



Jeremiah W. (Jay) Nixon, Governor

Sara Parker Pauley, Director

## DEPARTMENT OF NATURAL RESOURCES

dnr.mo.gov

August 19, 2011

U.S. Army Corps of Engineers  
Route 2 Box 2160  
Hermitage MO 65668

Dear Permittee:

Pursuant to the Federal Water Pollution Control Act, under the authority granted to the State of Missouri and in compliance with the Missouri Clean Water Law, we have issued and are enclosing your State Operating Permit to discharge from U.S. Army Corps of Engineers, Nemo Park, Hickory County, Missouri.

Please read your permit and enclosed Standard Conditions. They contain important information on monitoring requirements, effluent limitations, sampling frequencies and reporting requirements.

Monitoring reports required by the special conditions must be submitted on a periodic basis. The required forms are enclosed. Please make copies for your use. Completed forms should be mailed to this office.

Please note that the new effluent limits will take effect on **August 1, 2014**. These new effluent limitations may require an upgrade to the current treatment process. Please refer to **Part D** of the enclosed permit, which outlines the specific schedule you must follow.

The project to upgrade your facility will require careful planning, time and expenditure of capital. State regulations require that you involve a Missouri licensed professional engineer to design your project. The completed design is required to be submitted to this office for review and approval. Once approved, a construction permit is issued and you may begin your construction project to improve your facility.

This permit is both your Federal NPDES Permit and your new Missouri State Operating Permit and replaces all previous State Operating Permits issued for this facility under this permit number. In all future correspondence regarding this facility, please refer to your State Operating Permit number and facility name as shown on page one of the permit.

**Please be aware that nothing in this permit relieves the permittee of any other legal obligations or restrictions, such as other federal or state laws, court orders, or county or other local ordinances or restrictions.**



Recycled Paper

U.S. Army Corps of Engineers, Nemo Park  
Page 2

If you were adversely affected by this decision, you may be entitled to an appeal before the administrative hearing commission pursuant to 10 CSR 20-1.020 and Section 621.250, RSMo. To appeal, you must file a petition with the administrative hearing commission within thirty days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed; if it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the administrative hearing commission. Any appeal shall be directed to: Administrative Hearing Commission, Truman Building, Room 640, 301 W. High Street, P.O. Box 1557, Jefferson City, MO 65102, Phone: 573-751-2422, Fax: 573-751-5018, website: [www.aa.mo.gov/ahc](http://www.aa.mo.gov/ahc).

If you have questions concerning this permit please contact Mr. Chris Ray of my staff by calling 417-891-4300 or via mail at Southwest Regional Office, 2040 W. Woodland, Springfield, MO 65807-5912.

Sincerely,

SOUTHWEST REGIONAL OFFICE



Cynthia S. Davies  
Regional Director

CSD/crk

Enclosures

STATE OF MISSOURI  
**DEPARTMENT OF NATURAL RESOURCES**  
MISSOURI CLEAN WATER COMMISSION



## MISSOURI STATE OPERATING PERMIT

In compliance with the Missouri Clean Water Law, (Chapter 644 R.S. Mo. as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92<sup>nd</sup> Congress) as amended,

Permit No. MO-0130044

Owner: U.S. Army Corps of Engineers  
Address: Route 2 Box 2160, Hermitage MO 65668

Continuing Authority: Same as Above  
Address: Same as Above

Facility Name: U.S. Army Corps of Engineers, Nemo Park WWTF  
Facility Address: Route 2 Box 2160, Hermitage MO 65668

Legal Description: SW¼, SW¼, Sec. 17, T36N, R21W, Hickory County  
UTM (X/Y): 475952 / 4190760

Receiving Stream: Unnamed Tributary to Pomme de Terre Lake (U)  
First Classified Stream and ID: Pomme de Terre Lake (L2) (07238)  
USGS Basin & Sub-watershed No.: (10290107-0205)

is authorized to discharge from the facility described herein, in accordance with the effluent limitations and monitoring requirements as set forth herein:

### FACILITY DESCRIPTION

Outfall #001 - Campground / Sewerage Works - SIC #4952

The use or operation of this does not require a CERTIFIED OPERATOR.

Anaerobic & anoxic biological reactors / recirculating sand filter / chlorination / dechlorination / sludge disposal by contract hauler

Design organic population equivalent is 123  
Design flow is 0.010000 MGD  
Design sludge production is 0.861 dry tons/year.

This permit authorizes only wastewater discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated areas. This permit may be appealed in accordance with Section 644.051.6 of the Law.

August 19, 2011  
Effective Date

Sara Parker Pauley, Director, Department of Natural Resources

August 18, 2016  
Expiration Date

Cynthia S. Davies, Regional Director, Southwest Regional Office

| A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS   |   |   |   |  | PAGE NUMBER 2 of 7   |   |   |   |   |   |  |  |   |
|---|---|---|---|--|--|---|---|---|---|---|--|--|---|
|   |   |   |   |  | PERMIT NUMBER MO-0130044   |   |   |   |   |   |  |  |   |
| The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The interim effluent limitations shall become effective upon issuance and remain in effect until <b>July 31, 2014</b> . Such discharges shall be controlled, limited and monitored by the permittee as specified below:   |   |   |   |  |  |   |   |   |   |   |  |  |   |
| OUTFALL NUMBER AND EFFLUENT PARAMETER(S)  | UNITS   | INTERIM EFFLUENT LIMITATIONS  |   |  | MONITORING REQUIREMENTS  |   |   |   |   |   |  |  |   |
|   |   | DAILY MAXIMUM   | WEEKLY AVERAGE  | MONTHLY AVERAGE  | MEASUREMENT FREQUENCY  | SAMPLE TYPE   |   |   |   |   |  |  |   |
| <table border="1"> <tr> <td data-bbox="66 348 474 900"> <u>Outfall #001</u><br/><br/> Flow<br/><br/> Biochemical Oxygen Demand<sub>5</sub><br/><br/> Total Suspended Solids<br/><br/> pH – Units<br/><br/> <i>E. coli</i> (<b>Note 1</b>)<br/><br/> Total Residual Chlorine as Cl<sub>2</sub><br/><br/> Ammonia as N </td> <td data-bbox="474 348 605 900"> MGD<br/><br/> mg/L<br/><br/> mg/L<br/><br/> SU<br/><br/> #/100 ml<br/><br/> mg/L<br/><br/> mg/L </td> <td data-bbox="605 348 797 900"> *<br/><br/><br/><br/><br/><br/> ***<br/><br/><br/> 630<br/><br/> 0.016(<b>Note 2</b>)<br/>(0.13 ML)<br/><br/> * </td> <td data-bbox="797 348 930 900"> <br/><br/><br/><br/><br/><br/> 30<br/><br/> 30<br/><br/><br/><br/> 630<br/><br/><br/><br/> 0.0082(<b>Note 2</b>)<br/>(0.13 ML) </td> <td data-bbox="930 348 1130 900"> *<br/><br/><br/><br/><br/><br/> ***<br/><br/><br/> 126<br/><br/> 0.0082(<b>Note 2</b>)<br/>(0.13 ML)<br/><br/> * </td> <td data-bbox="1130 348 1295 900"> once/month**<br/><br/> once/month**<br/><br/> once/month**<br/><br/> once/month**<br/><br/> once/month**<br/><br/> once/month** </td> <td data-bbox="1295 348 1557 900"> 24 hr. estimate<br/><br/> grab<br/><br/> grab<br/><br/> grab<br/><br/> grab<br/><br/> grab </td> </tr> </table> |   |   |   |  |  |   | <u>Outfall #001</u><br><br>Flow<br><br>Biochemical Oxygen Demand <sub>5</sub><br><br>Total Suspended Solids<br><br>pH – Units<br><br><i>E. coli</i> ( <b>Note 1</b> )<br><br>Total Residual Chlorine as Cl <sub>2</sub><br><br>Ammonia as N | MGD<br><br>mg/L<br><br>mg/L<br><br>SU<br><br>#/100 ml<br><br>mg/L<br><br>mg/L | *<br><br><br><br><br><br>***<br><br><br>630<br><br>0.016( <b>Note 2</b> )<br>(0.13 ML)<br><br>* | <br><br><br><br><br><br>30<br><br>30<br><br><br><br>630<br><br><br><br>0.0082( <b>Note 2</b> )<br>(0.13 ML) | *<br><br><br><br><br><br>***<br><br><br>126<br><br>0.0082( <b>Note 2</b> )<br>(0.13 ML)<br><br>* | once/month**<br><br>once/month**<br><br>once/month**<br><br>once/month**<br><br>once/month**<br><br>once/month** | 24 hr. estimate<br><br>grab<br><br>grab<br><br>grab<br><br>grab<br><br>grab |
| <u>Outfall #001</u><br><br>Flow<br><br>Biochemical Oxygen Demand <sub>5</sub><br><br>Total Suspended Solids<br><br>pH – Units<br><br><i>E. coli</i> ( <b>Note 1</b> )<br><br>Total Residual Chlorine as Cl <sub>2</sub><br><br>Ammonia as N   | MGD<br><br>mg/L<br><br>mg/L<br><br>SU<br><br>#/100 ml<br><br>mg/L<br><br>mg/L | *<br><br><br><br><br><br>***<br><br><br>630<br><br>0.016( <b>Note 2</b> )<br>(0.13 ML)<br><br>* | <br><br><br><br><br><br>30<br><br>30<br><br><br><br>630<br><br><br><br>0.0082( <b>Note 2</b> )<br>(0.13 ML) | *<br><br><br><br><br><br>***<br><br><br>126<br><br>0.0082( <b>Note 2</b> )<br>(0.13 ML)<br><br>* | once/month**<br><br>once/month**<br><br>once/month**<br><br>once/month**<br><br>once/month**<br><br>once/month** | 24 hr. estimate<br><br>grab<br><br>grab<br><br>grab<br><br>grab<br><br>grab |   |   |   |   |  |  |   |
| OUTFALL NUMBER AND EFFLUENT PARAMETER(S)  | UNITS   | DAILY MINIMUM   | WEEKLY AVERAGE MINIMUM  | MONTHLY AVERAGE MINIMUM  | MEASUREMENT FREQUENCY  | SAMPLE TYPE   |   |   |   |   |  |  |   |
| <u>Outfall #001</u><br><br>Dissolved Oxygen   | mg/L  | *   |   | *  | once/month**   | grab  |   |   |   |   |  |  |   |

MONITORING REPORTS SHALL BE SUBMITTED **MONTHLY**; THE FIRST REPORT IS DUE **October 28, 2011**. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

| A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)  |          |                            |                        |                             | PAGE NUMBER 3 of 7       |                 |
|--|----------|----------------------------|------------------------|-----------------------------|--------------------------|-----------------|
|  |          |                            |                        |                             | PERMIT NUMBER MO-0130044 |                 |
| The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective <b>August 1, 2014</b> and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below: |          |                            |                        |                             |                          |                 |
| OUTFALL NUMBER AND EFFLUENT PARAMETER(S)   | UNITS    | FINAL EFFLUENT LIMITATIONS |                        |                             | MONITORING REQUIREMENTS  |                 |
|  |          | DAILY MAXIMUM              | WEEKLY AVERAGE         | MONTHLY AVERAGE             | MEASUREMENT FREQUENCY    | SAMPLE TYPE     |
| <u>Outfall #001</u>  |          |                            |                        |                             |                          |                 |
| Flow   | MGD      | *                          |                        | *                           | once/month **            | 24 hr. estimate |
| Biochemical Oxygen Demand <sub>5</sub>   | mg/L     |                            | 30                     | 20                          | once/month**             | grab            |
| Total Suspended Solids   | mg/L     |                            | 30                     | 20                          | once/month**             | grab            |
| pH – Units   | SU       | ***                        |                        | ***                         | once/month**             | grab            |
| <i>E. coli</i> (Note 1)  | #/100 ml |                            | 630                    | 126                         | once/month**             | grab            |
| Total Residual Chlorine as Cl <sub>2</sub>   | mg/L     | 0.016(Note 2)<br>(0.13 ML) |                        | 0.0082(Note 2)<br>(0.13 ML) | once/month**             | grab            |
| Ammonia as N<br>{April 1 – September 30}<br>{October 1 – March 31}   | mg/L     | 5.7<br>*                   |                        | 1.2<br>*                    | once/month**             | grab            |
| OUTFALL NUMBER AND EFFLUENT PARAMETER(S)   | UNITS    | DAILY MINIMUM              | WEEKLY AVERAGE MINIMUM | MONTHLY AVERAGE MINIMUM     | MEASUREMENT FREQUENCY    | SAMPLE TYPE     |
| <u>Outfall #001</u>  |          |                            |                        |                             |                          |                 |
| Dissolved Oxygen   | mg/L     | *                          |                        | *                           | once/month**             | grab            |
| MONITORING REPORTS SHALL BE SUBMITTED <b>MONTHLY</b> ; THE FIRST REPORT IS DUE <b>September 28, 2014</b> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.   |          |                            |                        |                             |                          |                 |
| <b>B. STANDARD CONDITIONS</b>  |          |                            |                        |                             |                          |                 |
| IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED <u>Parts I, II &amp; III</u> STANDARD CONDITIONS DATED <u>October 1, 1980 and August 15, 1994</u> , AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.  |          |                            |                        |                             |                          |                 |

MO 780-0010 (8/91)

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

- \* Monitoring requirement only.
- \*\* Sample once per month. Reports shall be submitted by the 28<sup>th</sup> day of the month following the reporting period, e.g. Reporting period is the month of March (sample collected in March), report due by April 28<sup>th</sup>.
- \*\*\* pH is measured in pH units and is not to be averaged. The pH for all facilities except lagoons is limited to the range of 6.5-9.0 pH units.
- \*\*\*\* A composite sample made up from a minimum of four grab samples collected within a 24-hour period with a minimum of two hours between each grab sample. A person may physically collect the four grab samples or a composite sampler may be set up to collect the four grab samples.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

Note 1 - Final limitations and monitoring requirements for *E. coli* are applicable only during the recreational season from April 1 through October 31. The Monthly Average Limit for *E. coli* is expressed as a geometric mean. Geometric mean for n samples =  $[a_1 \times a_2 \times a_3 \dots \times a_n]^{1/n}$ . The Weekly Average for *E. coli* will be expressed as a geometric mean if more than one (1) sample is collected during a calendar week (Sunday through Saturday)

Note 2 - This permit contains a Total Residual Chlorine (TRC) limit.

- (a) This effluent limit is below the minimum quantification level (ML) of the most common and practical EPA approved CLTRC methods. The Department has determined the current acceptable ML for total residual chlorine to be 0.13 mg/L when using the DPD Colorimetric Method #4500 – CL G. from Standard Methods for the Examination of Waters and Wastewater. The permittee will conduct analyses in accordance with this method, or equivalent, and report actual analytical values. Measured values greater than or equal to the minimum quantification level of 0.13 mg/L will be considered violations of the permit and values less than the minimum quantification level of 0.13 mg/L will be considered to be in compliance with the permit limitation. The minimum quantification level does not authorize the discharge of chlorine in excess of the effluent limits stated in the permit.
- (b) Disinfection is required year-round unless the permit specifically states that “Final limitations and monitoring requirements for *E. coli* are applicable only during the recreational season from April 1 through October 31.” If your permit does not require disinfection during the non-recreational months, do not chlorinate in those months.
- (c) Do not chemically dechlorinate **if it is not needed to meet the limits in your permit.**
- (d) If no chlorine was used in a given sampling period, an actual analysis is not necessary. Simply report as “0 mg/L” TRC.

| <b>C. INFLUENT MONITORING REQUIREMENTS</b>  |       | PERMIT NUMBER MO-0130044 |             |
|---|-------|--------------------------|-------------|
| The facility is required to meet a removal efficiency of <b>85%</b> or more. The monitoring requirements shall become effective upon issuance and remain in effect until expiration of the permit. To determine removal efficiencies, the influent wastewater shall be monitored by the permittee as specified below: |       |                          |             |
| SAMPLING LOCATION AND PARAMETER(S)  | UNITS | MONITORING REQUIREMENTS  |             |
|   |       | MEASUREMENT FREQUENCY    | SAMPLE TYPE |
| <u>Influent</u>   |       |                          |             |
| Biochemical Oxygen Demand <sub>5</sub>  | mg/L  | once / month**           | ****        |
| Total Suspended Solids  | mg/L  | once /month**            | ****        |
| MONITORING REPORTS SHALL BE SUBMITTED <b>MONTHLY</b> ; THE FIRST REPORT IS DUE <b>October 28, 2011.</b>   |       |                          |             |

MO 780-0010 (8/91)

C. INFLUENT MONITORING REQUIREMENTS (continued)

\*\* Sample once per month. Reports shall be submitted by the 28<sup>th</sup> day of the month following the reporting period, e.g. Reporting period is the month of March (sample collected in March), report due by April 28<sup>th</sup>.

\*\*\*\* A composite sample made up from a minimum of four grab samples collected within a 24-hour period with a minimum of two hours between each grab sample. A person may physically collect the four grab samples or a composite sampler may be set up to collect the four grab samples.

D. SPECIAL CONDITIONS

1. This permit may be reopened and modified, or alternatively revoked and reissued, to:

D. SPECIAL CONDITIONS (continued)

- (a) Comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a) (2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:
  - (1) contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
  - (2) controls any pollutant not limited in the permit.
- (b) Incorporate new or modified effluent limitations or other conditions, if the result of a waste load allocation study, toxicity test or other information indicates changes are necessary to assure compliance with Missouri's Water Quality Standards.
- (c) Incorporate new or modified effluent limitations or other conditions if, as the result of a watershed analysis, a Total Maximum Daily Load (TMDL) limitation is developed for the receiving waters which are currently included in Missouri's list of waters of the state not fully achieving the state's water quality standards, also called the 303(d) list.

The permit as modified or reissued under this paragraph shall also contain any other requirements of the Clean Water Act then applicable.

- 2. All outfalls must be clearly marked in the field.
- 3. Permittee will cease discharge by connection to a facility with an area-wide management plan per 10 CSR 20-6.010(3)(B) within 90 days of notice of its availability.
- 4. Changes in Discharges of Toxic Substances

The permittee shall notify the Director as soon as it knows or has reason to believe:

- (a) That any activity has occurred or will occur which would result in the discharge of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:"
  - (1) One hundred micrograms per liter (100 µg/L);
  - (2) Two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/L) for 2,5 dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;
  - (3) Five (5) times the maximum concentration value reported for the pollutant in the permit application;
  - (4) The level established in Part A of the permit by the Director.
- (b) That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant, which was not reported in the permit application.

- 5. Report as no-discharge when a discharge does not occur during the report period.

6. Water Quality Standards

- (a) Discharges to waters of the state shall not cause a violation of water quality standards rule under 10 CSR 20-7.031, including both specific and general criteria.
- (b) General Criteria. The following general water quality criteria shall be applicable to all waters of the state at all times including mixing zones. No water contaminant, by itself or in combination with other substances, shall prevent the waters of the state from meeting the following conditions:
  - (1) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses;
  - (2) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses;

D. SPECIAL CONDITIONS (continued)

- (3) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses;
  - (4) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life;
  - (5) There shall be no significant human health hazard from incidental contact with the water;
  - (6) There shall be no acute toxicity to livestock or wildlife watering;
  - (7) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community;
  - (8) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200-260.247.
7. The permittee shall comply with any applicable requirements listed in 10 CSR 20-8 and 10 CSR 20-9. The monitoring frequencies contained in this permit shall not be construed by the permittee as a modification of the monitoring frequencies listed in 10 CSR 20-9. If a modification of the monitoring frequencies listed in 10 CSR 20-9 is needed, the permittee shall submit a written request to the department for review and, if deemed necessary, approval.
8. Bypasses are not authorized at this facility and are subject to 40 CFR 122.41(m). If a bypass occurs, the permittee shall report in accordance to 40 CFR 122.41(m)(3)(i), and with Standard Condition Part I, Section B, subsection 2.b.
9. Non-Standard Technology

Non-standard Technology: Please note that the engineering design includes technology not addressed in Missouri Clean Water Commission Regulations 10 CSR 20-Chapter 8 design standards. To assess the effectiveness of the new technology at this facility, the following special conditions must be followed.

- (a) Upon submission of the renewal application the permittee shall submit an engineering report prepared by a professional engineer to the Southwest Regional Office evaluating the new technology using the 95<sup>th</sup> percentile performance standard described in the statement of basis. At a minimum the new technology must be evaluated and found to meet the 95<sup>th</sup> percentile performance standard at a minimum of 60% of the design organic or hydraulic loading to remove this special condition. If 60% organic or hydraulic engineered design loading has not occurred during this permit cycle the special condition cannot be removed during the renewal process; however, an engineering report evaluating the performance standard is still required to be submitted.
- (b) The permittee acting under the supervision of a professional engineer registered in Missouri shall at a minimum, collect and test samples of wastewater treatment facility effluent as outlined in this permit, measure flow as outlined in this permit, and shall record all maintenance and operational problems experienced with the wastewater treatment facility during the first 60 months of operation. Other sample collection and testing including influent samples, and samples before and after each unit operation or group of unit operations, and other record keeping shall be done at the discretion of the professional engineer as needed to assess the new technology.
- (c) The new technology will be deemed successful if the performance standard for 95<sup>th</sup> percentile probability is less than or equal to the permit maximum monthly average limit for each parameter.
- (d) If the new technology fails to meet the 95<sup>th</sup> percentile probability performance standard for any parameter, or if the engineer assesses the operation and maintenance problems to be sufficiently serious to require replacement of the new technology, the permittee shall submit engineering report, plans, specifications prepared by a professional engineer registered in Missouri along with construction permit application forms, filing fee to Southwest Regional Office within one hundred twenty (120) calendar days of the date of submittal of the engineering report evaluation that identified the failure. These documents shall outline replacement of the failed new technology with standard technology listed in Missouri Clean Water Commission Regulation 10 CSR 20-Chapter 8. Within one hundred eighty (180) calendar days of receiving the construction permit, the permittee shall construct the replacement facilities and submit the Statement of Work Complete prepared by the professional engineer to Southwest Regional Office.

D. SPECIAL CONDITIONS (continued)

(e) An annual report due each year on **January 28** shall be submitted summarizing any operational problems at the facility, all construction that has been completed with flow tributary to the facility, the percent of organic or hydraulic loading going to the facility, and the general overall performance of the facility (any violation of the effluent limits established in Table A at a minimum).

E. SCHEDULE OF COMPLIANCE

1. By **December 19, 2012** submit a completed application for construction permit, application fee, and one copy each of an engineering report, plans and specifications prepared by a professional engineer registered in the State of Missouri to the Missouri Department of Natural Resources, 2040 West Woodland, Springfield, Missouri, 65807, for providing wastewater treatment facility improvements to comply with the final effluent limitations as list in Part A of this permit, designed in accordance with Missouri Clean Water Law Regulation 10 CSR 20 Chapter 8.

Please note that you may be able to meet the Ammonia final effluent limits without a construction permit. If the final effluent limits can be achieved without a construction permit please submit in writing by **December 19, 2012** how you are planning to meet the new effluent limits.

2. Within fifteen (15) calendar days of receipt of any request for additional information or changes in the engineering report, plans or specifications, respond and if necessary submit engineering modifications to the Department.
3. Within 365 calendar days of issuance of the construction permit, construct the permitted wastewater treatment system improvements.
4. Within fifteen (15) calendar days of completion of construction of wastewater treatment system improvements, submit a Statement of Work Completed form, signed, sealed, and dated by a professional engineer registered in the State of Missouri certifying that the project has been completed substantially in accordance with the approved plans and specifications. In addition to the Statement of Work Completed, submit an application for a Missouri State Operating Permit modification complete with the appropriate modification fee to the Missouri Department of Natural Resources, 2040 West Woodland, Springfield, Missouri, 65807.
5. Annual progress reports shall be submitted on January 28<sup>th</sup> of each year until the construction completed. The report shall include what step of the process the facility is at, how much construction has been completed, approximately time of completion, etc. The first report is due **January 28, 2012**.

If you have questions you may contact the Missouri Department of Natural Resources, Southwest Regional Office by calling 417-891-4300 or by mail at 2040 West Woodland, Springfield, Missouri, 65807.

**Missouri Department of Natural Resources  
Statement of Basis  
USCOE, Nemo Park WWTF  
MSOP #: MO-0130044  
Hickory County**

A Statement of Basis (Statement) gives pertinent information regarding the applicable regulations and rationale for the development of the NPDES Missouri State Operating Permit (operating permit). This Statement includes Wasteload Allocations, Water Quality Based Effluent Limitations, and Reasonable Potential Analysis calculations as well as any other calculations that effect the effluent limitations of this operating permit. This Statement does not pertain to operating permits that include sewage sludge land application plans and variance procedures, and does not include the public comment process for this operating permit.

A Statement is not an enforceable part of an operating permit.

**Part I – Facility Information**

Facility Type: (POTW)  
Campground / Sewerage Works- SIC #4952

Facility Description: Anaerobic & anoxic biological reactors / recirculating sand filter / chlorination / dechlorination / sludge disposal by contract hauler

**OUTFALL(S) TABLE:**

| OUTFALL | DESIGN FLOW (CFS) | TREATMENT LEVEL | EFFLUENT TYPE | DISTANCE TO CLASSIFIED SEGMENT (MI) |
|---------|-------------------|-----------------|---------------|-------------------------------------|
| 001     | 0.02              | Secondary       | Domestic      | 0.18                                |

**Receiving Water Body's Water Quality & Facility Performance History:**

During a review of the Discharge Monitoring Reports (DMRs) submitted to this office from June 23, 2006 to May 31, 2011 it was noted that the permittee exceeded total residual chlorine limits during July 2007, June, July, and August 2008. The facility failed to meet the Schedule of Compliance in their previous permit. This schedule was to submit the non-standard technology evaluation. The non-standard technology designation will remain in this permit, with continued monthly sampling, until the facility submits the required evaluation.

This is for a renewal

Comments: The facility was last inspected on November 3, 2010. The inspection showed the following unsatisfactory features at the facility: the outfall was not marked.

**Part II – Operator Certification Requirements**

As per [10 CSR 20-6.010(8) Terms and Conditions of a Permit], permittees shall operate and maintain facilities to comply with the Missouri Clean Water Law and applicable permit conditions and regulations. Operators or supervisors of operations at regulated wastewater treatment facilities shall be certified in accordance with [10 CSR 20-9.020(2)] and any other applicable state law or regulation. As per [10 CSR 20-9.010(2)(A)], requirements for operation by certified personnel shall apply to all wastewater treatment systems, if applicable, as listed below:

Not Applicable ; This facility is not required to have a certified operator.

**Part III – Receiving Stream Information**

**APPLICABLE DESIGNATIONS OF WATERS OF THE STATE:**

As per Missouri's Effluent Regulations [10 CSR 20-7.015], the waters of the state are divided into the below listed seven (7) categories. Each category lists effluent limitations for specific parameters, which are presented in each outfall's Effluent Limitation Table and further discussed in the Derivation & Discussion of Limits section.

- Missouri or Mississippi River [10 CSR 20-7.015(2)]:
- Lake or Reservoir [10 CSR 20-7.015(3)]:
- Losing [10 CSR 20-7.015(4)]:
- Metropolitan No-Discharge [10 CSR 20-7.015(5)]:
- Special Stream [10 CSR 20-7.015(6)]:
- Subsurface Water [10 CSR 20-7.015(7)]:
- All Other Waters [10 CSR 20-7.015(8)]:

10 CSR 20-7.031 Missouri Water Quality Standards, the Department defines the Clean Water Commission water quality objectives in terms of "water uses to be maintained and the criteria to protect those uses." The receiving stream and/or 1<sup>st</sup> classified receiving stream's beneficial water uses to be maintained are located in the Receiving Stream Table located below in accordance with [10 CSR 20-7.031(3)].

**RECEIVING STREAM(S) TABLE:**

| WATERBODY NAME                           | CLASS | WBID  | DESIGNATED USES*                      | 8-DIGIT HUC | EDU**         |
|--|-------|-------|---------------------------------------|-------------|---------------|
| Unnamed Tributary to Pomme de Terre Lake | U     | N/A   | General Criteria                      | 10290107    | Ozark / Osage |
| Pomme de Terre Lake                      | L2    | 07238 | General Criteria, LWW, AQL,SCR, WBC-A |             |               |

\* - Irrigation (IRR), Livestock & Wildlife Watering (LWW), Protection of Warm Water Aquatic Life and Human Health-Fish Consumption (AQL), Cool Water Fishery(CLF), Cold Water Fishery (CDF), Whole Body Contact Recreation (WBC), Secondary Contact Recreation (SCR), Drinking Water Supply (DWS), Industrial (IND).  
 \*\* - Ecological Drainage Unit

**RECEIVING STREAM(S) LOW-FLOW VALUES TABLE:**

| RECEIVING STREAM (U, C, P)               | LOW-FLOW VALUES (CFS) |      |       |
|--|-----------------------|------|-------|
|  | 1Q10                  | 7Q10 | 30Q10 |
| Unnamed Tributary to Pomme de Terre Lake | 0                     | 0    | 0     |

**MIXING CONSIDERATIONS**

Mixing Zone: Not Allowed [10 CSR 20-7.031(4)(A)4.B.(I)(a)].  
 Zone of Initial Dilution: Not Allowed [10 CSR 20-7.031(4)(A)4.B.(I)(b)].

**Part IV – Rationale and Derivation of Effluent Limitations & Permit Conditions**

**ALTERNATIVE EVALUATIONS FOR NEW FACILITIES:**

As per [10 CSR 20-7.015(4)(A)], discharges to losing streams shall be permitted only after other alternatives including land application, discharges to a gaining stream and connection to a regional wastewater treatment facility have been evaluated and determined to be unacceptable for environmental and/or economic reasons.

Not Applicable .

The facility does not discharge to a Losing Stream as defined by [10 CSR 20-2.010(36)] & [10 CSR 20-7.031(1)(N)], or is an existing facility.

**ANTI-BACKSLIDING:**

A provision in the Federal Regulations [CWA §303(d)(4); CWA §402(c); 40 CFR Part 122.44(I)] that requires a reissued permit to be as stringent as the previous permit with some exceptions.

- Backsliding proposed in this statement for the reissuance of this permit conform to the anti-backsliding provisions of Section 402(o) of the Clean Water Act, and 40 CFR Part 122.44. At the time the previous permit was issued the Department did not know the classification of the receiving stream, so it was assumed to be a losing setting. During the previous permit cycle, a geohydrologic evaluation was conducted that shows the facility discharges to a gaining stream. For that reason, the permittee will receive higher effluent limits.

**AREA-WIDE WASTE TREATMENT MANAGEMENT & CONTINUING AUTHORITY:**

As per [10 CSR 20-6.010(8)(A)10.], when a Continuing Authority under paragraph 10 CSR 20-6.010(3)(B)1. or 2. is expected to be available for connection within the next five (5) years, any operating permit issued to a permittee under this paragraph, located within the service area of the paragraph (3)(B)1. or 2. facility, shall contain the following special condition... This language is contained in Special Condition #3 of this operating permit.

**ANTIDegradation:**

Policies which ensure protection of water quality for a particular water body where the water quality exceeds levels necessary to protect fish and wildlife propagation and recreation on and in the water. This also includes special protection of waters designated as outstanding natural resource waters. Antidegradation requirements are consistent with 40 CFR 131.12 that outlines methods used to assess activities that may impact the integrity of a water and protect existing uses. This policy may compel the state to maintain a level of water quality above those mandated by criteria.

Not Applicable ;

Renewal no degradation proposed and no further review necessary.

**APPLICABLE PERMIT PARAMETERS:**

Effluent parameters for conventional, non-conventional, and toxic pollutants have been obtained from the previous NPDES operating permit for this facility, technology based effluent limits, and from appropriate sections of the renewal application.

**Bio-solids, Sludge, & Sewage Sludge:**

Bio-solids are solid materials resulting from wastewater treatment that meet federal and state criteria for beneficial uses (i.e. fertilizer). Sludge is any solid, semi-solid, or liquid waste generated from a municipal, commercial, or industrial wastewater treatment plant, water supply treatment plant, or air pollution control facility or any other such waste having similar characteristics and effect. Sewage sludge is solids, semi-solids, or liquid residue generated during the treatment of domestic sewage in a treatment works; including but not limited to, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment process; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screening generated during preliminary treatment of domestic sewage in a treatment works.

Additional information regarding biosolids and sludge is located at the following web address:

<http://dnr.mo.gov/env/wpp/pub/index.html>, items WQ422 through WQ449.

- Sludge/biosolids are removed by contract hauler or are stored in the lagoon.

**COMPLIANCE AND ENFORCEMENT:**

Action taken by the Department to resolve violations of the Missouri Clean Water Law, its implementing regulations, and/or any terms and condition of an operating permit.

Not Applicable ;

The permittee/facility is not under enforcement action and is considered to be in compliance with the Missouri Clean Water Law, its implementing regulations, and/or any terms and condition of an operating permit.

**PRETREATMENT PROGRAM:**

The reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to or in lieu of discharging or otherwise introducing such pollutants into a Publicly Owned Treatment Works [40 CFR Part 403.3(q)].

Pretreatment programs are required at any POTW (or combination of POTW operated by the same authority) and/or municipality with a total design flow greater than 5.0 MGD and receiving industrial wastes that interfere with or pass through the treatment works or are otherwise subject to the pretreatment standards. Pretreatment programs can also be required at POTWs/municipals with a design flow less than 5.0 MGD if needed to prevent interference with operations or pass through.

Several special conditions pertaining to the permittee's pretreatment program may be included in the permit, and are as follows:

- Implementation and enforcement of the program,
- Annual pretreatment report submittal,
- Submittal of list of industrial users,
- Technical evaluation of need to establish local limitations, and
- Submittal of the results of the evaluation

Not Applicable ;

The permittee, at this time, is not required to have a Pretreatment Program or does not have an approved pretreatment program.

**REASONABLE POTENTIAL ANALYSIS (RPA):**

Limitations must control all pollutants or pollutant parameters that are or may be discharged at a level which will cause, have reasonable potential to cause, or contribute to an excursion above the Missouri Water Quality Standards.

Applicable .

A RPA was conducted for this facility for (parameters) and determined that this facility has the potential to cause or contribute to violations of Water Quality. Please see **APPENDIX A – RPA RESULTS**.

**REMOVAL EFFICIENCY:**

Removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to Biochemical Oxygen Demand 5-day (BOD<sub>5</sub>) and Total Suspended Solids (TSS) for Publicly Owned Treatment Works (POTWs). Please see the United States Environmental Protection Agency's (EPA) website for interpretation of percent removal requirements for National Pollutant Discharge Elimination System Permit Application Requirements for Publicly Owned Treatment Works and Other Treatment Works Treating Domestic Sewage @ [www.epa.gov/fedrgstr/EPA-WATER/1999/August/Day-04/w18866.htm](http://www.epa.gov/fedrgstr/EPA-WATER/1999/August/Day-04/w18866.htm)

Applicable .

Secondary Treatment is 85% removal [40 CFR Part 133.102(a)(3) & (b)(3)].

**SANITARY SEWER OVERFLOWS (SSOs), BYPASSES, INFLOW & INFILTRATION (I&I) – PREVENTION/REDUCTION:**

Sanitary Sewer Overflows (SSOs) are defined as an untreated or partially treated sewage release are considered bypassing under state regulation [10 CSR 20-2.010(11)] and should not be confused with the federal definition of bypass. SSO's have a variety of causes including blockages, line breaks, and sewer defects that allow excess storm water and ground water to (1) enter and overload the collection system, and (2) overload the treatment facility. Additionally, SSO's can be also be caused by lapses in sewer system operation and maintenance, inadequate sewer

design and construction, power failures, and vandalism. SSOs also include overflows out of manholes and onto city streets, sidewalks, and other terrestrial locations.

Additionally, Missouri RSMo §644.026.1 mandates that the Department require proper maintenance and operation of treatment facilities and sewer systems and proper disposal of residual waste from all such facilities.

- Not applicable. This facility is not required to develop or implement a program for maintenance and repair of the collection system; however, it is a violation of Missouri State Environmental Laws and Regulations to allow untreated wastewater to discharge to waters of the state.

**SCHEDULE OF COMPLIANCE (SOC):**

A schedule of remedial measures included in a permit, including an enforceable sequence of interim requirements (actions, operations, or milestone events) leading to compliance with the Missouri Clean Water Law, its implementing regulations, and/or the terms and conditions of an operating permit.

Applicable ;

The time given for effluent limitations of this permit listed under Interim Effluent Limitation and Final Effluent Limitations were established in accordance with [10 CSR 20-7.031(10)].

**STORM WATER POLLUTION PREVENTION PLAN (SWPPP):**

In accordance with 40 CFR 122.44(k) *Best Management Practices (BMPs)* to control or abate the discharge of pollutants when: (1) Authorized under section 304(e) of the Clean Water Act (CWA) for the control of toxic pollutants and hazardous substances from ancillary industrial activities; (2) Authorized under section 402(p) of the CWA for the control of storm water discharges; (3) Numeric effluent limitations are infeasible; or (4) the practices are reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the CWA.

In accordance with the EPA's *Storm Water Management for Industrial Activities: Developing Pollution Prevention Plans and Best Management Practices* [EPA 832-R-92-006] (Storm Water Management), BMPs are measures or practices used to reduce the amount of pollution entering (regarding this operating permit) waters of the state. BMPs may take the form of a process, activity, or physical structure.

Additionally in accordance with the Storm Water Management, a SWPPP is a series of steps and activities to (1) identify sources of pollution or contamination, and (2) select and carry out actions which prevent or control the pollution of storm water discharges.

Not Applicable ;

At this time, the permittee is not required to develop and implement a SWPPP.

**WASTELOAD ALLOCATIONS (WLA) FOR LIMITS:**

As per [10 CSR 20-2.010(78)], the amount of pollutant each discharger is allowed by the Department to release into a given stream after the Department has determined to total amount of pollutant that may be discharged into that stream without endangering its water quality.

Applicable ;

Wasteload allocations were calculated where applicable using water quality criteria or water quality model results and the dilution equation below:

$$C = \frac{(C_s \times Q_s) + (C_e \times Q_e)}{(Q_e + Q_s)} \quad (\text{EPA/505/2-90-001, Section 4.5.5})$$

Where  $C$  = downstream concentration  
 $C_s$  = upstream concentration  
 $Q_s$  = upstream flow  
 $C_e$  = effluent concentration  
 $Q_e$  = effluent flow

Chronic wasteload allocations were determined using applicable chronic water quality criteria (CCC: criteria continuous concentration) and stream volume of flow at the edge of the mixing zone (MZ). Acute wasteload allocations were determined using applicable water quality criteria (CMC: criteria maximum concentration) and stream volume of flow at the edge of the zone of initial dilution (ZID).

Water quality based maximum daily and average monthly effluent limitations were calculated using methods and procedures outlined in USEPA's "Technical Support Document For Water Quality-based Toxics Control" (EPA/505/2-90-001).

Number of Samples "n":

Additionally, in accordance with the TSD for water quality-based permitting, effluent quality is determined by the underlying distribution of daily values, which is determined by the Long Term Average (LTA) associated with a particular Wasteload Allocation (WLA) and by the Coefficient of Variation (CV) of the effluent concentrations. Increasing or decreasing the monitoring frequency does not affect this underlying distribution or treatment performance, which should be, at a minimum, be targeted to comply with the values dictated by the WLA. Therefore, it is recommended that the actual planned frequency of monitoring normally be used to determine the value of "n" for calculating the AML. However, in situations where monitoring frequency is once per month or less, a higher value for "n" must be assumed for AML derivation purposes. Thus, the statistical procedure being employed using an assumed number of samples is "n = 4" at a minimum. For Total Ammonia as Nitrogen, "n = 30" is used.

**WLA MODELING:**

Not Applicable ;

A WLA study was either not submitted or determined not applicable by Department staff.

**WATER QUALITY STANDARDS:**

Per [10 CSR 20-7.031(3)], General Criteria shall be applicable to all waters of the state at all times including mixing zones. Additionally, [40 CFR 122.44(d)(1)] directs the Department to establish in each NPDES permit to include conditions to achieve water quality established under Section 303 of the Clean Water Act, including State narrative criteria for water quality.

**WHOLE EFFLUENT TOXICITY (WET) TEST:**

A WET test is a quantifiable method of determining if a discharge from a facility may be causing toxicity to aquatic life by itself, in combination with or through synergistic responses when mixed with receiving stream water.

Not Applicable ;

At this time, the permittee is not required to conduct WET test for this facility.

**40 CFR 122.41(m) - Bypasses:**

The federal Clean Water Act (CWA), Section 402 prohibits wastewater dischargers from "bypassing" untreated or partially treated sewage (wastewater) beyond the headworks. A bypass, which includes blending, is defined as an intentional diversion of waste streams from any portion of a treatment facility, [40 CFR 122.41(m)(1)(i)]. Additionally, Missouri regulation 10 CSR 20-2.010(11) defines a bypass as the diversion of wastewater from any portion of wastewater treatment facility or sewer system to waters of the state. Only under exceptional and specified limitations do the federal regulations allow for a facility to bypass some or all of the flow from its treatment process. Bypasses are prohibited by the CWA unless a permittee can meet all of the criteria listed in 40 CFR

122.41(m)(4)(i)(A), (B), & (C). Any bypasses from this facility are subject to the reporting required in 40 CFR 122.41(l)(6) and per Missouri's Standard Conditions I, Section B, part 2.b. Additionally, Anticipated Bypasses include bypasses from peak flow basins or similar.

- Not Applicable, this facility does not bypass.

**303(d) LIST & TOTAL MAXIMUM DAILY LOAD (TMDL):**

Section 303(d) of the federal Clean Water Act requires that each state identify waters that are not meeting water quality standards and for which adequate water pollution controls have not been required. Water quality standards protect such beneficial uses of water as whole body contact (such as swimming), maintaining fish and other aquatic life, and providing drinking water for people, livestock and wildlife. The 303(d) list helps state and federal agencies keep track of waters that are impaired but not addressed by normal water pollution control programs.

A TMDL is a calculation of the maximum amount of a given pollutant that a body of water can absorb before its water quality is affected. If a water body is determined to be impaired as listed on the 303(d) list, then a watershed management plan will be developed that shall include the TMDL calculation

Not Applicable ;

This facility does not discharge to a 303(d) listed stream.

**Adjusted Design Flow:**

10 CSR 20-6.011(1)(B)1. provides for an Adjusted Design Flow when calculating permit fees on human sewage treatment facilities. If the average flow is sixty percent (60%) or less than the system's design flow, the average flow may be substituted for the design flow when calculating the permit fee on human sewage treatment facilities. If the facility's actual average flow is consistently 60% or less than the permitted design flow, the facility may qualify for a reduction in your fee when:

- The facility has a valid permit, or has applied for re-issuance, is in compliance with the terms, conditions and effluent limitations of the permit, and the facility has a good compliance history; and
- Flow is not expected to exceed 60% of design flow for the remaining term of the existing operating permit.

Not Applicable ;

Municipalities, POTWs, and Industrials do not qualify for Adjusted Design flows.

**Outfall #001 – Main Facility Outfall**

**EFFLUENT LIMITATIONS TABLE:**

| PARAMETER                        | UNIT   | BASIS FOR LIMITS | DAILY MAXIMUM | WEEKLY AVERAGE | MONTHLY AVERAGE | MODIFIED | PREVIOUS PERMIT LIMITATIONS |
|----------------------------------|--|------------------|---------------|----------------|-----------------|----------|-----------------------------|
| FLOW                             | MGD  | 1                | *             |                | *               | NO       | S                           |
| BOD <sub>5</sub>                 | MG/L   | 1                |               | 30             | 20              | YES      | 15/10                       |
| TSS                              | MG/L   | 1                |               | 30             | 20              | YES      | 20/15                       |
| pH (S.U.)                        | SU   | 1                | 6.5-9.0       |                | 6.5-9.0         | YES      | 6.0-9.0                     |
| AMMONIA AS N (OCTOBER - MARCH)   | MG/L   | 5                | *             |                | *               | NO       | *                           |
| AMMONIA AS N (APRIL - SEPTEMBER) | MG/L   | 5                | 5.7           |                | 1.2             | YES      | *                           |
| ESCHERICHIA COLI                 | ***  | 1,2,3            |               | 630            | 126             | NO       | NONE                        |
| CHLORINE, TOTAL RESIDUAL         | MG/L   | 3                | 0.016         |                | 0.0082          | YES      | 0.01                        |
| DISSOLVED OXYGEN                 | MG/L   | 11               | *             |                | *               | NO       | NONE                        |
| FECAL COLIFORM                   | ***  | 1                | 1000          |                | 400             | REMOVED  | 1000/400                    |
| TEMPERATURE                      | °C   | 8                | *             |                | *               | REMOVED  | NONE                        |
| MONITORING FREQUENCY             | Please see Minimum Sampling and Reporting Frequency Requirements in the Derivation and Discussion Section below. |                  |               |                |                 |          |                             |

**\* - Monitoring requirement only**

\*\*\* - # of colonies/100mL; the Monthly Average for E. coli is a geometric mean.

\*\*\*\* - Parameter not previously established in previous state operating permit.

N/A – Not applicable

S – Same as previous operating permit

**Basis for Limitations Codes:**

- |  |                                   |
|--|-----------------------------------|
| 1. State or Federal Regulation/Law       | 6. Antidegradation Policy         |
| 2. Water Quality Standard (includes RPA) | 7. Water Quality Model            |
| 3. Water Quality Based Effluent Limits   | 8. Best Professional Judgment     |
| 4. Lagoon Policy                         | 9. TMDL or Permit in lieu of TMDL |
| 5. Ammonia Policy                        | 10. WET test Policy               |
|  | 11. Dissolved Oxygen Policy       |

**OUTFALL #001 – DERIVATION AND DISCUSSION OF LIMITS:**

**Flow.** In accordance with [40 CFR Part 122.44(i)(1)(ii)] the volume of effluent discharged from each outfall is needed to assure compliance with permitted effluent limitations. If the permittee is unable to obtain effluent flow, then it is the responsibility of the permittee to inform the Department, which may require the submittal of an operating permit modification.

**Biochemical Oxygen Demand (BOD<sub>5</sub>).**

- 30 mg/L Weekly Average and 20 mg/L Monthly Average effluent limitations, as per [10 CSR 20-7.015]. The daily maximum is calculated by  $(20 \text{ AML})(\text{LTAc}/1.5524 \text{ AML})(3.114/\text{LTAc}) = 30 \text{ mg/L}$  weekly average. This method is outlined in SWRO-WP17-01 and is as protective as the daily maximum of 40 mg/L.

**Total Suspended Solids (TSS).**

- 30 mg/L Weekly Average and 20 mg/L Monthly Average effluent limitations, as per [10 CSR 20-7.015]. The daily maximum is calculated by  $(20 \text{ AML})(\text{LTAc}/1.5524 \text{ AML})(3.114/\text{LTAc}) = 30 \text{ mg/L}$  weekly

average. This method is outlined in SWRO-WP17-01 and is as protective as the daily maximum of 40 mg/L.

**pH.**

☒ – pH is limited to the range of 6.5 – 9.0 pH units, as per [10 CSR 20-7.031(4)(E)]. pH is measured in pH units and is not to be averaged.

**Temperature.** Temperature has been removed because it is no longer pertinent in determining ammonia limitations.

**Ammonia as N**

Assuming a first order decay process, ammonia decay was calculated using the following equation

$$D(t) = e^{-K_T t}$$

where

- D(t) = fraction of the initial ammonia concentration remaining at t
- K<sub>T</sub> = ammonia decay rate coefficient at local temperature [days<sup>-1</sup>]
- t = travel time [days]

The fraction of ammonia remaining, D(t), was computed for all two seasons:

$$\begin{aligned} D_{\text{summer}} &= .9721 \\ D_{\text{winter}} &= .9961 \end{aligned}$$

Assuming that early life stages are present, the Total Ammonia Nitrogen criteria [10 CSR 20-7.031(4)(B)7.C., Table B1, & Table B3] apply and will be used in conjunction with the decay calculations above.

| Season             | Temp (°C) | pH (SU) | Total Ammonia Nitrogen CCC (mg N/L) | Total Ammonia Nitrogen CMC (mg N/L) |
|--------------------|-----------|---------|-------------------------------------|-------------------------------------|
| Oct. 1 – March 31  | 6         | 7.8     | 3.1                                 | 12.1                                |
| April 1 – Sept. 30 | 27        | 7.8     | 1.4                                 | 12.1                                |

Winter: Oct 1 – March 31, Summer: April 1 – Sept. 30

$$\text{Chronic WLA} = (\text{CCC})(D_{\text{season}})^{-1}$$

**Summer** – Chronic WLA = (1.4 mg N/L)(.9712)<sup>-1</sup> = 1.44 mg N/L, Acute WLA = 12.1 mg N/L. No mixing zone is allowed. Discharges to Unclassified Streams.

LTA<sub>c</sub> = 1.44 mg/L (0.507) = 0.73 mg N/L [CV = 1.76, 99<sup>th</sup> Percentile, 30 day average]  
 LTA<sub>a</sub> = 12.1 mg/L (0.128) = 1.55 mg N/L [CV = 0.6, 99<sup>th</sup> Percentile]

MDL = 0.73 mg/L (7.83) = **5.7159 mg N/L** [CV = 1.76, 99<sup>th</sup> Percentile]  
 AML = 0.73 mg/L (1.59) = **1.1607 mg N/L** [CV = 1.76, 95<sup>th</sup> Percentile, n = 30]

**Winter** – Monitoring requirement only. No winter ammonia data has been collected because the facility does not discharge during the winter months. Reasonable potential analysis will be conducted upon renewal if sufficient data is submitted.

| Season            | Maximum Daily Limit (mg N/L) | Average Monthly Limit (mg N/L) |
|-------------------|------------------------------|--------------------------------|
| Oct 1 – March 31  | *                            | *                              |
| April 1 – Sept 30 | 5.7                          | 1.2                            |

**Fecal Coliform.** *E. coli* has replaced fecal coliform at the applicable bacteria criteria in Missouri’s water quality standards. (remove if not needed)

**Escherichia coli (E. coli).** Monthly average of 126 per 100 ml as a geometric mean and Weekly Average of 630 during the recreational season (April 1 – October 31), to protect Whole Body Contact Recreation (A) designated use of the receiving stream, as per 10 CSR 20-7.031(4)(C). Weekly Average effluent variability will be evaluated in development of a future effluent limit. An effluent limit for both monthly average and weekly average is required by 40 CFR 122.45(d).

**Total Residual Chlorine (TRC).** Warm-water Protection of Aquatic Life CCC = 10 µg/L, CMC = 19 µg/L [10 CSR 20-7.031, Table A]. Background TRC = 0.0 µg/L.

$$((Q_e + Q_s) \cdot C - (Q_s \cdot C_s)) / Q_e$$

Acute:  $C_e = ((0.02+0) \cdot 0.019 - (0 \cdot 0)) / 0.02 = 0.019$   
WLA<sub>a</sub> = 0.019 mg/L

Chronic:  $C_e = ((0.02 + 0) \cdot 0.01 - (0 \cdot 0)) / 0.02 = 0.01$   
WLA<sub>c</sub> = 0.01 mg/L

LTA<sub>a</sub> = 0.019 (0.321) = 0.0061 mg/L [CV = 0.6, 99<sup>th</sup> Percentile]  
LTA<sub>c</sub> = 0.01 (0.5274) = **0.005274** mg/L [CV = 0.6, 99<sup>th</sup> Percentile]

MDL = 0.005274(3.114) = 0.016 mg/L [CV = 0.6, 99<sup>th</sup> Percentile]  
AML = 0.005274(1.55) = 0.0082 mg/L [CV = 0.6, 95<sup>th</sup> Percentile, n = 4]

**Dissolved Oxygen.** Monitoring requirement only. Monitoring for dissolved oxygen are included to determine whether “reasonable potential” to exceed water quality standards exists after the discharge begins.

**Minimum Sampling and Reporting Frequency Requirements.**

| PARAMETER               | SAMPLING FREQUENCY | REPORTING FREQUENCY |
|-------------------------|--------------------|---------------------|
| FLOW                    | ONCE/MONTH         | MONTHLY             |
| BOD <sub>5</sub>        | ONCE/MONTH         | MONTHLY             |
| TSS                     | ONCE/MONTH         | MONTHLY             |
| PH                      | ONCE/MONTH         | MONTHLY             |
| AMMONIA AS N            | ONCE/MONTH         | MONTHLY             |
| <i>E. COLI</i>          | ONCE/MONTH         | MONTHLY             |
| TOTAL RESIDUAL CHLORINE | ONCE/MONTH         | MONTHLY             |
| DISSOLVED OXYGEN        | ONCE/MONTH         | MONTHLY             |

**Sampling Frequency Justification:**

Monthly sampling is appropriate to obtain adequate data to determine if reasonable potential exists to exceed water quality standards for dissolved oxygen. The facility is also still considered as using non standard technology, so monthly sampling will be kept.

The Clean Water Commission has directed the Department to proceed with amending 10 CSR 20-7.015 to reduce the sampling frequency required for E.coli to a lesser frequency, still protective of water quality standards, for smaller facilities, including those with discharges of 100,000 gallons per day or less.

**Sampling Type Justification**

Due to the small amount of flow sample type shall be modified composites.

### **Administrative Requirements**

On the basis of preliminary staff review and the application of applicable standards and regulations, the Department, as administrative agent for the Missouri Clean Water Commission, proposes to issue a permit(s) subject to certain effluent limitations, schedules, and special conditions contained herein and within the operating permit. The proposed determinations are tentative pending public comment.

**Date of Factsheet:** May 27, 2011

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**APPENDIX A – RPA RESULTS:**

| Parameter                               | CMC* | RWC Acute* | CCC* | RWC Chronic* | n** | Range max/min | CV*** | MF   | RP Yes/No |
|---|------|------------|------|--------------|-----|---------------|-------|------|-----------|
| Total Ammonia as Nitrogen (Summer) mg/L | 12.1 | 83         | 1.4  | 83           | 24  | 22.4 /0       | 1.76  | 3.69 | Yes       |

N/A – Not Applicable

\* - Units are (µg/L) unless otherwise noted.

\*\* - If the number of samples is greater than 10, then the CV value must be used in the WQBEL for the applicable constituent.

\*\*\* - Coefficient of Variation (CV) is calculated by dividing the Standard Deviation of the sample set by the Mean of the same sample set.

RWC – Receiving Water Concentration. It is the concentration of a toxicant or the parameter toxicity in the receiving water after mixing (if applicable).

n – Is the number of samples.

MF – Multiplying Factor. 99% Confidence Level and 99% Probability Basis.

RP – Reasonable Potential. It is where an effluent is projected or calculated to cause an excursion above a water quality standard based on a number of factors including, as a minimum, the four factors listed in 40 CFR 122.44(d)(1)(ii).

Reasonable Potential Analysis is conducted as per (TSD, EPA/505/2-90-001, Section 3.3.2). A more detailed version including calculations of this RPA is available upon request.