pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0254185**
Facility Type	**Industrial**	APS ID	**1074966**
Major / Minor	**Minor**	Authorization ID	**1416337**

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

Applicant and Facility Information

Applicant Name	**Reserved Environmental Services LLC**	Facility Name	**New Stanton Plant**
Applicant Address	1373 Washington Pike, Suite 100	Facility Address	1119 Old State Route 119
	Bridgeville, PA 15017-2837		Mt Pleasant, PA 15666-2719
Applicant Contact	Andrew Kicinski, P.E.	Facility Contact	Nathan Keller
Applicant Phone	(724) 454-1611	Facility Phone	(724) 244-8607
Applicant Email	akicinski@reswater.com	Facility Email	nkeller@reswater.com
Client ID	275447	Site ID	725235
SIC Code	1389	Municipality	Hempfield Township
SIC Description	Mining - Oil and Gas Field Services, NEC	County	Westmoreland
Date Application Received	November 1, 2022	EPA Waived?	No
Date Application Accepted	November 7, 2022	If No, Reason	Accepts natural gas wastewater
Purpose of Application	Renewal of an NPDES permit for discharges of storm water and emergency overflows from an oil and gas wastewater storage impoundment.		

Summary of Review

On November 1, 2022, DEP received an application from Reserved Environmental Services, LLC (RES) to renew NPDES Permit PA0254185 for discharges of storm water and emergency overflows from a ten-million-gallon impoundment for shale gas extraction (SGE) wastewaters at RES's New Stanton Plant. The New Stanton Plant is a Centralized Waste Treatment (CWT) facility that stores and treats SGE wastewaters for reuse. The NPDES permit currently in effect was issued on April 13, 2018 with an effective date of May 1, 2018 and an expiration date of April 30, 2023. The permit application was due by November 1, 2022 (180 days before expiration). Since the application was received by November 1, 2022, the renewal application was timely.

Permitting History

Prior to submission of the permit renewal application in November 2014, RES submitted applications to amend the 2010 NPDES permit. An application dated May 4, 2012 was submitted to add an outfall to authorize emergency overflows of treated SGE wastewater from the facility's ten-million-gallon storage impoundment. Pursuant to an April 9, 2012 Consent Order & Agreement, that outfall was to be added to the permit to allow for the controlled discharge of treated SGE wastewater from the impoundment during high water conditions that might develop in the unlikely event that low demand for reusable water for hydraulic fracturing or a lack of available offsite disposal locations in combination with heavy precipitation would result in overtopping of the impoundment (a circumstance that should not occur because of the two-foot minimum freeboard requirements for residual waste storage impoundments in 25 Pa. Code § 299.144(a)(6)). The overflow outfall was originally identified as Outfall 004, but was renamed to Internal Monitoring Point 102 because the discharge pathway for the emergency overflow would direct the water through Sediment Pond "A" and Outfall 002. DEP prepared a draft NPDES permit amendment that was published in the *Pennsylvania Bulletin* on March 23, 2013.

On April 5, 2013, during the 30-day comment period for the amendment to add the emergency overflow, RES submitted comments requesting to amend the permit to change the Outfall 001 discharge location. Despite the inclusion of Outfall 001

Approve	Deny	Signatures	Date
✓		Ryan C. Decker, P.E. / Environmental Engineer	January 24, 2023
X		Michael E. Fifth, P.E. / Environmental Engineer Manager	January 27, 2023

Summary of Review

in the NPDES permit (that outfall being retained from the former Sony American Video Glass plant and formerly used by Sony to discharge wastewaters to a stream with more assimilative capacity), RES had, up until that point, no intention of discharging treated SGE wastewaters. RES always intended the New Stanton Plant to be a zero-liquid-discharge facility and the treatment systems RES was using to treat SGE wastewaters for reuse were not able to meet the effluent limits at Outfall 001. However, in 2013, RES was considering using an evaporator/crystallizer that would allow the facility to discharge distillate in compliance with Outfall 001's effluent limits.

PennDOT was planning to begin construction on the I-70 New Stanton interchange including a bridge replacement on South Center Avenue where Outfall 001 was located. To avoid interference from that construction and retain the ability to discharge distillate if an evaporator/crystallizer was installed, RES planned to move the discharge to the area of the impoundment's emergency overflow. The new discharge location was to be identified as Internal Monitoring Point 202. RES submitted an amendment application dated May 24, 2013 and a revised amendment application on July 3, 2013 to change the Outfall 001 discharge location. DEP did not act on those applications at that time.

The November 25, 2014 NPDES permit renewal application incorporated all previous amendments. However, in the renewal application, RES requested to eliminate Outfall 001 from the permit and not to relocate it as proposed in April 2013. Outfall 001 was removed from the permit issued on April 13, 2018.

RES reported in the November 2022 renewal application that storm water Outfall 003 was eliminated. Therefore, the renewed NPDES permit will only include storm water at Outfall 002 and the impoundment's emergency overflow spillway at IMP 102.

Permit Requirements

RES is classified as a CWT facility and process wastewater discharges from CWT facilities, whether overflows from a treated process wastewater storage impoundment or otherwise, are subject to technology-based effluent limitations under 40 CFR Part 437 – Federal Effluent Limitations Guidelines for the Centralized Waste Treatment Point Source Category. In addition, technology-based effluent limitations are developed using applicable state regulations (25 Pa. Code Chapter 95), DEP's Oil and Gas Wastewater Permitting Manual, and Best Professional Judgement, as applicable.

A reasonable potential analysis is performed to identify pollutants that may be discharged in concentrations that would cause or have a reasonable potential to cause or contribute to excursions above any state water quality standards. Any pollutants with such potential are controlled by effluent limitations to protect the designated uses of the receiving stream. Other water quality-based effluent limitations are considered to address aquatic life impairment by acid mine drainage in Sewickley Creek for which there is a final Total Maximum Daily Load (TMDL). That TMDL is applicable because the receiving water for Outfall 002 is an unnamed tributary to Belson Run and Belson Run is a tributary of Sewickley Creek.

Other than the elimination of Outfall 003, there have been no substantial changes to the facility since the last permit was issued in 2018. Therefore, the effluent limits and monitoring requirements are mostly unchanged except for the removal of Outfall 003 from the permit. Also, WQBELs for Pyrene and 2,4,6-Trichlorophenol are updated in accordance with updates to Chapter 93's water quality criteria in October 2020.

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.	002	Design Flow (MGD)	Variable
Latitude	40° 11' 30.28"	Longitude	-79° 35' 13.03"
Quad Name	Mount Pleasant	Quad Code	1709
Wastewater Description:	Storm water and overflows monitored at IMP 102		
Receiving Waters	Unnamed Tributary to Belson Run (WWF)	Stream Code	37677 (Belson Run)
NHD Com ID	69913599	RMI	2.57 (Belson Run headwater)
Drainage Area		Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)	0.0 (headwater)	Q_{7-10} Basis	
Elevation (ft)		Slope (ft/ft)	
Watershed No.	19-D	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status	Final	Name	Sewickley Creek Watershed
Nearest Downstream Public Water Supply Intake	Westmoreland County Municipal Authority – McKeesport		
PWS ID	5020025	PWS Withdrawal (MGD)	12.0
PWS Waters	Youghiogheny River	Flow at Intake (cfs)	510
PWS RMI	1.4	Distance from Outfall (mi)	34

Internal Monitoring Point No.	102	Design Flow (MGD)	Variable
Wastewater Description:	Overflows of treated flowback, pit, and production fluids from oil and gas well-drilling, truck wash water, and storm water from a ten million-gallon storage impoundment		

Changes Since Last Permit Issuance: None

Treatment Facility Summary

Treatment Facility Name: Reserved Environmental Services LLC - Industrial Wastewater Treatment Plant

WQM Permit No.	Issuance Date	Purpose
6596201	April 1, 1996	Permit for industrial wastewater treatment plant issued to American Video Glass Company
6596201 A-1	April 9, 1997	Modification of the industrial wastewater treatment plant
6596201	May 15, 2003	Transfer from American Video Glass Company to American Video Glass Company LLC
6596201 6596201 A-1		The WQM permits were not modified to document an intermediate transfer from American Video Glass Company LLC to Commonwealth Renewable Energy
6596201 T-1 6596201 A-1 T-1	March 11, 2010	Transfer from Commonwealth Renewable Energy to Reserved Environmental Services, LLC
6596201 A-2	February 17, 2011	Construction and operation of a 10-million-gallon residual waste storage impoundment
6596201 A-3	April 18, 2012	Addition of a pre-filtration process, grit removal, and dewatering boxes; elimination of Outfall 001 effluent pumps and discharge piping; relocation of the impoundment emergency overflow; and updated 'as-built' liner specifications

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Industrial	Primary	Physical/Chemical	None	

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
1.3			N/A	N/A

Changes Since Last Permit Issuance: None

Other Comments:

Compliance History

DMR Data for Outfall 002 (from December 1, 2021 to November 30, 2022)

Parameter	NOV-22	OCT-22	SEP-22	AUG-22	JUL-22	JUN-22	MAY-22	APR-22	MAR-22	FEB-22	JAN-22	DEC-21
TSS (mg/L) Daily Maximum						393						< 0.0001
Oil and Grease (mg/L) Daily Maximum						< 1						< 0.0001

Development of Effluent Limitations

IMP No.	102	**Design Flow (MGD)**	Variable
Latitude	40° 11' 29.00"	**Longitude**	-79° 34' 38.00"

Wastewater Description: Overflows of treated flowback, pit, and production fluids from oil and gas well-drilling, truck wash water, and storm water from a ten million-gallon storage impoundment

Effluent limitations are imposed at IMP 102 rather than another monitoring location because 40 CFR § 125.3(f) prohibits compliance with technology-based treatment requirements through the use of "non-treatment" techniques such as flow augmentation (i.e., dilution). Since the final discharge point (Outfall 002) for emergency overflows from the ten-million-gallon impoundment includes contributions of storm water from Sediment Pond "A", which is in-line with the discharge pathway from IMP 102 to the receiving stream, IMP 102 is the only point at which compliance with applicable effluent limits may be determined without the interference of other wastewaters. This rationale is consistent with 40 CFR § 122.45(h)[1], which allows for the imposition of effluent limitations on internal waste streams in these circumstances.

RES does not discharge its treated wastewaters. The facility's treated SGE wastewater is stored in a ten-million-gallon impoundment located onsite from which wastewaters are hauled for reuse or disposal. Overflows from the impoundment should not occur provided RES maintains a balance between raw wastewater receipts and treated wastewater shipments with consideration of precipitation, but effluent limitations must be imposed at the impoundment's overflow spillway to control federally-regulated wastewaters that could discharge under certain circumstances.

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

Federal Effluent Limitations Guidelines ("ELGs")

Any point source discharges of SGE wastewaters from RES's Centralized Waste Treatment facility are subject to Federal Effluent Limitations Guidelines for the Centralized Waste Treatment Point Source Category. Since the effluent that would be discharged from IMP 102 during overflow conditions for the ten-million-gallon impoundment is the same as the effluent that would be discharged from former Outfall 001 (except for dilution caused by precipitation), the same effluent limitations rationale previously applied to Outfall 001 is applied to discharges from IMP 102 with appropriate changes to account for new policies and regulations that apply to CWT facilities.

RES's New Stanton Plant is classified as a new source in accordance with 40 CFR § 122.29(b) *Criteria for new source determination*. A new source, as defined in 40 CFR § 122.2 and referenced under 40 CFR § 122.29 is any building, structure, facility, or installation from which there is or may be a "discharge of pollutants," the construction of which commenced: (1) after promulgation of standards of performance under Section 306 of the Clean Water Act (CWA) which are applicable to such source, or (b) after proposal of standards of performance in accordance with Section 306 of the CWA which are applicable to such source, but only if the standards are promulgated in accordance with Section 306. The RES facility was constructed prior to the promulgation of applicable standards of performance that apply to the facility (40 CFR Part 437) and, as noted under 40 CFR § 122.29(b)(iii), the processes conducted at the facility are substantially independent of the processes for which the existing facility was constructed (the facility was previously operated by a television glass manufacturer). Since the facility is a new source, it is not considered to be a new discharger as defined in 40 CFR § 122.2.

New Source Performance Standards (NSPS) that apply to RES's facility are described in 40 CFR Part 437 for the Centralized Waste Treatment Point Source Category ELGs. A Centralized Waste Treatment facility ("CWT facility") is defined by 40 CFR § 437.2 as "any facility that treats (for disposal, recycling or recovery of material) any hazardous or non-hazardous industrial wastes, hazardous or non-hazardous industrial wastewater, and/or used material received from off-site." This includes facilities that treat waste received exclusively from off-site and facilities that treat waste generated on-site as well as waste received from off-site. As a facility that treats industrial wastewater received from off-site generators, RES's treatment facility is classified as a CWT facility.

EPA classifies CWT facilities under four subcategories in 40 CFR Part 437: Subpart A – Metals Treatment and Recovery, Subpart B – Oils Treatment and Recovery, Subpart C – Organics Treatment and Recovery, and Subpart D – Multiple Wastestreams—the latter a combination of two or more wastewaters classified under Subparts A, B, or C. The Development Document for Effluent Limitations Guidelines and Standards for the Centralized Waste Treatment Industry ("Development Document") provides a list of wastes that may be received by a CWT facility and classifies those wastes under one of the

[1] 40 CFR § 122.45(h)(1): "When permit effluent limitations or standards imposed at the point of discharge are impractical or infeasible, effluent limitations or standards for discharges of pollutants may be imposed on internal waste streams before mixing with other waste streams or cooling water streams."

three main subcategories: Metals, Oils, or Organics (Table 14-1 in the Development Document). If the waste to be received by a CWT facility is not readily classified using the list in Table 14-1, EPA recommends the use of the following hierarchy to characterize a CWT facility's wastes and identify the proper subcategory.[2]

1) If the waste receipt contains oil and grease at or in excess of 100 mg/L, the waste receipt should be classified in the oils subcategory.

2) If the waste receipt contains oil and grease <100 mg/L, and has any of the pollutants listed below in concentrations in excess of the values listed below, the waste receipt should be classified in the metals subcategory.
cadmium 0.2 mg/L; chromium 8.9 mg/L; copper 4.9 mg/L; nickel 37.5 mg/L

3) If the waste receipt contains oil and grease <100 mg/L, and does not have concentrations of cadmium, chromium, copper, or nickel above any of the values listed above, the waste receipt should be classified in the organics subcategory.

SGE wastewaters are not readily classified using Table 14-1 of the Development Document so the subcategorization hierarchy described above is used to subcategorize the facility's wastewaters. RES's reported wastewater concentrations for parameters listed in the Development Document subcategorization hierarchy are reported in Table 1 below.

Table 1. Reported Influent Concentrations for Selected Pollutants

Parameter	Reported Concentration
Cadmium	<30 µg/L
Chromium (VI)	<50 µg/L
Copper	<50 µg/L
Nickel	<100 µg/L
Oil and Grease	13.3 mg/L

Based on the reported concentrations, RES is classified under Subpart C – Organics Treatment and Recovery (40 CFR § 437.30 – 437.36). NSPS for Subpart C under 40 CFR § 437.34 are the same as BPT limitations under § 437.31, shown in Table 2.

Table 2. NSPS from 40 CFR § 437.34 (Equal to BPT Limits under 40 CFR § 437.31)

Parameter	Monthly Average (mg/L)	Daily Maximum (mg/L)
BOD-5	53.0	163.0
Total Suspended Solids	61.3	216.0
Copper	0.757	0.865
Zinc	0.420	0.497
Acetone	7.97	30.2
Acetophenone	0.0562	0.114
2-Butanone	1.85	4.81
o-Cresol	0.561	1.92
p-Cresol	0.205	0.698
Phenol	1.08	3.65
Pyridine	0.182	0.370
2,4,6-Trichlorophenol	0.106	0.155
pH	within the range of 6.0 to 9.0 s.u.	

In addition to the effluent limitations assigned based on 40 CFR 437, other case-by-case technology-based effluent limitations are imposed pursuant to 40 CFR § 125.3(c)(3) (incorporated by reference under 25 Pa. Code § 92a.3(b)(4)). DEP has a guidance document for oil and gas well permitting entitled: "Oil and Gas Wastewater Permitting Manual" (O&G Permitting Manual) dated October 30, 2001. The O&G Permitting Manual states that surface water discharges are allowed from oil and gas well operations if the wastewaters are removed to an off-site treatment facility (i.e., a CWT facility) such as

[2] "Small Entity Compliance Guide Centralized Waste Treatment Effluent Limitations Guidelines and Pretreatment Standards" (40 CFR 437), EPA 821-B-01-003, June 2001. See Attachment A to this Fact Sheet.

RES's New Stanton Plant. The O&G Permitting Manual also recommends technology-based effluent limitations for TSS, Oil and Grease, Total Iron, Acidity, and pH as shown in Table 3.

Table 3. TBELs for Oil and Gas Wastewater Treatment Facilities

Parameter	Monthly Average (mg/L)	Daily Maximum (mg/L)
Total Suspended Solids	30.0	60.0
Oil and Grease	15.0	30.0
Iron, Total	3.5	7.0
Acidity	Less than Alkalinity	
pH (standard units)	between 6.0 and 9.0 at all times	

The O&G Permitting Manual also requires that wastewater treatment facilities accepting oil and gas extraction-related wastewaters include the following components in the treatment system design:

a. Flow equalization to ensure optimum treatment efficiency of the facilities and minimization of water quality impacts.
b. Gravity separation and surface skimming, or equivalent technology, for oil and grease removal.
c. Chemical addition for pH control and metals removal, if necessary (a pH range of 8.0 - 8.5 is desirable).
d. Aeration, or equivalent technology, for reducing volatile petroleum hydrocarbons and oxidation for metals removal.
e. Settling (retention) or filtration for removal of solids, including oxidized metals.

Other technology-based effluent limitations are considered for pollutants of concern not covered by the ELGs or O&G Permitting Manual. The additional pollutants include dissolved iron, aluminum, barium, manganese, strontium, phenolics, benzene, ethylbenzene, toluene, and xylenes. A daily maximum effluent limit of 7.0 mg/L for dissolved iron will be imposed based on the requirements of 25 Pa. Code § 95.2(4). Chapter 95 also requires that dischargers of oil-bearing industrial wastewater meet certain discharge quality standards including: pH limitations between 6.0 and 9.0 standard units and oil and grease limitations of 15 mg/L average and 30 mg/L maximum. However, those requirements are already imposed as technology-based limitations based on Best Professional Judgment (BPJ) and the O&G Permitting Manual (see Table 3).

TBELs for aluminum and manganese will be imposed because those pollutants are present in the influent wastewater to the treatment system. Those parameters also need to be controlled because of the acid mine drainage Total Maximum Daily Load (TMDL) for the Sewickley Creek watershed (refer to the Section 102.B of this Fact Sheet).

<u>25 Pa. Code § 95.10</u>

Barium, strontium, gross alpha, radium 226/228, uranium, chlorides, and total dissolved solids also have been identified as pollutants of concern for SGE wastewaters based on state regulations under 25 Pa. Code § 95.10 and supporting guidance. Section 95.10 was promulgated on August 21, 2010 and describes treatment requirements for new and expanding mass loadings of Total Dissolved Solids (TDS). SGE wastewaters are addressed by specific subsections of § 95.10 because wastewaters resulting from the extraction of natural gas are of much higher concentration and represent higher overall loadings when compared to other industries. However, the regulations also exclude certain types of discharges from the treatment requirements of § 95.10 including:

> Maximum daily discharge loads of TDS or specific conductivity levels that were authorized by the Department prior to August 21, 2010. These discharge loads will be considered existing mass loadings by the Department. (25 Pa. Code § 95.10(a)(1))

With regard to the definition of the term "authorized," DEP's guidance document "Chapter 95 – Total Dissolved Solids, Statement of Policy Defining the Term "Authorization"," states the following:

> For the purpose of this regulation [§ 95.10], any discharge of TDS or specific conductance level permitted, registered, approved, certified or by other means granted permission by DEP prior to August 21, 2010, that contained a detectable level of TDS upon issuance, regardless of whether effluent limits for TDS or specific conductivity were included in the authorization would be exempt from the provisions of this regulation to the maximum level of TDS historically present in that approved discharge.

Existing discharge loadings of TDS from RES's facility were authorized prior to August 21, 2010. In addition, RES has not proposed any change in the quality of wastewaters to be received by the facility and there have been no discharges of treated SGE wastewaters upon which to base an evaluation of expanded TDS discharge loadings. Therefore, RES is exempt from the regulatory treatment requirements of § 95.10.

Despite RES's exemption, TBELs for barium, strontium, chlorides, and total dissolved solids equivalent to those given by § 95.10(b)(3) will be imposed at IMP 102. Imposition of the § 95.10(b)(3) effluent standards is based on DEP's BPJ under Section 402(a)(1) of the Clean Water Act. No numerical TBELs are recommended for gross alpha, radium 226/228, and uranium, but monitoring and reporting will be required for those parameters.

Case-by-Case TBELs for TDS, Chlorides, Barium, Strontium, Aluminum, and Manganese

Case-by-case TBELs and monitoring requirements previously established for TDS, Chlorides, Barium, Strontium, Aluminum, and Manganese will be maintained in the renewed permit pursuant to 40 CFR § 122.44(l) regarding anti-backsliding.

Table 4. Additional BPJ TBELs for Metals, TDS, and Chlorides.

Parameter	Monthly Average (mg/L)	Daily Maximum (mg/L)
Total Dissolved Solids	500.0	1,000.0
Total Chlorides	250.0	500.0
Aluminum, Total	4.0	8.0
Manganese, Total	2.0	4.0
Iron, Dissolved	—	7.0
Barium, Total	10.0	20.0
Strontium, Total	10.0	20.0
Gross Alpha (pCi/L)	Monitor and Report	Monitor and Report
Radium 226/228 (pCi/L)	Monitor and Report	Monitor and Report
Uranium (µg/L)	Monitor and Report	Monitor and Report

DEP's previous analysis of the factors in 40 CFR § 125.3(d) that were considered when developing the case-by-case TBELs and monitoring requirements in Table 4 is included in Attachment B to this Fact Sheet.

Benzene, Ethylbenzene, Toluene, Xylenes, and Total BTEX

DEP has determined that the treatment technology employed at RES's facility for a treated discharge must address additional organic constituents including benzene, ethylbenzene, toluene, total xylenes, total BTEX, and phenols. Not all of those pollutants showed up in the influent analytical results supplied by RES, but DEP has observed the presence of BTEX pollutants in SGE wastewater receipts at a number of other CWT facilities and considers BTEX pollutants and phenolics to be pollutants of concern for this industry.

Two common treatment technologies that are used to treat BTEX pollutants and phenolics are granular activated carbon and air stripping units. Those technologies, alone or in combination, readily remove organic pollutants at treatment efficiencies of up to 99% as observed for numerous dischargers covered under DEP's PAG-05 "General Permit for Petroleum Product Contaminated Groundwater Remediation Systems" that use such technologies. Table 5 shows the case-by-case TBELs and monitoring requirements for the additional pollutants of concern that are achievable using the two technologies described above. If BTEX pollutants or phenolics are present in RES's influent in significant concentrations, the limits in Table 5 are intended to be achievable by technologies that can be readily employed.

Table 5. Additional Case-by-Case TBELs for Organic Pollutants.

Parameter	Monthly Average (mg/L)	Daily Maximum (mg/L)
Benzene	0.001	0.002
Ethylbenzene	Report	Report
Toluene	Report	Report
Xylenes, Total	Report	Report
Total BTEX	0.1	0.2
Phenolics	Not Detectable	Not Detectable

Flow monitoring will be required in accordance with 25 Pa. Code § 92a.61(d) and alkalinity will be added as a parameter to monitor and report as a check for the "acidity less than alkalinity" limit from the O&G Permitting Manual. To summarize, the following TBELs apply at IMP 102, subject to water quality analysis where applicable:

Table 6. TBELs for Internal Monitoring Point 102.

Parameter	Average Monthly (mg/L)	Daily Maximum (mg/L)	Basis	
			Federal Regulation	State Regulation(s)
Flow (MGD)	Report	Report	—	25 Pa. Code § 92a.61(d)
pH (S.U.)	6.0 (Minimum)	9.0 (Maximum)	40 CFR § 437.31	25 Pa. Code § 95.2(1) & 25 Pa. Code § 92a.48(a)(1)
BOD-5	53.0	163.0	40 CFR § 437.31	25 Pa. Code § 92a.48(a)(1)
Total Suspended Solids	30.0	60.0	40 CFR § 125.3 (BPJ)	25 Pa. Code § 92a.3(b)(5)
Total Dissolved Solids	500.0	1,000.0	40 CFR § 125.3 (BPJ)	25 Pa. Code § 95.10(b)(3)
Chlorides, Total	250.0	500.0	40 CFR § 125.3 (BPJ)	25 Pa. Code § 95.10(b)(3)
Oil and Grease	15.0	30.0	40 CFR § 125.3 (BPJ)	25 Pa. Code § 95.2(2)(ii)
Aluminum, Total	4.0	8.0	40 CFR § 125.3 (BPJ)	25 Pa. Code § 92a.3(b)(5)
Barium, Total	10.0	20.0	40 CFR § 125.3 (BPJ)	25 Pa. Code § 95.10(b)(3)
Copper, Total	0.757	0.865	40 CFR § 437.31	25 Pa. Code § 92a.48(a)(1)
Iron, Total	3.5	7.0	40 CFR § 125.3 (BPJ)	25 Pa. Code § 92a.3(b)(5)
Iron, Dissolved	—	7.0	—	25 Pa. Code § 95.2(4)
Manganese, Total	2.0	4.0	40 CFR § 125.3 (BPJ)	25 Pa. Code § 95.10(b)(3)
Strontium, Total	10.0	20.0	40 CFR § 125.3 (BPJ)	25 Pa. Code § 95.10(b)(3)
Zinc, Total	0.420	0.497	40 CFR § 437.31	25 Pa. Code § 92a.48(a)(1)
Benzene	0.001	0.002	40 CFR § 125.3 (BPJ)	25 Pa. Code § 92a.3(b)(5)
Ethylbenzene	Report	Report	40 CFR § 125.3 (BPJ)	25 Pa. Code § 92a.3(b)(5)
Toluene	Report	Report	40 CFR § 125.3 (BPJ)	25 Pa. Code § 92a.3(b)(5)
Xylenes, Total	Report	Report	40 CFR § 125.3 (BPJ)	25 Pa. Code § 92a.3(b)(5)
Total BTEX	0.1	0.2	40 CFR § 125.3 (BPJ)	25 Pa. Code § 92a.3(b)(5)
Phenolics	Not Detectable	Not Detectable	40 CFR § 125.3 (BPJ)	25 Pa. Code § 92a.3(b)(5)
Acetone	7.97	30.2	40 CFR § 437.31	25 Pa. Code § 92a.48(a)(1)
Acetophenone	0.0562	0.114	40 CFR § 437.31	25 Pa. Code § 92a.48(a)(1)
2-Butanone	1.85	4.81	40 CFR § 437.31	25 Pa. Code § 92a.48(a)(1)
o-Cresol	0.561	1.92	40 CFR § 437.31	25 Pa. Code § 92a.48(a)(1)
p-Cresol	0.205	0.698	40 CFR § 437.31	25 Pa. Code § 92a.48(a)(1)
Pyridine	0.182	0.370	40 CFR § 437.31	25 Pa. Code § 92a.48(a)(1)
2,4,6-Trichlorophenol	0.106	0.155	40 CFR § 437.31	25 Pa. Code § 92a.48(a)(1)
Acidity	Less than alkalinity		40 CFR § 125.3 (BPJ)	25 Pa. Code § 92a.3(b)(5)
Alkalinity	Report	Report	40 CFR § 125.3 (BPJ)	25 Pa. Code § 92a.3(b)(5)
Gross Alpha (pCi/L)	Report	Report	40 CFR § 125.3 (BPJ)	25 Pa. Code § 92a.3(b)(5)
Radium 226/228 (pCi/L)	Report	Report	40 CFR § 125.3 (BPJ)	25 Pa. Code § 92a.3(b)(5)
Uranium (µg/L)	Report	Report	40 CFR § 125.3 (BPJ)	25 Pa. Code § 92a.3(b)(5)

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

Water quality-based effluent limitations (WQBELs) are evaluated at IMP 102. Even though IMP 102 is not final stream discharge point, storm water is the only other contributor. Therefore, evaluating discharges solely from IMP 102 is still protective of stream uses. There are three scenarios in which a discharge from the impoundment could occur:

Scenario 1: A significant and/or sustained rainfall event occurs and RES is unable to haul wastewater away quickly enough to prevent a discharge

Scenario 2: RES directs too much treated wastewater to the impoundment and is unable to haul wastewater away quickly enough to prevent a discharge

Scenario 3: A combination of 1 and 2

A reasonable potential analysis is used to determine whether a discharge in any of those scenarios, under design conditions (i.e., $Q_{7\text{-}10}$ stream flow) could lead to an excursion above an applicable water quality standard.

Reasonable Potential

Over the course of RES's permitting history with DEP, RES has maintained a position that no process wastewater discharges from the facility will occur, including 1) discharges from the former treated wastewater outfall, Outfall 001, where the discharge pumps were removed; and 2) discharges from the ten-million-gallon impoundment, which originally did not include an overflow spillway to prevent overtopping. In response to DEP's comments on the WQM permit amendment authorizing the construction of the impoundment—specifically, comments regarding the need for an overflow structure, RES stated the following:

> The facility is a zero discharge facility and there is no anticipated discharge from the pond. Therefore, an overflow or spillway was not included in the RES design. The impoundment is designed with required 2 feet of freeboard to handle precipitation including the additional water from a 24-hour/25-year storm event. For the facility site this is 4 inches of precipitation from the NOAA Atlas 14 of the NOAA National Water Service. Water received in the pond would mix with the treated water and be removed from the pond as treated water [for reuse or disposal offsite].
>
> Surface water will be directed away from the pond. The drawings have been revised to show a 6 inch berm around the pond. The area around the pond will be directed away from the pond to the collection trenches.
>
> The facility anticipates shipping up to 1,500,000 gallons per day. The current demand for the treated water will allow the water level to be lowered to the freeboard level through routine shipments. If market conditions were to change and there was no market outlet for removal of the water, then water would have to be removed and sent to an offsite disposal or treatment facility, or other similar options to regain the ponds [sic] freeboard.

Despite RES's explanation, DEP requested than an overflow spillway be constructed to account for unanticipated circumstances that could lead to an overflow such as the scenarios listed above. An overflow spillway also facilitates a controlled release of water rather than uncontrolled overtopping of the impoundment. RES responded with the following:

> Tetra Tech has discussed the overflow and "unanticipated circumstances" issue with PADEP and no agreement was reached as to a worst case or most likely case scenario as a design basis for an emergency overflow or other measures. PADEP has clearly stated that the impoundment must have an emergency overflow for permit approval.
>
> RES has agreed to install a four-foot-wide by three inches deep spillway on the south end of the west side of the impoundment. The twelve-inch berm height and required two feet of freeboard will be maintained. The spillway would overflow to the stormwater ditch on the west side of the pond.

A three-inch deep spillway was constructed into the northwest corner of the impoundment. The spillway empties into a drainage channel running along the northern side of the impoundment. The drainage channel makes a ninety-degree turn from the northern to the western side of the impoundment and leads into a storm water pond (Sediment Pond "A") that discharges through Outfall 002. Presuming that the impoundment is at capacity with two feet of freeboard, a storm event under Scenario 1 would need to drop more than 21 inches of rain on the impoundment for an overflow to occur (2 feet – 3 inches = 21 inches). That rainfall amount assumes that RES would not be removing wastewaters during the storm and increasing the amount of rainfall necessary to cause an overflow. Based on this evaluation, discharges under Scenario 1 would only occur during very rare periods of significant rainfall—periods when the receiving stream would not be at $Q_{7\text{-}10}$ low-flow design conditions. Since design conditions would not be met if a discharge occurred under Scenario 1, a water quality analysis is not performed for those circumstances.

Scenario 3 also includes precipitation-induced discharges. As with Scenario 1, a discharge that occurs during a storm event under Scenario 3 would not occur at $Q_{7\text{-}10}$ low-flow conditions in the receiving stream so a water quality analysis is not performed for those circumstances either.

Scenario 2 is the only scenario in which a non-precipitation induced discharge could occur at design conditions. Even though the circumstances presented in Scenario 2 should not occur provided RES continues to properly manage its wastewater receipts and shipments, the possibility for an overflow cannot be discounted. If an overflow from IMP 102 occurred under Scenario 2, the effluent would flow off RES's property through Outfall 002 into a road-side drainage channel that flows west along State Route 3093 for a few hundred feet. The channel then flows south into a culvert under State Route 3093 and into a second basin. The second basin discharges to Belson Run, an intermittent stream. A non-precipitation-induced discharge under Scenario 2 would result in a discharge composed almost entirely of treated process wastewater with the effluent flowing through the series of vegetated, roadside drainage channels. Assuming that Belson Run is the point of first use in the affected watershed and that the $Q_{7\text{-}10}$ low-flow in Belson Run is at or near zero (a reasonable assumption given that Belson Run is an intermittent stream with a drainage area of about one square mile where

the second storm water retention basin empties into it), overflows must achieve WQBELs at levels equivalent to water quality criteria in order to protect Belson Run's designated uses.

In effluent dominated streams, any pollutants of concern identified for a given discharge will have a reasonable potential to cause or contribute to excursions above water quality criteria. Therefore, any pollutants for which technology-based effluent limitations are imposed (see Table 6) or any pollutants present or likely to be present in the discharge (based on NPDES permit application data) that also have applicable water quality criteria will receive WQBELs equivalent to criteria as shown in Table 7. If a parameter's most stringent criterion is a chronic fish, human health, or cancer risk level criterion, then the criterion is imposed as the average monthly limit and, in the absence of data that would allow for case-specific statistical analyses, the maximum daily limit is calculated as two times the average monthly limit based the multiplier in DEP's guidance used to translate average monthly limits into maximum daily limits for industrial wastes.[3] If a parameter's most stringent criterion is an acute fish criterion, then both the average monthly and maximum daily limits are set equal to the criterion.

Table 7. Criteria-Based WQBELs for Internal Monitoring Point 102

Parameter	Average Monthly (mg/L)	Maximum Daily (mg/L)
Aluminum, Total	0.75	0.75
Antimony, Total	0.0056	0.0112
Barium, Total	2.4	4.8
Boron, Total	1.6	3.2
Copper, Total	0.009	0.018
Iron, Total	1.5	3.0
Iron, Dissolved	0.30	0.30
Lead, Total	0.003	0.005
Manganese, Total	1.0	2.0
Mercury, Total	0.00005	0.00010
Strontium, Total	4.0	8.0
Thallium, Total	0.00024	0.00048
Zinc, Total	0.12	0.12
Acetone	3.5	7.0
p-Cresol	0.16	0.32
Phenanthrene	0.001	0.002
Pyrene	0.02	0.04
2,4,6-Trichlorophenol	0.0015	0.003
Osmotic Pressure (mOs/kg)	50.0	50.0

TDS and Sulfate

40 CFR 122.44(d)(1)(i) requires that NPDES permits contain limitations to control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the permitting authority determines are or may be discharged at a level which 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.

When determining whether a discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above narrative or numeric criteria within a State water quality standard, the permitting authority shall use procedures which account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant or pollutant parameter in the effluent, the sensitivity of the species to toxicity testing (when evaluating whole effluent toxicity), and where appropriate, the dilution of the effluent in the receiving water (40 CFR 122.44(d)(1)(ii)).

For CWT facilities that are authorized to discharge treated wastewater from drilling and production of natural gas wells, TDS and sulfate have been identified as pollutants of concern as indicated by the limitation of those pollutants under 25 Pa. Code Chapter 95.10(b)(3)(iii) for CWT facilities treating SGE wastewaters. TDS and sulfate are important with respect to 40 CFR 122.44(d)(1)(i) because the Monongahela River—the water of the Commonwealth into which wastewaters from IMP 102 ultimately discharge—historically exhibited excursions above State water quality standards for TDS and sulfate. To ensure that treated discharges from the RES facility do not cause or contribute to TDS and sulfate excursions above criteria for those pollutants in the Monongahela River, limits for TDS and sulfate are considered.

[3] Refer to Chapter 2, Section C of DEP's "Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits" [Doc. No. 362-0400-001, October 1, 1997]

Table 8. Pennsylvania Criteria for TDS and Sulfate (Chapter 93.7(a) – Table 3)

Parameter	Monthly Average (mg/L)	Maximum (mg/L)
Total Dissolved Solids	500	750
Sulfate	—	250

TDS criteria apply at the point of a surface potable water supply withdrawal (25 Pa. Code Chapter 96.3(d) requires compliance with potable water supply criteria 99% of the time). Even though the nearest surface potable water supply withdrawal is located 34 miles downstream of IMP 102 on the Youghiogheny River, a discharge from the RES facility may still have an impact at that withdrawal because TDS is a conservative pollutant that persists in the water column. In the NPDES permit application, the TDS concentration of RES facility's raw wastewaters were reported as 226,000 mg/L. Given the lack of TDS treatment at the RES facility, it reasonably can be assumed that effluent TDS concentrations will be similar in magnitude to influent TDS concentrations. Even a small discharge bearing TDS concentrations on the order of 50,000 to 80,000 mg/L would cause an increase in TDS concentrations at the nearest downstream potable water supply withdrawal. Based on the information presented above, a reasonable potential exists for a discharge from IMP 102 to contribute to a TDS excursion above Pennsylvania's TDS criteria. Therefore, to ensure that there is no contribution to a TDS excursion, TDS criteria shall be imposed as effluent limitations at IMP 102.

Sulfate was not detected in the raw wastewaters, but the existing reporting requirement will remain in effect.

Sewickley Creek Watershed TMDL

A TMDL was finalized for the Sewickley Creek watershed on April 8, 2009 to address aquatic life impairments within the Sewickley Creek watershed resulting from elevated concentrations of aluminum, iron, and manganese caused by acid mine drainage. The constituents covered under the TMDL are pollutants of concern for this facility as described in Section 102.A of this Fact Sheet. Since this site discharges to Sewickley Creek via Belson Run, the TMDL must be considered when assigning limits for aluminum, iron, and manganese.

The TMDL does not provide reserve waste load allocations for new sources like RES's New Stanton Plant. Therefore, to ensure that any from the plant do not cause or contribute to violations of a water quality standard as required by 40 CFR § 122.4(i), effluent limitations are imposed for aluminum, iron, and manganese at their respective water quality criteria. Since DEP has already calculated effluent limitations for aluminum, iron, and manganese at criteria based on a reasonable potential analysis (see Table 7), no other limits are required to comply with the TMDL.

Table 9. WQBELs for IMP 102

Parameter	Average Monthly (mg/L)	Daily Maximum (mg/L)
Aluminum, Total	0.75	0.75
Antimony, Total	0.0056	0.0112
Barium, Total	2.4	4.8
Boron, Total	1.6	3.2
Copper, Total	0.009	0.018
Iron, Total	1.5	2.3
Iron, Dissolved	0.30	0.30
Lead, Total	0.003	0.005
Manganese, Total	1.0	2.0
Mercury, Total	0.00005	0.00010
Strontium, Total	4.0	8.0
Thallium, Total	0.00024	0.00048
Zinc, Total	0.12	0.12
Acetone	3.5	7.0
p-Cresol	0.16	0.32
Phenanthrene	0.001	0.002
Pyrene	0.02	0.04
2,4,6-Trichlorophenol	0.0015	0.003
Osmotic Pressure	50.0	50.0
Total Dissolved Solids	500.0	750.0
Sulfate, Total	Report	Report

The WQBELs in Table 9 are generally unchanged from those in the previous permit except for the criteria-based WQBELs for Pyrene and 2,4,6-Trichlorophenol, which were adjusted to match the updated criteria in 25 Pa. Code Chapter 93.[4]

102.B. Final Effluent Limits and Monitoring Requirements for IMP 102

In accordance with 25 Pa. Code §§ 92a.12 and 92a.61 and anti-backsliding requirements under Section 402(o) of the Clean Water Act and 40 CFR § 122.44(l) [5] (incorporated in Pennsylvania's regulations at 25 Pa. Code § 92a.44), effluent limits at IMP 102 are the more stringent of TBELs, WQBELs, regulatory effluent standards, and monitoring requirements developed for this permit renewal (see Tables 6 and 9); and effluent limits and monitoring requirements from the previous permit, subject to any exceptions to anti-backsliding discussed in this Fact Sheet. Applicable effluent limits and monitoring requirements are summarized in the table below. Since discharge flow rates from IMP 102 that would occur during an overflow are unknown, no mass limits are calculated for IMP 102.

Table 10. Effluent Limits and Monitoring Requirements for IMP 102

Parameter	Mass (pounds/day)		Concentration (mg/L)			Basis
	Average Monthly	Daily Maximum	Average Monthly	Daily Maximum	Instant Maximum	
Flow (MGD)	Report	Report	—	—	—	25 Pa. Code § 92a.61(d)(1)
BOD-5	—	—	53.0	163.0	—	40 CFR § 437.31
Total Suspended Solids	—	—	30.0	60.0	—	BPJ TBEL; 40 CFR § 125.3 & 122.44(l)
Total Dissolved Solids	—	—	500.0	750.0	—	BPJ TBEL; 25 Pa. Code § 95.10(b)(3); WQBELs
Osmotic Pressure (mOs/kg)	—	—	50.0	50.0	—	WQBELs; 25 Pa. Code §§ 92a.12(a)(1) & 96.4(b)
Oil and Grease	—	—	15.0	30.0	—	25 Pa. Code § 95.2(2)(ii)
Acidity, Total (as CaCO3)	—	—	Less than alkalinity		—	BPJ TBEL; 40 CFR § 125.3(c)(3) & 122.44(l)
Alkalinity, Total (as CaCO3)	—	—	Report	Report	—	25 Pa. Code § 92a.61(b)
Aluminum, Total	—	—	0.75	0.75	—	TMDL WQBELs; 25 Pa. Code §§ 92a.12(a)(1) & 96.4(b)
Antimony, Total	—	—	0.0056	0.0112	—	WQBELs; 25 Pa. Code §§ 92a.12(a)(1) & 96.4(b)
Barium, Total	—	—	2.4	4.8	—	WQBELs; 25 Pa. Code §§ 92a.12(a)(1) & 96.4(b)
Boron, Total	—	—	1.6	3.2	—	WQBELs; 25 Pa. Code §§ 92a.12(a)(1) & 96.4(b)
Copper, Total	—	—	0.009	0.018	—	WQBELs; 25 Pa. Code §§ 92a.12(a)(1) & 96.4(b)
Iron, Dissolved	—	—	0.30	0.30	—	WQBELs; 25 Pa. Code §§ 92a.12(a)(1) & 96.4(b)
Iron, Total	—	—	1.5	3.0	—	TMDL WQBELs; 25 Pa. Code §§ 92a.12(a)(1) & 96.4(b)
Lead, Total	—	—	0.003	0.005	—	WQBELs; 25 Pa. Code §§ 92a.12(a)(1) & 96.4(b)
Manganese, Total	—	—	1.0	2.0	—	TMDL WQBELs; 25 Pa. Code §§ 92a.12(a)(1) & 96.4(b)
Mercury, Total	—	—	0.00005	0.00010	—	WQBELs; 25 Pa. Code §§ 92a.12(a)(1) & 96.4(b)
Strontium, Total	—	—	4.0	8.0	—	WQBELs; 25 Pa. Code §§ 92a.12(a)(1) & 96.4(b)
Sulfate, Total	—	—	Report	Report	—	25 Pa. Code § 92.61(b)
Uranium, Total (µg/L)	—	—	Report	Report	—	25 Pa. Code § 92.61(b)
Thallium, Total (µg/L)	—	—	0.24	0.48	—	WQBELs; 25 Pa. Code §§ 92a.12(a)(1) & 96.4(b)

[4] Specific water quality criteria in Chapter 93 were updated in October 2020. Updates were approved by the U.S. EPA in March 2021.

[5] *Reissued permits.* (1) Except as provided in paragraph (l)(2) of this section when a permit is renewed or reissued, interim effluent limitations, standards or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit (unless the circumstances on which the previous permit was based have materially and substantially changed since the time the permit was issued and would constitute cause for permit modification or revocation and reissuance under § 122.62.)

Table 10 (continued). Effluent Limits and Monitoring Requirements for IMP 102

Parameter	Mass (pounds/day)		Concentration (mg/L)			Basis
	Average Monthly	Daily Maximum	Average Monthly	Daily Maximum	Instant Maximum	
Zinc, Total	—	—	0.12	0.12	—	WQBELs; 25 Pa. Code §§ 92a.12(a)(1) & 96.4(b)
o-Cresol	—	—	0.561	1.92	—	40 CFR § 437.31
2,4,6-Trichlorophenol	—	—	0.0015	0.003	—	WQBELs; 25 Pa. Code §§ 92a.12(a)(1) & 96.4(b)
Acetone	—	—	3.5	7.0	—	WQBELs; 25 Pa. Code §§ 92a.12(a)(1) & 96.4(b)
Acetophenone	—	—	0.0562	0.114	—	40 CFR § 437.31
Ethylbenzene	—	—	Report	Report	—	25 Pa. Code § 92.61(b)
Benzene	—	—	0.001	0.002	—	BPJ TBEL; 40 CFR § 125.3(c)(3) & 122.44(l)
BTEX, Total	—	—	0.1	0.2	—	BPJ TBEL; 40 CFR § 125.3(c)(3) & 122.44(l)
Chloride	—	—	250.0	500.0	—	WQBELs; 25 Pa. Code §§ 92a.12(a)(1) & 96.4(b)
Bromide	—	—	Report	Report	—	25 Pa. Code § 92.61(b)
2-Butanone	—	—	1.85	4.81	—	40 CFR § 437.31
p-Cresol	—	—	0.16	0.32	—	WQBELs; 25 Pa. Code §§ 92a.12(a)(1) & 96.4(b)
Phenanthrene	—	—	0.001	0.002	—	WQBELs; 25 Pa. Code §§ 92a.12(a)(1) & 96.4(b)
Phenolics, Total	—	—	5.0	5.0	—	WQBELs; 25 Pa. Code §§ 92a.12(a)(1) & 96.4(b)
Pyrene	—	—	0.02	0.04	—	WQBELs; 25 Pa. Code §§ 92a.12(a)(1) & 96.4(b)
Pyridine	—	—	0.182	0.370	—	40 CFR § 437.31
Toluene	—	—	Report	Report	—	25 Pa. Code § 92.61(b)
Xylenes, Total	—	—	Report	Report	—	25 Pa. Code § 92.61(b)
Gross Alpha (pCi/L)	—	—	Report	Report	—	25 Pa. Code § 92.61(b)
Radium 226/228, Total (pCi/L)			Report	Report		25 Pa. Code § 92.61(b)
pH	within the range of 6.0 to 9.0					40 CFR § 423.12(b)(1)

Effluent limits for mercury are less than DEP's target quantitation limit for mercury: 0.2 µg/L. Therefore, a condition will be included in the permit whereby DEP's target quantitation limit is used for compliance purposes.

Sampling will be required at a frequency of 2/discharge because at least two samples are required to evaluate compliance with average monthly effluent limits.

Development of Effluent Limitations

Outfall Nos.	002	**Design Flow (MGD)**	Variable
Latitude	40º 11' 20.00"	**Longitude**	-79º 34' 45.00"

Wastewater Description: Storm water and sources monitored at IMP 102

RES submitted a No Exposure Certification to certify that storm water discharges at Outfall 002 are not exposed to industrial activities. Outfall 002 has the potential to be impacted by industrial activities if there was a discharge from the ten-million-gallon storage impoundment through IMP 102. Sediment Pond "A" also appears to receive runoff from the truck loading area adjacent to the impoundment. Since there is evidence of sediment in this area from truck traffic (see attached images) and analytical data show elevated concentrations of TSS (393 mg/L), Outfall 002 will be permitted as a storm water discharge associated with industrial activities.

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

There are no Federal Effluent Limitations Guidelines (ELGs) applicable to the storm water discharges from Outfall 002. 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 RES's storm water discharges. Based on RES's SIC Code of 4953 (NAICS 562219), the facility would be classified under Appendix J – Additional Facilities of the PAG-03 General Permit.[6] In order to ensure that there is consistency across the state for facilities that discharge storm water associated with their industrial activities, the monitoring requirements of Appendix J of the PAG-03 will be imposed at Outfall 002.

Table 11. PAG-03 Appendix J – Minimum Monitoring Requirements

Discharge Parameter	Units	Sample Type	Appendix J Measurement Frequency	Benchmark Values
Total Phosphorus	mg/L	1 Grab	1/6 months	—
Total Suspended Solids	mg/L	1 Grab	1/6 months	100
Oil and Grease	mg/L	1 Grab	1/6 months	30
pH	S.U.	1 Grab	1/6 months	9.0
Chemical Oxygen Demand	mg/L	1 Grab	1/6 months	120

To the extent that effluent limits are necessary to ensure that storm water Best Management Practices (BMPs) are adequately implemented, DEP's Permit Writers' Manual recommends that effluent limits be developed for industrial storm water discharges based on a determination of Best Available Technology (BAT) using Best Professional Judgment (BPJ). BPJ of BAT typically involves the evaluation of end-of-pipe wastewater treatment technologies, but DEP considers the use of BMPs to be BAT for storm water outfalls unless effluent concentrations indicate that BMPs provide inadequate pollution control. At this time, no TBELs will be imposed on RES's storm water discharges. However, TBELs may be warranted in the future if pollutant concentrations in storm water consistently exceed the benchmark values.

DEP uses benchmark values as an indicator of the effectiveness of a facility's BMPs. The benchmark values 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, RES 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.

Outfall 002 may receive overflows of treated SGE wastewater from the storage impoundment, but proper management of stored wastewater volumes should result in storm water being the only source of discharge from Outfall 002 under most circumstances.

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

Generally, DEP does not develop numerical WQBELs for storm water discharges. Pursuant to 25 Pa. Code § 96.4(g), mathematical modeling used to develop WQBELs must be performed at Q_{7-10} low flow conditions. Precipitation-induced discharges generally do not occur at Q_{7-10} design conditions because the precipitation that causes a storm water discharge

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

will also 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, 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.

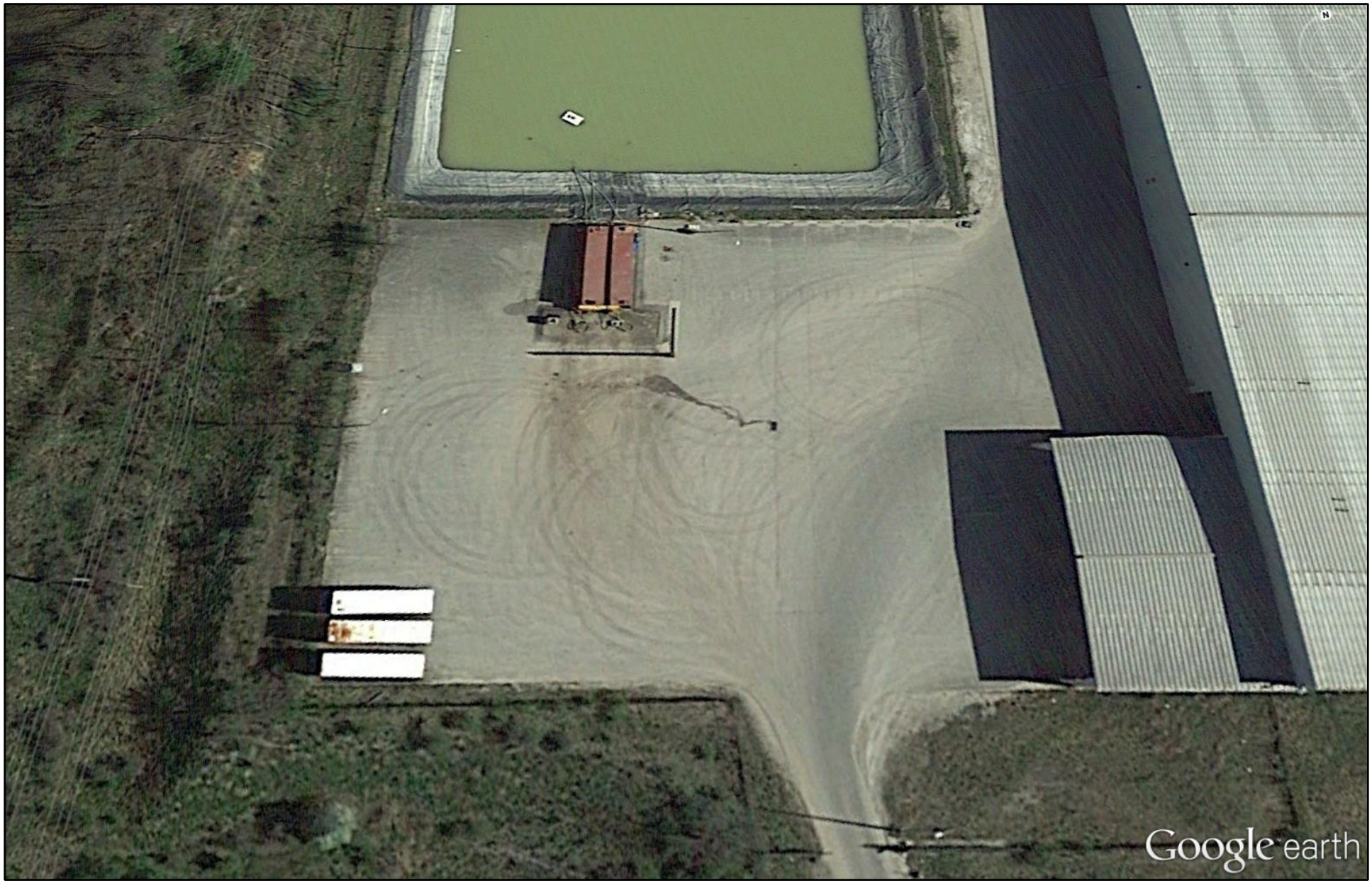
002.C. Effluent Limitations and Monitoring Requirements for Outfall 002

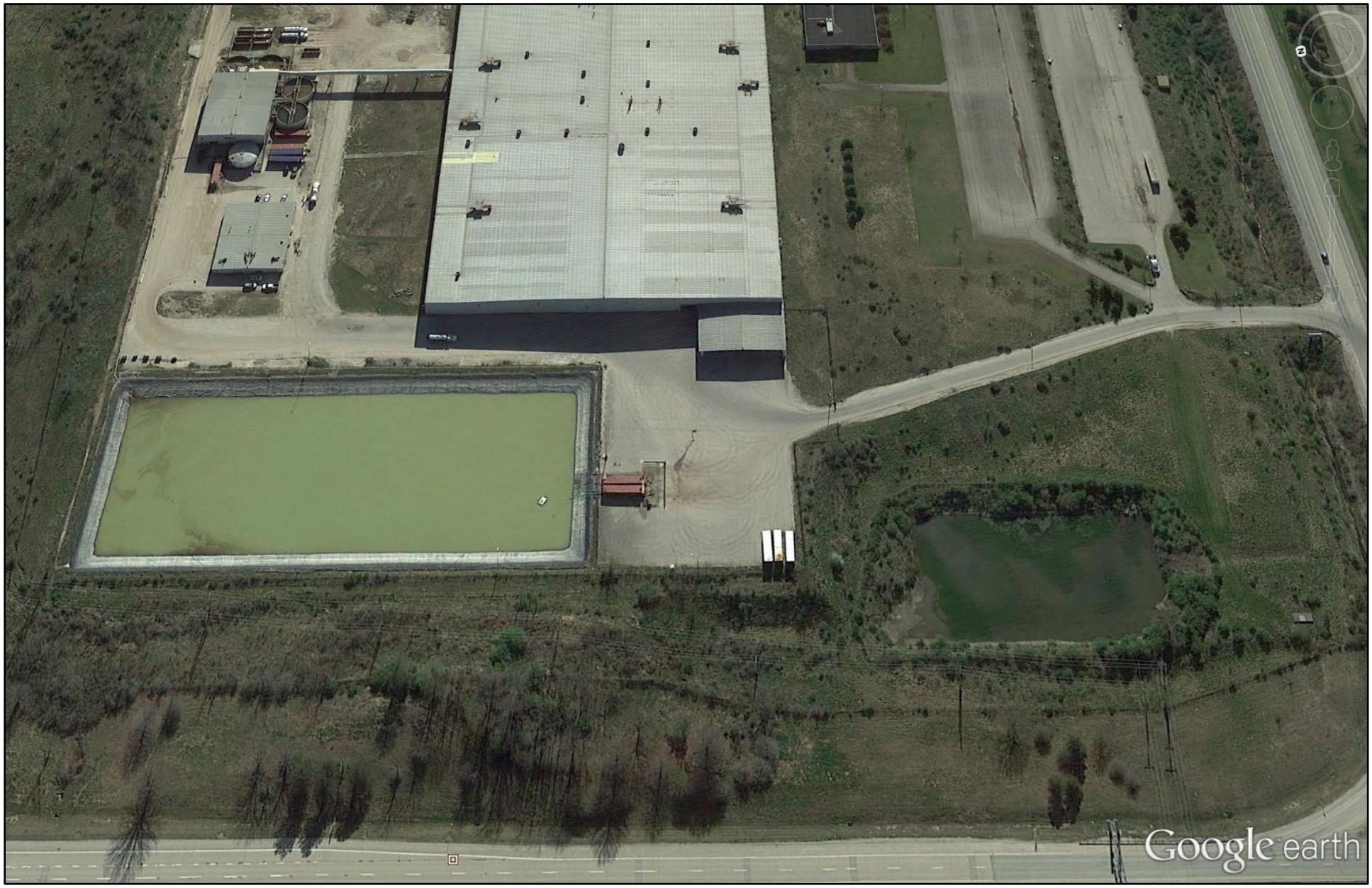
Effluent limits applicable at Outfall 002 are the more stringent of TBELs, WQBELs, regulatory effluent standards and monitoring requirements. Since TBELs are not being imposed at this time, only PAG-03-based monitoring will be required.

Table 12. Effluent Limits and Monitoring Requirements for Outfall 002

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)
Chemical Oxygen Demand	—	—	—	—	Report	25 Pa. Code § 92a.61(h); PAG-03, Appendix J
Total Suspended Solids	—	—	—	—	Report	25 Pa. Code § 92a.61(h); PAG-03, Appendix J
Oil and Grease	—	—	—	—	Report	25 Pa. Code § 92a.61(h); PAG-03, Appendix J
pH (standard units)	—	—	—	—	Report	25 Pa. Code § 92a.61(h); PAG-03, Appendix J
Total Phosphorus	—	—	—	—	Report	25 Pa. Code § 92a.61(h); PAG-03, Appendix J

The sampling frequency and type for all parameters will be 1/6 months grab samples as established in Appendix J of the PAG-03 General Permit on which the monitoring requirements are based. Flow should be estimated at the time of sampling.


Google earth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Development of Effluent Limitations

Outfall No.	003	**Design Flow (MGD)**	Variable
Latitude	40° 11' 25.00"	**Longitude**	-79° 34' 35.00"

Wastewater Description: Storm water

Pursuant to the NPDES permit renewal application, Outfall 003 was eliminated and will not be included in the renewed permit.

Tools and References Used to Develop Permit	
☐	WQM for Windows Model (see Attachment)
☐	Toxics Management Spreadsheet (see Attachment)
☐	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment)
☐	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☒	Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
☐	Pennsylvania CSO Policy, 385-2000-011, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.
☐	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
☐	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
☐	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 391-2000-007, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
☐	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
☐	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 10/97.
☐	Implementation Guidance for Application of Section 93.5(e) for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 391-2000-019, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 3/99.
☐	Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 391-2000-022, 3/1999.
☐	Design Stream Flows, 391-2000-023, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 391-2000-024, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
☐	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☐	SOP:
☒	Other: Oil and Gas Wastewater Permitting Manual, 550-2100-002, 10/30/01
☒	Other: Small Entity Compliance Guide Centralized Waste Treatment Effluent Limitations Guidelines and Pretreatment Standards (40 CFR 437), EPA 821-B-01-003, June 2001

ATTACHMENT A

Centralized Waste Treatment
Small Entity Compliance Guide
40 CFR Part 437 Subcategorization

This classification is not inclusive of all possible wastestreams. It is simply a guidance of the typical wastestreams in each subcategory.

5.2.3 *Step 3: Waste Characterization Using Numerical Criteria*

For wastestreams that are from non-specific sources or not listed in the waste receipt classification table, the facility should additionally complete Step 3. In Step 3, the facility should use data collected during the waste acceptance procedures to classify the waste into the appropriate subcategory. EPA recommends the CWT facility apply the following hierarchy:

1). If the waste receipt contains oil and grease at or in excess of 100 mg/L, the waste receipt should be classified in the oils subcategory;

2). If the waste receipt contains oil and grease <100 mg/L, and has any of the pollutants listed below in concentrations in excess of the values listed below, the waste receipt should be classified in the metals subcategory.

cadmium	0.2 mg/L
chromium	8.9 mg/L
copper	4.9 mg/L
nickel	37.5 mg/L

3). If the waste receipt contains oil and grease < 100 mg/L and does not have concentrations of cadmium, chromium, copper, or nickel above any of the values listed above, the waste receipt should be classified in the organics subcategory.

At this point, the CWT facility has determined the applicable subcategories and should refer to Chapter 6 for implementing the rule if only one subcategory applies or Chapter 7 if more than one subcategory applies.

5.3 Follow-Up Subcategory Determination Procedures

Once the CWT facility's initial subcategory determination (oils, metals, organics, or mixed) has been made, the facility will not need to repeat this determination process where its wastestreams remain consistent. This includes accepting a new wastestream that is within the CWT facility's current subcategory. However, if a CWT facility alters its operation to accept wastes from a subcategory outside its permit (or to no longer accept waste from a subcategory), the facility should notify the appropriate permitting or control authority and the subcategory determination should be re-visited. EPA notes that current permit and pretreatment regulations require notification to the permitting or control authority when significant changes occur. EPA also recommends that a facility revisit its subcategory determination whenever the permit or control mechanism is re-issued, though this would not necessarily require complete characterization of a subsequent year's waste receipts if there is no indication that the make-up of the CWT facility's receipts had significantly changed.

ATTACHMENT B

Evaluation for Existing Case-by-Case TBELs at IMP 102

In promulgating § 95.10, DEP did not wish to preempt existing, nationally applicable performance standards that impact the oil and gas extraction industry (40 CFR Part 435 and 40 CFR Part 437) or to otherwise prescribe the use of a specific treatment technology. However, supporting documentation for § 95.10, including the preamble to the final regulation and the Comment and Response Document, provides ample basis for establishing case-by-case technology-based effluent limitations for Total Dissolved Solids, Total Chlorides, Total Barium, and Total Strontium at IMP 102. Each of the technology options included as part of a case-by-case effluent limit determination including Best Practicable Control Technology Currently Available (BPT), Best Conventional Pollutant Control Technology (BCT), and Best Available Control Technology Economically Achievable (there is no BPJ for NSPS) are to be evaluated using factors listed under 40 CFR § 125.3(d).

The factors common to each level of control technology include the following: the age of equipment and facilities involved, the processes 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. Each of these factors is discussed below. Note that parameters listed under Subpart C of 40 CFR 437 are not included as part of the BPJ evaluation because EPA has already determined the appropriate level of treatment for those parameters. In addition, BCT is not included in the analysis because conventional pollutants are already addressed by 40 CFR Part 437 Subpart C and the O&G Permitting Manual. This case-by-case, BPJ evaluation of technology-based effluent limitations applies solely to the RES facility and should not be generalized to other CWT facilities accepting SGE wastewaters.

1. Equipment and Facility Age – Facility age impacts the feasibility of modifying existing equipment to implement a technology. The older a facility is, the costlier modifications can be (e.g., upgrading/replacing old treatment units to make them current or to make them compatible with new treatment systems). New facilities can install the best and most efficient production processes and wastewater treatment technologies. The RES facility is a relatively new facility, so none of the treatment units at the site should require significant upgrades or modifications to accommodate the addition of treatment units for TDS and chlorides (barium, strontium, aluminum, and manganese would already be addressed by the existing metals removal treatment facilities).

So long as the existing facilities provide adequate pretreatment and are not in a state of disrepair, the age of the existing facilities should not negatively impact the feasibility of adding new treatment facilities for TDS and chlorides. DEP does not consider the age of existing facilities to be a limiting factor for the installation of new treatment systems.

2. Processes Employed – As listed on Module 2 of the permit application, existing treatment technologies include clarification, pH adjustment, equalization, flash mixing for metals removal, secondary clarification, and high-pressure filtration. The existing technologies are effective, affordable, and reliable, but they do not address TDS and chlorides. Even though additional treatment beyond what is currently employed is needed to address dissolved constituents, the existing treatment processes at the RES facility act as effective pretreatment for TDS control technologies and can handle metals constituents.

3. Engineering Aspects of Control Techniques – From an engineering standpoint, the Chapter 95.10(b)(3) effluent standards are achievable using technically sound, reliable, and widely available treatment technologies. The preamble to the Chapter 95.10 final form rulemaking (40 Pa.B. 4835, Saturday, August 21, 2010) supports this determination:

> Wastewater originating in this [Marcellus Shale] formation presents treatment challenges due to the presence of high concentrations of chlorides, barium and strontium, and the presence of naturally-occurring radioactive radium. It is clear that technology for treating the extraordinarily high TDS wastewater from natural gas well drilling operations is both proven and widely available. The Department met with over 60 manufacturers and vendors of technologies for treating the very high levels of TDS from the oil and gas industry, specifically the Marcellus shale formation. While some of these vendors do not have actual facilities in operation and are seeking to get into the business, at least six manufacturers have either piloted the technology at full scale or have facilities currently operating in other states…
>
> The Department issued two National Pollutant Discharge Elimination System (NPDES) permits for facilities to treat these wastewaters to the standards in the proposed rulemaking, one in the Williamsport area—Terraqua Resource Management—and one in Somerset County—Somerset Regional Water Resources. The Department has at least 29 other permit applications currently under review. In addition, facilities have been constructed and are in operation in other states. AOP Clearwater recently began operation of a zero liquid discharge facility in Fairmont, West Virginia, and 212 Resources operates a treatment facility in Colorado. Integrated Water Technologies has recently completed full-scale pilot studies documenting that their technologies are successful in treating these wastewaters to the proposed standards or better.

4. Process Changes – Consideration for process changes relates to the feasibility of any modifications that reduce the quantity or toxicity of a discharge. Potential process changes include source control, waste stream minimization, recycling, and zero liquid discharge systems. The RES facility, in coordination with offsite waste generators, has already employed many of those processes to the extent possible. Since the RES facility's NPDES permit was issued in 2010, the facility has recycled all of its wastewater receipts back to well drillers and no process wastewater discharges from the RES facility have occurred. Despite the recycling of treated wastewaters and the operation of the RES treatment facility without process wastewater discharges, DEP anticipates that discharges could eventually be necessary—albeit in a reduced capacity compared to other CWT facilities due to the large storage volume of RES's treated water storage impoundment. Well-drillers sending wastewaters to the RES facility may not always be able to accept treated wastewater for reuse and the availability of other disposal options such as deep-well injection is not guaranteed.

DEP has not identified any additional process changes beyond those already implemented by the RES facility that would eliminate the potential need for a surface water discharge. However, this does not preclude the oil and gas extraction industry from developing practices that would enable it to recycle 100% of its wastewaters.

5. Non-Water Quality Environmental Impacts (Including Energy Requirements) – Non-water quality impacts including air pollution, solid waste generation, and energy requirements are potentially significant factors associated with technologies that remove dissolved solids. Distillation, evaporation, and reverse osmosis are energy intensive technologies and increased energy consumption causes increases in air pollution and solid waste generation at the power generation site depending on the generation source.

Wastes generated directly by TDS treatment technologies may include highly concentrated brines that may be further processed—albeit with additional energy requirements and air pollutant emissions—into a salt that can be beneficially reused. Even when TDS treatment concentrate is not processed further, there is still the benefit of reducing (via TDS treatment) the volume of unusable wastewater that needs to be sent elsewhere for disposal.

In general, the application of TDS treatment technology at the RES facility is only expected to have marginal non-water quality environmental impacts. That is, although TDS treatment technologies are energy intensive when compared to the other types of treatment technologies employed by RES, the net impact on the environment, which will be realized elsewhere (i.e., power generating facilities, landfills, etc.) is expected to be small.

6. Costs – Cost considerations vary between the BPT and BAT levels of control. The BPT cost analysis is a cost-benefit analysis comparing the total cost of application of a technology to the effluent reduction benefits to be achieved from such application.

The intent of the BPT cost-benefit requirement is to avoid requiring wastewater treatment when the amount of effluent reduction is disproportionate to the cost of the reduction. In balancing costs in relation to effluent reduction benefits, factors to consider include the volume and nature of existing discharges, the volume and nature of discharges expected after application of BPT, the general environmental effects of the pollutants, and the cost and economic impact of the required pollution control.

There are no existing process wastewater discharges from the RES facility. However, if the site were to discharge without the installation of TDS treatment, the TDS discharge loads could be represented by influent TDS loadings: 457,328 pounds/day average (54,800 mg/L TDS at a flow rate of 1.0 MGD) and 732,727 pounds/day maximum (87,800 mg/L TDS at a flow rate of 1.0 MGD). Installing TDS treatment technology capable of reducing TDS discharge concentrations to 500 mg/L would result in an average TDS discharge load of 4,173 pounds/day—a reduction of 453,155 pounds/day or over 99% removal.

With respect to the environmental effects of TDS, the preamble to the final § 95.10 rulemaking discusses the effects of TDS on aquatic life:

> TDS causes toxicity to water bodies through increases in salinity, changes in the ionic composition of the water and toxicity of individual ions. The composition of specific ions determines the toxicity of elevated TDS in natural waters. Also, as the hardness increases, TDS toxicity may decrease. The major concern associated with high TDS concentrations relates mostly to direct effects of increased salinity on the health of aquatic organisms…
>
> Several studies on the potential impacts to aquatic life from…large TDS discharges were also conducted on major tributaries flowing into the Monongahela River in Greene County. Each of these studies documents the adverse effects of discharges of TDS, sulfates and chlorides on the aquatic communities in these receiving streams. The former concludes that there is a high abundance of halophilic (salt-loving) organisms downstream from the

> discharges of TDS and chlorides and a clear transition of fresh water organisms to brackish water organisms in the receiving stream from points above the discharge to points below. It is evident from this study that increases in salinity have caused a shift in biotic communities.

The preamble to the final rulemaking also discusses costs:

> In the preamble to the proposed rulemaking, the Board referred to estimated costs for treating [produced] wastewater at approximately 25¢ per gallon. Each of the manufacturers previously cited that has technology operating has verified that the true costs for treatment of this wastewater range between 12¢ and 25¢ per gallon…
>
> The cost of wastewater treatment, when compared with estimates of the annual revenue from Marcellus Shale gas extraction, is minuscule. Using industry projections, if there are indeed 500 trillion cubic feet of gas recoverable over the next 50 years, and if the price per 1,000 cubic feet were to hold at today's levels (about $5, which is an extremely conservative assumption), the annual revenue industry-wide could be $50 billion. Based on the treatment needs estimates by the industry and this analysis, the cost of treatment would be 0.4% to 0.8% of annual revenue, an insignificant percentage. Moreover, this industry has shown an ability to quickly adjust and develop cost effective solutions, as evidenced by the development and embrace of techniques for reuse of fracturing fluids. Treatment to levels in the final-form rulemaking clearly can be achieved at a reasonable cost to the natural gas industry in this Commonwealth. On the other side, the benefits from preventing the rise of TDS and chloride pollution levels in this Commonwealth's water resources are significant. For example, in economic terms, the TDS Stakeholders Subcommittee noted that stream-related tourism and recreation in this Commonwealth brings in an estimated $28 million annually.

Applying the cost estimates outlined in the preamble, the RES facility could theoretically incur costs on the order of $250,000 per day if the maximum 1 MGD design flow of the treatment system were treated for TDS at a rate of 25¢ per gallon. Although the RES facility does not directly generate revenue from the extraction and sale of oil and gas and RES does not intend to treat its wastewater for TDS, RES's costs for installing and operating treatment facilities capable of removing TDS from SGE wastewaters may be absorbed by the oil and gas extraction industry.

Mitigating high concentrations of TDS in the RES facility's effluent by installing TDS treatment technology would have beneficial economic impacts related to the use of water resources affected by a potential process wastewater discharge from RES's facility. Since high TDS causes scaling and accelerated corrosion in municipal and industrial water distribution systems, any reductions in the TDS concentrations of water resources that supply those distribution systems would reduce maintenance costs for municipalities and industries. Industrial facilities that withdraw and treat surface waters for industrial uses also would not need to install additional treatment systems to remove TDS in their raw water withdrawals. Economic benefits may also be realized in the areas of tourism and recreation through the maintenance of existing fresh water biotic communities.

Based on the preceding, DEP contends that the total cost of application of TDS treatment technologies at the RES facility is not disproportionate to the reductions in TDS discharge loading achieved by application of those technologies.

The BAT cost analysis is an evaluation of the economic achievability of implementing pollution control technologies. The intent of the BAT economic achievability determination is to evaluate whether a technology can be implemented without causing a facility to shut down (i.e., can the facility continue to operate and maintain profitability). DEP has not requested and RES has not shared the financial information necessary to fully evaluate the economics of installing TDS treatment at the RES facility, but RES was considering using an evaporator/crystallizer suggesting the technology is affordable.

In DEP's best professional judgment and in accordance with the requirements of 40 CFR § 125.3, the effluent standards for total dissolved solids, total chlorides, total barium, and total strontium listed under 25 Pa. Code § 95.10(b)(3) can be achieved by the RES facility using reliable, economical, readily available treatment technologies. Therefore, the effluent standards under § 95.10(b)(3) will be adopted as BAT performance standards at IMP 102. Maximum daily effluent limitations are imposed in accordance with 40 CFR § 122.45(d) and are calculated by multiplying the average monthly effluent limits by two as per DEP policy. (Note: BAT=BPT for this BPJ evaluation)

DEP recognizes, as described in the preamble to the final Chapter 95.10 rulemaking, that TDS treatment technologies can achieve TDS effluent concentrations less than 500 mg/L. However, EPA states in the Technical Support Document for WQ-based Toxics Control that: "In the development of technology-based effluent limits guidelines, the operating records of various wastewater treatment facilities for a particular category of discharger are examined. Based on the effluent data for the treatment facilities, a composite mean or long-term average (LTA) value for the parameter is determined. This LTA value, with relevant estimates of variability [95th and 99th percentile lognormal distributions for monthly average and daily

maximum limits], is then used to derive effluent limit guidelines, which lead directly to permit limits." Operating records for the RES facility representing proper operation of TDS treatment technology do not exist because RES does not use TDS treatment technologies. In addition, EPA has not promulgated ELGs for the SGE wastewater treatment industry that account for the use of TDS treatment technologies. In the absence of nationwide, EPA-promulgated ELGs developed based on the use of TDS treatment technology as BAT or site-specific effluent data showing the capabilities of TDS treatment technology employed at the RES facility, DEP considers the adoption of the Chapter 95.10(b)(3) performance standards to be reasonable for this permit.

It is expected that the aluminum, manganese, barium, and strontium limitations may be readily met using conventional metals treatment technologies, including the metals removal treatment process currently employed by RES. The recommended TBELs and monitoring requirements for TDS, total chlorides, aluminum, manganese, dissolved iron, barium, strontium, gross alpha, radium 226/228, and uranium are shown in Table 4. Note that daily maximum effluent limitations for aluminum, manganese, barium, and strontium are calculated as twice the monthly average limit.