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-0131555
Owner:	Wescon Development Company, Inc.
Address:	479 Faith Road, Blue Eye, MO 65611
Continuing Authority:	same as above
Address:	same as above
Facility Name:	Grand Cru WWTF
Facility Address:	42 Grand Parkway, Blue Eye, MO 65611
Legal Description:	NW¼, NE¼, Sec. 4, T21N, R22W, Stone County
UTM Coordinates:	X = 471186, Y= 4045480
Receiving Stream:	Table Rock Lake (L2)
First Classified Stream and ID:	Table Rock Lake (L2) (7313) 303(d)
USGS Basin & Sub-watershed No.:	(11010001-1403)

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 - Townhomes – SIC # 8641
No Certified Operator Required.
Two septic tanks / recirculating sand filter / chemical addition to facilitate phosphorus removal / tertiary settling / chlorination / dechlorination / sludge disposal by contract hauler.
Design population equivalent is 190 PE.
Design flow is 19,037 gallons per day.
Actual flow is 1,100 gallons per day.
Design sludge production is 0.83dry 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.

February 1, 2014 — Effective Date
October 1, 2014 — Modification Date

Sara Parker Pauley, Director, Department of Natural Resources

January 31, 2019 — Expiration Date

John Madras, Director, Water Protection Program

OUTFALL #001	TABLE A. FINAL EFFLUENT LIMITATIONS and MONITORING REQUIREMENTS 10 CSR 20-7.015(3)	PAGE NUMBER 2 of 5
		PERMIT NUMBER MO-0131555

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:

EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Flow	MGD	*		*	once/quarter***	24 hr. total
Biochemical Oxygen Demand$_5$	mg/L	22.5		15	once/quarter***	grab
Total Suspended Solids	mg/L	15		10	once/quarter***	grab
pH – Units	SU	**		**	once/quarter***	grab
Ammonia as N	mg/L	5.0		3.0	once/quarter***	grab
Total Phosphorous	mg/L			0.5	once/quarter***	grab
Total Nitrogen	mg/L	*		*	once/quarter***	grab
Aluminum, Total Recoverable (Note 1)	mg/L	0.75		0.37	once/quarter***	grab
E. coli (Note 2)	#/100 ml	630		126	once/quarter***	grab
Total Residual Chlorine (Note 3)	µg/L	19 (130ML)		9 (130ML)	once/quarter***	grab
Dissolved Oxygen	mg/L	*		*	once/quarter***	grab

MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE JANUARY 28, 2015. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

* Monitoring requirement only.

** 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.

*** Quarterly sampling is required and samples shall be collected and tested for the parameters listed in Table A if a discharge occurs during the reporting period. If the facility serves a part-time or seasonal establishment/residence(s), then sampling shall occur while the treatment facility is operating and after a discharge begins.

Minimum Sampling Requirements				
Quarter	**Months**	**E. coli, Total Residual Chlorine (TRC), and Dissolved Oxygen**	**All Other Parameters**	**Report is Due**
First	January, February, March	Not required to sample.	Sample at least once during any month of the quarter	April 28th
Second	April, May, June	Sample at least once during any month of the quarter	Sample at least once during any month of the quarter	July 28th
Third	July, August, September	Sample at least once during any month of the quarter	Sample at least once during any month of the quarter	October 28th
Fourth	October, November, December	Sample once during October; no sample required in either November or December	Sample at least once during any month of the quarter	January 28th

Note 1 - If no Aluminum or Iron was used in a given sampling period, an actual analysis is not necessary. Simply report as “0 mg/L”.

Note 2 - Effluent 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.

A. Final Effluent Limits and Monitoring Requirements (continued)

Note 3 - This permit contains a Total Residual Chlorine (TRC) limit.

(a) This effluent limit is below the minimum quantification level (ML) of the most common and practical EPA approved CLTRC methods. The Department has determined the current acceptable ML for total residual chlorine to be 130 µg/L when using the DPD Colorimetric Method #4500 – CL G. from Standard Methods for the Examination of Waters and Wastewater. The permittee will conduct analyses in accordance with this method, or equivalent, and report actual analytical values. Measured values greater than or equal to the minimum quantification level of 130 µg/L will be considered violations of the permit and values less than the minimum quantification level of 130 µg/L will be considered to be in compliance with the permit limitation. The minimum quantification level does not authorize the discharge of chlorine in excess of the effluent limits stated in the permit.

(b) Disinfection is required during the recreational season from April 1 through October 31. Do not chlorinate during the non-recreational months.

(c) Do not chemically de-chlorinate **if it is not needed to meet the limits in your permit.**

(d) If no chlorine was used in a given sampling period, an actual analysis is not necessary. Simply report as "0 µg/L" TRC.

B. STANDARD CONDITIONS

In addition to specified conditions stated herein, this permit is subject to the attached Parts I & III standard conditions dated November 1, 2013 and August 15, 1994, and hereby incorporated as though fully set forth herein.

C. SPECIAL CONDITIONS

1. This permit establishes final ammonia limitations based on Missouri's current Water Quality Standard. On August 22, 2013, the U.S. Environmental Protection Agency (EPA) published a notice in the Federal Register announcing of the final national recommended ambient water quality criteria for protection of aquatic life from the effects of ammonia in freshwater. The EPA's guidance, Final Aquatic Life Ambient Water Quality Criteria for Ammonia – Fresh Water 2013, is not a rule, nor automatically part of a state's water quality standards. States must adopt new ammonia criteria consistent with EPA's published ammonia criteria into their water quality standards that protect the designated uses of the water bodies. The Department of Natural Resources intends to adopt the new ammonia criteria during the next water quality standards triennial review. Also, refer to Section VI of this permit's factsheet for further information including estimated future effluent limits for this facility. It is recommended the permittee view the Department's 2013 EPA criteria Factsheet located at http://dnr.mo.gov/pubs/pub2481.pdf .

2. 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.

3. All outfalls must be clearly marked in the field.

4. 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.

C. SPECIAL CONDITIONS (continued)

5. Water Quality Standards
   (a) To the extent required by law, 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.

6. 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 by the Director in accordance with 40 CFR 122.44(f).
   (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.

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

8. It is a violation of the Missouri Clean Water Law to fail to pay fees associated with this permit (644.055 RSMo).

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. Bypasses are to be reported to the Southwest Regional Office.

10. The facility must be sufficiently secured to restrict entry by children, livestock and unauthorized persons as well as to protect the facility from vandalism.

11. A least one gate must be provided to access the wastewater treatment facility and provide for maintenance and mowing. The gate shall remain locked except when opened by the permittee to perform operational monitoring, sampling, maintenance, mowing, or for inspections by the department.

12. At least one (1) warning sign shall be placed on each side of the facility enclosure in such positions as to be clearly visible from all directions of approach. There shall also be one (1) sign placed for every five hundred feet (500') (150 m) of the perimeter fence. A sign shall also be placed on each gate. Minimum wording shall be SEWAGE TREATMENT FACILITY—KEEP OUT. Signs shall be made of durable materials with characters at least two inches (2") high and shall be securely fastened to the fence, equipment or other suitable locations.

13. An Operation and Maintenance (O & M) manual shall be maintained by the permittee and made available to the operator. The O & M manual shall include key operating procedures and a brief summary of the operation of the facility.

C. SPECIAL CONDITIONS (continued)

14. An all-weather access road shall be provided to the treatment facility.

15. The discharge from the wastewater treatment facility shall be conveyed to the receiving stream via a closed pipe or a paved or rip-rapped open channel. Sheet or meandering drainage is not acceptable. The outfall sewer shall be protected against the effects of floodwater, ice or other hazards as to reasonably insure its structural stability and freedom from stoppage. The outfall shall be maintained so that a sample of the effluent can be obtained at a point after the final treatment process and before the discharge mixes with the receiving waters.

Missouri Department of Natural Resources
FACT SHEET
FOR MODIFICATION OF
GRAND CRU WWTF
MO-0131555

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 Minor Operating Permit covering non-POTW domestic Wastewater Treatment Plants (WWTP).

Part I – Facility Information

Facility Type: Townhomes SIC# - 8641

Facility Description:
Septic tanks / recirculating sand filter / chemical addition to facilitate phosphorus removal / tertiary settling / chlorination / dechlorination / sludge disposal by contract hauler.

OUTFALL(S) TABLE:

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	EFFLUENT TYPE
#001	0.029	Secondary	Domestic

Notes:
CP-0000722 was issued by the SWRO on May 31, 2011; however the facility was not constructed by the time the construction permit expired. On April 12, 2013, CP-0001499 was issued for the same construction of a recirculating sand filter and facility expansion from 6,000 gpd to 19,037 gpd. Statement of work completed was received on September 10, 2014.

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 20-9.020(2)(A)], requirements for operation by certified personnel shall apply to all wastewater treatment systems, if applicable, as listed below:

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

Part III– Operational Monitoring

Not Applicable ☒: As per [10 CSR 20-9.010(4))], the facility is not required to conduct operational monitoring.

Part IV – Receiving Stream Information

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)].

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 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. This permit only applies to facilities discharging to the following categories of water body.

☒Lake or Reservoir [10 CSR 20-7.015(3)]:

RECEIVING STREAM(S) TABLE:

WATER-BODY NAME	CLASS	WBID	DESIGNATED USES*	12-DIGIT HUC	DISTANCE TO CLASSIFIED SEGMENT (MI)
Table Rock Lake	(L2)	7313	AQL, LWW, SCR, WBC(A)	11010001-1403	0.0

* - 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).

MIXING CONSIDERATIONS

Zone of Initial Dilution: Not Allowed [10 CSR 20-7.031(5)(A)4.B.(IV)(b)].

Mixing Zone:
Mixing Zone (MZ) Parameters: According to the USGS 1:24,000K Quadrangle, the mainstem lake width near the facility outfall location is approximately 80 feet (ft.). One-quarter of this width equals 20 ft. Therefore, because 100 feet is greater than 20 ft., MZ = 20 feet [10 CSR 20-7.031(5)(A)5.B.(IV)(a)].

Mixing Zone Volume: The flow volume approximates a triangular prism because of the slope of the lake bottom, where the formula is Volume = L*W*(D*0.5). Assuming that the width will be either side of the discharge (MZ) length (100 feet) to form the plume effect, the box dimensions are length (L) = 100 ft., width (W) = 20 ft., and depth (D) = 5 ft. Depth was obtained using mixing zone length projected 100 ft. from shoreline to the intersecting contour on 7.5' USGS topographic map.

Volume = L*W*(D*(0.5)) = (100')*(20')*(2.5') = 5,000 ft^3.

The flow volume of 5,000 ft^3 is assumed as the daily mixing zone. Therefore;
30Q10=(5,000 ft^3/day)*(1 day/86,400 sec) = 0.06 ft^3/sec.

RECEIVING STREAM MONITORING REQUIREMENTS:
No receiving water monitoring requirements recommended at this time.

Part V – 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.

Not Applicable ☒: All limits in this operating permit are at least as protective as those previously established; therefore, 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.

Applicable☒: This permit contains new and/or expanded discharge; please see **APPENDIX A: ANTIDEGRADATION ANALYSIS**. As result of the Antidegradation Analysis, the selected alternative was a recirculating sand filter with chlorine/ dechlorination disinfection. The preferred alternative limits (PAL) presented in Part VII are more protective than the Water Quality Standards or Effluent Regulations, as with the selected alternative technology based effluent limits were selected. The expansion to 19,037 gpd is proposed to accommodate the rezoning of the surrounding area and the development of residential, condominium and resort/time-share properties in the area. With the close proximity to Branson, the areas entertainment and Table Rock Lake, Stone County has continued to see significant growth. With the high densities and resort/commercial style of development, the County's tax base per land will have a higher optimization and sales taxes will increase as a result. The social benefits of the project will facilitate the continued development of surrounding properties.

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 & SEWAGE SLUDGE:
Biosolids are solid materials resulting from domestic wastewater treatment that meet federal and state criteria for beneficial uses (i.e. fertilizer). 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.

With prior approval from the department, permittees are authorized to land apply biosolids, or utilize other methods of sludge disposal contained in Standard Conditions Part III.

Not Applicable☒: Permittee is not authorized to land apply biosolids. Sludge/biosolids are removed by contract hauler to the City of Hollister for ultimate disposal.

CONSERVATIVE ASSUMPTIONS:
In order to ensure efficient processing of permit applications domestic wastewater treatment facilities under 50,000 receive an expedited permit renewal. If the permittee would prefer to have additional review conducted, such as reasonable potential analysis, or wish to submit time of travel calculations for the department to consider ammonia degradation, the department will accommodate such a request. The following conservative assumptions have been made regarding the facility:

- Ammonia is a constituent of domestic wastewater. Unless the facility is entitled to a large mixing zone/zone of initial dilution relative to the discharge volume, reasonable potential to violate water quality standards is assumed. If the facility is legally entitled to a mixing zone and zone of initial dilution, such dilution is documented in the effluent limit calculations.
- Reasonable Potential Analysis [statistical analysis] using facility data was not conducted. Default multipliers from EPA guidance utilized to calculate effluent limits.
- Where discharges are to an unclassified stream, no degradation of ammonia has been calculated.
- This facility was determined not to have other sources of wastewater which would introduce other pollutants. Only domestic wastewater is included in the influent to this facility.

SANITARY SEWER OVERFLOWS (SSO) AND INFLOW AND INFILTRATION (I&I):
Sanitary Sewer Overflows (SSOs) are defined as an untreated or partially treated sewage release are considered bypassing under state regulation [10 CSR 20-2.010(11)] and should not be confused with the federal definition of bypass. SSO's have a variety of causes including blockages, line breaks, and sewer defects that allow excess storm water and ground water to (1) enter and overload the collection system, and (2) overload the treatment facility. Additionally, SSO's can be also be caused by lapses in sewer system operation and maintenance, inadequate sewer design and construction, power failures, and vandalism. SSOs also include overflows out of manholes and onto city streets, sidewalks, and other terrestrial locations. Additionally, Missouri RSMo §644.026.1 mandates that the department require proper maintenance and operation of treatment facilities and sewer systems and proper disposal of residual waste from all such facilities.

Not applicable ☒: This facility is not required to develop or implement a program for maintenance and repair of the collection system; however, it is a violation of Missouri State Environmental Laws and Regulations to allow untreated wastewater to discharge to waters of the state. There are 2,650 feet of length of pipe in the collection system according to the permit application submitted.

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.

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.

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:

$$Ce = \frac{(Qe + Qs)C - (Cs \times Qs)}{(Qe)}$$ (EPA/505/2-90-001, Section 4.5.5)

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

Chronic wasteload allocations were determined using applicable chronic water quality criteria (CCC: criteria continuous concentration) and stream volume of flow at the edge of the mixing zone (MZ). Acute wasteload allocations were determined using applicable water quality criteria (CMC: criteria maximum concentration) and stream volume of flow at the edge of the zone of initial dilution (ZID). Water quality based maximum daily and average monthly effluent limitations were calculated using methods and procedures outlined in USEPA's "Technical Support Document For Water Quality-based Toxics Control" (EPA/505/2-90-001).

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

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

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

40 CFR 122.41(M) - BYPASSES:
The federal Clean Water Act (CWA), Section 402 prohibits wastewater dischargers from "bypassing" untreated or partially treated sewage (wastewater) beyond the headworks. A bypass is defined as an intentional diversion of waste streams from any portion of a treatment facility, [40 CFR 122.41(m)(1)(i)]. Additionally, Missouri regulation 10 CSR 20-2.010(11) defines a bypass as the diversion of wastewater from any portion of wastewater treatment facility or sewer system to waters of the state. Only under exceptional and specified limitations do the federal regulations allow for a facility to bypass some or all of the flow from its treatment process. Bypasses are prohibited by the CWA unless a permittee can meet all of the criteria listed in 40 CFR 122.41(m)(4)(i)(A), (B), & (C). Any bypasses from this facility are subject to the reporting required in 40 CFR 122.41(l)(6) and per Missouri's Standard Conditions I, Section B, part 2.b. Additionally, Anticipated Bypasses include bypasses from peak flow basins or similar devices designed for peak wet weather flows.

Not Applicable ☒: This facility does not anticipate bypassing.

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

Applicable ☒; Table Rock Lake is listed on the 2002Missouri 303(d) List for nutrients. Table Rock Lake is also listed on the 2010 303(d) list for Chlorophyll and Nitrogen.
☒ – This facility is considered to be a source of or has the potential to contribute to the above listed pollutant(s); however this is a renewal of an existing facility. According to 10 CSR 20-7.015 (4)(G) existing facilities with design flow of less than 22,500 gpd are required to monitor only.

Part VI –2013 Water Quality Criteria for Ammonia

Upcoming changes to the Water Quality Standard for ammonia may require significant upgrades to wastewater treatment facilities.

On August 22, 2013, the U.S. Environmental Protection Agency (EPA) finalized new water quality criteria for ammonia, based on toxicity studies of mussels and gill breathing snails. Missouri's current ammonia criteria are based on toxicity testing of several species, but did not include data from mussels or gill breathing snails. Missouri is home to 69 of North America's mussel species, which are spread across the state. According to the Missouri Department of Conservation nearly two-thirds of the mussel species in Missouri are considered to be "of conservation concern". Nine species are listed as federally endangered, with an additional species currently proposed as endangered and another species proposed as threatened.

The adult forms of mussels that are seen in rivers, lakes, and streams are sensitive to pollutants because they are sedentary filter feeders. They vacuum up many pollutants with the food they bring in and cannot escape to new habitats, so they can accumulate toxins in their bodies and die. But very young mussels, called glochidia, are exceptionally sensitive to ammonia in water. As a result of a citizen suit, the EPA was compelled to conduct toxicity testing and develop ammonia water quality criteria that would be protective if young mussels may be present in a waterbody. These new criteria will apply to any discharge with ammonia levels that may pose a reasonable potential to violate the standards. Nearly all discharging domestic wastewater treatment facilities (cities, subdivisions, mobile home parks, etc.), as well as certain industrial and stormwater dischargers with ammonia in their effluent, will be affected by this change in the regulations.

When new water quality criteria are established by the EPA, states must adopt them into their regulations in order to keep their authorization to issue permits under the National Pollutant Discharge Elimination System (NPDES). States are required to review their water quality standards every three years, and if new criteria have been developed they must be adopted. States may be more protective than the Federal requirements, but not less protective. Missouri does not have the resources to conduct the studies necessary for developing new water quality standards, and therefore our standards mirror those developed by the EPA; however, we will utilize any available flexibility based on actual species of mussels that are native to Missouri and their sensitivity to ammonia.

Many treatment facilities in Missouri are currently scheduled to be upgraded to comply with the current water quality standards. But these new ammonia standards may require a different treatment technology than the one being considered by the permittee. It is important that permittees discuss any new and upcoming requirements with their consulting engineers to ensure that their treatment systems are capable of complying with the new requirements. The Department encourages permittees to construct treatment technologies that can attain effluent quality that supports the EPA ammonia criteria.

Under the new EPA criteria, where mussels of the family Unionidae are present or expected to be present, the estimated effluent limitations for a facility in a location such as this, with lake mixing criteria, will be 8.1 mg/L daily maximum, 3.1 mg/L monthly average.

Actual effluent limits will depend in part on the actual performance of the facility.

Operating permits for facilities in Missouri must be written based on current statutes and regulations. It is expected that the new WQS will be adopted in the next review of our standards. Therefore permits will be written with the existing effluent limitations until the new standards are adopted. To aid permittees in decision making, an advisory will be added to permit Fact Sheets notifying permittees of the expected effluent limitations for ammonia. When setting schedules of compliance for ammonia effluent limitations, consideration will be given to facilities that have recently constructed upgraded facilities to meet the current ammonia limitations.

For more information on this topic feel free to contact the Missouri Department of Natural Resources, Water Protection Program, Water Pollution Control Branch, Operating Permits Section at (573) 751-1300.

Part VII – Effluent Limits Determination

See Appendix A: Antidegradation Analysis for more information on the determination of effluent limits.

PARAMETER	Unit	Basis for Limits	Daily Maximum	Weekly Average	Monthly Average
Flow	MGD	1	*		*
BOD_5	mg/L	1,4	22.5		15
TSS	mg/L	14	15		10
pH	SU	1, 2	6.5-9.0		6.5-9.0
Ammonia as N	mg/L	2,4	5.0		3.0
Total Nitrogen	mg/L	4	*		*
Total Phosphorous	mg/L	2, 4			0.5
Aluminum, Total Recoverable	mg/L	1,4	0.75		0.37
Escherichia coli	***	1, 2, 3	630		126
Chlorine, Total Residual	µg/L	1, 3	19		9
Dissolved Oxygen**	mg/L	1, 3, 4	*		*

* - 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.

Basis for Limitations Codes:
1. State or Federal Regulation/Law
2. Water Quality Standard (includes RPA)
3. Water Quality Based Effluent Limits
4. Antidegradation Review
5. Antidegradation Policy
6. Water Quality Model
7. Best Professional Judgment
8. TMDL or Permit in lieu of TMDL
9. WET Test Policy

OUTFALL #001 – DERIVATION AND DISCUSSION OF LIMITS:

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

- **Biochemical Oxygen Demand (BOD_5).**
  ☒ - 22.5 mg/L as a Daily Maximum and 15 mg/L as a Monthly Average per the Antidegradation Review. Please see the **APPLICABLE DESIGNATION OF WATERS OF THE STATE** sub-section of the **Effluent Limits Determination** and **Appendix A: Antidegradation Analysis.**

- **Total Suspended Solids (TSS).**
  ☒ - 15 mg/L as a Daily Maximum and 10 mg/L as a Monthly Average. Please see the **APPLICABLE DESIGNATION OF WATERS OF THE STATE** sub-section of the **Effluent Limits Determination** and **Appendix A: Antidegradation Analysis.**

- **pH**. Effluent limitation range is 6.5 – 9.0 Standard pH Units (SU), as per the applicable section of 10 CSR 20-7.015. pH is not to be averaged.

- **Total Ammonia as Nitrogen.** The proposed effluent limits provided in the Antidegradation Report was ≤5.0 mg/L. MDNR calculated the Water Quality Based Effluent Limits, which using the mass balance equation calculates to a MDL and AML at 9.3 mg/L and 3.6 mg/L respectively. Early Life Stages Present Total Ammonia Nitrogen criteria apply [10 CSR 20-7.031(4)(B)7.C. & Table B3]. Background total ammonia nitrogen = 0.01 mg/L. No ammonia decay due to the discharge being directly to Table Rock Lake. Water Quality Based Effluent Limits (WQBEL) was calculated using the Triangular Prism Method for determining the Regulatory Mixing Zone. The 5 mg/L proposed in the Antidegradation Report was set as the maximum daily limit and the AML was set at 3.0 mg/L, which are more protective than the WQBEL.

WQBEL- Summer effluent limits were calculated as they are the most protective.

Season	Temp (^oC)	pH (SU)	Total Ammonia Nitrogen CCC (mg N/L)	Total Ammonia Nitrogen CMC (mg N/L)
Summer	26	7.8	1.5	12.1

$$WLA_c = \frac{(((0.0295+0.06)*1.5)-(0.06*0.01))}{0.0295} = 3.9 \text{ mg/l}$$

$$WLA_a = \frac{(((0.0295+0.00)*12.1)-(0.00*0.01))}{0.0295} = 12.1 \text{ mg/l}$$

LTA_c = 3.9 mg/L (0.780) = **3.0 mg/L** [CV = 0.6, 99th Percentile, 30 day avg.]
LTA_a = 12.1 mg/L (0.321) = 3.9 mg/L [CV = 0.6, 99th Percentile]
MDL = 3.0 mg/L (3.11) = **9.3 mg/L** [CV = 0.6, 99th Percentile]
AML = 3.0 mg/L (1.19) = **3.6 mg/L** [CV = 0.6, 95th Percentile, n = 30]

- **Dissolved Oxygen**. Monitoring included to determine if the facility has the reasonable potential to cause a violation of water quality standards in the receiving stream. Dechlorination chemicals have the potential to reduce dissolved oxygen concentrations in the discharge, resulting in an anoxic discharge, unless carefully controlled. Data will be reviewed upon renewal to determine if an effluent limitation is necessary to protect water quality.

- ***Escherichia coli (E. coli)***. Discharges to lakes/reservoirs shall not exceed a monthly average of 126 per 100 ml as a geometric mean and Daily Maximum of 630 during the recreational season (April 1 – October 31), to protect Whole Body Contact Recreation designated use of the receiving stream, as per 10 CSR 20-7.031(4)(C).

- **Total Residual Chlorine (TRC)**. Warm-water Protection of Aquatic Life CCC = 10 µg/L, CMC = 19 µg/L [10 CSR 20-7.031, Table A]. Background TRC = 0.0 µg/L. Due to minimum detection limits, TRC effluent limits of 17 µg/L daily maximum, 8 µg/L monthly average are recommended if chlorine is used as a disinfectant.

- **Total Phosphorus** 0.5 mg/L as per 10 CSR 20 - 7.015 (3).

- **Total Nitrogen.** Monitoring only as Table Rock is 303(d) listed for nutrients.

- **Minimum Sampling and Reporting Frequency Requirements**.

PARAMETER	SAMPLING FREQUENCY	REPORTING FREQUENCY
Flow	once/quarter	once/quarter
BOD_5	once/quarter	once/quarter
TSS	once/quarter	once/quarter
pH	once/quarter	once/quarter
Ammonia as N	once/quarter	once/quarter
Total Phosphorus	once/quarter	once/quarter
Total Nitrogen	once/quarter	once/quarter
Aluminum, Total Recoverable	once/quarter	once/quarter
E. coli	once/quarter	once/quarter
Total Residual Chlorine	once/quarter	once/quarter
Dissolved Oxygen	once/quarter	once/quarter

- **Sampling Frequency Justification:** Sampling and Reporting Frequency was retained from previous permit. Otherwise explain why you chose the frequency you did. The Clean Water Commission has directed the Department to proceed with amending 10 CSR 20-7.015 to reduce the sampling frequency required for E. coli to a lesser frequency, still protective of water quality standards, for smaller facilities, including those with discharges of 100,000 gallons per day or less.

- **Sampling Type Justification .**As per 10 CSR 20-7.015, BOD_5, TSS and WET test samples collected for sand filters may be grab samples. Grab samples must be collected for pH, Ammonia as N, *E. coli*, TRC, Dissolved Oxygen and Total Phosphorus. This is due to the holding time restriction for *E. coli*, the volatility of Ammonia and TRC, and the fact that pH and DO cannot be preserved and must be sampled in the field. As Ammoniaand Total Phosphorus samples must be immediately preserved with acid, these samples are to be collected as a grab. For further information on sampling and testing methods please review 10 CSR 20-7.015(9)(D) 2.

Part VIII – Finding of Affordability

Pursuant to Section 644.145, RSMo., the department is required to determine whether a permit or decision is affordable and makes a finding of affordability for certain permitting and enforcement decisions. This requirement applies to discharges from combined or separate sanitary sewer systems or publically-owned treatment works.

Not applicable ☒: The department is not required to determine findings of affordability because the facility is not a **combined or separate sanitary sewer system for a publically-owned treatment works.**

Part IX – 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.

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. Renewal applications must continue to be submitted within 180 days of expiration, however, in instances where effluent data from the previous renewal is less than 4 years old, that data may be re-submitted to meet the requirements of the renewal application. If the permit provides a schedule of compliance for meeting new water quality based effluent limits beyond the expiration date of the permit, the time remaining in the schedule of compliance will be allotted in the renewed permit.

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.

☒ - The Public Notice for renewal period for this operating permit was from May 9, 2013 to June 10, 2013. Prior to construction, the operating permit modification was public noticed from December 3, 2010 to January 3, 2011. No responses received on either public notice.

DATE OF FACT SHEET: SEPTEMBER 15, 2014; APRIL 17, 2013

COMPLETED BY:

LEASUE MEYERS, ENVIRONMENTAL ENGINEER
ENGINEERING SECTION
WATER PROTECTION PROGRAM
MISSOURI DEPARTMENT OF NATURAL RESOURCES
leasue.meyers@dnr.mo.gov

JEREMY PAYNE, ENVIRONMENTAL SPECIALIST
FINANCIAL ASSISTANCE CENTER
WATER PROTECTION PROGRAM
MISSOURI DEPARTMENT OF NATURAL RESOURCES
jeremy.payne@dnr.mo.gov

Appendix A: Antidegradation Analysis

STATE OF MISSOURI

Jeremiah W. (Jay) Nixon, Governor • Mark N. Templeton, Director

DEPARTMENT OF NATURAL RESOURCES

www.dnr.mo.gov

MAY 25 2010

Westcon Development Company, Inc.
ATTN: Mr. Glenn Plaskett
479 Faith Road
Blue Eye, MO 65611

RE: Water Quality and Antidegradation Review Preliminary Determination for Grand Cru Estates WWTF, Stone Co., MO-0131555

Dear Mr. Plaskett:

In accordance with the *Missouri Antidegradation Rule and Implementation Procedure (AIP)*, your proposed discharge is subject to an Antidegradation Review. The enclosed *Water Quality and Antidegradation Review (WQAR)* summarizes this preliminary determination based upon your *Grand Cru Estates WWTF Antidegradation Review* Report 19,037 gpd.

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) 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 to Southwest Regional Office (SW RO). 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 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, please feel free to contact Leasue Meyers by telephone at (573) 751-7906, by e-mail at leasue.meyers@dnr.mo.gov, or by mail at P.O. Box 176, Jefferson City, Missouri 65102-0176.

Sincerely,

WATER PROTECTION PROGRAM

Refaat Mefrakis, P.E., Chief
NPDES Permits & Engineering Section

Enclosures

RK:lmn

c: Mr. Ken Heithaus, Heithaus Engineering & Associates
Ms. Kristen Pattinson, SWRO
File Copy

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM
WATER POLLUTION CONTROL BRANCH
NPDES PERMITS AND ENGINEERING SECTION

Water Quality and Antidegradation Review

For the Protection of Water Quality and Determination of Effluent Limits for Discharge to Table Rock Lake

by

Grand Cru Estates Wastewater Treatment Facility

May 10, 2010

Table of Contents

1. Facility Information 15
2. Water Quality Information 15
2.1. Water Quality History: 15
3. Receiving Waterbody Information 15
4. General Comments 16
5. Antidegradation Review Information 16
5.1. Tier Determination 16
Table 1: Pollutants of Concern and Tier Determination 16
5.2. Existing Water Quality 16
5.3. Alternatives Analysis and Socio-Economic Impact Discussion 17
Table 2: Comparison of Alternatives 17
5.3.1. Regionalization Alterative 18
6. General Assumptions of the Water Quality and Antidegradation Review 18
7. Mixing Considerations 18
8. Permit Limits and Information 18
Table 3: Effluent Limits 19
Table 4: Calculation of Loading 19
9. Receiving Water Monitoring Requirements 19
10. Derivation and Discussion of Limits 20
10.1. Limit Derivation 20
11. Antidegradation Review Preliminary Determination 22
Appendix A: Map of Discharge Location 23
Appendix B: Geohydrological Evaluation 24
Appendix C: Heritage Review: 26
Appendix D: Antidegradation Review Summary Attachments 27

1. FACILITY INFORMATION

FACILITY NAME: Grand Cru Estates WWTF NPDES #: MO-0131555

FACILITY TYPE/DESCRIPTION: Currently a 6,000 gpd (0.006 MGD) facility is located at Table Rock Lake with a recirculating sand filter. The proposed expansion will increase the design flow to 19,037 gpd (0.019 MGD). As a result of the submitted alternative analysis, the applicant's preferred alternative is to expand the recirculating sand filter treatment facility.

EDU*: Ozark / White EcoRegion: Ozark Highlands/ White River Hills 8- DIGIT HUC: 11010001 COUNTY: Stone

* - Ecological Drainage Unit

LEGAL DESCRIPTION: NW ¼ NE ¼ Section 04, T21N, R22W LATITUDE/ LONGITUDE: 36 º33'16"/-93º19'16"
UTM COORDINATES: x= 471156, y= 4045499

2. 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.

2.1. WATER QUALITY HISTORY:

The facility was originally permitted in 2008; there have been no exceedances of current permit limits at this time.

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	RECEIVING WATERBODY	DISTANCE TO CLASSIFIED SEGMENT (MI)
001	0.0295	Secondary	Table Rock Lake	0.0

3. RECEIVING WATERBODY INFORMATION

WATERBODY NAME	CLASS	WBID	LOW-FLOW VALUES (CFS)			DESIGNATED USES**
			1Q10	7Q10	30Q10	
Table Rock Lake	L2	07313	--	--	--	AQL, LWW, SCR, WBC (A)

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

RECEIVING WATER BODY SEGMENT #1: Table Rock Lake
Upper end segment* UTM or Lat/Long coordinates: 36 º33'16"/-93º19'16" (Outfall)
Lower end segment* UTM or Lat/Long coordinates: 36 º33'32"/-93º18'48" (Table Rock Lake Cove)

*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

4. GENERAL COMMENTS

Heithaus Engineering and Associates, Inc. prepared, on behalf of Weston Development Company, the *Antidegradation Report for the proposed expansion of Grand Cru Estates WWTF* dated August 2009 and revised May 2010. Geohydrological Evaluation was submitted with the request (Appendix A: Map & Appendix B: Geohydrological Evaluation). Applicant elected to assume that all pollutants of concern (POC) are significantly degrading the receiving cove of Table Rock Lake in the absence of existing water quality. An alternative analysis was conducted to fulfill the requirements of the AIP. 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 C). Information that was provided by the applicant in the submitted report and summary forms in Appendix D was used to develop this review document.

5. ANTIDEGRADATION REVIEW INFORMATION

The following is a review of the *Antidegradation Report* dated August 21, 2009, revised May 06, 2010. The Antidegradation Request was submitted prior to the implementation of Nutrient Criteria on the lakes.

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, except for Total Phosphorus (see Appendix D).

TABLE 1: POLLUTANTS OF CONCERN AND TIER DETERMINATION

POLLUTANTS OF CONCERN	TIER*	DEGRADATION	COMMENT
Dissolved Oxygen	2	Significant	
Biochemical Oxygen Demand$_5$	2	Significant	
Total Suspended Solids (TSS)	**	Significant	
Ammonia	2	Significant	
pH	***	Significant	State Regulations applied
Escherichia coli (E. coli)	2	Significant	Disinfection/ State Regulations applied
Fecal coliform	2	Significant	Disinfection/ State Regulations applied
Total Phosphorous	1		State Regulations applied
Aluminum	2	Significant	Chemical addition to treat phosphorus
Oil and Grease	2	Significant	State Regulations applied
Total Nitrogen	2	Significant	
Total Residual Chlorine (TRC)	2	Significant	

* 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. Table Rock Lake is on the 2002 303(d) list for nutrients. A Tier 1 review was conducted for total phosphorus. All other POCs were considered to be Tier 2 and significantly degraded in the absence of existing water quality.

5.3. Alternatives Analysis and Socio-Economic Impact Discussion

This antidegradation review assumed significant degradation for all of the Tier 2 Pollutants of Concern, so there is a demonstration of necessity (i.e., alternatives analysis) and a determination of social and economic importance included in the *Grand Cru Estates WWTF Antidegradation Report* dated August 2009 and revised May 2010. There were a total of three (3) no discharge alternatives and four (4) discharging alternatives reviewed in the report. The no discharge alternatives were: land application, sub-surface irrigation and discharge to a regional wastewater treatment facility. Due to the cost of land acquisition, the construction cost and the soil characteristics, both land application and subsurface irrigation were not considered feasible. Discharging to a regional wastewater treatment facility was also infeasible due to distance and construction costs. The four discharging alternatives are Pura Max-Moving Bed Biological Reactor (MBBR), Recirculating Sand/ Gravel Filter (RSF), Bioficient, and Pura M. All four degrading technologies achieve Water Quality Standards. The MBBR, RSF, and Bioficient offered similar levels of treatment, with the RSF having lower cost, as shown in Table 2. The Pura M system of bioreactors and ultra-filtration achieves the highest levels of treatment, but is cost prohibitive. In the analysis of the technologies, their installation, operational and maintenance costs over the lifespan of the plant, and social-economic impact for the community, Heithaus Engineering demonstrated the RSF has the lowest installation, operation and maintenance costs than the other technologies and will fit in the current facility layout and design plan. The MBBR is both practicable and economically efficient; however with the information provided it does not meet a higher level of treatment than the RSF. (Please see the Grand Cru Estates WWTF Alternatives Analysis for a more detailed discussion of the proposed alternatives). The preferred alternative is the RSF.

The wastewater treatment facility is currently permitted 6,000 gpd to handle Grand Cru Landing at the Lake. The expansion to 19,037 gpd is proposed to accommodate the rezoning of the surrounding area and the development of residential, condominium and resort/time-share properties in the area. With the close proximity to Branson, the areas entertainment and Table Rock Lake, Stone County has continued to see significant growth. With the high densities and resort/commercial style of development, the County's tax base per land will have a higher optimization and sales taxes will increase as a result. The social benefits of the project will facilitate the continued development of surrounding properties.

Table 2: Comparison of Alternatives

Parameter	RSF	MBBR	Bioficient	Pura M
BOD_5 (mg/L)	≤15	≤15	≤20	≤5
TSS (mg/L)	≤10	≤15	≤20	≤2
DO (mg/L)	≥6	≥6	≥6	≥6
Ammonia (mg/L)	≤5	≤5	≤5	≤1
Fecal Coliform (/100 ml)	≤400	≤400	≤400	≤ 100 CFU
E. Coli (/100 ml)	≤126	≤126	≤126	≤ 3 CFU
Total Residual Chlorine (mg/L)	≤0.1	≤0.1	≤0.1	≤0.1
Oil & Grease (mg/L)	≤10	≤10	≤10	≤10
Aluminum (mg/L)	≤0.75	≤0.75	≤0.75	≤0.75
Total Phosphorous (mg/L)	≤0.5	≤0.5	≤0.5	≤0.5
Practicable	yes	yes	yes	yes
Economically Efficient	Yes	yes	no	no
Present Worth Cost*	$723,140	$804,611	$914,522	$1,060,196
Cost per Gallon	$37.99	$42.27	$48.04	$55.69
Ratio	Base	1.11	1.26	1.47

*20 year design life, 3% inflation and 2.6% interest

5.3.1. REGIONALIZATION ALTERATIVE

Within Section II B 1. of the AIP, discussion of the potential for discharge to a regional waste water collection system is mentioned. The applicant provided discussion of this alternative. There is not a regional authority available. This authority is not operative at this time so a waiver required under 10 CSR 20-6.010(3) (B) 1 Continuing Authority listed on forms is Grand Cru at the Lake Property Owners Association.

NEEDS A WAIVER TO PREVENT CONFLICT WITH AREA WIDE MANAGEMENT PLAN APPROVED UNDER SECTION 208 OF THE CLEAN WATER ACT AND UNDER 10 CSR 20-6.010(3) (B) 1 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 supercede 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

Triangular Prism Method

Mixing Zone (MZ) Parameters: According to the USGS 1:24,00OK Quadrangle, the mainstem lake width near the facility outfall location is approximately 80 feet (ft). One quarter of this width equals 20 ft. Therefore, MZ Width =20 feet [l0 CSR 20-7.031 (4)(A) 4.B.(IV)(a)].

Mixing Zone (MZ): The flow volume approximates a triangular prism because of the slope of the lake bottom, where the formula is Volume = L*W*(D*0.5). Assuming that the width will be either side of the discharge (MZ) length (100 feet) to form the plume effect, the box dimensions are length (L) = 100 ft, width (W) = 20 ft**,** and depth (D) = 5 ft. Depth was obtained using mixing zone length projected 100 ft from shoreline to the intersecting contour on 7.5' USGS topographic map. Volume = L*W*(D*(0.5)) = **(100)*(20)*(5*0.5)=** 5,000 ft^3. The flow volume of 5,000ft^3 is assumed as the daily mixing zone. Therefore (5,000 ft^3/day)*(l day/86,400 sec) = 0.06 ft^3/sec.

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

8. PERMIT LIMITS AND INFORMATION

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

TABLE 3: EFFLUENT LIMITS

PARAMETER	UNITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	WQBEL (NOTE 2)	MONITORING FREQUENCY
FLOW	GPD	*		*	FSR	ONCE/QUARTER
BOD_5	MG/L	22.5		15	PAL	ONCE/QUARTER
TSS	MG/L	15		10	PAL	ONCE/QUARTER
pH	SU	6.0 – 9.0		6.0 – 9.0	FSR	ONCE/QUARTER
TEMPERATURE	°C	*		*	N/A	ONCE/QUARTER
OIL AND GREASE	MG/L	15		10	FSR	ONCE/QUARTER
AMMONIA AS N	MG/L	5.0		3.0	PAL	ONCE/QUARTER
TOTAL NITROGEN	MG/L	*		*	FSR	ONCE/QUARTER
TOTAL PHOSPHORUS	MG/L	*		0.50	FSR	ONCE/QUARTER
DISSOLVED OXYGEN	MG/L	6.0 MINIMUM		6.0 MINIMUM	FSR	ONCE/QUARTER
ALUMINUM, TOTAL RECOVERABLE	MG/L	0.75		0.37	WQBEL	ONCE/QUARTER
TOTAL RESIDUAL CHLORINE	MG/L	0.019		0.0095	WQBEL	ONCE/QUARTER
FECAL COLIFORM	NOTE 1	1000		400**	FSR	ONCE/QUARTER
ESCHERICHIA COLIFORM (E. COLI)	NOTE 1			126**	FSR	ONCE/WEEK

* - Monitoring requirements only.
**- The Monthly Average for indicator bacteria shall be reported as a Geometric Mean.
NOTE 1– COLONIES/100 ML Please see the E. coli discussion in the Derivation & Discussion of Limits section of this WQRS below.
NOTE 2– WATER QUALITY-BASED EFFLUENT LIMITATION --WQBEL; OR MINIMALLY DEGRADING EFFLUENT LIMIT--MDEL; OR TECHNOLOGY-BASED EFFLUENT LIMIT-TBEL; OR NO DEGRADATION LIMIT--NDL; OR FSR --FEDERAL/STATE REGULATION; OR PAL—PREFERRED ALTERNATIVE LIMIT; OR N/A--NOT APPLICABLE. ALSO, PLEASE SEE THE **GENERAL ASSUMPTIONS OF THE WQAR #4 & #5.**

TABLE 4: CALCULATION OF LOADING

PARAMETER	EXISTING					PROPOSED EXPANSION				% CHANGE IN LOAD
	LIMIT	PERMIT LIMITS (MG/L)	(LBS/ MG) /(MG/L)	DESIGN FLOW (MGD)	LOAD (LBS/ DAY)	PERMIT LIMITS (MG/L)	(LBS/ MG) /(MG/L)	DESIGN FLOW (MGD)	LOAD (LBS/ DAY)	
BOD_5	Monthly	20	8.34	0.006	1.0	15	8.34	0.019	2.38	+238%
	Weekly*	30	8.34	0.006	1.5	22.5	8.34	0.019	3.57	+238%
TSS	Monthly	20	8.34	0.006	1.0	10	8.34	0.019	1.59	+159%
	Weekly*	30	8.34	0.006	1.5	15	8.34	0.019	2.38	+159%
Phosphorus	Monthly	0.5	8.34	0.006	0.03	0.5	8.34	0.019	0.079	+263%
TRC	Monthly	1.0	8.34	0.006	0.05	0.019	8.34	0.019	0.003	-40%
	Daily	1.0	8.34	0.006	0.05	0.0095	8.34	0.019	0.0015	-70%
Aluminum	Monthly	--	--	--	--	0.37	8.34	0.019	0.059	--
	Daily	--	--	--	--	0.75	8.34	0.019	0.12	--
Ammonia	Monthly	--	--	--	--	3.0	8.34	0.019	0.48	--
	Daily	--	--	--	--	5.0	8.34	0.019	0.79	--

-- Limits previously not established
* Previous Permit was in weekly and monthly averages; this WQAR has limits as daily maximum and monthly average.

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:

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

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

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

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 provided by the consultant as the WLA, the significantly-degrading effluent average monthly and daily maximum limits are determined by applying the WLA as the average monthly (AML) and multiplying the AML by 1.5 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 BOD_5 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 BOD_5 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. LIMIT DERIVATION.

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

- **Biochemical Oxygen Demand (BOD_5).** Technology based effluent limits: 15 mg/L monthly average. Proposed limit of 15.0 mg/l was provided by applicant in the Antidegradation Report. To derive the Monthly Daily Maximum (MDL), the average monthly limit was multiplied by 1.5, thus the MDL =22.5 mg/l. Influent monitoring may be required for this facility in its Missouri State Operating Permit.

- **Total Suspended Solids (TSS).** Technology based effluent limits: 10 mg/L monthly average. Proposed limit of 10.0 mg/l was provided by applicant in the Antidegradation Report. To derive the Monthly Daily Maximum (MDL), the average monthly limit was multiplied by 1.5, thus the MDL =15.0 mg/l. Influent monitoring may be required for this facility in its Missouri State Operating Permit

- **Dissolved Oxygen.** Dissolved oxygen in the cove is dependent upon the wastewater treatment plant effluent concentration of dissolved oxygen. Because the consultant proposed a DO effluent limit of 6.0 mg/l minimum, the department is requiring this dissolved oxygen concentration of 6.0 mg/l as a daily minimum and monthly average for the outfall. [10 CSR20-7.031(4)(J)].

- **pH.** pH shall be maintained in the range from six to nine (6.0 – 9.0) standard units [10 CSR 20-7.015(8)(B)2.].

- **Temperature.** Monitoring requirement only. Temperature affects the toxicity of Ammonia.

  - **Fecal Coliform**. Discharge shall not contain more than a monthly geometric mean of 400 colonies/ 100 mL and a daily maximum of 1000 colonies/100 mL during the recreational season (April 1 – October 31) [10 CSR 20-7.015(3)(B)3]. Future renewals of the facility operating permit will contain effluent limitations for E. coli that will replace fecal coliform as the applicable bacteria criteria in Missouri's water quality standards when Missouri adopts the implementation of the E. coli standards. Also, please see **GENERAL ASSUMPTIONS OF THE WQAR #7.**

  - **E. coli**. Discharge shall not contain more than a monthly geometric mean of 126 colonies/ 100 mL during the recreational season (April 1 – October 31). This facility will be required to have E. coli effluent limitations when Missouri adopts the implementation of the E. coli effluent regulations. The proposed E. Coli rule was published in the Missouri Register on November 2, 2009. In the proposed rule, weekly monitoring is required during the recreational season. Also, please see **GENERAL ASSUMPTIONS OF THE WQRS #7.**

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

$$WLA_c = \frac{(((0.0295 + 0.06) * 10) - (0.06 * 0.0))}{0.0295} = 30.34 \text{ µg/L}$$

$$WLA_a = \frac{(((0.0295 + 0.00) * 19) - (0.00 * 0.0))}{0.0295} = 19 \text{ µg/L}$$

LTA_c = 30.34 µg/L (0.527) = 15.9 µg/L	[CV = 0.6, 99" Percentile]
LTA_a = 19µg/L (0.321) = **6.1 µg/L**	[CV = 0.6, 99" Percentile]
MDL =6.1(3.11)= 19.0 µg/L =0.019 mg/l	[CV = 0.6, 99" Percentile]
AML = 6.1(1.55)= 9.5 µg/L=0.0095 mg/l	[CV = 0.6, 95" Percentile, n = 4]

Standard compliance language for TRC, including the minimum level (ML), should be included in the permit.

  - **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.

  - **Total Ammonia Nitrogen.** The proposed effluent limits provided in the Antidegradation Report was ≤5.0 mg/L. MDNR calculated the Water Quality Based Effluent Limits, which using the mass balance equation calculates to a MDL and AML at 11.0 mg/L and 4.2 mg/L respectively. Early Life Stages Present Total Ammonia Nitrogen criteria apply [10 CSR 20-7.031(4)(B)7.C. & Table B3]. Background total ammonia nitrogen = 0.01 mg/L. No ammonia decay due to the discharge being directly to Table Rock Lake. Water Quality Based Effluent Limits (WQBEL) was calculated using the Triangular Prism Method for determining the Regulatory Mixing Zone. The 5 mg/L proposed in the Antidegradation Report was set as the maximum daily limit and the AML was set at 3.0 mg/L, which are more protective than the WQBEL.

WQBEL- Summer effluent limits were calculated as they are the most protective.

Season	Temp (^oC)	pH (SU)	Total Ammonia Nitrogen CCC (mg N/L)	Total Ammonia Nitrogen CMC (mg N/L)
Summer	26	7.8	1.5	12.1

$$C_e = \frac{(((Q_e + Q_s) * C) - (Q_s * C_s))}{Q_e}$$

$$WLA_c = \frac{(((0.0295 + 0.06) * 1.5) - (0.06 * 0.01))}{0.0295} = 4.55 \text{ mg/l}$$

$$WLA_a = \frac{(((0.0295 + 0.00) * 12.1) - (0.00 * 0.01))}{0.0295} = 12.1 \text{ mg/l}$$

LTA_c = 4.55 mg/L (0.780) = **3.5 mg/L** [CV = 0.6, 99th Percentile, 30 day avg.]
LTA_a = 12.1 mg/L (0.321) = 3.9 mg/L [CV = 0.6, 99th Percentile]
MDL = 3.5 mg/L (3.11) = **11.0 mg/L** [CV = 0.6, 99th Percentile]
AML = 3.5 mg/L (1.19) = **4.22 mg/L** [CV = 0.6, 95th Percentile, n = 30]

- **Total Phosphorous.** Average monthly limit 0.5 mg/L [10 CSR 20-7.015(3)G]. Table Rock Lake is 303 (d) listed for nutrients. Limits have been applied by regulation to affect the Tier 1 status of the POC with Table Rock Lake. Applicant is currently discharging this POC.

- **Total Nitrogen.** Monitoring only requirement. Table Rock Lake is 303 (d) listed for nutrients.

- **Total Aluminum Recoverable** Protection of Aquatic Life Acute Criteria = 0.75 mg/L.
  ACUTE

$$WLA_a = \frac{(((0.0295 + 0.00) * 0.75) - (0.00 * 0.00))}{0.0295} = 0.75 \text{ mg/l}$$

LTA_a = 0.75(0.321) = 0.241 mg/L [CV = 0.6, 99th Percentile]
MDL = 0.241(3.11) = **0.37 mg/L** [CV = 0.6, 99th Percentile]
AML = 0.241(1.55) = **0.75 mg/L** [CV = 0.6, 95th Percentile, n = 4]

11. ANTIDEGRADATION REVIEW PRELIMINARY DETERMINATION

The proposed expanded facility discharge, Grand Cru Estates WWTF, 0.019 MGD was assumed to result in significant degradation of the segment identified in Table Rock Lake. The Recirculating Sand Filter 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 recirculating sand filter was found to be cost effective and was determined to be the preferred alternative. The effluent limits in the WQAR reflect either water quality based effluent limits or technology effluent limits based on the preferred treatment alternative; all effluent limits should be reviewed by the construction permit engineer prior to permit issuance.

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: 05/10/2010
Unit Chief: John Rustige, PE

APPENDIX A: MAP OF DISCHARGE LOCATION

APPENDIX B: GEOHYDROLOGICAL EVALUATION

Missouri Department Of Natural Resources
Geological Survey and Resource Assessment Division
P.O. Box 250
Rolla, Missouri 65402-0250
Phone - 573.368.2161 Fax - 573.368.2111
E-mail - gspeg@dnr.mo.gov

Project ID Number
06605
County
STONE

Geohydrologic Evaluation of Liquid-Waste Treatment Site

Project **Grand Cru Landing at Table Rock Lake -RFB** Quadrangle **TABLE ROCK DAM**
Location **NW1/4, NE1/4** Section **4** Township **21 N** Range **22 W**
Additional Location Information
Latitude **36** Deg **33** Min **20** Sec North Longitude **93** Deg **19** Min **13** Sec West

Owner Wescon Development Company, Inc. 4173384383
306 Sherman Way Branson, MO 65616

Requestor Heithaus Engineering, Inc. 4178873238
Ken Heithaus
535 W. Battlefield Road Springfield, MO 65807

Previous Reports ☑ Not Applicable
Date
Identification Number
Fiscal Year

Facility Type
- ○ Mechanical treatment plant
- ◉ Recirculating filter bed
- ○ Earthen lagoon with discharge
- ○ Earthen holding basin
- ○ Land application
- ○ Other type of facility

Type of Waste
- ○ Animal
- ◉ Human
- ○ Process or industrial
- ○ Leachate
- ○ Other waste type

Other Information
- ○ Plans were submitted
- ○ Site was investigated by NRCS
- ○ Soil or geotechnical data were submitted

Funding Source
- ◉ PPG
- ○ WWLF-SRF

Date of Field Visit 09/09/2004 **Stream Classification** ◉ Gaining ○ Losing ○ No discharge

Overall Geologic Limitations
- ◉ Slight
- ○ Moderate
- ○ Severe

Collapse Potential
- ○ Not applicable
- ◉ Slight
- ○ Moderate
- ○ Severe

Topography
- ◉ < 4%
- ○ 4% to 8%
- ○ 8% to 15%
- ○ > 15%

Landscape Position
- ○ Broad uplands
- ○ Ridgetop
- ◉ Hillslope
- ○ Narrow ravine
- ○ Floodplain
- ○ Alluvial plain
- ○ Terrace
- ○ Sinkhole

Bedrock The uppermost bedrock at the site consists of the Ordovician-age Cotter Dolomite.

Surficial Materials The surficial materials consist of bouldery and gravelly residuum/colluvium that has moderate permeability.

Project ID Number **06605**

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

- ○ Partical 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 evaluation was conducted for a recirculating sand filter to serve the Grand Cru Landing. The resort is currently utilizing a small earthen lagoon for a wastewater treatment system. The surficial materials at the site consist of residuum and colluvium derived from weathered Ordovician-age Cotter Dolomite. This residuum contains gravel of dolostone and chert with a sandy clay to silty clay matrix. These materials are expected to exhibit moderate permeability and may be relatively thin at some locations across the site. The uppermost bedrock at the site consists of Ordovician-age Cotter Dolomite. The bedrock is expected to have moderate permeability between the upper bedrock layers and low vertical permeability at depth.

Discharge from the proposed RFB would flow a short distance down a steep hillslope and enter Table Rock Lake. This is considered a gaining setting.

The site receives a slight overall geologic limitations rating.

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: Joe Gillman

Report Date: 9/16/2004

CC WPCP, SWRO, Wescon Development Co., Inc.

9-20-04

APPENDIX C: HERITAGE REVIEW:

Missouri Department of Conservation

Heritage Review Report

June 23, 2009; page 1 of 2

Policy Coordination Unit
P. O. Box 180
Jefferson City, MO 65102
Prepared by: Shannon Cave
shannon.cave@mdc.mo.gov
573-522-4115X3250

Adam Black, E. I.
Heithaus Engineering Incorporated
535 W Battlefield Rd
Springfield, MO 65807

Project type:	Wastewater Treatment Facility Expansion
Location/Scope:	Section 4, Township 21 N, Range 22 W
County:	Stone
Query reference:	HEI 204058 Operating Permit # Mo-0131555
Query received:	June 17, 2009

6-23-2009

This NATURAL HERITAGE REVIEW is not a site clearance letter. Rather, it indicates whether or not public lands and sensitive resources are known to be located close to and potentially affected by the proposed project.

FEDERAL LIST species/habitats are protected under the Federal Endangered Species Act. ***Consult with the U.S. Fish and Wildlife Service*** *(101 Park Deville Drive Suite A, Columbia, Missouri 65203-0007; 573-234-2132). STATE ENDANGERED species are listed in and protected under the Wildlife Code of Missouri (3CSR10-4.111).*

Records of federal-listed or state-listed (endangered) species or critical habitats near the project site:

Heritage records identify no wildlife preserves, no designated wilderness areas or critical habitats, no state or federal endangered-list records, and no records of species of concern that are tracked due to their rarity (but not listed as endangered)

- within one mile of the site, or
- in the public land survey section listed above, or
- in Table Rock Lake.

Clean Water Act permits issued by other agencies regulate both construction and operation of wastewater systems, and provide many important protections for fish and wildlife resources throughout the project area and at some distance downstream. Fish and wildlife almost always benefit when unnatural pollutants are removed from water, and concerns are minimal if construction is managed to minimize erosion and sedimentation/runoff to nearby streams and lakes, including adherence to any "Clean Water Permit" conditions. Revegetation of disturbed areas is recommended to minimize erosion, as is restoration with of native plant species compatible with the local landscape and for wildlife needs. Annuals like ryegrass may be combined with native perennials for quicker green-up. Avoid aggressive exotic perennials such as crown vetch and sericea lespedeza.

Some tributaries of Table Rock Lake provide habitat for aquatic species of concern. While these may use the lake and maintaining and improving water quality entering it is encouraged, the lake itself does not generally provide habitat critical to survival of species of conservation concern. Terrestrial species of concern like bald eagles and gray bats often take advantage of the lake and shore habitat and may be encountered, but are not recorded in proximity to the project site.

Heritage records were identified at some date and at a more or less precise location. This report includes information about records near but not necessarily on 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 the project will not encounter something not recorded. On-site verification is the responsibility of the project. Incorporating information from Heritage records into plans can help reduce adverse impacts to sensitive natural resources. However, these records only provide one reference and other information (e.g. wetland or soils maps, on-site inspections or surveys) should be considered. Compare biological and habitat needs of records listed to planned project activities to avoid or minimize impacts. More information may be found at www.mdc.mo.gov/nathis/endangered/ and mdc4.mdc.mo.gov/applications/mofwis/mofwis_search1.aspx. Find contact information on the department's nearest Natural History Biologist at http://www.mdc.mo.gov/nathis/contacts/.

Recommendations related to this project or site (not to specific heritage records):

- The project area is in region with 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/manag_construc.htm for best management information.
- Gray bats (*Myotis grisescens*, 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 possible retain forest vegetation along the stream and from the gray bat cave opening to the stream. See http://mdc.mo.gov/104 for best management recommendations.
- Bald eagles (*haliaeetus leucocephalus*) overwinter and may nest in the project area. The U. S. Fish and Wildlife Service has removed the bald eagle from the "threatened" species list, as has the State of Missouri from its list of endangered species. However, eagles continue to be protected by the federal government under the Bald and Golden Eagle Protection Act. Work sites should be reviewed for nearby eagle roost and nesting areas within 1500 meters. We recommend following federal guidelines at http://www.fws.gov/migratorybirds/issues/BaldEagle/NationalBaldEagleManagementGuidelines.pdf. MDC's best management recommendations are available at http://mdc.mo.gov/87.
- 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://mdc.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. Especially important at this time is the zebra mussel, known in the Missouri and Mississippi Rivers and Lake of the Ozarks, but missing from many inland streams and most lakes.
  - Remove any mud, soil, trash, plants or animals before leaving any water body or work area.
  - Before leaving a project site, drain water from boats and machinery (that has operated in the 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 (104° F or more) water, like that found at a do-it-yourself carwash and dry in the hot sun before using again. Please help prevent the spread of invasive species by inspecting and cleaning equipment thoroughly before moving between project sites.

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 remnants of species once but no longer common.

Project managers can pre-screen heritage review requests at http://mdcgis.mdc.mo.gov/heritage/newheritage/heritage.htm. A "Level 1 response" will result in a printable document that will make further submission to MDC or USFWS unnecessary.

APPENDIX D: ANTIDEGRADATION REVIEW SUMMARY ATTACHMENTS

The attachments that follow contain summary information provided by the applicant, Grand Cru Estates WWTF. 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: Effluent limits for BOD_5, TSS, TRC, and Ammonia as N were changed to reflect the Antidegradation Report and Water Quality Standards. Monitoring requirements were added for total nitrogen.

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	TELEPHONE NUMBER WITH AREA CODE
WESCON DEVELOPMENT COMPANY, INC	(417)338-4383
PERMITTEE	**TELEPHONE NUMBER WITH AREA CODE**
WESCON DEVELOPMENT COMPANY, INC	(417)338-4383

REASON FOR REQUEST

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

DESCRIPTION OF PROPOSED ACTIVITY:
EXPANSION OF EXISTING 6,225 GPD RSF TREATMENT PLANT TO 19,037 GPD.

FACILITY INFORMATION

FACILITY NAME	MSOP NUMBER (IF APPLICABLE)
GRAND CRU ESTATES WWTF	
COUNTY	**SIC / NAICS CODE**
STONE	4952

METHOD OF BACTERIA COMPLIANCE
☒ Chlorine Disinfection ☐ Ultraviolet Disinfection ☐ Ozone ☐ Not Applicable

WATER QUALITY ISSUES
NO NOTICES OF VIOLATION OR COMPLIANCE ISSUES WITHIN THE PAST 12 MONTHS.

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]
1	NW 1/4 NE 1/4 SEC. 4, T 21N, R 22 W	☒	TABLE ROCK LAKE
		☐	
		☐	

[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*
1	0.019	RECIRCULATING SAND FILTER	DOMESTIC WASTERWATER

* 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

MO 780-1893 (03-09)

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: Glenn R Plaskett DATE: 4/26/10
PRINT NAME: Glenn R Plaskett
E-MAIL ADDRESS:

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM, WATER POLLUTION CONTROL BRANCH

ANTIDEGRADATION REVIEW SUMMARY
TIER DETERMINATION AND EFFLUENT LIMIT SUMMARY

1. FACILITY

NAME			TELEPHONE NUMBER WITH AREA CODE
GRAND CRU WWTF			417-338-4383
ADDRESS (PHYSICAL)	CITY	STATE	ZIP CODE
42 GRAND PARCWAY	BLUE EYE	MO	65611

2. RECEIVING WATER BODY SEGMENT #1

NAME
TABLE ROCK LAKE

2.1 UPPER END OF SEGMENT (Location of discharge)
UTM _____ OR Lat 36º33'16" N, Long 93º19'16" W
2.2 LOWER END OF SEGMENT
UTM _____ OR Lat 36º33'32" N, Long 93º18'48" W

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

3.1 UPPER END OF SEGMENT
UTM _____ OR Lat _____, Long _____
3.2 LOWER END OF SEGMENT
UTM _____ OR Lat _____, Long _____

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?

☐ Yes ☒ 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 net increase in the ambient water quality concentration of the receiving water after mixing?

☐ Yes ☒ 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?

☐ Yes ☒ No

If yes, complete Attachment C.

Has the project been determined as non-degrading?

☐ Yes ☒ 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.

MO780-2025 (01/09)

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:

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
		BOD5* & TSS*
		DO*
		AMMONA AS N*
		FECAL C* & E.COLI*
		PHOS. (P) & AL *

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
		BOD5* & TSS*
		DO*
		AMMONA AS N*
		FECAL C* & E.COLI*
		PHOS. (P) & AL *

- 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? 4.0

Wet Weather Design Summary:
NO WET WEATHER BYPASS IS BEING REQUESTED AT THIS TIME

MO780-2025 (01/09)

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	MG/L	20	20	30
TSS	MG/L	20	20	30
Dissolved Oxygen	MG/L	6.0 MINIMUM	6	6
Ammonia	MG/L	5	5	8
Bacteria (E. Coli)	COLONIES/100 ML	126	126	126
PHOSPHOROUS	MG/L	0.5	0.5	0.5
ALUMINUM	UG/L	750	750	750
FECAL COLIFORM	COLONIES/100ML	400	400	1000

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: [signature] DATE: 4/26/10

NAME AND OFFICIAL TITLES: KENNETH M. HEITHAUS, P.E., P.L.S.

COMPANY NAME: HEITHAUS ENGINEERING & ASSOC., INC.

ADDRESS: 535 W. BATTLEFIELD ST, 65807 CITY: SPRINGFIELD STATE: MO ZIP CODE:

TELEPHONE NUMBER WITH AREA CODE: (417)887-3238 E-MAIL ADDRESS: KEN@HEIWEB.COM

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

SIGNATURE: [signature], PRESIDENT DATE: 4/26/10

NAME AND OFFICIAL TITLES: WESCON DEVELOPMENT COMPANY, INC.

ADDRESS: 479 FAITH RD CITY: BLUE EYE STATE: MO ZIP CODE: 65611

TELEPHONE NUMBER WITH AREA CODE: (417)338-4383 E-MAIL ADDRESS:

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: [signature], PRESIDENT DATE: 4/26/10

NAME AND OFFICIAL TITLES: WESCON DEVELOPMENT COMPANY, INC

ADDRESS: 479 FAITH RD CITY: BLUE EYE STATE: MO ZIP CODE: 65611

TELEPHONE NUMBER WITH AREA CODE: 417-338-4383 E-MAIL ADDRESS:

MO780-2025 (01/08)

STANDARD CONDITIONS FOR NPDES PERMITS
ISSUED BY
THE MISSOURI DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION
REVISED
NOVEMBER 1, 2013

These Standard Conditions incorporate permit conditions as required by 40 CFR 122.41 or other applicable state statutes or regulations. These minimum conditions apply unless superseded by requirements specified in the permit.

Part I – General Conditions
Section A – Sampling, Monitoring, and Recording

1. **Sampling Requirements.**
   a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
   b. All samples shall be taken at the outfall(s) or Missouri Department of Natural Resources (Department) approved sampling location(s), and unless specified, before the effluent joins or is diluted by any other body of water or substance.

2. **Monitoring Requirements**.
   a. Records of monitoring information shall include:
      i. The date, exact place, and time of sampling or measurements;
      ii. The individual(s) who performed the sampling or measurements;
      iii. The date(s) analyses were performed;
      iv. The individual(s) who performed the analyses;
      v. The analytical techniques or methods used; and
      vi. The results of such analyses.
   b. If the permittee monitors any pollutant more frequently than required by the permit at the location specified in the permit using test procedures approved under 40 CFR Part 136, or another method required for an industry-specific waste stream under 40 CFR subchapters N or O, the results of such monitoring shall be included in the calculation and reported to the Department with the discharge monitoring report data (DMR) submitted to the Department pursuant to Section B, paragraph 7.

3. **Sample and Monitoring Calculations.** Calculations for all sample and monitoring results which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in the permit.

4. **Test Procedures**. The analytical and sampling methods used shall conform to the reference methods listed in 10 CSR 20-7.015 unless alternates are approved by the Department. The facility shall use sufficiently sensitive analytical methods for detecting, identifying, and measuring the concentrations of pollutants. The facility shall ensure that the selected methods are able to quantify the presence of pollutants in a given discharge at concentrations that are low enough to determine compliance with Water Quality Standards in 10 CSR 20-7.031 or effluent limitations unless provisions in the permit allow for other alternatives. A method is "sufficiently sensitive" when; 1) the method minimum level is at or below the level of the applicable water quality criterion for the pollutant or, 2) the method minimum level is above the applicable water quality criterion, but the amount of pollutant in a facility's discharge is high enough that the method detects and quantifies the level of pollutant in the discharge, or 3) the method has the lowest minimum level of the analytical methods approved under 10 CSR 20-7.015. These methods are also required for parameters that are listed as monitoring only, as the data collected may be used to determine if limitations need to be established. A permittee is responsible for working with their contractors to ensure that the analysis performed is sufficiently sensitive.

5. **Record Retention.** Except for records of monitoring information required by the permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five (5) years (or longer as required by 40 CFR part 503), the permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by the permit, and records of all data used to complete the application for the permit, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Department at any time.

6. **Illegal Activities.**
   a. The Federal Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under the permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than two (2) years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than four (4) years, or both.
   b. The Missouri Clean Water Law provides that any person or who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained pursuant to sections 644.006 to 644.141 shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than six (6) months, or by both. Second and successive convictions for violation under this paragraph by any person shall be punished by a fine of not more than $50,000 per day of violation, or by imprisonment for not more than two (2) years, or both.

Section B – Reporting Requirements

1. **Planned Changes.**
   a. The permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility when:
      i. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR 122.29(b); or
      ii. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under 40 CFR 122.42(a)(1);
      iii. The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan;
      iv. Any facility expansions, production increases, or process modifications which will result in a new or substantially different discharge or sludge characteristics must be reported to the Department 60 days before the facility or process modification begins. Notification may be accomplished by application for a new permit. If the discharge does not violate effluent limitations specified in the permit, the facility is to submit a notice to the Department of the changed discharge at least 30 days before such changes. The Department may require a construction permit and/or permit modification as a result of the proposed changes at the facility.

2. **Twenty-Four Hour Reporting.**
   a. The permittee shall report any noncompliance which may endanger health or the environment. Relevant information shall be provided orally or via the current electronic method approved by the Department, within 24 hours from the time the permittee becomes aware of the circumstances, and shall be reported to the appropriate Regional Office during normal business hours or the Environmental Emergency Response hotline at 573-634-2436 outside of normal business hours. A written submission shall also be provided within five (5) business days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

b. The following shall be included as information which must be reported within 24 hours under this paragraph.
   i. Any unanticipated bypass which exceeds any effluent limitation in the permit.
   ii. Any upset which exceeds any effluent limitation in the permit.
   iii. Violation of a maximum daily discharge limitation for any of the pollutants listed by the Department in the permit required to be reported within 24 hours.

c. The Department may waive the written report on a case-by-case basis for reports under paragraph 2. b. of this section if the oral report has been received within 24 hours.

3. **Sanitary Sewer Overflow Reporting.** The following requirements solely reflect reporting obligations, and reporting does not necessarily reflect noncompliance, which may depend on the circumstances of the incident reported.
   a. Twenty-Four Hour (24-Hour) Reporting. The permittee or owner shall report any incident in which wastewater escapes the collection system such that it reaches waters of the state or it may pose an imminent or substantial endangerment to the health or welfare of persons. Relevant information shall be provided orally or via the current electronic method approved by the Department within 24 hours from the time the permittee becomes aware of the incident. A written submission shall also be provided within five (5) business days of the time the permittee or owner becomes aware of the incident. The Department may waive the written report on a case-by-case basis if the oral report has been received within 24 hours. The five (5) day reports may be provided via the current electronic method approved by the Department.
   b. Incidents Reported via Discharge Monitoring Reports (DMRs). The permittee or owner shall report any event in which wastewater escapes the collection system, which does not enter waters of the state and is not expected to pose an imminent or substantial endangerment to the health or welfare of persons, which occur typically during wet weather events. Relevant information shall be provided with the permittee's or owner's DMRs.

4. **Anticipated Noncompliance**. The permittee shall give advance notice to the Department of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements. The notice shall be submitted to the Department 60 days prior to such changes or activity.

5. **Compliance Schedules.** Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of the permit shall be submitted no later than 14 days following each schedule date. The report shall provide an explanation for the instance of noncompliance and a proposed schedule or anticipated date, for achieving compliance with the compliance schedule requirement.

6. **Other Noncompliance.** The permittee shall report all instances of noncompliance not reported under paragraphs 2, 3, 4, and 7 of this section, at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph 2. a. of this section.

7. **Other Information**. Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Department, it shall promptly submit such facts or information.

8. **Discharge Monitoring Reports.**
   a. Monitoring results shall be reported at the intervals specified in the permit.
   b. Monitoring results must be reported to the Department via the current method approved by the Department, unless the permittee has been granted a waiver from using the method. If the permittee has been granted a waiver, the permittee must use forms provided by the Department.
   c. Monitoring results shall be reported to the Department no later than the 28th day of the month following the end of the reporting period.

Section C – Bypass/Upset Requirements

1. **Definitions.**
   a. *Bypass*: the intentional diversion of waste streams from any portion of a treatment facility.
   b. *Severe Property Damage*: substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.
   c. *Upset*: an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

2. **Bypass Requirements.**
   a. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs 2. b. and 2. c. of this section.
   b. Notice.
      i. Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least 10 days before the date of the bypass.
      ii. Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in Section B – Reporting Requirements, paragraph 5 (24-hour notice).
   c. Prohibition of bypass.
      i. Bypass is prohibited, and the Department may take enforcement action against a permittee for bypass, unless:
         1. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
         2. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
         3. The permittee submitted notices as required under paragraph 2. b. of this section.
      ii. The Department may approve an anticipated bypass, after considering its adverse effects, if the Department determines that it will meet the three (3) conditions listed above in paragraph 2. c. i. of this section.

3. **Upset Requirements.**
   a. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph 3. b. of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.
   b. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
      i. An upset occurred and that the permittee can identify the cause(s) of the upset;
      ii. The permitted facility was at the time being properly operated; and
      iii. The permittee submitted notice of the upset as required in Section B – Reporting Requirements, paragraph 2. b. ii. (24-hour notice).
      iv. The permittee complied with any remedial measures required under Section D – Administrative Requirements, paragraph 4.
   c. Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

Section D – Administrative Requirements

1. **Duty to Comply.** The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Missouri Clean Water Law and Federal Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.
   a. The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the Federal Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.
   b. The Federal Clean Water Act provides that any person who violates section 301, 302, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any such sections in a permit issued under section 402, or any requirement imposed in a pretreatment program approved under sections 402(a)(3) or 402(b)(8) of the Act, is subject to a civil penalty not to exceed $25,000 per day for each violation. The Federal Clean Water Act provides that any person who negligently violates sections 301, 302, 306, 307, 308, 318, or 405 of the Act, or any condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, or any requirement imposed in a pretreatment program approved under section 402(a)(3) or 402(b)(8) of the Act, is subject to criminal penalties of $2,500 to $25,000 per day of violation, or imprisonment of not more than one (1) year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than $50,000 per day of violation, or by imprisonment of not more than two (2) years, or both. Any person who knowingly violates such sections, or such conditions or limitations is subject to criminal penalties of $5,000 to $50,000 per day of violation, or imprisonment for not more than three (3) years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than $100,000 per day of violation, or imprisonment of not more than six (6) years, or both. Any person who knowingly violates section 301, 302, 303, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than $250,000 or imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing endangerment violation, a person shall be subject to a fine of not more than $500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in section 309(c)(3)(B)(iii) of the CWA, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than $1,000,000 and can be fined up to $2,000,000 for second or subsequent convictions.
   c. Any person may be assessed an administrative penalty by the EPA Director for violating section 301, 302, 306, 307, 308, 318 or 405 of this Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of this Act. Administrative penalties for Class I violations are not to exceed $10,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed $25,000. Penalties for Class II violations are not to exceed $10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed $125,000.
   d. It is unlawful for any person to cause or permit any discharge of water contaminants from any water contaminant or point source located in Missouri in violation of sections 644.006 to 644.141 of the Missouri Clean Water Law, or any standard, rule or regulation promulgated by the commission. In the event the commission or the director determines that any provision of sections 644.006 to 644.141 of the Missouri Clean Water Law or standard, rules, limitations or regulations promulgated pursuant thereto, or permits issued by, or any final abatement order, other order, or determination made by the commission or the director, or any filing requirement pursuant to sections 644.006 to 644.141 of the Missouri Clean Water Law or any other provision which this state is required to enforce pursuant to any federal water pollution control act, is being, was, or is in imminent danger of being violated, the commission or director may cause to have instituted a civil action in any court of competent jurisdiction for the injunctive relief to prevent any such violation or further violation or for the assessment of a penalty not to exceed $10,000 per day for each day, or part thereof, the violation occurred and continues to occur, or both, as the court deems proper. Any person who willfully or negligently commits any violation in this paragraph shall, upon conviction, be punished by a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than one year, or both. Second and successive convictions for violation of the same provision of this paragraph by any person shall be punished by a fine of not more than $50,000 per day of violation, or by imprisonment for not more than two (2) years, or both.

2. **Duty to Reapply.**
   a. If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit.
   b. A permittee with a currently effective site-specific permit shall submit an application for renewal at least 180 days before the expiration date of the existing permit, unless permission for a later date has been granted by the Department. (The Department shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)
   c. A permittees with currently effective general permit shall submit an application for renewal at least 30 days before the existing permit expires, unless the permittee has been notified by the Department that an earlier application must be made. The Department may grant permission for a later submission date. (The Department shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)

3. **Need to Halt or Reduce Activity Not a Defense.** It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

4. **Duty to Mitigate.** The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

5. **Proper Operation and Maintenance**. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

6. **Permit Actions.**
   a. Subject to compliance with statutory requirements of the Law and Regulations and applicable Court Order, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to, the following:
      i. Violations of any terms or conditions of this permit or the law;
      ii. Having obtained this permit by misrepresentation or failure to disclose fully any relevant facts;
      iii. A change in any circumstances or conditions that requires either a temporary or permanent reduction or elimination of the authorized discharge; or
      iv. Any reason set forth in the Law or Regulations.
   b. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

7. **Permit Transfer.**
   a. Subject to 10 CSR 20-6.010, an operating permit may be transferred upon submission to the Department of an application to transfer signed by the existing owner and the new owner, unless prohibited by the terms of the permit. Until such time the permit is officially transferred, the original permittee remains responsible for complying with the terms and conditions of the existing permit.
   b. The Department may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the Missouri Clean Water Law or the Federal Clean Water Act.
   c. The Department, within 30 days of receipt of the application, shall notify the new permittee of its intent to revoke or reissue or transfer the permit.

8. **Toxic Pollutants.** The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the Federal Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the Federal Clean Water Act within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.

9. **Property Rights.** This permit does not convey any property rights of any sort, or any exclusive privilege.

10. **Duty to Provide Information.** The permittee shall furnish to the Department, within a reasonable time, any information which the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish to the Department upon request, copies of records required to be kept by this permit.

11. **Inspection and Entry.** The permittee shall allow the Department, or an authorized representative (including an authorized contractor acting as a representative of the Department), upon presentation of credentials and other documents as may be required by law, to:
   a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of the permit;
   b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
   c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
   d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Federal Clean Water Act or Missouri Clean Water Law, any substances or parameters at any location.

12. **Closure of Treatment Facilities.**
   a. Persons who cease operation or plan to cease operation of waste, wastewater, and sludge handling and treatment facilities shall close the facilities in accordance with a closure plan approved by the Department.
   b. Operating Permits under 10 CSR 20-6.010 or under 10 CSR 20-6.015 are required until all waste, wastewater, and sludges have been disposed of in accordance with the closure plan approved by the Department and any disturbed areas have been properly stabilized. Disturbed areas will be considered stabilized when perennial vegetation, pavement, or structures using permanent materials cover all areas that have been disturbed. Vegetative cover, if used, shall be at least 70% plant density over 100% of the disturbed area.

13. **Signatory Requirement.**
   a. All permit applications, reports required by the permit, or information requested by the Department shall be signed and certified. (See 40 CFR 122.22 and 10 CSR 20-6.010)
   b. The Federal Clean Water Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than six (6) months per violation, or by both.
   c. The Missouri Clean Water Law provides that any person who knowingly makes any false statement, representation or certification in any application, record, report, plan, or other document filed or required to be maintained pursuant to sections 644.006 to 644.141 shall, upon conviction, be punished by a fine of not more than ten thousand dollars, or by imprisonment for not more than six months, or by both.

14. **Severability.** The provisions of the permit are severable, and if any provision of the permit, or the application of any provision of the permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of the permit, shall not be affected thereby.

STANDARD CONDITIONS FOR NPDES PERMITS
ISSUED BY
THE MISSOURI DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION
AUGUST 15, 1994

PART III – SLUDGE & BIOSOLIDS FROM DOMESTIC WASTEWATER TREATMENT FACILITIES

SECTION A – GENERAL REQUIREMENTS

1. This permit pertains to sludge requirements under the Missouri Clean Water Law and regulation and incorporates applicable federal sludge disposal requirements under 40 CFR 503. The Environmental Protection Agency (EPA) has principal authority for permitting and enforcement of the federal sludge regulations under 40 CFS 503 until such time as Missouri is delegated the new EPA sludge program. EPA has reviewed and accepted these standard sludge conditions. EPA may choose to issue a separate sludge addendum to this permit or a separate federal sludge permit at their discretion to further address federal requirements.
2. These PART III Standard Conditions apply only to sludge and biosolids generated at domestic wastewater treatment facilities, including public owned treatment works (POTW) and privately owned facilities.
3. Sludge and Biosolids Use and Disposal Practices.
   a. Permittee is authorized to operate the sludge and biosolids treatment, storage, use, and disposal facilities listed in the facility description of this permit.
   b. Permittee shall not exceed the design sludge volume listed in the facility description and shall not use sludge disposal methods that are not listed in the facility description, without prior approval of the permitting authority.
   c. Permittee is authorized to operate the storage, treatment or generating sites listed in the Facility Description section of this permit.
   d. A separate operating permit is required for each operating location where sludge or biosolids are generated, stored, treated, or disposed, unless specifically exempted in this permit or in 10 CSR 20, Chapter 6 regulations. For land application, see section H, subsection 3 of these standard conditions.
4. Sludge Received From Other Facilities
   a. Permitees may accept domestic wastewater sludge from other facilities including septic tank pumpings from residential sources as long as the design sludge volume is not exceeded and the treatment facility performance is not impaired.
   b. The permittee shall obtain a signed statement from the sludge generator or hauler that certifies the type and source of the sludge.
   c. Sludge received from out-of-state generators shall receive prior approval of the permitting authority and shall be listed in the facility description or special conditions section of the permit.
5. These permit requirements do not supersede nor remove liability for compliance with county and other local ordinances.
6. These permit requirements do not supersede nor remove liability for compliance with other environmental regulations such as odor emissions under the Missouri Air Pollution Control Law and regulations.
7. This permit may (after du process) be modified, or alternatively revoked and reissued, to comply with any applicable sludge disposal standard or limitation issued or approved under Section 405(d) of the Clean Water Act or under Chapter 644 RsMo.
8. In addition to the STANDARD CONDITIONS, the department may include sludge limitations in the special conditions portion or other sections of this permit.
9. Alternate Limits in Site Specific Permit.
   Where deemed appropriate, the department may require an individual site specific permit in order to authorize alternate limitations:
   a. An individual permit must be obtained for each operating location, including application sites.
   b. To request a site specific permit, an individual permit application, permit fees, and supporting documents shall be submitted for each operating location. This shall include a detailed sludge/biosolids management plan or engineering report.
10. Exceptions to these Standard Conditions may be authorized on a case-by-case basis by the department, as follows:
    a. The department will prepare a permit modification and follow permit public notice provisions as applicable under 10 CSR 20-6.020, 40 CFR 124.10, and 40 CFR 501.15(a)(2)(ix)(E). This includes notification of the owners of property located adjacent to each land application site, where appropriate.
    b. Exceptions cannot be grated where prohibited by the federal sludge regulations under 40 CFR 503.
11. Compliance Period
    Compliance shall be achieved as expeditiously as possible but no later than the compliance dates under 40 CFR 503.2.

SECTION B – DEFINITIONS

1. Biosolids means an organic fertilizer or soil amendment produced by the treatment of domestic wastewater sludge. Untreated sludge or sludge that does not conform to the pollutants and pathogen treatment requirements in this permit is not considered biosolids.
2. Biosolids land application facility is a facility where biosolids are spread onto the land at agronomic rates for production of food or fiber. The facility includes any structures necessary to store the biosolids until soil, weather, and crop conditions are favorable for land application.
3. Class A biosolids means a material that has met the Class A pathogen reduction requirements or equivalent treatment by a Process to Further Reduce Pathogens (PFRP) in accordance with 40 CFR 503.
4. Class B biosolids means a material that has met the Class B pathogen reduction requirements or equivalent treatment by a Process to Significantly Reduce Pathogens (PFRP) in accordance with 40 CFR 503.
5. Domestic wastewater means wastewater originating from the sanitary conveniences of residences, commercial buildings, factories and institutions; or co-mingled sanitary and industrial wastewater processed by a public owned treatment works (POTW) or privately owned facility.
6. Mechanical treatment plants are wastewater treatment facilities that use mechanical devices to treat wastewater, including septic tanks, extended aeration, activated sludge, contact stabilization, trickling filters, rotating biological discs, and other similar facilities. It does not include unaerated wastewater treatment lagoons and constructed wetlands for wastewater treatment.
7. Operating location as defined in 10 CSR 20-2.010 is all contiguous lands owned, operated or controlled by one (1) person or by two (2) or more persons jointly or as tenants in common.
8. Plant Available Nitrogen (PAN) is the nitrogen that will be available to plants during the next growing season after biosolids application.
9. Sinkhole is a depression in the land surface into which surface water flows to join an underground drainage system.
10. Site Specific Permit is a permit that has alternate limits developed to address specific site conditions for each land application site or storage site.
11. Sludge is the solid, semisolid, or liquid residue removed during the treatment of wastewater. Sludge includes septage removed from septic tanks.
12. Sludge lagoon is an earthen basin that receives sludge that has been removed from a wastewater treatment facility. It does not include a wastewater treatment lagoon or sludge treatment units that are not a part of a mechanical wastewater treatment facility.
13. Wetlands are those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamp, marshes, bogs, and similar areas. Wetlands do not include constructed wetlands used for wastewater treatment.

SECTION C – MECHANICAL WASTEWATER TREATMENT FACILITIES

1. Sludge shall be routinely removed from the wastewater treatment facilities and handled according to the permit facility description and sludge conditions in this permit.
2. The permittee shall operate the facility so that there is no sludge loss into the discharged effluent in excess of permit limits, no sludge bypassing, and no discharge of sludge to waters of the state.
3. Mechanical treatment plants shall have separate sludge storage compartments in accordance with 10 CSR 20, Chapter 8. Failure to remove sludge from these storage compartments on the required design schedule is a violation of this permit.

SECTION D – SLUDGE DISPOSED AT OTHER TREATMENT FACILITY OR CONTRACT HAULER

1. This section applies to permittees that haul sludge to another treatment facility for disposal or use contract haulers to remove and dispose of sludge.
2. Permittees that use contract haulers are responsible for compliance with all the terms of this permit including final disposal, unless the hauler has a separate permit for sludge or biosolids disposal issued by the department; or the hauler transports the sludge to another permitted treatment facility.
3. The permittee shall require documentation from the contractor of the disposal methods used and permits obtained by the contractor.
4. Testing of sludge, other than total solids content, is not required if sludge is hauled to a municipal wastewater treatment facility or other permitted wastewater treatment facility.

SECTION E – WASTEWATER TREATMENT LAGOONS AND STORMWATER RETENTION BASINS

1. Sludge that is retained within a wastewater treatment lagoon is subject to sludge disposal requirements when the sludge is removed from the lagoon or when the lagoon ceases to receive and treat wastewater.
2. If sludge is removed during the year, an annual sludge report must be submitted.
3. Storm water retention basins or other earthen basins, which have been used as sludge storage for a mechanical treatment system is considered a sludge lagoon and must comply with Section G of this permit.

SECTION F – INCINERATION OF SLUDGE

1. Sludge incineration facilities shall comply with the requirements of 40 CFR 503 Subpart E; air pollution control regulations under 10 CSR 10; and solid waste management regulations under 10 CSR 80.
2. Permittee may be authorized under the facility description of this permit to store incineration ash in lagoons or ash ponds. This permit does not authorize the disposal of incineration ash. Incineration ash shall be disposed in accordance with 10 CSR 80; or if the ash is determined to be hazardous waste, shall be disposed in accordance with 10 CSR 25.
3. In addition to normal sludge monitoring, incineration facilities shall report the following as part of the annual report, quantity of sludge incinerated, quantity of ash generated, quantity of ash stored; and ash use or disposal method, quantity, and location. Permittee shall also provide the name of the disposal facility and the applicable permit number.
4. Additional limitations, monitoring, and reporting requirements may be addressed in the Special Conditions sections of this permit.

SECTION G – SURFACE DISPOSAL SITES AND SLUDGE LAGOONS

1. Surface disposal sites shall comply with the requirements in 40 CFR 503 Subpart C, and solid waste disposal regulations under 10 CSR 80.
2. Additional limitations, monitoring, and reporting requirements may be addressed in the Special Conditions section of this permit.
3. Effective February 19, 1995, a sludge lagoon that has been in use for more than two years without removal of accumulated sludge, or that has not been properly closed shall comply with one of the following options:
   a. Permittee shall obtain a site specific permit to address surface disposal requirements under 40 CFR 503, ground water quality regulations under 10 CSR 20, Chapter 7 and 8, and solid waste management regulations under 10 CSR 80;
   b. Permittee shall clean out the sludge lagoon to remove any sludge over two years old and shall continue to remove accumulated sludge at least every two years or an alternate schedule approved under 40 CFR 503.20(b). In order to avoid damage to the lagoon seal during cleaning, the permittee may leave a layer of sludge on the bottom of the lagoon, upon prior approval of the department; or
   c. Permittee shall close the lagoon in accordance with Section 1.

SECTION H – LAND APPLICATION

1. The permittee shall not land apply sludge or biosolids unless land application is authorized in the Facility Description or special conditions section of the permit.
2. This permit replaces and terminates all previous sludge management plan approvals by the department for land application of sludge or biosolids.
3. Land application sites within a 20 mile radius of the wastewater treatment facility are authorized under this permit when biosolids are applied for beneficial use in accordance with these standard conditions unless a site specific permit is required under Section A, Subsection 9.
4. Biosolids shall not be applied unless authorized in this permit or exempted under 10 CSR 20, Chapter 6.
   a. This permit does not authorize the land application of sludge except when sludge meets the definition of biosolids.
   b. This permit authorizes “Class A or B” biosolids derived from domestic wastewater sludges to be land applied onto grass land, crop land, timber land or other similar agricultural or silviculture lands at rates suitable for beneficial use as organic fertilizer and soil conditioner.
5. Public Contact Sites.
   Permittees who wish to apply Class A biosolids to public contact sites must obtain approval from the department. Applications for approval shall be in the form of an engineering report and shall address priority pollutants and dioxin concentrations. Authorization for land applications must be provided in the special conditions section of this permit or in a separate site-specific permit.

6. Agricultural and Silvicultural Sites.
   In addition to specified conditions herein, this permit is subject to the attached Water Quality Guides numbers WQ 422 through 426 published by the University of Missouri, and herby incorporated as though fully set forth herein. The guide topics are as follows:
   - WQ 422 Land Application of Septage
   - WQ 423 Monitoring Requirements for Biosolids Land Application
   - WQ 424 Biosolids Standards for Pathogens and Vectors
   - WQ 425 Biosolids Standards for Metals and Other Trace Substances
   - WQ 426 Best Management Practices for Biosolids Land Applications

SECTION I – CLOSURE REQUIREMENTS

1. This section applies to all wastewater treatment facilities (mechanical and lagoons) and sludge or biosolids storage and treatment facilities and incineration ash ponds. It does not apply to land application sites.
2. Permittees who plan to cease operation must obtain department approval of a closure plan which addresses proper removal and disposal of all residues, including sludge, biosolids, and ash. Permittee must maintain this permit until the facility is properly closed per 10 CSR 20-6.010 and 10 CSR 20-6.015.
3. Residuals that are left in place during closure of a lagoon or earthen structure shall not exceed the agricultural loading rates as follows:
   a. Residuals shall meet the monitoring and land application limits for agricultural rates as referenced in Section H of these standard conditions.
   b. If a wastewater treatment lagoon has been in operation for 15 years or more, the sludge in the lagoon qualifies for Class B with respect to pathogens (see WQ 424, Table 3), and testing for fecal coliform is not required. For other lagoons, testing for fecal coliform is required to show compliance with Class B limitations. Se WQ 423 and 424.
   c. The allowable nitrogen loading that may be left in the lagoon shall be based on the plant available nitrogen (PAN) loading. See WQ 426 for calculation procedures. For a grass cover crop, the allowable PAN is 300 pounds/acre.
4. When closing a wastewater treatment lagoon with a design treatment capacity equal or less than 150 persons, the residuals are considered “septage” under the similar treatment works” definition. See WQ 422. Under the septage category, residuals may be left in place as follows:
   a. Testing for metals or fecal coliform is not required.
   b. If the wastewater treatment lagoon has been in use for less than 15 years, mix lime with the sludge at the rate of 50 pounds of hydrated lime per 1000 gallons (134 cubic feet) of sludge.
   c. The amount of sludge that may be left in the lagoon shall be based on the plan available nitrogen (PAN) loading. 100 dry tons/acre of sludge may be left in the basin without testing for nitrogen. If more than 100 dry tons/acre will be left in the lagoon, test for nitrogen and determine the PAN in accordance with WQ 426. Allowable PAN loading is 300 pounds/acre.
5. Residuals left within the lagoon shall be mixed with soil on at least a 1 to 1 ratio, the lagoon berms shall be demolished, and the site shall be graded and vegetated so as to avoid ponding of storm water and provide adequate surface water drainage without creating erosion.
6. Lagoon closure activities shall obtain a storm water permit for land disturbance activities that equal or exceed five acres in accordance with 10 CSR 20-6.200.
7. If sludge exceeds agricultural loading rates under Section H or I, a landfill permit or solid waste disposal permit shall be obtained to authorize on-site sludge disposal under the Missouri Solid Waste Management Law and regulations per 10 CSR 80, and the permittee must comply with the surface disposal requirements under 40 CFR 503, Subpart C.

SECTION J – MONITORING FREQUENCY

1. At a minimum, sludge or biosolids shall be tested for volume and percent total solids on a frequency that will accurately respresent sludge quantities produced and disposed.
2. Testing for land application is listed under Section H, Subsection 6 of these standard conditions (see WQ 423). Once per year is the minimum test frequency. Additional testing shall be performed for each 100 dry tons of sludge generated or stored during the year.
3. Additional testing may be required in the special conditions or other sections of the permit. Permittees receiving industrial wastewater may be required to conduct additional testing upon request from the department.
4. Monitoring requirements shall be performed in accordance with, “POTW Sludge Sampling and Analysis Guidance Document”, United States Environmental Protection Agency, August 1989, and subsequent revisions.

SECTION K – RECORD KEEPING AND REPORTING REQUIREMENTS

1. The permittee shall maintain records on file at the facility for at least five years for the items listed in these Standard Conditions and any additional items in the Special Conditions section of this permit. This shall include dates when the sludge facility is checked for proper operation, records of maintenance and repairs and other relevant information.
2. Reporting Period
   a. By January 28th of each year, an annual report shall be submitted for the previous calendar year period for all mechanical wastewater treatment facilities, sludge lagoons, and sludge or biosolids disposal facilities.
   b. Permittees with wastewater treatment lagoons shall submit the above annual report only when sludge or biosolids are removed from the lagoon during the report period or when the lagoon is closed.
3. Report Forms. The annual report shall be submitted on report forms provided by the department or equivalent forms approved by the department.
4. Report shall be submitted as follows:
   Major facilities (those serving 10,000 persons or 1 million gallons per day) shall report to both the department and EPA. Other facilities need to report only to the department. Reports shall be submitted to the addresses listed as follows:

   DNR regional office listed in your permit
   (See cover letter of permit)

   EPA Region VII
   Water Compliance Branch (WACM)
   Sludge Coordinator
   901 N 5th Street
   Kansas City, KS 66101

5. Annual Report Contents. The annual report shall include the following:
   a. Sludge/biosolids testing performed. Include a copy or summary of all test results, even if not required by this permit.
   b. Sludge or Biosolids quantity shall be reported as dry tons for quantity generated by the wastewater treatment facility, the quantity stored on site at end of year, and the quantity used or disposed.
   c. Gallons and % solids data used to calculate the dry ton amounts.
   d. Description of any unusual operating conditions.
   e. Final disposal method, dates, and location, and person responsible for hauling and disposal.
      (1) This must include the name, address and permit number for the hauler and the sludge facility. If hauled to a municipal wastewater treatment facility, sanitary landfill, or other approved treatment facility, give the name and permit number of that facility.
      (2) Include a description of the type of hauling equipment used and the capacity in tons, gallons, or cubic feet.
   f. Contract Hauler Activities.
      If contract hauler, provide a copy of a signed contract or billing receipts from the contractor. Permittee shall require the contractor to supply information required under this permit for which the contractor is responsible. The permittee shall submit a signed statement from the contractor that he has complied with the standards contained in this permit, unless the contract hauler has a separate sludge disposal or biosolids use permit.
   g. Land Application Sites.
      (1) Report the location of each application site, the annual and cumulative dry tons/acre for each site, and the landowners name and address. The location for each spreading site shall be given as legal description for nearest ¼, ¼, Section, Township, Range, and County, or as latitude and longitude.
      (2) If biosolids application exceeds 2 dry tons/acre/year, report biosolids nitrogen results. Plant Available Nitrogen (PAN) in pounds/acre, crop nitrogen requirement, available nitrogen in the soil prior to biosolids application, and PAN calculations for each site.
      (3) If the "Low Metals" criteria is exceeded, report the annual and cumulative pollutant loading rates in pounds per acre for each applicable pollutant, and report the percent of cumulative loading which has been reached at each site.
      (4) Report the method used for compliance with pathogen and vector attraction requirements.
      (5) Report soil test results for pH, CEC, and phosphorus. If none was tested during the year, report the last date when tested and results.

AP19490

SEP 10 2014

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM

FORM B: APPLICATION FOR OPERATING PERMIT FOR FACILITIES THAT RECEIVE PRIMARILY DOMESTIC WASTE AND HAVE A DESIGN FLOW LESS THAN OR EQUAL TO 100,000 GALLONS PER DAY

FOR AGENCY USE ONLY	
CHECK NUMBER 1520	
DATE RECEIVED 9/10/14	FEE SUBMITTED $200.00 SB

PLEASE READ THE ACCOMPANYING INSTRUCTIONS BEFORE COMPLETING THIS FORM

1. THIS APPLICATION IS FOR:

☐ An operating permit for a new or unpermitted facility. Construction Permit # _____

(Please include completed antidegradation review or request for antidegradation review, see instructions)

☐ An operating permit renewal: Permit #MO- _____ Expiration Date _____

☑ An operating permit modification: Permit #MO- 0131555 Reason: Construction Complete

1.1 Is the appropriate fee included with the application (see instructions for appropriate fee)? ☑ YES ☐ NO

2. FACILITY

NAME		TELEPHONE NUMBER WITH AREA CODE	
Grand Cru WWTF			
ADDRESS (PHYSICAL)	CITY	STATE	ZIP CODE
42 Grand Parcway	Blue Eye	Mo	65611

2.1 Legal description: ¼, NW ¼, NE ¼, Sec. 4 , T 21n , R 22w County Stone

2.2 UTM Coordinates Easting (X): 471172.9 Northing (Y): 4045490.3

For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)

2.3 Name of receiving stream: Table Rock Lake

2.4 Number of outfalls: 1 wastewater outfalls stormwater outfalls instream monitoring sites

3. OWNER

NAME	EMAIL ADDRESS	TELEPHONE NUMBER WITH AREA CODE	
Wescon Development Company, Inc.		(417) 338-4383	
ADDRESS	CITY	STATE	ZIP CODE
479 FAITH ROAD	Blue Eye	Mo	65611

3.1 Request review of draft permit prior to public notice? YES ✓ NO

3.2 Are you a publicly owned treatment works? YES ✓ NO

3.3 Are you a privately owned treatment works? ✓ YES NO

3.4 Are you a privately owned treatment facility regulated by the Public Service Commission? YES ✓ NO

4. CONTINUING AUTHORITY: Permanent organization that will serve as the continuing authority for the operation, maintenance and modernization of the facility.

NAME	EMAIL ADDRESS	TELEPHONE NUMBER WITH AREA CODE	
Wescon Development Company, Inc.		(417) 338-4383	
ADDRESS	CITY	STATE	ZIP CODE
479 FAITH ROAD	Blue Eye	Mo	65611

If the continuing authority is different than the owner, please include a copy of the contract agreement between the two parties and a description of the responsibilities of both parties within the agreement.

5. OPERATOR

NAME	TITLE	CERTIFICATE NUMBER
Jeff Riekhof (Clearwater Env. LLC.)	Owner	9952
EMAIL ADDRESS		TELEPHONE NUMBER WITH AREA CODE
clearwater.enviro@yahoo.com		(417) 300-5473

6. FACILITY CONTACT

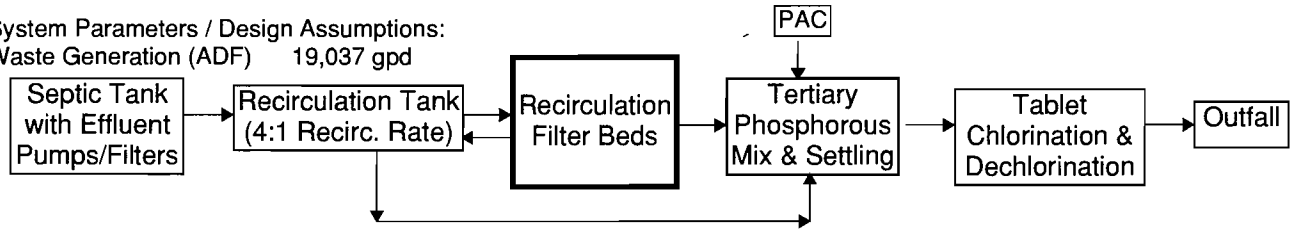
NAME		TITLE	
Judy Lemen		Secretary	
EMAIL ADDRESS		TELEPHONE NUMBER WITH AREA CODE	
lemen@centurytel.net		(417) 335-1818	
ADDRESS	CITY	STATE	ZIP CODE
479 FAITH ROAD	Blue Eye	Mo	65611

7. DESCRIPTION OF FACILITY

7.1 Process Glow Diagram or Schematic: Provide a diagram showing the processes of the treatment plant. Show all of the treatment units, including disinfection (e.g. – chlorination and dechlorination), influents and outfalls. Indicate any treatment process changes in the routing of wastewater during dry weather and peak wet weather. Include a brief narrative description of the diagram. Attach sheets as necessary.

Process description: (See asbuilt plan for flow diagram, component size, and location of unit.)

System Parameters / Design Assumptions:
Waste Generation (ADF) 19,037 gpd



WWTF
1. Collection / Pretreatment: (Local Septic Tank Effluent Pump with Filter, Pressure Collection System)
2. Recirculation Tanks (4:1 Recirculation Rate)
3. Recirculating Gravel Filter Beds
4. Tertiary Phosphorous Reduction (PAC injection with Rapid mixers and Settling Tanks)
5. Chlorination & Dechlorination (tablet chlorine disinfection with pipe contact chamber and tablet dechlorination)
6. Discharge to outfall

Note: no bypassing or rerouting occurs within the treatment plant. .

7.2 Attach an aerial photograph or USGS topographic map showing the location of the facility and outfall.

8. ADDITIONAL FACILITY INFORMATION

8.1 Facility SIC code: 8641 ; Discharge SIC code: 4952 .

8.2 Number of people presently connected or population equivalent (P.E.) Design P.E.

8.3 Connections to the facility:

Number of units presently connected:

Homes 18 Trailers _____ Apartments _____ Other (including industrial) _____

Number of commercial establishments: _____

8.4 Design flow: 19,037 gpd | Actual flow:

8.5 Will discharge be continuous through the year? ✓ Yes | No (If yes, explain.)

Discharge will occur during the following months:

How many days of the week will discharge occur?

8.6 Is industrial waste discharged to the facility? Yes ✓ No

8.7 Does the facility accept or process leachate from landfills? Yes ✓ No

8.8 Is wastewater land applied? Yes ✓ No

If yes, is Form I attached? Yes ✓ No

8.9 Does the facility discharge to a losing stream or sinkhole? Yes ✓ No

8.10 Has a wasteload allocation study been completed for this facility? Yes ✓ No

9. LABORATORY CONTROL INFOMRATION

LABORATORY WORK CONDUCTED BY PLANT PERSONNEL

Lab work conducted outside of plant. ✓ Yes | No

Push-button or visual methods for simple test such as pH, settlable solids. ✓ Yes | No

Additional procedures such as dissolved oxygen, chemical oxygen demand, biological oxygen demand, titrations, solids, volatile content. Yes ✓ No

More advanced determinations such as BOD seeding procedures, fecal coliform, nutrients, total oils, phenols, etc. Yes ✓ No

Highly sophisticated instrumentation, such as atomic absorption and gas chromatograph. Yes ✓ No

10. COLLECTION SYSTEM

10.1 Length of pipe in the sewer collection system? 2650 Feet, or _____ Miles (either unit is appropriate)

10.2 Does significant infiltration occur in the collection system? Yes ✓ No

If yes, briefly explain any steps underway or planned to minimize inflow and infiltration:

11. BYPASSING

Does any bypassing occur in the collection system or at the treatment facility?

If yes, explain:
No bypassing

12. SLUDGE HANDLING, USE AND DISPOSAL

12.1 Is the sludge a hazardous waste as defined by 10 CSR 25? ☐ Yes ☑ No

12.2 Sludge production, including sludge received from others: _____Design dry tons/year _____Actual dry tons/year

12.3 Capacity of sludge holding structures:
Sludge storage provided: _____ cubic feet; _____ days of storage; _____ average percent solids of sludge;
☑ No sludge storage is provided. ☐Sludge is stored in lagoon.

12.4 Type of Storage:
☐ Holding tank ☐ Building
☐ Basin ☐ Lagoon
☐ Concrete Pad ☐ Other (Please describe) _____

12.5 Sludge Treatment:
☐ Anaerobic Digester ☐ Lagoon ☐ Composting
☐ Storage Tank ☐ Aerobic Digester ☑ Other (Attach description)
☐ Lime Stabilization ☐ Air or Heat Drying No sludge treatment onsite

12.6 Sludge Use or Disposal:
☐ Land Application ☐ Surface Disposal (Sludge Disposal Lagoon, Sludge held for more than two years)
☑ Contract Hauler ☐ Hauled to Another treatment facility
☐ Incineration ☐ Sludge Retained in Wastewater treatment lagoon
☐ Solid waste landfill

12.7 Person responsible for hauling sludge to disposal facility:
☐ By applicant ☑ By others (complete below)

NAME	EMAIL ADDRESS
Borman Septic	

ADDRESS	CITY	STATE	ZIP CODE
1621 Deer Lane	Kirbyville	Mo	65679

CONTACT PERSON	TELEPHONE NUMBER WITH AREA CODE	PERMIT NO.
Michael Cardwell	(417) 546-5336	MO-

12.8 Sludge use or disposal facility
☐ By applicant ☑ By others (Please complete below.)

NAME	EMAIL ADDRESS
City of Hollister	wwtp@cityofhollister.com

ADDRESS	CITY	STATE	ZIP CODE
329 Maurice Lane	Hollister	Mo	65672

CONTACT PERSON	TELEPHONE NUMBER WITH AREA CODE	PERMIT NO.
Kelly Burgess	(417) 334-3330	MO- 0116041

12.9 Does the sludge or biosolids disposal comply with federal sludge regulations under 40 CFR 503?
☑Yes ☐ No (Please explain)

13. CERTIFICATION

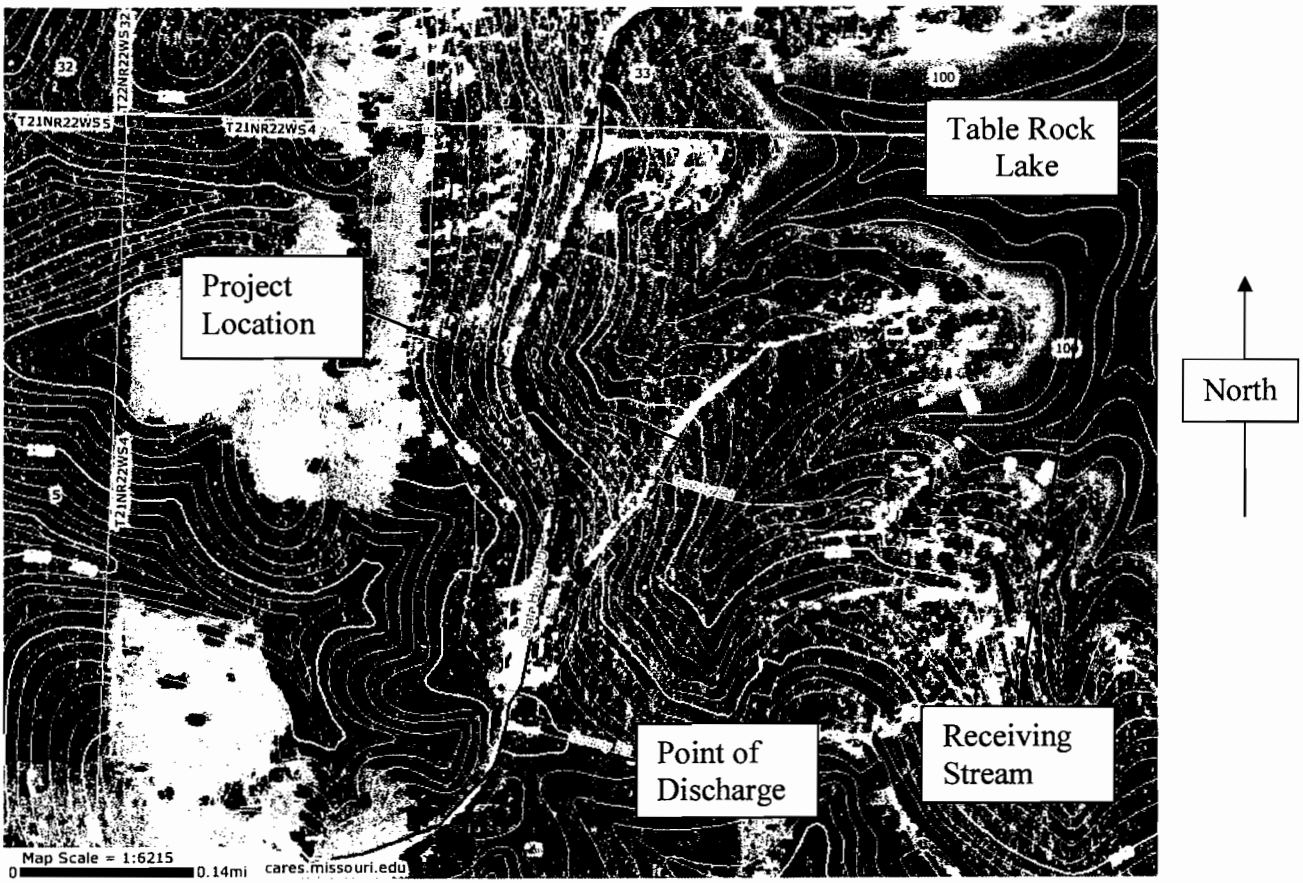
I certify that I am familiar with the information contained in the application, that to the best of my knowledge and belief such information is true, complete and accurate, and if granted this permit, I agree to abide by the Missouri Clean Water Law and all rules, regulations, orders and decisions, subject to any legitimate appeal available to applicant under the Missouri Clean Water Law.

NAME (TYPE OR PRINT)	OFFICIAL TITLE	TELEPHONE NUMBER WITH AREA CODE
Glenn Plaskett	President	
SIGNATURE		DATE SIGNED

MO 780-1512 (06-14)

GRAND CRU ESTATES WWTF

Stone County, MO

A Part of the SW ¼ of the NW ¼ of the NE ¼, Sec. 4, T21N, R22W

Topographical and Aerial Map