Areas on the south side of the facility near the batch plant and the aggregate storage piles slope towards the truck wash sump, which leads to a sediment trap and then Outfall 004.

Gavco reported the effluent quality for storm water discharges at Outfall 004. It is unclear whether the results represent only the storm water that contributes to Outfall 004's discharges or whether the results represent wet weather discharges from Outfall 004 (i.e., truck wash water mixed with storm water). Any sample collected at Outfall 004 is likely to include both truck wash water and storm water runoff from process and material storage areas because all those sources combine in the truck wash sump. The reported results are summarized in **Table 8**.

Image 12. Outfall 004 Drainage Area (Google Earth Pro, September 23, 2015)



Table 8. Storm Water Analytical Results Reported for Outfall 004

Parameter	Outfall 004 Storm Water Results (mg/L)	Outfall 004 Results (mg/L)	No Exposure Thresholds (mg/L)	PAG-03 Benchmark Values (mg/L)	Most Stringent Criterion (mg/L)
Oil and Grease	<5	5	≤ 5.0	30	—
BOD ₅	3	39	≤ 10.0	30	—
COD	14	130	≤ 30.0	120	—
TSS	73	162	≤ 30.0	100	—
Total Nitrogen	1.49	32.6 (TKN)	≤ 2.0 (Tot. N)	N/A	10.0
Total Phosphorus	0.06	0.07	≤ 1.0	—	—
pH (standard units)	9.98	11.4	6.0 – 9.0 s.u.	—	6.0 – 9.0 s.u.
Iron	2.06	1.19	≤ 7.0	7.0	—
Aluminum	1.590	1.290	—	—	0.750
Manganese	0.119	0.0903	—	—	1.0
Hardness	83.4	388	—	—	—
Alkalinity	55	—	—	—	—
TDS	96	780	—	—	500
Chloride	6.1	110	—	2,000	250
Sulfate	12.2	156	—	—	250

Storm water quality is generally comparable to or better (i.e., lower) than the process wastewater results summarized in **Table 6**. Since storm water does not discharge separately from process wastewaters, the TBELs and WQBELs developed for process wastewaters will control all sources that discharge through Outfall 004. Additionally, monitoring will be required for Total Nitrogen and Total Phosphorus to be consistent with Appendix N of the PAG-03. The other Appendix N parameters are either limited or monitored already. No other limits or monitoring requirements are imposed to regulate storm water at Outfall 004.

Even though no additional limits are imposed, Gavco must implement BMPs in the drainage area contributing to Outfall 004 including the Sector-Specific BMPs previously discussed in this Fact Sheet and standard BMPs relating to pollution prevention and exposure minimization, good housekeeping, erosion and sediment control, and spill prevention and response.

004.B. Water Quality-Based Effluent Limitations (WQBELs)

Toxics Management Spreadsheet Water Quality Modeling Program and Procedures for Evaluating Reasonable Potential

WQBELs are developed pursuant to Section 301(b)(1)(C) of the Clean Water Act and, per 40 CFR § 122.44(d)(1)(i), are imposed to “control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) that are or may be discharged at a level that will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality.” The Department of Environmental Protection developed the DEP Toxics Management Spreadsheet (TMS) to facilitate calculations necessary to complete a reasonable potential (RP) analysis and determine WQBELs for discharges of toxic and some nonconventional pollutants.

The TMS is a single discharge, mass-balance water quality modeling program for Microsoft Excel® that considers mixing, first-order decay, and other factors to determine WQBELs for toxic and nonconventional pollutants. Required input data including stream code, river mile index, elevation, drainage area, discharge flow rate, low-flow yield, and the hardness and pH of both the discharge and the receiving stream are entered into the TMS to establish site-specific discharge conditions. Other data such as reach dimensions, partial mix factors, and the background concentrations of pollutants in the stream also may be entered to further characterize the discharge and receiving stream. The pollutants to be analyzed by the model are identified by inputting the maximum concentration reported in the permit application or Discharge Monitoring Reports, or by inputting an Average Monthly Effluent Concentration (AMEC) calculated using DEP’s TOXCONC spreadsheet for datasets of 10 or more effluent samples. Pollutants with no entered concentration data and pollutants for which numeric water quality criteria in 25 Pa. Code Chapter 93 have not been promulgated are excluded from the modeling. Ammonia-nitrogen, CBOD-5, and dissolved oxygen are analyzed separately using DEP’s WQM 7.0 model.

The TMS evaluates each pollutant by computing a wasteload allocation for each applicable criterion, determining the most stringent governing WQBEL, and comparing that governing WQBEL to the input discharge concentration to determine whether permit requirements apply in accordance with the following RP thresholds:

- Establish limits in the permit where the maximum reported effluent concentration or calculated AMEC equals or exceeds 50% of the WQBEL. Use the average monthly, maximum daily, and instantaneous maximum (IMAX) limits for the permit as recommended by the TMS (or, if appropriate, use a multiplier of 2 times the average monthly limit for the maximum daily limit and 2.5 times the average monthly limit for IMAX).
- For non-conservative pollutants, establish monitoring requirements where the maximum reported effluent concentration or calculated AMEC is between 25% - 50% of the WQBEL.
- For conservative pollutants, establish monitoring requirements where the maximum reported effluent concentration or calculated AMEC is between 10% - 50% of the WQBEL.

In most cases, pollutants with effluent concentrations that are not detectable at the level of DEP’s Target Quantitation Limits are eliminated as candidates for WQBELs and water quality-based monitoring.

Reasonable Potential Analysis and WQBEL Development for Outfall 004

Table 9. TMS Inputs for 004

Parameter	Value
River Mile Index	0.92
Discharge Flow (MGD)	0.0002
Discharge Hardness (mg/L)	303.67
Discharge pH (s.u.)	11.4
Basin/Stream Characteristics	
Parameter	Value
Drainage Area (sq. mi.)	1.04
Q ₇₋₁₀ (cfs)	0.01092
Low-flow yield (cfs/mi ²)	0.0105
Elevation (ft)	1,002
Slope	0.013

Discharges from Outfall 004 are evaluated based on the maximum concentrations reported in the permit application. The TMS model is run for Outfall 004 with the modeled discharge and receiving stream characteristics shown in **Table 9**. Pollutants for which specific water quality criteria have not been promulgated (e.g., TSS, oil and grease, etc.) are excluded from the modeling.

The modeled discharge flow is the average flow during production as reported on the NPDES permit application. The Q₇₋₁₀ flow of the Unnamed Tributary of Pigeon Creek River is estimated using USGS’s StreamStats web application. StreamStats estimates flow statistics for ungaged sites using streamflow data from gaged sites and regression equations that account for the characteristics of the delineated drainage basin at the ungaged site. The slope is estimated using a topographic map. Hardness is the average hardness reported on the permit application and pH is the maximum pH reported on the permit application.

The drainage area calculated by StreamStats at Outfall 004 is 1.04 square miles, which is less than the 2.26-square-mile minimum limit for StreamStats' regression equations to estimate low flow statistics with known errors. Therefore, the Q_{7-10} of the unnamed tributary at Outfall 004 is calculated by selecting a location downstream of that point where the minimum drainage area is met and calculating the low-flow yield at that point. The low-flow yield is an estimate of the amount of stream flow generated per square mile of drainage area. The Q_{7-10} at Outfall 004 is calculated by multiplying the low-flow yield for the downstream point by Outfall 004's drainage area.

A downstream point on an unnamed tributary to Pigeon Creek just downstream of where Gavco's receiving stream flows into the unnamed tributary was selected in StreamStats to ensure that the minimum drainage area was achieved. The selected point has a drainage area of 3.22 square miles and a Q_{7-10} of 0.0338 cfs. The low-flow yield in the vicinity of Outfall 004 is:

$$0.0338 \text{ cfs} / 3.22 \text{ sq. mi.} \approx 0.0105 \text{ cfs/sq. mi.}$$

The Q_{7-10} at Outfall 004 is then estimated as:

$$0.0105 \text{ cfs/sq. mi.} \times 1.04 \text{ sq. mi.} = 0.01092 \text{ cfs}$$

Output from the TMS model run is included in **Attachment D**. As explained previously, the TMS compares the input discharge concentrations to the calculated WQBELs using DEP's Reasonable Potential thresholds to evaluate the need to impose WQBELs or monitoring requirements in the permit. Based on the results of the TMS modeling, the permit requirements listed in **Table 10** apply at Outfall 004.

Table 10. Water Quality-Based Requirements for Outfall 004

Parameter	Permit Limits			Reported Result (µg/L)	Target QL (µg/L)	Governing WQBEL [and Basis] †
	Avg Mo. (µg/L)	Max Daily (µg/L)	IMAX (µg/L)			
Hexavalent Chromium	Report	Report	Report	180	1.0	377 µg/L [CFC]
Mercury, Total	Report	Report	Report	0.2	0.2	1.81 µg/L [THH]

† CFC = Chronic Fish Criterion; THH = Threshold Human Health

DEP notes that hexavalent chromium is known to be present in Portland cement and, to the extent that hexavalent chromium is present in discharges from the Charleroi Plant, Gavco can control the discharge of hexavalent chromium by controlling fugitive cement and concrete dust. ⁹

DEP further notes that the Charleroi Fishing Club has a dam on the unnamed tributary that impounds water to create an artificial pond about 2.8 acres in size. The pond is used by the club for fishing. The dam is located about 1,300 feet downstream of Gavco's Charleroi Plant, but the headwaters of the pond are only about 800 feet downstream of the plant.

004.C. Effluent Limitations and Monitoring Requirements for Outfall 004

In accordance with 25 Pa. Code §§ 92a.12 and 92a.61, effluent limits at Outfall 004 are the more stringent of TBELs, WQBELs, regulatory effluent standards, and monitoring requirements.

Table 11. Effluent Limits and Monitoring Requirements for Outfall 004

Parameter	Mass (pounds/day)		Concentration (mg/L)			Basis
	Average Monthly	Maximum Daily	Average Monthly	Maximum Daily	Instant Maximum	
Flow (MGD)	Report	Report	—	—	—	25 Pa. Code § 92a.61(d)(1)
Total Suspended Solids	—	—	30.0	60.0	75.0	25 Pa. Code § 92a.48(a)(3) & 40 CFR § 125.3
Total Dissolved Solids	—	—	—	Report	—	25 Pa. Code § 92a.61(b)
Chemical Oxygen Demand	—	—	—	Report	—	25 Pa. Code § 92a.61(b)
Oil and Grease	—	—	—	Report	—	25 Pa. Code § 92a.61(b)
Chloride	—	—	—	Report	—	25 Pa. Code § 92a.61(b)

⁹ "Hexavalent Chromium in Portland Cement." <https://www.astm.org/ccca10560j.html>

"Study on Cr(VI) Leaching from Cement and Cement Composites." <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5923866/>

Table 11 (continued). Effluent Limits and Monitoring Requirements for Outfall 004

Parameter	Mass (pounds/day)		Concentration (mg/L)			Basis
	Average Monthly	Maximum Daily	Average Monthly	Maximum Daily	Instant Maximum	
Sulfate	—	—	—	Report	—	25 Pa. Code § 92a.61(b)
MBAS	—	—	—	Report	—	25 Pa. Code § 92a.61(b)
Nitrogen, Total	—	—	—	Report	—	25 Pa. Code §§ 92a.61(b) and (h); PAG-03, Appendix N
Phosphorus, Total	—	—	—	Report	—	25 Pa. Code §§ 92a.61(b) and (h); PAG-03, Appendix N
Aluminum, Total	—	—	—	Report	—	25 Pa. Code §§ 92a.61(b) and (h); PAG-03, Appendix N
Chromium, Hexavalent	—	—	Report	Report	—	WQBELs; 25 Pa. Code §§ 92a.12(a)(1) & 96.4(b)
Iron, Dissolved	—	—	Report	7.0	—	25 Pa. Code §§ 92a.48(a)(2) and § 95.2(4)
Iron, Total	—	—	—	Report	—	25 Pa. Code §§ 92a.61(b) and (h); PAG-03, Appendix N
Mercury, Total	—	—	Report	Report	—	25 Pa. Code § 92a.61(b)
pH	—	—	6.0 (Instant. Minimum)	—	9.0	25 Pa. Code §§ 92a.48(a)(2) and § 95.2(1)

Minimum measurement frequencies and sample types are based on Table 6-4 – Self-Monitoring Requirements for Industrial Dischargers in DEP’s “Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits”. The guidance recommends 1/week sampling using 4-grab composites and weekly flow monitoring using a flow meter. However, given the nature of Outfall 004’s discharges, sampling will be required 2/month using grab sampling for TSS, Hexavalent Chromium, Total Mercury, and Dissolved Iron. Flow must be estimated 1/week and pH must be measured weekly. TDS, COD, Oil and Grease, Chloride, Sulfate, MBAS, Total Aluminum, Total Nitrogen, and Total Phosphorus will require 1/month sampling using grab sampling.

Development of Effluent Limitations

Outfall No.	005	Design Flow (MGD)	Variable
Latitude	40° 07' 50.1"	Longitude	-79° 58' 25.7"
Wastewater Description: Storm water from the upper parking/support area			

Image 13. Outfall 005. (July 28, 2020 by DEP)



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

There are no Federal Effluent Limitations Guidelines (ELGs) applicable to the storm water discharges at Outfall 005. In the absence of applicable ELGs, TBELs, if warranted, are developed based on Best Professional Judgment.

Consistent with 25 Pa. Code § 92a.61(h) and DEP's policy for permitting storm water discharges associated with industrial activities, minimum standards described in the PAG-03 will be applied to Gavco's storm water discharges. Based on Gavco's SIC Code of 3273, the monitoring requirements of Appendix N of the PAG-03 will be imposed at Outfall 005 (see **Table 1**).

DEP considers the use of BMPs to be BAT for storm water outfalls unless effluent concentrations indicate that BMPs provide inadequate pollution control. Gavco reported in its October 2020 application update that it was unable to sample Outfall 005 due to an extended dry period, so the quality of Outfall 005's storm water discharges is unknown as is the effectiveness of Gavco's BMPs within Outfall 005's drainage area. Consequently, no numerical TBELs are developed for this outfall.

TBELs may be warranted in the future if pollutant concentrations in storm water consistently exceed the benchmark values shown in **Table 1**. The benchmark values are not effluent limitations and exceedances do not constitute permit violations. However, if sampling demonstrates exceedances of benchmark values for two consecutive monitoring periods, then Gavco must submit a corrective action plan within 90 days of the end of the monitoring period triggering the plan. The corrective action plan requirement and the benchmark values will be specified in a condition in Part C of the permit.

Estimates of the storm water discharge flow rate will be required pursuant to 25 Pa. Code § 92a.61(h).

005.B. Water Quality-Based Effluent Limitations (WQBELs)

No WQBELs are developed for discharges from Outfall 005. Generally, DEP does not develop numeric WQBELs for storm water discharges. Pursuant to 25 Pa. Code § 96.4(g), mathematical modeling used to develop WQBELs must be performed at Q₇₋₁₀ low-flow conditions. Precipitation-induced discharges generally do not occur at Q₇₋₁₀ 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.

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.

005.C. Effluent Limitations and Monitoring Requirements for Outfall 005

In accordance with 25 Pa. Code §§ 92a.12 and 92a.61, effluent limits at Outfall 005 are the more stringent of TBELs, WQBELs, regulatory effluent standards, and monitoring requirements.

Table 12. Effluent Limits and Monitoring Requirements for Outfall 005

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
Nitrogen, Total	—	—	—	Report	—	25 Pa. Code § 92a.61(h); PAG-03, Appendix N
Phosphorus, Total	—	—	—	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 at the time of sampling.

Development of Effluent Limitations

Outfall No.	006	Design Flow (MGD)	Variable
Latitude	40° 7' 40.25"	Longitude	-79° 58' 20.70"
Wastewater Description: Storm water from the lower support area			

Gavco proposed to eliminate Outfall 006 because the outlet could not be located. However, DEP's understanding is that the catch basin at the site that leads to Outfall 006 is accessible, but currently clogged with sediment.

Image 14. Lower plant yard looking west. (July 28, 2020 by DEP)



Image 15. Catch basin to Outfall 006. (July 28, 2020 by DEP)



Since the catch basin leading to Outfall 006 still exists, Outfall 006 will be listed in the permit—notwithstanding failed attempts to locate the outfall pipe. As with Outfall 001, if the catch basin still transmits flow, then dye testing could be used to identify the outfall location. Alternatively, assuming the catch basin is not needed to control drainage in the yard, Gavco could permanently seal the catch basin to remove Outfall 006 from the permit. Given the condition of the catch basin and the inability to locate the outfall, DEP is not proposing any monitoring requirements for Outfall 006.

Development of Effluent Limitations

Outfall No.	007	Design Flow (MGD)	Variable
Latitude	40° 07' 49.1"	Longitude	-79° 58' 23.7"
Wastewater Description: Storm water from the plant area			

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

There are no Federal Effluent Limitations Guidelines (ELGs) applicable to the storm water discharges at Outfall 007. In the absence of applicable ELGs, TBELs, if warranted, are developed based on Best Professional Judgment.

Consistent with 25 Pa. Code § 92a.61(h) and DEP's policy for permitting storm water discharges associated with industrial activities, minimum standards described in the PAG-03 will be applied to Gavco's storm water discharges. Based on Gavco's SIC Code of 3273, the monitoring requirements of Appendix N of the PAG-03 will be imposed at Outfall 007 (see **Table 1**).

DEP considers the use of BMPs to be BAT for storm water outfalls unless effluent concentrations indicate that BMPs provide inadequate pollution control. Gavco reported in its October 2020 application update that it was unable to sample Outfall 007 due to an extended dry period, so the quality of Outfall 007's storm water discharges is unknown as is the effectiveness of Gavco's BMPs within Outfall 007's drainage area. Consequently, no numerical TBELs are developed for this outfall.

TBELs may be warranted in the future if pollutant concentrations in storm water consistently exceed the benchmark values shown in **Table 1**. The benchmark values are not effluent limitations and exceedances do not constitute permit violations. However, if sampling demonstrates exceedances of benchmark values for two consecutive monitoring periods, then Gavco must submit a corrective action plan within 90 days of the end of the monitoring period triggering the plan. The corrective action plan requirement and the benchmark values will be specified in a condition in Part C of the permit.

Estimates of the storm water discharge flow rate will be required pursuant to 25 Pa. Code § 92a.61(h).

007.B. Water Quality-Based Effluent Limitations (WQBELs)

No WQBELs are developed for discharges from Outfall 007. Generally, DEP does not develop numeric WQBELs for storm water discharges. Pursuant to 25 Pa. Code § 96.4(g), mathematical modeling used to develop WQBELs must be performed at Q₇₋₁₀ low-flow conditions. Precipitation-induced discharges generally do not occur at Q₇₋₁₀ 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.

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.

007.C. Effluent Limitations and Monitoring Requirements for Outfall 007

In accordance with 25 Pa. Code §§ 92a.12 and 92a.61, effluent limits at Outfall 007 are the more stringent of TBELs, WQBELs, regulatory effluent standards, and monitoring requirements.

Table 13. Effluent Limits and Monitoring Requirements for Outfall 007

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
Nitrogen, Total	—	—	—	Report	—	25 Pa. Code § 92a.61(h); PAG-03, Appendix N
Phosphorus, Total	—	—	—	Report	—	25 Pa. Code § 92a.61(h); PAG-03, Appendix N
Aluminum, Total	—	—	—	Report	—	25 Pa. Code § 92a.61(h); PAG-03, Appendix N

Table 13 (continued). Effluent Limits and Monitoring Requirements for Outfall 007

Parameter	Mass (pounds/day)		Concentration (mg/L)			Basis
	Average Monthly	Daily Maximum	Average Monthly	Maximum Daily	Instant Maximum	
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 at the time of sampling.

Development of Effluent Limitations

Outfall No.	008	Design Flow (MGD)	0.0002
Latitude	40° 07' 49.2"	Longitude	-79° 58' 24.4"
Wastewater Description: Effluent waste from the drum wash and storm water from the storage shed roof and diesel fuel storage tank containment dike			

Outfall 008 discharges drum washout water from the drum washout cells, drainage from the solids drying pad, and storm water runoff from waste concrete dumping areas east of the main plant. Outfall 008 also appears to discharge storm water that accumulates within the secondary containment dike for an aboveground diesel fuel tank and storm water from the roof of the maintenance shed. Aerial images from Google Earth Pro show the regular drainage pathways of those sources.

Image 16. Outfall 008 Drainage (Google Earth Pro, June 14, 2014)



Image 17. Outfall 008 Drainage (Google Earth Pro, April 17, 2016)



Image 18. Outfall 008 Drainage (Google Earth Pro, October 8, 2020)



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

Discharges from Outfall 008 have the same characteristics as those discussed in Section 004.A of this Fact Sheet. In that section, DEP identified a sloped slab system with aggregate recovery, partial recycle of wastewater, no recovery of cement fines, and pH adjustment as BAT for Gavco's process wastewaters from Outfall 004. Outfall 008's wastewaters are already managed using a variation of the sloped slab system (and a filter sock and rock berm along the tributary), so pH adjustment would be the only added treatment requirement for Outfall 008's wastewaters. Based on the concept of technology transfer, the TBELs developed for Outfall 004 will be imposed at Outfall 008.

Table 14. TBELs and Monitoring Requirements for Outfall 008

Parameter	Average Monthly (mg/L)	Maximum Daily (mg/L)
Flow (MGD)	Report	Report
Total Suspended Solids	30.0	60.0
Total Dissolved Solids	—	Report
Chloride	—	Report
Sulfate	—	Report
Chemical Oxygen Demand	—	Report
Oil and Grease	—	Report
MBAS	—	Report
Aluminum	—	Report
Iron, Dissolved	Report	7.0
Iron, Total	—	Report
pH (S.U.)	6.0 (minimum)	9.0 (maximum)

Existing and Proposed Water Handling for Outfall 008

In its 2020 application update, Gavco proposed to install tanks to manage the discharge of process wastewaters. The tanks will provide extra water retention capacity and reduce the amount of water that discharges through process outfalls (004 and 008). Gavco explained its proposal for Outfall 008's discharges as follows:

The process water generated for this point is from the concrete washout area. The returning truck drivers pull up to this area and use the existing concrete washout cells to collect the washout slurry material. An existing pump is used to circulate the water into the truck drum. Recent site monitoring has shown this area to produce discharges. Samples have been collected and analyzed. The operator is proposing to install a tank and plumb it into this system so that a flow switch is installed to automatically maintain the water level in the existing concrete wash out cells. This pipe will go the tank for surge capacity. The truck driver will continue to use the existing cells for washout and thus the system will be closed circuit. It should be noted that the operator is continuously adding water to the concrete wash out cells due to evaporation and continued cleaning of the accumulated material. It is anticipated that the addition of 004 water would likely substitute this additional clean water source.

As stated in Section 004.A of this Fact Sheet, any open pond has the chance to discharge at some point and the washout cells appear to be undersized for the volume of water they receive. Installing a tank and pump at the drum washout will provide additional capacity, which is likely to reduce but not eliminate overflows from the washout cells since the cells are exposed to precipitation. Even if washout is reduced or eliminated, drainage from the solids drying pad, waste concrete piles, and other yard areas will discharge to Outfall 008 in the absence of additional BMPs and wastewater management practices. Gavco is encouraged to implement measures it believes will reduce or eliminate discharges from both the truck wash and drum washout. However, the TBELs in **Table 14** will be imposed on any discharges from Outfall 008.

Gavco may consider additional structural changes to reduce or eliminate discharges from Outfall 008 such as increasing the size of the washout cells, installing storm resistant shelters over the cells and solids drying pad, and modifying slopes and/or installing berms so that all drainage from the solids drying pad and waste concrete areas flow into the washout basins. The total recycle options discussed in Section 004.A of this Fact Sheet also may be considered.

Hazardous Waste

The reported pH of process wastewater discharges from Outfall 008 is 12.5 s.u. Pursuant to 40 CFR § 261.22 regarding the identification and listing of hazardous wastes according to the characteristic of corrosivity, an aqueous "solid waste" with

a pH greater than or equal to 12.5 as determined by a pH meter using Method 9040C in “Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,” EPA Publication SW-846 is classified by EPA as a D002 Hazardous Waste.

Gavco used Standard Method 4500-H+B to measure the pH of the drum washout water and not Method 9040C, so Gavco’s drum washout water is not a D002 Hazardous Waste based on the 40 CFR § 261.22 criteria. In addition, industrial waste discharges are excluded from Part 261’s definition of “solid waste” under 40 CFR § 261.4(a)(2). That exclusion does not encompass industrial wastewaters while they are being collected, stored, or treated before discharge, nor does it encompass sludges that are generated by industrial wastewater treatment. Consequently, Gavco’s drum washout water is likely a hazardous waste while it is stored in the drum washout cells.

If discharges of drum washout water occur as overflows from the washout cells or for other reason, then the potentially hazardous corrosivity characteristics of that waste must be removed through pH adjustment to a maximum pH of 9.0 s.u.

Storm Water

As described above, Outfall 008 discharges storm water in addition to drum washout. Storm water runoff includes roof drainage from the maintenance shed, storm water that collects in the secondary containment dike for a diesel fuel tank, and storm water runoff from the yard.

Gavco reported the effluent quality for storm water discharges at Outfall 008. It is unclear whether the results represent only the storm water that contributes to Outfall 008’s discharges or whether the results represent wet weather discharges from Outfall 008 (i.e., drum washout cell overflows and solids drying pad drainage mixed with storm water). Any sample collected at Outfall 008 is likely to include both process wastewater and storm water runoff since rainfall is the likely cause for overflows from the drum washout cells. The reported storm water results from Module 1 of the application and the corresponding results for Outfall 008 from Pollutant Groups 1 and 2 are summarized in **Table 15**.

Table 15. Storm Water Analytical Results Reported for Outfall 008

Parameter	Outfall 008 Storm Water Results (mg/L)	Outfall 008 Results (mg/L)	No Exposure Thresholds (mg/L)	PAG-03 Benchmark Values (mg/L)	Most Stringent Criterion (mg/L)
Oil and Grease	<5	5	≤ 5.0	30	—
BOD ₅	<2	14	≤ 10.0	30	—
COD	14	120	≤ 30.0	120	—
TSS	86	162	≤ 30.0	100	—
Total Nitrogen	1.18	2.1 (TKN)	≤ 2.0 (Tot. N)	N/A	10.0
Total Phosphorus	0.03	0.03	≤ 1.0	—	—
pH (standard units)	11.0	12.5	6.0 – 9.0 s.u.	—	6.0 – 9.0 s.u.
Iron	0.43	0.44	≤ 7.0	7.0	—
Aluminum	1.210	0.961	—	—	0.750
Manganese	0.0388	0.0361	—	—	1.0
Hardness	160	1660	—	—	—
Alkalinity	110	—	—	—	—
TDS	352	3640	—	—	500
Chloride	93.5	151	—	2,000	250
Sulfate	47.3	1150	—	—	250

The storm water results are generally comparable to the process wastewater results. Storm water may discharge separately from process wastewaters if there is a storm event that is not significant enough to cause the drum washout cells to overflow but is significant enough to cause a storm water discharge. DEP is not proposing any additional TBELs or monitoring requirements for those storm water discharges.

Even though no additional limits are imposed, Gavco must implement BMPs in the drainage area contributing to Outfall 008 including the Sector-Specific BMPs previously discussed in this Fact Sheet and standard BMPs relating to pollution prevention and exposure minimization, good housekeeping, erosion and sediment control, and spill prevention and response.

008.B. Water Quality-Based Effluent Limitations (WQBELs)

Reasonable Potential Analysis and WQBEL Development for Outfall 008

Discharges from Outfall 008 are evaluated based on the maximum concentrations reported in the permit application. The TMS model is run for Outfall 008 with the modeled discharge and receiving stream characteristics shown in **Table 16**. Pollutants for which specific water quality criteria have not been promulgated (e.g., TSS, oil and grease, etc.) are excluded from the modeling.

Table 16. TMS Inputs for 008

Parameter	Value
River Mile Index	0.94
Discharge Flow (MGD)	0.0002
Discharge Hardness (mg/L)	1660
Discharge pH (s.u.)	12.5
Basin/Stream Characteristics	
Parameter	Value
Drainage Area (sq. mi.)	0.86
Q ₇₋₁₀ (cfs)	0.000903
Low-flow yield (cfs/mi ²)	0.0105
Elevation (ft)	1,002
Slope	0.013

The modeled discharge flow is the average flow during production as reported on the NPDES permit application. The Q₇₋₁₀ flow of the Unnamed Tributary of Pigeon Creek River is estimated using USGS's StreamStats web application. StreamStats estimates flow statistics for ungaged sites using streamflow data from gaged sites and regression equations that account for the characteristics of the delineated drainage basin at the ungaged site. The slope is estimated using a topographic map. Hardness is the average hardness reported on the permit application and pH is the maximum pH reported on the permit application.

Q₇₋₁₀ is calculated using the low-flow yield previously discussed in Section 004.B of this Fact Sheet and the drainage area at Outfall 008.

$$0.0105 \text{ cfs/sq. mi.} \times 0.86 \text{ sq. mi.} = 0.000903 \text{ cfs}$$

Output from the TMS model run is included in **Attachment E**. As explained previously, the TMS compares the input discharge concentrations to the calculated WQBELs using DEP's Reasonable Potential thresholds to evaluate

the need to impose WQBELs or monitoring requirements in the permit. Based on the results of the TMS modeling, the permit requirements listed in **Table 17** apply at Outfall 008.

Table 17. Water Quality-Based Requirements for Outfall 008

Parameter	Permit Limits			Reported Result (µg/L)	Target QL (µg/L)	Governing WQBEL [and Basis] †
	Avg Mo. (µg/L)	Max Daily (µg/L)	IMAX (µg/L)			
Total Chromium (III)	Report	Report	Report	2,230	4.0	7,338 µg/L [CFC]
Hexavalent Chromium	314	490	784	2,300	1.0	314 µg/L [CFC]
Mercury, Total	Report	Report	Report	0.2	0.2	1.51 µg/L [THH]

† CFC = Chronic Fish Criterion; THH = Threshold Human Health

The reported concentration of hexavalent chromium is more than seven times greater than the allowable average monthly limit and about three times greater than the instantaneous maximum limit. It is unlikely Gavco will be able to comply with the WQBELs for hexavalent chromium at Outfall 008 upon permit issuance. Therefore, pursuant to 25 Pa. Code § 92a.51(a), a schedule of compliance will be included in the permit for the hexavalent chromium WQBELs.

As explained in Section 004.B of this Fact Sheet, chromium is known to be present in Portland cement. Gavco intends to install a tank to reduce the occurrence of overflows from the drum washout cells. The tank will reduce the occurrence of discharges but is unlikely to eliminate those discharges. Gavco can consider other measures to eliminate discharges of drum washout, which is achievable using a variety of measures discussed in Section 004.A of this Fact Sheet (e.g., total recycle systems, rain-resistant shelters for washout bays, etc.). Gavco also can consider measures to limit fugitive cement and concrete dust that would be mobilized by runoff and which likely contributes to the reported chromium concentrations.

Since the source of chromium is known and Gavco is already planning to install a tank to reduce the occurrence of discharges from Outfall 008, a limited two-year schedule of compliance is included in the permit for hexavalent chromium.

008.C. Effluent Limitations and Monitoring Requirements for Outfall 008

In accordance with 25 Pa. Code §§ 92a.12 and 92a.61, effluent limits at Outfall 004 are the more stringent of TBELs, WQBELs, regulatory effluent standards, and monitoring requirements.

Table 18. Effluent Limits and Monitoring Requirements for Outfall 008

Parameter	Mass (pounds/day)		Concentration (mg/L)			Basis
	Average Monthly	Maximum Daily	Average Monthly	Maximum Daily	Instant Maximum	
Flow (MGD)	Report	Report	—	—	—	25 Pa. Code § 92a.61(d)(1)
Total Suspended Solids	—	—	30.0	60.0	75.0	25 Pa. Code § 92a.48(a)(3) & 40 CFR § 125.3
Total Dissolved Solids	—	—	—	Report	—	25 Pa. Code § 92a.61(b)
Chemical Oxygen Demand	—	—	—	Report	—	25 Pa. Code § 92a.61(b)
Oil and Grease	—	—	—	Report	—	25 Pa. Code § 92a.61(b)
Chloride	—	—	—	Report	—	25 Pa. Code § 92a.61(b)
Sulfate	—	—	—	Report	—	25 Pa. Code § 92a.61(b)
MBAS	—	—	—	Report	—	25 Pa. Code § 92a.61(b)
Nitrogen, Total	—	—	—	Report	—	25 Pa. Code §§ 92a.61(b) and (h); PAG-03, Appendix N
Phosphorus, Total	—	—	—	Report	—	25 Pa. Code §§ 92a.61(b) and (h); PAG-03, Appendix N
Aluminum	—	—	—	Report	—	25 Pa. Code §§ 92a.61(b) and (h); PAG-03, Appendix N
Chromium (III), Total	—	—	—	Report	—	25 Pa. Code §§ 92a.61(b) and (h)
Chromium, Hexavalent [†]	—	—	0.314	0.490	0.784	WQBELs; 25 Pa. Code §§ 92a.12(a)(1) & 96.4(b)
Iron, Dissolved	—	—	Report	7.0	—	25 Pa. Code §§ 92a.48(a)(2) and § 95.2(4)
Iron, Total	—	—	—	Report	—	25 Pa. Code §§ 92a.61(b) and (h); PAG-03, Appendix N
Mercury, Total	—	—	Report	Report	—	25 Pa. Code § 92a.61(b)
pH	—	—	—	Report	—	25 Pa. Code §§ 92a.48(a)(2) and § 95.2(1)

[†] Parameter is subject to interim two-year monitoring and reporting.

Minimum measurement frequencies and sample types are based on Table 6-4 – Self-Monitoring Requirements for Industrial Dischargers in DEP's "Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits". The guidance recommends 1/week sampling using 4-grab composites and weekly flow monitoring using a flow meter. However, given the nature of Outfall 008's discharges, sampling will be required 2/month using grab sampling for TSS, Hexavalent Chromium, Total Chromium, Total Mercury, and Dissolved Iron. Flow must be estimated 1/week and pH must be measured weekly. TDS, COD, Oil and Grease, Chloride, Sulfate, MBAS, Total Aluminum, Total Nitrogen, and Total Phosphorus will require 1/month sampling using grab sampling.

Tools and References Used to Develop Permit	
<input type="checkbox"/>	WQM for Windows Model (see Attachment)
<input checked="" type="checkbox"/>	Toxics Management Spreadsheet (see Attachments D and E)
<input type="checkbox"/>	TRC Model Spreadsheet (see Attachment)
<input type="checkbox"/>	Temperature Model Spreadsheet (see Attachment)
<input type="checkbox"/>	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
<input checked="" type="checkbox"/>	Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97.
<input type="checkbox"/>	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
<input type="checkbox"/>	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
<input type="checkbox"/>	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
<input type="checkbox"/>	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
<input type="checkbox"/>	Pennsylvania CSO Policy, 385-2000-011, 9/08.
<input type="checkbox"/>	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
<input type="checkbox"/>	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.
<input type="checkbox"/>	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
<input type="checkbox"/>	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
<input type="checkbox"/>	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.
<input type="checkbox"/>	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
<input type="checkbox"/>	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
<input type="checkbox"/>	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
<input type="checkbox"/>	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
<input type="checkbox"/>	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
<input type="checkbox"/>	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
<input type="checkbox"/>	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
<input type="checkbox"/>	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 10/97.
<input type="checkbox"/>	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.
<input type="checkbox"/>	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 3/99.
<input type="checkbox"/>	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.
<input type="checkbox"/>	Design Stream Flows, 391-2000-023, 9/98.
<input type="checkbox"/>	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.
<input type="checkbox"/>	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
<input type="checkbox"/>	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
<input checked="" type="checkbox"/>	SOP: Standard Operating Procedure (SOP) for Clean Water Program – Establishing Effluent Limitations for Individual Industrial Permits, SOP No. BCW-PMT-032, 10/2020.
<input checked="" type="checkbox"/>	Other: Guidance Development Document for Effluent Limitations Guidelines and New Source Performance Standards for the Concrete Products Point Source Category, EPA 440/1-78/090h, 2/1978.
<input checked="" type="checkbox"/>	Other: Development Document for Effluent Limitations Guidelines and New Source Performance Standards for the Cement Manufacturing Point Source Category, EPA 440/1-74/005a, 1/1974.
<input checked="" type="checkbox"/>	Other: Sustainable Concrete Plant Guidelines, Version 1.1, RMC Foundation, 3/2011.
<input checked="" type="checkbox"/>	Other: Commonwealth of Pennsylvania Department of Transportation Publication 408/2020 – Specifications – Section 720.1. 4/2022.
<input checked="" type="checkbox"/>	Other: ASTM C1602/C1602M Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete.
<input checked="" type="checkbox"/>	Other: Stormwater Best Management Practice – Concrete Washout, USEPA, 2/2012.

ATTACHMENT A

EPA Stormwater Best Management Practice for Concrete Washout



Stormwater Best Management Practice

Concrete Washout



Minimum Measure

Construction Site Stormwater Runoff Control

Subcategory

Good Housekeeping/Materials Management

Description of Concrete Washout at Construction Sites

Concrete and its ingredients

Concrete is a mixture of cement, water, and aggregate material. Portland cement is made by heating a mixture of limestone and clay containing oxides of calcium, aluminum, silicon and other metals in a kiln and then pulverizing the resulting clinker. The fine aggregate particles are usually sand. Coarse aggregate is generally gravel or crushed stone. When cement is mixed with water, a chemical reaction called hydration occurs, which produces glue that binds the aggregates together to make concrete.

Concrete washout

After concrete is poured at a construction site, the chutes of ready mixed concrete trucks and hoppers of concrete pump trucks must be washed out to remove the remaining concrete before it hardens. Equipment such as wheelbarrows and hand tools also need to be washed down. At the end of each work day, the drums of concrete trucks must be washed out. This is customarily done at the ready mixed batch plants, which are usually off-site facilities, however large or rural construction projects may have on-site batch plants. Cementitious (having the properties of cement) washwater and solids also come from using such construction materials as mortar, plaster, stucco, and grout.

Environmental and Human Health Impacts

Concrete washout water (or washwater) is a slurry containing toxic metals. It's also caustic and corrosive, having a pH near 12. In comparison, Drano liquid drain cleaner has a pH of 13.5. Caustic washwater can harm fish gills and eyes and interfere with reproduction. The safe pH ranges for aquatic life habitats are 6.5 – 9 for freshwater and 6.5 – 8.5 for saltwater.

Construction workers should handle wet concrete and washout water with care because it may cause skin irritation and eye damage. If the washwater is dumped on the ground (Fig. 1), it can run off the construction site to adjoining roads and enter roadside storm drains, which discharge to surface waters such as rivers, lakes, or estuaries. The red arrow in Figure 2 points to a ready mixed truck chute that's being washed out into a roll-off bin, which isn't watertight. Leaking washwater, shown in the foreground, will likely follow similar



Figure 1. Chute washwater being dumped on the ground



Figure 2. Chute washwater leaking from a roll-off bin being used as a washout container

paths to nearby surface waters. Rainfall may cause concrete washout containers that are uncovered to overflow and also transport the washwater to surface waters. Rainwater polluted with concrete washwater can percolate down through the soil and alter the soil chemistry, inhibit plant growth, and contaminate the groundwater. Its high pH can increase the toxicity of other substances in the surface waters and soils. Figures 1 and 2 illustrate the need for better washout management practices.

Best Management Practice Objectives

The best management practice objectives for concrete washout are to (a) collect and retain all the concrete washout water and solids in leak proof containers, so that this caustic material does not reach the soil surface and then migrate to surface waters or into the ground water, and (b) recycle 100 percent of the collected concrete washout water and solids. Another

Stormwater Best Management Practice: Concrete Washout

objective is to support the diversion of recyclable materials from landfills. Table 1 shows how concrete washout materials can be recycled and reused.

Table 1 – Recycling concrete washout materials

Uses of Recycled Materials	Concrete Washout Materials					
	Washwater	Cement fines ^a	Fine aggregate	Coarse aggregate	Hardened concrete	Unused wet concrete
Reused to washout additional mixer truck chutes or drums	x					
Reused as a ready mixed concrete ingredient	x	x ^b	x	x		
Reused as an ingredient of precast concrete products, e.g., highway barriers, retaining wall blocks, riprap	x	x	x	x		x
Reused as crushed concrete products, e.g., road base or fill		x	x	x	x	
Reused to pave the yards of ready mixed concrete plants						x
Returned back to a surface water, e.g., river, lake, or estuary	x ^c					

a. Fine particles of cementitious material (e.g., Portland cement, slag cement, fly ash, silica fume)

b. Recyclable, if allowed by the concrete quality specifications

c. Treated to reduce the pH and remove metals, so it can be delivered to a municipal wastewater treatment plant, where it is treated further and then returned to a natural surface water

Washwater recycling, treatment, disposal

Washwater from concrete truck chutes, hand mixers, or other equipment can be passed through a system of weirs or filters to remove solids and then be reused to wash down more chutes and equipment at the construction site or as an ingredient for making additional concrete. A three chamber washout filter is shown in Figure 3. The first stage collects the coarse aggregate. The middle stage filters out the small grit and sand. The third stage has an array of tablets that filter out fines and reduces the pH. The filtered washwater is then discharged through a filter sock. An alternative is to pump the washout water out of the washout container (Fig 4) and treat the washwater off site to remove metals and reduce its pH, so it can be delivered to a publicly owned treatment works (POTW), also known as a municipal wastewater treatment plant, which provides additional treatment allowing the washwater to be discharged to a surface water. The POTW should be



Figure 3. Concrete washout filter

contacted to inquire about any pretreatment requirements, i.e., the National Pretreatment Standards for Prohibited Dischargers (40CFR 403.5) before discharging the washwater to the POTW. The washwater can also be retained in the washout container and allowed to evaporate, leaving only the hardened cementitious solids to be recycled.

Solids recycling

The coarse aggregate materials that are washed off concrete truck chutes into a washout container can be either separated by a screen and placed in aggregate bins to be reused at the construction site or returned to the ready mixed plant and washed into a reclaimer (Fig. 5). When washed out into a reclaimer, the fine and coarse aggregates are separated out and placed in different piles or bins to be reused in making fresh concrete. Reclaimers with settling tanks separate cement fines from the washwater, and these fines can also be used in new concrete unless prohibited by the user's concrete quality specifications.



Figure 4. Vacuuming washwater out of a washout container for treatment and reuse



Figure 5. Ready mixed truck washing out into a reclaimer

Hardened concrete recycling

When the washwater in a construction site concrete washout container has been removed or allowed to evaporate, the hardened concrete that remains can be crushed (Fig. 6) and reused as a construction material. It makes an excellent aggregate for road base and can be used as fill at the



Figure 6. Crushed concrete stockpile and crusher

construction site or delivered to a recycler. Concrete recyclers can be found at municipal solid waste disposal facilities, private recycling plants, or large construction sites.

Stormwater Best Management Practice: Concrete Washout

Wet concrete recycling

Builders often order a little more ready mixed concrete than they actually need, so it is common for concrete trucks to have wet concrete remaining in their drum after a delivery. This unused concrete can be returned to the ready mixed plant and either (1) used to pour precast concrete products (e.g., highway barriers, retaining wall blocks, riprap), (2) used to pave the ready mixed plant's yard, (3) washed into a reclaimer, or (4) dumped on an impervious surface and allowed to harden, so it can be crushed and recycled as aggregate. Unused wet concrete should not be dumped on bare ground to harden at construction sites because this can contribute to ground water and surface water contamination.

Washout Containers

Different types of washout containers are available for collecting, retaining, and recycling the washwater and solids from washing down mixed truck chutes and pump truck hoppers at construction sites.

Chute washout box

A chute washout box is mounted on the back of the ready mixed truck. If the truck has three chutes, the following procedure is used to perform the washout from the top down: (1) after the pour is completed, the driver attaches the extension chute to the washout box, (2) the driver then rotates the main chute over the extension chute (Fig. 7) and washes down the hopper first then the main chute, (3) finally the driver washes down the flop down chute and last the extension chute hanging on the box. All washwater and solids are captured in the box.



Figure 7. Chute washout box

After the wash down, washwater and solids are returned to the ready mixed plant for recycling. A filter basket near the top of the washout box separates out the coarse aggregates so they can be placed in a bin for reuse either at the construction site or back at the cement plant.

Chute washout bucket and pump

After delivering ready mixed concrete and scraping the last of the customer's concrete down the chute, the driver hangs a washout bucket shown in Figure 8 (see red arrow) on the end of the truck's chute and secures the hose to insure no leaks. The

driver then washes down the chute into the bucket to remove any cementitious material before it hardens. After washing out the chute, the driver pumps (yellow arrow points to the pump) the washwater, sand, and other fine solids from the bucket up into the truck's drum to be returned to the ready mixed plant, where it can be washed into a reclaimer. A removable screen at the bottom of the washout bucket prevents coarse aggregate from entering the pump. This coarse aggregate can also be returned to the plant and added to the coarse aggregate pile to be reused. All the materials are recycled.



Figure 8. Chute washout bucket and pump

Hay bale and plastic washout pit

A washout pit made with hay bales and a plastic lining is shown in Figure 9. Such pits can be dug into the ground or built above grade. The plastic lining should be free of tears or holes that would allow the washwater to escape (Fig. 10). After the pit is used to wash down the chutes of multiple ready mixed trucks and the washwater has evaporated or has been vacuumed off, the remaining hardened solids can be broken up and removed from the pit. This process may damage the hay bales and plastic lining. If damage occurs, the pit will need to be repaired and relined with new plastic. When the hardened solids are removed, they may be bound up with the plastic lining and have to be sent to a landfill, rather than recycled. Recyclers usually accept only unmixed material. If the pit is going to be emptied and repaired more than a few times, the hay bales and plastic will be generating additional solid waste. Ready mixed concrete



Figure 9. Hay bale and plastic washout pit



Figure 10. Leaking washout pit that has not been well maintained

Stormwater Best Management Practice: Concrete Washout

trucks can use hay bale washout pits, but concrete pump trucks have a low hanging hopper in the back that may prevent their being washed out into bale-lined pits.

Vinyl washout container



Figure 11. Vinyl washout pit with filter bag

The vinyl washout container (Fig. 11) is portable, reusable, and easier to install than a hay bale washout pit. The biodegradable filter bag (Fig. 12) assists in

extracting the concrete solids and prolongs the life of the vinyl container. When the bag is lifted, the water is filtered out and the remaining concrete solids and the bag can be disposed of together in a landfill, or the hardened concrete can be delivered to a recycler. After the solids have been removed several times and the container is full of washwater, the washwater can be allowed to evaporate, so the container can be reused. The washwater can be removed more quickly by placing another filter bag in the container and spreading water gelling granules evenly across the water. In about five minutes, the water in the filter bag will turn into a gel that can be removed with the bag. Then the gel and filter bag can be disposed of together.



Figure 12. Extracting the concrete solids or gelled washwater

Metal washout container

The metal roll-off bin (Fig. 13) is designed to securely contain concrete washwater and solids and is portable and reusable. It also has a ramp that allows concrete pump trucks to wash out their hoppers (Fig. 14). Roll-off providers offer recycling services, such as, picking up the roll-off bins after the washwater has evaporated and the solids have hardened, replacing them with empty washout bins, and delivering the hardened concrete to a recycler (Fig. 15), rather than a landfill. Some providers will vacuum off the washwater, treat it to remove metals and reduce the pH, deliver it to a wastewater treatment plant for additional treatment and



Figure 13. Mixer truck being washed out into a roll-off bin

subsequent discharge to a surface water. Everything is recycled or treated sufficiently to be returned to a natural surface water.



Figure 14. Pump truck using the ramp to wash out into a roll-off bin



Figure 15. Delivering hardened Concrete to a recycler

Another metal, portable, washout container, which has a rain cover to prevent overflowing, is shown in Figure 16. It is accompanied by an onsite washwater treatment unit, which reduces the pH and uses a forced weir tank system to remove the coarse aggregate, fine aggregate, and cement fines. The washwater can then be reused at the construction site to wash out other mixer truck chutes and equipment. The solids are allowed to harden together and can be taken to a concrete recycler (Fig. 17) to be crushed and used as road base or aggregate for making precast products, such as retaining wall blocks. All materials are recycled.



Figure 16. Washout container with a rain cover and onsite washwater treatment



Figure 17. Delivering hardened concrete to a recycler

Siting Washout Facilities

Concrete washout facilities, such as washout pits and vinyl or metal washout containers, should be placed in locations that provide convenient access to concrete trucks, preferably near the area where concrete is being poured. However they

Stormwater Best Management Practice: *Concrete Washout*

should not be placed within 50 feet of storm drains, open ditches, or waterbodies. Appropriate gravel or rock should cover approaches to concrete washout facilities when they are located on undeveloped property. On large sites with extensive concrete work, washouts should be placed at multiple locations for ease of use by ready mixed truck drivers. If the washout facility is not within view from the pour location, signage will be needed to direct the truck drivers.

Operating and Inspecting Washout Facilities

Concrete washout facilities should be inspected daily and after heavy rains to check for leaks, identify any plastic linings and sidewalls have been damaged by construction activities, and determine whether they have been filled to over 75 percent capacity. When the washout container is filled to over 75 percent of its capacity, the washwater should be vacuumed off or allowed to evaporate to avoid overflows. Then when the remaining cementitious solids have hardened, they should be removed and recycled. Damages to the container should be repaired promptly. Before heavy rains, the washout container's liquid level should be lowered or the container should be covered to avoid an overflow during the rain storm.

Educating Concrete Subcontractors

The construction site superintendent should make ready mixed truck drivers aware of washout facility locations and be watchful for improper dumping of cementitious material. In addition, concrete washout requirements should be included in contracts with concrete delivery companies.

Reference

NRMCA 2009. Environmental Management in the Ready Mixed Concrete Industry, 2PEMRM, 1st edition. By Gary M. Mullins. Silver Springs, MD: National Ready Mixed Concrete Association.

Websites and Videos

Construction Materials Recycling Association
www.concreterecycling.org

National Ready Mixed Concrete Association
www.nrmca.org

National Ready Mixed Concrete Research and Education Foundation
www.rmc-foundation.org

Additional information and videos on concrete washout containers and systems can be found by a web search for "concrete washout."

Photograph Credits

Figures 1, 2. Mark Jenkins, Concrete Washout Systems, Inc.

Figure 3. Mark Shaw, Ultra Tech International, Inc.

Figure 4. Mark Jenkins, Concrete Washout Systems, Inc.

Figure 5. Christopher Crouch, CCI Consulting

Figure 6. William Turley, Construction Materials Recycling Association

Figure 7. Brad Burke, Innovative Concrete Solutions, LLC

Figure 8. Ron Lankester, Enviroguard

Figures 9, 10. Mark Jenkins, Concrete Washout Systems, Inc.

Figures 11, 12. Tom Card, RTC Supply

Figures 13, 14, 15. Mark Jenkins, Concrete Washout Systems, Inc.

Figures 16, 17. Rick Abney Sr., Waste Crete Systems, LLP

Disclaimer

Please note that EPA has provided external links because they provide additional information that may be useful or interesting. EPA cannot attest to the accuracy of non-EPA information provided by these third-party websites and does not endorse any non-government organizations or their products or services.

ATTACHMENT B

Safer Choice Criteria for Surfactants

An official website of the United States government.

We've made some changes to EPA.gov. If the information you are looking for is not here, you may be able to find it on the EPA Web Archive or the January 19, 2017 Web Snapshot.

Close



Safer Choice Criteria for Surfactants

Surfactants in cleaning products are distinguished by their:

- rate of biodegradation,
- degradation products, and
- level of aquatic toxicity.

The Safer Choice Criteria for Surfactants combine these hazard characteristics, and require that surfactants with higher aquatic toxicity demonstrate a faster rate of biodegradation without degradation to products of concern. Surfactants that meet the Safer Choice Criteria are acceptable for use in a Safer Choice product; surfactants in products which typically bypass sewage treatment must meet the [Criteria for Environmental Fate & Toxicity for Chemicals in Direct Release Products](#).

The surfactants listed on the Safer Chemical Ingredients List (SCIL) include mixtures with varying chain lengths, degrees of branching, and numbers of ethoxyl (EO) and propoxyl (PO) groups. These structural characteristics determine the aquatic toxicity and rate of biodegradation of the chemical. Safer Choice may require additional structural information and/or test data to assess surfactants listed on SCIL for use in labeled products.

Standard Surfactant Criteria

Acute Aquatic Toxicity (L/E/IC50 Value) ¹	Rate of Biodegradation
≤1 ppm	May be acceptable if biodegradation ² occurs within a 10-day window without products of concern ³
>1 ppm and ≤10 ppm	Biodegradation ² occurs within a 10-day window without products of concern ³
>10 ppm	Biodegradation ² occurs within 28 days without products of concern ³
<p>1. In general, there is a predictable relationship between acute aquatic toxicity and chronic aquatic toxicity for organic chemicals (i.e., chemicals that have high acute aquatic toxicity also have high chronic aquatic toxicity). Since acute aquatic toxicity data are more readily available, the Safer Choice Criteria use these data to screen chemicals that may be toxic to aquatic life (see Sections 5.9 and 6.8 of the Safer Choice Master Criteria for Safer Ingredients).</p> <p>2. Generally, >60% mineralization (to CO₂ and water) in 28 days (see Sections 5.9 and 6.8 of the Safer Choice Master Criteria for Safer Ingredients).</p> <p>3. Products of concern are compounds with high acute aquatic toxicity (L/E/IC50 =10 ppm) and a slow rate of biodegradation (greater than 28 days).</p>	

ATTACHMENT C

Stream Withdrawal Correspondence

Decker, Ryan

From: Brian Verwelst <bverwelst@earthtechinc.net>
Sent: Friday, June 3, 2022 8:53 AM
To: Decker, Ryan
Cc: hleydig@earthtechinc.net
Subject: [External] Re: Reassignment - Gavco Charleroi Plant Permit PA0253448 & Solid Waste Disposal

ATTENTION: This email message is from an external sender. Do not open links or attachments from unknown sources. To report suspicious email, forward the message as an attachment to CWOPA_SPAM@pa.gov.

Ryan,

Our client has informed us that this site is inactive due to lack of personnel to run the plant. A supervisor, from another Gavco site, went to the Charleroi plant to investigate the pump. They have informed us that the pump has been removed and will no longer be utilized. This site is served by public water, so we are unsure of the reason the pump was placed in the stream. It is Earthtech's understanding that the previous GAVCO site foreman has left the company.

Thanks
Brian

On Wed, May 18, 2022 at 11:08 AM Brian Verwelst <bverwelst@earthtechinc.net> wrote:

Hi Ryan,

Thanks for the update, we will get with the client and figure out what's going on with the pump and get information back to you.

Thanks
Brian

On Tue, May 17, 2022 at 1:30 PM Decker, Ryan <rydecker@pa.gov> wrote:

Hello, Ms. Leydig. My name is Ryan Decker. I've been assigned this application to review. I have a question about the Charleroi Plant.

Photos from DEP's July 2020 inspection show what appears to be a pump in the stream that runs through the site (see attached image). Is that pump used to withdraw water from the stream for use as mixing water in batching operations or for other facility uses like dust control? If yes, then please provide information relating to use of the pump including:

- conditions for use of the pump
- what the water is used for
- pump capacity
- average daily withdrawal rate
- frequency and duration of use

There are water withdrawal registration and reporting requirements under Chapter 110 of Pennsylvania's regulations when certain withdrawal thresholds are exceeded. I think the lowest threshold that requires registration and reporting under Chapter 110 is an average withdrawal rate of 10,000 gpd in a 30-day period. More information is available here: [Registration and Reporting \(pa.gov\)](http://www.dep.pa.gov/DataandTools/Pages/Application-Form-Upload.aspx).

Even if Gavco doesn't withdraw enough water to exceed Chapter 110's registration and reporting thresholds, the NPDES permit may require reporting of withdrawal rates and/or put restrictions on the amount or rate of water withdrawals to ensure that Gavco doesn't dry up the stream at certain times of year.

Ryan C. Decker, P.E. | Environmental Engineer

Department of Environmental Protection | Clean Water Program

Southwest Regional Office

400 Waterfront Drive | Pittsburgh, PA 15222
Phone: 412.442.4144 | Fax: 412.442.5885
www.dep.pa.gov

DEP is now accepting permit and authorization applications, as well as other documents and correspondence, electronically through the OnBase Electronic Forms Upload tool. Please use the link below to view the webpage, get instructions, and submit documents: <https://www.dep.pa.gov/DataandTools/Pages/Application-Form-Upload.aspx>

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Brian Verwelst, P.E.

Earthtech, Inc. P.O. Box 4A, Lemont Furnace PA 15456
Office: (724) 439-1313 Cell: (724) 787-1127
<http://earthtechinc.net>



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ATTACHMENT D

Toxics Management Spreadsheet Analysis Results for Outfall 004



Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions Discharge Stream

Facility: Gavco Materials Inc. Charleroi Plant NPDES Permit No.: PA0253448 Outfall No.: 004

Evaluation Type: Major Sewage / Industrial Waste Wastewater Description: Truck wash sediment trap overflows

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q ₇₋₁₀	Q _h
0.0002	303.67	11.4						

				0 if left blank		0.5 if left blank		0 if left blank			1 if left blank		
	Discharge Pollutant	Units	Max Discharge Conc		Trib Conc	Stream Conc	Daily CV	Hourly CV	Stream CV	Fate Coeff	FOS	Criteria Mod	Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L		780									
	Chloride (PWS)	mg/L		110									
	Bromide	mg/L		1									
	Sulfate (PWS)	mg/L		156									
	Fluoride (PWS)	mg/L		0.5									
Group 2	Total Aluminum	µg/L		1290									
	Total Antimony	µg/L		1									
	Total Arsenic	µg/L		1									
	Total Barium	µg/L		257									
	Total Beryllium	µg/L		1									
	Total Boron	µg/L		60									
	Total Cadmium	µg/L		0.2									
	Total Chromium (III)	µg/L		115									
	Hexavalent Chromium	µg/L		180									
	Total Cobalt	µg/L		0.7									
	Total Copper	µg/L		0.7									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L		37									
	Dissolved Iron	µg/L		90									
	Total Iron	µg/L		1190									
	Total Lead	µg/L		1									
	Total Manganese	µg/L		90.3									
	Total Mercury	µg/L		0.2									
	Total Nickel	µg/L		3									
	Total Phenols (Phenolics) (PWS)	µg/L		10									
	Total Selenium	µg/L		1.4									
	Total Silver	µg/L		0.2									
	Total Thallium	µg/L		0.2									
	Total Zinc	µg/L		21.5									
	Total Molybdenum	µg/L		28.7									
	Acrolein	µg/L	<										
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<										
	Benzene	µg/L	<										
	Bromoform	µg/L	<										

D-2

	2,6-Dinitrotoluene	µg/L	<																
	Di-n-Octyl Phthalate	µg/L	<																
	1,2-Diphenylhydrazine	µg/L	<																
	Fluoranthene	µg/L	<																
	Fluorene	µg/L	<																
	Hexachlorobenzene	µg/L	<																
	Hexachlorobutadiene	µg/L	<																
	Hexachlorocyclopentadiene	µg/L	<																
	Hexachloroethane	µg/L	<																
	Indeno(1,2,3-cd)Pyrene	µg/L	<																
	Isophorone	µg/L	<																
	Naphthalene	µg/L	<																
	Nitrobenzene	µg/L	<																
	n-Nitrosodimethylamine	µg/L	<																
	n-Nitrosodi-n-Propylamine	µg/L	<																
	n-Nitrosodiphenylamine	µg/L	<																
	Phenanthrene	µg/L	<																
	Pyrene	µg/L	<																
	1,2,4-Trichlorobenzene	µg/L	<																
Group 6	Aldrin	µg/L	<																
	alpha-BHC	µg/L	<																
	beta-BHC	µg/L	<																
	gamma-BHC	µg/L	<																
	delta BHC	µg/L	<																
	Chlordane	µg/L	<																
	4,4-DDT	µg/L	<																
	4,4-DDE	µg/L	<																
	4,4-DDD	µg/L	<																
	Dieldrin	µg/L	<																
	alpha-Endosulfan	µg/L	<																
	beta-Endosulfan	µg/L	<																
	Endosulfan Sulfate	µg/L	<																
	Endrin	µg/L	<																
	Endrin Aldehyde	µg/L	<																
	Heptachlor	µg/L	<																
	Heptachlor Epoxide	µg/L	<																
	PCB-1016	µg/L	<																
	PCB-1221	µg/L	<																
	PCB-1232	µg/L	<																
	PCB-1242	µg/L	<																
	PCB-1248	µg/L	<																
	PCB-1254	µg/L	<																
	PCB-1260	µg/L	<																
	PCBs, Total	µg/L	<																
	Toxaphene	µg/L	<																
	2,3,7,8-TCDD	ng/L	<																
Group 7	Gross Alpha	pCi/L																	
	Total Beta	pCi/L	<																
	Radium 226/228	pCi/L	<																
	Total Strontium	µg/L	<																
	Total Uranium	µg/L	<																
	Osmotic Pressure	mOs/kg																	



Stream / Surface Water Information

Gavco Materials Inc. Charleroi Plant, NPDES Permit No. PA0253448, Outfall 004

Instructions

Discharge

Stream

Receiving Surface Water Name: Unnamed Tributary to Pigeon Creek

No. Reaches to Model: 1

- ☒ Statewide Criteria
☐ Great Lakes Criteria
☐ ORSANCO Criteria

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi ²)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	039677	0.92	1002	1.04	0.013		Yes
End of Reach 1	039677	0.05	934.33	1.42	0.013		Yes

Q₇₋₁₀

Location	RMI	LFY (cfs/mi ²)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	0.92	0.0105										310	7		
End of Reach 1	0.05	0.0105													

Q_h

Location	RMI	LFY (cfs/mi ²)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	0.92														
End of Reach 1	0.05														



Model Results

Gavco Materials Inc. Charleroi Plant, NPDES Permit No. PA0253448, Outfall 004

Instructions

Results

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☒ All

☐ Inputs

☐ Results

☐ Limits

☐ Hydrodynamics

☒ Wasteload Allocations

☒ AFC

CCT (min): 0.603

PMF: 1

Analysis Hardness (mg/l): 309.83

Analysis pH: 7.01

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	750	750	27,221	
Total Antimony	0	0		0	1,100	1,100	39,924	
Total Arsenic	0	0		0	340	340	12,340	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	762,176	
Total Boron	0	0		0	8,100	8,100	293,982	
Total Cadmium	0	0		0	6.039	6.73	244	Chem Translator of 0.897 applied
Total Chromium (III)	0	0		0	1438.532	4,552	165,222	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	591	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	3,448	
Total Copper	0	0		0	39.003	40.6	1,475	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	215.701	344	12,501	Chem Translator of 0.626 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	59.8	Chem Translator of 0.85 applied
Total Nickel	0	0		0	1218.849	1,221	44,326	Chem Translator of 0.998 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	Chem Translator of 0.922 applied
Total Silver	0	0		0	22.498	26.5	961	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	2,359	
Total Zinc	0	0		0	305.477	312	11,336	Chem Translator of 0.978 applied

☒ CFC

CCT (min): 0.603

PMF: 1

Analysis Hardness (mg/l): 309.83

Analysis pH: 7.01

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	220	220	7,985	
Total Arsenic	0	0		0	150	150	5,444	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	148,806	
Total Boron	0	0		0	1,600	1,600	58,071	
Total Cadmium	0	0		0	0.539	0.63	22.7	Chem Translator of 0.862 applied
Total Chromium (III)	0	0		0	187.124	218	7,897	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	377	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	690	
Total Copper	0	0		0	23.538	24.5	890	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	54,441	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	8.406	13.4	487	Chem Translator of 0.626 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	32.9	Chem Translator of 0.85 applied
Total Nickel	0	0		0	135.376	136	4,928	Chem Translator of 0.997 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	4.600	4.99	181	Chem Translator of 0.922 applied
Total Silver	0	0		0	N/A	N/A	N/A	Chem Translator of 1 applied
Total Thallium	0	0		0	13	13.0	472	
Total Zinc	0	0		0	307.976	312	11,336	Chem Translator of 0.986 applied

☒ THH

CCT (min): 0.603

PMF: 1

Analysis Hardness (mg/l): N/A

Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	500,000	500,000	N/A	
Chloride (PWS)	0	0		0	250,000	250,000	N/A	
Sulfate (PWS)	0	0		0	250,000	250,000	N/A	
Fluoride (PWS)	0	0		0	2,000	2,000	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	203	
Total Arsenic	0	0		0	10	10.0	363	
Total Barium	0	0		0	2,400	2,400	87,106	
Total Boron	0	0		0	3,100	3,100	112,512	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	

Hexavalent Chromium	0	0		0	N/A	N/A	N/A
Total Cobalt	0	0		0	N/A	N/A	N/A
Total Copper	0	0		0	N/A	N/A	N/A
Dissolved Iron	0	0		0	300	300	10,888
Total Iron	0	0		0	N/A	N/A	N/A
Total Lead	0	0		0	N/A	N/A	N/A
Total Manganese	0	0		0	1,000	1,000	36,294
Total Mercury	0	0		0	0.050	0.05	1.81
Total Nickel	0	0		0	610	610	22,139
Total Phenols (Phenolics) (PWS)	0	0		0	5	5.0	N/A
Total Selenium	0	0		0	N/A	N/A	N/A
Total Silver	0	0		0	N/A	N/A	N/A
Total Thallium	0	0		0	0.24	0.24	8.71
Total Zinc	0	0		0	N/A	N/A	N/A

☒ CRL

CCT (min): 0.118

PMF: 1

Analysis Hardness (mg/l): N/A

Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	N/A	N/A	N/A	
Total Arsenic	0	0		0	N/A	N/A	N/A	
Total Barium	0	0		0	N/A	N/A	N/A	
Total Boron	0	0		0	N/A	N/A	N/A	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	N/A	N/A	N/A	
Total Nickel	0	0		0	N/A	N/A	N/A	
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	

☒ Recommended WQBELs & Monitoring Requirements

No. Samples/Month: 4

Pollutants	Mass Limits		Concentration Limits				Governing WQBEL	WQBEL Basis	Comments
	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units			
Hexavalent Chromium	Report	Report	Report	Report	Report	µg/L	377	CFC	Discharge Conc > 10% WQBEL (no RP)
Total Mercury	Report	Report	Report	Report	Report	µg/L	1.81	THH	Discharge Conc > 10% WQBEL (no RP)

☒ Other Pollutants without Limits or Monitoring

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

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Fluoride (PWS)	N/A	N/A	PWS Not Applicable
Total Aluminum	17,447	µg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	203	µg/L	Discharge Conc ≤ 10% WQBEL
Total Arsenic	363	µg/L	Discharge Conc ≤ 10% WQBEL
Total Barium	87,106	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	58,071	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	22.7	µg/L	Discharge Conc ≤ 10% WQBEL
Total Chromium (III)	7,897	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	690	µg/L	Discharge Conc ≤ 10% WQBEL
Total Copper	890	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	10,888	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	54,441	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	487	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	36,294	µg/L	Discharge Conc ≤ 10% WQBEL
Total Nickel	4,928	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	PWS Not Applicable
Total Selenium	181	µg/L	Discharge Conc ≤ 10% WQBEL
Total Silver	616	µg/L	Discharge Conc ≤ 10% WQBEL
Total Thallium	8.71	µg/L	Discharge Conc ≤ 10% WQBEL
Total Zinc	7,266	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS

ATTACHMENT E

Toxics Management Spreadsheet Analysis Results for Outfall 008



Discharge Information

Instructions

Discharge

Stream

Facility: Gavco Materials Inc. Charleroi Plant

NPDES Permit No.: PA0253448

Outfall No.: 008

Evaluation Type: Major Sewage / Industrial Waste

Wastewater Description: Truck washout basin overflow

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q ₇₋₁₀	Q _n
0.0002	1660	12.5						

				0 if left blank		0.5 if left blank		0 if left blank			1 if left blank		
	Discharge Pollutant	Units	Max Discharge Conc		Trib Conc	Stream Conc	Daily CV	Hourly CV	Stream CV	Fate Coeff	FOS	Criteria Mod	Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L		3640									
	Chloride (PWS)	mg/L		151									
	Bromide	mg/L		5.7									
	Sulfate (PWS)	mg/L		1150									
	Fluoride (PWS)	mg/L		0.8									
Group 2	Total Aluminum	µg/L		961									
	Total Antimony	µg/L		1									
	Total Arsenic	µg/L		1									
	Total Barium	µg/L		456									
	Total Beryllium	µg/L		1									
	Total Boron	µg/L		50									
	Total Cadmium	µg/L		0.2									
	Total Chromium (III)	µg/L		2230									
	Hexavalent Chromium	µg/L		2300									
	Total Cobalt	µg/L		0.7									
	Total Copper	µg/L		11.8									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L		120									
	Dissolved Iron	µg/L		50									
	Total Iron	µg/L		440									
	Total Lead	µg/L		1									
	Total Manganese	µg/L		36.1									
	Total Mercury	µg/L		0.2									
	Total Nickel	µg/L		2.8									
	Total Phenols (Phenolics) (PWS)	µg/L		11									
	Total Selenium	µg/L		14.1									
	Total Silver	µg/L		0.3									
	Total Thallium	µg/L		0.2									
	Total Zinc	µg/L		19									
	Total Molybdenum	µg/L		349									
	Acrolein	µg/L	<										
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<										
	Benzene	µg/L	<										
	Bromoform	µg/L	<										



Stream / Surface Water Information

Gavco Materials Inc. Charleroi Plant, NPDES Permit No. PA0253448, Outfall 008

Instructions Discharge **Stream**

Receiving Surface Water Name: Unnamed Tributary to Pigeon Creek

No. Reaches to Model: 1

- ☒ Statewide Criteria
☐ Great Lakes Criteria
☐ ORSANCO Criteria

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi ²)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	039677	0.94	1002.69	0.86	0.013		Yes
End of Reach 1	039677	0.05	934.33	1.42	0.013		Yes

Q₇₋₁₀

Location	RMI	LFY (cfs/mi ²)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	0.94	0.0105										310	7		
End of Reach 1	0.05	0.0105													

Q_n

Location	RMI	LFY (cfs/mi ²)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	0.94														
End of Reach 1	0.05														



Model Results

Gavco Materials Inc. Charleroi Plant, NPDES Permit No. PA0253448, Outfall 008

Instructions

Results

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☐ Results

☐ Limits

☐ Hydrodynamics

☒ Wasteload Allocations

☒ AFC

CCT (min): 0.523

PMF: 1

Analysis Hardness (mg/l): 354.72

Analysis pH: 7.01

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	750	750	22,639	
Total Antimony	0	0		0	1,100	1,100	33,204	
Total Arsenic	0	0		0	340	340	10,263	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	633,896	
Total Boron	0	0		0	8,100	8,100	244,503	
Total Cadmium	0	0		0	6.886	7.73	233	Chem Translator of 0.891 applied
Total Chromium (III)	0	0		0	1607.143	5,086	153,520	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	492	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	2,868	
Total Copper	0	0		0	44.307	46.2	1,393	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	248.184	409	12,352	Chem Translator of 0.607 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	49.7	Chem Translator of 0.85 applied
Total Nickel	0	0		0	1366.694	1,369	41,337	Chem Translator of 0.998 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	Chem Translator of 0.922 applied
Total Silver	0	0		0	28.394	33.4	1,008	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	1,962	
Total Zinc	0	0		0	342.592	350	10,574	Chem Translator of 0.978 applied

☒ **CFC**

CCT (min): 0.523

PMF: 1

Analysis Hardness (mg/l): 354.72

Analysis pH: 7.01

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	220	220	6,641	
Total Arsenic	0	0		0	150	150	4,528	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	123,761	
Total Boron	0	0		0	1,600	1,600	48,297	
Total Cadmium	0	0		0	0.592	0.69	20.9	Chem Translator of 0.856 applied
Total Chromium (III)	0	0		0	209.056	243	7,338	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	314	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	574	
Total Copper	0	0		0	26.423	27.5	831	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	45,278	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	9.671	15.9	481	Chem Translator of 0.607 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	27.3	Chem Translator of 0.85 applied
Total Nickel	0	0		0	151.798	152	4,596	Chem Translator of 0.997 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	4.600	4.99	151	Chem Translator of 0.922 applied
Total Silver	0	0		0	N/A	N/A	N/A	Chem Translator of 1 applied
Total Thallium	0	0		0	13	13.0	392	
Total Zinc	0	0		0	345.394	350	10,574	Chem Translator of 0.986 applied

☒ **THH**

CCT (min): 0.523

PMF: 1

Analysis Hardness (mg/l): N/A

Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	500,000	500,000	N/A	
Chloride (PWS)	0	0		0	250,000	250,000	N/A	
Sulfate (PWS)	0	0		0	250,000	250,000	N/A	
Fluoride (PWS)	0	0		0	2,000	2,000	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	169	
Total Arsenic	0	0		0	10	10.0	302	
Total Barium	0	0		0	2,400	2,400	72,445	
Total Boron	0	0		0	3,100	3,100	93,575	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	

Hexavalent Chromium	0	0		0	N/A	N/A	N/A
Total Cobalt	0	0		0	N/A	N/A	N/A
Total Copper	0	0		0	N/A	N/A	N/A
Dissolved Iron	0	0		0	300	300	9,056
Total Iron	0	0		0	N/A	N/A	N/A
Total Lead	0	0		0	N/A	N/A	N/A
Total Manganese	0	0		0	1,000	1,000	30,186
Total Mercury	0	0		0	0.050	0.05	1.51
Total Nickel	0	0		0	610	610	18,413
Total Phenols (Phenolics) (PWS)	0	0		0	5	5.0	N/A
Total Selenium	0	0		0	N/A	N/A	N/A
Total Silver	0	0		0	N/A	N/A	N/A
Total Thallium	0	0		0	0.24	0.24	7.24
Total Zinc	0	0		0	N/A	N/A	N/A

☒ CRL

CCT (min): 0.102

PMF: 1

Analysis Hardness (mg/l): N/A

Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	N/A	N/A	N/A	
Total Arsenic	0	0		0	N/A	N/A	N/A	
Total Barium	0	0		0	N/A	N/A	N/A	
Total Boron	0	0		0	N/A	N/A	N/A	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	N/A	N/A	N/A	
Total Nickel	0	0		0	N/A	N/A	N/A	
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	

☒ Recommended WQBELs & Monitoring Requirements

No. Samples/Month: 4

Pollutants	Mass Limits		Concentration Limits				Governing WQBEL	WQBEL Basis	Comments
	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units			
Total Chromium (III)	Report	Report	Report	Report	Report	µg/L	7,338	CFC	Discharge Conc > 10% WQBEL (no RP)
Hexavalent Chromium	0.0005	0.0008	314	490	784	µg/L	314	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Mercury	Report	Report	Report	Report	Report	µg/L	1.51	THH	Discharge Conc > 10% WQBEL (no RP)

☒ Other Pollutants without Limits or Monitoring

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

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Fluoride (PWS)	N/A	N/A	PWS Not Applicable
Total Aluminum	14,511	µg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	169	µg/L	Discharge Conc ≤ 10% WQBEL
Total Arsenic	302	µg/L	Discharge Conc ≤ 10% WQBEL
Total Barium	72,445	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	48,297	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	20.9	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	574	µg/L	Discharge Conc ≤ 10% WQBEL
Total Copper	831	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	9,056	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	45,278	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	481	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	30,186	µg/L	Discharge Conc ≤ 10% WQBEL
Total Nickel	4,596	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	PWS Not Applicable
Total Selenium	151	µg/L	Discharge Conc ≤ 10% WQBEL
Total Silver	646	µg/L	Discharge Conc ≤ 10% WQBEL
Total Thallium	7.24	µg/L	Discharge Conc ≤ 10% WQBEL
Total Zinc	6,777	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS

☒ **Recommended WQBELs & Monitoring Requirements**

No. Samples/Month: **4**

Pollutants	Mass Limits		Concentration Limits				Governing WQBEL	WQBEL Basis	Comments
	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units			
Hexavalent Chromium	Report	Report	Report	Report	Report	µg/L	377	CFC	Discharge Conc > 10% WQBEL (no RP)
Total Mercury	Report	Report	Report	Report	Report	µg/L	1.81	THH	Discharge Conc > 10% WQBEL (no RP)

☒ **Other Pollutants without Limits or Monitoring**

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

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Fluoride (PWS)	N/A	N/A	PWS Not Applicable
Total Aluminum	17,447	µg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	203	µg/L	Discharge Conc ≤ 10% WQBEL
Total Arsenic	363	µg/L	Discharge Conc ≤ 10% WQBEL
Total Barium	87,106	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	58,071	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	22.7	µg/L	Discharge Conc ≤ 10% WQBEL
Total Chromium (III)	7,897	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	690	µg/L	Discharge Conc ≤ 10% WQBEL
Total Copper	890	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	10,888	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	54,441	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	487	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	36,294	µg/L	Discharge Conc ≤ 10% WQBEL
Total Nickel	4,928	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	PWS Not Applicable
Total Selenium	181	µg/L	Discharge Conc ≤ 10% WQBEL
Total Silver	616	µg/L	Discharge Conc ≤ 10% WQBEL
Total Thallium	8.71	µg/L	Discharge Conc ≤ 10% WQBEL
Total Zinc	7,266	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS

ATTACHMENT F

Additional Photos from July 28, 2020 Inspection



Drum washout area and runoff to Outfall 008. (DEP, 7/28/2020)



Old material waste pile near the batching plant. (DEP, 7/28/2020)



Former waste concrete dumping area. (DEP, 7/28/2020)



Former waste concrete dumping area. (DEP, 7/28/2020)



Waste pile near the concrete block storage yard. (DEP, 7/28/2020)



Waste pile near the concrete block storage yard. (DEP, 7/28/2020)



Waste pile near the concrete block storage yard. (DEP, 7/28/2020)



Lower yard and unnamed tributary (looking east). (DEP, 7/28/2020)