



Jeremiah W. (Jay) Nixon, Governor • Sara Parker Pauley, Director

DEPARTMENT OF NATURAL RESOURCES

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JUL 01 2014

Ms. Jamie Richardson, EIT
Missouri American Water
727 Craig Road
St. Louis, MO 63141-7175

RE: Missouri American Water Company; New Limits Pilot Study Test Protocol Ammonia Removal for Sand Filters for Missouri American Water, Stoney Creek Septic System – Stoney Creek Subdivision Wastewater Treatment Facility (WWTF), MO-0124982, Pilot Project Approval

Dear Ms. Richardson:

The Missouri Department of Natural Resources' Water Protection Program has reviewed and approved the New Limits Pilot Study Test Protocol Ammonia Removal for Sand Filters for Missouri American Water, Stoney Creek Septic System dated April 25, 2014. This approval grants operation of the proposed domestic wastewater pilot project through July 31, 2015.

PILOT PROJECT DESCRIPTION:

The New Limits' Bow Reactor is a self-contained unit with a pre-anoxic zone, an aerobic zone, a pre-clarification, and utilizes the activated sludge process. The primary objective of the pilot study is to determine the ability of the system to achieve future ammonia discharge limits of less than 0.6 mg/l during the summer and 2.2 mg/l during the winter. The proposed sampling and analysis will provide data on the test unit, which will provide additional design information including unit sizing, hydraulic retention time (HRT), solids retention time (SRT), loadings, etc.

The existing Stoney Creek WWTF consists of a septic tank and recirculating sand filter with chlorination and dechlorination. The Bow Reactor will be placed between the existing septic tank and recirculating sand filter. Missouri American Water Company will provide seed sludge from one of its mechanical plants for start-up. In addition, provisions will be made for insulation of the unit during the winter.

The Stoney Creek WWTF is permitted for 8,880 gallons per day (gpd). Actual flow averages 3,000 gpd as determined by monthly grab measurements of the discharge. The pilot Bow Reactor is designed for 1,200 gpd. Any flow in excess of this amount will bypass the reactor and be sent to the recirculating sand filter.

CONDITIONS:

1. The pilot system shall be operated until July 31, 2015. If a time extension for the pilot project is necessary, submit a request and justification in writing to the Department at least 30 days prior to the completion date.
2. Any changes to the scope of work to the approved pilot project will require a subsequent review and approval by the Department.
3. While the pilot project is ongoing, the facility shall – obtain samples from these locations: influent to septic tank, influent to Bow Reactor, effluent from Bow Reactor, and discharge.
 - A. Sample the following parameters on a weekly basis:
 1. Flow (Influent to septic tank and influent to Bow Reactor);
 2. Biochemical Oxygen Demand₅ (BOD₅);
 3. Chemical Oxygen Demand (COD);
 4. Total Suspended Solids (TSS);
 5. Volatile Suspended Solids (VSS);
 6. Ammonia as N (NH₃-N);
 7. Nitrate (NO₃⁻) (Every other week);
 8. Total Kjeldahl Nitrogen (TKN);
 9. Temperature of wastewater (Influent to septic tank and influent to Bow Reactor);
 10. pH;
 11. Dissolved Oxygen (DO);
 12. Total Phosphorus (P) (Suggestion only).
 - B. Continue sampling the facility discharge per the conditions of the Missouri State Operating Permit.
4. After June 30, 2015, if the facility intends to continue operation of the New Limit's Bow Reactor as a full scale demonstration project, at least 30 days prior to end of the pilot project period submit the following to the Department:

- A. One facility plan;
 - B. One set of the construction plans and specifications;
 - C. One summary of design;
 - D. An electronic copy of the facility plan, plans and specifications, summary of design, and other pertinent documents in an Adobe[®] PDF searchable format. If the plans are scanned, set the resolution to a minimum of 200 dpi at 17 by 22 inches.
 - E. An *Application for an Operating Permit for Domestic or Municipal Wastewater (≤100,000 gallons per day)* Form B available online at dnr.mo.gov/forms/780-1512-f.pdf; and
 - F. A permit modification fee.
5. If, as a result of the pilot project, additional hydraulic and/or pollutant loading is expected for discharge beyond what is currently permitted in the Stoney Creek Subdivision WWTP, Missouri State Operating Permit, an Antidegradation Review shall be submitted to the Department for review and approval prior to the submittal of a construction permit application.
 6. Construction, installation, expansion or modification of any collection system or wastewater treatment facility outside of this approval is prohibited until a construction permit is issued by the Department, per 10 CSR 20-6.010(4)(A).
 7. Within 45 days of the conclusion of operations of the pilot project, the Missouri American Water Company shall submit to the Department a report signed, sealed, and dated by a professional engineer of Missouri. This report shall summarize the data collected, sampling results, observations, and provide an overall assessment of the pilot project as outlined in the approved New Limits Pilot Study Test Protocol Ammonia Removal for Sand Filters for Missouri American Water, Stoney Creek Septic System.
 8. Nothing in this approval removes any obligations to comply with county or other local ordinances or restrictions.
 9. This approval does not relieve the Stoney Creek WWTP of their obligations to meet the requirements in the Missouri State Operating Permit including effluent limitations. In the event of violations, such as exceeding effluent limitations, the Missouri American Water Company may be subject to enforcement action.

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If you have any questions concerning this matter, please contact Byron F. Shaw, Jr., of the Water Protection Program, at 573-751-1402 or Missouri Department of Natural Resources, P.O. Box 176, Jefferson City, MO 65102-0176.

Thank you for your efforts to help ensure clean water in Missouri.

Sincerely,

WATER PROTECTION PROGRAM



John Madras
Director

JM:ebj

Enclosures

c: Mr. Refaat Mefrakis, P.E., Water Protection Program, Engineering Section
Mr. Byron Shaw, Jr., P.E., Water Protection Program, Financial Assistance Center
Mr. Chris Wieberg, Water Protection Program, Permits Section
Ms. Angela Falls, Water Protection Program, Permits Section
Northeast Regional Office