



WATER QUALITY MANAGEMENT PERMIT

<p>A. PERMITTEE (Name and Address): CLIENT ID#: 62429 Tamaqua Borough and Tamaqua Borough Authority Schuylkill County 320 East Broad Street Tamaqua, PA 18252</p>	<p>B. PROJECT/FACILITY (Name): Tamaqua WWTP Upgrades</p>
<p>C. LOCATION (Municipality, County): SITE ID#: 253253 Walker Township, Schuylkill County</p>	
<p>D. This amendment approves the transfer, construction/modification, and operation of sewage facilities consisting of:</p> <ul style="list-style-type: none"> • <u>New Headworks (receiving 27-inch influent diameter interceptor sewer flow):</u> <ul style="list-style-type: none"> ○ New headworks building with new electrical room ○ New CSO No. 014 Regulator with overflow weir/fiberglass scum baffle to CSO Diversion Chamber ○ New CSO Diversion Chamber with two (2) motor-operated plug valves (to control flow to EQ/Aeration Tank Nos. 5 and 6) and sampling point ○ New CSO metering chamber with new 18-inch Palmer Bowlus flume and level transducer to measure CO Discharge Flows ○ New refrigerated flow-proportional 24-hour composite sampler ○ Two (2) 1/4th-Inch Mechanical bar screens (each with washer/compactor) Duperon Model FlexRake FRIQ or approved equal with motor-operated slide gates tied to SCADA System; ○ One (1) 3/4th-inch Manual bar rack for emergency operations and to maximize flow to the WWTP in accordance with NMCs; ○ One (1) Multi-Tray vortex grit removal facility with bypass channel Hydro-Dyne Engineering Inc. Bull Shark Through Screen & Whitetip Shark Washing Compactor or approved equal; ○ Two (2) grit pumps and one (1) grit concentrator and dewatering unit. ○ One (1) Magnetic flow meter on 30-inch effluent pipe to Flash Mix tank • <u>Existing Primary Clarifier Distribution Chamber/Flash Mix Tank:</u> Wooden influent baffle being replaced by fiberglass baffle. Three (3) Clarifier influent slide gates replaced with motor-operated gates to 16-inch pipelines to existing clarifiers. Addition of isolation valves on all recycle flows (WAS, digester supernatant, sump pump discharge) • <u>Existing Three (3) Primary Clarifiers (102,100-gallons each):</u> Plow-type scraper mechanisms (including drive motors) added (Evoqua H30A-LT Center-feed, Plow-type circular scrapper or approved equal), with new peripheral weirs and scum baffles. Valves on the primary clarifier sludge and scum lines will be replaced, with the valves to be located inside new circular manhole. Three Primary Sludge Pumps (150 GPM at 17 PSI TDH each; Penn Valley Pump Co. Double Disc Diaphragm 6DDX107CNU or approved equal) with VFDs & Motor Control Center (MCC) to send sludge to Digester No. 1. New flow meter on pump discharge line. Existing 16-inch Effluent pipes from primary clarifiers will be replaced with larger 20-inch pipes. Concrete repair and coating. Electrical improvements. • <u>Existing Secondary Treatment Regulator Chamber:</u> Replacement of influent gate and motor operator with new stainless steel slide gate and automated motor operator. • <u>Existing Secondary Treatment Flow Meter Chamber:</u> Replacement of nonfunctional clamp-on ultrasonic flow meter with the Endres Hauser Proline Prosonic Flow 83W ultrasonic flow meter (or approved equal). This flow meter shall be replaced as normal O&M as soon as practicable. • <u>Existing Caustic Mix Tank/Flow Splitter box:</u> Existing mixer will be replaced, along with disconnect switch and local control station (refed from MCC). Four replacement motor-operated slide gates control flow to Aeration Tanks Nos. 1 through 6. • <u>Existing Aeration Tanks:</u> <ul style="list-style-type: none"> ○ <u>Aeration Tanks Nos. 5 and 6 (233,400-gallons each):</u> Modification to allow for operation as either Aeration Tanks or EQ Tanks (with new pipeline from CSO No. 014 Diversion Chamber, tank level sensor control in the tanks, new duplex pump stations to pump tank contents back to headworks after peak wet weather flows subside. Concrete repair including epoxy adhesive repair. An existing hydraulic restriction in the Aeration Tank No. 5 effluent will be addressed by going to 16-inch effluent pipes (from 10-inch). An existing Aeration Tank No. 5 leak near the effluent trough (where pipe penetrates the outer wall) will be repaired. ○ <u>Aeration Tank Nos. 1 through 4 (116,700-gallons each):</u> Unused Aeration Tanks (not being used for secondary treatment) will be used as secondary treatment bypassing. ○ <u>All Tanks:</u> <ul style="list-style-type: none"> ▪ New mud valves, new pumps and valving ▪ Diffusors: Fine bubble membrane diffusors (Fine Bubble 9-inch Membrane Disk) will replace ceramic diffusors. Sanitaire Silver Series II 9-inch diameter membrane disk diffusor (or approved equal) ▪ Replacement of electrical equipment as needed ○ <u>Replacement Aeration Blowers:</u> Air flow to each aeration tank will be individually controlled. DO probe in each tank/basin will provide feedback to a modulating butterfly valve that throttles depending on oxygen demand, and incorporated into the blower control upgrades. Replacement blowers (with VFDs, surge protection, and process control panels) and blower controls with additional airflow control valves and DO probes tied into the plant's new PMCS system. Three (3) Hardy Pro-Air Positive Displacement 1350 SCFM at 7.5 PSIG, Model SD-HPP-MD6016-DD75HP, 75 HP (or approved equal) ○ <u>RAS Pumps:</u> Three (3) Return Activated Sludge (RAS) Sludge Pumps (with new VFDs/controllers) controlled by PCMP: Three Cornell Pump Horizontal Non-Clog Centrifugal 850 GPM at 17 Feet TDH, 5 HP (or approved equal). ○ <u>WAS Pumps:</u> Three (3) Waste Activated Sludge (WAS) Sludge Pumps (with new VFDs/controllers) controlled by PCMP: Three Cornell Pump Model 4NLDL Horizontal Non-Clog Centrifugal 155 GPM at 43 Feet TDH, 7.55 HP (or approved equal). 	

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- Existing Alum Mix Tank/Distribution Chamber: Existing Alum system to be removed from Tank.
- Existing Three (3) Final Clarifiers (189,582-gallons each): Evoqua Model H30A-LT Center feed, Suction header hydraulic removal will replace older technology. The clarifier mechanisms will be replaced with a suction header clarifier, with a tapered rectangular header mounted at a 45-degree angle with orifices on the bottom-front and fluidizing vane at the bottom vertex. Weirs and scum baffles will be replaced. Deteriorated concrete will be repaired. Final Clarifier No. 3 concrete repair and replacement of top 2 feet of sidewall. Rough concrete bottom will have top 2-inches of grout removed and new grout swept in with the header of the new unit. New electrical equipment.
- Existing Chlorine Distribution Chamber (7,750-gallons) and Existing Three (3) Chlorine Contact Tanks (23,600-gallons Tanks 1 & 2, 23,800-gallon Tank 3): Post-aeration blower will be demolished and replaced with submersible mixers, repowered out of the new MCCs. The valves and slide gates will be replaced. A parallel 12-inch pipe will be installed between the chlorine distribution tank and Chlorine Contact Tank (CCT) Nos. 1 and 2 (to eliminate a hydraulic restriction). Sodium Hypochlorite disinfection system (with automatic feed control) will replace the chlorine gas disinfection system. The chemical feed system will be located in a containment system in the Blower Building. A TRC sensor will be installed in common effluent Manhole M to allow for automated demand-based dosage. Concrete containment for new feed system. Three tanks' discharge will combine at Manhole M (effluent sampling location) prior to Outfall No. 001 discharge.
- Magnesium Hydroxide Alkalinity System (equipment located in existing dewatering building): Two (2) 2,000-gallon bulk tanks and two (2) peristaltic metering pumps, with secondary containment curb.
- Existing Primary Anaerobic Digestion System: Two (2) existing digesters will be demolished. Remaining 477,084-gallon Anaerobic Digester Cover will be rehabilitated to include a safety selector valve to mount two pressure/vacuum relief valve and flame arrestor assemblies with insulating jackets. The digester gas withdrawal will be equipped with a condensate and sediment trap with drip trap and electric operator (suitable for Class I Division I or II Division explosion proof area). Digester gas pressure will be measured by manometer and pressure transmitter for remote sensor. Floating cover position will be measured by an ultrasonic level sensor. All new gas piping will be sloped 2% to the new condensate and sediment trap. A low pressure check valve and mass flow meter will be provided in Digester Control House to control gas flow to the waste gas burner. A flame trap will be provided for each of the boiler and waste gas burner within 15 feet of the flame source. A flame check will be provided on the pilot gas within 15 feet of the flame source.
 - Two (2) Vaughan Model HE6W8 Chopper Centrifugal Pumps. 1600 GPM (including 150 GPM heating recirculation flow) at 39 Feet TDH, 25 HP (or approved equal)
 - Two Floor-mounted, double nozzle Digester Nozzles (4 nozzles total).
 - New boiler building with dual fuel boiler, pair of boiler primary loop recirculation hot water pumps, a digester secondary loop recirculation hot water pump, space heating equipment, associated hydronic piping treatment and balancing accessories. The building will include a separate gas equipment room to house flame trap and flame check to ensure NFPA 820 15-foot separation from boiler burner classified area. The hot water heating system will be provided a primary loop to allow boiler running at 180 °F for effective space heating and a secondary loop at 145 °F for sludge heating. The boiler and hot water pumps will be in the boiler room that is non-classified (NFPA). The new sludge heat exchanger will be a spiral heat exchange in the Digester Control House.
 - Digester Mixing System: Vaughn Pump Company Rotamix System or Evoqua JetMixing System (or approved equal)
 - Sludge Heat Exchanger: One (1) Alfa Laval Model 1H-SW-1W (or approved equal)
 - Primary Heat Loop Hot Water Pumps: Two (2) End-Suction Centrifugal, 210 GPM (or approved equal)
 - Secondary Heat Loop Hot Water Pump: One (1) End-Suction Centrifugal, 150 GPM (or approved equal)
 - Waste Gas Burner: One (1) Varec Biogas Series 244W, 4,000 SCFH, (or approved equal)
- One (1) Screw Press Dewatering System:
 - Screw Press: One (1) Schwing Bioset Model FSP 502 Horizontal Shafted Screw Press (or approved equal) with reaction tank, dewatering pumps, polymer feed system, and shaftless screw conveyor. New platform and supports for new screw press.
 - Polymer Dewatering System: Velo Blend VM-IP-300-D-0-A-1 or approved equal. Old sludge processing unit to be removed.
- Miscellaneous:
 - New Plant water system consisting of three (3) skid-mounted vertical multistage centrifugal pumps with VFD, along with self-cleaning strainer and new piping/valves.
 - Replacement WWTP access gate, electronic building access, closed-circuit video surveillance, and increased site lighting.
 - PMCS critical infrastructure to allow future growth, including fiber cable between buildings tied to new main Process Control Panel (PCP) located in the digester control building with client work station. New PCPs, with PLC and fiber optics network switch, will be located at different locations in the WWTP Headworks Building, Blower Building, Dewatering Building, Primary Digester Control House, and Digester Control Building (main location).
 - Miscellaneous building repairs, new mechanical equipment in the new/old buildings, and electrical improvements.
 - Site Stormwater Controls: Including new onsite sedimentation basin and restoration of (previously abandoned) stormwater discharges to Little Schuylkill River (including outfall rip-rap apron installation).
 - Demolition/removal of buildings/structures/equipment (old headworks, old boiler building, old underground Storage Tank No. 2, Belt filter press, old sodium hydroxide system, old Ferric Chloride system, old lime system, etc.)

Pump Stations: NA	Manure Storage: NA	Sewage Treatment Facility:
Design Capacity: _____ GPM	Volume: _____ MG	Annual Average Flow: 2.60 MGD
	Freeboard: _____ inches	Design Hydraulic Capacity: See Permit MGD
		Design Organic Capacity: See Permit lb/day

E. APPROVAL GRANTED BY THIS PERMIT IS SUBJECT TO THE FOLLOWING:

1. **Amendments/Transfer**: All construction, operations and procedures shall be in accordance with the Water Quality Management Permit Amendment application dated **May 12, 2022** and its supporting documentation and addendums dated **July 25, 2022; October 31, 2022; April 28, 2023; June 16, 2023; and October 31, 2023**, which are hereby made a part of this amendment.
 Except for any herein approved modifications, all terms, conditions, supporting documentation and addendums approved under Water Quality Management Permit No. **5496403** dated **July 5, 1996**; Water Quality Management Permit No. **5490401** dated **January 4, 1991**; Water Quality Management Permit No. **5472404** dated **November 16, 1972**; and Sanitary Water Board No. **62947-T1** dated **August 15, 1969** shall remain in effect.
2. Permit Conditions Relating to Sewerage are attached and made part of this permit.
3. Special Conditions **A, B, C, D, E, F, G, H, I, J, K, and L** are attached and made part of this permit.

F. THE AUTHORITY GRANTED BY THIS PERMIT IS SUBJECT TO THE FOLLOWING FURTHER QUALIFICATIONS:

1. If there is a conflict between the application or its supporting documents and amendments and the attached conditions, the attached conditions shall apply.
2. Failure to comply with the rules and regulations of DEP or with the terms or conditions of this permit shall void the authority given to the permittee by the issuance of this permit.
3. This permit is issued pursuant to the Clean Streams Law Act of June 22, 1937, P.L. 1987, as amended 35 P.S. §691.1 *et seq.* Issuance of this permit shall not relieve the permittee of any responsibility under any other law.

PERMIT ISSUED:

December 6, 2023

BY:

Amy M. Bellanca

TITLE:

**Amy M. Bellanca, P.E.
Clean Water Program Manager
Northeast Regional Office**



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF POINT AND NON-POINT SOURCE MANAGEMENT

PERMIT CONDITIONS RELATING TO SEWERAGE
For use in Water Quality Management Permits

(Check boxes that apply)

General

- 1. The Department of Environmental Protection (DEP) considers the licensed Professional Engineer whose seal is affixed to the design documents to be fully responsible for the adequacy of all aspects of the facility design.
- 2. The permittee shall adopt and enforce an ordinance requiring the abandonment of privies, cesspools or similar receptacles for human waste and onlot sewage disposal systems on the premises of occupied structures accessible to public sewers. All such structures must be connected to the public sewers.
- 3. The outfall sewer or drain shall be extended to the low water mark of the receiving body of water. Where necessary to ensure proper mixing and waste assimilation, an outfall sewer or drain may be extended with appurtenances below the low water mark and into the bed of a navigable stream provided that the permittee has secured an easement, right-of-way, license or lease from DEP in accordance with Section 15 of the Dam Safety and Encroachments Act, the Act of November 26, 1978, P.L. 1375, as amended.
- 4. The approval is specifically made contingent on the permittee acquiring all necessary property rights, by easement or otherwise, providing for the satisfactory construction, operation, maintenance and replacement of all sewers or sewerage structures in, along or across private property with full rights of ingress, egress and regress.
- 5. When construction of the approved sewerage facilities is completed and before they are placed in operation, the permittee shall notify DEP in writing so that a DEP representative may inspect the facilities.
- 6. The approval of the plans, and the authority granted in this permit, if not specifically extended, shall cease and be null and void 5 years from the issuance date of this permit unless construction or modification of the facilities covered by this permit has begun on or before the fifth anniversary of the permit date.
- 7. If, at any time, the sewerage facilities covered by this permit create a public nuisance, including but not limited to, causing malodors or causing environmental harm to waters of the Commonwealth, DEP may require the permittee to adopt appropriate remedial measures to abate the nuisance or harm.
- 8. If, after the issuance of this permit, DEP approves a municipal sewage facilities official plan or an amendment to an official plan under Act 537 (Pennsylvania Sewage Facilities Act, the Act of January 24, 1966, P.L. 1535 as amended) in which sewage from the herein approved facilities will be treated and disposed of at other planned facilities, the permittee shall, upon notification from the municipality or DEP, provide for the conveyance of its sewage to the planned facilities, abandon use and decommission the herein approved facilities including the proper disposal of solids, and notify DEP accordingly. The permittee shall adhere to schedules in the approved official plan, amendments to the plan, or other agreements between the permittee and municipality. This permit shall then, upon notice from DEP, terminate and become null and void and shall be relinquished to DEP.
- 9. This permit does not relieve the permittee of its obligations to comply with all federal, interstate, state or local laws, ordinances and regulations applicable to the sewerage facilities.
- 10. This permit does not give any real or personal property rights or grant any exclusive privileges, nor shall it be construed to grant or confirm any right, easement or interest in, on, to or over any lands which belong to the Commonwealth.
- 11. The authority granted by this permit is subject to all effluent requirements, monitoring requirements and other conditions as set forth in the NPDES Permit and all subsequent amendments and renewals. No discharge is authorized from these facilities unless approved by an NPDES Permit.

Construction

- 12. This permit is issued under the authorization of The Clean Streams Law and 25 Pa. Code Chapter 91. The permittee shall obtain all necessary permits, approvals and/or registrations under 25 Pa. Code Chapters 102, 105 and 106 prior to commencing construction of the facilities authorized by this permit, as applicable. The permittee should contact the DEP office that issued this permit if there are any questions concerning the applicability of additional permits.

- 13. The facilities shall be constructed under the supervision of a Pennsylvania licensed Professional Engineer in accordance with the approved reports, plans and specifications.
- 14. A Pennsylvania licensed Professional Engineer shall certify that construction of the permitted facilities was completed in accordance with the application and design plans submitted to DEP, using the "Post Construction Certification" form (3800-PM-WSFR0179a). It is the permittee's responsibility to ensure that a Professional Engineer is on-site to provide the necessary oversight and/or inspections to certify the facilities. The certification must be submitted to DEP before the facility is placed in operation. As-built drawings, photographs (if available) and a description of all deviations from the application and design plans must be submitted to DEP within 30 days of certification.
- 15. Manhole inverts shall be formed to facilitate the flow of the sewage and to prevent the stranding of sewage solids. The manhole structure shall be built to prevent undue infiltration, entrance of street wash or grit and provide safe access to facilitate manhole maintenance activities.
- 16. The local Waterways Conservation Officer of the Pennsylvania Fish and Boat Commission (PFBC) shall be notified when the construction of any stream crossing and/or outfall is started and completed. A written permit must be secured from the PFBC if the use of explosives in any waterways is required and the permittee shall notify the local Waterways Conservation Officer when explosives are to be used.

Operation and Maintenance

- 17. The permittee shall maintain records of "as-built" plans showing all the treatment facilities as actually constructed together with facility operation and maintenance (O&M) manuals and any other relevant information that may be required. Upon request, the "as-built" plans and O&M manuals shall be filed with DEP.
- 18. The sewers shall have adequate foundation support as soil conditions require. Trenches shall be back-filled to ensure that sewers will have proper structural stability, with minimum settling and adequate protection against breakage. Concrete used in connection with these sewers shall be protected from damage by water, freezing, drying or other harmful conditions until cured.
- 19. Stormwater from roofs, foundation drains, basement drains or other sources shall not be admitted directly to the sanitary sewers.
- 20. The approved sewers shall be maintained in good condition, kept free of deposits by flushing or other cleaning methods and repaired when necessary.
- 21. The sewerage facilities shall be properly operated and maintained to perform as designed.
- 22. The attention of the permittee is called to the highly explosive nature of certain gases generated by the digestion of sewage solids when these gases are mixed in proper proportions with air and to the highly toxic character of certain gases arising from such digestion or from sewage in poorly ventilated compartments or sewers. Therefore, at all places throughout the sewerage facilities where hazard of fire, explosion or danger from toxic gases may occur, the permittee shall post conspicuous permanent and legible warnings. The permittee shall instruct all employees concerning the aforesaid hazards, first aid and emergency methods of meeting such hazards and shall make all necessary equipment and material accessible.
- 23. An operator certified in accordance with the Water and Wastewater Systems Operator Certification Act of February 21, 2002, 63 P.S. §§1001, *et seq.* shall operate the sewage treatment plant.
- 24. The permittee shall properly control any industrial waste discharged into its sewerage system by regulating the rate and quality of such discharge, requiring necessary pretreatment and excluding industrial waste, if necessary, to protect the integrity or operation of the permittee's sewerage system.
- 25. There shall be no physical connection between a public water supply system and a sewer or appurtenance to it which would permit the passage of any sewage or polluted water into the potable water supply. No water pipe shall pass through or come in contact with any part of a sewer manhole.
- 26. All connections to the approved sanitary sewers must be in accordance with the official Act 537 Plan and, if applicable, a corrective action plan as contained in the approved Title 25 Pa. Code Chapter 94 Municipal Wasteload Management Annual Report.
- 27. Collected screenings, slurries, sludge and other solids shall be handled and disposed of in compliance with Title 25 Pa. Code Chapters 271, 273, 275, 283 and 285 (related to permits and requirements for land filling, land application, incineration and storage of sewage sludge), Federal Regulations 40 CFR 257 and the Federal Clean Water Act and its amendments.



**WATER QUALITY MANAGEMENT
 POST CONSTRUCTION CERTIFICATION**

PERMITTEE IDENTIFIER	
Permittee	Tamaqua Borough Authority and Tamaqua Borough Schuylkill County
Municipality	Walker Township
County	Schuylkill
WQM Permit No.	5496403-A1 (WWTP Upgrades)
Facility Type	Sewage
All of the above information should be taken directly from the Water Quality Management Permit.	
CERTIFICATION	
<p>This certification must be completed and returned to the permits section of the DEP's regional office issuing the WQM permit within 30 days of completion of the project and received by DEP prior to operation, and if requested, as-built drawings, photographs (if available) and a discussion of any DEP-approved deviations from the design plans during construction.</p>	
<p>I, being a Registered Professional Engineer in Pennsylvania, do hereby certify to the best of my knowledge and belief, based upon personal observation and interviews, that the above facility approved under the Water Quality Management Permit has been constructed in accordance with the plans, specifications and modifications approved by DEP.</p>	
<p>Construction Completion Date (MM/DD/YYYY): _____</p>	
<p style="font-size: 2em; opacity: 0.5;">Engineer's Seal</p>	Professional Engineer
	Name _____ (Please Print or Type)
	Signature _____
	Date _____
	License Expiration Date _____
	Firm or Agency _____
	Telephone _____
	Permittee or Authorized Representative
	Name _____ (Please Print or Type)
	Signature _____
	Title _____
	Telephone _____