



Standing Stone Gas Well Wastewater Treatment Facility Membrane Biological Reactor & Reverse Osmosis Treatment Upgrade to Allow Direct Discharge

Project Information & Schedule

Eureka Resources has been the leading provider of wastewater treatment, recycle and reuse services for the Oil and Gas industry in the Marcellus Shale play since 2008. The Standing Stone facility is allowed to discharge directly to the Susquehanna River through an NPDES permit furthering Eureka's commitment to providing state-of-the-art gas well wastewater treatment and protecting the water quality of Pennsylvania.

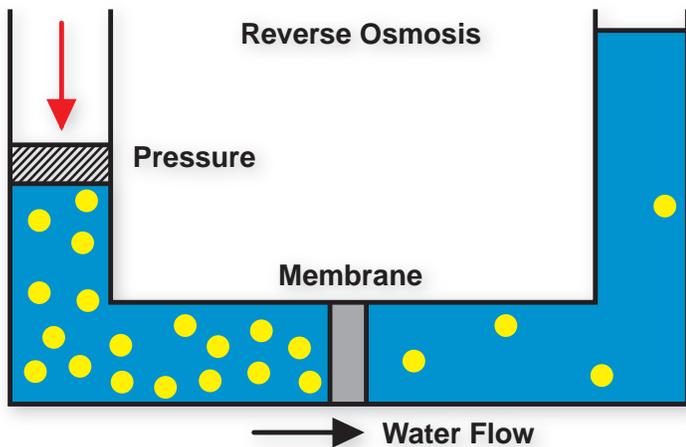
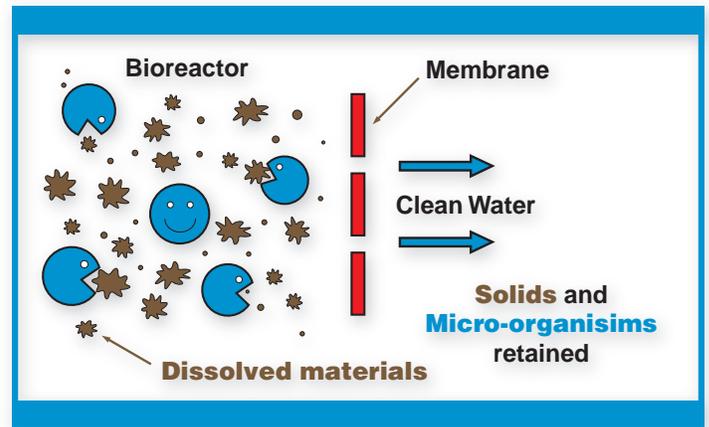
Treatment of the distilled water generates ultra clean water that achieves PADEP's WMGR123 requirements for declassifying (de-wasting) the wastewater to allow direct discharge and/or storage in fresh water impoundments. Treatment of the distilled water involves employing a patented approach, including biological treatment using a membrane biological reactor (MBR) to remove residual organics and polishing with reverse osmosis (RO) to remove trace materials.

(US Patent No. 9,796,612)

Eureka obtained an NPDES direct discharge permit from the PADEP in 2013, and discharge was initiated in May 2014.

Membrane Biological Reactor (MBR)

The MBR consists of two principal components: (1) biological reactor tanks which biologically degrade organic matter, and (2) ultrafiltration membranes (0.005 – 0.05 mm pore size) to retain biological solids. The membranes provide a barrier to keep microbial solids in the reactors and render a clarified, solids-free effluent stream for RO polishing.



Reverse Osmosis (RO)

Reverse Osmosis (RO) is a membrane-technology filtration method that removes many types of large molecules and ions from solutions by applying pressure to the solution when it is on one side of a selective membrane (0.0001 – 0.001 mm pore size). In Eureka's case, the result is that residual dissolved solids and organics remaining in the MBR effluent are retained on the pressurized side of the membrane and ultra clean water meeting the WMGR de-wasting standard is allowed to pass to the other side for discharge. (US Patent No. 9,796,612)



ABILITY • RESPONSIBILITY • STEWARDSHIP



FREQUENTLY ASKED QUESTIONS:

Q *How much wastewater is treated by MBR and RO at the upgraded facility?*

A The MBR and RO processes are designed to treat approximately 5,000 barrels (210,000 gallons) per day of distilled effluent from the crystallizer.

Q *Will the wastewater discharge impact the water quality of the Susquehanna River?*

A **No.** The facility is designed to provide state-of-the-art wastewater treatment which will achieve PADEP WMGR123 standards allowing reuse/recycle and storage of the treated effluent in fresh water impoundments. The treated effluent is high purity water that meets all applicable discharge standards protecting the water quality of the Susquehanna River.

Q *Will the discharge have high TDS?*

A **No.** The treated effluent has an average TDS of approximately 50 mg/l which is well below the PADEP standard of 500 mg/l.

Q *What is the distance from the discharge to the nearest surface water withdrawal sources?*

A The nearest upstream drinking water surface water withdrawal is the Binghamton, NY drinking water withdrawal which is approximately 128 miles upstream on the Susquehanna River. The nearest downstream drinking water withdrawal is the Danville Municipal Water Authority which is approximately 68 miles downstream on the Susquehanna River.

Q *Will there be any impact on the Towanda water system groundwater withdrawal wells?*

A **No.** The Standing Stone facility/discharge is located approximately 10 miles downstream of the Towanda groundwater wells. Since the discharge will be a surface discharge directed to the Susquehanna River which flows in a general southerly direction away from Towanda, there is no potential to impact the water quality of the Towanda groundwater wells.

Q *Will the treated effluent be discharged to King Creek?*

A **No.** The treated effluent is pumped directly to the Susquehanna River.

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GAS WELL WASTEWATER TREATMENT

CORPORATE OFFICE LOCATION:

454 Pine Street, Williamsport, Pennsylvania 17701

STANDING STONE FACILITY:

Type: Oil and Gas Wastewater Treatment

Location: Off Route 6 near Towanda, just east of Fisher Road, Standing Stone Township, Bradford County, Pennsylvania

Please contact us at for more information: **570-651-9972**

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