

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, 92nd Congress) as amended,

Permit No. MO-0136611

Owner: City of Taos
Address: 4909 Countryside Park, Taos, MO 65101

Continuing Authority: Same as above
Address: Same as above

Facility Name: Taos Wastewater Treatment Plant (WWTP)
Facility Address: 2100 feet South of Liberty Road and South Liberty Intersection

Legal Description: SW ¼, SW ¼, SE ¼, Sec. 32, T44N, R10W , Cole County
UTM Coordinates: X =583096; Y = 4263054

Receiving Stream: Unnamed Tributary to Sanford Creek (U)
First Classified Stream and ID: Sanford Creek (C) (1032)
USGS Basin & Sub-watershed No.: 1029011-0407

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 - POTW- SIC #4952 - **Certified "C" Operator Required**
Oxidation Ditch/Ultraviolet Disinfection/ sludge disposal by contract hauler
Design population equivalent is 950.
Design flow is 150, 000 gallons per day.
Design sludge production is 19.95 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.

October 5, 2012
Effective Date

Sarah Parker Pauley, Director, Department of Natural Resources

January 30, 2016
Expiration Date

John Madras, Director, Water Protection Program

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS					PAGE NUMBER 2 of 7	
					PERMIT NUMBER MO-0136611	
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 upon issuance 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. total
Biochemical Oxygen Demand ₅	mg/L		30	25	once/month	24 hr. composite**
Total Suspended Solids	mg/L		30	25	once/month	24 hr. composite**
<i>E. coli</i> (Note 1)	#/100 mL		1,030	206	once/ <u>week</u>	grab
pH – Units	SU	****		****	once/month	grab
Ammonia as N (April 1 – Sept 30) (Oct 1 – March 31)	mg/L	3.6 7.5		1.4 2.9	once/month	grab
Temperature	°C	*		*	once/month	grab
Oil & Grease	mg/L	15		10	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE <u>November 28, 2012</u> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
Whole Effluent Toxicity (WET) test	% Survival	See Special Condition #10			once/permit cycle	24 hr comp**
MONITORING REPORTS SHALL BE SUBMITTED <u>ONCE PER PERMIT CYCLE</u> ; THE FIRST REPORT IS DUE <u>January 28, 2016</u> .						
B. STANDARD CONDITIONS						
IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED <u>Parts I, II, & 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.
- ** A 24-hour composite sample is composed of 48 aliquots (subsamples) collected at 30 minute intervals by an automatic sampling device.
- **** pH is measured in pH units and is not to be averaged. The pH is limited to the range of 6.5-9.0 pH units.

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. 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).

C. INFLUENT MONITORING REQUIREMENTS		PAGE NUMBER 3 of 7	
		PERMIT NUMBER MO-0136611	
The facility is required to meet a removal efficiency of 85% or more as a monthly average. 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 ₅	mg/L	once/month	24 hr. composite
Total Suspended Solids	mg/L	once/month	24 hr. composite
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE <u>November 28, 2012</u> .			

D. SPECIAL CONDITIONS

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

D. SPECIAL CONDITIONS (continued)

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;
 - (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, unless the facility has received written notification that the Department has approved a modification to the requirements. 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. The permittee shall develop and implement a program for maintenance and repair of the collection system. The permittee shall submit a report annually in November to the Northeast Regional Office with the Discharge and Monitoring reports which address measures taken to locate and eliminate sources of infiltration and inflow into the collection system serving the facility.
9. 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.
10. Whole Effluent Toxicity (WET) Test shall be conducted as follows:

SUMMARY OF ACUTE WET TESTING FOR THIS PERMIT				
OUTFALL	AEC	FREQUENCY	SAMPLE TYPE	MONTH
001	100%	once/permit cycle	24 hr. composite*	Any, 2015

* A 24-hour composite sample is composed of 48 aliquots (subsamples) collected at 30 minute intervals by an automatic sampler.

Dilution Series						
100% effluent	50% effluent	25% effluent	12.5% effluent	6.25% effluent	(Control) 100% upstream, if available	(Control) 100% Lab Water, also called synthetic water

D. SPECIAL CONDITIONS (continued)

(a) Test Schedule and Follow-Up Requirements

- (1) Perform a MULTIPLE-dilution acute WET test in the months and at the frequency specified above. For tests which are successfully passed, submit test results using the Department's WET test report form #MO-780-1899 along with complete copies of the test reports as received from the laboratory, including copies of chain-of-custody forms within 30 calendar days of availability to the WATER PROTECTION PROGRAM, P.O. Box 176, Jefferson City, MO 65102. If the effluent passes the test, do not repeat the test until the next test period.
 - (a) For discharges of stormwater, samples shall be collected within three hours from when discharge first occurs.
 - (b) Samples submitted for analysis of stormwater discharges shall be collected as a grab.
 - (c) For discharges of non-stormwater, samples shall be collected only when precipitation has not occurred for a period of forty-eight hours prior to sample collection. In no event shall sample collection occur simultaneously with the occurrence of precipitation excepting for stormwater samples.
 - (d) A twenty-four hour composite sample shall be submitted for analysis of non-stormwater discharges.
 - (e) Upstream receiving water samples, where required, shall be collected upstream from any influence of the effluent where downstream flow is clearly evident.
 - (f) Samples submitted for analysis of upstream receiving water may be collected as either a grab or twenty-four-hour composite as appropriate to the nature of the discharge.
 - (g) Chemical and physical analysis of the upstream control and effluent sample shall occur immediately upon being received by the laboratory, prior to any manipulation of the effluent sample beyond preservation methods consistent with federal guidelines for WET testing that are required to stabilize the sample during shipping.
 - (h) Any and all chemical or physical analysis of the effluent sample performed in conjunction with the WET test shall be performed at the 100% Effluent concentration in addition to analyses performed upon any other effluent concentration.
 - (i) All chemical analyses included in the Missouri Department of Natural Resources WET test report form #MO-780-1899 shall be performed and results shall be recorded in the appropriate field of the report form.
 - (j) Where flow-weighted composite sample is required for analysis, the samples shall be composited at the laboratory where the test is to be performed.
 - (k) Where in stream testing is required downstream from the discharge, sample collection shall occur immediately below the established Zone of Initial Dilution in conjunction with or immediately following a release or discharge.
 - (l) Samples submitted for analysis of downstream receiving water may be collected as either a grab or twenty-four-hour composite as appropriate to the nature of the discharge.
 - (m) All instream samples, including downstream samples, shall be tested for toxicity at the 100% concentration in addition to any other assigned AEC for in-stream samples.
- (2) All failing test results along with complete copies of the test reports as received from the laboratory, INCLUDING THOSE TESTS CONDUCTED UNDER CONDITION (3) BELOW, shall be reported to the WATER PROTECTION PROGRAM, P.O. Box 176, Jefferson City, MO 65102 within 14 calendar days of the availability of the results.
- (3) If the effluent fails the test, a multiple dilution test shall be performed for BOTH test species within 30 calendar days and biweekly thereafter (for storm water, tests shall be performed on the next and subsequent storm water discharges as they occur, but not less than 7 days apart) until one of the following conditions are met:
 - (i) THREE CONSECUTIVE MULTIPLE-DILUTION TESTS PASS. No further tests need to be performed until next regularly scheduled test period.
 - (ii) A TOTAL OF THREE MULTIPLE-DILUTION TESTS FAIL.
- (4) The permittee shall submit a summary of all test results for the test series along with complete copies of the test reports as received from the laboratory to the WATER PROTECTION PROGRAM, P.O. Box 176, Jefferson City, MO 65102 within 14 calendar days of the third failed test.
- (5) Additionally, the following shall apply upon failure of the third MULTIPLE DILUTION test: A toxicity identification evaluation (TIE) or toxicity reduction evaluation (TRE) is automatically triggered. The permittee shall contact THE WATER PROTECTION PROGRAM within 14 calendar days from availability of the test results to ascertain as to whether a TIE or TRE is appropriate. The permittee shall submit a plan for conducting a TIE or TRE to the WATER PROTECTION PROGRAM within 60 calendar days of the date of DNR's direction to perform either a TIE or TRE. This plan must be approved by DNR before the TIE or TRE is begun. A schedule for completing the TIE or TRE shall be established in the plan approval.

D. SPECIAL CONDITIONS (continued)

- (6) Upon DNR's approval, the TIE/TRE schedule may be modified if toxicity is intermittent during the TIE/TRE investigations. A revised WET test schedule may be established by DNR for this period.
 - (7) If a previously completed TIE has clearly identified the cause of toxicity, additional TIEs will not be required as long as effluent characteristics remain essentially unchanged and the permittee is proceeding according to a DNR approved schedule to complete a TRE and reduce toxicity. Regularly scheduled WET testing as required in the permit, without the follow-up requirements, will be required during this period.
- (b) PASS/FAIL procedure and effluent limitations:
- (1) To pass a multiple-dilution test:
 - (i) For facilities with a computed percent effluent at the edge of the zone of initial dilution, Allowable Effluent Concentration (AEC) OF 30% OR LESS, the AEC must be less than three-tenths (0.3) of the LC₅₀ concentration for the most sensitive of the test organisms; **OR**,
 - (ii) For facilities with an AEC greater than 30%, the LC50 concentration must be greater than 100%; **AND**,
 - (iii) All effluent concentrations equal to or less than the AEC must be nontoxic. Mortality observed in all effluent concentrations equal to or less than the AEC shall not be significantly different (at the 95% confidence level; $p = 0.05$) than that observed in the upstream receiving-water control sample. Where upstream receiving water is not available mortality observed in the AEC test concentration shall not be significantly different (at the 95% confidence level; $p = 0.05$) than that observed in the laboratory control. The appropriate statistical tests of significance shall be consistent with the most current edition of METHODS FOR MEASURING THE ACUTE TOXICITY OF EFFLUENTS AND RECEIVING WATERS TO FRESHWATER AND MARINE ORGANISMS or other federal guidelines as appropriate or required.
- (c) Test Conditions
- (1) Test Type: Acute Static non-renewal
 - (2) All tests, including repeat tests for previous failures, shall include both test species listed below.
 - (3) Test species: Ceriodaphnia dubia and Pimephales promelas (fathead minnow). Organisms used in WET testing shall come from cultures reared for the purpose of conducting toxicity tests and cultured in a manner consistent with the most current USEPA guidelines. All test animals shall be cultured as described in the most current edition of Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms.
 - (4) Test period: 48 hours at the "Allowable Effluent Concentration" (AEC) specified above.
 - (5) Upstream receiving stream water shall be used as dilution water. If upstream water is unavailable or if mortality in the upstream water exceeds 10%, "reconstituted" water will be used as dilution water. Procedures for generating reconstituted water will be supplied by the MDNR upon request.
 - (6) Unless otherwise specified above, multiple-dilution tests will be run with:
 - (i) 100%, 50%, 25%, 12.5%, and 6.25% effluent, unless the AEC is less than 25% effluent, in which case dilutions will be 4 times the AEC, two times the AEC, AEC, 1/2 AEC and 1/4 AEC;
 - (ii) 100% receiving-stream water (if available), collected upstream of the outfall at a point beyond any influence of the effluent; and
 - (iii) Reconstituted water.
 - (7) If reconstituted-water control mortality for a test species exceeds 10%, the entire test will be rerun.
 - (8) If upstream control mortality exceeds 10%, the entire test will be rerun using reconstituted water as the dilutant.

SUMMARY OF TEST METHODOLOGY FOR ACUTE WHOLE-EFFLUENT TOXICITY TESTS

Whole-effluent-toxicity test required in NPDES permits shall use the following test conditions when performing single or multiple dilution methods. Any future changes in methodology will be supplied to the permittee by the Missouri Department of Natural Resources (MDNR). Unless more stringent methods are specified by the DNR, the procedures shall be consistent with the most current edition of Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms.

Test conditions for Ceriodaphnia dubia:

Test duration:	48 h
Temperature:	25 ± 1°C Temperatures shall not deviate by more than 3°C during the test.
Light Quality:	Ambient laboratory illumination
Photoperiod:	16 h light, 8 h dark
Size of test vessel:	30 mL (minimum)
Volume of test solution:	15 mL (minimum)
Age of test organisms:	<24 h old
No. of animals/test vessel:	5
No. of replicates/concentration:	4
No. of organisms/concentration:	20 (minimum)
Feeding regime:	None (feed prior to test)
Aeration:	None
Dilution water:	Upstream receiving water; if no upstream flow, synthetic water modified to reflect effluent hardness.
Endpoint:	Pass/Fail (Statistically significant Mortality when compared to upstream receiving water control or synthetic control if upstream water was not available at $p \leq 0.05$)
Test acceptability criterion:	90% or greater survival in controls

Test conditions for Pimephales promelas:

Test duration:	48 h
Temperature:	25 ± 1°C Temperatures shall not deviate by more than 3°C during the test.
Light Quality:	Ambient laboratory illumination
Photoperiod:	16 h light/ 8 h dark
Size of test vessel:	250 mL (minimum)
Volume of test solution:	200 mL (minimum)
Age of test organisms:	1-14 days (all same age)
No. of animals/test vessel:	10
No. of replicates/concentration:	4 (minimum) single dilution method 2 (minimum) multiple dilution method
No. of organisms/concentration:	40 (minimum) single dilution method 20 (minimum) multiple dilution method
Feeding regime:	None (feed prior to test)
Aeration:	None, unless DO concentration falls below 4.0 mg/L; rate should not exceed 100 bubbles/min.
Dilution water:	Upstream receiving water; if no upstream flow, synthetic water modified to reflect effluent hardness.
Endpoint:	Pass/Fail (Statistically significant Mortality when compared to upstream receiving water control or synthetic control if upstream water was not available at $p \leq 0.05$)
Test Acceptability criterion:	90% or greater survival in controls

**Missouri Department of Natural Resources
 FACT SHEET
 FOR THE PURPOSE OF CONSTRUCTION
 OF
 MO-0136611
 TAOS WWTP**

The Federal Water Pollution Control Act ("Clean Water Act" Section 402 Public Law 92-500 as amended) established the National Pollution Discharge Elimination System (NPDES) permit program. This program regulates the discharge of pollutants from point sources into the waters of the United States, and the release of storm water from certain point sources. All such discharges are unlawful without a permit (Section 301 of the "Clean Water Act"). After a permit is obtained, a discharge not in compliance with all permit terms and conditions is unlawful. Missouri State Operating Permits (MSOPs) are issued by the Director of the Missouri Department of Natural Resources (Department) under an approved program, operating in accordance with federal and state laws (Federal "Clean Water Act" and "Missouri Clean Water Law" Section 644 as amended). MSOPs are issued for a period of five (5) years unless otherwise specified.

As per [40 CFR Part 124.8(a)] and [10 CSR 20-6.020(1)2.] a Factsheet shall be prepared to give pertinent information regarding the applicable regulations, rationale for the development of effluent limitations and conditions, and the public participation process for the Missouri State Operating Permit (operating permit) listed below.

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

This Factsheet is for a Major , Minor , Industrial Facility ; Variance ; Master General Permit ; General Permit Covered Facility ; and/or permit with widespread public interest .

Part I – Facility Information

Facility Type: POTW
 Facility SIC Code(s): 4952

Facility Description:

The wastewater enters a bar screen and grit removal system and then into the biological aeration basin with consists of 2 channels and 4 disc aerators. From there, wastewater enters one of two circular clarifiers. Wastewater then enters an ultraviolet disinfection system followed by post aeration provided by concrete cascade steps. A return/waste activated sludge system is utilized to recycle sludge back to the biological aeration basin or an aerobic digester.

Have any changes occurred at this facility or in the receiving water body that effects effluent limit derivation?

- Yes; please provide simple description or reference appropriate location in the Fact Sheet.
 - No.

Application Date: 01/18/11
 Expiration Date: N/A - New Facility

OUTFALL(S) TABLE:

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	EFFLUENT TYPE	DISTANCE TO CLASSIFIED SEGMENT (MI)
001	0.2325	Secondary	Municipal	1.85

Outfall #001

Legal Description: SW ¼, SW ¼, SE ¼, Sec. 32, T44N, R10W
 UTM Coordinates: x=583096; y= 4263054
 Receiving Stream: Unnamed Tributary to Sanford Creek (U)
 First Classified Stream and ID: Sanford Creek (C) (1032)
 USGS Basin & Sub-watershed No.: (1029011–060004)

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

Not Applicable – New Facility

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:

Check boxes below that are applicable to the facility;

- Owned or operated by or for:
 - Municipalities
 - Public Sewer District:
 - County
 - Public Water Supply Districts:
 - Private sewer company regulated by the Public Service Commission:
 - State or Federal agencies:

Each of the above entities are only applicable if they have a Population Equivalent greater than two hundred (200) and/or fifty (50) or more service connections.

This facility currently requires an operator with a C Certification Level. Please see **Appendix #1 - Classification Worksheet**. Modifications made to the wastewater treatment facility may cause the classification to be modified.

- This facility does not currently retain an operator with the correct level of certification required to operate the wastewater treatment facility. Missouri Clean Water Law and its implementing regulation 10 CSR 20-9.020(2)(F) allows the Department to develop a schedule of activities including the date by which compliance shall be obtained. This schedule of activities shall be established in this operating permit as a Schedule of Compliance.

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 1st 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 Sanford Creek	U	--	General Criteria	10290111	Ozark/Osage
Sanford Creek	U	--	General Criteria		
Sanford Creek	C	1032	AQL, LWW, WBC(B)***		

* - 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), Groundwater (GRW).

** - Ecological Drainage Unit

*** - UAA conducted in 2007 for Sanford Creek with the recommendation to add Whole Body Use

RECEIVING STREAM(S) LOW-FLOW VALUES TABLE:

RECEIVING STREAM (U, C, P)	LOW-FLOW VALUES (CFS)		
	1Q10	7Q10	30Q10
Unnamed Tributary to Sanford Creek (U)	0.0	0.0	0.0
Sanford Creek (U)	0.0	0.0	0.0
Sanford Creek (C)	0.0	0.0	0.1

MIXING CONSIDERATIONS TABLE:

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)].

RECEIVING STREAM MONITORING REQUIREMENTS:

No receiving water monitoring requirements recommended at this time.

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.

- New facility, backsliding does not apply.

ANTIDegradation:

In accordance with Missouri’s Water Quality Standard [10 CSR 20-7.031(2)], the Department is to document by means of Antidegradation Review that the use of a water body’s available assimilative capacity is justified. Degradation is justified by documenting the socio-economic importance of a discharging activity after determining the necessity of the discharge.

- New discharge, please see **APPENDIX B – ANTIDegradation ANALYSIS.**

AREA-WIDE WASTE TREATMENT MANAGEMENT & CONTINUING AUTHORITY:

As per [10 CSR 20-6.010(3)(B)], ... An applicant may utilize a lower preference continuing authority by submitting, as part of the application, a statement waiving preferential status from each existing higher preference authority, providing the waiver does not conflict with any area-wide management plan approved under section 208 of the Federal Clean Water Act or any other regional sewage service and treatment plan approved for higher preference authority by the Department.

BIOSOLIDS, 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.

- Permittee land applies biosolids in accordance with Standard Conditions III and a Department approved biosolids management plan.

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

Not applicable;
This condition is not applicable to the permittee for this facility.

COMPLIANCE AND ENFORCEMENT:

Enforcement is the action taken by the Water Protection Program (WPP) to bring an entity into compliance with the Missouri Clean Water Law, its implementing regulations, and/or any terms and conditions of an operating permit. The primary purpose of the enforcement activity in the WPP is to resolve violations and return the entity to compliance.

Not Applicable ;
The permittee/facility is not currently under Water Protection Program enforcement action.

PERMIT SYNCHRONIZATION:

The Department of Natural Resources is currently undergoing a synchronization process for operating permits. Permits are normally issued on a five-year term, but to achieve synchronization many permits will need to be issued for less than the full five years allowed by regulation. The intent is that all permits within a watershed will move through the Watershed Based Management (WBM) cycle together will all expire in the same fiscal year. This will allow further streamlining by placing multiple permits within a smaller geographic area on public notice simultaneously, thereby reducing repeated administrative efforts. This will also allow the department to explore a watershed based permitting effort at some point in the future.

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):

Federal regulation [40 CFR Part 122.44(d)(1)(i)] requires effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause or contribute to an in-stream excursion above narrative or numeric water quality standard.

In accordance with [40 CFR Part 122.44(d)(iii)] if the permit writer determines that any give pollutant has the reasonable potential to cause, or contribute to an in-stream excursion above the WQS, the permit must contain effluent limits for that pollutant.

Not Applicable ;

A RPA was not conducted for this facility.

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 (BOD₅) and Total Suspended Solids (TSS) for Publicly Owned Treatment Works (POTWs)/municipals. 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.

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 Systems (SSSs) are municipal wastewater collection systems that convey domestic, commercial, and industrial wastewater, and limited amounts of infiltrated groundwater and storm water (i.e. I&I), to a POTW. SSSs are not designed to collect large amounts of storm water runoff from precipitation events.

Untreated or partially treated discharges from SSSs are commonly referred to as SSOs. SSOs have a variety of causes including blockages, line breaks, sewer defects that allow excess storm water and ground water to overload the system, lapses in sewer system operation and maintenance, inadequate sewer design and construction, power failures, and vandalism. A SSOs is defined as an untreated or partially treated sewage release from a SSS. SSOs can occur at any point in an SSS, during dry weather or wet weather. SSOs include overflows that reach waters of the state. SSOs also include overflows out of manholes and onto city streets, sidewalks, and other terrestrial locations. SSSs can back up into buildings, including private residences. When sewage backups are caused by problems in the publicly-owned portion of an SSS, they are considered SSOs.

Applicable ;

In accordance with 40 CFR Part 122.41(e), the permittee is required to develop and/or implement a program for maintenance and repair of the collection system and shall be required in this operating permit by either means of a Special Condition or Schedule of Compliance. In addition, the Department considers the development of this program as an implementation of this condition. Additionally, 40 CFR Part 403.3(o) defines a POTW to include any device and systems used in the storage, treatment, recycling and reclamation of municipal sewage or industrial wastes of liquid nature. It also includes sewers, pipes, and other conveyances only if they convey wastewater to a POTW Treatment Plant.

At this time, the Department recommends the US EPA's Guide for Evaluating Capacity, Management, Operation and Maintenance (CMOM) Programs At Sanitary Sewer Collection Systems (Document # EPA 305-B-05-002). The CMOM identifies some of the criteria used by the EPA to evaluate a collection system's management, operation, and maintenance and was intended for use by the EPA, state, regulated community, and/or third party entities. The CMOM is applicable to small, medium, and large systems; both public and privately owned; and both regional and satellite collection systems. The CMOM does not substitute for the Clean Water Act, the Missouri Clean Water Law, and both federal and state regulations, as it is not a regulation.

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.

Not Applicable ;

This permit does not contain a SOC.

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 *Developing Your Stormwater Pollution Prevention Plan, A Guide for Industrial Operators*, (Document number EPA 833-B-09-002) [published by the United States Environmental Protection Agency (USEPA) in February 2009], 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.

VARIANCE:

As per the Missouri Clean Water Law § 644.061.4, variances shall be granted for such period of time and under such terms and conditions as shall be specified by the commission in its order. The variance may be extended by affirmative action of the commission. In no event shall the variance be granted for a period of time greater than is reasonably necessary for complying with the Missouri Clean Water Law §§644.006 to 644.141 or any standard, rule or regulation promulgated pursuant to Missouri Clean Water Law §§644.006 to 644.141.

Not Applicable ;

This operating permit is not drafted under premises of a petition for variance.

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 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
Cs = upstream concentration
Qs = upstream flow
Ce = effluent concentration
Qe = 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:

There are two general types of effluent limitations, technology-based effluent limits (TBELs) and water quality based effluent limits (WQBELs). If TBELs do not provide adequate protection for the receiving waters, then WQBEL must be used.

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.

Applicable ;

Under the federal Clean Water Act (CWA) §101(a)(3), requiring WET testing is reasonably appropriate for site-specific Missouri State Operating Permits for discharges to waters of the state issued under the National Pollutant Discharge Elimination System (NPDES). WET testing is also required by 40 CFR 122.44(d)(1). WET testing ensures that the provisions in the 10 CSR 20-6.010(8)(A)7. and the Water Quality Standards 10 CSR 20-7.031(3)(D),(F),(G),(I)2.A & B are being met. Under [10 CSR 20-6.010(8)(A)4], the Department may require other terms and conditions that it deems necessary to assure compliance with the Clean Water Act and related regulations of the Missouri Clean Water Commission. In addition the following MCWL apply: §§644.051.3 requires the Department to set permit conditions that comply with the MCWL and CWA; 644.051.4 specifically references toxicity as an item we must consider in writing permits (along with water quality-based effluent limits, pretreatment, etc...); and 644.051.5 is the basic authority to require testing conditions. WET test will be required by all facilities meeting the following criteria:

- Facility is a designated Major.
- Facility continuously or routinely exceeds its design flow.
- Facility (industrial) that alters its production process throughout the year.
- Facility handles large quantities of toxic substances, or substances that are toxic in large amounts.
- Facility has Water Quality-based Effluent Limitations for toxic substances (other than NH₃)
- Facility is a municipality or domestic discharger with a Design Flow \geq 22,500 gpd.
- Other – please justify.

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.

Part V – Effluent Limits Determination

Outfall #001 – Main Facility Outfall

Effluent limitations derived and established in the below Effluent Limitations Table are based on current operations of the facility. Future permit action due to facility modification may contain new operating permit terms and conditions that supercedes the terms and conditions, including effluent limitations, of this operating permit.

EFFLUENT LIMITATIONS TABLE:

PARAMETER	UNIT	BASIS FOR LIMITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MODIFIED	PREVIOUS PERMIT LIMITATIONS
FLOW	MGD	1	*		*		
BOD ₅	MG/L	12		30	25		
TSS	MG/L	12		30	25		
pH	SU	2	**		**		
TEMPERATURE	°C	2	*		*		
AMMONIA AS N (APR. 1 – SEPT 30)	MG/L	2,5,12	3.6		1.4		
AMMONIA AS N (OCT 1 – MAR 31)	MG/L	2,5,12	7.5		2.9		
DISSOLVED OXYGEN (DO)	MG/L	12	## **		## **		
ESCHERICHIA COLI	***	1,2,3	Please see Escherichia Coli (E. coli) in the Derivation and Discussion Section below.				
OIL & GREASE (MG/L)	MG/L	2	15		10		
WHOLE EFFLUENT TOXICITY (WET) TEST	% Survival	11	Please see WET Test in the Derivation and Discussion Section below.				
MONITORING FREQUENCY	Please see Minimum Sampling and Reporting Frequency Requirements in the Derivation and Discussion Section below.						

- * - Monitoring requirement only.
- ** - For DO the Daily Maximum is a Daily Minimum and the Monthly Average is a Monthly Average Minimum.
- *** - # of colonies/100mL; the Monthly Average for *E. coli* is a geometric mean.
- **** - New Facility, Not Applicable

Basis for Limitations Codes:

- | | |
|--|------------------------------------|
| 1. State or Federal Regulation/Law | 7. Antidegradation Policy |
| 2. Water Quality Standard (includes RPA) | 8. Water Quality Model |
| 3. Water Quality Based Effluent Limits | 9. Best Professional Judgment |
| 4. Lagoon Policy | 10. TMDL or Permit in lieu of TMDL |
| 5. Ammonia Policy | 11. WET Test Policy |
| 6. Dissolved Oxygen Policy | 12. Antidegradation Review |

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 (BOD₅).** See Antidegradation Analysis, Appendix B. Monthly average= 25 mg/L; Weekly average = 30 mg/L.
- **Total Suspended Solids (TSS).** See Antidegradation Analysis, Appendix B. Monthly average= 25 mg/L; Weekly average = 30 mg/L.
- **pH.** pH shall be maintained in the range from 6.5 to nine (6.5– 9) standard units [10 CSR 20-7.015 (8)(A)2.].
- **Temperature.** Monitoring requirement due to the toxicity of Ammonia varies by temperature

- **Total Ammonia Nitrogen**. See Antidegradation Analysis, Appendix B.

The proposed facility was designed with a conservative design to meet the effluent limits below. However, concerns have been raised that the new facility is replacing eight existing treatment plants with unknown performance and sewer lines. To handle the unknowns related to the retrofit, the facility has concerns on meeting the daily maximum effluent limits below. The department has been informed of these concerns and has determined if necessary based on the facility's performance, the department may reopen an/or modify the permit up to the maximum daily effluent limit of the Water Quality Based Effluent Limits (WQBELs). The maximum daily WQBELs are 7.8 mg/L for summer and 8.7 mg/L for winter. The department is in the process of revising the Water Quality Standards, including the stream classifications. The revised standards will require more stringent effluent limits than the current WQBELs.

Season	Maximum Daily (mg/L)	Average Monthly (mg/L)
Summer	3.6	1.4
Winter	7.5	2.9

- **Escherichia coli (E. coli)**. Monthly average of 206 per 100 mL as a geometric mean and Weekly Average of 1,030 during the recreational season (April 1 – October 31), to protect Whole Body Contact Recreation (B) 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). For POTWs if more than one (1) sample is collected in a calendar week, then the result is to be reported as a geometric mean.
- **Oil & Grease**. Conventional pollutant, effluent limitation for protection of aquatic life; 10 mg/L monthly average, 15 mg/L daily maximum.
- **WET Test**. WET Testing schedules and intervals are established in accordance with the Department's Permit Manual; Section 5.2 *Effluent Limits / WET Testing for Compliance Bio-monitoring*. It is recommended that WET testing be conducted during the period of lowest stream flow.
 - Acute
 - No less than ONCE/PERMIT CYCLE:**
 - Municipality or domestic facility with a design flow \geq 22,500 gpd, but less than 1.0 MGD.
 - Other, please justify.

Acute and/or Chronic Allowable Effluent Concentrations (AECs) for facilities that discharge to unclassified, Class C, Class P (with default Mixing Considerations), or Lakes [10 CSR 20-7.031(4)(A)4.B.(IV)(b)] are 100%, 50%, 25%, 12.5%, & 6.25%.

- **Minimum Sampling and Reporting Frequency Requirements**. In accordance with Appendix U, once/month sampling is being established. Future renewal of this permit may reduce the monitor frequency based on applicable effluent regulation.

Part VI – 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.

PUBLIC NOTICE:

The Department shall give public notice that a draft permit has been prepared and its issuance is pending. Additionally, public notice will be issued if a public hearing is to be held because of a significant degree of interest in and water quality concerns related to a draft permit. No public notice is required when a request for a permit modification or termination is denied; however, the requester and permittee must be notified of the denial in writing.

The Department must issue public notice of a pending operating permit or of a new or reissued statewide general permit. The public comment period is the length of time not less than 30 days following the date of the public notice which interested persons may submit written comments about the proposed permit.

For persons wanting to submit comments regarding this proposed operating permit, then please refer to the Public Notice page located at the front of this draft operating permit. The Public Notice page gives direction on how and where to submit appropriate comments.

DATE OF FACT SHEET: MARCH 18, 2011

COMPLETED BY:

MARK E. BOCKSTRUCK, ENVIRONMENTAL ENGINEER II
FINANCIAL ASSISTANCE CENTER
PERMITTING AND ENGINEERING SECTION
WATER PROTECTION PROGRAM
(573) 526-5631
MARK.BOCKSTRUCK@DNR.MO.GOV

Part VII – Appendices

APPENDIX A - CLASSIFICATION WORKSHEET:

ITEM	POINTS POSSIBLE	POINTS ASSIGNED
Maximum Population Equivalent (P.E.) served (Max 10 pts.)	1 pt./10,000 PE or major fraction thereof.	
Maximum: 10 pt Design Flow (avg. day) or peak month; use greater (Max 10 pts.)	1 pt. / MGD or major fraction thereof.	
EFFLUENT DISCHARGE RECEIVING WATER SENSITIVITY:		
Missouri or Mississippi River	0	
All other stream discharges except to losing streams and stream reaches supporting whole body contact	1	
Discharge to lake or reservoir outside of designated whole body contact recreational area	2	
Discharge to losing stream, or stream, lake or reservoir area supporting whole body contact recreation	3	3
PRELIMINARY TREATMENT - Headworks		
Screening and/or comminution	3	3
Grit removal	3	3
Plant pumping of main flow (lift station at the headworks)	3	
PRIMARY TREATMENT		
Primary clarifiers	5	5
Combined sedimentation/digestion	5	
Chemical addition (except chlorine, enzymes)	4	
REQUIRED LABORATORY CONTROL – performed by plant personnel (highest level only)		
Push – button or visual methods for simple test such as pH, Settleable solids	3	
Additional procedures such as DO, COD, BOD, titrations, solids, volatile content	5	
More advanced determinations such as BOD seeding procedures, fecal coliform, nutrients, total oils, phenols, etc.	7	
Highly sophisticated instrumentation, such as atomic absorption and gas chromatograph	10	
ALTERNATIVE FATE OF EFFLUENT		
Direct reuse or recycle of effluent	6	
Land Disposal – low rate	3	
High rate	5	
Overland flow	4	
Total from page ONE (1)	----	14

APPENDIX A - CLASSIFICATION WORKSHEET (CONTINUED):

ITEM	POINTS POSSIBLE	POINTS ASSIGNED
VARIATION IN RAW WASTE (highest level only) (DMR exceedances and Design Flow exceedances)		
Variation do not exceed those normally or typically expected	0	
Recurring deviations or excessive variations of 100 to 200 % in strength and/or flow	2	
Recurring deviations or excessive variations of more than 200 % in strength and/or flow	4	
Raw wastes subject to toxic waste discharge	6	
SECONDARY TREATMENT		
Trickling filter and other fixed film media with secondary clarifiers	10	
Activated sludge with secondary clarifiers (including extended aeration and oxidation ditches)	15	15
Stabilization ponds without aeration	5	
Aerated lagoon	8	
Advanced Waste Treatment Polishing Pond	2	
Chemical/physical – without secondary	15	
Chemical/physical – following secondary	10	
Biological or chemical/biological	12	
Carbon regeneration	4	
DISINFECTION		
Chlorination or comparable	5	
Dechlorination	2	
On-site generation of disinfectant (except UV light)	5	
UV light	4	4
SOLIDS HANDLING - SLUDGE		
Solids Handling Thickening	5	
Anaerobic digestion	10	
Aerobic digestion	6	6
Evaporative sludge drying	2	
Mechanical dewatering	8	
Solids reduction (incineration, wet oxidation)	12	
Land application	6	
Total from page TWO (2)	---	19
Total from page ONE (1)	---	14
Grand Total	---	39

- A: 71 points and greater
- B: 51 points – 70 points
- C: 26 points – 50 points
- D: 0 points – 25 points

APPENDIX B – ANTIDegradation ANALYSIS:



Jeremiah W. (Jay) Nixon, Governor • Kip A. Stetzler, Acting Director

DEPARTMENT OF NATURAL RESOURCES

www.dnr.mo.gov

DEC 23 2010

Ms. Alicia Weaver
4909 Countryside Park
Jefferson City, Missouri 65101

RE: Preliminary Determination on *Antidegradation Report Proposed Wastewater Treatment Facility for Taos WWTF, Cole County*

Dear Ms. Weaver:

Enclosed please find the finalized Water Quality and Antidegradation Review (WQAR) for the Taos Waste Water Treatment Facility (WWTF) in Cole County. The WQAR contains pertinent antidegradation review information based on the use of existing water quality, effluent limitations and monitoring requirements for the facility discharge. It was developed in accordance with 10 CSR 20-7.031, the Clean Water Commission approved *Missouri Antidegradation Rule and Implementation Procedure (AIP)* dated May 7, 2008, U.S. Environmental Protection Agency (US EPA) guidance, the applicant-supplied antidegradation review documentation, and the State of Missouri's effluent regulations (10 CSR 20-7.015). Please refer to the *General Assumptions of the Water Quality and Antidegradation Review* section of the enclosed WQAR. The WQAR is preliminary and subject to change as new information becomes available during future permit application processing.

Based on the Missouri Department of Natural Resources' (department's) initial review, preliminary determination is that the applicant-supplied antidegradation review documentation satisfies the requirements of the AIP. This WQAR/preliminary determination may be appealed within 30 days of this letter in accordance with the AIP Section II.F.4.

You may proceed with submittal of an application for an operating permit and antidegradation review public notice, an engineering report, or a complete application for a construction permit. These submittals must reflect the design flow, facility description, and general treatment components of this WQAR or this preliminary determination may have to be revisited.

Following the Department's public notice of draft Missouri State Operating Permit including the antidegradation review findings and preliminary determination, the Department will review any public notice comments received. If significant comments are made, the project may require another public notice and potentially another

Ms. Weaver
Taos WWTF
Page 2 of 2

antidegradation review. If no comments are received or comments are resolved without another public notice, these findings and determinations will be considered final. Following issuance of the construction permit and completion of the actual facility construction, the Department will proceed with the issuance of the operating permit.

If you should have questions regarding the enclosed WQAR, please contact Ms. Leasue Meyers by telephone at (573) 751-7906, by e-mail at leasue.meyers@dnr.mo.gov, or by mail at the Missouri Department of Natural Resources, Water Protection Program, P O Box 176, Jefferson City, Missouri 65102-0176.

Sincerely,

WATER PROTECTION PROGRAM



Refaat Mefrakis, P.E., Chief
Permits and Engineering Section

RM:lm

Enclosure

c: Cary Sayre, Allstate Consultants, 30601 Highway 5, Marceline, MO 64658
Mark Bockstruck, Financial Assistance Center
Philip Wilson, NERO

Water Quality and Antidegradation Review

*For the Protection of Water Quality and Determination of
Effluent Limits for Discharge to Sanford Creek*

by

Taos Wastewater Treatment Facility



November 12, 2010
Revised December 22, 2010

Table of Contents

1.	FACILITY INFORMATION.....	18
2.	WATER QUALITY INFORMATION.....	18
2.1.	WATER QUALITY HISTORY:	18
3.	RECEIVING WATERBODY INFORMATION	18
4.	GENERAL COMMENTS	19
5.	ANTIDegradation REVIEW INFORMATION.....	19
5.1.	TIER DETERMINATION.....	19
	TABLE 1. POLLUTANTS OF CONCERN AND TIER DETERMINATION	20
5.2.	EXISTING WATER QUALITY	20
5.3.	ALTERNATIVES ANALYSIS	20
	TABLE 2: COMPARISON OF ALTERNATIVES	22
5.4.	SOCIAL AND ECONOMIC IMPORTANCE.....	22
5.4.1.	REGIONALIZATION ALTERATIVE.....	22
6.	GENERAL ASSUMPTIONS OF THE WATER QUALITY AND ANTIDegradation REVIEW	23
7.	MIXING CONSIDERATIONS	23
8.	PERMIT LIMITS AND MONITORING INFORMATION	23
	TABLE 3. EFFLUENT LIMITS	24
9.	RECEIVING WATER MONITORING REQUIREMENTS.....	24
10.	DERIVATION AND DISCUSSION OF LIMITS.....	24
10.1.	OUTFALL #001 – MAIN FACILITY OUTFALL	25
11.	ANTIDegradation REVIEW PRELIMINARY DETERMINATION	27
	APPENDIX A: MAPS OF DISCHARGE LOCATION	28
	A-2: CITY OF TAOS MAP WITH EXISTING TREATMENT PLANTS	29
	APPENDIX B: NATURAL HERITAGE REVIEW.....	29
	APPENDIX C: GEOHYDROLOGIC EVALUATION	32
	APPENDIX D: ANTIDegradation REVIEW SUMMARY ATTACHMENTS.....	33

Facility Information

FACILITY NAME: Taos WWTF NPDES #: NEW FACILITY

FACILITY TYPE/DESCRIPTION: As a result of the submitted alternative analysis, the applicant's preferred alternative is an oxidation ditch with ultraviolet disinfection. The proposed new facility is to replace failing onsite systems and up to eight small treatment plants with one larger mechanical treatment plant. The design flow will be 0.150 MGD.

EDU*:	Ozark/Osage	ECOREGION:	Ozark Highlands/ Osage River Hills
COUNTY:	Cole	LEGAL DESCRIPTION:	SW ¼, SW ¼, SE ¼, Sec. 32, T44N, R10W
8- DIGIT HUC:	10290111	UTM COORDINATES:	x=583096; y= 4263054

* - Ecological Drainage Unit

1. Water Quality Information

In accordance with Missouri's Water Quality Standard [10 CSR 20-7.031(2)] and federal antidegradation policy at Title 40 Code of Federal Regulation (CFR) Section 131.12 (a), the Missouri Department of Natural Resources (MDNR) developed a statewide antidegradation policy and corresponding procedures to implement the policy. A proposed discharge to a water body will be required to undergo a level of Antidegradation Review which documents that the use of a water body's available assimilative capacity is justified. Effective August 30, 2008, a facility is required to use *Missouri's Antidegradation Rule and Implementation Procedure (AIP)* for new and expanded wastewater discharges.

1.1. Water Quality History:

New facility. No history for this facility. No receiving water information. Facility to replace failing onsite systems and up to eight permitted facilities in the Taos area in both Sanford Creek and Rising Creek watersheds.

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	RECEIVING WATERBODY	DISTANCE TO CLASSIFIED SEGMENT (MI)
001	0.2325	Secondary	Unnamed Tributary to Sanford Creek	~1.85

3. Receiving Waterbody Information

WATERBODY NAME	CLASS	WBID	LOW-FLOW VALUES (CFS)			DESIGNATED USES**
			1Q10	7Q10	30Q10	
Unnamed Tributary to Sanford Creek	U	--	0.0	0.0	0.0	General Criteria
Sanford Creek	U	--	0.0	0.0	0.0	General Criteria
Sanford Creek	C	1032	0.0	0.0	0.1	AQL, LWW, WBC(B)

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

RECEIVING WATER BODY SEGMENT #1: Unnamed Tributary to Sanford Creek

Upper end segment* UTM coordinates: x=583096; y= 4263054 (Outfall)

Lower end segment* UTM coordinates: x= 582997; y= 4261901 (Confluence with Sanford Creek (U))

RECEIVING WATER BODY SEGMENT #2: Sanford Creek (U)

Upper end segment* UTM coordinates: x= 582997; y= 4261901 (Sanford Creek (U))

Lower end segment* UTM coordinates: x= 584926; y= 4262332 (Confluence with Sanford Creek (C))

RECEIVING WATER BODY SEGMENT #3: Sanford Creek to Osage River

Upper end segment* UTM coordinates: x= 584926; y= 4262332 (Sanford Creek (C))

Lower end segment* UTM coordinates: x= 585503; y= 4263039 (Confluence with Osage River (P))

*Segment is the portion of the stream where discharge occurs. Segment is used to track changes in assimilative capacity and is bound at a minimum by existing sources and confluences with other significant water bodies. The same segment reaches as used by Geosyntec in the Water Quality Modeling for Dissolved Oxygen

4. General Comments

Allstate Consultants prepared, on behalf of the City of Taos, the *Antidegradation Report Proposed Wastewater Treatment Facility* dated September 2010. Geohydrological Evaluation was submitted with the request and the receiving stream is gaining for discharge purposes (Appendices A and C). Applicant elected to assume that all pollutants of concern (POC) are significantly degrading the receiving stream in the absence of existing water quality. An alternative analysis was conducted to fulfill the requirements of the AIP. Dissolved oxygen modeling analysis was submitted for review. Staff believes that the results of the model are protective of the water quality standards for dissolved oxygen. Information that was provided by the applicant in the submitted report and summary forms in Appendix D was used to develop this review document. A Missouri Department of Conservation Natural Heritage Review was obtained by the applicant; and no endangered species were found to be impacted by the discharge (Appendix B).

With the creation of the 0.15 MGD plant, the following wastewater treatment plants potentially will be closed and the permits terminated:

1. St. Francis Xavier (MO-0101559);
2. Sunrise Meadows (MO-0122939);
3. Helias Dr. (MO-0114073);
4. Cedar Grove Lagoon (MO-0107433);
5. Twehous Acres (MO-0089338);
6. Dove Lake (MO-0096342);
7. Twehous Excavating (MO-0121355); and
8. flows from Spotless Car Wash general permit (MOG750002).

THE CURRENT AVERAGE FLOW FOR THE SEVEN WASTEWATER TREATMENT PLANTS IS 43,420 GALLONS PER DAY (0.043 MGD), WHICH IS ABOUT HALF OF THE PERMITTED DESIGN FLOWS OF THE TREATMENT FACILITIES. THE PROPOSED NEW PLANT HAS A DESIGN FLOW OF 150,000 GALLONS PER DAY (0.15 MGD) TO HANDLE THE FLOWS FROM THE TREATMENT PLANTS, THE CARWASH AND THE NEW CONNECTIONS FROM THE ONSITE SYSTEMS. THE SEVEN TREATMENT PLANTS ARE CURRENTLY OWNED AND OPERATED BY AQUA MISSOURI. TAOS IS IN THE PROCESS OF BUYING THE TREATMENT PLANTS FROM AQUA MISSOURI. BY BUILDING A PLANT THE CITY OWNS, FEES COLLECTED WILL BE PAID TO THE CITY FOR THE SERVICES AND TAOS IS ELIGIBLE TO COMPETE FOR STATE REVOLVING FUND AND RURAL DEVELOPMENT GRANTS AND LOANS. ALSO IT IS AN ECONOMY OF SCALE, 400 SERVICE CONNECTIONS TO PAY FOR ONE TREATMENT PLANT AND NECESSARY UPGRADES, COMPARED TO THE LITTLE OVER 200 CONNECTIONS PAYING FOR SEVEN TREATMENT PLANTS IS ECONOMICALLY BENEFICIAL TO THE CITY AND ITS RESIDENTS.

5. Antidegradation Review Information

The following is a review of the *Antidegradation Report* dated September 15, 2010.

5.1. TIER DETERMINATION

Below is a list of pollutants of concern reasonably expected to be in the discharge (see Appendix D: Tier Determination and Effluent Limit Summary). Pollutants of concern are defined as those pollutants “proposed for discharge that affects beneficial use(s) in waters of the state. POCs include pollutants that create conditions unfavorable to beneficial uses in the water body receiving the discharge or proposed to receive the discharge.” (AIP, Page 7). Tier 2 was assumed for all POCs (see Appendix D).

Table 1. Pollutants of Concern and Tier Determination

POLLUTANTS OF CONCERN	TIER*	DEGRADATION	COMMENT
BOD ₅ /DO	2	Significant	
Total Suspended Solids (TSS)	**	Significant	
Ammonia	2	Significant	
pH	***	Significant	Permit limits applied
Oil and Grease			Permit limits applied
Escherichia coli (E. coli)	2	Significant	Disinfection required

* Tier assumed. Tier determination not possible: ** No in-stream standards for these parameters. *** Standards for these parameters are ranges

The following Antidegradation Review Summary attachments in Appendix D were used by the applicant:

- Tier Determination and Effluent Summary
- Attachment A, Tier 2 with significant degradation.

5.2. EXISTING WATER QUALITY

No existing water quality data was submitted. All POCs were considered to be Tier 2 and significantly degraded in the absence of existing water quality.

5.3. ALTERNATIVES ANALYSIS

Missouri's antidegradation implementation procedures specify that if the proposed activity does result in significant degradation then a demonstration of necessity (i.e., alternatives analysis) and a determination of social and economic importance are required. A number of alternatives from non-degrading to less degrading to degrading alternatives were evaluated. The extended aeration-oxidation ditch was the preferred alternative based on this analysis.

The first option explored by Taos was to do nothing, leave the existing plants in under the control of Aqua Missouri. Most of the treatment plants have capacity available to handle some future growth. However, the residents connected to the different Aqua Missouri plants would be facing increases in sewer bills for upgrades to the existing treatment plants to treat for ammonia and for some of the plants the addition of disinfection of *E. Coli*. This option did not handle the issues of upgrades needed to the existing collection systems and the nearly 200 businesses and residences currently on on-site systems.

The second through seventh alternatives all include collection system upgrades and removal of the nearly 200 on-site systems and seven wastewater treatment plants. These options include the purchase of the treatment plants. The second alternative evaluated was to expand the current treatment systems for growth. This option is impractical as the City would need to pay for upgrades at all the treatment plants to meet ammonia and E. Coli limits. This would also limit the growth of the City and increase sewer bills to pay for construction improvements. This option was not practical and a life-cycle cost estimate was not prepared.

The third option evaluated was to connect to Jefferson City sewer system. At one time, this was the alternative being pursued by the City of Taos and Jefferson City. This alternative is no longer being pursued due to changes in cost to connect, annexation issues, and payment for the new sewer line along Highway 50. The terms of the contract changed constantly between meetings between Taos and Jefferson City. The City of Taos provided a letter in their Antidegradation Report documenting why this alternative is not economically efficient for the City.

The fourth alternative explored was non-degrading option of land application. Taos would make the collection system repairs and build a holding basin. It is estimated that seventy (70) acres would be necessary for land application. The cost associated with acquiring the seventy acres by buying or through leases was not economically efficient or practical.

The fifth option was a membrane bioreactor, which is an emerging technology. Membrane Bioreactors can provide a high quality effluent, however the construction, operation and maintenance costs tend to be higher than for traditional mechanical treatment plants. Membrane bioreactors require multiple components beyond the membrane, including flow equalization basins and extra filtration systems. Frequent cleaning and replacement of filters and membranes is required, which increase the life cycle cost of the plant. When the plant is operated and maintained correctly, according to the different membrane bioreactor websites, effluent contains less than 10 mg/L of BOD₅ and TSS, and ammonia concentrations of less than 2 mg/L.

The sixth option was a less degrading option of a moving bed bioreactor (MBBR). The MBBR was identified as the base case by the applicant, based on the capital cost evaluation, however when the life cycle cost estimate for twenty years was conducted it estimated to be a million dollars more to operate than the oxidation ditch. The MBBR is an emerging technology in Missouri and would have been subject to new technology requirements. The MBBR does produce a high quality effluent; however the operation and maintenance cost were high over the course of the life of the plant. When the plant is operated and maintained correctly, according to the different membrane bioreactor websites, effluent contains less than 15 mg/L of BOD₅ and TSS, and ammonia concentrations of less than 3 mg/L.

The seventh option evaluated and the preferred alternative is an extended aeration, oxidation ditch plant. Oxidation ditches are an established treatment technology, there are over a hundred permitted in the state. The oxidation ditch does require a larger footprint area than the bioreactors. With the retention time of the basin, peak flows can be handled. The oxidation ditch has lower operation and maintenance costs when compared to the moving bed bioreactor or the membrane bioreactor. In terms of effluent, there is some variability, however based on discharge monitoring reports; an oxidation ditch consistently has BOD₅ and TSS less than 25 mg/L and ammonia under 1.5 mg/L. The oxidation ditch has higher upfront cost associated with it than the MBBR, however the operations and maintenance cost are lower, thus providing the lowest life-cycle cost estimate for twenty years of operation. Another benefit of an oxidation ditch is the familiarity operators have with the technology.

Option 1 and 2 were not practical as they left the existing treatment plants in place, thus subjecting each subdivision to sewer rate increases for upgrades and did not eliminate the human health risks associated with lagoons or not disinfecting. Due to the cost of land acquisition and the construction cost both land application and subsurface irrigation were not considered feasible. Discharging to a regional wastewater treatment facility was also infeasible due to construction costs and failure to get an agreed upon contract with the City of Jefferson. The MBBR and the MBR were considered practical options when Taos was faced with the responsibility of constructing a new treatment plant, however as both are new technologies, with limited operational data available and the cost to maintain the system over the life-cycle, these were not considered the preferred alternative. The manufacturer's data for the MBBR and MBR suggest they achieve higher BOD₅ and TSS removal than the oxidation ditch; however the ammonia is the more stringent water quality parameter, which the oxidation ditch meets consistently. There is more operational data for oxidation ditches in Missouri than the MBR and MBBR, which demonstrates that the oxidation ditch can meet water quality standards consistently over a long time period and weather conditions. Table 2 provides a comparison of the alternatives evaluated and the treatment levels.

The oxidation ditch is the preferred alternative. The Moving Bed Bioreactor is within the 25% rule of thumb in treatment technology. The applicant preferred the oxidation ditch because it consistently performed better than the Moving Bed Bioreactor for ammonia. The Moving Bed Bioreactor requires more hands on operation and maintenance than the oxidation ditch. The annual operation and maintenance cost is for the oxidation ditch is \$40,000 less than for the MBBR.

TABLE 2: COMPARISON OF ALTERNATIVES

	EXPAND CURRENT	MEMBRANE	MOVING BED	OXIDATION	LAND
	TREATMENT	BIOREACTOR	BIOREACTOR	DITCH	APPLICATION
	SYSTEMS				
BOD ₅ (MG/L)	30-65	10	15	25	NA
TSS (MG/L)	30-80	10	10	25	NA
AMMONIA (MG/L)		<2.0	<3.0	<3.0	NA
E. COLI	NA	<206	<206	<206	NA
PRACTICABLE	N	Y	Y	Y	N
ECONOMICALLY	N	N	Y	Y	N
EFFICIENT					
CAPITAL COSTS	NC	\$2,804,500	\$1,830,00	\$1,874,00	\$3,594,00
PRESENT WORTH	NC	\$5,328,406	\$4,043,074	\$3,445,980	\$5,052,948
ESTIMATE*					
RATIO	NC	1.55	1.17	1.00	1.47

N= no, NA= not applicable, NC= not calculated; Y= yes
*20 year design life, with 3.0% interest and 4.0% inflation

5.4. Social and Economic Importance

The project has necessity to provide wastewater treatment from the currently permitted 91,000 gpd between seven treatment plants to the proposed 150,000 gpd to account for future growth and connection of onsite systems to a centralized treatment plant. The new wastewater treatment plant will allow for the future development of residential and commercial businesses in Taos, as the community continues to expand. Taos is a bedroom community for the City of Jefferson. The social benefits of the project will facilitate the continued development of surrounding properties. The centralization of the sewer is the economy of scale, the price for upgrades can be spread through the entire community versus each subdivision being responsible for upgrades. Also with Taos owning the treatment system, the City can now qualify for state and federal loans and grants when upgrading or expanding in the future (State Revolving Fund, USDA Rural Development, etc.).

An impact of closing seven treatment plants and connecting sewer to current onsite system is it will reduce the health risk associated with lagoons and failing onsite systems. There is the environmental benefit of reducing discharges to tributaries and streams.

5.4.1. REGIONALIZATION ALTERNATIVE

Within Section II B 1. of the AIP, discussion of the potential for discharge to a regional waste water collection system is mentioned. The regional alternative was to connect to the City of Jefferson's Wastewater Treatment Plant, which was option #3 evaluated. This alternative is not available and as it is not a Sewer District or approved 208 entity, a waiver under 10 CSR 20-6.010(3)(B)1 could not be obtained.

NEEDS A WAIVER TO PREVENT CONFLICT WITH AREA WIDE MANAGEMENT PLAN APPROVED UNDER SECTION 208 OF THE CLEAN WATER ACT AND/OR UNDER 10 CSR 20-6.010(3)(B) 1 OR 2 CONTINUING AUTHORITIES? (Y OR N) N

6. General Assumptions of the Water Quality and Antidegradation Review

1. A Water Quality and Antidegradation Review (WQAR) assumes that [10 CSR 20-6.010(3) Continuing Authorities and 10 CSR 20-6.010(4) (D), consideration for no discharge] has been or will be addressed in a Missouri State Operating Permit or Construction Permit Application.
2. A WQAR does not indicate approval or disapproval of alternative analysis as per [10 CSR 20-7.015(4) Losing Streams], and/or any section of the effluent regulations.
3. Changes to Federal and State Regulations made after the drafting of this WQAR may alter Water Quality Based Effluent Limits (WQBEL).
4. Effluent limitations derived from Federal or Missouri State Regulations (FSR) may be WQBEL or Effluent Limit Guidelines (ELG).
5. WQBEL supersedes ELG only when they are more stringent. Mass limits derived from technology based limits are still appropriate.
6. A WQAR does not allow discharges to waters of the state, and shall not be construed as a National Pollution Discharge Elimination System or Missouri State Operating Permit to discharge or a permit to construct, modify, or upgrade.
7. Limitations and other requirements in a WQAR may change as Water Quality Standards, Methodology, and Implementation procedures change.
8. Nothing in this WQAR removes any obligations to comply with county or other local ordinances or restrictions.

7. Mixing Considerations

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

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

8. Permit Limits and Monitoring Information

WASTELOAD ALLOCATION STUDY CONDUCTED (Y OR N): USE ATTAINABILITY ANALYSIS CONDUCTED (Y OR N): WHOLE BODY CONTACT USE RETAINED (Y OR N):

*UAA conducted in 2007 with the recommendation to add Whole Body Use

OUTFALL #001

WET TEST (Y OR N): FREQUENCY: ONCE/YEAR AEC: 100% METHOD: MULTIPLE

TABLE 3: EFFLUENT LIMITS

PARAMETER	UNITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	BASIS FOR LIMIT (NOTE 1)	MONITORING FREQUENCY
FLOW	MGD	*		*	FSR	once/day
BOD ₅ (MG/L)***	MG/L		30	25	PEL	once/month
TSS ***	MG/L		30	25	PEL	once/month
PH	SU	6.5 – 9.0		6.5 – 9.0	FSR	once/month
OIL AND GREASE	MG/L	15		10	FSR	once/month
ESCHERICHIA COLIFORM (E. COLI)	COLONIES /100 ML		1,030	206**	FSR	once/week
TEMPERATURE	°C	*		*	N/A	once/month
AMMONIA AS N (APR 1 – SEPT 30)	MG/L	3.6		1.4	PEL	once/month
AMMONIA AS N (OCT 1 – MAR 31)	MG/L	7.5		2.9	PEL	once/month

* - Monitoring requirements only.

** - The Monthly Average for E. coli shall be reported as a Geometric Mean.

*** This facility is required to meet a removal efficiency of 85% or more for BOD₅ and TSS. Influent BOD₅ and TSS data should be reported to ensure removal efficiency requirements are met.

NOTE 1 – WATER QUALITY-BASED EFFLUENT LIMITATION --WQBEL; OR MINIMALLY DEGRADING EFFLUENT LIMIT--MDEL; OR PREFERRED ALTERNATIVE EFFLUENT LIMIT-PEL; TECHNOLOGY-BASED EFFLUENT LIMIT-TBEL; OR NO DEGRADATION EFFLUENT LIMIT--NDEL; OR FSR --FEDERAL/STATE REGULATION; OR N/A--NOT APPLICABLE. ALSO, PLEASE SEE THE GENERAL ASSUMPTIONS OF THE WQAR #4 & #5.

9. Receiving Water Monitoring Requirements

No receiving water monitoring requirements recommended at this time.

10. Derivation and Discussion of Limits

Wasteload allocations and limits were calculated using two methods:

1) Water quality-based – 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). Acute wasteload allocations were determined using applicable water quality criteria (CMC: criteria maximum concentration).

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).

2) Alternative Analysis-based – Using the preferred alternative’s treatment capacity for conventional pollutants such as BOD₅ and TSS that are provided by the consultant as the WLA, the significantly-degrading effluent average monthly and average weekly limits are determined by applying the WLA as the average monthly (AML) and multiplying the AML by 1.5 to derive the average weekly limit (AWL). For toxic and nonconventional pollutant such as ammonia, the

significantly-degrading effluent average monthly and daily maximum limits are determined by applying the WLA multiplied by 1.19 as the average monthly (AML), and multiplying the AML by 3.11 to derive the maximum daily limit. This is an accepted procedure that is defined in USEPA’s “Technical Support Document For Water Quality-based Toxics Control” (EPA/505/2-90-001).

Note: Significantly-degrading effluent limits have been based on the authority included in Section III. Permit Consideration of the AIP. Also under 40 CFR 133.105, permitting authorities shall require more stringent limitations than equivalent to secondary treatment limitations for 1) existing facilities if the permitting authority determines that the 30-day average and 7-day average BOD₅ and SS effluent values that could be achievable through proper operation and maintenance of the treatment works, and 2) new facilities if the permitting authority determines that the 30-day average and 7-day average BOD₅ and SS effluent values that could be achievable through proper operation and maintenance of the treatment works, considering the design capability of the treatment process.

10.1. **OUTFALL #001 – MAIN FACILITY OUTFALL**

- **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 (BOD₅).** BOD₅ limits of 25 mg/L monthly average, 30 mg/L average weekly limits were proposed to be protective of the stream. These values are more stringent than the secondary treatment criteria in 10 CSR 20-7.015(8)(A)1 of 30 mg/L monthly average, 45 mg/L weekly average. Influent monitoring may be required for this facility in its Missouri State Operating Permit. AML= 25 mg/L; AWL= 30 mg/L.

Geosyntec provided dissolved oxygen modeling to protect the beneficial uses within Sanford Creek. According to the modeling, the dissolved oxygen recovers to above 5.0 mg/L prior to reaching the classified segment. The lowest modeled dissolved oxygen or critical dissolved oxygen sag was 3.03 mg/L at 0.20 miles from the outfall. **As a result of this analysis, MDNR staff concludes that the above mentioned effluent limits are protective of beneficial uses and existing water quality.**

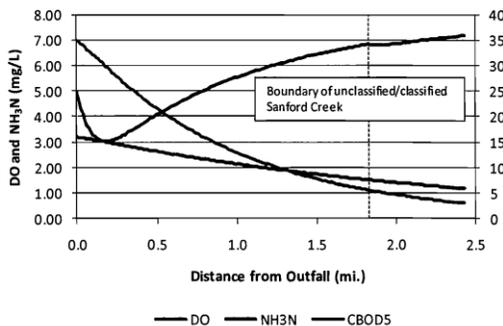


FIGURE 2. Summer Water Quality Model Output for the Taos WWTF.

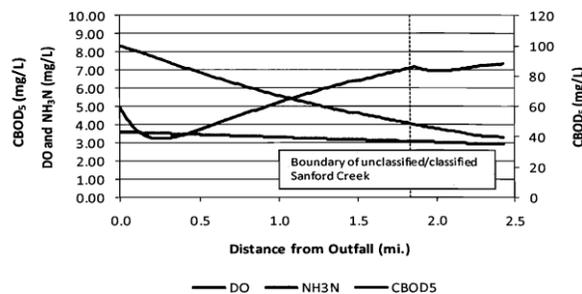


FIGURE 3. Winter water Water Quality Model Output for the Taos WWTF.

- **Total Suspended Solids (TSS).** The applicant proposed 25 mg/L monthly average, 40 mg/L daily maximum as protective of the stream. Taos is a publicly owned treatment plant, which is required to have weekly average limits. The department set the TSS weekly average equal to the BOD₅ weekly average. According to EPA, because TSS and BOD₅ are closely correlated, we apply the same limits for TSS as BOD₅. The influent monitoring may be required for this facility in its Missouri State Operating Permit. AML= 25 mg/L; AWL= 30 mg/L.
- **pH.** pH shall be maintained in the range from 6.5 to nine (6.5– 9) standard units [10 CSR 20-7.015 (8)(A)2.].
- **Temperature.** Monitoring requirement only. Temperature affects the toxicity of Ammonia

- **Total Ammonia Nitrogen.** The applicant proposed a summer monthly average of 3.0 mg/L and a winter monthly average of 3.3 mg/L based on time of travel and decay for 1.85 miles. The department calculated water quality based effluent limits with no time of travel to compare. For the Water Quality Based Effluent Limits: Early Life Stages Present Total Ammonia Nitrogen criteria apply [10 CSR 20-7.031(4)(B)7.C. & Table B3]. No mixing consideration, thus criteria equals wasteload allocations.

There are numerous oxidation ditches in the state with ammonia monitoring. When evaluating the available data for some of those facilities, the 99th percentile for summer and winter were near the average monthly Water Quality Based Effluent Limits with no time of travel or mixing considerations. The majority of the facilities evaluated averaged ammonia concentrations at or below 1.0 mg/L, however following EPA’s technical support document; the 99th percentile was used to evaluate the data of other existing facilities. The department is recommending the seasonal limits below to be the ammonia effluent limits.

The proposed facility was designed with a conservative design to meet the effluent limits below. However, concerns have been raised that the new facility is replacing eight existing treatment plants with unknown performance and sewer lines. To handle the unknowns related to the retrofit, the facility has concerns on meeting the daily maximum effluent limits below. The department has been informed of these concerns and has determined if necessary based on the facility’s performance, the department may reopen and/or modify the permit up to the maximum daily effluent limit of the Water Quality Based Effluent Limits (WQBELs). The maximum daily WQBELs are 7.8 mg/L for summer and 8.7 mg/L for winter. The department is in the process of revising the Water Quality Standards, including the stream classifications. The revised standards will require more stringent effluent limits than the current WQBELs.

Season	Temp (°C)	pH (SU)	Total Ammonia Nitrogen CCC (mg N/L)	Total Ammonia Nitrogen CMC (mg N/L)
Summer	26	7.8	1.5	12.1
Winter	6	7.8	3.1	12.1

Summer: April 1 – September 30, Winter: October 1 – March 31.

Summer

WLA_a = 12.1 mg/L

WLA_c = 1.5 mg/L

LTA_a = 12.1(0.321) = 3.88 mg/L

[CV = 0.6, 99th Percentile]

LTA_c = 1.5(0.780) = **1.17 mg/L**

[CV = 0.6, 99th Percentile, 30 day average]

MDL = 1.17 mg/L (3.11) = 3.6 mg/L

[CV = 0.6, 99th Percentile]

AML = 1.17 mg/L (1.19) = 1.4 mg/L

[CV = 0.6, 95th Percentile, n = 30]

Winter

WLA_a = 12.1 mg/L

WLA_c = 3.1 mg/L

LTA_a = 12.1(0.321) = 3.88 mg/L

[CV = 0.6, 99th Percentile]

LTA_c = 1.5(0.780) = **2.41mg/L**

[CV = 0.6, 99th Percentile, 30 day average]

MDL = 2.41 mg/L (3.11) = 7.5 mg/L

[CV = 0.6, 99th Percentile]

AML = 2.41 mg/L (1.19) = 2.9 mg/L

[CV = 0.6, 95th Percentile, n = 30]

Season	Maximum Daily Limit (mg/l)	Average Monthly Limit (mg/l)
Summer	3.6	1.4
Winter	7.5	2.9

- **E. coli.** Effluent limitation for WBC(B) is 206 colonies per 100 ml for monthly average as a geometric mean[10 CSR 20-7.015 (8)(A)4.] and [10 CSR 20-7.031(4)(C), Table A]. In the rule, weekly monitoring is required during the recreational season with compliance to be determined by calculating the geometric mean of all samples collected each calendar month. The weekly average effluent limit is 1,030 colonies per 100 mL during the recreation season. 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). Also, please see **GENERAL ASSUMPTIONS OF THE WQAR #7**. The applicant proposed Ultraviolet (UV) disinfection for E. Coli.
- **Oil & Grease.** Conventional pollutant, [10 CSR 20-7.031, Table A]. Effluent limitation for protection of aquatic life; 10 mg/L monthly average, 15 mg/L daily maximum.

11. ANTIDegradation Review Preliminary Determination

The proposed new facility discharge, Taos WWTF, 0.150 MGD will result in significant degradation of the segment identified in Unnamed Tributary to Sanford Creek. The Membrane Bioreactor (MBR) was determined to be the base case technology (lowest cost alternative that meets technology and water quality based effluent limitations. The cost effectiveness of the other technologies were evaluated, and an Extended Aeration, Oxidation Ditch with ultraviolet disinfection was found to be cost effective and was determined to be the preferred alternative.

Per the requirements of the AIP, the effluent limits in this review were developed to be protective of beneficial uses and to attain the highest statutory and regulatory requirements. MDNR has determined that the submitted review is sufficient and meets the requirements of the AIP. No further analysis is needed for this discharge.

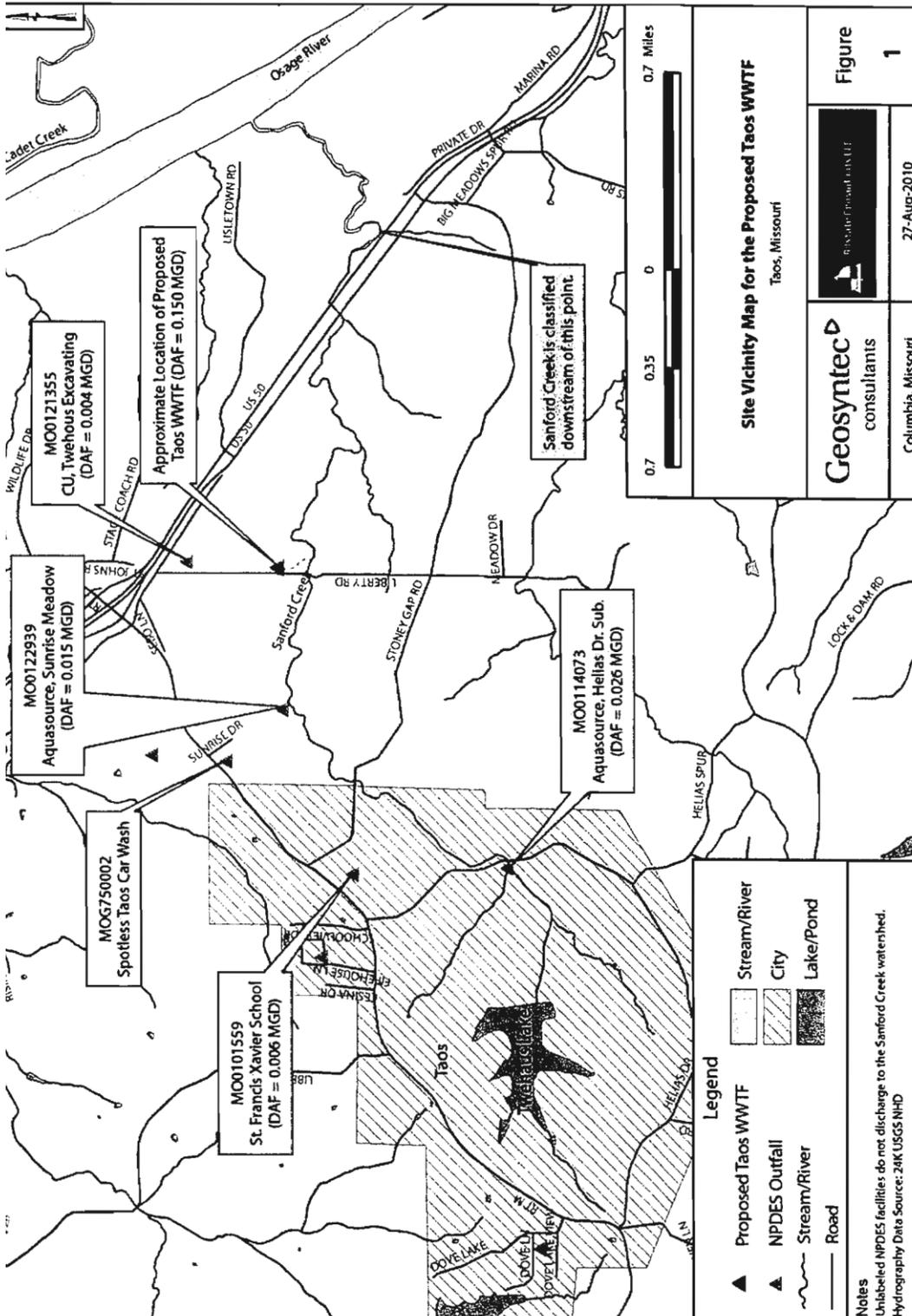
Reviewer: Leasue Meyers
Date: 12/22/2010
Unit Chief: John Rustige, P.E.

Appendix A: Maps of Discharge Location

A-1: Proposed Discharge Map



A-2: City of Taos Map with Existing Treatment Plants



Site Vicinity Map for the Proposed Taos WWTF

Taos, Missouri

Geosyntec
 consultants

Columbia, Missouri

Figure

1

27-Aug-2010

Legend

- ▲ Proposed Taos WWTF
- ▲ NPDES Outfall
- ~ Stream/River
- Road
- ▨ Stream/River
- ▨ City
- ▨ Lake/Pond

Notes
 Unlabeled NPDES facilities do not discharge to the Sanford Creek watershed.
 Hydrography Data Source: 24K USGS NHD

Appendix B: Natural Heritage Review

 <p>Missouri Department of Conservation Heritage Review Report August 26, 2010 – Page 1 of 2</p>		<p>Policy Coordination Unit P. O. Box 180 Jefferson City, MO 65102 heritage.review@mdc.mo.gov 573-522-4115 X 3367</p>	
<p>Ron Shy Allstate Consultants LLC 3312 LeMone Industrial Blvd. Columbia, Missouri 65201</p>		<p>Project type: Wastewater Treatment System Improvements Location/Scope: Township 44N, Range 10W, Section 32 County: Cole City of Taos: Query received: August 18, 2010</p>	
<p>This NATURAL HERITAGE REVIEW is not a site clearance letter. Rather, it identifies public lands and sensitive resources known to have been located close to and/or potentially affected by the proposed project. On-site verification is the responsibility of the project. Heritage records were identified at some date and location. This report considers records near but not necessarily at the project site. Animals move and, over time, so do plant communities. To say "there is a record" does not mean the species/habitat is still there. To say that "there is no record" does not mean a protected species will not be encountered. These records only provide one reference and other information (e.g. wetland or soils maps, on-site inspections or surveys) should be considered. Look for additional information about the biological and habitat needs of records listed in order to avoid or minimize impacts. More information may be found at http://mdc.mo.gov/discover-nature/places-go/natural-areas-and-mdc-mdc.mo.gov/applications/mohis/mohis_search1.asp. Contact information for the department's Natural History Biologist is online at http://mdc.mo.gov/contact-us.</p>		 Prepared by: Shannon Case 8-26-2010	
<p>Level 3 (federal-listed) and Level 2 (state listed) issues: Records of listed species or critical habitats:</p> <p>Heritage records identify <u>no</u> wildlife preserves, <u>no</u> designated wilderness areas or critical habitats, <u>no</u> state or federal endangered-list species records within one mile of the site or in the public land survey section listed above.</p> <p>The project should be managed to minimize erosion and sedimentation/runoff to nearby streams and lakes, including adherence to any "Clean Water Permit" conditions. Revegetate areas in which the natural cover is disturbed to minimize erosion using native plant species compatible with the local landscape and wildlife needs. Pollutants, including sediment, can have significant impacts far downstream. Use silt fences and/or vegetative filter strips to buffer streams and drainages, and monitor those after rain events and until a well-rooted ground cover is reestablished.</p>			
<p>General recommendations related to this project or site, or based on information about the historic range of species (unrelated to any specific heritage records):</p> <ul style="list-style-type: none"> ➤ This county has known karst geologic features (e.g. caves, springs, and sinkholes, all characterized by subterranean water movement). Few karst features are recorded in heritage records, and ones not noted here may be encountered at the project site or affected by the project. Cave fauna (many of which are species of conservation concern) are influenced by changes to water quality, so check your project site for any karst features and make every effort to protect groundwater in the project area. See http://mdc.mo.gov/nathis/caves/management for best management information. ➤ Gray bats (<i>Myotis grisescens</i>, federally and state listed "endangered") are likely to occur in the project area, as they forage over streams, rivers, and reservoirs in this part of Missouri. Avoid entry or disturbance of any cave inhabited by gray bats and when 			

FEDERAL LIST species/habitats are protected under the Federal Endangered Species Act. Consult with U.S. Fish and Wildlife Service, 101 Park Deville Drive, Suite A, Columbia, Missouri 65203-0007, 573-234-2332.

- possible retain forest vegetation along the stream and from the gray bat cave opening to the stream. See <http://imdc.mo.gov/104> for best management recommendations.
- Streams in the area should be protected from soil erosion, water pollution and in-stream activities that modify or diminish aquatic habitats. Best management recommendations relating to streams and rivers may be found at <http://imdc.mo.gov/79>.
 - Invasive exotic species are a significant issue for fish, wildlife and agriculture in Missouri. Seeds, eggs, and larvae may be moved to new sites on boats or construction equipment, so inspect and clean equipment thoroughly before moving between project sites.
 - ◆ Remove any mud, soil, trash, plants or animals from equipment before leaving any water body or work area.
 - ◆ Drain water from boats and machinery that has operated in water, checking motor cavities, live-well, bilge and transom wells, tracks, buckets, and any other water reservoirs.
 - ◆ When possible, wash and rinse equipment thoroughly with hard spray or HOT water ($\geq 104^{\circ}$ F, typically available at do-it-yourself carwash sites), and dry in the hot sun before using again.

These recommendations are ones project managers might prudently consider based on a general understanding of species needs and landscape conditions. Heritage records largely reflect only sites visited by specialists in the last 30 years. This means that many privately owned tracts could host unknown remnants of species once, but no longer, common.

Pre-screen heritage review requests at <http://tinyurl.com/heritagereview>. A "Level 1 response" will make further submission to MDC or USFWS unnecessary.



Appendix C: Geohydrologic Evaluation



Missouri Department Of Natural Resources

Division of Geology and Land Survey
 P.O. Box 250
 Rolla, Missouri 65402-0250
 Phone - 573.368.2161 Fax - 573.368.2111
 E-mail - gspgeol@dnr.mo.gov

Project ID Number

LWE11019

County

COLE

Geohydrologic Evaluation of Liquid-Waste Treatment Site

Project **Eastern Cole County Regional WWTP** Quadrangle **OSAGE CITY**

Location **SW1/4 SE1/4** Section **32** Township **44 N** Range **10 W**

Additional Location Information

Latitude **38** Deg **30** Min **38** Sec Longitude **92** Deg **2** Min **51** Sec

Owner City of Taos (573) 395-4084
 4909 Countryside Park, Jefferson City, MO 65101

Requestor Allstate Consultants, LLC (573) 875-8799
 Cary Sayre
 3312 LeMone Industrial Boulevard, Columbia, MO 65201

Previous Reports Not Applicable

Date	12/19/2003	10/16/1997
Identification Number	13404	10698
Fiscal Year	98	

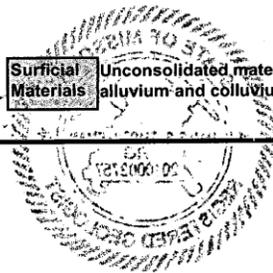
Facility Type	Type of Waste	Funding Source
<input checked="" type="radio"/> Mechanical treatment plant <input type="radio"/> Recirculating filter bed <input type="radio"/> Earthen lagoon with discharge <input type="radio"/> Earthen holding basin <input type="radio"/> Land application <input type="radio"/> Other type of facility	<input type="radio"/> Animal <input checked="" type="radio"/> Human <input type="radio"/> Process or industrial <input type="radio"/> Leachate <input type="radio"/> Other waste type	<input type="radio"/> PPG <input checked="" type="radio"/> WWLF-SRF <input type="radio"/> Non-Point Source Other Information <input type="radio"/> Plans were submitted <input type="radio"/> Site was investigated by NRCS <input type="radio"/> Soil or geotechnical data were submitted

Date of Field Visit 09/22/2010 **Stream Classification** Gaining Losing No discharge

Overall Geologic Limitations	Collapse Potential	Topography	Landscape Position
<input checked="" type="radio"/> Slight <input type="radio"/> Moderate <input type="radio"/> Severe	<input checked="" type="radio"/> Not applicable <input type="radio"/> Slight <input type="radio"/> Moderate <input type="radio"/> Severe	<input checked="" type="radio"/> < 4% <input type="radio"/> 4% to 8% <input type="radio"/> 8% to 15% <input type="radio"/> > 15%	<input type="radio"/> Broad uplands <input type="radio"/> Ridgetop <input type="radio"/> Hillslope <input type="radio"/> Narrow ravine <input checked="" type="radio"/> Floodplain <input checked="" type="radio"/> Alluvial plain <input type="radio"/> Terrace <input type="radio"/> Sinkhole

Bedrock The uppermost bedrock is Ordovician-age Jefferson City-Cotter Dolomite.

Surficial Materials Unconsolidated materials existing above bedrock are silty clay alluvium (CH/MH) over silty-clay gravel alluvium and colluvium (GM/GC).



Project ID Number **LWE11019**

Page 2

Recommended Construction Procedures

- Installation of clay pad
- Diversion of subsurface flow
- Rock excavation
- Compaction
- Artificial sealing
- Limit excavation depth

Required Geologic Exploration

(Missouri Clean Water Commission 10 CSR 20 8.200 Wastewater Treatment Ponds)

Determine Overburden Properties

- Particle size analysis
- Standard Proctor density
- Permeability coefficient for undisturbed sample
- Atterburg limits
- Overburden thickness
- Permeability coefficient for remolded sample

Determine Hydrologic Conditions

- Groundwater elevation
- Direction of groundwater flow
- 25-year flood level
- 100-year flood level

Notify Geologist

- Before exploration
- During construction
- After construction
- Not necessary

Remarks

The proposed East Cole County Regional mechanical treatment plant is located on a terrace to the north Sanford Creek. The site is approximately .5 miles south of the intersection of South Liberty Road and the US Highway 50 Outer Road, approximately .75 miles south of Schubert, Missouri and US Highway 50.

The site elevation is approximately 580 feet msl. Sanford Creek, the proposed discharging stream, was observed to exhibit gaining conditions. No springs, faults, sinkholes or caves were observed in the vicinity of the site.

Observations at the site indicate approximately 10-15 feet of surficial materials. The site visit revealed that the surficial materials consist of silty clay alluvium (CH/MH) over silty-clay gravel alluvium and colluvium (GM/GC). These materials are derived from the breakdown of Ordovician-age dolomites and shales, and reworked loess.

Outcrops at the site indicate that the uppermost bedrock is the Ordovician-age Jefferson City-Cotter Dolomite, which generally exhibits high permeability in a thin upper weathered zone, with low permeability at depth in this area. The formation in this area consists of medium- to thick-bedded, argillaceous, cherty dolomite with thin shales. Underlying the Jefferson City-Cotter Dolomite is the Ordovician-age Roubidoux Formation, which exhibits low to moderate secondary permeability in this area. It is typically a massive-bedded sandstone with dolomite and chert.

The site is currently a thickly wooded, relatively flat floodplain on Sanford Creek. The proposed building site is approximately 15 feet above the creek. It is recommended that the depth to groundwater and the 25- and 100-year flood levels be determined for final siting of this facility.

This site receives a slight overall geologic limitations rating. Should this facility fail to operate properly, local shallow groundwater supplies could be impacted.

This document is a preliminary report. It is not a permit. Additional data may be required by the Department of Natural Resources prior to the issuance of a permit. This report is valid only at the above location and becomes invalid one year after the report date below.

Report By: **Blake Smotherman**

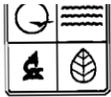
Report Date: **10/4/2010**

CC **WPP, NERO**



The attachments that follow contain summary information provided by the applicant, City of Taos. MDNR staff determined that changes must be made to the information contained within these attachments. The following were modified and can be found within the MDNR WQAR:

- 1) Tier Determination and Effluent Limit Summary Sheet: Ammonia calculations-see Water Quality Antidegradation Review; see page 11.
- 2) Attachment A: Ammonia calculations-see Water Quality Antidegradation Review; see page 11.



MISSOURI DEPARTMENT OF NATURAL RESOURCES
 WATER PROTECTION PROGRAM, WATER POLLUTION CONTROL BRANCH
WATER QUALITY REVIEW ASSISTANCE/ANTIDegradation REVIEW REQUEST
 PRE-CONSTRUCTION REVIEW FOR PROTECTION OF BENEFICIAL USES AND DEVELOPING EFFLUENT LIMITS

TYPE OF PROJECT

Grant SRF Loan All Other Projects

REQUESTER CITY OF TAOS	TELEPHONE NUMBER WITH AREA CODE 573.395.4084
PERMITTEE CITY OF TAOS	TELEPHONE NUMBER WITH AREA CODE 573.395.4084

REASON FOR REQUEST:

New Discharge (See Instruction #9) Upgrade (No expansion) (See AIP) Expansion

DESCRIPTION OF PROPOSED ACTIVITY:

PURCHASE EXISTING AUQUA MO WASTEWATER SYSTEMS CURRENTLY SERVICING TAOS VICINITY.
 CONSTRUCT NEW COLLECTION AND TREATMENT SYSTEMS TO CONSOLIDATE AND REGIONALIZE INTO ONE
 NEW TREATMENT FACILITY.

FACILITY INFORMATION:

FACILITY NAME TAOS WASTEWATER TREATMENT FACILITY	MSOP NUMBER (IF APPLICABLE) NA
COUNTY COLE	SIC / NAICS CODE 4952

METHOD OF BACTERIA COMPLIANCE

Chlorine Disinfection Ultraviolet Disinfection Ozone Not Applicable

WATER QUALITY ISSUES

ELIMINATE EIGHT (8) EXISTING TREATMENT FACILITIES AND CONSTRUCT ONE NEW TREATMENT FACILITY.

Water quality issues include: effluent limit compliance issues, notice (s) of violation, water body beneficial uses not attained or supported, etc.

OUTFALL	LOCATION (LAT/LONG OR LEGAL DESCRIPTION)	MAPPED ¹ (CHECK)	RECEIVING WATER BODY ²
001	LAT. 38.50161/LONG -92.04817	<input type="checkbox"/>	SANFORD CREEK (UNCLASS)
		<input type="checkbox"/>	
		<input type="checkbox"/>	

¹ Attach topographic map (See www.dnr.mo.gov/internetmapviewer/) with outfall location(s) clearly marked.
 For additional outfalls, attach a separate form.

² See general instructions for discharges to streams.

OUTFALL	NEW DESIGN FLOW ** (MGD)	TREATMENT TYPE	EFFLUENT TYPES*
001	0.15	Extended Aeration	DOMESTIC WASTEWATER

* Describe predominating character of effluent. Example: domestic wastewater, municipal wastewater, industrial wastewater, storm water, mining leachate, etc.

** If expansion, indicate new design flow.

Checked for rare or endangered species and provided determination with this request. See Instruction #8.

ANTIDegradation REVIEW SUBMISSION:

See attached Antidegradation instructions. Applicant supplied a summary within:

- Tier Determination and Effluent Limit Summary
- Attachment A – Significant Degradation
- Attachment B – Minimal Degradation
- Attachment C – Temporary degradation
- Attachment D – Tier 1 Review
- No Degradation Evaluation – Conclusion of Antidegradation Review

See general instructions. Additional information may be needed to complete your request. Your request may be returned if items are missing. Revised submittal will be considered a new submittal.

SIGNATURE	DATE
Cary D. Sayre, PE, Project Engineer <i>Cary D. Sayre</i>	9/14/10
E-MAIL ADDRESS carysayre@allstateconsultants.net	



MISSOURI DEPARTMENT OF NATURAL RESOURCES
 WATER PROTECTION PROGRAM, WATER POLLUTION CONTROL BRANCH
ANTIDegradation REVIEW SUMMARY
ATTACHMENT A: TIER 2 – SIGNIFICANT DEGRADATION

RECEIVED

SEP 20 2011

1. FACILITY **WATER PROTECTION PROGRAM**

NAME TAOS WASTEWATER TREATMENT FACILITY		TELEPHONE NUMBER WITH AREA CODE 573.395.4084	
ADDRESS (PHYSICAL) SW1/4 OF SW1/4 OF SE1/4 OF SECTION 32-44-10	CITY TAOS	STATE MO	ZIP CODE 65101

2. RECEIVING WATER BODY SEGMENT #1

NAME
UNNAMED TRIBUTARY OF SANFORD CREEK (UNCLASSIFIED)

3. WATER BODY SEGMENT #2 (IF APPLICABLE)

NAME
SANFORD CREEK (UNCLASSIFIED)

4. IDENTIFYING ALTERNATIVES

Supply a summary of the alternatives considered and the level of treatment attainable with regards to the alternative. "For Discharges likely to cause significant degradation, an analysis of non-degrading and less-degrading alternatives must be provided," as stated in the Antidegradation Implementation Procedure Section II.B.1. Per 10 CSR 20-6.010(4)(D)1., the feasibility of a no-discharge system must be considered. Attach all supportive documentation in the Antidegradation Review report.

Non-degrading alternatives: LAND APPLICATION, CONNECTION TO CITY OF JEFFERSON

Alternatives ranging from less-degrading to degrading including Preferred Alternative (All must meet water quality standards):

Alternatives	Level of Treatment Attainable for each Pollutant of Concern			
	BOD (summer/winter)	TSS	Ammonia as N (summer/winter)	Bacteria (E. Coli)
	(mg/L)	(mg/L)	(mg/L)	(#/100mL)
EXTENDED AERATION (PREFERRED)	25	25	3.0/3.3	206
MOVING BED BIOREACTOR (BASE CASE)	27/30	30	3.0/3.3	206
MEMBRANE BIOREACTOR	10/10	10	2	206

Identifying Alternatives Summary: EXTENDED AERATION IS THE PREFERRED ALTERNATIVE AND PRACTICABLE.

5. DETERMINATION OF THE REASONABLE ALTERNATIVE

Per the Antidegradation Implementation Procedure Section II.B.2, "a reasonable alternative is one that is practicable, economically efficient and affordable." Provide basis and supporting documentation in the Antidegradation Review report.

Practicability Summary:

"The practicability of an alternative is considered by evaluating the effectiveness, reliability, and potential environmental impacts," according to the Antidegradation Implementation Procedure Section II.B.2.a. Examples of factors to consider, including secondary environmental impacts, are given in the Antidegradation Implementation Procedure Section II.B.2.a.

Non-degrading alternatives were not practicable. The MBR and MBBR is considered new technology and may not be approvable by MDNR. Extended aeration is practicable. See report for further details.

Economic Efficiency Summary:

Alternatives that are deemed practicable must undergo a direct cost comparison in order to determine economic efficiency. Means to determine economic efficiency are provided in the Antidegradation Implementation Procedure Section II.B.2.b.

The MBR is over 120% of base cost so it is not economically efficient.

The extended aeration and MBBR are both economically efficient.

Affordability Summary:

Alternatives identified as most practicable and economically efficient are considered affordable if the applicant does not supply an affordability analysis. An affordability analysis per the Antidegradation Implementation Procedure Section II.B.2.c, "may be used to determine if the alternative is too expensive to reasonably implement."

NOT APPLICABLE

Preferred Chosen Alternative:

Extended aeration with grit collection, screening, clarification, UV disinfection, reaeration and sludge holding.

Reasons for Rejecting the other Evaluated Alternatives:

The MBBR is considered new technology by MDNR.

Comments/Discussion:

The extended aeration system appears to be the best solution at this time and with the available information.

6. SOCIAL AND ECONOMIC IMPORTANCE OF THE PREFERRED ALTERNATIVE

If the preferred alternative will result in significant degradation, then it must be demonstrated that it will allow important economic and social development in accordance to the Antidegradation Implementation Procedure Section II.E. Social and Economic Importance is defined as the social and economic benefits to the community that will occur from any activity involving a new or expanding discharge.

Identify the affected community:

The affected community is defined in 10 CSR 20-7.031(2)(B) as the community "in the geographical area in which the waters are located.: Per the Antidegradation Implementation Procedure Section II.E.1, "the affected community should include those living near the site of the proposed project as well as those in the community that are expected to directly or indirectly benefit from the project."

The City of Taos, Cole County, and vicinity will benefit from this proposed facility.

Identify relevant factors that characterize the social and economic conditions of the affected community:

Examples of social and economic factors are provided in the Antidegradation Implementation Procedure Section II.E.1., but specific community examples are encouraged.

Failing individual on-site systems and eight existing wastewater treatment facilities will be replaced with one new wastewater treatment facility. Approximately 200 homes will be added to the proposed collection and treatment plant.

Describe the important social and economic development associated with the project:

Determining benefits for the community and the environment should be site specific and in accordance with the Antidegradation Implementation Procedure Section II.E.1.

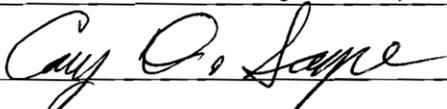
Eliminating failing on-site systems and old wastewater plants will help clean up the environment and provide protection of the health, safety and welfare of the public. Value of homes and property should increase with the proposed improvements.

PROPOSED PROJECT SUMMARY:

The proposed improvements will provide a series of gravity sewers, pump stations and forcemains to collect and transport sanitary waste to a new wastewater treatment facility.

Attach the Antidegradation Review report and all supporting documentation. This is a technical document, which must be signed, sealed and dated by a registered professional engineer of Missouri.

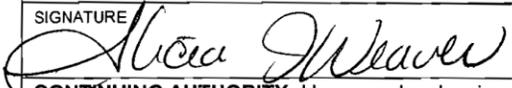
CONSULTANT: I have prepared or reviewed this form and all attached reports and documentation. The conclusion proposed in consistent with the Antidegradation Implementation Procedure and current state and federal regulations.

SIGNATURE		DATE	9/15/2010
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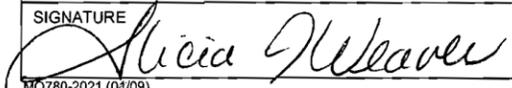
PRINT NAME	Cary D. Sayre, PE	LICENSE # :	MO-027574
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TELEPHONE NUMBER WITH AREA CODE	660.376.2941	E-MAIL ADDRESS:	carysayre@allstateconsultants.net
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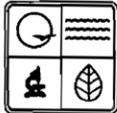
OWNER: I have read and reviewed the prepared documents and agree with this submittal.

SIGNATURE		DATE	9/15/2010
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CONTINUING AUTHORITY: I have read and reviewed the prepared documents and agree with this submittal.

SIGNATURE		DATE	9/15/2010
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RECEIVED



MISSOURI DEPARTMENT OF NATURAL RESOURCES
 WATER PROTECTION PROGRAM
ANTIDegradation REVIEW SUMMARY
TIER DETERMINATION AND EFFLUENT LIMIT SUMMARY

WATER PROTECTION PROGRAM

1. FACILITY		TELEPHONE NUMBER WITH AREA CODE	
NAME TAOS WASTEWATER TREATMENT FACILITY		573.395.4084	
ADDRESS (PHYSICAL) SW1/4 OF SW1/4 OF SE1/4 OF SECTION 32-44-10		CITY TAOS	STATE MO
		ZIP CODE 65101	
2. RECEIVING WATER BODY SEGMENT #1			
NAME UNNAMED TRIBUTARY OF SANFORD CREEK			
2.1	UPPER END OF SEGMENT (Location of discharge) UTM ___ OR Lat <u>38.50161</u> , Long <u>92.04817</u>		
2.2	LOWER END OF SEGMENT UTM ___ OR Lat <u>38.50865</u> , Long <u>-92.04740</u>		
Per the Missouri Antidegradation Rule and Implementation Procedure, or AIP, the definition of a segment, "a segment is a section of water that is bound, at a minimum, by significant existing sources and confluences with other significant water bodies."			
3. WATER BODY SEGMENT #2 (IF APPLICABLE)			
NAME SANFORD CREEK (UNCLASSIFIED)			
3.1	UPPER END OF SEGMENT UTM ___ OR Lat <u>38.50865</u> , Long <u>-92.04740</u>		
3.2	LOWER END OF SEGMENT UTM ___ OR Lat <u>38.50531</u> , Long <u>-92.02599</u>		
4. WATER BODY SEGMENT #3 (IF APPLICABLE)			
NAME			
4.1	UPPER END OF SEGMENT UTM ___ OR Lat ___, Long ___		
4.2	LOWER END OF SEGMENT UTM ___ OR Lat ___, Long ___		
5. PROJECT INFORMATION			
Is the receiving water body an Outstanding National Resource Water, an Outstanding State Resource Water, or drainage thereto? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
In Tables D and E of 10 CSR 20-7.031, Outstanding National Resource Waters and Outstanding State Resource Water are listed. Per the Antidegradation Implementation Procedure Section 1.B.3., "any degradation of water quality is prohibited in these waters unless the discharge only results in temporary degradation." Therefore, if degradation is significant or minimal, the Antidegradation Review will be denied.			
Will the proposed discharge of all pollutants of concern, or POCs, result in no net increase in the ambient water quality concentration of the receiving water after mixing? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
If yes, submit a summary table showing the levels of each pollutant of concern before and after the proposed discharge in the receiving water and then complete Attachment B for the first downstream classified water body segment.			
Will the discharge result in temporary degradation? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
If yes, complete Attachment C.			
Has the project been determined as non-degrading? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
If yes, complete No Degradation Evaluation – Conclusion of Antidegradation Review form. Submit with the appropriate Construction Permit Application as no antidegradation review is required.			
If yes to one of the above questions, skip to Section 8 - Wet Weather.			

6. EXISTING WATER QUALITY DATA OR MODEL SUMMARY

Obtaining Existing Water Quality is possible by three methods according to the Antidegradation Implementation Procedure Section II.A.1.: (1) using previously collected data with an appropriate Quality Assurance Project Plan, or QAPP (2) collecting water quality data by approved the Missouri Department of Natural Resources methodology or (3) using an appropriate water quality model. QAPPs must be submitted to the department for approval well in advance (six months) of the proposed activity. Provide all the appropriate corresponding data and reports which were approved by the department Water Quality Monitoring and Assessment Section.

Date existing water quality data was provided by the Water Quality Monitoring and Assessment Section:
Approval date of the QAPP by the Water Quality Monitoring and Assessment Section:
Approval date of the project sampling plan by the Water Quality Monitoring and Assessment Section:
Approval date of the data collected for all appropriate pollutants of concern by the Water Quality Monitoring and Assessment Section:

Comments/Discussion:
THIS SECTION IS NOT APPLICABLE.

7. POLLUTANTS OF CONCERN AND TIER DETERMINATION(S)

Pollutants of Concern to be considered include those pollutants reasonably expected to be present in the discharge per the Antidegradation Implementation Procedure Section II.S. The tier protection levels are specified and defined in rule at 10 CSR 20-7.031 (2).

**Water Body Segment One
Pollutants of Concern and Tier Determination(s)**

Tier 1	Tier 2 with Minimal Degradation	Tier 2 with Significant Degradation
		BOD/DO
		TSS
		AMMONIA
		BACTERIA
		OIL & GREASE

Note: Add an asterisk to items that you only assume are Tier 2 with significant degradation.

**Water Body Segment Two
Pollutants of Concern and Tier Determination(s)**

Tier 1	Tier 2 with Minimal Degradation	Tier 2 with Significant Degradation

- For pollutants of concern that are Tier 2 with significant degradation, complete Attachment A.
- For pollutants of concern that are Tier 2 with minimal degradation, complete Attachment B.
- For pollutants of concern that are Tier 1, complete Attachment D. Additionally, a Tier 2 review must be conducted for each pollutant of concern on the appropriate water body segment.

8. WET WEATHER ANTICIPATIONS

If an applicant anticipates excessive inflow or infiltration and pursues approval from the department to bypass secondary treatment, a feasibility analysis is required. The feasibility analysis must comply with the criteria of all applicable state and federal regulations including 40 CFR 122.41(m)(4). Attach the feasibility analysis to this report.

What is the Wet Weather Flow Peaking Factor in relation to design flow?

Wet Weather Design Summary:

MO 780-2025 (05-09)

9. SUMMARY OF THE PROPOSED ANTIDegradation REVIEW EFFLUENT LIMITS

What are the proposed pollutants of concern and their respective effluent limits that the selected treatment option will comply with:

Pollutant of Concern	Units	Wasteload Allocation	Average Monthly Limit	Daily Maximum Limit
BOD5 (Summer)	MG/L		25(AML)	30(AWL)
BOD5 (Winter)	MG/L		25(AML)	30(AWL)
TSS	MG/L		25(AML)	40
Ammonia (Summer)	MG/L		3.0(AML)	7.8
Ammonia (Winter)	MG/L		3.3(AML)	8.7
E. COLI	CFU/100 ML		206	
OIL & GREASE	MG/L		10	15

These proposed limits must not violate water quality standards, be protective of beneficial uses and achieve the highest statutory and regulatory requirements.

Attach the Antidegradation Review report and all supporting documentation.

CONSULTANT: I have prepared or reviewed this form and all attached reports and documentation. The conclusion proposed is consistent with the Antidegradation Implementation Procedure and current state and federal regulation.

SIGNATURE  DATE 9/15/2010

NAME AND OFFICIAL TITLES
CARY D. SAYRE, PE, PROJECT ENGINEER

COMPANY NAME
ALLSTATE CONSULTANTS LLC

ADDRESS 30601 HWY. 5 CITY MARCELINE STATE MO ZIP CODE 64658

TELEPHONE NUMBER WITH AREA CODE 660.376.2941 E-MAIL ADDRESS carysayre@allstateconsultants.net

OWNER: I have read and reviewed the prepared documents and agree with this submittal.

SIGNATURE  DATE 9/15/2010

NAME AND OFFICIAL TITLES
ALICIA J. WEAVER, MAYOR

ADDRESS 4909 COUNTRYSIDE PARK CITY JEFFERSON CITY STATE MO ZIP CODE 65101

TELEPHONE NUMBER WITH AREA CODE 573.395.4084 E-MAIL ADDRESS ALICIA_J_WEAVER@YAHOO.COM

CONTINUING AUTHORITY: Continuing Authority is the permanent organization that will be responsible for the operation, maintenance and modernization of the facility. The regulatory requirement regarding continuing authority is found in 10 CSR 20-6.010(3) available at www.sos.mo.gov/adrules/csr/current/10csr/10c20-6a.pdf.

I have read and reviewed the prepared documents and agree with this submittal.

SIGNATURE  DATE 9/15/2010

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